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The UNCTAD Virtual Institute is a capacity-building and networking programme that aims to strengthen teaching and research of international trade and development issues at academic institutions in developing countries and countries with economies in transition, and to foster links between research and policymaking.

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<td>NIC</td>
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Module 1

The trade and gender debate: Concepts, definitions and analytical frameworks
1 Introduction

Before starting any kind of research, there are three basic questions that need to be answered: (a) What is the topic I want to examine? (b) Why is it important to investigate it? (c) How can I carry out my analysis? In this introductory module, we aim to provide an answer to each of these questions and thus set the stage for the analysis in Modules 2 and 3.

Over the last 30 years, globalization has contributed to increased cross-border flows of goods and services, capital, technology, and information. The prevailing assumption during this period has been that the lowering of economic, geographic and cultural barriers would lead to higher levels of productivity and expanded employment opportunities from which everybody would benefit. Economic policies were often designed on the assumption that market forces would automatically ensure these outcomes would be realized.

With the adoption of the Millennium Declaration in 2000, the discourse in international development has shifted to the Millennium Development Goals (MDGs) as an overarching framework for development. With regard to trade, the Doha Round of multilateral trade negotiations, launched in 2001 with a strong emphasis on development, contributed to challenging the view that globalization would consequentially lead to economic growth and development for all. Indeed, a key feature of the last decade’s economic development is a disconnection between economic growth and social development: income disparity, social inequality and exclusion have increased even in countries that have recorded high levels of economic growth and remarkable trade performance. It has become increasingly evident that economic policies impact different segments of the population, including men and women, in different ways; the assumption that economic policies are “gender neutral” has been increasingly challenged and it has also become clear that economic policy, including trade policy, can play a critical role in narrowing the gender gap only if policymakers consciously take into account these horizontal differences (UNCTAD, 2012).

Country-based research, including research conducted by UNCTAD, has shown that the different roles played by women and men in society and in the economy have repercussions on countries’ trade performance and outcomes, as well as on women’s and men’s ability to take advantage of the opportunities emerging from expanded trade. Adopting a gender perspective contributes to a deeper and richer understanding of trade performance and brings new insights into trade policy analysis. Firstly, a gender perspective challenges the prevailing aggregate focus of conventional trade policy analysis which overshadows the redistributive effects of trade at the country level. Secondly, a gender perspective is instrumental in bringing to the forefront of the analysis the intersecting patterns of inequality – including inequalities of income and wealth, as well as horizontal differences rooted in race/ethnicity/caste or spatial location – that would otherwise be overlooked in mainstream trade policy analysis. Finally, by delving deep into social norms and power relations, the gender approach integrates social and cultural factors into economic analysis. This, in turn, encourages a shift from formal models to real life economics. In sum, the gender perspective provides a framework for reassessing macroeconomic policy, and trade policy in particular, in ways that magnify their social meaningfulness and inclusiveness (UNCTAD, 2012).

This teaching material explores the consequences of trade for women’s economic empowerment and well-being and the impact of gender inequality on trade. Since the economy is a gendered structure, any impact of trade on the economy is likely to have gender-specific repercussions. Looking at countries’ socio-economic structure through a gender lens is therefore the general framework, which will be described in Section 2. Sections 3 and 4 will then discuss some key concepts and issues in this area, paving the way for analysis in the following sections. Specifically, Section 3 will present a set of key indicators for measuring gender inequality and provide the reader with the necessary tools to understand which indicator is more appropriate to use depending on the purpose of his/her study. Section 4 will explore different definitions of trade used in research and policymaking, as well as provide some clarifications on how we use the term “trade” in this teaching material. After tackling these introductory definitions, the analysis will turn to the core issues at stake in the trade and gender debate. Section 5 will present the multiple channels of interaction between trade and gender. Section 6 will then look at the country case study of Angola, with the objective of applying the previously presented theory to some hard data, as well as providing an initial insight and empirical evidence on the trade and gender debate. The final section (Section 7) will introduce the notion of “mainstreaming gender into trade policy”: its meaning in practice, challenges encountered and the steps that need to be taken for trade policy to fully acknowledge and address gender-based
The trade and gender debate: Concepts, definitions and analytical frameworks

inequalities. The module will conclude with exercises and questions for discussion.

At the end of this module, students should be able to:

- Identify topics related to the trade and gender relationship and understand why and when it is important to investigate them;
- Explain why the economy is a gendered structure and describe its main constitutive elements;
- Compare the strengths and weaknesses of different indicators of gender inequality and identify relevant data sources;
- Understand the difference between “trade” and “trade policy” as well as define and compare different measures of trade;
- Describe the main channels through which gender and trade interact while understanding that the trade and gender relationship is a bi-directional one;
- Understand and gain confidence with the use of a range of different gender analysis frameworks;
- Define the concept of “mainstreaming gender into trade policy”.

2 The economy as a gendered structure

Before delving into the trade and gender debate it is important to clarify the ways in which “gender” and the “economy as a gendered structure” are conceived in this teaching material.

Gender is a system of norms and practices that ascribe particular roles, characteristics and behaviours to males and females based on their sex and generally assign those born female a subordinate status in society. These differences are socially constructed rather than based on any “natural” distinctions and they structure social, economic and political power relations between persons of different genders within the household, the market and society at large. According to UN Women, gender is defined as: “the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, as well as the relations between women and those between men. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes … [and are] context/time-specific and changeable … In most societies there are differences and inequalities between women and men in responsibilities assigned, activities undertaken, access to and control over resources, as well as decision-making opportunities. Gender is part of the broader socio-cultural context. Other important criteria for socio-cultural analysis include class, race, poverty level, ethnic group and age.”

Our analysis in this teaching material focuses on gender biases that prevent women from accessing the same kind of economic, social and political opportunities as men. With the term gender inequalities we refer to the “equal rights, responsibilities and opportunities of women and men and girls and boys” and recognize that gender equality implies that the interests, needs and priorities of both women and men are taken into consideration and that equality between women and men is a human rights issue and as a precondition for, and indicator of, sustainable people-centred development. With the term gender inequalities we therefore refer to the concrete manifestations of gender bias that create disadvantages for women (e.g. lower wages); with the term gender equality we refer to situations where men and women receive equal treatment (e.g. equal pay for equal work).

By understanding the economy as a “gendered structure”, we explicitly acknowledge and identify the gendered power relations that underpin the various institutions, transactions and relations that make up the sphere of the “economy”. That is, we view the economy as part of a system of social relations in which gender is already inscribed, though gender relations within that system can also be transformed and made anew. For example, gender-based discrimination in labour markets is rife and means that women can access only a limited range of occupations and that wages paid to them underestimate their contribution. This is not only a breach of basic labour rights but also makes it harder for a country to take advantage of the full productive capacity of its current and future workforce. Similarly, when women gain access to employment and income, it may lead to greater power and say in the household and therefore mitigate some gender inequalities.

The first step in looking at the economy through a gender lens is to make visible the unpaid household-based work of caring for others that is vital for the continued functioning of the market-oriented economy. Gender-aware economists draw attention to the fact that goods and services required for adequate living standards are produced not only through market work but also through many hours of unpaid labour spent on cooking and cleaning, collecting water and fuel, and taking care of children, the elderly, ill and able-bodied adults. This unpaid labour is vital.
for the functioning of the paid economy though it remains invisible. It has therefore been proposed that the boundaries of the economic system should be broadened to include both market and non-market dimensions. Understanding the interdependence between non-market activities (alternatively termed “reproduction” or also “unpaid care work”) and market activities (or “production”), and the gender division of labour within these, constitutes the starting point for any gender-aware economic analysis.

Gender-based norms about what is men’s and what is women’s work mean that women are expected to take on the bulk of caring responsibilities (Razavi, 2007). This implies that women (much more than men) have the double burden of participating in both paid and unpaid work. This dual role has often the effect of undermining women’s position and negotiating power in the paid labour market, and jeopardizes their access to credit and other productive resources. For instance, it can make women seek jobs that offer flexible arrangements, such as informal and part-time jobs, so that they can combine work with care responsibilities. But because informal and part-time jobs usually pay lower wages than formal and full-time jobs, women often have little incentive to engage in paid work, which reinforces their participation in unpaid household/family work (Higgins, 2012). Consequently, women become more vulnerable within their own families because, for example, they are more dependent on their husband’s income.

The second step of a gender-aware analysis is to identify and analyse how gender bias operates and affects women in the multiple roles they play in the economy. Typically, women in the economy are workers and producers, traders, consumers (and users of public services), and tax payers. Of course, women play several roles in parallel and are therefore exposed to different forms of gender inequality that may reinforce each other, putting women at a disadvantage in the market economy (see Table 2 for a summary of these roles and the corresponding gender bias affecting women). In Sections 2.1 to 2.4, we explain and give examples of the operation of gender biases in each of these roles and make brief reference to data sources whenever possible. However, we leave more detailed discussion of gender indicators and data issues to Section 3.

2.1 Women as workers and producers

Women can participate in the economy as workers and producers. In order to understand the gendered structure of an economy and the type of gender bias women have to deal with in these economic roles, we need to first identify the sectors (agriculture, manufacturing or services) where women and men work and, secondly, what their employment status is (e.g. self-employed, wage employee or contributing family worker).

Despite some variations across regions and countries, women not only tend to be concentrated in fewer sectors (“horizontal gender segregation”) – such as food production in agriculture, textiles and garments in manufacturing, and domestic as well as other social services – but they are also underrepresented in power and decision-making positions (“vertical gender segregation”). Conversely, men are more evenly distributed across a wider range of occupations and productive activities (World Bank, 2012).

Women are also more likely than men to be found in precarious forms of work. The International Labour Organization (ILO) is a good source of global data on these patterns. Figure 1, taken from the report on women’s employment trends (ILO, 2012), shows for instance that, in all regions of the world, women constitute a larger share of “contributing family workers”. This gender difference is particularly marked in South Asia, where unpaid family work accounts for 39 per cent of women’s employment compared with 11 per cent of men’s, and in sub-Saharan Africa, where the corresponding figures are 40 per cent for women and 19 per cent for men. A contributing family worker is the most vulnerable form of employment, as his/her status implies no independent access to income.

In the same vulnerable position are unpaid (household) female workers, who are also included in the category of women as workers and producers. Responsibility for food preparation, water and fuel collection, housework, as well as child and elderly care, falls disproportionately on women’s shoulders all over the world. For example, Budlender (2008) shows that in India, women spend on average 354 minutes every day on housework and childcare, as compared to men who only spend 36 minutes on it. For Tanzania, the corresponding figures are 270 minutes for women and around 50 minutes for men. The burden of unpaid work is particularly heavy for rural women in remote areas, due to poor physical infrastructure. As mentioned above, this is likely to limit the ability of these women to contribute to paid productive activities and it increases the probability that they will be involved in informal low-return forms of employment (World Bank, 2007). The most used source of information on unpaid work are time use surveys (TUS).
Information on the time spent on providing unpaid services for the family and neighbours can be gleaned from time use surveys, which are carried out in a growing number of developing countries (see Figure 2). TUS generally measure all types of unpaid work, with a good level of detail both for the activities recorded and the socio-economic characteristics of the people undertaking them (such as whether they live in rural areas or not, and what their levels of income and livelihood strategies are). TUS-based analysis could be used to guide decisions on how to prioritize sectoral allocation of public expenditures and strengthen gender-sensitive policies in key sectors, such as agriculture commercialization, infrastructure and employment. With a few exceptions (such as the Republic of Korea and Mexico), however, developing countries’ TUS are currently available only for one point in time, which limits their usefulness for analyses of economic changes over time. Small-scale qualitative research at the grassroots level may offer helpful insights when other statistics are lacking.

Source: UNCTAD Secretariat.

Average time (minutes) per day spent on unpaid care work, by sex, selected countries

Source: Budlender (2008).

Note: The data used vary according to when the countries at stake did the time use surveys: Argentina in 2001, India in 1998/99, the Republic of Korea in 2004, South Africa in 2000, and Tanzania in 2006.
Women’s restricted time availability implies that they face greater disadvantages than men in responding to new economic incentives, especially in their role as workers and producers. Women are also found to produce less than men because of their limited access to productive resources (e.g. credit, land and inputs). Empirical evidence from different countries shows that female farmers are as capable as their male counterparts; however, because of fewer entitlements to land and limited access to inputs, they become less efficient and produce smaller quantities of crops (FAO, 2010). Table 1 shows that in most African countries and half of the Asian countries, women are disadvantaged by statutory and customary law in their right to own and inherit land. With regard to credit, women tend to receive only small loans since they have limited or no collateral and therefore often remain trapped in low-value activities that may help them in meeting their practical needs but do not widen their opportunities or favour capital accumulation (UNDAW, 2009). With regard to education and vocational training, women and girls have fewer opportunities than men and boys to develop skills because boys are more likely to be sent to school than girls, who often stay at home to help within the household. At a later stage, vocational training, including agricultural extension services, may not fit women’s time schedule and preclude their participation in it. Women’s lower education and knowledge, in particular in cutting-edge technical fields, limits their upward mobility for employment opportunities when the economy moves up the technology ladder.

<table>
<thead>
<tr>
<th>Region</th>
<th>Inequality related to inheritance rights</th>
<th>No/limited right to acquire and own land</th>
<th>No/limited right to own property other than land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa (48)</td>
<td>45</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>Northern Africa (5)</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Eastern Africa (15)</td>
<td>13</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Middle Africa (8)</td>
<td>7</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Southern Africa (5)</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Western Africa (15)</td>
<td>15</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Asia (42)</td>
<td>25</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>Central Asia (5)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Eastern Asia (4)</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>South-East Asia (10)</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Southern Asia (8)</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Western Asia (15)</td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Latin America and the Caribbean (22)</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Caribbean (6)</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Central America (6)</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>South America (10)</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Oceania (2)</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Eastern Europe (9)</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: UNDESA (2010).
Note: The numbers in brackets indicate the number of countries reviewed. The quality of women’s ownership rights was graded from 0 meaning “no restrictions” to 1 signifying complete discrimination against women. Variations between 0 and 1 may indicate the extent of restrictions or the size of the group of women for which the restrictions may apply. Countries presented in the table are those with partial (graded 0.5) or complete (graded 1) discrimination against women on the issue considered.

2.2 Women as traders

Women in developing countries actively participate in informal cross-border trade and in those countries where women do not face specific barriers to their mobility, they constitute the majority of street traders and vendors. Women who own and run micro, small and medium-sized enterprises (SMEs) also fall into this category.

Women as informal cross-border traders face gender-related barriers because of cultural norms that may determine which modes of
Transportation are appropriate for women. Gender differences exist in the perception, availability and use of many means of transport, especially in developing countries. Women's control over simple means of transport, such as bicycles, animals and carts, may be limited. This imposes an obstacle on women to reach markets where their products can fetch fair prices and conditions in a timely manner. In Uganda, for example, it was found that only men could use bicycles, allowing them to travel and trade outside the village, something that women were not able to do then (Malmberg Calvo, 1994). A project in Tamil Nadu, India, introduced bicycles in the 1990s as a way of promoting women's literacy. It was found that bicycles empowered women and changed their lives because they were able to get quicker access to schools, hospitals, and markets. In addition, gender roles changed as women could undertake tasks such as marketing, taking children to school, and running errands typically done by men. Moreover, bicycles allowed women to complete their tasks faster and more easily, freeing time for other activities (Starkey et al., 2002). Female informal cross-border traders may also face harassment by customs officials. As a result, they often get an unfair deal both as sellers and as buyers.

Women street vendors and owners of micro and small enterprises tend to be at a disadvantage compared to men in terms of having less education and bargaining power, and less access to productive resources and market information and networks. Women entrepreneurs often have different responsibilities, goals and business strategies than men. Obligations related to the well-being of the household place extra demands on their time and income. Even when programmes targeting small businesses are available, often they do not sufficiently take into account the needs and local realities of women entrepreneurs. This is why businesses run by women tend to remain small and generate little income, undermining their potential for growth. Considering that in developing countries SMEs are important for generating employment and make up a large share of economic activities, the fact that businesses run by women are able to grow and upgrade technologically jeopardizes the growth prospects of the whole economy.

In street trading environments, there is a general lack of health and safety standards. Women often need to travel long distances to access health services; thus, their opportunity cost in terms of lost earnings increases when seeking treatment. These poor conditions, coupled with women's higher household workload, increase women's exposure to work-related risks, including those related to stress and ill health. As informal workers, women street traders and vendors are also excluded from the protection of labour legislation and are often unable to access formal social protection measures, such as insurance, disability, maternity and unemployment benefits (Lee, 2004).

Sex-disaggregated data on access to markets and other networks are less readily available and not found in standard surveys. Case studies of particular regions or countries and sector-specific gender value chain analyses (of women's involvement in the various stages of production and distribution of a particular commodity relative to men) are an underutilized source of information for capturing some of these important dimensions.

2.3 Women as consumers

Women in developing countries play an important economic role as consumers: they purchase food and other goods for their families and use public services. Any economic shock resulting in changes in the relative price of necessities and in the provision of essential public services is therefore likely to have a different impact on female and male household members.

Women's contribution to the economy as caregivers means that women essentially buy goods that provide sustenance for the home and family. While a large share of men's income is often devoted to products that Darity (1995) defines as "pure luxury items", women's consumption basket is mainly made up of food products. A change in economic policy that increases food prices, for example, that women can purchase a smaller amount of food products with a given income. This has consequences for the well-being of the family generally but particularly so for girls since food may be unequally distributed among male and female members of the family. Collier and Appleton (1995) note that in northern India boys are favoured over girls in terms of food allocation. Smaller quantities of food available in the household can result in higher risk of nutritional deficiencies and ill health for female members.

If an economic shock derives from a change in trade policy, such as a change in tariffs, women will be affected according to: (a) how much influence trade policy has on the domestic prices of imported goods; and (b) their degree of exposure to various imported goods. Module 2 investigates this impact in detail and describes the transmission mechanisms from tariff changes to women's well-being.
Women are also consumers of public services. A change in government revenues – which may be the result of tariff reduction or elimination pursued within the framework of trade agreements – is likely to have gender-specific effects if it impacts the size and composition of public expenditure, e.g. if public services are cut. The privatization of public services pursued unilaterally or in the framework of trade agreements may also lead to higher prices or to the unavailability of such services in remote areas where services provision may prove unprofitable.

The provision of essential services – health and education services, as well as electricity, sanitation and water infrastructure – are likely to favour vulnerable groups the most (if appropriately designed and targeted). Gender-aware research, mostly on the early episodes of structural adjustment (see Box 2), has highlighted the greater adverse effects of cuts in public spending on women compared to men (Gladwin, 1991; Elson, 1991). Elson (1991) reported for example that, in Zambia, cutbacks in health expenditure were harming women farmers who could spend less time farming because of the need to care for sick relatives. Gender-responsive budgeting initiatives, promoted in a number of countries (see e.g. Budlender et al., 2002), might be a useful tool both for gathering information on gender patterns of public services use and for ensuring that social sector spending, especially oriented towards promoting gender equality, is protected. However, data on these issues are still limited.

### Box 2

**What are Structural Adjustment Programmes?**

Structural Adjustment Programmes (SAPs) are a set of economic policies that were promoted by the World Bank and the International Monetary Fund (IMF) since the early 1980s as a response to the economic crisis experienced by sub-Saharan Africa during the 1970s. Their aim was to encourage more open and efficient economies and boost economic growth in developing countries. Adopting such policies was often a precondition for countries to obtain loans. SAPs usually included measures such as trade liberalization, deregulation of markets, privatization of public enterprises, a diminished role for the state, reduction of subsidies, and flexibility of the labour market. SAPs became increasingly the subject of criticism because of doubts about their positive impact on the economic growth of developing countries, and concerns about their considerable social costs, including higher unemployment, cuts in welfare spending and greater inequality. In 1999, the World Bank and the IMF introduced the poverty reduction strategies (Poverty Reduction Strategy Papers – PRSPs) as the new framework for concessional lending and debt relief for developing countries.

Source: UNCTAD Secretariat.

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### 2.4 Women as tax payers

Women and men pay taxes. However, because of their different economic roles and responsibilities, women and men are likely to be affected differently by tax policies.

A distinction can be made between explicit and implicit biases against women in taxation (Stotsky, 1997; Elson, 2006; UNDP, 2010). Explicit forms of bias include cases in which men and women are subject to different tax rules. An example is the law in Morocco, which grants tax reductions for dependents to men but not to women (Bouazzaoui et al., 2010, as quoted in Hui, 2013: 9). Implicit forms of bias, on the other hand, are the result of social norms and are more difficult to identify; in this case, the different treatment of men and women is not the result of tax law, but rather of how societies are organized. For example, in Argentina, Mexico, Morocco, South Africa, and Uganda, tax exemptions and deductions benefit professionals and those in formal employment, who are more likely to be male (Grown and Valodia, 2010).  

Another distinction with respect to gender can be made between direct and indirect taxes (see Box 3). In the case of income tax, for example, changes in income tax tend to disproportionately impact men as they usually earn more and own more wealth. The way in which income tax returns are filed is also relevant in assessing the gendered impact of taxation: when the husband’s and the wife’s income are pooled together for tax purposes, women – who tend to earn less – may decide to drop out of formal employment if the income loss is partially compensated by lower marginal tax rates (Grown and Valodia, 2010; Tax Justice Network, 2011; Hui, 2013).
Direct and indirect taxes

<p>| Box 3 |</p>
<table>
<thead>
<tr>
<th>Direct and indirect taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes can be classified in various ways, according to who pays them, who bears the ultimate burden of them, the extent to which the burden can be shifted, and other criteria. The most common classification is direct and indirect taxes.</td>
</tr>
</tbody>
</table>

Direct taxes are taxes on individuals or companies (income and corporate taxes) based on the tax payer’s ability to pay as measured by income or wealth. Individual income taxes are commonly levied on the income of tax payers (be they individuals or households). They are frequently adjusted to take into account the circumstances that can impact the ability to pay, such as family status, number and age of children, etc. Direct taxes are often progressive, meaning that tax rates rise along with income. A direct tax is paid to the government and cannot be shifted to another individual or entity.

Indirect taxes are levied on the production or consumption of goods and services or on transactions, including imports and exports. Examples include sales taxes, value-added taxes (VAT), taxes on legal transactions and customs duties. General sales taxes are applied to most consumer expenditures. The same tax rate can be applied to all taxed items; different items (for example food and medicines) can also be subject to different rates. Some basic goods are sometimes exempted from sales taxes to reduce the tax burden of low-income households. Conversely, excise tax is levied only on particular commodities or services, in particular alcoholic beverages, tobacco, and motor fuel. Indirect taxes are collected by an intermediary (e.g. a merchant) from the person who bears the burden of the tax (e.g. the customer).


Corporate tax can also have different impacts on men and women (Barnett and Grown, 2004). For example, if there are deductions for small-scale enterprises, women may particularly benefit since they often own and manage such enterprises.

Indirect taxes, such as the VAT, are based on consumption rather than on income. Lower income groups – including women – tend to consume a higher proportion of their income than wealthier groups; therefore, they face a higher tax incidence: in other words, they pay more taxes as a proportion of their income. In addition, as mentioned in Section 2.3 above, men and women are reported to purchase different kinds of items. For example, in the case of India, it is reported that female-headed households concentrate their consumption on items such as food, medicines and clothing, while male-headed households have higher expenditures related to beverages, tobacco, and transportation (Hui, 2013).

Since individual data on taxation are often missing, the most frequent approach to assess the gender implications of changes in both direct and indirect taxation is to differentiate between the sex of the household’s head (see e.g. Grown and Valodia, 2010). This should however only be regarded as a rough approximation as household members might have different earnings that are not captured in this approach.

Policies with an impact on trade are implemented in the context of gendered structures like the ones just described. Given that women in many settings have fewer resources than men, they have greater difficulty in both taking advantage of new opportunities generated by trade and coping with adjustments brought about by trade reforms. The objective of this section was to show that economic policies and related reforms are not gender neutral. Attention needs to be devoted to designing policies and complementary interventions with a view to mitigating any adverse impacts and promoting gender-equitable adjustments. The many channels through which trade and trade-related policies interact with gender will be described in Section 5. Before this, we need to deal in greater detail with the definitions and measurements of “gender (in)equality” (Section 3) on the one hand, and “trade” and “trade policy” (Section 4) on the other hand.
The trade and gender debate: Concepts, definitions and analytical frameworks

1

International instruments and goals related to gender equality

Gender refers to the socially constructed differences between women and men. These vary from one society to another, change over time and define who has power and influence over what.

The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) was signed by governments in 1979, entered into force in 1981 and has at present 187 States Parties. CEDAW is the first legally binding instrument that takes a comprehensive approach to prohibiting discrimination against women in all domains and is considered a significant achievement.

The Beijing Declaration and Platform for Action (BDPFIA) was signed by 189 governments in 1995. The BDPFIA is the first international legal instrument to incorporate a detailed action plan that sets out strategies to ensure equality and full human rights for women in 12 areas of concern: poverty, education and training, health, violence against women, armed conflict, the economy, power and decision-making, institutional mechanisms for the advancement of women, human rights, the media, the environment, and the girl-child.

MDG3 is the Millennium Development Goal that specifically focuses on gender equality and the empowerment of women. The target for Goal 3 is to “eliminate gender disparity in primary and secondary education, preferably by 2005, and at all levels of education no later than 2015”. This target is measured as the ratio of girls’ to boys’ enrolment in primary, secondary and tertiary education. The three other indicators added to MDG3 are: the ratio of literate females to males among 15–25 year olds, the share of women in wage employment in the non-agricultural sector, and the proportion of seats held by women in national parliaments. MDG3 has been subject to some criticism for its narrow (mainly social) interpretation of gender equality and women’s empowerment, and for the limited attention paid to the impact of economic factors on women’s well-being.

Source: UNCTAD Secretariat.

3 Measures of gender (in)equality

This section provides an overview of the various indicators currently used to measure gender inequality. It focuses only on individual indicators and does not discuss aggregate indices. This is because composite indices are of limited use for analyses that aim to disentangle multiple distributional effects of trade-induced changes, which is the objective of this teaching material.

Table 2

<table>
<thead>
<tr>
<th>Women’s economic roles and gender bias</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women’s economic role</strong></td>
</tr>
<tr>
<td><strong>Workers and producers</strong></td>
</tr>
<tr>
<td>- Self-employed or wage workers</td>
</tr>
<tr>
<td>- Contributing family workers</td>
</tr>
<tr>
<td>- Unpaid (family) workers</td>
</tr>
<tr>
<td>- Casual15 (seasonal) workers</td>
</tr>
<tr>
<td>- Restricted time availability (“time poverty”): household responsibilities fall disproportionately on women’s shoulders</td>
</tr>
<tr>
<td>- Limited access to and control over income and productive resources (i.e. credit, land and inputs)</td>
</tr>
<tr>
<td><strong>Traders</strong></td>
</tr>
<tr>
<td>- Informal cross-border traders</td>
</tr>
<tr>
<td>- Street traders and vendors</td>
</tr>
<tr>
<td>- Owners of micro and small enterprises</td>
</tr>
<tr>
<td>- Limited access to capital</td>
</tr>
<tr>
<td>- Higher health-related risks</td>
</tr>
<tr>
<td>- Limited access to formal social protection measures</td>
</tr>
<tr>
<td>- Limited access to business development services that are usually designed without taking into account the needs of women entrepreneurs</td>
</tr>
<tr>
<td><strong>Consumers</strong></td>
</tr>
<tr>
<td>- Purchasers of food and other goods</td>
</tr>
<tr>
<td>- Users of public services</td>
</tr>
<tr>
<td><strong>Tax payers</strong></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>

Source: UNCTAD Secretariat.
It is important to clarify here the difference between gender equality and women’s empowerment; the two concepts are closely related but quite distinct. Gender equality is about women’s status relative to men’s status, while empowerment refers to whether women have the ability to exercise control, and have options and choice over practical and strategic decisions. Women can be empowered, for instance, by allowing them to make their own decisions regarding the use of their resources and income (economic empowerment); to access good quality education (social empowerment) and to participate in political life (political empowerment). Women’s empowerment is a more controversial concept and more difficult to measure than gender equality because it entails many complex dimensions, such as social norms and institutions, which are highly context-specific.

3.1 Three domains of gender equality indicators

The Millennium Project Task Force on Education and Gender Equality has developed a useful operational framework that distinguishes between three domains of gender equality: (a) capabilities, (b) access to resources and opportunities, and (c) security (UN Millennium Project, 2005):

(a) The capabilities domain refers to basic human abilities, such as knowledge and health. These are fundamental to individual well-being and generate the preconditions for engaging in production and economic decision-making. They are usually measured by various education, health and nutrition indicators.

(b) The access to resources and opportunities domain refers to conditions that enable individuals to earn adequate livelihoods for themselves and their families by accessing economic assets and resources and exercising political decision-making. Land, other property and infrastructure are measures of economic assets. Income and employment are commonly used as measures of access to economic resources. Women’s share of managerial and leadership positions in cooperatives, businesses and governing bodies can be taken as an indicator of political opportunities.

(c) The security domain refers to vulnerability to violence and conflict. Violence and conflict cause physical and psychological harm and undermine the ability of individuals and communities to fulfill their potential. Security can be measured by indicators such as prevalence of rape, sexual harassment or female trafficking.

Module 3 recalls and draws upon this framework to sketch patterns of gender inequality that may influence a country’s export competitiveness.

3.2 Relative and absolute measures of gender inequality

Gender inequalities can be measured in relative and absolute terms.

In relative terms, gender inequality can be assessed in different ways, including the following:

One approach is to construct a ratio of female to male achievement which can be called the gender parity index (GPI). It is calculated as:

$$ GPI_t = \frac{F^i_t}{M^i_t} $$

where $F^i_t$ and $M^i_t$ are the female and male values of indicator i at time t, respectively. The GPI is usually used to measure the relative access of males and females to education; for instance, gender parity indices can be computed for enrolment rates, completion rates, and literacy rates. The GPI of enrolment rates, for example, is calculated by dividing the female enrolment rate by the male enrolment rate for a given level of education. A GPI of 1 indicates parity between the sexes. A GPI that varies between 0 and 1 suggests a disadvantage for females.\(^{17}\)

A second approach is to calculate the relative gap as the difference between the number of males and females of a given indicator (e.g. literacy rates, employment rates, etc.), which in percentage is given by the formula.\(^{18}\)

$$ \text{Relative Gap}_t = \frac{M^i_t - F^i_t}{M^i_t} \times 100 $$

where $M^i_t$ and $F^i_t$ are defined as above. The relative gap can also be measured in terms of wages and, in this case, it is usually referred to as the gender wage gap (or gender pay gap). This relative measure of gender inequality has been the subject of numerous studies, especially with regard to the gendered effects of trade. Module 2 will explain the transmission mechanisms from trade to gender and consider the gender wage gap as well. To set the stage for that analysis, see Box 5 for a detailed description of the gender wage gap.

In absolute terms, gender inequality can be calculated as the absolute difference between the number of males and females in a given sphere of their economic and social lives (e.g. school enrolment); this would be computed by subtracting the number of females from the number of males.
Female to male ratios, referred to in the first approach, appear to be the most commonly used measure of gender disparities. It is important, however, to be aware of the drawbacks of such indicators. A problem with ratios is that there may be some cases where a ratio of one, indicating gender parity, is misleading. For example, Klasen (2004) noted that a ratio of one for infant mortality rates would actually be an example of gender bias favouring males rather than equality of survival since it is well known that females enjoy a biological survival advantage over males in infancy. An even more serious limitation is that ratios say nothing about the context in which the change happens and the direction of its individual components. For an accurate interpretation of changes in ratios, information on the data used to construct the different measures must be available. Taking as an example the ratio of female-to-male wages, increases in female-to-male ratios do not necessarily derive from an increase in female wages but can for instance result from either a fall in male wages, with female wages remaining constant, or a decline in both female and male wages, with male wages declining faster. Without additional information, the researcher would be able to say nothing on whether improvements in the ratio reflect increases in women’s wages (desirable) or decreases in men’s wages (undesirable). Therefore, a correct interpretation of ratios requires trend analysis of the underlying indicators.

As opposed to relative measures, absolute measures use a fixed threshold against which outcomes are measured. For example, maternal mortality is measured against the benchmark of maximum achievement, in other words, the country with the lowest mortality rate.

3.3 Availability and quality of sex-disaggregated data

The best sources of sex-disaggregated data are household surveys and labour force surveys.
While the former provide extensive information on the living conditions of the household, as well as data on age, marital status, family role, education, employment status, earnings and expenditure for each member of the household, the latter concentrate on labour market statistics (which can also be collected by household surveys), such as wages, hours worked and individuals’ union membership. Household and labour force surveys are usually designed and implemented by national statistical offices although there are some surveys sponsored by international organizations (such as the Living Standard Measurement Survey – LSMS – by the World Bank). Listing all the available sources of sex-disaggregated data is not the purpose of this module but we would like to reassure the reader about the question of the patchiness of data raised in Section 2. Despite the paucity of data and lack of standardization across countries that may restrict the capacity to develop appropriate gender indicators for use in gender-aware research and policy, developing countries are strengthening their capacity to develop valid sources of gender-disaggregated statistics. Hopefully, in a few years, improved data, both in terms of quantity and quality, will become available in each domain of gender inequality. As of now, the problem of data availability is more acute in some domains than in others (and in some developing regions more than others). The capability domain contains the largest number of comparable cross-country indicators. Very few reliable indicators are however available for the security domain, and data gaps are also prevalent in the domain of economic opportunities. For example, the recent report on progress in statistics of the World’s Women (UNDESA, 2010) shows that most countries of sub-Saharan Africa and South Asia are missing data on the share of women in non-agricultural wage employment, and even fewer have information on women’s relative earnings.

In addition, a frequent problem with many low-income countries’ statistics, especially on employment, is that they lack the level of sectoral disaggregation (in agriculture, as well as manufacturing) that is commonly used in trade classifications. This undermines the capacity to carry out comprehensive gender impact assessments of trade liberalization, for example. More general limitations of current household and labour force surveys have to do with the irregularity with which they report details on qualitative aspects of work, such as workplace conditions, benefits, hours of work and earnings.

### Box 6

**The category of female-headed households**

Sex-disaggregated data are often collected on the basis of the distinction between female-headed and male-headed households. Frequently, such data are the only sources available for conducting a gender-sensitive analysis; however, some caution should be used when utilizing them.

Female-headed households may include different situations: one-person households, households where the only adult is a woman, or households where there are two adults – a man and a woman – and the woman is considered the household head. Moreover, women can be household heads on a regular or temporary basis if the male partner is only temporarily absent.

Traditionally, the household head is considered to be the person who is economically responsible for the household and has authority over it. However, this concept loses its relevance in circumstances where both spouses/partners provide economic support to the household and both have responsibilities and authority within the household. The assumption that the male adult in the household is by default the head of the household is misleading and may distort the facts, although such an assumption has been largely used in gender analyses.

Using different criteria to identify the head of the household has an impact on how different kinds of households are associated with different poverty rates. For example, data from Panama, based on the 1997 LSMS, distinguished between three different kinds of female-headed households, namely: (a) households where women reported to be the head of the household; (b) households where women were defined as “potential” household heads since no adult males were present; and (c) households where a woman was providing more than half of the total household labour hours worked. According to the analysis, the overlap between the three categories of households was low and the corresponding poverty rates were different: 29 per cent for the self-declared female-headed households; 23 per cent for the “potential” female-headed households; and 21 per cent for the households mainly relying on a woman’s work.

Source: UNDESA (2010).
3.4 Gender indicators for employment, income and assets

The remainder of this section discusses strengths and weaknesses of a few selected variables in the domain of economic opportunities, which are the most commonly used indicators in studies of the relationship between gender and trade. Other indicators of well-being, such as educational attainment or health status, are also relevant to our understanding of the interactions between gender differences and trade changes, however. The reader is encouraged to consult sources such as Buvinic et al. (2008) for an extensive list and a comprehensive discussion of all the indicators that have been used by the United Nations and other specialized agencies for monitoring gender equality on a global basis. The UN has also compiled a “minimum set” of 52 gender indicators in different areas, including economic structure and health, and created a directory of UN Resources on Gender and Women’s Issues that interested readers can explore.19

A number of indicators can be used to capture gender inequality in the domain of economic opportunities (see Table 3 for a summary of these indicators). For paid employment, such indicators include labour force participation, the female share of paid non-agricultural employment and unemployment. For unpaid work, indicators include the female and male shares of non-market time devoted to care. Indicators that capture conditions of and returns from work are female and male shares of vulnerable employment, occupational segregation, and female to male earnings. Other indicators of access to resources may consist of, among others, women’s ownership and control over productive assets, such as land or housing. Some of these indicators are examined in detail below.

(a) The labour force participation rate is one of the most widely used indicators of gender inequality in paid work. The rate measures the number of persons in the workforce as a percentage of the population in working age, and is usually disaggregated by sex and age. Both those who are employed and those who are unemployed but looking for jobs are included. Typically, “working-age persons” are defined as people between the ages of 15 and 64. This measure however says nothing about the quality of work and gives no indication as to whether women are entering the paid labour market out of choice or need. Higher female participation in the paid labour force can reflect women’s free choice to take up new opportunities but can also represent “distress sale” of labour by women who are pushed to take up jobs because of the falling earnings of other household members. Another potential drawback relates to the fact that labour force participation data may undercount workers who only work for a few hours or in their homes. Females are more frequently found in these types of employment than males.

(b) The female share of paid non-agricultural employment is calculated as the number of women in paid non-agricultural employment divided by the total number of persons in paid employment in the non-agricultural sector, and is used for monitoring progress on the achievement of MDG3. One problem is that, in many countries, especially in South Asia and sub-Saharan Africa, non-agricultural wage employment represents only a small portion of total employment. Moreover, this measure does not capture the quality of work. For example, it does not reveal the different types of non-agricultural wage employment, some of which (e.g. domestic services) can be worse than agricultural work in terms of earnings or social protection. If the increase in female non-agricultural employment is driven by an increase of the share of women in low productivity and precarious types of jobs, this should evidently not be interpreted as emancipatory for women.

(c) Unpaid work is classified by the 1993 UN System of National Accounts (SNA) into three categories: (a) housework, childcare and other family-related services not recognized by SNA as economic activity; (b) subsistence and non-market activities, such as agricultural production for household consumption and imputed rent of own-occupied dwellings; and (c) household enterprises producing for the market for which more than one household member provides unpaid labour. An indicator for gender gaps in unpaid work could be the ratio of female hours per week spent on unpaid work to male hours per week spent on unpaid work. A ratio greater than one would mean that women do more such work than men. As already mentioned in this section, time use data, which are essential for the construction of an indicator of gender gaps in unpaid work, are being collected in a growing number of developing countries. However, these data are unfortunately not regularly available and are rarely updated periodically.

(d) Unemployment rates20 disaggregated by sex are important indicators of labour market performance in industrial countries, but are much less useful in low-income economies where the majority of the population is in-
volved either in informal work or self-employment. Unemployment has different meanings in countries that have unemployment insurance, as compared to those that do not. In the latter, most people cannot afford to be unemployed. This is the case for the majority of countries in the less developed regions where visible unemployment may be low but is often disguised as underemployment. In addition, discouraged workers may no longer seek work and are therefore excluded from the count of unemployment. Both underemployment and discouraged worker effects are likely to have distinct gender patterns across countries, and even within countries.

(e) Occupational segregation (i.e. the separation of women and men into different occupations) can reflect different opportunities available to female and male workers and can be useful to capture the rigidity of occupational hierarchies and “job ladders” for women. Occupational segregation is usually measured by the index of dissimilarity (ID). This index can vary from 0 (no segregation, implying an equal percentage of women in each occupation) to 1 (maximum segregation, implying that all female workers are in occupations where there is no male worker) and is measured as the sum of the absolute difference in women’s and men’s distribution over occupations. It is calculated as:

\[ ID = \frac{1}{2} \sum \left| \frac{M_i - F_i}{M_i + F_i} \right| \]  

where \( M_i \) is the number of males in the occupation \( i \), \( M \) is the number of males in the workforce, \( F_i \) is the number of females in the occupation \( i \), and \( F \) is the number of females in the workforce. The index score can be interpreted as the percentage of workers that would have to change jobs to obtain equal distribution of employment. The index of dissimilarity does not measure discrimination itself, but rather the tendency of labour markets to be segmented along gender lines. Another drawback related to data availability is that occupational segregation may not cover informal employment.

A good source of data for occupational segregation is the ILO SEGREGAT dataset which contains employment statistics for detailed occupations by sex (see Box 7). Although employment information is provided for more than 80 developed and developing countries, data are not always comparable across countries and points in time because of differences in data sources, data coverage and national classifications used across countries.

(f) Earnings are a key factor affecting inequality in economic opportunities. The gender wage gap falls in this category and, as mentioned above, reflects inequalities that almost invariably affect women. In particular, women’s earnings tend to be lower than men’s because of occupational segregation in lower-paid positions or direct earnings discrimination. Yet, the wage gap may also reflect individual choices: women are often prepared to accept lower pay as a result of lower aspirations with regard to earnings. A major drawback of the gender wage gap is that earnings data disaggregated by sex are not provided by many countries. When they exist, they are mostly available only for non-agricultural work and often only for the formal manufacturing sector. Accurate information on remuneration from informal employment, for instance, is rarely available. Comparability of wage data across countries is further affected by the inclusion or exclusion of overtime pay, bonuses, payments in kind and other allowances, as well as the unit of time used. Earnings are mostly reported as average earnings per month, which further complicates comparison between male and female wages when data on hours of work are not available, since women tend to work different hours than men. Limited data on gender-disaggregated wages is a serious problem that undermines the analysis of trends over time and across countries.

(g) Distribution of assets. In agricultural societies, access to assets, such as land and credit, may be more salient as an indicator of gender equality than wages and employment (as noted by Agarwal, 2003). Yet sex-disaggregated data on
the distribution of land and housing ownership or on credit access are even more patchy than data on wages. In Africa and Asia, most of the information on the distribution of land ownership by gender comes from scattered household surveys. Some of the LSMS managed by the World Bank include questions on individual ownership of land, but the frequency is low. Even when legal data on women’s access to land, house titles or credit are available, this is not sufficient to gauge whether they have control over such resources in practice, due to social pressures and conventions. Efforts are currently under way to support the revision of the definition of agricultural holder in agricultural censuses so as to allow for the collection of data that reflect the possibility of multiple ownership of land and multiple decision-making in rural households (FAO, 2010). This is a promising step, but, for the moment, assessments of gender equality in agriculture-based economies remain challenging.

### Table 3

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Category</th>
<th>Domain</th>
<th>Description</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour force participation rate (LFPR)</td>
<td>Paid employment</td>
<td>Access to resources and (economic) opportunities</td>
<td>[LFPR^t = \frac{EMP^t + U^t}{POP^t} \times 100]</td>
<td>Many widely used indicator of gender inequality in paid work</td>
<td>No information on quality of work</td>
</tr>
<tr>
<td>Female share of paid non-agricultural employment (FPNAE)</td>
<td>Paid employment</td>
<td>Access to resources and (economic) opportunities</td>
<td>[FPNAE^t = \frac{FNAE^t}{NAEMP^t} \times 100]</td>
<td>Monitors progress on MDG3</td>
<td>Does not capture quality of work</td>
</tr>
<tr>
<td>Domestic work ratio (DWR)</td>
<td>Unpaid employment</td>
<td>Access to resources and (economic) opportunities</td>
<td>[DWR^t = \frac{DF^t}{DM^t}]</td>
<td>Accounts for the part of domestic work that falls disproportionately on women’s shoulders</td>
<td>Time use surveys not readily available and rarely updated</td>
</tr>
<tr>
<td>Unemployment rates (UR)</td>
<td>Paid and unpaid employment</td>
<td>Access to resources and (economic) opportunities</td>
<td>[UR^t = \frac{U^t}{EMP^t + U^t}]</td>
<td>Important indicator of employment and unemployment, especially in developed countries</td>
<td>Does not account for self-employed, underemployed or those employed in the informal sector</td>
</tr>
<tr>
<td>Index of dissimilarity (ID)</td>
<td>Occupational segregation</td>
<td>Access to resources and (economic) opportunities</td>
<td>[ID = \frac{1}{2} \sum \left[ \frac{M_i}{M} - \frac{F_i}{F} \right]]</td>
<td>Measures the distribution of occupations across genders</td>
<td>It is not an exact measure of discrimination</td>
</tr>
<tr>
<td>Gender wage gap (GWG)</td>
<td>Earnings</td>
<td>Access to resources and (economic) opportunities</td>
<td>[GWG = \frac{W^<em>_m - W^</em>_f}{W^*_f} \times 100]</td>
<td>Conveys the extent of gender-based discrimination in wages when human capital variables are accurately controlled for</td>
<td>Data availability</td>
</tr>
<tr>
<td>Distribution of assets</td>
<td>Access to resources</td>
<td>Access to resources and (economic) opportunities</td>
<td>[\text{Data availability}]</td>
<td>More accurate measure of gender inequality for agricultural economies</td>
<td>Data availability</td>
</tr>
</tbody>
</table>

Source: UNCTAD Secretariat.
4 Trade: Definition and measurement

In the previous section, we have seen that gender (in)equality can be defined and measured in various ways. This section analyses the concept of “trade”; its aim is to clarify what we identify as trade and how it can be measured. Indeed, just when looking at the literature on trade and gender, there are many different interpretations of trade depending on the purpose of the study, and the use of one measure or another may sometimes lead to very different conclusions. It is thus important to be clear about which measure of trade is being used and to be aware that the validity of the statements depends on the choice of the indicator. In the remainder of this teaching material, we will also use “trade” to refer to different phenomena. But before explaining what we mean by trade, it is useful first to make some paramount distinctions and disentangle the different levels of analysis involved.

4.1 Some preliminary distinctions

At the outset, it is important to distinguish between “trade” and “trade policy”. “Trade” refers to the international flow of goods and services, or the exchange of goods and services across international borders. “Trade policy” refers to laws, regulations and requirements affecting trade. Both concepts deserve closer scrutiny.

4.1.1 Trade

When assessing the relationship between trade and gender, two structural aspects of trade are frequently considered, separately or together: the degree of trade openness of an economy, and patterns of structural transformation in the composition of trade.

(a) Trade openness

The first issue – trade openness, or more precisely, “trade openness in practice” – indicates a country’s degree of integration into the world economy. In other words, trade openness gauges the importance of international transactions relative to domestic activities and is usually measured by actual trade volumes in a specified period of time. Specific indicators include either exports or imports, or both. These can be recorded either in absolute terms or as a share of a country’s gross domestic product (GDP).

Trade openness “in practice” shall be kept distinct from a different though related notion of “openness in policy” (see Table 4). The latter is concerned with the existence and extent of measures designed to restrict or enhance trade (McCulloch et al., 2001), an issue discussed below under “trade policy”. Some of the most commonly used indicators include simple or trade-weighted average tariff levels, collected tariffs, the effective rate of protection, non-tariff barriers (NTBs) and various composite indices. Openness in practice is not necessarily linked to trade openness in policy as it may also be the result of non-policy factors such as the size of the country, natural resource endowments and other determinants of comparative advantage (McCulloch, 2001). This is why it is important to recognize the difference between the two measures. Governments may not be able to determine or control openness in practice. Higher or lower exports and imports are not necessarily the result of policies. Geography, size and income are important determinants of a country’s external sector as well. For example, trade generally accounts for a much larger share of GDP in small countries than in large countries. Countries that are open in practice may not be open in policy and vice versa. In addition, trade policy may not translate into the desired trade outcomes for various reasons. These include limited physical infrastructure (such as ports and roads), weak productive capacity and lack of resources and measures to stimulate their development, distorted markets, restricted access to information and productive resources. Most of these impediments affect vulnerable women in particular. We will further discuss this point in the next modules, especially in Module 3. Obstacles can also exist at the international level (and be beyond the control of a country’s government), such as when market access is restricted by trading partners, volatility in world prices of a country’s main export is high, or competition from other countries increases.

An ideal measure of a country’s openness would be an index that includes all measures that distort international trade. Researchers have tried to construct various indices of trade restrictiveness (Leamer, 1988; Sachs and Warner, 1995; Kee et al., 2006, etc.) and rank countries according to them, but the emerging consensus is that these indices have important shortcomings.
(b) Structural composition of trade

When assessing a country’s trade stance, it is important to move beyond an assessment of trade openness, and explore some structural or qualitative aspects of a country’s foreign trade. Two important aspects in this respect are the degree of export diversification/concentration and the technological intensity of a country’s foreign trade. Both of them may have important gender ramifications. For example, an increase in labour-intensive exports with low technology intensity, such as clothing or light assembly manufacturing, is often accompanied by an increase in female wage employment in the formal sector. A number of country case studies by UNCTAD (e.g. on Lesotho and Angola) assess the gender ramifications of structural changes in output and trade.

The degree of concentration/diversification of a country’s foreign trade is captured through different measures, including: the number of products traded internationally by a country (a very simple measure of diversification); concentration indices, which show how exports and imports of individual countries or a group of countries are concentrated on a limited number of products or otherwise distributed in a more scattered manner among a series of products; and the diversification index, which reveals the extent of the differences between the structure of trade of the country or country group and the world average. Measures of technology intensity aggregate and classify goods by technology content.

Before moving on to consider the second term – trade policy – it is important to recall that there are static and dynamic measures of trade. The for-
In terms of trade at a specific point in time, such as the amount of export volumes of a country in a given year, and convey the level of integration of a country. Dynamic measures of trade identify changes in trade over time such as the growth rate of exports. Changes in trade may be the result of trade reforms but can also reflect changes in prices when trade flows (i.e. exports and imports) are measured in values, or changes in the industrial policy of the country. Changes in trade may also be the result of demographical changes (i.e. a growing population has bigger consumption needs) or switches in consumption patterns (e.g. the introduction of more meat in the diet, partially replacing cereals).

**4.1.2 Trade policy**

The term “trade policy”, as mentioned above, covers laws, regulations and requirements affecting trade. We often talk of “trade policy in practice”. Indeed, what matters is not only the rule as such, but the way the rule is applied in practice.

To substantiate the notion, it is important to distinguish between the two sides of the trade policy equation: policy measures affecting imports, on the one hand, and policy measures impacting exports on the other (see Figure 3).

The first type of measures relates to the degree of a country’s import trade openness, or in other words the degree of market access it grants. The second type of measures shapes a country’s export competitiveness (e.g. export subsidies), among other things, but it may also serve domestic policy purposes, such as food security (e.g. export restrictions on domestically consumed staples). For trade policy purposes, it is also important to distinguish between border and internal measures (as a matter of fact, a rather intractable distinction – internal measures are often enforced at the border); and between tariffs and non-tariff barriers. We shall also consider a wide spectrum of trade policies and instruments that affect domestic production and trade (from domestic support to state trading) although they are not specifically focused on the regulation of trade flows. Trade policy covers all these aspects, which are in practice complexly intertwined. It is also important to stress that the term “trade policy” is neutral in terms of policy direction: it covers both trade liberalization measures – aimed at the removal or reduction of tariff and non-tariff barriers on the free exchange of goods and services – and protectionist measures.

<table>
<thead>
<tr>
<th>Trade policy measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Border measures</strong></td>
</tr>
<tr>
<td>- Tariff barriers: Import tariffs and tariff-rate quotas (TRQs)</td>
</tr>
<tr>
<td>- Non-tariff barriers: Customs procedures and valuations, import licensing requirements, import controls and restrictions, domestic taxes collected at the border (e.g. VAT), etc.</td>
</tr>
<tr>
<td><strong>Internal measures</strong></td>
</tr>
<tr>
<td>All measures “affecting the internal sale, offering for sale, purchase, transportation, distribution or use” of a product, including technical regulations, standards and conformity assessment procedures, and sanitary and phytosanitary measures.</td>
</tr>
<tr>
<td><strong>Export restrictions</strong></td>
</tr>
<tr>
<td>- Export taxes, charges and levies</td>
</tr>
<tr>
<td>- Export bans and other export restrictions (non-automatic export licensing requirements, minimum export prices, etc.)</td>
</tr>
<tr>
<td>- Customs procedures for exports, and export controls (registration and documentation)</td>
</tr>
<tr>
<td><strong>Export subsidies</strong></td>
</tr>
<tr>
<td>- Export credits and export credit guarantees on non-commercial terms, non-genuine food aid, export-oriented state trading enterprises, etc.</td>
</tr>
<tr>
<td><strong>Government procurement and state trading</strong></td>
</tr>
<tr>
<td><strong>Subsidies/domestic support policies</strong></td>
</tr>
<tr>
<td><strong>Intellectual property rights</strong></td>
</tr>
</tbody>
</table>

Source: UNCTAD Secretariat.
Trade measures, and particularly tariffs, can be analysed at various levels of aggregation. On the one hand, aggregate measures provide general information on a country’s trade openness, including its trade partners, and can be useful at an initial stage of a trade-related analysis. On the other hand, disaggregated measures focus on a country’s trade openness at the sectoral, product or firm level and this micro-level information becomes more useful for a detailed trade-related analysis, such as when investigating the gendered distributional impacts of trade. As a general rule, in reviewing a country’s trade policy, it should be borne in mind that “the devil is in the detail”: meaning that to yield meaningful insights, the analysis of import and export-related measures should be conducted at a disaggregated level (ideally by product, at the HS 6-digit level), taking into due account a country’s bilateral trade flows (major exports and imports by destination and source country). Box 8 provides a description of the classification of traded goods.

### Box 8

#### International systems of classification of traded goods

The Harmonized Commodity Description and Coding System (HS) is an international nomenclature for the classification of products developed by the World Customs Organization (WCO) in 1988. It has been adopted by most countries worldwide and is currently used to classify over 98 per cent of world merchandise trade. The classification has undergone several updates since its inception to reflect developments in technology, changes in trade patterns and the needs of users. The HS comprises about 5,300 product descriptions that appear as headings and subheadings, arranged in 99 chapters, grouped in 21 sections. At the international level the HS is a 6-digit code system. Additional digits may be added at the country level.

The Standard International Trade Classification (SITC) was developed by the United Nations, with the intention of classifying traded products not only on the basis of their physical properties, but also according to the stage of processing, their economic use and their technological properties. The overall aim of the SITC is to facilitate economic analysis. The SITC maintains a correspondence with the HS and this is why it has undergone four revisions (revision 4 was adopted in 2006) to maintain consistency with the development of the HS. SITC classifies merchandise in approximately 3,000 commodity groups and is less detailed than the HS.

Source: UN Statistics Division.

With the progressive removal of formal trade barriers, other issues have gained importance. These include trade facilitation as well as tackling non-official market entry restrictions.

Narrowly intended, trade facilitation refers to the simplification of trade procedures (e.g. procedures for customs clearance). More broadly intended, trade facilitation is concerned with: the establishment of trade-related infrastructure (e.g. transport and storage); the delivery of supply-side services to enhance productive capacity (e.g. market information services or agronomic extension services); and the delivery of aid for the implementation of trade policy reforms. Trade facilitation is currently part of trade policy. To some extent, there has been a shift in emphasis in trade policy from “trade liberalization” to “trade facilitation”. For instance, the gains that the African, Caribbean and Pacific (ACP) countries could obtain from signing the European Partnership Agreements (EPAs) with the EU are more linked to trade facilitation than market access. At the Bali World Trade Organization (WTO) Ministerial Conference in December 2013, WTO members reached a consensus on a Trade Facilitation Agreement as part of a wider “Bali Package”. The agreement contains provisions focused on measures and policies aimed at simplification, harmonization and standardization of border procedures, along with provisions for technical assistance and capacity building in this area.

Market entry barriers are barriers to trade that arise from the structural characteristics of supply chains and markets. Indeed, the actual ability to enter an export market is not only affected by government regulations that determine market access conditions. Important trade barriers arise from entry conditions posed by private actors, e.g. private standards set by large distribution networks (UNCTAD, 2003). These issues, which fall beyond the remit of the WTO, may possibly be tackled within the framework of trade facilitation initiatives.

#### 4.2 The use of the concept of trade

We will now discuss the particular concept of trade used in this teaching material. In Module 2, where we will describe the transmission mechanisms from trade to gender, you will notice that the most frequently used trade-related terms are:
• **Trade policy**, which refers to a set of policy measures affecting international trade, including changes in tariffs and non-tariff measures. As discussed, trade policy can either indicate a fall or an increase in trade barriers; the decision of a country on which kind of trade policy to implement depends on both domestic (e.g. industrial policy) and external factors (e.g. pressure from the international community, surge of exports).

• **Trade liberalization**, which indicates the reduction or removal of trade barriers in the form of tariffs and non-tariff measures, including quantitative restrictions. Trade liberalization is one of the options available for trade policy formulation (as opposed to trade protectionism). It may be the result of bilateral, regional or multilateral commitments taken by a country, or may be pursued unilaterally. Following our classification above, trade liberalization falls in the category of “trade openness in policy”. However, trade liberalization is often confused with “openness in practice” because of the causality effect linking the two concepts. A reduction in trade barriers encourages and often leads to an increase in trade flows but, as we have seen above, this is not always the case.

• **Trade protectionism**, which refers to restrictions on imports by means of tariffs and non-tariff measures meant to protect domestic producers from competition with imported goods.

• **Trade integration**, which refers to the process of increasing a country’s participation in the world market through trade, accomplished by trade liberalization.

• **Trade flow**, which indicates the quantity or value of a country’s trade with another country within a certain period of time.

• **Trade share**, which refers to either imports or exports (or their sum) as a percentage of GDP.

• **Trade regime**, which refers to the laws and practices that govern a country’s international trade.

• **Free trade**, which refers to a situation where there are no barriers to trade.

• **Trade performance**, which is quantified in terms of export flows. We say that a country has improved its trade performance when it has experienced an increase in the quantity of exports. This may be the result of a reduction in trade barriers by a trading partner or of an export-led growth strategy promoted by the country itself. Identifying an increase in the value of exports as an improvement in trade performance may however be incorrect, depending on whether it is the prices or the quantity of exports that have increased.

In Module 3, where we will analyse the effect of gender on trade, we will refer to trade in terms of trade (ToT) performance and/or export competitiveness. In the latter case, a country’s export competitiveness is measured in terms of lower prices of its exports compared to the prices of its international competitors. Improved export competitiveness may translate into increased trade performance and create positive spillover effects on a country’s economy as a whole. We will further elaborate on this point in Module 3 and explain the historical role of gender inequality in increasing export competitiveness in some South-East Asian countries.

5 The trade-gender relationship

5.1 A two-way relationship

Changes in a country’s trade patterns and volume (whether resulting from domestic trade policies or from trends at the international level, such as instability in world prices of exports and imports) take place in the context of economic structures and institutions that tend to be shaped by gender bias. This has two implications.

The first implication is that the distributional outcomes of trade vary by gender: within a country, men and women tend to be affected by changes in trade patterns and volumes differently, as discussed in detail in Module 2. Furthermore, the effects of trade are likely to vary among women themselves, depending on their ethnicity, age, income, educational level, migration status, as well as the social obligations prevailing in their households and communities. Module 2 elaborates on the discrete impact of trade and trade policy on women and men (the first side of the equation of the trade-gender relationship).

The second implication is that gender inequalities tend to affect trade strategies for competitiveness and the extent to which a particular set of trade measures will translate into the desired economic performance. Possible reasons for bottlenecks between trade policy and trade performance include inadequate productive capacity, restricted access to information and markets, limited availability...
of productive resources, such as skills or credit, as well as weak infrastructure. All these factors can be said to be “gender intensified” in the sense that they reflect asymmetric distributions which can in principle limit men’s opportunities as well as women’s, but which usually bear down more heavily on women. Module 3 discusses the impact of gender bias on a country’s competitiveness and export performance (the second side of the equation of the trade-gender relationship).

5.2 Gender-sensitive frameworks for the analysis of the trade-gender relationship

A number of analytical frameworks exist that could help in organizing our thoughts about the interaction of trade with gender inequalities. An approach frequently used in gender analysis, but which can also be applied to the links between trade and gender, is to distinguish between the “macro”, “meso” and “micro” levels (Elson et al., 1997). Macro-level analysis examines the gender division of the labour force between the productive market sectors and reproductive sectors. Meso-level analysis looks at the institutions and frameworks responsible for the distribution of resources, the provision of public services and the functioning of labour, commodity and other markets. Micro-level analysis provides an in-depth analysis of the gender division of labour, resources and decision-making, particularly within the household (UNICEF, 2011).

Our analysis of the channels of interaction between trade and gender suggests that trade can affect gender inequalities at all these three levels. For example, gender gaps in market participation may narrow if the expanding sectors are more female-intensive than the contracting sectors (macro); public provision of social services that favour women (such as health and education) may be undermined if the loss of government revenue from reduced tariffs leads to cuts in such services (meso); female control over household spending may be reduced or extended, depending on whether trade liberalization destroys or creates sources of independent income for women (micro). Employment, public provision and consumption effects may in turn have consequences for the level and gender distribution of unpaid work at both the micro level (among household members) and macro level (between households and public institutions).

Another useful distinction when analysing the gender impact of trade is the difference between practical and strategic gender needs (Moser, 1989). Moser argues that it is important not only to assess the impact on women’s current material status, given their tasks and responsibilities under the established gender division of labour (practical needs), but also to examine whether outcomes contribute to more egalitarian gender relations in the long term, by reducing the basis of women’s economic disadvantage and widening women’s options (strategic needs). An assessment of trade interventions through the practical versus strategic needs lens would lead, for example, to prioritizing interventions that enhance the economic participation of vulnerable women in new sectors (for instance, by promoting training that boosts their upward mobility in technical jobs) over measures that are confined to supporting a few traditionally “female” industries, such as textiles.

Another important contribution to conceptual frameworks for the analysis of trade and gender is provided by Elson et al. (2007) who draw on heterodox trade theories to develop a critique of the concept of comparative advantage and highlight that the acquisition of competitive advantage is a gendered process. They refer to post-Keynesian and Marxist theories that maintain that trade is based on absolute advantage rather than comparative advantage and that competition should be understood in terms of a proactive search for competitive advantage where each actor (e.g. firms) uses strategies to dominate other actors. We will see in the following section how this theoretical framework can be used to analyse the channels of interaction from gender to trade.

5.3 Channels of interaction between trade and gender

We start by describing how trade affects women’s economic empowerment and well-being. Trade alters the distribution of income and resources between different groups of women and men through different channels, and affects them in their multiple roles as workers and producers, consumers, and tax payers entitled to public services.

First of all, trade may lead to changes in the structure of production, with sectors producing for export expected to expand and other sectors sensitive to import competition expected to contract. This, in turn, causes changes in the level and distribution of employment of different categories of workers (employed in different sectors with different intensities), as well as in their remuneration. The economic volatility often associated with production for world markets is also likely to affect the quality and security of employment for various groups of workers and producers differently, with small-scale producers and low-skill workers more often bearing the brunt.
Second, trade-induced changes in the relative prices of goods and services bring about changes in real incomes that affect groups differently, depending on their consumption patterns and livelihood strategies. This will have implications for both resource and time allocations within different types of households.

Third, trade openness is also likely to reduce tariff revenues, and this, in turn, may have gender-specific effects on the size and composition of government expenditure (for example, via the availability of government resources for social programmes and infrastructure). Even if the government manages to replace tariffs with alternative direct or indirect taxes, these may have a gender-differentiated impact.

The theoretical framework provided by Elson et al. (2007) mentioned in Section 5.2 is useful to understand how gender inequality affects trade. The authors argue that gender inequality positions women more as sources of competitive advantage than achievers of competitive advantage (see Box 9 in Module 2). The former refers to women as unpaid family workers and wage workers contributing to businesses run by others; the latter refers to women as owners of businesses employing other people or as own-account self-employed producers. They observe that to achieve competitive advantage producers need access to land, technology, knowledge, freedom from other demands on their time, markets and a favourable policy environment. Many barriers prevent women from using these resources to compete with men. When female business owners or producers achieve competitive advantage, it is usually in a niche market, at the local level.

On the other hand, because of gender gaps in power in labour markets and households, women are a source of competitive advantage for producers using labour-intensive production methods. Gender bias in labour markets enables these producers to pursue a strategy that combines modern technology in transport and marketing with the use of cheap labour. Although export expansion in labour-intensive goods, both in manufacturing and agribusiness, seems to advantage women in terms of the availability of wage employment, the competitive advantage of firms that employ them depends on women’s lower pay and poor working conditions.

Elson et al. (2007) conclude by noting that such strategies are not only bad for gender equality but also counterproductive for business as a whole in the long run, in that they undermine the conditions for a healthy and skilled labour force. We will provide more details on the transmission mechanisms from gender inequality to trade in Module 3.

6 Case study on gender and trade: Angola

We now present a country case study to understand more concretely the issues we have addressed in an abstract manner so far. The country we look at, Angola, has a specific gender pattern of employment which is a reflection of the country’s socio-economic structure. The case study provides insights into the gender ramifications of trade-led structural changes in an oil-dependent country. Our choice of country was not accidental; indeed, by describing the Angola experience, our aim is to make the reader aware of the complexities that arise when investigating the relationship between trade and gender, as well as recognize that the outcomes are country-specific and cannot be generalized, though some policy implications can indeed be drawn and good practices identified.

At the end of this module, we will suggest a set of questions encouraging the reader to explore the issues related to trade and gender. At the same time, these are the questions that researchers and/or policymakers should think about when undertaking an empirical country-specific analysis on the interplay between trade and gender, or when assessing theoretical models about the ways trade and gender interact.

6.1 Basic facts about the economy

Angola is a country rich in natural resources, particularly mineral and oil resources. There are also rich fishing resources, and the abundance of arable land and favourable climatic conditions facilitate the growth of a variety of agricultural crops and the raising of livestock. However, the favourable land and environmental conditions enjoyed by the country have not yet translated into opportunities that would enhance the well-being of the population. The country faced forty years of armed conflict, which started in 1961 with the struggle for independence from Portugal and continued with the civil war that erupted immediately after Angola gained independence in 1975. Peace was only finally achieved in 2002. As a consequence of the long period of armed conflict, the agricultural and manufacturing sectors were seriously disrupted. A decade after the end of the war, Angola has made substantial progress in economic and political terms, but the distortions generated by the long internal conflict still affect the economy and society and have specific repercussions on women.
During the decade that followed the end of the armed conflict (2002–2011), Angola experienced an average annual growth rate of 12 per cent, making it one of the fastest growing economies in the world. Growth has been spurred by the massive reconstruction projects as well as high international oil prices. However, the combined effect of peace and high rates of economic growth have had a limited impact on the reduction of poverty. Inequality and levels of extreme poverty remain quite high: according to the World Bank, 67.4 per cent of the population lived on less than $2 per day (in PPP) in 2009. Poverty is greater in female-headed households, especially in rural areas. Angola remains one of the most unequal countries in the world. In addition to overall inequality, there is a large cleavage between the rural and urban areas.

Regarding Angola’s production structure, the extractive sector is predominant, with around 64 per cent of GDP in 2009. Services contributed to around 25 per cent of GDP, agriculture and fishing to around 8 per cent and manufacturing only to around 4 per cent. Despite the poor performance of agriculture, the sector remains the main source of income for the majority of the population and accounts for over 80 per cent of all jobs generated in the country. Female workers represent 70 per cent of all persons engaged in agricultural activities.

Angola is characterized by one of the largest informal economies in the developing world, the so-called candongas. Informal activities are estimated to contribute to approximately 45 per cent of the Angolan GDP and to provide a living to a significant proportion of the Angolan population, especially women.

6.2 The gender profile of Angola

The situation of women in Angola is still fraught with challenges inherited from the legacy of nearly forty years of conflict. This puts women at a disadvantage in terms of health, educational attainment and access to vital resources, such as land. As regards health, lack of access to reliable and consistent medical services puts women’s health at risk and reduces their ability to participate in society and in the economy because of time spent taking care of the ill and old members of the family. Gender-based violence has been a serious problem in Angola, both during and after the conflict, and it aggravates women’s precarious social status. Gender imbalance is marked in education: the adult literacy rate is 82.7 per cent for men and only 58.1 per cent for women. Seventy-eight per cent of girls and 98 per cent of boys are enrolled in primary school. As a result, Angolan women face significant barriers in terms of resource and time availability in order to participate meaningfully in the country’s social and economic development. On an encouraging note, however, women are well represented in decision-making positions.

The principles of gender equality and non-discrimination against women are enshrined in the Constitution and in the major laws of the country. The analysis of domestic policies shows evidence of Angola’s commitment towards gender equality and of the government’s resolve to consider gender issues and women’s empowerment as a fundamental component of the national development strategy. Angola has a dual legal system based on Portuguese civil law and customary law. Customary law in Angola – as well as in several other African countries – may have a discriminatory effect on women, for example in terms of limiting their rights to property. At the international level, Angola is a party to the main regional and international conventions related to the advancement of women and the promotion of gender equality.

6.3 Basic facts about trade and trade policy

6.3.1 Trade structure and trade partners

The resource-based nature of the Angolan economy has determined both economic and political dynamics in the country. In 2011, Angola was Africa’s second largest oil producer and the fifth largest diamond producer in the world. The expanding production of natural gas and other minerals has a great potential to boost exports.

The evolution of commodity exports in Angola since 2004 presents two important features: (a) the dominance of extractive activities, which in 2010 accounted for more than 99 per cent of all exports; and (b) a significant stability of the structure of exports over time, with products other than oil and diamonds showing limited dynamism and very low value. The country’s integration into the world economy, mainly as an oil and to some extent a diamond exporter, has not contributed to diversify the economy, making it extremely difficult to develop domestic import-competing or export-oriented sectors and reinforcing the primary extractive character of the economy.

Angola is highly dependent on imports: during 2004–2010, imports experienced an annual average growth rate of 13.5 per cent. Import penetration is significant in most sectors.
As far as services are concerned, while imports show a very high annual average growth rate, exports, except for tourism, have demonstrated limited dynamism and low export value. The contraction of commercial services has suggested no diversification of service export activities of the types that have emerged in other developing countries and that represent a potential source of employment for the female labour force, such as health and information and communications technology (ICT) services.

Intra-regional trade remains very limited, as only 2.4 per cent of Angola’s exports are destined to other South African Development Community (SADC) countries, mainly South Africa. In 2011, China and the United States accounted for the bulk of Angola’s exports, with 37.7 per cent and 21 per cent of total exports, respectively. Imports mainly originated from Portugal and China, accounting for 19 and 16.3 per cent of total imports, respectively.

6.3.2 Trade-related arrangements and policies

Angola is a founding member of the WTO and, as a developing and least developed country, it enjoys Special and Differential Treatment (SDT) with respect to WTO obligations and commitments, and benefits from non-reciprocal preferential treatment under a number of bilateral arrangements, such as the United States’ African Growth and Opportunity Act (AGOA) and the European Union’s Everything But Arms initiative.

In terms of tariffs, Angola has a high level of protection of domestic production in some sectors, with the overall goal of supporting the gradual process of import substitution for essential goods and boosting exports from the non-oil sectors. The highest average most-favoured-nation (MFN) applied rates affect tobacco, petroleum, fish and fish products, coffee, tea, and clothing. All remaining product groups face an average tariff close to or below 10 per cent. The average tariff levied on capital goods – traditionally linked to the extractive sector – is very low.

The protectionist policies implemented by the government of Angola to promote industrialization and enhance agricultural production, however, have so far not generated significant results. The domestic currency appreciation policy, which resulted from the “hard-kwanza” policy pursued since 2002 in the framework of stabilization attempts, and the effects of the so-called “Dutch Disease” artificially lowered the price of imports, while increasing the prices of non-tradable goods within the domestic economy. This constrained the diversification of the economy and created challenges of a structural and systemic nature for the country.

6.4 Trade and gender interactions

The participation of women in the economy and the female intensity of employment depend on the overall structural change in the economy, in particular the growth and decline of different sectors that can also be led by trade. To the extent that structural change generates job opportunities that match the skill level of the female workforce, a feminization of work can take place.

To understand how trade-led structural changes in Angola can impact the female workforce, it is necessary to look at the sectoral participation of women in the labour market. Women are concentrated in the agricultural sector, including fisheries, which is still a low-productivity sector. The urban informal sector is the second most important source of employment for the female workforce nationwide. The absolute number of women working in other sectors is very limited. In the formal economy, the main employers of women are the state, i.e. central and local administration, and traditional services such as health and education, which have a high propensity to hire female workers.

The small amount of disaggregated and time-series data available for Angola presents a serious limitation to the analysis of the effects of a trade-led transformation of the production structure on the feminization of labour in the country. Evidence based on the available data suggests that the limited structural transformation experienced by the Angolan economy since the end of the civil war in 2002 did not promote the empowerment of women. As a matter of fact, in the formal sector, the female workforce remains confined to non-tradable and low-productivity activities. The informal sector represents an important channel for the imports of goods in the country and has benefited from trade liberalization. The majority of women in Angola are employed in the informal sector and the trade-led expansion of informal activities has given them a chance to make a living.

As explained in Section 6.3, Angola’s integration into the world economy mainly as an oil exporter has resulted in macroeconomic distortions (i.e. the excessive appreciation in the real exchange rate), tending to crowd out productive activities, such as agriculture and light manufacturing, which could absorb the female workforce and provide women with decent incomes. This challenges the stance
that structural issues (e.g. the “Dutch Disease”) are gender-neutral (UNCTAD, 2013).

Against this background, policymakers face the challenge of designing and implementing a set of policies aimed at reactivating the non-oil export sectors – particularly agriculture and light manufacturing – and spur the development of domestically competitive production. From a gender perspective, export diversification towards agriculture and light manufacturing can reward the female workforce if gender-based constraints are acknowledged and redressed by means of gender-specific and, as warranted, redistributive measures.

Angola displays a significant growth and diversification potential in a number of staple foods and cash crops for export. As female workers comprise 70 per cent of all persons engaged in traditional agricultural activities, agricultural exports are expected to positively impact women’s welfare. For this to happen, however, sectoral policies that take into account the specific needs of women and gender division of labour should be put in place. They include access to rural finance through microfinance schemes backed by governments or non-governmental organizations (NGOs); access to agricultural extension services, in particular agriculture production techniques, marketing of produce and basic business management; access to inputs (e.g. improved seeds varieties and fertilizers) and facilities (e.g. warehouses); secure land tenure for women, including user rights to communal property; and restoring markets and marketing networks, which includes encouraging women’s associations and cooperatives.

The fisheries sector has significant potential for job creation in Angola and the experience of other developing countries suggests that women usually carry out many fishing activities. Policies geared at developing an export-oriented fisheries sector should ensure that women have access to upgraded facilities and receive training on fish handling/processing techniques and on micro-business administration.

Economic liberalization in Angola has so far not promoted the development of export-oriented manufacturing activities. The potential exists to reactivate Angola’s manufacturing capacity in sectors that have a comparative advantage. The production of differentiated, high-value and processed food products can offer significant opportunities of formal employment for relatively unskilled women.

Additionally, tourism is increasingly regarded as a sector with significant economic potential that could contribute to the diversification of the Angolan economy. However, excessive currency appreciation and lack of adequate infrastructure and skilled personnel constitute major challenges that hamper the development of the sector. Women’s participation in the services sector, particularly in tourism-related activities, is relatively low compared to other countries. In view of the high potential for women’s employment in this sector, initiatives could be put forward to bridge the gender gap in education and vocational training and encourage skill development. Most notably, by transferring a portion of the proceeds of the oil/diamond industry to dedicated funds, the government could leverage these revenues to unleash the commercial potential of sectors in which Angola has a comparative advantage, and to fund pro-poor and gender-sensitive social policies.

7 Mainstreaming gender in trade policy

The topic of gender and trade is receiving increasing attention in policy circles, but what are the concrete measures that could effectively contribute to gender-mainstreamed trade policies? This section aims to shed some light on the issue.

Mainstreaming gender in trade policy means ensuring that due consideration is given to gender inequalities and implications at every stage of the trade policy process: (a) the stage of generating relevant evidence to inform decisions on trade policy; (b) the stage of designing policies based on such evidence; and, later, (c) the stage of supporting interventions on the ground to enable their successful implementation. Below, we will provide examples of the kind of actions that may be needed to strengthen gender perspectives in trade policymaking at each of these three stages, especially when the negotiation of trade agreements is at stake. While the focus is on trade agreements, trade liberalization may also be pursued on a unilateral basis; therefore, similar actions would also be of relevance in such a case. Many actors have a role to play in this endeavour: the international community, ministries and other government agencies, trade negotiators, researchers and statisticians, as well as civil society organizations. One of the main challenges is to make sure that all of these actors get involved and that their actions are interconnected and well coordinated.
The trade and gender debate: Concepts, definitions and analytical frameworks

Module

7.1 Comprehensive ex-ante gender impact assessments of trade agreements

Some countries/regions (mostly from the high-income group, such as the United States, Canada and the European Union) routinely undertake assessment studies before negotiating a trade agreement. These assessments tend to vary in scope and purpose, but could include, as standard practice, some sex-disaggregated analysis of the likely distributional effects of the trade measures that are being considered.

There is scope for the international community to offer assistance to developing countries interested in conducting gender assessments of trade agreements. UNCTAD already plays an important role in this area by promoting a range of initiatives in the area of technical support and capacity building. For example, through country-based analysis, such as the one presented in Section 6, it supports developing and least developed countries in mapping women’s roles in the economy and examining the impacts of trade policies on women. Hands-on support is provided on the methodologies that can be used to gauge the impact of trade policy on women. Such activities enhance the research capacity in developing countries that forms the basis for assessing the potential gender-related implications of trade agreements.

Quality sex-disaggregated statistics and research capacity are the two key ingredients required for rigorous and comprehensive gender impact assessments. Both can be supported through a combination of actions at various levels. For example, technical and financial assistance to statistical offices should be aimed at promoting the collection of sex-disaggregated data on a more regular basis and for a wider range of relevant variables and dimensions. Local women’s organizations could play a role by running economic literacy courses (which could encompass the basic concepts and tools for trade analysis) and work closely with statistical offices and government officials to encourage regular use of gender statistics in economic policymaking. The donor community could support independent trade research in key gender-relevant areas, including both qualitative and quantitative studies. Analytical capacity relevant to gender-aware economics needs to be built not only among researchers but also within ministries, and in those related to trade.

7.2 Negotiations of trade agreements

Two different issues should be addressed here: (a) possible inclusion in trade agreements of gender-related provisions; and (b) the need to ensure that liberalization commitments are crafted in a way that also reflects the interest of women.

Some trade agreements make open reference to gender equality goals. The Cotonou Agreement, for example, states that parties must respect international conventions regarding women’s rights and urges the inclusion of a gender perspective in all areas of cooperation. Most of the ensuing interim or final EPAs signed in recent years, though, do not contain explicit gender-related provisions.

Would the use of specific provisions be an effective way of mainstreaming gender in trade agreements? The issue of social clauses based on core ILO conventions in trade agreements is quite a controversial topic. Those arguing for it believe that social clauses are important in that they establish internationally agreed universal rights which can be made to apply to all workers irrespective of country (e.g. Çağatay, 2001). Those arguing against (e.g. Kabeer, 2004) contend that they represent a new form of protectionism to keep imports from developing countries at bay and protect jobs in the North.

The evidence so far appears to be that when a labour side agreement is attached to a trade agreement, the enforcement mechanisms are weak. This is for instance the case of the North American Free Trade Agreement (NAFTA) signed in 1994 by Mexico, the United States and Canada, which includes a number of side agreements. The related North American Agreement on Labour Cooperation is the first case of workers’ rights considerations, including the equality of women and men in employment and pay, being ever linked to a trade agreement in more than a passing manner. However, between the entry of the agreement into force and 2010, only 39 petitions were filed regarding labour rights violations by one of the NAFTA countries; of those around 70 per cent were accepted for review, while the others were rejected. All the cases reviewed ended in ministerial consultations and none reached more concrete levels of arbitration. In other words, trade sanctions were never used. It seems that no concrete improvements in the labour practices of the countries involved in the disputes have taken place as a result of the petitions, and the whole system has therefore proved rather ineffective (Nolan Garcia, 2010).

A study by UNCTAD (2009) highlights the similarities between the ongoing debate about the inclusion of gender clauses in trade agreements and the debate that was spurred in the 1990s...
about the inclusion of environmental requirements. The debate saw developed and developing countries holding rather different positions. The latter were cautious about incorporating environmental considerations into trade agreements because they might result in trade barriers and because their implementation might represent a heavy burden in terms of financial costs and human resources. An additional argument invoked was that the size and economic weight of the country wishing to include environmental considerations in a trade agreement might play a disproportionate role in the outcome of the discussion. Moreover, some developing countries invoked the fact that they were called to negotiate environmental chapters in trade agreements while their national environmental frameworks were still in their infancy and needed further development. Similar arguments may be used as far as gender clauses are concerned. But which specific gender provisions could actually be included in a trade agreement? Possible examples are specific gender-related standards, such as equal working conditions for men and women, and enforcement and dispute-settlement mechanisms concerning compliance with gender-related provisions.

While the arguments presented above about the inclusion of environmental considerations in trade agreements truly reflect the constraints faced by many developing countries, raising the issue has also had some positive effects. These include: (a) increased awareness of the importance of environmental issues for development; (b) a broader participation of civil society in the negotiation and implementation of the agreements; and (c) easier channels (e.g. the Global Environment Facility) for developing countries to access funding for environment-related activities. In particular, point (c) further leads to enhanced dialogue and cooperation on environmental issues among the countries that are parties to the agreements as well as enhanced technical cooperation and capacity building on relevant environmental issues for developing countries that are parties to the agreement. Something similar may be expected should gender considerations be included in trade agreements. In any event, gender-related requirements need to be balanced and realistic, and take into account the economic and social contexts of all countries that are parties to the agreement.

With regard to the second issue mentioned above – the need for gender-sensitive content of the liberalization commitments – it is important to note that broad-based participation in trade consultations and negotiations is likely to increase the chances that gender concerns are taken into account. Fostering collaboration among various government departments (trade, planning, women’s ministry, statistical bureau, etc.), and enhancing the capacity of civil society organizations with regard to gender equality are important in this regard. Trade negotiators could, for example, be provided with a list of gender-sensitive sectors where trade liberalization should be expedited, delayed or exempted, to enhance female employment and empowerment. Ultimately, the commitments that a party is ready to take in the framework of a trade agreement should be beneficial to all segments of the population, including women.

7.3 Development assistance after the entering into force of trade agreements

As briefly discussed in Section 7.2, gender-sensitive interventions are crucial to enable vulnerable women and men to take advantage of newly emerging trading opportunities. Interventions should not be limited to protecting a few traditionally “female” industries, such as textiles, or supporting well-established export sectors. They should also be aimed at enhancing the economic participation of women as a whole, and in particular in the production of goods with higher value-added content. Measures, especially in the areas of trade-related infrastructure and building of productive capacity, should be context-specific and could include, among others: financing road and other physical infrastructure projects that reduce women’s time and energy burdens; designing agricultural vocational training and extension services to meet the specific needs of female farmers; conducting gender audits of trade-related administrative procedures; promoting institutional mechanisms at the government level that foster women’s economic advancement and participation in the labour market, particularly focusing on small producers and traders; or ensuring that decisions on public expenditure and taxes in response to tariff revenue loss are based on a sound understanding of the gender implications of fiscal policies.

Multilateral development cooperation frameworks could also be used to support gender-sensitive interventions in trade-related areas. Programmes such as the Enhanced Integrated Framework (EIF) and the Aid for Trade Initiative (AFT) can play an important role in operationalizing gender mainstreaming and supporting governments in the implementation of gender equality goals within their trade strategies. For example, the Gambia’s Diagnostic Trade Integra-
tion Study update, completed in 2013 within the EIF, may play a catalyst role in driving funds towards gender-sensitive projects in the fisheries sector. AfT and EIF resources are meant to be used following the principles agreed upon in the Paris Declaration on Aid Effectiveness, in particular the principle of national ownership; it is the prerogative of the receiving countries to design their national development strategies and single out the programmes and projects that will be instrumental in their achievement. The upgrading of facilities mainly used by women, the provision of training tailored to women on issues such as financial literacy and business planning, the setting up of e-platforms to enhance the capacity of female small operators to understand market requirements, are examples of activities that could be financed through EIF and AfT.
Exercises and questions for discussion

General questions

1. How can one examine the gender profile of an economy?

2. What are the most common indicators of gender inequality and which gender variables are the most relevant for trade analysis?

3. Some dimensions of gender inequality are not sufficiently captured in the analysis. Explain what they are and why it is difficult to include them in the analysis.

4. A number of indicators can be used to capture gender inequality in the domain of economic opportunities, one of them being the gender wage gap. Explain the different reasons for why a gender wage gap might be observed and the complications of measuring it.

5. Gathering reliable and updated sex-disaggregated data is difficult since many countries do not collect these data on a regular basis. An additional problem is that sometimes sex-disaggregated data are collected on the basis of criteria that are not completely adequate to capture reality, such as distinctions between female-headed and male-headed households. Explain why it is important to collect sex-disaggregated data and suggest some measures that could be used to improve the quality of data and their usefulness in carrying out gender analysis.

6. Trade openness “in practice” is distinct from trade openness “in policy”. Explain why these two concepts are different. Are countries that are open in practice necessarily also open in policy and vice versa?

7. What are the various measures and interventions included under the broad label of “trade policy”? Explain the difference between trade policy and trade liberalization.

8. What are the channels through which trade affects women’s economic empowerment and well-being? And what are the channels through which gender inequality affects trade outcomes? Which analytical frameworks are most useful to explore these linkages? What are the empirical findings?

9. Can one unambiguously establish that trade is good or bad for gender equality in a particular country? Are different country experiences comparable? Can we draw “general lessons”?

10. Beyond gender, what are the other most common sources of disadvantage that people may experience, and how do they intersect with gender-related disadvantages?

11. In your opinion, how easy is it to disentangle trade impacts from impacts of other policies that usually accompany trade liberalization, such as financial liberalization, public expenditure cuts or privatization?

12. Based on your knowledge, why do you think that fiscal policy is important to achieve gender equality, and when does fiscal policy become a source of discrimination?

13. In trade policy analysis, “the devil is in the detail”. How would you proceed if you were asked to assess the level of protection enjoyed by farmers in the specific staples that they produce or to evaluate the tariff and non-tariff barriers that may be faced in the export markets?

14. If gender-related requirements are included in the text of a trade agreement, all parties are bound to comply with such requirements. Explain the pros and cons of including gender requirements in trade agreements.

15. Beyond trade policy instruments, which other policies/measure (and in which areas) do you think may be needed to ensure positive economic and social outcomes for women? What kind of institutional mechanisms do you think would be needed for this to happen?
Exercises and questions for discussion

Specific questions arising from the country case study

The country profile of Angola sketched in Section 6 introduces a range of issues that deserve careful attention in a gender-aware analysis of trade.

1. Read carefully the country case study again and identify:
   (a) The different roles women play in the economy;
   (b) The sectors where women are mostly concentrated;
   (c) Whether women are suffering from gender bias and if so, what type of gender inequality affects women and in what domain (i.e. capabilities, security, and access to and control over resources).
      (Hint: Keep in mind that women may suffer from different forms of gender bias according to their socio-economic roles and/or sector in which they work.)
   (d) The trade policy context;
   (e) The trade and gender interactions.

2. Suppose the government of Angola decides to implement an export-led growth strategy aimed at developing the agricultural sector. What policy measures would you suggest so that women might benefit from increased agricultural exports? Besides the agricultural sector, which other sectors could generate beneficial effects for women?

3. Angola is an oil-exporting country. Do you think it would be feasible to use revenues from the oil industry to promote women’s empowerment? If yes, what measures would you propose?

4. How could the “Dutch Disease” impact women in Angola?
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Module 2
The effects of trade on women’s well-being and economic empowerment: Evidence and research methodologies
1 Introduction

Although manufacturing has historically been a male preserve, the adoption of export-oriented policies by developing countries from the 1960s and 1970s onwards saw a massive influx of women workers into labour-intensive manufacturing production. They constituted between 70 to 90 per cent of the workforce in countries such as Mexico, Puerto Rico, the Republic of Korea and Singapore, and most of them were obtaining formal non-agricultural employment for the first time. The literature on the "feminization of labour" has explained this unprecedented preference for female labour in export-oriented production as a result of intense international competition that demanded the use of relatively cheap labour to cut costs. Standing (1989, 1999) even argued that the implementation of SAPs, including trade liberalization, had led to a "global feminization of labour". Although this claim has been debated and a number of scholars have shown that feminization can reverse itself over time, it is clear that trade has significant gendered consequences.

Building on the concepts introduced in Module 1, this module focuses on the impact of trade liberalization on women’s economic empowerment and well-being. Module 3 then examines the ways in which gender inequality can affect trade performance. Trade has many different aspects that are reflected in terms such as trade policy, trade liberalization, trade protectionism, etc., introduced in Module 1. In this module, we are mainly concerned with trade liberalization, or the removal of trade barriers in the form of tariff and non-tariff barriers that obstruct the free flow of goods and services, and its impact on women’s economic empowerment. We also discuss the impact of trade expansion that may accrue, for example, due to improved trade logistics.

Trade affects economies by altering the structure of production, employment patterns, income and the relative prices of goods and services. Each of these has a gender dimension that must be considered while designing and implementing trade policy. Here, we account for these dimensions by examining how trade liberalization affects women in the market sphere as wage workers, producers, traders, consumers and tax payers, as the impact of trade will vary based on women’s roles in the economy. There is, of course, an overlap between these roles, and ideally a researcher should assess the net impact of trade policy to ascertain the final outcomes. For the interested reader, we also provide brief summaries of research papers that illustrate the various approaches and methodologies that can be used to analyse the effects of trade on women’s share of employment in an Annex at the end of the module.

At the end of this module, students should be able to:

- Illustrate the full range of channels and interactions through which trade liberalization can affect women as wage workers, both in terms of employment and earnings, as producers, traders, consumers of imported goods and of public services, and tax payers;
- Distinguish between the predictions of standard trade theory as applied to the question of gender inequality and those of the heterodox framework;
- Critically review research papers that explore various dimensions of the gender effects of trade and assess their strengths and weaknesses.

2 Women as wage workers

Most of the research on the impact of trade liberalization focuses on women in wage employment and assesses how their employment and income are affected through an increase (or decrease) in exports and imports. Because trade theory makes categorical predictions about how employment and income will shift when a country liberalizes trade, there has been significant research interest in whether these predictions are confirmed empirically. Trade theory can also be interpreted as having specific predictions for gender equality, with respect to employment and wages. Since the research on gendered employment and wage effects is vast, the section on women as wage workers is longer than the others. We first present the employment effects of trade liberalization, including the quality and patterns of employment, followed by wage effects.

2.1 Employment effects

2.1.1 Theoretical expectations

2.1.1.1 Standard theory

Standard trade theory asserts that a country’s comparative advantage in trade is based on its factor endowments (labour or capital) and that it will export those commodities that use its relatively abundant factor most intensively. Accordingly, the Heckscher-Ohlin-Stolper-Samuelson (HOSS) theorems predict that returns to the relatively abundant factor that is used more intensively in exports will rise as the demand for...
it increases (Heckscher and Ohlin, 1991; Stolper and Samuelson, 1941). Since developing countries are abundant in labour rather than capital, the returns to labour (wages) are expected to rise when trade is liberalized. Another way to think about this framework is in terms of skill level: if rich countries are abundant in high-skill labour and poor countries in low-skill labour, trade will increase the returns to low-skill labour in the latter. If women are assumed to form a bulk of the low-skill labour pool, then trade liberalization should increase the demand for women’s labour and lower the demand for male labour. Female wages are expected to rise while male wages are supposed to fall, leading to a lower gender wage gap. This interpretation of standard trade theory leads to the prediction that trade liberalization promotes gender equality.

These arguments have been challenged on both theoretical and empirical grounds. To start with, “endowments of female unskilled wage labour” characterize a number of developing countries but not all of them (e.g. some countries are relatively rich in agricultural resources; in others women are relatively well educated). Moreover, since gender discrimination cannot be assumed to be natural, it is hard to use the natural factor endowments model as a basis for the analysis of a phenomenon so influenced by social norms (Tejani and Milberg, 2010).

2.1.1.2 Heterodox perspectives

Heterodox theorists have argued that trade is based on absolute or competitive advantage as elaborated by Adam Smith (1776/2009) rather than on comparative advantage (see Box 9). That is, a country that produces a good more cheaply will dominate the international market and outdo its competitors. International competition is the main driver in this narrative and it stimulates the search for lower cost labour as firms compete on absolute unit costs rather than relative costs.

Firms seize on existing gender inequalities such as the gender wage gap and hire women to bring down the costs of production, particularly in labour-intensive activities for which they are considered suitable. Women thus serve as a source of competitive advantage for export-oriented firms that face intense competition in the international market, and the demand for their labour rises. As we will see in the section on wages (Section 2.2), it is not necessary that women’s wages rise as a result; trade may perpetuate or even exacerbate existing gender inequalities.

| Box 9 | Comparative advantage vs. competitive advantage |

The principle of comparative advantage suggests that countries compete on relative unit costs. Accordingly, a country exports the goods and/or services it can produce at a relatively lower cost at home, and imports those goods that it can buy at a relatively lower cost from abroad. In the simplest trade setting (i.e. the Ricardian one), trade occurs as long as the parties have different relative efficiencies. Take for example two countries, Rich and Poor; and two goods, airplanes and footwear. Assume that Rich can produce airplanes at a relatively lower cost than footwear – that is, it has a comparative advantage in the production of airplanes. Poor can produce footwear at a relatively lower cost than airplanes – that is, it has a comparative advantage in the production of footwear. In a closed economy, both countries produce both goods. But when they lower their barriers to trade, it will be efficient for both of them to specialize in the production and export of the good they can produce domestically at a relatively lower cost. Country Rich will specialize in the production and export of airplanes while abandoning the production of footwear, which it will import from Poor; country Poor will specialize in the production and export of footwear and abandon the production of airplanes, which it will import from Rich.

In this setting, inequalities emerging from trade liberalization are purely transitional and not accounted for. Empirical evidence has however shown that trade liberalization may result in patterns of specialization (and persistent trade imbalances) that systematically disadvantage one country in relation to the other. Heterodox economists have instead proposed the principle of competitive or absolute advantage to better capture these trade patterns and outcomes. In this framework, countries compete on absolute unit costs (rather than relative costs) and use different strategies such as unit cost reduction and price-cutting to outperform their competitors and gain market share. Take the example used above and assume that country Rich enjoys lower absolute unit cost in the production of both airplanes and footwear – that is, it has a competitive advantage in both goods. Then, Rich exports both airplanes and footwear and Poor stands to have its domestic industry undermined by competition or even to become a net importer of both goods if trade is liberalized. (In such a case, Poor can choose to promote and strengthen domestic production capacity before it liberalizes trade to ensure that its industries can compete, of course within the limits of WTO rules if it is a WTO member.)

2.1.2 Existing evidence

In this sub-section, we present the findings of numerous studies that have analysed the gendered employment effects of trade. Trade liberalization brings about changes in the structure of production of a country, with some sectors expanding (e.g. export-oriented production) and other sectors contracting (e.g. import-competing production). Women and men work in different economic sectors, with women clustered in fewer sectors and men more evenly distributed across occupations and productive activities. Gender roles in both households and labour markets also tend to be rigid (although not unchangeable). Female workers and producers are less likely to enter the expanding sectors – unless these are traditionally female sectors such as garments – due to entrenched gender norms and limited access to productive resources and training. Trade may or may not contribute to gender equality in employment and an improvement in working conditions, depending on a range of factors, including economic structure, trade composition and labour market institutions.

A comprehensive assessment of the gender-differentiated employment effects of trade should distinguish impacts across agricultural, manufacturing and service sectors as well as between different employment statuses (e.g. wage work vs. self-employment). The effects of both export expansion and import displacement should be taken into account. When considering expanding sectors, the analysis should examine changes in the quality of jobs as well as their quantity, by exploring for instance the gendered nature of informalization processes and work vulnerability associated with increased international competition. A further question might be whether the new jobs created for women are available only in traditionally female sectors and occupations (such as textile production) or whether they reduce either vertical or horizontal gender segregation. Finally, it will be important to understand whether the jobs generated by trade offer sustainable gains in the long term. Overall, employment effects from greater trade openness are expected to be gendered because of the different distribution of women and men across tradable and non-tradable sectors, combined with limited substitutability between female and male labour due to rigid gender roles.

2.1.2.1 Agriculture

The limited evidence, both from sub-Saharan Africa and elsewhere, shows that the impact of growing agricultural exports is generally less favourable to female than to male farmers. There is evidence that even when a crop is traditionally female-intensive, its commercial exploitation causes men to enter the sector and take over production and/or marketing. This was the case for groundnuts in Zambia (Wold, 1997), rice in the Gambia (von Braun et al., 1994) and leafy vegetables in Uganda (Shiundu and Oniang’o, 2007).

Women in agriculture-based economies seem to be benefiting from incorporation into international trade more through wage employment opportunities on estate farms or packing houses than directly through product markets. Women are often preferred for this type of work as they are seen as secondary workers and relatively easier to lay off due to their lower bargaining power (Barrientos et al., 2004). Their employment on commercial farms, on the other hand, tends to vary greatly by crop (Chan, 2013).

Wage employment in non-traditional agricultural export (NTAE) production has emerged as a significant source of employment for rural women, particularly in Latin American countries such as Colombia, Ecuador, Brazil, Chile, Mexico and Peru as well as in some African countries such as Kenya, Uganda, Zambia, South Africa and, more recently, Ethiopia. Still, the NTAE sectors employ a very small share of the rural labour force in general and the scope for their future expansion is limited (Fontana and Paciello, 2009). There are also regional differences in how NTAEs affect gender equality. In sub-Saharan Africa, the rise of cash crop exports has resulted in more employment opportunities for men rather than women (Wamboye and Seguino, 2012).

In terms of policy, dynamizing the traditional crop sector can be a way to address existing gender inequalities in agriculture, for women are over-represented in the production of staple foods and in local marketing activities. Linking smallholders to public stockholding schemes for food security, e.g. to require that government or international agencies procure foodstuff from local producers rather than meet requirements through imports (UNCTAD, 2009), could be one way forward. Yet, to be socially inclusive and gender-sensitive, rather than exclusionary, strategies geared to dynam-
The effects of trade on women’s well-being and economic empowerment: Evidence and research methodologies

ize the traditional subsistence-oriented sector should also effectively acknowledge and tackle gender-specific obstacles that hinder the ability of women to efficiently engage in commercially oriented agriculture. Training women in some of the capital-intensive activities in commercial agriculture, such as operating computerized irrigation and cooling systems and driving tractors, can increase their participation, particularly in gender-specific obstacles that hinder the ability of women to efficiently engage in commercially oriented agriculture. Training women in some of the capital-intensive activities in commercial agriculture, such as operating computerized irrigation and cooling systems and driving tractors, can increase their participation, particularly in higher-paid and permanent jobs (Barrientos et al., 2004). In sub-Saharan Africa, while trade has had mostly negative effects on women’s relative and absolute employment, higher investment in infrastructure that reduces women’s care burdens has had a strong positive effect, highlighting again the importance of reducing and redistributing care work to enable women to respond to employment opportunities (Wamboye and Seguinou, 2012).

The feminization of employment through export orientation appears to be more common in the manufacturing sector and in semi-industrialized economies than it is in agriculture-based economies or in mineral resource-rich countries, as we will see in the next sub-section.

2.1.2.2 Manufacturing

Several studies have documented a positive relation between the share of basic manufactures in exports and the female share of employment in a number of developing countries (Wood, 1991; Joekes, 1995; Seguinou, 1997, 2000). This trend found in earlier studies continues to hold for middle-income countries, but only on average, for there are important differences across regions, industrial structures and processes (see e.g. Tejani and Milberg, 2010). An overwhelming characteristic of this increase in female employment is that it is concentrated in labour-intensive, low value added and low wage export industries such as garments, textiles, leather and toys where the quality of jobs and prospects for advancement are limited. In fact, the term “feminization of labour” has been used to refer not only to the increase in women’s share of employment but also to the extension of insecure working conditions, which traditionally characterized female jobs, to male jobs (Standing, 1989, 1999).

In the early stages, female employment gains in manufacturing employment were particularly strong in Asia, especially in the four East Asian “Tigers” but also Bangladesh and Sri Lanka in South Asia, and Malaysia, Indonesia, Thailand and the Philippines in South-East Asia. Expansion was more limited in Latin America, most notably Mexico, but also Central America and the Caribbean (Fontana, 2007). In sub-Saharan Africa, Mauritius experienced a tenfold growth in female employment in manufactures between the 1980s and early 1990s (Pearson, 1999). In Lesotho, as described in Box 10, jobs in the apparel sector grew from around 10,000 in 1999 to 48,000 in 2004 and most of them were filled by women (UNCTAD, 2012). Madagascar experienced a remarkable expansion of about 150,000 jobs in the apparel sector during the period 1997–2003, more than doubling the value of its exports (from $200 million to almost $500 million). The industry experienced a downturn following the phasing out of the Multi-Fibre Arrangement (MFA), but exports picked up again in 2006, reaching about $600 million in 2007. The expansion of the garment industry provided significant employment opportunities for women, as more than 80 per cent of the new jobs were filled by female workers (UNCTAD, 2008).

The employment gains of women in some countries should not obscure the fact that these may have come at the expense of women workers in other countries. In the 1980s and 1990s, the increase in labour-intensive manufacturing exports produced mostly by female workers in developing countries also resulted in the destruction of jobs held by women in high-income economies, due to import competition. Kucera and Milberg (2000) found, for example, that the expansion of OECD trade with developing countries over the 1978–1995 period resulted in disproportionate job losses for women in OECD countries, who constituted the majority of workers in import-competing industries such as textiles, footwear and leather goods.

Moreover, export-oriented jobs are highly dependent on the trade policy environment, and changes in preferential market access, tariff rates, exchange rates and wage rates can lead to large export declines or even trigger the wholesale relocation of industries to other countries. The end of the MFA, which had partially shielded African exporters from more competitive Asian suppliers, led to large export declines in a number of low-income African countries; currency appreciation and higher wage costs resulted in a massive relocation of labour-intensive manufacturing from the East Asian first-tier countries to South-East Asia in the 1980s. The apparel industry in Lesotho is highly dependent on the preferential tariff rates and special rules of origin under the Africa Growth and Opportunities Act, a trade agreement with the United States (see Box 10). If the agreement and particularly the rules of origin are not renewed in 2015, it can potentially decimate the apparel industry and
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The intensified trade competition among developing countries following the complete phase-out of MFA quotas under the terms of the ATC in 2005 also brought about a shift of related exports and employment from Central America and Africa to Asia, and especially to China. China and India increased their shares of imports to the European Union and the United States while economies such as the Dominican Republic, El Salvador, Fiji, Nepal, South Africa and Mauritius, among others, experienced absolute declines in their textile and garment exports, with female jobs being especially affected (Berik, 2011; Otobe, 2008; Valodia, 1996).

Trade, structural change and employment implications for women: The case of the apparel sector in Lesotho

There have been major changes in Lesotho’s structure of production and trade over the past thirty years – most notably the fast expansion of supply capacity in the apparel sector and a relative shift in the composition of exports towards apparel. These structural developments are largely the outcome of trade policy.

One instrument in particular has been critical in shaping Lesotho’s competitive edge in apparel exports: unilateral, non-reciprocal duty-free and quota-free access to the United States for Lesotho’s apparel products under the African Growth and Opportunity Act initiative, coupled with a relaxation of the rules of origin under AGOA to permit the use of inputs from third countries in the production of these apparel exports to the United States. Under AGOA, Lesotho’s apparel exports to the United States almost tripled between 2001 and 2004.

The study argues that the trade-led expansion of Lesotho’s apparel industry has created opportunities for women’s empowerment and well-being through job creation in export-led sectors, but it has also contributed to new patterns of inequality and vulnerability. Under AGOA, Lesotho’s clothing industry grew to be the country’s single largest employer with some 48,000 jobs in 2004, compared with only about 10,000 in 1999. Women still make up the bulk of this workforce. The Lesotho case study shows that trade policy (in this case, preferential access to markets in the United States) can play a catalytic role in job creation for women. Most significantly, trade-led developments have created a large number of new jobs for underprivileged, relatively unskilled women who would otherwise have little chance of being formally employed.

However, there are qualifications to be made and some aspects that need to be critically assessed. Some of the major areas of concern raised by the study include the quality (wages, working conditions and potential for skill development) of the jobs created, spillover effects within the economy and new patterns of vulnerability to external shocks. Above all, wages in the textile and apparel sectors are low in real terms and allow for the coverage of basic subsistence expenses only. Working conditions are hard. Furthermore, segregation of women in the unskilled/labour-intensive nodes of production and the segregated nature of tasks within each node have significantly limited skill development.

Source: Musselli and Zarrilli (2012) and UNCTAD (2012) for the study on Lesotho.

2.1.2.3 Services

The expansion of exportable services appears to have become another source of employment for women, especially in the information technology (IT) sector in countries like India, the Philippines, Jamaica and Mexico (Mitter et al., 2004; Prasad and Sreedevi, 2007). Evidence however points to a marked occupational segregation by gender in this sector, with women mostly concentrated in data processing and men dominating the better paid high-skilled positions such as programming (Wajcman and Lobb, 2007; Patel and Parmettier, 2005). In the IT sector in India, for example, women are reported to account for about half of the workforce employed in business process outsourcing, but for only a quarter in the higher value-added software development segments (Sengupta and Sharma, 2009).

2.1.3 Quality of trade-related employment

Do these newly created jobs for women comply with labour standards? As we have already mentioned, they do not appear to provide secure or long-lasting employment opportunities. Most of the evidence on the quality of trade-related female jobs comes from case studies of Export Processing Zones (EPZs) and, to a less extent, NTAE sectors.
EPZs have been integral to the export-led growth strategy of many industrializing countries. According to ILO statistics, women workers constituted around 70 per cent of EPZ employment in 2006, ranging from a low of 10 per cent in Bahrain to 90 per cent in Jamaica and Nicaragua (Boyenge, 2007). Employers in EPZs often segregate women in unskilled positions that do not provide opportunities for training and promotion and suppress their union rights (Doraisami, 2008; Berik, 2006). Especially in apparel and footwear industries, where suppliers face tight shipping deadlines and seasonal peaks in demand, excessive overtime is widespread (Berik and Rodgers, 2010; Amengual and Milberg, 2008). Working conditions are often very poor and factories do not observe basic fire and safety regulations as the building collapse and fires in 2013 in some Bangladeshi garment export factories showed.

There have been a number of multi-stakeholder initiatives to improve the quality of export-related jobs as a result of consumer pressure, such as the Ethical Trade Initiative (in the United Kingdom) and the Apparel Industry Partnership (in the United States) that involve the adoption of voluntary codes of conduct by firms in the North while sourcing from suppliers in the South (Barrientos, 2001; Barrientos and Smith, 2005). Suppliers are required to observe some core labour standards, and monitoring and reporting is done on a regular basis to ensure compliance. However, voluntary initiatives cannot replace the legal enforcement of core labour rights and standards within countries. In many cases, developing countries have the requisite laws to protect labour rights on the books but their implementation and monitoring need to be significantly improved. The Better Work programme, launched by ILO and the International Finance Corporation, ensures that core labour standards and national labour laws are observed in factories by conducting regular audits, facilitating dialogue between workers and management and building stakeholder involvement and support for its activities with government agencies and unions. The Better Work programme is currently run in nine countries and the Better Factories initiative in Cambodia has been particularly noted for its success.

2.1.4 Impact on gender-based employment segregation

In most developing countries, employment segregation by gender has only marginally declined over the last three decades, despite the increase in female labour force participation. Female workers have remained in traditionally female jobs with little chance to enter previously male-dominated sectors and occupations (Fontana, 2009) that are better paid and offer greater chances for advancement. Gender segregation is widely prevalent in horticultural and commodity value chains: vertically, women are crowded in low value-added work while men are generally in better paid and more secure jobs; at the horizontal level, women predominate in harvesting, slicing, grading and packing fruit while men operate machinery and do loading and other heavy work (Chan, 2013).

In the manufacturing sector, women are concentrated in very few industries, namely garments, textiles and electronics, while their share of employment in sectors such as chemicals, wood products and metallurgical industries is much lower. This kind of gender segregation or crowding in a few industries also serves to keep women’s wages low. In Bangladesh, for example, women have remained highly concentrated in one single subsector – ready-made garments – while other textile subsectors that are more capital-intensive are still dominated by men (Fontana, 2007).

Inknitwear, the sector with the seemingly best prospects in the post-MFA phase, women constitute only 14 per cent of the labour force. In Mexico, maquila employment (i.e.
assembling imported material to be exported as final product) for men has risen significantly more than for women in recent years because of the increased importance of industries such as transportation equipment.

Recent trends appear to suggest that the process of the feminization of manufacturing export employment may decline over time as economies shift to the production of higher value-added goods. The study by Jejani and Milberg (2010), reviewed in the Annex, offers fresh evidence on this phenomenon in middle-income countries in both South-East Asia and Latin America. The authors find that trends in the female share of employment in manufacturing are strongly correlated with technological conditions or the labour productivity and capital intensity of production. That is, women are preferred for low productivity jobs and the female share of employment tends to decline as countries upgrade their manufacturing sectors and labour productivity rises. The authors found that this was the case in South-East Asia from 1985 to 2007, while Latin America displayed the opposite trend during the same period: the female share of employment rose as labour productivity and capital intensity of production fell. Women made impressive gains in terms of education in both regions during this period, so skill differences between men and women cannot be the primary reason why technical change is associated with defeminization. The authors rather emphasized that persistent gender norms and stereotypes segment women into “gender appropriate” activities that tend to be low skilled and with low value added.

In many developing countries, the gender gap in education has closed rapidly in primary education and to a lesser extent in secondary education though drop-out rates for girls continue to be a problem as does the quality of education. Although women might now be better educated, they may still lack job-specific technical skills because they do not receive on-the-job training, because they are segregated into activities that do not have much opportunity for skill development or because of gender segregation in vocational or technical training programmes. This problem can be addressed in different ways in terms of policy. First, relevant government authorities (such as EPZs) can co-finance or offer partial rebates to firms that mandate the participation of women in training programmes for higher-skilled activities. Second, governments can take steps to reduce gender biases in admission policy and instruction in technical training programmes and promote the participation of women in traditionally male-dominated vocations (Jejani, 2011).

2.2 Wage effects

Female labour is on average rewarded less than male labour. This is true for all countries for which data exist (Oelz et al., 2013). There are two main reasons for why women’s average wages remain lower than men’s universally, though the gender wage gap has shrunk in some countries over time. First, women are paid less than men for work of equal value due to gender-based discrimination (FAO et al., 2010), including norms that designate men as breadwinners and women as secondary workers. Second, women tend to be crowded or segmented into stereotypical “feminine” activities like nursing and teaching and labour-intensive manufacturing industries, such as textiles, garments and electronics, due to entrenched gender norms and stereotypes about women’s abilities and the types of work that are “suitable” for them (Oelz et al., 2013). This segregation creates downward pressure on wages and reduces women’s average earnings relative to men’s, thus contributing to the gender wage gap. In addition, these activities are considered low skill and tend to attract lower remuneration, though the designation of work as high and low skill is itself a contentious matter.

We have seen that greater trade integration has led to a rise in women’s access to paid employment in some developing countries, but what about their earnings? Have trade-related jobs offered women higher wages relative to alternative jobs available to them? Have they contributed to the narrowing of the gender wage gap?

2.2.1 Theoretical expectations

Standard and heterodox approaches offer different predictions as to the effects of trade on pay differentials between women and men in developing countries.

2.2.1.1 Standard theory

Within neoclassical economic theory, two arguments suggest gender equitable effects of trade expansion: standard trade theory (the HOSS theorem) and Gary Becker’s theory of labour market discrimination (Becker, 1959). As outlined in the previous section, according to HOSS, trade expansion in developing countries is expected to increase the demand for relatively abundant, lower-skilled labour and reduce wage disparities among groups of workers. To the extent that women workers predominate in lower-skilled jobs and men cluster in higher-skilled jobs, this theory predicts rises in women workers’ wages in unskilled jobs relative to men in skilled jobs, and hence a decline in the gender wage gap.
Trade liberalization may influence wage disparities not only by affecting the relative demand for various types of workers but also by influencing discriminatory practices. Reinterpreting Becker’s theory (1959) in an open economy context, some scholars (for instance Black and Brainerd, 2004) assert that liberalization is likely to lead to competitive pressures that will reduce the scope for employers to discriminate, including discriminating against women. Female workers in this framework are assumed to be equally skilled/productive as male workers. Firms pay male workers a "wage premium" or a wage that is higher than the marginal product of labour because of their gender; discrimination here is conceptualized as a cost to the firm rather than an advantage. The prediction is that import competition will induce firms in concentrated industries (i.e. those industries in which a few large firms take up a large percentage of the market) to cut the wage premium to male workers. This will reduce the gender wage differential.

2.2.2 Existing evidence

There are numerous studies that have shed light on the effects of trade liberalization on women’s relative wages; the results vary according to the country and sectors studied. Evidence on changes in female and male wages associated with trade liberalization however tends to be rather scarce and limited to formal manufacturing and a few (mainly middle-income) countries. Data mostly exclude the informal sector and sometimes also small businesses in the formal sector, which is where many women work, thus providing a somewhat incomplete picture of the manufacturing sector (Fontana, 2007). The information on wages is often not comparable over time and across countries because of differences in definitions. For example, some surveys report daily wages while others measure monthly or annual wages. Different studies often use wages from different sectors of the economy or occupations, and often (and surprisingly) wage data for males and females are not disaggregated by skill level. Overall, the gender wage gap is still large in most countries even when there has been rapid growth in exports that employed female labour – a fact for which there are different interpretations (Fontana, 2007).

2.2.1 Trends in female wages linked to trade

Empirically, two broad sets of studies linking gender pay differentials with trade can be distinguished in the literature: studies that analyse levels in female wages and their trajectory over time, and studies that examine female wages relative to male wages, i.e. the gender wage gap. Some research shows that wage levels and non-wage benefits are generally better in EPZ factories than in alternative employment in the economy and suggests that monthly earnings from employment in EPZs are high enough to keep households above the local poverty line (e.g. Glick and Roubaud, 2006, for Madagascar; and Kabeer and Mahmud, 2004, for Bangladesh).

Studies of EPZs in Mauritius, Mexico and Central America however provide some contrary evidence. In Mauritius, real monthly earnings in large EPZ establishments have tended to be below average earnings in large non-EPZ establishments; in addition, during 1991–2004, the gap between EPZ earnings and non-EPZ earnings widened (Otobe, 2008). Similarly, a study that examined trends in wages in export-oriented assembly factories in Mexico (maquilas) after two decades of operation found that EPZ workers constitute the lowest paid workers in the local labour market (Fussel, 2000). It shows that, over time, maquiladoras’ employers reduced average
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These divergent findings may partly stem from the way wages have been measured in these studies which mostly use either monthly or annual data. The use of monthly or annual wages in comparing export-oriented sectors and other sectors without taking into account working hours is likely to overstate the relative advantage of EPZs over other employment since long hours and excessive overtime are endemic in the EPZs. Ideally, studies should use hourly wages as standard practice but this type of data is rarely available.

### Box 11

**How are wages measured?**

According to the ILO definition, “wage” refers to total gross remuneration, including regular bonuses received by employees during a specific period of time worked as well as time not worked, such as paid annual leave and paid sick leave. Employees include regular employees, workers in short-term employment, casual workers, outworkers, seasonal workers and other categories of workers holding paid employment jobs. In practice, especially in low-income countries, the wage statistics that are collected do not fully reflect all these components.

Wages can refer to all employees, in which case we call them “economy-wide wages”, or to a subset, such as employees in manufacturing or full-time employees. Gender differences in economy-wide wages can result from various effects: a “sectoral employment effect” that reflects the fact that a higher number of women than men tend to work in low-paying jobs; and a “female wage effect” that reflects gender pay differentials within sectors, resulting from either direct or indirect discrimination. The fact that women in many countries tend to crowd into few relatively low-paying jobs can also be a form of discrimination.

Wage data are most commonly available on a monthly basis but hourly wages are preferable as the amount of working hours performed by women and men in a month can vary a great deal (e.g. in many developed countries, more women than men work in part-time jobs).

“Raw gender wage differentials” do not control for productivity as measured by job tenure and education, for example, or by other personal worker characteristics. This omission is often criticized but the key goal in comparing raw wage gaps is not to assess whether employers pay employees fairly but to get an estimate of the structural barriers to gender equality in paid labour, whether through pre-market discrimination in education and training, or within labour markets, via job segregation and wage discrimination.

Most of the studies reviewed in Section 2.2 of this module do indeed control for productivity. They use the “residual gender wage gap”, which is that part of the wage gap that remains unexplained even after accounting for differences between the educational and work experience characteristics of female and male workers. The studies use the “unexplained” gender wage gap because their interest is in measuring possible direct earning discrimination associated with trade.

For further details on measurement issues regarding gender wage differentials, you can also refer back to Section 3 in Module 1.

Source: UNCTAD Secretariat.

### 2.2.2.2 Trends in gender wage gaps linked to trade

As far as analyses of gender wage gaps are concerned, most existing studies examine Becker’s hypothesis (outlined in Section 2.2.1.1) and generally find no support for the argument that trade competition reduces gender wage discrimination. A cross-country analysis of gender wage gaps for 161 detailed occupations and 83 countries during the 1983–1999 period (Oostendorp, 2009) found no evidence that the gender gap declined with trade expansion in low- and lower-middle income countries. Some evidence in this regard is found only in high-income economies.

One of the first studies to test the open economy version of Becker’s theory found that in the United States, during the 1976–1993 period, import expansion indeed contributed to the decline in gender wage discrimination in less competitive manufacturing industries (Black and Brainerd, 2004). This conclusion was challenged by showing that the decline in the residual manufacturing gender wage gap in the United States during that period was driven by changes in the
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Research related to developing countries has mostly produced evidence contrary to Becker's hypothesis. In the case of Taiwan Province of China, increased import expansion was associated with a rise in the gender wage gap between 1980 and 1999 (Berik et al., 2004). The authors interpreted the adverse impacts of import expansion on gender wage gaps as the outcome of disproportionate lay-offs of women workers in the manufacturing industries, such as textiles and electronics, and noted the institutional resistance to reducing discrimination against women in the labour market.

Becker's hypothesis was tested for India for the period 1983–2004 and it was found that the country's industrial and trade liberalization policies since 1991 were associated with wider gender wage gaps in manufacturing industries (Menon and Rodgers, 2009). In Mexico, the residual gender wage gap declined in concentrated industries over the period 1987–1993, once differences in human capital characteristics were accounted for (Artecon and Cunningham, 2002). Yet, there are questions as to whether the results in the paper are statistically significant. The authors also found that greater exposure to trade increased the economy-wide gender wage gap.

Other studies of major exporting countries with strong demand for women's labour seem to suggest that the discriminatory portion of the gender wage gap increased between 1995 and 2005. In Bangladesh, for instance, female wages in apparel industries went from 66 per cent of male wages in 1990 to 50 per cent in 1997 (Paul-Majumder and Begum, 2000). When controlling for worker skills, the female to male wage ratio was 95 per cent in 1991–1995 but declined to about 75 per cent by 2006 (Bhattacharya et al., 2008). In China, the discriminatory portion of the gender wage gap also widened in the 1990s (Maurer-Fazio et al., 1999).

In sum, the available research suggests a much slower narrowing of the gender wage gap in developing countries than standard trade theory would predict. As it was observed earlier, women's lower education compared to men's as an explanation of female workers' inability to move into higher-paying jobs appears increasingly weak in light of women's educational gains in recent years. However, women's limited access to vocational training is still likely to be valid as an explanation. In addition, skills are filtered through gender norms: stereotypes about women's and men's suitability for certain types of work and perceptions of women's and men's abilities influence employer hiring practices. For example, in the context of industrial upgrading, women may not be able to shake off their association with unskilled work, and with the relative growth of the service economy they may be perceived as more suitable for lower-paying occupations such as caring jobs that are consistent with gender norms (Berik, 2011).

Other factors, such as the increased mobility of foreign investors in the context of decentralized global production and the related weakening of labour rights that have often accompanied trade liberalization in developing countries, are likely to also play a role in inhibiting greater equality in pay between female and male workers.

Box 12

The impact of trade liberalization on women as workers: A summary

Trade liberalization impacts women in their role as workers by influencing their employment and wage patterns. Both standard and heterodox theories have accounts of how trade affects gender differentials in employment and wages but they differ on the channels through which this takes place and in their conclusions.

(a) In the standard view, changes in prices are the main channel through which adjustments occur. Building on the notion of comparative advantage, standard trade theory (the HOSS theorem) suggests that developing countries specialize in and export lower-skill intensive goods because they have abundant low-skill labour and can produce this type of good relatively cheaply. When trade is liberalized, higher global demand raises the price of this good and boosts income. Under the assumption that female workers in developing countries have lower average skills than male workers, standard theory can be interpreted as predicting that firms demand more female labour as a result of trade. While women's wages increase, men's wages decrease and, consequently, the gender wage gap narrows.
Box 12

The impact of trade liberalization on women as workers: A summary

(b) In the heterodox view, forces of competition drive the analysis. Trade liberalization intensifies international competition and rival firms increasingly rely on existing gender inequalities to reduce unit costs in order to survive. Although firms demand more (cheap) female labour as a result, this does not necessarily translate into an increase in female wages as the standard theory suggests. Women’s wages may or may not rise as firm competitiveness depends on keeping labour costs low. Additionally, under the assumption that female labour supply is relatively elastic, it is impossible to know a priori whether the gender wage gap will widen or narrow.

Country case studies show that the impact of trade on women as workers also differs according to the sector of economic activity. Women have particularly gained from trade in the labour-intensive manufacturing sectors through increased employment opportunities: the so-called “feminization of labour”. In the agricultural sector, trade liberalization has resulted in fewer opportunities for women as compared to men. Trade in services has also expanded job opportunities for women though they remain segmented in low value-added work. The gains in all sectors need to be assessed against the job losses resulting from import-competing sectors. Moreover, the quality of jobs created and persistent gender segregation are also relevant issues to be considered when assessing the impact of trade liberalization on women’s employment.

Source: UNCTAD Secretariat.

3 Women as producers

Now that we have seen how women as wage workers might be affected by trade liberalization in terms of shifts in employment patterns and income, we turn our attention to the possible impacts on women farmers and small-scale entrepreneurs in the manufacturing sector. Though many women have gained employment as wage workers in export-oriented production, we will see that the impact of trade on women producers can be quite different.

3.1 Theoretical expectations

The HOSS model suggests that countries gain from trade because it shifts relative prices and allows each country to produce more efficiently and consume more goods than before. Consider the case in which two countries produce two goods with two factors of production (labour and capital). Under free trade, a country will produce that good in which it has a comparative advantage, or the one that uses its abundant factor more intensively. Accordingly, the domestic price of the good in which the home country has a comparative advantage (or its export good) will rise. This is because under free trade, excess demand for this good in the foreign country will cause its world equilibrium price to rise. Exporters in the home country stand to benefit from expanded markets and better prices for their products. Thus women as producers also stand to gain if they can avail of opportunities to export their products.

Next we must consider the effects of the elimination of import tariffs on domestic producers. Tariffs reduce import demand and allow domestic producers to both increase supply and sell a good at a price higher than the world price, thus making a surplus in the process that is equal to the price difference times the additional supply. When tariffs are eliminated under free trade, domestic producers will face a fall in revenues due to the loss of this “producer surplus”.

Some productive activities can be rendered unviable as domestic producers cannot compete with the fall in prices due to import competition and are driven out of the market altogether. Trade alters the structure of production by expanding some sectors and contracting others, thus generating significant adjustment costs that are higher if the production base is narrower and the export potential is lower (Beviglia-Zampetti and Tran-Nguyen, 2004).

3.2 Existing evidence

3.2.1 Agriculture

A large number of women in developing countries are crowded in the agricultural sector where they are likely to be small and marginal farmers or work as unpaid labour on family farms. Women most often work in subsistence agriculture and produce staples for own consumption. Generally, agricultural productivity in many developing countries tends to be low and underemployment in the sector is high. When examining the gender ramifications of trade policy in agriculture, it is useful to distinguish between the subsistence-oriented staple food segment on the one hand, and export cash crops on the other.
3.2.1.1 Subsistence-oriented staple food production

There are two discrete trade policy issues related to import penetration and the “modernization” of the subsistence sector to increase its commercial orientation.

(a) Import penetration

Cheap food imports as a result of trade liberalization can reduce the domestic price of agricultural produce and erode women’s already meagre earnings in the sector. This was the case in the Philippines where over a third of the women in agriculture were engaged in rice farming. Liberalization of the rice market between 2001 and 2005 led to a reduction in the domestic price of rice and reduced incomes for both men and women small-scale farmers in the rice value chain (UNCTAD, 2008). Tariff protection for crops that are vital for food security and for the livelihoods of poor households can be used as a policy instrument here, though compatibility with WTO trade rules needs to be worked out. It should be stressed, in this respect, that in most developing countries, the gap between the bound and applied MFN rates (the so-called “binding overhang”) is fairly large for agricultural products. This allows for significant leeway in adjusting border protection to stimulate domestic staple food production. Constraints in manipulating import levies, however, may arise from regional agreements. Domestic support measures can also be proactively used to stimulate production. Such measures include price support, though within the de minimis threshold. Compensation for the “losers” from trade can also be considered although this is a short-term solution and does not address the question of alternative livelihoods for the concerned producers.

When assessing the extent to which domestic staple food production is displaced by cheap imports, it is also important to consider the degree to which local markets are insulated from competition. Poor transport and trade logistics, among others, increase transaction costs and tend to insulate more remote markets. If we take the example of Rwanda, most food imports are directed to Kigali and few urban areas; rural markets in remote areas continue to be mainly supplied by subsistence-oriented farmers. Yet, infrastructure constraints are being removed quickly through coordinated investment in roads, electrification and cold-chain storage, and import penetration is likely to increase in rural regions (UNCTAD, 2014).

(b) Modernization of the traditional subsistence-oriented sector

In the long term, the goal of many primarily agrarian societies is to move from a largely subsistence-oriented agricultural sector to a more commercially-oriented one, sustaining growth and adding value to products through processing (e.g. the case of Rwanda). From a gender perspective, questions arise as to whether the modernization of agriculture would imply a change in mode or scale of production: from small scale to large scale, from labour intensive to capital intensive. This shift may pose significant challenges for rural women who tend to be relatively disadvantaged compared to men in terms of capabilities (lower literacy rate of rural female heads of households) and access to productive resources (land, credit, etc.). Proactive measures are needed to ensure a gender-sensitive modernization of the traditional staple food sector.

A related issue is land diversion. Agricultural modernization schemes typically envisage land consolidation and acreage expansion for a few prioritized crops (typically the major internationally traded cereals, like maize, wheat and rice). This may occur at the expense of the so-called “secondary crops” (roots and tubers, such as cassava and pulses) that have significant local importance in dietary terms and that tend to be “female” crops in many contexts. The same problem arises with respect to agribusiness expansion. Poor farmers in many developing countries are also increasingly abandoning or selling their farms, leading to land concentration in the hands of a few large commercial enterprises, including foreign companies. For example, in the Philippines, a study reports that rural women have been pushed by large NTAE businesses into increasingly less fertile land or even been displaced to cities and tourist zones, where they work as domestic workers or sex workers (Beviglia-Zampetti and Tran-Nguyen, 2004).

3.2.1.2 Cash crops for export, with a focus on non-traditional segments

Trade liberalization can benefit women farmers by providing expanded markets for export as well as opportunities to integrate into global supply chains as producers. Emerging trends seem to indicate that small farmers, many of whom are women, are often not in a position to compete in overseas markets. They face a particular set of constraints relating to land tenure systems, poor infrastructure, limited access to credit and often a lack of the technical expertise required to comply with regulations and output standards (Fon-
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Evidence that women as producers face more severe challenges in accessing international markets than their male counterparts, and that women traders tend to be confined to local markets, can be found in Samoa, Mozambique and other sub-Saharan African countries (Carr, 2004; Beviglia-Zampetti and Tran-Nguyen, 2004). In addition, women producers face various market access constraints related to phytosanitary standards, technical barriers to trade, and product and process regulations that they find difficult to meet (Beviglia-Zampetti and Tran-Nguyen, 2004). They also face market entry barriers, such as private standards or voluntary labelling requirements. Not only do these market access and entry barriers have to be eased, women producers also need technical expertise and training to deal with them.

A related development, particularly in NTAEs, is production under contract farming and other out-grower schemes. Under these contractual arrangements, the farmer agrees to supply a specified quantity and quality of a specific agricultural product at an agreed time; the buyer (typically a processor, trader or retailer chain “off-taker”) commits to purchase the product and, in some cases, advances finance or supply inputs and provides extension services, the costs of which are deducted from the final settlement payment. The gender ramifications of these schemes are not straightforward. On the one hand, off-takers often prefer to source from the most commercially oriented farmers so as to reduce transaction costs of supervision and counterparty risks. This tends to crowd out marginal and vulnerable rural smallholders, many of whom are women. For instance, women farmers get a very small share of contracts from agro-processing firms to grow export crops: during the 1990s, they obtained only 3 per cent of contracts in Guatemala and less than 10 per cent in Kenya (Kabeer, 2012). On the other hand, some buyers may structure their procurement to enable the participation of women, particularly when reputational or sustainability issues are at stake (especially if the produce is sold as “socially sustainable” in high-income consuming countries). In this case, the buyers may act as catalysts for the empowerment of rural women. Beyond gender considerations, contract farming and other models of structured supply chains raise concerns about over-dependence and abuse of position. These concerns can be more effectively addressed when local authorities step in and “frame” the broad terms of the bilateral deal: which suggests a shift from bilateral contractual relationships (between farmers and off-takers) to triangular public-private partnerships (involving farmers, off-takers and the public sector).

Nevertheless, there are numerous successful cases in which women producers have been able to take advantage of export opportunities for agricultural produce and increase their earnings, often by forming local associations and obtaining the right technical and financial assistance. For instance, the government of Burkina Faso along with international NGOs and the UN initiated a project to assist women shea producers in the country to improve their production of the crop and link them up to export markets. Women’s producer associations pooled resources to buy machinery so that they could sell more profitable shea butter instead of raw nuts and successfully linked up to global markets. They receive regular technical training to observe export quality standards and attend trade fairs to make contact with buyers (UNCTAD, 2008). In Uganda, women produce 80 per cent of NTAEs and have been successful in expanding their businesses and getting access to credit because they own land (Randriamaro, 2005), which highlights the importance of strengthening women’s property rights and their entitlements to land. Because it is easier for small-scale farmers to gain access to global value chains when they form cooperatives or producer organizations, it is important for policymakers to enhance women’s access to these organizations as they tend to be male-dominated or to promote women producers organizations (Fontana and Piacelli, 2009).

Ultimately, the ability of rural women to effectively integrate into global supply chains depends on the corrective action taken by governments to redress gender-based inequalities and constraints as well as the incentives that off-takers in structured chains have to source from women.

3.2.2 Manufacturing

Aside from agriculture, women are also engaged as small-scale producers or home-based micro-entrepreneurs of manufactured items such as handicrafts, garments, textiles, food products, etc. These enterprises typically have a low capital base, low productivity and are often based on home premises. That is, women’s enterprises tend to be mostly informal and “survival-oriented” rather than formal and “accumulation-oriented” (Kabeer, 2012). As in agriculture, gender-based constraints in small-scale production, such as lack of access to capital, technical and business training, marketing skills, education and heavy care burdens that have to be managed simultaneously, mean that enterprises run by women often tend to grow more slowly and are generally less profitable than those run by men (Kabeer, 2012).
Trade integration transforms nearly every aspect of business and puts pressure on small-scale producers to upgrade their technologies, increase productivity and compete with cheaper and often better quality imported goods. Trade liberalization is often associated with industry consolidation and expansion as large and/or foreign firms make incursions into traditional and local markets in which SMEs may have found a niche (OECD, 2004). Given their constraints, women entrepreneurs in particular find it difficult to cope with the higher competition and may have their livelihoods eroded as a result, which was the case in Viet Nam (Tuyet Mai, 1998) and in Samoa (AusAID, 2008), for instance. In such cases, trade protection for items of particular relevance for SMEs can be a policy option; sector specific industrial policy including preferential terms of credit, technical support and export subsidies can also address some of the problems faced by small entrepreneurs. For enterprises that go out of business, reskilling programmes might be necessary to reintegrate owners into the labour market as workers.

On the other hand, trade liberalization can also give women entrepreneurs the opportunity to access new export markets and increase their earnings. However, for the same reasons discussed above, women-owned enterprises are much less likely to acquire the necessary technical and legal expertise and the ability to market their products effectively. Rather, formal and accumulation-oriented enterprises are more likely to take advantage of export markets.

In some countries, small- and medium-scale formal sector enterprises owned by women have benefited from selling in export markets though, as in the case of Kenya, where these businesses tend to be owned by women with university education, entrepreneurial backgrounds, some managerial experience and supportive husbands (Stevenson and St. Onge, 2005). Women entrepreneurs from different industries in Ethiopia have also successfully established export associations to pursue their business interests, promote their products, participate in trade fairs, build capacity of their members and mobilize resources (Solomon, 2008). However, as was the case in agriculture, the ability of women entrepreneurs to take advantage of export opportunities will depend in part on the policy support they receive to foster competitiveness and increase productivity, output and access to new markets. For instance, making working capital and finance available for expansion, introducing women entrepreneurs to buyer networks, providing training on business management and marketing skills as well as expertise on product standards, labelling requirements and trade regulations can significantly enhance the export potential of small-scale enterprises.

4 Women as traders

4.1 Theoretical expectations

Theoretically, as outlined earlier, trade liberalization is expected to reduce the price and increase the availability of imported goods. For women who trade in local and domestic products, trade liberalization can displace their means of livelihood and erode their incomes while women who sell imported goods can be expected to benefit. On the other hand, trade liberalization is expected to provide exporters and potential exporters the opportunity to access new markets and fetch better prices for their goods.

4.2 Existing evidence

In many countries, women are crowded in the services sector as petty traders of goods and services, such as street vendors, itinerant sellers and small shop owners. These occupations tend to be highly informal and insecure and act as a buffer for women who have little education, who are displaced from agriculture or are not able to find alternative employment. Trade liberalization can affect the prices of the goods they sell, the markets they can access and the income they earn. In countries where women sell locally produced, traditional or other domestic goods, the availability of cheap imports can erode their income and livelihood and shrink their markets. However, cheap imported goods can also become a source of livelihood for women who sell these goods in the domestic market for a living. For instance, in Angola, women in urban areas trade cheap imported goods informally, since oil-induced macroeconomic distortions in the country — particularly the excessive appreciation in the real exchange rate — tend to crowd out productive activities such as agriculture and light manufacturing that could absorb the female workforce and provide women with decent incomes. In some cases, women have also established cooperatives and travel to China, South Africa and Brazil to buy cheap goods and resell them in the domestic market (UNCTAD, 2013).

Women tend to dominate informal cross-border trade particularly in Africa; gender-sensitive trade facilitation policies therefore have a critical role to play in empowering women. Gender-spe-
specific obstacles create significant competitive disadvantages for female cross-border traders and they need to be tackled so as to unleash women’s full entrepreneurial potential, which is in turn likely to promote export competitiveness, trade expansion and economic growth (an issue dealt with in Module 3).

Some scholars have suggested that regional trade agreements might be best suited to benefit women because neighbouring markets are likely to be more familiar and easier to deal with (Carr, 2004, as cited in Randriamaro, 2005). However, some regional trade agreements explicitly discriminate against small-scale traders and disadvantage women in the process. Jamaica’s integration into the Caribbean Single Market and Economy allows the free movement of only certain categories of skilled workers in the area and therefore limits the opportunities of unskilled workers, which include many women, to provide their services in the region (UNCTAD, 2009). This is also likely to magnify existing cleavages between skilled and unskilled workers.

The evidence suggests that women traders have greater difficulty in accessing export markets than their male counterparts not only because they lack information and networks but because they are crowded in petty and local trading activities that do not offer much potential for expansion and growth when trade is liberalized. For instance, in the Gambia, women in the fisheries sector are small-scale traders who buy and sell fresh produce locally while men predominate in exports of frozen and smoked fish and commercial fishing. Dynamization of the fisheries sector through the expansion of trade runs the risk of excluding women who are not well positioned to be integrated into supply chains or of endangering their access to fresh fish supplies (UNCTAD-EIF, 2014).

5 Women as consumers

5.1 Consumers of imported products

5.1.1 Theoretical expectations

According to standard trade theory, one of the advantages of trade liberalization is the welfare enhancing effect it has on consumers. With the imposition of a tariff, consumer demand for a good shrinks because its domestic price rises. However, with the removal of a tariff, consumers can consume more of this good at a lower price and both import demand and supply increase at the new lower price. Thus women as consumers can also be expected to benefit from trade liberalization.

5.2 Consumers of public services

Because trade integration can affect women in a myriad of ways, it is important to investigate all likely impacts and assess the net impact of policy changes. In addition to the direct impact on prices, wages and employment, tariff reductions can also affect women indirectly as consumers of public services. Revenue losses for governments due to the elimination of tariffs or a reduction in trade taxes can lead to cutbacks in social expenditure that disproportionately affect women due to their domestic and reproductive roles and responsibilities. Trade policy can thus lead to shifts in fiscal policy that in turn have gendered consequences.

5.2.1 Theoretical expectations

As outlined in Module 1, gender-aware macroeconomics brings the sphere of non-market work, including unpaid care work, domestic work and reproduction, into the macro-level analysis. National output here is considered as a product of four interdependent sectors: the private,
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public, domestic and voluntary sectors. Market production would not be possible without the unpaid domestic and care work done by women in the household because it creates vital human and social capital (Elson, 2002). Therefore, it is important that any trade or macroeconomic policy shifts analyse the implications for the domestic sector as well.

For instance, in a simple economic model where injections of aggregate demand (government spending, investment and exports) equal leakages (savings, taxes and imports), gender equality can improve if government spending specifically benefits females, such as through investing in education or reducing the care burden. This would be an expansionary and “gender cooperative” effect of fiscal policy, while a decline in such spending would be contractionary and “gender conflictive” (Seguino, 2012).

5.2.2 Existing evidence

Trade taxes are an important source of revenue for African countries. During the 1990s, they provided 28 per cent of the region’s total revenue, for instance, while tariff revenues comprised 2 per cent of GDP in the median sub-Saharan African country and up to 4 to 6 per cent in non-median countries (UNECA, 2004). Trade liberalization created serious fiscal challenges for the region and was consistent with successive declines in public investment starting from the 1980s until the 2000s (UNECA, 2004). Zouhon-Bi and Nielsen (2007, as quoted in UNCTAD 2011a: 26), found that in Cape Verde tariff liberalization as part of the EPAs would lead to a reduction of 80 per cent in tariff revenue and a 16 per cent fall in government revenue overall, a very significant drop.

If governments reduce expenditure on health care, social services and programmes or education to make up for these losses in revenue it means that women’s care burdens and their expenditure on basic services will increase. Women already bear the bulk of responsibility for household tasks, child-rearing and other care work as compared to men and face considerable time poverty. These additional burdens could mean that they have to drop out of the labour force or forego opportunities to earn income and time for rest and leisure. Alternatively, the additional responsibilities can spill over to young girls at home whose education might suffer as a result (Elson, 1993). With higher rates of poverty in general, the additional expenditure on basic services can have deleterious effects on living standards, health and well-being as they require that tough choices be made on spending priorities. In the gender-aware macroeconomic framework, such reductions in social spending would be contractionary and “gender conflictive.”

The scaling back of public infrastructure spending, including electricity and water, can seriously disrupt productive and household activities, leading to a loss of income, longer hours spent on domestic work and possible public health problems. Revenue losses and resulting fiscal austerity policies can also constrain the ability of governments to put in place social protection mechanisms and safety nets to contain some of the negative effects of liberalization (Randriamaro, 2005) or to implement cash transfer programmes and daycare facilities that benefit poor households and women in particular.

Women’s care burden may increase as a result of privatization programmes implemented unilaterally or in the framework of agreements on trade in services liberalization. Some developing countries have privatized the provision of water, sanitation and other public services, with the hope of achieving greater efficiency or as a precondition for obtaining loans from international financial institutions. The results of these experiences are mixed. While in some cases private participation has contributed to increasing the availability and quality of services, in other cases the opposite has happened, with non-profitable regions and poor communities being particularly penalized.

It is clear from this discussion that macroeconomic and trade policies have effects on the market as well as non-market spheres. Specifically, economic policy brings about resource reallocations that place (or ease) obligations and constraints on households but also affects gender dynamics within households. A small but growing body of research focuses on the impact of trade policy on intra-household dynamics; the interested reader can learn more about key ideas and research papers in the literature from Box 13.
Trade policy and intra-household dynamics: A brief note

Sociologists and anthropologists have long called attention to the fact that men and women have different rights and responsibilities within households and that gendered norms have an impact on decision-making processes and intra-household allocation of key resources such as food and time.

It is only recently, however, that economists have started to look inside the households and acknowledged the importance of different constraints and preferences among family members. Still, the impact of trade policy on intra-household dynamics is the least studied topic within the trade and gender literature. The following are some of the channels through which trade expansion affects intra-household dynamics:

(a) Trade expansion may create or destroy sources of independent income for women and hence affect their influence over household decisions.
(b) Since men and women have different expenditure patterns, who the earning member is determines which goods are purchased and whom they benefit in the family. For instance, women tend to spend higher amounts of their income on food, education for children and basic necessities while men tend to spend higher amounts on alcohol and tobacco.
(c) Trade causes changes in the prices of goods consumed by the household and this is also likely to have gender-specific effects. Higher prices of foodstuff may make it difficult for all members of the household to be fed adequately and the preference may be to feed men and boys over female members of the family.
(d) Changes in trade-related employment affect how the family members spend time on non-market care work: women who are employed may have less time for rest; some of the care work may be redistributed to men or other members of the family; children, and especially girls, may also have to take on their mothers’ domestic responsibilities.
(e) Trade liberalization leads to changes in tax revenues and this in turn may affect the public provision of social services. Younger and older, male and female members of households need these services to different degrees.


Source: UNCTAD Secretariat.

6 Women as tax payers

As in the case of women as consumers of public services, we consider here another indirect effect of the fall in tariff revenues as a result of trade liberalization. Apart from cutting social spending, governments may try to offset the fall in revenue by increasing taxes. However, taxation policy is also not gender-neutral and we need to analyse how a shift in the tax structure or regime affects women differentially.

6.1 Theoretical expectations

The gender dimension of taxation is a relatively new field and concepts in this area are still being developed. Here we rely on the framework offered by Stotsky (1997) and developed further in Elson (2006) and Crown and Valodia (2010). Because women and men have different positions in the economy, which is itself a gendered structure (refer to Module 1), tax policies affect them differently. Stotsky (1997) pointed out that tax policy can have explicit or implicit biases against women. In the first case, tax regulations themselves treat women differently, such as in personal taxation, while in the second case, they impact women inadvertently due to their social and economic location. Elson (2006) went a step further and made the case that personal income tax systems should not simply be “unbiased” but rather seek to transform inequitable gender roles in society by eliminating incentives for their continuation and by redistributing care work.

6.2 Existing evidence

Over 125 countries now apply indirect VAT (Bird, 2005, as cited in Crown and Valodia, 2010). It is well known that the use of VAT on basic consumption goods, or an increase in the VAT rate, will have a regressive effect on income distribution because it affects the poorest households that spend the highest share of their income on basic goods the most. As we have already outlined, women in general earn less than men and have higher rates of poverty so a VAT will have a gender-biased impact. In a set of simulation
studies that reduced or zero-rated key items in the basic food consumption basket of different countries, Grown and Valodia (2010) reported that poor and female-headed households in Argentina, Morocco, and Uganda experienced a decline in their tax incidence as a result. India was the only exception in which the tax incidence of poor female-headed households did not decrease. Correspondingly, it can be expected that a rise in VAT will also have significant gender-adverse effects if it is used to compensate for losses in tariff revenues.

On the other hand, direct taxes on income usually affect men more than women, since men tend to own more wealth and have higher incomes. If governments try to compensate for the loss of tariff revenues by increasing income taxes, this may have an indirect adverse effect on women. When taxes are applied to joint household income rather than individual income, it increases the applicable tax rate and creates disincentives for women to enter the labour market (Huber, 2005; Tax Justice Network, 2011). Alternatively, it may encourage women to drop out of the labour force if they are already working. Additional increases in the income tax rate will exacerbate these disincentives. For example, dual earner households in Argentina pay higher taxes than male breadwinner households and the system of deductions in the personal income tax structure creates disincentives for women to enter the labour market (Grown and Komatsu, 2010).

If governments must raise taxes in lieu of the loss in tariff revenues, evidence suggests that increasing taxes on luxury goods such as cars, boats, and electronics while reducing or maintaining rates on basic necessities such as food, fuel, and children’s clothing can have a pro-poor and gender equitable impact (Grown and Komatsu, 2010).

| Table 5 Summary of channels of interaction from trade to gender |
|---|---|---|
| Women’s economic role | Channels | Possible effects |
| **Workers** | (1a) Standard theory (HOSS): Prices of low-skilled goods in developing countries rise as a result of trade. | (a) Demand for female labour rises as women are considered low-skilled. Demand for male labour falls as they are considered high-skilled. Women’s wages rise, men’s wages fall and the gender wage gap decreases. |
| | (b) Standard theory (Becker): International competition makes it costly to hire men when it is cheaper to employ women. | |
| | (2) Heterodox theory: International competition drives firms to using existing inequalities to reduce unit costs. | |
| **Producers and traders** | (1) Increased competition from imported products. | (i) Lower income for women producers who face competition from cheaper imported products (unless they produce for own consumption). |
| | (2) Lower import prices as a result of tariff cuts. | (2) Lower income for women who are petty traders of locally produced goods due to higher competition; higher income for women traders who sell cheaper imported goods on the domestic market. |
| | (3) Higher prices for export goods. | (3) Higher income for women producers and traders if they are able to export. |
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2

Conclusion

In this module, we have learned about the likely impacts of trade liberalization on women’s economic empowerment as predicted by standard and heterodox theories, as well as reviewed existing empirical evidence on the topic. It is clear by now that trade liberalization affects women differently depending on their position in the economy. For instance, women as workers might find increased employment opportunities in export factories but women who are small and marginal farmers may suffer as a result of cheap food imports. There is some overlap between these roles: women as consumers may also benefit from the availability of cheaper food items. Thus, it is important to conduct a comprehensive assessment of the net impact of trade liberalization policies on different groups (including women) before their implementation so as to ensure that trade plays the role of reducing and not exacerbating existing inequalities. It must also be borne in mind that although trade liberalization creates jobs and income for women in labour-intensive manufacturing, they are generally poor in quality, limited to some industries and with few opportunities for advancement. On the policy front, more needs to be done to improve the quality of export-oriented jobs as well as to ensure that women who are producers and traders are able to take advantage of potential export opportunities. Policies to compensate the “losers” in the process of trade integration or to reskill workers who were employed in industries that got adversely affected by trade are also important. On the other hand, trade protection for particular sectors that are critical for food security and poverty alleviation is also a viable policy option.

Table 5

<table>
<thead>
<tr>
<th>Women’s economic role</th>
<th>Channels</th>
<th>Possible effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumers</strong>&lt;br&gt; (1) Lower import prices of consumption goods as a result of tariff cuts.</td>
<td>Welfare</td>
<td>(1) Increase in poor and female-headed households’ welfare if the resulting cheaper goods form a part of the basic consumption basket.</td>
</tr>
<tr>
<td>(2) Higher prices of basic services as a result of trade in services liberalization.</td>
<td></td>
<td>(2) Reduction in women’s access to basic services due to higher prices.</td>
</tr>
<tr>
<td><strong>Tax payers</strong>&lt;br&gt; Governments raise taxes to compensate for a loss in revenues as a result of tariff cuts.</td>
<td>Taxation</td>
<td>(1) Higher direct and indirect tax incidence.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Women fall out of and/or are discouraged to enter the labour market.</td>
</tr>
</tbody>
</table>

Lower government spending – social expenditure – as a result of tariff cuts. Reduction in the supply of public and social services to the detriment of women.

Source: UNCTAD Secretariat.
Exercises and questions for discussion

1. Describe the channels through which trade can impact women’s economic empowerment. Do the effects of trade policies and/or trade expansion on women’s employment and income differ according to the different roles women play in society? If yes, how?

2. What are the effects of export expansion on the gender patterns of employment? Could these effects be sector specific? And if so, how does export expansion impact women employed in the sector experiencing it? Also, illustrate the possible gender employment effects of an increase in imports.

3. Explain the concept of “occupational segregation”. Do you think that women suffer more from occupational segregation? If yes, explain why. Does trade exacerbate women’s segregation in particular types of occupations?

4. What is the gender wage gap and what are its implications for women and for the labour market? What is the role that gender segregation plays in the gender wage gap?

5. Explain the concept of “feminization of labour” and its implications for women and for sector/country competitiveness.

6. How do we expect trade to influence gender patterns of intra-household allocation of resources and time?

7. The gendered employment effects of trade may or may not contribute to gender equality, depending on a range of factors and preconditions. Discuss what these factors and preconditions may be in relation to two countries of your choice.

8. Suppose that female employment has recently increased in your country, mostly because of the development of a new EPZ. At the same time, there is also evidence of poor compliance with labour standards. What sort of recommendations would you put forward to your government to address this problem and still maintain international competitiveness?

9. A large number of women in developing countries are crowded in the agricultural sector. Explain the impact that increased imports of agricultural and food products could have on women as agricultural producers and consumers of food products. Explain why the impact may vary depending on whether women produce for own consumption or for the market.

10. Only a small share of women in developing countries is involved in formal employment and receives wages. Many poor women in particular tend to receive income from other sources such as informal employment in non-tradable services, or profits from small-scale self-employment in agricultural or non-agricultural activities. How will trade expansion affect their earnings?

11. Imagine your country is in the process of negotiating a trade agreement. How would you go about assessing the import competition effects on both production and consumption? What sort of evidence would you need to generate to expose the gender characteristics of production and consumption in those sectors that are likely to be affected?

12. Tariff reductions due to trade liberalization may affect women indirectly as consumers of public services. Explain why women are likely to be affected more than men. Explain the distinct effect that changes in fiscal policy (for example changes in the rates of income taxes or indirect taxes, such as the VAT) could have on women and men.
ANNEX

Review of selected approaches and methodologies

This Annex reviews a set of studies that illustrate the range of approaches and methodologies available to researchers who would like to analyse the impact of trade liberalization on employment, one of the best researched topics in the field. Of the four papers presented here, all except the first (which analyses economy-wide labour market participation) examine trends in manufacturing, reflecting the relative abundance of empirical work and data in this sector.

As the reader will observe, the question of how changes in trade patterns affect gender inequality in employment has been tackled in various ways. Researchers have chosen different lines of inquiry as well as scopes of analysis and used different measures for the variables of interest.


Context

This paper investigates whether greater trade integration has increased women’s employment opportunities in sub-Saharan Africa. It considers women’s overall access to work both in relative and absolute terms (but with no detail for specific economic sectors) and measures openness in practice.

The authors indicate that, given women’s lack of resources to facilitate their mobility between sectors in export production in sub-Saharan Africa, men’s employment opportunities may have increased more than women’s, in contrast to outcomes in semi-industrialized economies.

The authors are interested in the impact of trade on women’s employment opportunities not only through export expansion but also through import liberalization, and hence disaggregate the trade openness variable by using exports and imports as a percentage of GDP separately in some of their regressions.

Another valuable contribution of the paper is that it attempts to differentiate effects on countries with different structures of production and trade (such as oil producers, mineral exporters and non-mineral exporters) and pays attention to other factors likely to influence women’s labour supply, such as a country’s physical infrastructure (including electrification, clean water and transport that could reduce the time women spend doing unpaid work).

Data and methodology

The paper uses two estimation methods: fixed effects (FE) and two-stage least squares (TSLS). These are applied to an unbalanced panel including data for 38 economies over a twenty-year period (1990–2010). FE estimation captures country-specific factors that influence gendered employment and that are not otherwise captured by the independent variables. The authors use TSLS as a robustness check and to address the potential endogeneity of the regressor; the degree of gender equality may itself influence the rate of economic growth and may also respond to changes in the trade share.

The dependent variables are measured as: (a) the female minus the male employment-to-population ratio for those 15 years and over, and (b) the female employment-to-population ratio. The employment-to-population ratio is a broad measure of access to work and allows one to capture economy-wide changes in job gains relative to the population. It has the added advantage of being an easily available indicator. However, it offers no sector-specific information and it is important to note that increases in (a) can occur due to higher female employment ratios or lower male employment ratios.

The independent variables include: (a) trade openness, measured as the sum of exports and imports as a percentage of GDP, or just exports or imports as a share of GDP; (b) the growth rate of real GDP per capita to capture the effects of aggregate demand on gendered employment; (c) manufacturing and agriculture value added as a share of GDP to account for gendered effects on employment stemming from changes in sectoral demand and in economic structure; and (d) physical infrastructure to account for factors that may affect the time women spend in unpaid work and their labour market supply (this is captured by two variables: the proportion of the population with access to improved sanitation facilities and the number of telephone lines per 100 people) 33.

The analysis compares outcomes in oil-exporting countries and two groups of non-oil exporters: mineral-exporting countries (MECs), and non-mineral-exporting countries (NMECs).
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2

Findings

The estimation results offer a mixed picture. Constant other factors, trade liberalization negatively affects women’s absolute and relative employment in NMECs. The effects are positive in MECs but not robust across estimation methods. If we disaggregate trade variables into exports and imports and then further into subgroups, gender effects vary across sectors and countries with differing economic structures. For example, both imports and exports have a negative effect on women’s relative employment rates in NMECs and MECs; yet, imports have a positive effect in MECs. At a greater level of detail, the authors find that “food imports and exports produce a neutral gendered employment effect” but manufacturing imports and exports lower women’s employment relative to men’s (in other words, men appear to gain more). While trade has mostly negative effects, infrastructure has a strong positive effect both on women’s relative and absolute employment. The results are robust to different estimation techniques, model specifications and samples. The authors conclude that infrastructure improvements may play an important complementary role to improve women’s access to employment created by trade expansion.

There are limits to what can be observed from aggregate cross-country analyses. To better understand channels of transmission, such studies must be supplemented by country-specific analyses.

A2 Kucera, Roncolato and von Uexkull (2012): “Trade contraction and employment in India and South Africa during the global crisis”

Context

This paper explores a different question than Wamboye and Seguino (2012), focusing on single countries and following a simulation rather than an estimation approach. The recent global crisis of 2008–2009 is estimated to have led to a significant, albeit temporary, decline in global trade (WTO, 2010). The authors set to investigate the employment effects of the crisis in South Africa and India resulting from reductions in exports to the EU and the United States around 2009. They do so by looking at direct (e.g. job destruction in export-producing sectors), indirect (e.g. job changes in other sectors of the economy linked to the export-producing sectors through backward or forward linkages) and induced employment effects (e.g. job changes resulting from changes in household expenditure) by differentiating the impact on workers by gender and skill. In other words, they ask: if one could isolate the effects of trade contraction from other simultaneous events, what would the job losses across all industries in the concerned economy be, disaggregated by gender? Would the overall employment changes be gender- (and skill-) neutral?

The main contribution of the paper is to develop a method to calculate gender-specific job losses not just in the sector directly affected by the crisis but through repercussions in all other sectors of the economy. Even if global trade has already begun to recover, the authors argue that their exercise is still useful as it offers a comprehensive assessment of the potential costs associated with greater openness in countries such as India and South Africa, which have dramatically increased their engagement with the world economy in the last decade. Their approach helps in identifying particular industries and workers that may be especially at risk and hence could usefully inform government crisis responses in the future. The same approach could in principle be applied to the study of other policy changes such as trade liberalization episodes or tax reforms. Its value lies in underscoring for policymakers the importance of not targeting only those sectors that are directly affected by a shock.

Data and methodology

As ever, the extent to which an issue can be accurately explored is determined by the availability of data. The authors can rely on rich data on the structure of both the Indian and the South African economy (including employment patterns) in the form of social accounting matrices (SAMs). For their trade data, however, because of the lack of up-to-date export statistics at the detailed industry level for both India and South Africa, they use mirror statistics on imports from the two countries reported by the EU (Eurostat) and the United States (United States International Trade Commission) but they do not include trade in services (which would be substantial) because of a lack of sufficient information.

A SAM can be described as an extended input-output table with much greater institutional detail. It includes not only information about productive activities in the economy but also incorporates other institutions and markets such as factors of production (i.e. labour, land and capital) and different household types. Each of the accounts in the SAM can be constructed and dis-
aggregated in such a way as to provide insights into the roles of different socio-economic groups in the generation and distribution of income in a country. The SAMs for South Africa and India cover formal as well as informal establishments and workers and provide a fine level of detail for the gender and skill composition of employment in specific industries, enabling one to separate out, for example, female-intensive sectors from male-intensive ones.

The modelling approach of Kucera et al. (2012) consists of a Leontief multiplier analysis in which a change in demand is represented by a change in exports from India and South Africa to the EU and United States, respectively. These changes cause changes in production, which in turn cause changes in employment.

In developing countries with extensive informal employment and underemployment, the estimation of changes in employment via changes in production is not straightforward. The authors note that what they refer to as employment declines represented in terms of full-time equivalent jobs may in fact translate in many cases into movements from formal into informal employment or increases in underemployment. Thus their results should be seen simply as an average measure of the negative impact on workers through some combination of job and income losses.

Employment changes for both women and men are proportionate to actual female and male shares of employment in the SAM base years. In other words, the assumption is that employers would not make distinctions by gender (or education) in the face of job destruction or creation, maintaining the same ratios of men and women in their workforce. This is, by the authors’ own admission, a somewhat strong assumption that however does not detract from the main objective of the exercise. This consists of broadly identifying, by gender, sectors and groups of workers that could be either directly or indirectly vulnerable to a particular form of trade contraction.

Findings

The simulations show that India and South Africa have experienced substantial employment declines as a result of the crisis in Europe and the United States alone. A large share of these declines has occurred in the sectors not immediately exposed to trade, resulting from income-induced effects. In South Africa, industries with higher shares of male workers have been disproportionately affected by employment declines, while no evidence of gender bias (in either way) is found in India.

This study usefully illustrates how a shock originating in the tradable goods sector can have wide-ranging spillover effects and shows the gender composition of the labour force that may be affected by such a shock.


Context

This paper chooses yet another way of looking at issues related to gendered employment in the manufacturing sector. While the studies reviewed so far do not distinguish between different employment statuses, Rani and Unni focus specifically on home-based workers, one of the most vulnerable categories of workers usually hidden from official statistics. They investigate whether greater integration in global production chains and higher competition in India have led to the reorganization of work, with an increase in subcontracted workers of the home-based variety, and whether women and men workers have been affected differently by these changes. Rani and Unni use a quantitative approach and look at the issue from both a macro and a micro perspective.

Data and methodology

At the macro level, the authors estimate simple ordinary least squares (OLS) regression equations to analyse factors explaining changes in the share of home-based work in the Indian manufacturing sector. They include a cross-section of 54 industry groups at the three-digit industry level of the International Standard Industrial Classification (ISIC) and broadly cluster these industry groups based on whether they are export oriented, import competing or mostly non-tradable. The dependent variable in the model is calculated as percentage change in the share of home-based workers during the 1995–2000 period and is constructed separately for male and female workers. Independent variables include: changes in value added, capital intensity and wage rates for each of the industry groups, and two trade policy variables to capture openness in practice. These two variables are: (a) the change in the import-weighted average tariff rate applied on goods entering the country, and (b) the change in non-tariff barriers (price control measures, finance control measures and
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Conventional sources of data on employment such as population censuses and labour force surveys do not capture home-based workers well. Information on this employment group is generally not easy to find but India is an exception. The authors use a number of employment and unemployment surveys produced by the Indian National Sample Survey Organisation that, for the first time in 1999, introduced a question on place of work (including one's home as a place of work to identify home-based workers).

The microanalysis involves the use of a multinomial model with one categorical dependent variable, which is the choice of undertaking home-based work relative to working elsewhere or not working at all. Explanatory variables range from educational level to religion, caste, location, age, having children or not, and other family circumstances. The main purpose of this component of the empirical investigation is to identify the most important determinants of women's participation in home-based work.

Findings

The authors find that only men's home-based work increased during the period of trade policy reforms while women had been working as home-based workers in large numbers over a long period of time and were less affected by the recent episode of trade liberalization than men. The authors conclude that the historically high share of women in home-based work, which did not show much change during the reforms, suggests that female participation in such work in India is more likely to have been determined by cultural and social norms than by the recent liberalization process. The findings from the micro-model show that women's decision to participate in home-based work is associated with low levels of education, lower caste status and religion. Moreover, participation in home-based work is higher among female heads of households and women with school-age children (compared with women having younger children).

Interestingly, the results show diverging patterns for export-promoting and import-penetrating industries. Export-oriented industries such as apparel and chemical product industries, which employ a large share of female workers in general and home-based work in particular, experienced a decline in the share of home-based work (though the number of home-based workers still increased in absolute terms due to the overall growth in the sector). Import-penetrating industries such as machinery, TV and radio equipment saw an increase in the share of (mostly male) home-based workers. The finding from the macro-model that a growth in wage rates had a positive effect on the share of home-based work for males appears to corroborate the authors' hypothesis that the shift to this form of production in industries facing severe competition from imports could be a cost-cutting strategy. Because of high and rigid levels of gender employment segregation that preclude women's access to sectors like machinery and other technical equipment, the informalization of working conditions is thus extending to men.

A4 Tejani and Milberg (2010): “Global defeminization? Industrial upgrading, occupational segmentation and manufacturing employment in middle-income countries”

Context

The paper by Tejani and Milberg (2010) takes a cross-country perspective and asks whether the feminization of manufacturing employment associated with trade expansion in developing countries in the past still continues or if defeminization is becoming the new trend in middle-income countries in Latin America and South-East Asia.

The authors look at many facets of this question by exploring a number of reasons for a possible shift in the female intensity of manufacturing employment and by identifying differences in patterns between the two regions. They use a combination of descriptive statistics (looking at changes over time in a set of variables), simple correlations and scatterplots and examine broad regional trends as well as trajectories of particular countries. The study offers good insights into the direction that further investigations could take.

Findings

The paper describes trends in the female intensity of manufacturing employment over the period 1985–2007 for a sample of 60 high- and middle-income countries. It focuses on South-East Asia and Latin America and finds that these two regions have contrasting trends: While the Latin American and Caribbean middle-income countries in the sample experienced rising fe-
male intensity, most South-East Asian countries experienced a defeminization beginning in the mid-1980s (and starting from a relatively high level of female intensity compared to other industrialized countries).

Both regions experienced strong growth in merchandise exports over the period, which suggests that export growth per se does not determine shifts in the female intensity of employment. More specifically, using the latest ILO data, the authors find that there is no clear relationship between the average growth rate of exports and the rate of feminization. Most countries in their sample experienced export growth rates of 2–5 per cent per annum but this narrow range was associated with a broad range of changes in female intensity, including some rapidly feminizing countries (such as Brazil and Venezuela) and other rapidly defeminizing countries (such as Malaysia). They conclude that it is important to go behind export performance and explore underlying changes in industrial structure and labour market institutions to explain changes in the female intensity of employment.

The authors hence look further at the correlation between gender wage ratios and female employment intensity (for a smaller number of countries since wage data are not available for all the countries in their sample) and find again no consistent pattern.

They note that South-East Asia and Latin America underwent different industrialization processes, which might explain the divergent feminization patterns in the two regions. While South-East Asian countries used exports to upgrade their manufacturing sectors into higher value-added activities, in most of Latin America, import substitution industrialization remained the primary policy approach throughout the 1970s and, after the crises of the 1980s, growth in manufacturing remained sluggish.

The authors test this hypothesis by measuring industrial upgrading as (a) capital intensity, and (b) value added per worker. The two regions show broadly symmetric patterns: in South-East Asian production, capital intensity is increasing while in Latin America, it is decreasing. The authors find that the growth of manufacturing productivity is negatively correlated to the growth of female intensity of employment and that higher levels of capital intensity in production are also associated with lower levels of female intensity.

The authors then go on to present data on the gender gap in education. They show that the gains in education for women at all levels are impressive in the two regions and that, especially in Latin America, women’s enrolment in tertiary education exceeds that of males. Thus the argument of a skill mismatch (or a lack of education) as a key explanation for why the female share of employment tends to fall with higher skill intensity is not tenable. The authors emphasize that persistent gender norms and stereotypes that deem women to be unsuitable for technologically advanced or heavy work seem to be a more feasible explanation.
REFERENCES


The effects of trade on women’s well-being and economic empowerment: Evidence and research methodologies


Module 3
Gender-based inequalities and trade performance
1 Introduction

In Module 1, we conceptualized the economy as a gendered structure and have seen that women face gender-related obstacles in the various roles they play in society and the economy. In Module 2, we discussed how trade integration impacts women as wage workers, producers, traders, consumers (and users of public services) and tax payers. We have seen that trade liberalization in many developing countries has led to a considerable “feminization of labour” in labour-intensive manufacturing while in agriculture, the impact on women has been much more mixed. We have also learned that women as producers and traders have not been able to take advantage of new export markets and, in fact, might have been adversely impacted by import competition.

This module examines how gender-specific inequalities impact export competitiveness and trade performance. We analyse the reasons why women have been preferred for low-wage, low value-added jobs in labour-intensive manufacturing. We also discuss further the reasons why women who are self-employed as entrepreneurs and traders are often not in a position to achieve export competitiveness. That is, we look at trade and gender inequality in two dimensions: (a) how gender inequality is itself used to enhance export competitiveness which in turn leads to higher economic growth, and (b) how gender inequalities prevent women from becoming exporters and thus limit trade performance. For this purpose, we employ the categories provided by van Staveren et al. (2007) and Elson (2007) that describe women as “sources of competitive advantage” for export-oriented firms and as “underachievers of competitive advantage” in their own enterprises. We illustrate these processes using related country case studies in each case. Finally, in an Annex, we briefly review some research papers that analyse the impact of gender inequality on trade, both from an empirical and theoretical perspective.

In this module, we refer mostly to the export dimension of trade and we also discuss the link between export growth and economic growth.

At the end of this module, students should be able to:

- Identify how gender inequality can influence export competitiveness and trade performance as well as understand the transmission mechanisms of this influence;
- Give examples of how gender inequality affects trade performance and export competitiveness.

2 Women as “sources of competitive advantage”

2.1 The gender wage gap and “flexibility”

As outlined in Module 2, women have been employed in large numbers as workers in labour-intensive export production in many developing countries. The female share of employment in EPZs in particular tends to be very high and most zones remain concentrated on light manufacturing and assembly-type operations in garment, leather, toys and electronics. How have women become a source of competitive advantage for these firms? The main reason cited in the literature is the almost universal existence of the gender wage gap (Oelz et al., 2013). The relatively lower pay that women receive for similar work due to discriminatory norms and practices makes them an attractive labour force for firms that face stiff competition in the international market. For labour-intensive products in particular, international price competition tends to be intense and the price elasticity of demand is relatively high. Since labour costs make up a large share of total costs in this case, feminization of the labour force becomes a viable strategy to cut costs. Table 6 presents the gender wage gap for a small sample of countries in South-East Asia and Latin America. It is clear that a significant gender wage gap exists for all the countries listed. In Indonesia and El Salvador, the gap has increased over time. It is important to note that the gender wage gap is not only a developing country phenomenon; substantial differences in women’s pay relative to men exist even in developed countries.

Seguino (2000) showed that the gender wage gap contributed significantly to economic growth by expanding exports and investment for a sample of developing countries between 1975 and 1995. Similarly, Busse and Spielmann (2006) found that gender wage inequality is strongly associated with higher comparative advantage in labour-intensive production or, in other words, those countries that have higher gender wage gaps have higher exports of labour-intensive goods.
Gender-based inequalities and trade performance

Many of these export-oriented firms, usually situated in developing countries, are integrated into the low value-added segments of global value chains (GVCs) and are under great pressure to deliver under short deadlines and meet seasonal demand peaks in foreign markets, for which they recruit female labour. For instance, in horticultural value chains, women form the core of the “flexible” workforce and are concentrated in seasonal, casual and temporary work in Chile and South Africa while men predominate in the core permanent workforce (Barrientos, 2001). Thus firms might consciously choose a dual strategy and hire a lower wage workforce with weaker bargaining power on the one hand and pay higher wages to a smaller group of more skilled workers as a strategy to boost profits. This strategy has also been used by the garment industry in Morocco, which employs unskilled informal and generally female workers for activities such as packing and loading but maintains a core group of skilled workers to manage the quality of production (Rossi, 2011).

As discussed in Module 2, aside from employment in export factories, women also make a living as home-based workers, a category that includes independent own-account producers and dependent subcontract workers (Carr et al., 2000). The latter category, called “homeworkers” and consisting of workers who are poorly paid and lack benefits or social security, also plays an important role in GVCs. Over one-third of electronics, apparel and textile companies in Malaysia subcontract to homeworkers (Ghosh, 2002; Sim, 2009), while in Turkey, a leading exporter of garments, subcontracting piece-rate work to mostly female homeworkers, is widespread and has led to a greater informalization of the female workforce (Dedeoğlu, 2010). By subcontracting labour-intensive or assembly-type work to homeworkers, producers in the lower segment of GVCs can cut wage, non-wage and overhead costs and transfer risk to homeworkers who buy machinery and pay for rent and electricity (Carr et al., 2000). Thus female labour, it has been argued, has a structural impact on the value chain hierarchy because it facilitates the transfer of rents to the lead firms in developed countries (Tejani, 2011).

Producers use existing gender inequalities to cut costs but they in turn create new forms of inequalities, such as crowding of women in low-paid, low-skilled jobs in expanding export sectors. This gender segregation combined with women’s lower bargaining power serves to keep wages low. For instance, in her study on the development in the Republic of Korea, Seguino (1997) showed that gender wage differentials were an important factor in the competitiveness and success of the country’s exports. She found that women’s segregation in major export industries was related to the persistence of the gender wage gap. The hiring, training and promoting practices also weakened their fall-back position and restricted their ability to bargain for higher wages. Similarly in Bangladesh, Kapsos (2008) found that nearly one-third of the total gender wage gap is accounted for by the “segregation effect”. Higher wages in male-dominated occupations in 14 countries lead to a wage differential of between 5 to 43 per cent (ILO, 2009, as cited in Kabeer, 2012).

In agriculture-based economies, women are usually engaged as unpaid family workers in cash crop production. Male relatives usually own the land and women do not have access to or control over the resources employed by the family business; they have little decision-making power and do not have control over their earnings, which are often paid out to the male relative. Production and income associated with traditional cash crops can expand with

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**Table 6**

<table>
<thead>
<tr>
<th>South-East Asia ratio of manufacturing wages, female to male (per cent)</th>
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<tbody>
<tr>
<td>Start year</td>
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<tr>
<td><strong>South-East Asia</strong></td>
</tr>
<tr>
<td>Indonesia</td>
</tr>
<tr>
<td>Malaysia</td>
</tr>
<tr>
<td>Philippines</td>
</tr>
<tr>
<td>Thailand</td>
</tr>
<tr>
<td><strong>Latin America</strong></td>
</tr>
<tr>
<td>Brazil</td>
</tr>
<tr>
<td>Costa Rica</td>
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<tr>
<td>El Salvador</td>
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<tr>
<td>Mexico</td>
</tr>
</tbody>
</table>

new export opportunities when trade is liberalized, although it is unclear whether women will benefit as a result (UNCTAD, 2004, as cited in Elson, 2007). Although the benefits accruing to women are uncertain, their unpaid labour is important in reducing the cost of cash crop exports and increasing export earnings. Additionally, if women are deprived of markets for their surplus production due to competition from cheaper imports, their reservation wage will decrease and they will be more willing to work as unpaid family workers (Elson, 2007).

2.2 The role of gender norms and stereotypes

However, the question remains as to why women have become a source of competitive advantage primarily in labour-intensive industries and not in others. Although the gender education gap may have contributed to this phenomenon previously, it has closed almost entirely at the primary level in many developing countries. In secondary and tertiary education as well, progress in upper-middle-income countries has been impressive and in some countries in South-East Asia and Latin America, female achievement at these levels has exceeded male’s (Tejani and Milberg, 2010). Indeed, in a few studies, the education variable has been found to be statistically insignificant in explaining shifts in the female share of employment in manufacturing in Indonesia (Caraway, 2007) and in Latin America and South-East Asia (Tejani and Milberg, 2012). It is true however, that women may lack on-the-job training and access to technical and vocational training programmes, which might affect their participation in higher value-added jobs, as discussed in Module 2.

The important role of gender norms and stereotypes in facilitating the feminization of (or the segregation of women in) labour-intensive production is unmistakable and has been emphasized by a number of feminist scholars. Distinct notions of “men’s work” and “women’s work” tend to sort men into capital-intensive and heavy work and women into labour-intensive jobs. Stereotypes about women’s docility, submissiveness, dexterity and reluctance to join unions have contributed a great deal to their preference as wage workers in labour-intensive jobs (Anker, 1998; Caraway, 2007). Women are generally viewed as being suitable for repetitive, detailed and caring work because of “natural proclivities” based on gender. As a result, the female share of employment in metal products and chemicals is a fraction of that in garments and electronics in EPZs in a cross-country sample of developing countries, as evidenced in Figure 4. In the services sector, women tend to crowd into lower-paid occupations including caring work such as teaching and nursing, which are considered “feminine” activities, or clerical work, tourism or informal activities including domestic work and petty trading. In agriculture too, we have seen that women are most often employed as seasonal workers for activities such as packing and harvesting or as flexible workers in the production of NTAEs. Table 7 provides a descriptive summary of the nature of segregation in the horticultural, tourism and call centre industries.
Gender-based inequalities and trade performance

Table 7

<table>
<thead>
<tr>
<th>Sector</th>
<th>Job segregation patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horticulture</td>
<td>Women are concentrated in the packing segment, where they generally work as wage labour, and in the production segment, where they work as unpaid family labour in smallholder operations. Few women participate as entrepreneurs who independently cultivate crops.</td>
</tr>
<tr>
<td>Tourism</td>
<td>Women are overrepresented in the accommodation and excursion segments. Within these segments, they work mostly as low- to mid-skill employees in hotels (housekeeping, laundry, food and beverages, clerical work), as own-account workers or entrepreneurs, as artisans or retail vendors, and in family restaurants.</td>
</tr>
<tr>
<td>Call centres</td>
<td>Women are concentrated at the agent level, while employment in higher-value segments and management typically is male dominated. Only few female entrepreneurs run their own call centres.</td>
</tr>
</tbody>
</table>


Similarly, norms that identify men as breadwinners and women as secondary earners reserve higher wages and more secure jobs for men. Labour market institutions, especially male-dominated unions, and employment policies adopted by both the state and employers have also been a contributing factor for the gender segregation of occupations (Cheng and Hsiung, 1998; Seguino, 1997). For example, gender-specific job advertisements may exclude women from entering higher-paid skilled jobs (Berik, 2005). However, the employment share of women in labour-intensive manufacturing increases only if the producer thinks that women have the attributes required for the job: in other words, what matters is not the veracity of stereotypes but whether employers believe in them (Caraway, 2007, as cited in Tejani and Milberg, 2010).

That gender norms and stereotypes have a tremendous currency in hiring decisions is evident in the fact that women have not been a preferred source of labour when industries have upgraded to higher value-added production. This has led to trends of defeminization in manufacturing even in female-intensive sectors such as garments and textiles, for instance in the East Asian “Tiger” economies (Barrientos et al., 2004). We will study the case of Taiwan Province of China in particular in more detail in Section 2.5. Narrowing of the gender gap can also be another reason for a fall in the relative demand for female labour and consequent defeminization, which was the case in the Republic of Korea.

2.3 Export competitiveness and economic growth

Increased export competitiveness may ultimately stimulate economic growth. There are different channels linking export growth and economic growth. First, export revenues allow access to imports of intermediate and capital goods that embody new technology and permit economies of scale and specialization; these factors raise aggregate productivity and therefore output. The revenues coming from exports can be spent, for instance, on research and development (R&D). As modelled in Barro (1996), technological advance resulting from R&D activity helps to maintain positive growth rates in the long run. However, as illustrated by Romer (1990), to absorb the new technologies it is necessary for the country to have a large stock of human capital (i.e. educated/skilled workforce) as well as a trade structure based on imports of intermediate goods and capital goods which can create technological spillover effects on productivity and output growth. If these conditions hold, exports can spur further economic growth. Second, revenues of exporting firms increase the availability of capital for investment. As argued by Ertürk and Çağatay (1995), if a smaller amount of the firms’ revenue is allocated to pay female labour, more resources can be allocated for capital accumulation and thus investment, which is among the primary engines of economic growth (Alesina and Perotti, 1996).

Moreover, macroeconomic policies that promote openness to trade are also considered to be growth enhancing. Indeed, economic openness is argued to contribute to a competitive economic environment, promoting efficient allocation of resources, and thus enhancing output per worker (Seguino, 2000). These features have been observed in most developing countries that have strongly relied on foreign demand as a growth strategy (Seguino, 2010; Berik, 2005).

2.4 The unsustainability of an export strategy based on gender inequality

Although gender wage differentials have been a crucial element of the competitiveness some developing countries have achieved in labour-inten-
Gender-based inequalities and trade performance

Moreover, the reliance on gender inequality contravenes international labour standards as set out by the ILO conventions on equal remuneration or on discrimination, among others, \(^61\) and is also problematic from a human rights perspective.

Further, although many countries have ratified the ILO’s core labour conventions \(^63\) covering discrimination, equal remuneration, freedom of association and collective bargaining, there is a big gap between policy and practice. It is critical that countries enforce and monitor labour standards more effectively to prevent discrimination against women. However, there has to be a global push to implement these standards so as to prevent capital flight and firm relocation as a way to hedge labour costs. As some authors have emphasized, there is a "low road" to international competitiveness that is characterized by cost cutting, limited social policy and labour and management discord, and a "high road" characterized by high productivity growth, higher wages, collective bargaining and effective social protection (Milberg and Houston, 2005). Indeed, the authors find that higher social spending and cooperative labour-management relations are not systematically linked to poor performance at the international level. This suggests that countries can use a mix of enlightened policies to ensure that “economic upgrading” leads to “social upgrading”, defined broadly as salutary changes in employment and wages and respect for labour standards. \(^64\)

Moreover, the evolution of social norms and traditions in parallel with economic development is bound to make gender inequalities increasingly unacceptable over time: inequalities may then become a source of social conflict and destabilize the social and economic environment in the countries concerned. The social setting characterizing some developing economies (e.g. Taiwan Province of China and the Republic of Korea) may have prevented social conflict over low wages (Hsiung, 1996). Although in the Republic of Korea women did engage in protests against their low wages and working conditions in the 1980s which led to an increase in wages across the board, it also contributed to the relocation of labour-intensive production to lower labour cost countries to the detriment of unskilled workers, including women (Murayama and Yokota, 2008).

Finally, gender inequalities may reduce the appeal of products for consumers in destination markets. \(^65\) Consumers in importing countries who pay attention to the labour standards and other ethical parameters adopted in the manufacturing process may be discouraged to buy items that reflect indecent working conditions,
including gender discrimination. In conclusion, a strategy that is de facto based on gender inequality, although aimed at spurring growth and development, is neither desirable nor sustainable.

2.5 Case study of Taiwan Province of China: Leveraging gender inequality to achieve competitive advantage

In what follows we present the country experience of Taiwan Province of China, a highly open economy where improved export competitiveness occurred simultaneously with an increase in the gender differential in earnings.

In the early 1960s, most of Taiwan Province of China’s labour force was employed in agriculture. During the following three decades, the country implemented a three-stage growth strategy based on the expansion of its exports. In the first stage, this export-led strategy relied on labour-intensive manufacturing; in the second stage, capital/technology-intensive sectors were developed and product quality was upgraded in order to maintain the country’s international competitiveness. During the third stage (from the mid-1980s onwards), larger firms operating in high-technology industries started seeking more skilled workers to adopt the new technologies and a “job restructuring” process took place. These policies spurred the country’s growth as anticipated but coincided with a dramatic change in employment patterns, especially for women.

2.5.1 Implications for women as wage workers

In the first stage of the country’s export-oriented growth strategy starting in the 1960s, women provided low-wage unskilled labour for export manufacturing. This resulted in gender earning inequalities that persisted throughout the 1980s and early 1990s (Berik, 2005). In the mid-1970s, women represented about 80 per cent of the total workforce in EPZs. Export factories recruited women from school, thus cutting short their education, and from rural areas. In addition, gender-specific job advertisements prevented women from entering high-paid skilled positions; they were also excluded from access to training (Berik, 2005). Initial wages for women were set at 10 to 30 per cent below that of men working in the same occupation. By the 1960s, this country’s labour-intensive manufacturing sectors relied on a massive pool of low-paid, low-skilled unmarried women to feed the labour-intensive phase of export-led industrialization.

Despite the increase in female employment rates, gender wage inequality as well as the segregation of women into unskilled jobs persisted in Taiwan Province of China throughout the 1960s. Later in the 1970s, married women were also encouraged to enter the manufacturing labour market through programmes that promoted their inclusion in employment by granting flexible working arrangements that allowed them to comply with household duties (Chu, 2002).

Taiwan Province of China began its move to the second stage of its export-led strategy in the late 1970s. This was the start of a gradual transformation of the country’s productive base from manufacturing to higher technology products, meaning that firms demanded higher skills. However, earlier recruitment practices prevented women from acquiring the necessary skills to enter high-technology firms and benefiting from better employment opportunities. As discussed in Section 2.2, gender norms that identified women with labour-intensive tasks also prevented them from accessing jobs in capital-intensive sectors. Starting from the mid-80s, the third stage of Taiwan Province of China’s export-led strategy was characterized by the relocation of Taiwanese labour-intensive firms to countries with lower labour costs. This dismantled most labour-intensive manufacturing production in the country and women suffered the most from layoffs in the process: the decrease in female labour demand resulted in a steady decline of women’s share of employment and a widening of the gender wage gap.

2.5.2 Summary

Taiwan Province of China is undoubtedly one of the most notable successful practitioners of the export-growth model. Industrial policies were geared at promoting domestic firms’ export growth by keeping low export prices. Cheap labour-intensive export products rely, among other factors, on cheap labour. In Taiwan Province of China, this translated into an increase in the demand for a female workforce, particularly young unmarried women who provided a low-skilled and low-paid labour force.

Despite the increase in female employment, women’s wages remained low relative to those of their male counterparts. This phenomenon was mainly due to a surplus in female labour supply and to the ensuing crowding of women in lower productivity sectors. At the same time, only limited attempts were made to grant women higher wages or enter higher-skilled jobs. There is therefore evidence that the country relied on low-wage female workers to achieve competitive advantage in labour-intensive manufacturing.
production in foreign markets. When Taiwanese industry upgraded and finally relocated, a de fem inization of labour ensued.

3 Women as under-achievers of competitive advantage

We now examine why women remain under-achievers of competitive advantage as small entre preneurs and self-employed producers.

3.1 Three domains of inequality

In many poor countries, women participate in production activities as small entrepreneurs or as self-employed producers. In most of the developing world except for Latin America and the Caribbean, women systematically account for a lower share of wage employment than men (ILO, 2012). Globally, a significant proportion of women are own-account workers (25.5 per cent), classified by the ILO as belonging to the vulnerable employment category, although in sub-Saharan Africa and South Asia, the shares are much higher, at around 45 per cent. As noted in Module 2, most of the enterprises that women own are small-scale and “survival-oriented” rather than “accumulation-oriented” (Kabeer, 2012). In sub-Saharan Africa, Hallward-Driemer (2011, as cited in Kabeer, 2012) found that women-owned enterprises are concentrated in lower value-added industries such as garments and food processing as compared to men who were in metals and manufacturing activities. The author found that the informal nature of female-owned enterprises leads to their lower productivity as compared to male-owned enterprises, although the question remains as to why women’s enterprises remain informal.

We have some idea by now of the various types of discrimination women face as a result of patriarchal norms, traditions and customary laws. This discrimination leads to inequalities that have been classified into three domains (UN Millennium Project, 2005).

(a) Capabilities. In poor countries, health and nutrition deficiencies tend to have a disproportionate impact on women (see, for instance, the case of sub-Saharan Africa where, in 2003, 57 per cent of all HIV-positive adults were women (ILO, 2004)). Although the primary education gap has been bridged in many developing countries, women still have limited access to technical and vocational training. In many low-income countries, families often prefer to send boys to school while girls are usually married at an early age and tied to their social roles as mothers and care-givers. Women face important time and mobility constraints that affect their ability to fully engage in formal work, as they are usually solely responsible for household work. This “time squeeze” also has repercussions on their health since they can devote little time to rest and leisure.

(b) Access to resources and opportunities. There is extensive evidence that women producers in poor countries tend to have:

• Limited land ownership;
• Relatively little control over their income;
• Limited access to financial resources and external credit and, therefore, insufficient cash flow to purchase agricultural inputs and/or to expand their businesses;
• Insufficient access to extension services (e.g. training);
• Limited access to basic processing and storage of perishable goods;
• Poor quality of public transport infrastructure to market their products;
• Logistics constraints, added to transport challenges.

(c) Security. Women often have to cope with gender-based violence from male members in the family, in conflict areas and in the labour market. For example, a study on women cross-border traders in Liberia found that 37 per cent of respondents had experienced sexually based violence at border crossings, and 15 per cent reported to have been raped or forced to have sex in exchange for favours (Randriamaro and Budelender, 2008, in UNECA et al., 2010). A survey on cross-border traders conducted in 2010 at the border posts between the Democratic Republic of the Congo, Rwanda and Uganda found that 54 per cent of respondents had been victims of acts of violence, threats and sexual harassment, 38 per cent had experienced rude behaviour, verbal abuse and insults, and 85 per cent had been forced to pay bribes (World Bank, 2013).

Although there are intrinsic reasons for which these inequalities must be tackled and redressed, they also seriously impair women’s income-earning possibilities. For instance, women who are small-scale entrepreneurs often lack access to capital, training, market networks and improved production techniques (Kabeer, 2012). When trade is liberalized, they are often unable to scale up production and take advantage of export markets, as discussed in Module 2. In agriculture, women remain tied to subsistence farming with
little value added and low earnings. This in turn may affect the export competitiveness of the sector where women work, if it is female-intensive. Put another way, the export response as a result of trade liberalization might be greater if the obstacles that prevent women entrepreneurs and producers from achieving export capacity are addressed.

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<th>Box 15</th>
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**Three domains of inequality: Women as informal cross-border traders**

Women traders across Africa face obstacles similar to those faced by women in the agricultural sector. Gender-specific constraints exist in the three areas described above: capabilities (particularly knowledge and health), access to resources and opportunities, and security. With regard to capabilities, informal women traders are often illiterate or have little information and knowledge about cross-border trade regulations and procedures, which may lead to abuse. For example, they continue to pay tariffs even if trade with neighbouring countries is duty free or continue to use illegal routes to move goods across borders (Higgins, 2012). Gender-based inequalities in access to productive resources cover many different dimensions and include the following: (a) Women have to either walk or rely on public transport to get their products to market as compared to men. Given the poor quality of public transport infrastructure, this results in delays, missed market days and perished goods, and hence increased transaction costs and competitive disadvantages (Higgins, 2012). (b) Women face logistical constraints that translate into higher unit costs for logistics services (for example, a single woman cannot fill a container). (c) Women have poor access to credit to purchase goods to resell at the border and rely on their own and meagre savings to finance themselves, which seriously limits possibilities for expansion. (d) Women have limited opportunities to attend training courses to improve their trading skills as their time is allocated between trade and household care, with little time left for other activities. Vulnerability to violence and conflict (the security constraint) is another aspect of the gender-specific challenges that female informal cross-border traders face. Female traders are particularly exposed to gender-based violence at border crossings. These include, for example, requests for sexual favours by customs officials – who tend to be men – to avoid arrest or confiscation of goods (Higgins, 2012; Brenton et al., n.d.). Women are also often asked to pay bribes to these officials.

Source: UNCTAD Secretariat, based on Higgins (2012) and Brenton et al. (n.d.).

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**Figure 5**

The multiple challenges faced by female informal cross-border traders

- Harassment and gender-based violence at border crossings (e.g. bribes/sexual favours demanded by customs officials to avoid arrest or confiscation of goods)
- Often illiterate and not informed about cross-border trade regulations and practices (e.g. pay tariffs even if internal trade is duty free)

<table>
<thead>
<tr>
<th>Capabilities</th>
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<tbody>
<tr>
<td>Security</td>
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<td>Access to resources and opportunities</td>
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- Transport: walking/public transport (delays, perished goods, …)
- Storage and other physical infrastructure: “diminished” assets (decision-making at local level)
- Logistics: small-scale, pay comparably high unit costs

Source: UNCTAD Secretariat, based on Higgins (2012) and Brenton et al. (n.d.).
We will now use case studies to document gender bias in agriculture-based developing countries in order to illustrate how it hampers a country’s trade performance. We present two country case studies addressing women working in different economic sectors, thus adding diversity and nuance to the discussion. First, we look at the case of the Gambia, a country where fisheries is a female-dominated sector. This study illustrates the gender-specific obstacles that women face as self-employed producers, and how these impediments affect both their and the sector’s performance as a whole. Second, we look at the case of Rwanda where women are mostly employed in subsistence agriculture and informal cross-border trade. This gives us the opportunity to examine how gender-based inequalities constrain women’s income-earning capacity as producers and informal cross-border traders and limit the overall competitiveness of two sectors of the economy—staple food production and informal cross-border trade. We will also discuss some policy measures to address these inequalities in each case.

3.2 Case study of the fisheries sector in the Gambia: How trade policy can exacerbate gender inequality

In the Gambia, agriculture, fisheries and forestry represent 30 per cent of GDP and account for more than 70 per cent of employment. They are also the sectors where the poor are concentrated, since household heads employed in the agricultural and fishing sectors exhibit higher poverty rates compared to household heads employed in other sectors. In 2010, 48.9 per cent of the population was living below the $1.25 per day poverty line.

The Gambia enjoys rich fishing resources both in terms of abundance and species’ diversity, thereby making fisheries a sector with great potential for socio-economic development, if fish resources are managed sustainably. The fisheries sector consists of an artisanal subsector and an industrial subsector.

The artisanal one is by large the dominant sector, accounting for 90 per cent of total national fish consumption and supplying about 80 per cent of the fish input to the industrial fish processing plants. It is estimated to employ, either directly or indirectly, between 25,000 and 30,000 people and to contribute to the livelihoods of around 200,000 people.

The industrial subsector employs high-cost production and processing systems and is concentrated along the Atlantic coastline. Industrial fisheries account for only 10 per cent of total national fish consumption and an estimated 20 per cent of locally processed fish. This is due to the fact that over 90 per cent of the fishing vessels legally operating in Gambian waters are foreign owned and land their catches abroad. The subsector also includes downstream fish processing plants—mainly supplied by the artisanal catch.

Dynamizing the fisheries sector and, in particular, export-oriented fish processing can be a way to alleviate poverty and to provide greater employment opportunities for unskilled women downstream. However, such a policy option can also lead to greater social polarization and exclusion in terms of gender if existing gendered patterns of employment are not taken into account.

3.2.1 Gendered patterns of employment and implications for trade

Patterns of employment in the Gambian fisheries sector are highly gendered. The first important gender distinction is between upstream activities (fisheries narrowly defined, i.e. the capture or culture of fish) and downstream activities (fish processing and distribution). Fish harvesting is essentially dominated by men, though women are present in some subsectors (oyster and cockle harvesters are mainly women). Women tend to be overrepresented in downstream activities: an estimated 80 per cent of fish processors and 50 per cent of fish traders are women.

Second, within downstream activities, men and women tend to produce rather distinctive products, operate on different scales and serve different markets. This results in quite specific gender-based trade patterns throughout the chain. To simplify, women tend to operate on a relatively small scale and are the predominant dealers involved in the domestic marketing of fresh and cured fish products. Men tend to operate on a larger scale and are more involved in distance/export trade where the profit margins are higher. Similarly, large-scale fish suppliers of fresh fish to processing factories for export to the overseas market (mainly the European Union) tend to be men.

Upgrading the export-oriented segment of the chain will benefit men who already dominate in this trade and exclude women who are domestic fresh and cured fish sellers. Their fresh fish supplies may also be endangered due to the higher demand. Similarly, upgrading can magnify existing cleavages between large-scale and small-scale traders unless specific corrective measures
to address this gendered division of labour are put in place.

This division of labour reflects deeply embedded social roles – most notably, the time and mobility constraints that women face as primary care-givers. This is a matter of social, cultural and biological structures/institutions. Yet, the situation also reflects gender biases in access to and control over resources, which in turn reflect contingent market and governance failures. Observations at selected landing sites, for example, have evidenced women’s unequal access to community-managed facilities: women tend to occupy units (smoking houses, drying stalls, etc.) in need of rehabilitation for which they pay a rent with virtually no service provided. As in other contexts, the overall tendency seems to be that women tend to receive “diminished” assets, while sectors that attract investment tend to “defeminize”. Whatever their role, women constantly struggle to maintain their position in the fisheries sector. Women who unload fish from the canoes and carry them to local markets are increasingly competing with men who are quicker and more able in these tasks because they are better equipped (men can afford wheelbarrows while women can only afford head pans). Consequently, women risk being pushed out of the business and lose an important source of income. Women processing the fish do not have access to high-level technologies and operate on a rudimentary basis, which reduces their productivity. Women traders often lose part of their product while transporting it to the local market because of poor quality storage systems and thus suffer significant financial losses.

3.2.2 Summary

The case study of the Gambia shows how trade policy measures to dynamize a sector can exclude women and lead to greater social polarization if existing gendered patterns of employment are not taken into account. Measures to help women increase their productivity must include ensuring access to credit and finance, higher quality/technology infrastructure and facilities, training on the fish value chain and on small business management, as well as hygiene and marketing of food products. In order to ensure that women receive access to upgraded facilities, quotas and procedures for informal complaints may also be introduced.

High-value product niches in the fisheries market that can generate value added for women, for instance shrimp farming and oyster culture, can be developed for export to segments of the European market. Ways to build up larger-scale trading activities for women such as serving hotels and restaurants can also be considered though more working capital and better cash flow are required for this purpose.

Initiatives aimed at identifying and addressing gender-based constraints would have important poverty alleviation effects as well since fish and fish products represent the main source of protein for the majority of the population. Since the fisheries sector consists largely of self-employed women, growth in the sector can be achieved only by tackling the obstacles women face in developing their own businesses.

Women in the industrial sector would benefit from flexible work arrangements to meet family needs as well as training on handling and processing fish. Finally, studies on the health implications of working in the fisheries sector and resulting corrective measures for the improvement of women’s well-being are also needed.

3.3 Case study of the agricultural sector in Rwanda: Gender inequality as a barrier to growth

The remarkable growth of Rwanda’s economy comes after a long and protracted conflict and a genocide that took thousands of lives, decimated the economy and severely impoverished the population. In the post-conflict period, Rwanda was quite successful in rebuilding its economic and social infrastructure. The country also achieved progress in poverty reduction: according to the 2012 data from the National Statistical Institute, in 2010–2011, the poverty rate fell to 44.9 per cent compared to 58.9 per cent in 2000–2001. Similarly, the poverty headcount ratio of $1.25 per day fell from 74.5 per cent of the population in 2000 to 63.2 per cent in 2011.

Rwanda has strongly committed to a gender-inclusive post-conflict reconstruction and is an example of successful integration of gender considerations in government programmes and laws, as well as the plans and strategies that form the country’s development framework. In seeking to become a more prosperous and competitive nation, Rwanda has acknowledged the importance of women’s participation and placed an emphasis on gender equality. In 2008, it became the first country in history to have more women members than men in its Parliament. At present, women hold 63.8 per cent of the seats in the Lower House and 38.5 per cent in the Upper House (Inter-Parliamentary Union, 2014). In addition, Rwanda has made impressive progress in educational attainment for its population in general, and for women...
Gender-based inequalities and trade performance

3.3.1 Women in agriculture: Gender-biases in access to productive resources

Despite the limited availability of arable land, Rwanda can be defined as an agriculture-based economy: the sector employs over 70 per cent of the population and represents the main source of income for the majority of the population. Agricultural activities are mainly based on subsistence staple food production although Rwanda exports tea and coffee; these exports represented 40 per cent of total export earnings in 2012. One way for Rwanda to achieve economic growth could be to upgrade and dynamize its agricultural sector, both the export-oriented component and the traditional segment. However, there are constraints that prevent the expansion of agriculture.

Over eight out of ten female workers are employed in agriculture – as unpaid family workers, casual wage workers or independent farmers. Women participate in subsistence staple food production to a greater extent than men. Therefore, the development of agriculture strongly depends on women's ability to effectively engage in production and marketing. Gender disparities in the agricultural sector are many and include the fact that women have limited control over land due to traditions and customary laws that privilege men as owners of assets (e.g. income) and designate women as being responsible for the household; the persisting high levels of illiteracy among rural women, which are comparatively higher than for men (62.4 per cent of rural women heads of households cannot read or write, compared to 28.7 of male heads); or the difficulty for rural women to access credit. Rural women in Rwanda often lack the needed collateral to secure credit, as well as the ability to articulate a business plan or complete a loan application process, and are often not aware of available microcredit facilities. Women also have lower access to durables (e.g. radios, mobile phones, and bicycles) than their male counterparts, which increases their transaction costs in accessing markets. For instance, this negatively affects women employed in the coffee export sector since market information is disseminated by radio or mobile phones, and bicycles represent a convenient and fast means to transport coffee to the washing stations. In Rwanda, as in many other developing countries, women have limited access to extension services and training, which tend to be male-dominated and are not designed to meet women's time constraints. Finally, women's cooperatives and organizations tend to be weakly organized and managed. These patterns are reinforced by gender-based norms that encroach on women's ability to profitably engage in the market economy at least in two important respects: first, women's double burden of unpaid care work and productive activities resulting in significant time shortage; and second, women's limited control over the household income that affects for example their ability to set aside savings for business ventures. In addition, gender-based violence, including domestic violence, is still an important issue in Rwanda.

3.3.2 Women in cross-border trade

In Rwanda, as elsewhere, the majority of informal cross-border traders are women. Traded goods consist of fish and agricultural commodities as well as textile and retail shop products. Women traders usually obtain goods from their own farming activity or buy the goods from small-scale local businesses. Goods sold via the informal channel are usually cheaper than those sold through formal trade. Therefore, women's trading activities not only provide them with income but also sustain the livelihoods of many more, particularly their poor clientele and self-employed women. For example, women engaged in tailoring activities who produce for the local market sell their products to women traders who then sell them elsewhere. In addition, women traders often run their own businesses, such as pharmaceutical shops, or are involved in the processing of the commodities they buy in order to resell.

3.3.3 Summary

Agriculture in Rwanda is female dominated and mostly involves production at subsistence level. The development of the agricultural sector entails the shift to higher value added and export-oriented production. Despite Rwanda's limited availability of arable land, there is potential for the agricultural sector to grow, especially if women are provided with the necessary resources and tools to do so. Greater land security for women is an important area of intervention and there is already some work being carried out in Rwanda.
in this regard, including awareness raising and sensitization about women’s land rights at the village level, as well as training for local officers such as land officers and community development officers. In the registration and titling process of land, gender awareness is necessary to ensure joint titling of land and assignment of land to women-headed households. Providing women with access to inputs and basic technologies to enhance the productivity of land is also important. For instance, water pressure pumps and harvesting tools such as cutters, weeder and threshing and cleaning equipment can help women increase productivity as well as manage their roles as farmers and care-givers by reducing their time burden. Advisory and extension services on crop husbandry and input management should take women’s time constraints and limited access to ICTs into account. The gender balance among extension officers and agronomists also needs to be improved.

In addition, strengthening existing cooperatives and women’s associations through capacity-building measures and linking them with input distribution networks, post-harvest facilities and marketing outlets can enhance women’s access to markets significantly. Public procurement (e.g. school feeding programmes, catering for public administration) could offer opportunities for staples locally processed by women. These measures can also boost food security for the poor as most women are subsistence farmers.

Educating Rwandese informal cross-border traders on their rights and obligations can be a way to empower them in their daily activities. Moreover, creating a gender balance among customs officers as well as offering them gender awareness training could contribute to reducing gender-based harassment at border crossings. Reducing the red tape with regard to procedural clearances required for cross-border traders can improve efficiency and provide incentives for expansion. As in agriculture, promoting cooperatives among women traders can reduce risks and costs for these informal workers.

Gender-specific constraints affecting Rwandese women adversely impact their ability to expand their production of agricultural goods, and trading activities and income. This in turn limits the performance of the agricultural and trading sectors as a whole. Gender-specific measures are needed to remove these obstacles and unleash the potential of women as agricultural producers and traders, which can in turn be expected to enhance growth in the respective sectors in which they work.

4 Conclusion

In this module, we have seen how gender inequality can shape a country’s international competitiveness. We have seen that women are more likely to be sources of competitive advantage in their role as wage workers, homeworkers and unpaid family workers rather than achievers of competitive advantage as owners of businesses and self-employed producers. The existence of a nearly universal gender wage gap has made women an attractive workforce to keep labour costs low, particularly in labour-intensive export production where price competition is intense. At the same time, entrenched norms about “gender appropriate” work and “feminine skills” have facilitated the large-scale entry of women workers primarily into the low value-added segment of export production and not others. Thus, while most dimensions of gender inequality indirectly hinder trade performance, wage inequalities appear to have a positive impact on export growth (Çagatay, 2001; Seguino, 1997; UNCTAD, 2012). Relatively cheap and flexible female labour has also been important in meeting the requirements of GVC production where demand tends to be volatile and delivery times short. Homeworkers are perhaps the most vulnerable group in this regard and tend to bear most of the risks of production, with very little pay and security.

Gender-based inequalities also dampen women’s output and productivity as self-employed workers and prevent them from becoming achievers of competitive advantage. This in turn hampers the growth of the sector – if female-intensive – and the successful export performance of the economy as a whole. Gender inequalities lie in the dimensions of access to and control over resources, capabilities and security. For instance, women own very little land, they often do not control their own income and lack access to financial and other support services that might help them to expand their productive activities. In terms of capabilities, women tend to have poorer health and nutrition, face considerable time poverty and experience hindrances in mobility that affect their position as producers. Finally, women face different forms of gender-based violence through their life cycles, both within the family and in the labour market. This violence is reprehensible in its own right though it also has consequences for women’s ability to earn a livelihood and indeed to expand their economic activities and prosper.

Specific policy measures to take these gender-based inequalities into account are necessary while designing trade policies, or it is likely that existing gender biases may be reproduced or even exacerbated as a result.
### Exercises and questions for discussion

1. Firms can import know-how and technologies through Foreign Direct Investment (FDI). In your opinion, what could have been the potential impacts of increased FDI into Taiwan Province of China on the labour-intensive manufacturing sector? Could women have benefited from it? If yes, how?

2. What types of policies would you recommend to governments to overcome women’s segregation into low-paid, low-skill labour? Explain the arguments against the use of gender inequality as a tool for export growth.

3. In the 1990s, firms in Taiwan Province of China started shifting production to lower labour cost countries. What do you think are the gender implications of this type of cost-cutting strategy for all the countries involved?

4. Look again at the case study of the Gambia. Explain how addressing women’s constraints in the fisheries sector could improve the country’s export competitiveness. Keep in mind that women in the Gambia are mostly concentrated in the artisanal fisheries sector, which is more domestic oriented. What do you think would be the effects on women if the exporting industrial fisheries sector were to be the only focus of an export growth oriented strategy? What would the position of women be in this case?

5. In the case of Rwanda, how do gender obstacles for women as agricultural workers and informal cross-border traders affect the country’s export performance?

6. As we have seen, women in Rwanda are also actively involved in informal trading activities. What do you think would be the effects on the formal trade channel if the Rwandese government implemented measures to protect and empower women as informal cross-border traders? (Hint: Remember that informal cross-border trade in the case of Rwanda usually takes place only with its neighbouring countries which are at the same level of development as Rwanda.)

7. What do you think are the main constraints in agriculture-based developing countries and semi-industrialized economies that hamper the economic empowerment of women? What are the similarities and differences? How would you address them if you were a policymaker?

8. For each of the country case studies presented, explain in detail the areas in which gender inequality is experienced.
ANNEX

The aim of this Annex is to provide a brief overview of some key and/or innovative papers that investigate the impact of gender inequality on exports or export-led growth in order to illustrate the central concerns of the authors, the methodology used and the main findings. The second volume of this teaching material will provide a more in-depth overview of empirical methods used to analyse the links between gender and trade.

A1 Seguino (1997): “Gender wage inequality and export-led growth in South Korea”

Context

The paper fills the gap in the literature on the role that gender played in boosting export-led growth in the Republic of Korea. Until then, the Republic of Korea’s economic success was explained either as the result of market-oriented policies and trade liberalization or as the outcome of effective industrial policy, depending on the theoretical persuasion of the authors, without paying much attention to the gender aspect of the process. Seguino’s paper is the first to make an explicit link between the gender wage gap and export growth in the Republic of Korea and to test this link empirically. In effect, this paper highlights the critical role of gender wage inequality in the process of export-led growth.

The study is also important as it delves into the reasons for which the gender wage gap in the Republic of Korea narrowed only slightly during the period 1978–1989, despite the high demand for female labour. Segregation of women in labour-intensive production are found to be important. The aim of the econometric analysis in the paper is twofold: first, to assess whether women’s employment segregation in the country’s export industries is linked to females’ lower wages; and second, to provide evidence on the Republic of Korea’s use of low-paid female employment as a source of competitive advantage.

Data and methodology

The econometric analysis uses cross-sectional time series two-digit and three-digit ISIC manufacturing data for the period 1978–1989 in order to test the first question of whether women’s segregation in export industries is linked to lower wages. The data come from different sources: monthly earnings are from the Republic of Korea’s Ministry of Employment and Labor’s monthly labour survey, employment data come from ILO, and value-added data are published by the Bank of Korea and used only in the augmented equation.

The question is addressed by analysing the link between the industry’s relative wage and the proportion of women in an industry while controlling for other relevant variables such as productivity levels. The model includes a standard wage equation and an augmented one (where the author also controls for value added).

The second empirical question of whether gender wage differentials led to export growth in the Republic of Korea is answered by estimating a benchmark standard export function as well as a modified one for the period 1975–1990. Data are compiled from the Bank of Korea and ILO. In this case, the dependent variable is manufactured exports and the independent variables are (a) foreign income, (b) relative prices, and, in the modified function, also (c) relative (female-male) wages.

Findings

The findings from the first model confirm the hypothesis that women’s segregation in low productivity jobs is related to their lower wages, providing one explanation for why the country’s gender wage ratio did not improve in response to the increase in female labour demand. That is, when the female share of employment in an industry rose, the relative wage in that industry fell, thus demonstrating the effect of crowding on wages. However, the coefficient on the female employment variable is smaller when value added is controlled for, which indicates that women’s lower relative wages are also explained by their concentration in low value-added industries.

The findings from the second model also confirm that gender-based wage inequality stimulated the country’s exports. In other words, as the ratio of female to male wages fell, export demand increased. The coefficient for the gender wage ratio is negative and statistically significant and improves the explanatory power of the export function.

In conclusion, the paper both explains the reasons for the observed stability of the gender-wage gap over time, namely segregation of women in low-paid jobs, and provides evidence that women’s low wages have improved Republic of Korea’s export competitiveness.
A2 Seguino (2000): “Gender inequality and economic growth: A cross-country analysis”

Context

The focus of the paper is the impact of gender wage inequality on economic growth via its effect on exports and investment in a sample of semi-industrialized economies (SIEs) that used export-led strategies (with high proportions of female labour) to boost growth. In a sense, this paper builds on Seguino (1997) and explicitly links gender wage inequality not only to export expansion but to economic growth per se. This it does by “gendering” standard growth accounting methodology that is used to model the determinants of output growth at the aggregate level. Indeed, according to the author, previous growth accounting studies were “virtually devoid of a gendered perspective”. The causal links are as follows: Gender inequality leads to export expansion which in turn generates technical change and contributes to economic growth. In terms of the effect of gender inequality on investment, the author argues that low labour costs imply a higher profit share for firms, which may in turn stimulate higher capital investment.

The evidence on the relationship between gender inequality and economic growth

There is an ongoing and unresolved debate on whether gender inequality should be considered a drag or a stimulus to economic growth. Empirical evidence so far has shown that the effect varies depending both on the measure of gender inequality used and the structure of the economy analysed. For instance, Klasen and Lamanna (2008), using cross-sectional analysis for different world regions over the period 1960–2000, find that gender inequality in employment and education reduces economic growth. Seguino (2010) further expands the discussion and assesses the effect of gender inequality both in wages and education on economic performance in two types of economies, namely low-income agricultural economies (LIAEs) and SIEs. The author finds that while in LIAEs greater gender equality both in wages and education contributes to economic growth, in SIEs gender equality in wages slows economic growth but gender equality in education stimulates growth.

Source: UNCTAD Secretariat.

The study is also noteworthy in that it provides contrasting results to works that have shown that income inequality slows growth because of the social conflict it generates, thus negatively affecting investment (Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Larraín and Vergara, 1998).

Data and methodology

Countries come from a sample of SIEs selected on the basis of a semi-industrialized export orientation (SIEO) index constructed for the purpose of the study. From the group of economies drawn according to the SIEO index, countries with available gender-disaggregated wage data were selected. Data were taken from the ILO’s Yearbook of Labour Statistics and various country specific sources.

The paper uses a standard growth accounting methodology and genders it in two ways: (a) the human capital term in the neoclassical production function is disaggregated by gender, and (b) the gender wage gap is introduced as a determinant of technical change via its effect on export growth. Based on this growth model, the author carries out cross-country regressions using period averages for 1975–1995. In order to capture changes in variables within countries over time, the paper uses panel data analysis with five-year averages; in this case, the estimation is carried out with a least square dummy variable model to capture both country and time effects.

The dependent variable is represented by GDP growth rates and the independent variables are: (a) the growth rate of technological change (measured as the growth rate of gross domestic fixed capital formation), (b) the gender wage gap (estimated in three different ways), and (c) different measures of female and male human capital. Industry-specific fixed effects are also added to the model. To test the hypothesis that gender wage inequality might foster economic growth by increasing investment, Seguino also estimates the effect of the gender wage gap on investment as a share of GDP using period averages.

Findings

The first set of cross-country regressions that assess the impact of gender wage differentials on GDP growth via the exports channel shows that all three measures of the gender wage gap are positively and statistically significant; these findings are confirmed in the panel data estimation using five-year averages. The two sets of regressions pre-
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Gender wage inequality is also found to be positively and statistically significant in the cross-country regressions on investment. That is, the results confirm the hypothesis that gender wage differentials contribute to economic growth by stimulating investment.

In conclusion, Seguino’s paper provides robust evidence on the contribution of gender inequality to economic growth. In particular, it confirms the assumption that the gender wage gap affects GDP growth rates via its effect on exports and investment.

A3 Busse and Spielmann (2006): “Gender inequality and trade”

Context

This paper looks at the relationship between gender bias and trade flows in a sample of 92 developed and developing countries. More specifically, the authors assess whether gender inequality leads to a comparative advantage in labour-intensive manufactured goods. The paper uses a broader definition of gender inequality, including wage, labour market access and educational inequality as compared to the previous papers we reviewed, which focused only on wage inequality. The authors argue that gender bias is more likely to affect the composition of exports than the amount of export flows. Moreover, they acknowledge the fact that improved export performance in labour-intensive products might tie the country to the production of such commodities and prevent the switch to higher value-added products. Contrary to Seguino (2000), the authors find that comparative advantage in labour-intensive products does not necessarily translate into higher growth rates.

One of the problems in the analysis, however, is limited data availability for the gender wage gap. This implies that the findings related to this dimension of gender inequality should be interpreted with some caution, as they are unable to provide a full assessment of the relationship between gender inequality and comparative advantage in labour-intensive industries.

Data and methodology

The data used for the empirical analysis come from international organizations’ statistics. To ensure consistency in the data, the measure for wage inequality is constructed using two ILO sources, namely the 2003 Yearbook of Labour Statistics and the 2004 October Inquiry. The information on employment and education is taken from the World Bank’s World Development Indicators 2004. The trade data come from the United Nations Commodity Trade Statistics Database (UNCOMTRADE).

In order to determine whether gender inequality is related to comparative advantage in labour-intensive manufacturing goods, the authors first conduct a cross-sectional analysis using data for the year 2000. They then pool data for some years to create a panel and apply country-fixed effects to assess changes over time. The benchmark model includes different trade indicators as dependent variables and three dimensions of gender inequality as independent variables. The trade indicators include: (a) the ratio of labour-intensive exports to total exports for labour-intensive goods, and (b) revealed comparative advantage in labour-intensive goods. Gender inequality is measured by indicators that capture the difference between male and female wages, labour market access and educational attainment.

Additionally, the model incorporates a set of control variables including: (a) a measure for relative capital endowment, (b) a measure for relative labour endowment, (c) equivalent aggregated variables used to measure gender inequality (i.e. total educational attainment when using gender inequality in access to education as an explanatory variable), as well as (d) regional dummies to account for differences in regional characteristics.

Findings

The findings from the cross-sectional regression suggest that gender inequality in wages is positively associated with comparative advantage in labour-intensive goods. This result holds in the panel estimations, indicating that the positive relationship holds over time.

In contrast, gender inequality in access to employment and in educational enrolment lower trade performance. Results for both the cross-sectional and panel data analysis suggest that higher female participation in the labour market enhances labour endowment and thus comparative advantage in labour-intensive goods. Similarly lower differences in education between males and females positively influence comparative advantage in labour-intensive industries.
Gender-based inequalities and trade performance

Context

This paper is based on research about the nature of gender-based division of labour in agrarian regions of sub-Saharan Africa. It is innovative in that it builds a theoretical model in order to capture the pronounced gender distribution of occupations in this region. Building upon the assumption that men and women differ in their responsibilities and tasks, the model shows how gender-based division of labour can lead to inefficient outcomes in terms of both export cash crop production and “subsistence” household production. Another interesting contribution of the paper is that it sheds light on the effects of SAPs promoted by the IMF and the World Bank.

Methodology

The economy is assumed to be composed of two production sectors: (a) a “subsistence” household sector, which employs only females; and (b) a cash crop exporting sector, where males are devoted to land preparation. This is referred to as “men’s work” while activities such as transplanting and weeding are referred to as “women’s work”. A Cobb-Douglas production function that accounts for the quantity of a cash crop produced is modelled by male labour in cash crop production, female labour in the same sector and fixed capital used in the cash crop sector.

Women’s labour supply is allocated between household work, cash crop production and leisure time. The amount of female labour supply in cash crop production is modelled by: (a) the level of control men have over women’s time allocation decisions with respect to the export sector and housework; (b) the extent of women’s cooperation in their husbands’ or fathers’ efforts to raise output in the cash crop export sector; and (c) the real wage paid by men to women for working in the export sector.

The higher the males’ coercive power on females’ labour allocation, the stronger are women’s cooperation efforts; and the higher the compensation paid by men, the higher is the amount of work time women spend in cash crop production and vice versa. In some cases, women are not willing to offer any uncompensated labour for cash crop production because they are not forced to do so by their male counterparts.

Males seek to maximize their income which is given by the difference between their revenues, represented by the value of the cash crop, and its costs, represented by compensation paid to women. Men will maximize their income by selecting the amount of time they work in the export sector and the wages paid to women.

Besides the production sectors, the model includes a market where consumer and investment goods can be exchanged. Finally, the model studies the effects of a devaluation of the domestic currency as part of a structural adjustment strategy to promote foreign demand for goods exported by the country.

Findings

As women devote more time to unpaid cash crop production, for instance because of men’s higher coercive power, their labour productivity declines. Increased time dedicated to cash crop production comes at the expense of women’s leisure time because the model relies on the strong assumption that women are the only ones engaged in housework. They need to accomplish a minimum of work in the “subsistence” household sector to comply with tradition and customary standards and thus cannot reduce work related to household maintenance. If women are excluded from or are not adequately rewarded for their work in the cash crop sector, they may risk suffering

from gender-specific nutritional deficiencies because with the little money they earn, they can only afford subsistence goods. These deficiencies can even arise during an export boom, when women’s work days will be longer because they need to work more hours in the cash crop producing sector to meet the higher demand for export goods. If the pressure on female labour time cannot be offset by resources purchased with incomes generated in the export sector, women’s productivity falls in both the subsistence and cash crop exporting sector, thus affecting export performance.

To boost foreign demand for the country’s exports, the model then assumes an IMF-mandated local currency devaluation. The direct effect of such currency devaluation is to raise domestic prices and therefore the money price of cash crops as well. This leads to two simultaneous outcomes: (a) an increase in men’s work hours dedicated to the export sector to increase cash crop production and income; and (b) an increase in wages paid to women for their work in the fields because men are more willing to offer compensated work to women in the export sector.

As a result, the time women allocate to the export sector will increase, putting even more pressure on the subsistence household sector. Women will bear the brunt of a reduction in subsistence output. Gender-specific health disadvantages can once more jeopardize the efficiency of the cash crop exporting sector unless women’s greater access to resources (i.e. wages received from working on cash-crop production) can offset this effect.

Darity’s model shows how women’s limited access to wages in an agrarian economy with gender-based socio-cultural stereotypes can inhibit export performance. It also accounts for gender inequalities in capabilities (health and nutrition), as well as security (modelled by men’s coercive power over women).

In the concluding part of the paper, Darity explains the implications of a reduction in men’s coercive power as one way to achieve greater gender equality in the distribution of labour. In this case, men would prefer to work longer hours in cash crop production and would pay higher wages to women since they would only be available to supply their labour if they are compensated for it. Therefore women would have greater access to income and could more easily take part in the consumption of subsistence goods. Women would be less drawn into unpaid work in the export sector allowing them to devote more time to subsistence production and leisure. Women would be able to enjoy a healthier lifestyle, accumulate savings for the education of their children and start up their own businesses in cash crop production.
REFERENCES


Gender-based inequalities and trade performance


Further readings


GLOSSARY

A

Absolute measure: Metric expressed in absolute units. For example, the number of people living in poverty, total export value in local currency, difference between the number of females and males enrolled in primary education. See also “Relative measure”.

Agreement on Textiles and Clothing (ATC): Sector-specific WTO agreement on trade in textiles and clothing which entered into force on 1 January 1995. Its main purpose was to secure the phasing out of restrictions on imports of textile and clothing products – set by the Multi-Fibre Arrangement (MFA) – over a transitional period of ten years, thereby integrating the textile and clothing sector into the standard rules and disciplines of the WTO by 2004. See also “Multi-Fibre Arrangement”.

Agricultural extension services: Activities aimed at educating and training rural workers on agricultural practices, including farming methods and techniques.

Agro-climatic zones: Territorial areas that share similar land, soil and climate characteristics and where the same kind of vegetation is found and the same crops are cultivated.

B

Bargaining power: Relative capacity of one party to exert influence over another party during a negotiation or a dispute. The party with a stronger bargaining power is able to secure an agreement closer to its own terms thereby achieving a more desirable outcome.

C

Capital intensity: Ratio of the amount of capital and labour used in production. It is commonly measured as the ratio of net fixed capital stock to the number of workers. See also “Labour intensity”.

Cash crop: Agricultural crop grown for sale and not for the farmer’s own consumption. See also “Subsistence crop”.

Comparative advantage: The efficiency with which a country can produce one good relative to another in the standard theory of international trade. It is generally measured as the ratio of unit labour costs. Trade between countries occurs if their relative efficiencies in producing two goods are different. If a country A can produce product X at a relatively lower cost than country B, it has a comparative advantage in producing X. By exporting X and buying product Y from its trading partner country B at a relatively lower cost, it can get more Y and at a lower price through this exchange than if it produced both goods nationally. See also “Competitive advantage”.

Competitive advantage: The idea that countries compete on absolute unit costs (rather than relative costs) and use different strategies such as unit cost reduction and price-cutting to outperform their competitors and gain market shares. The country that produces a good more efficiently (or at a lower cost) as compared to the other captures the export market, regardless of the relative cost of production of goods within the country. This contrasts with the standard trade theory based on comparative advantage in which trade is based on the relative cost of production within countries. See also “Comparative advantage”.

Contract farming: It can be defined as agricultural production carried out according to an agreement between a buyer and farmers, which establishes conditions for the production and marketing of a farm product. Typically, the farmer commits to provide agreed quantities of a specific agricultural product, which should meet the quality standards of the purchaser and be supplied at the time determined by the purchaser. In turn, the buyer commits to purchase the product and, in some cases, to support production through, for example, the supply of farm inputs, land preparation and the provision of technical advice (FAO, 2012).
Contributing family worker: The term refers to a self-employed individual in a market-oriented establishment managed by a related person living in the same household. Contributing family workers cannot be considered as co-workers, because their degree of commitment to the operation of the establishment, in terms of working time or other factors, is not comparable to that of the head of the establishment (ILO, 1993).

Cross-border trade: Buying, selling and related activities, of goods and services between individuals or companies (traders) in neighbouring countries, with the seller(s) in one country and the buyer(s) in the other country. See also “Informal cross-border trade”.

Customary law: An established practice that has become part of the accepted and expected conduct in a given social setting due to convention, tradition or social norms. Customary practices are enforced and accepted as law.

Defeminization of labour: The decline in the share of female employment in any given sector or industry. Some of the factors that may contribute to the defeminization of labour include: the shift to capital-intensive production (if women are concentrated in labour-intensive production); export contraction (if women are strongly present in exporting industries, such as manufacturing); higher wages in female-intensive production, which may attract men and contribute to push women out of employment (ECLAC, 2001). See also “Feminization of labour”.

Downstream activities: Later stages of the production process that include the processing of raw materials into finished products and their distribution, through marketing and sale, to end-consumers (businesses and/or individuals). In the case of the fishing sector in the Gambia, downstream activities involve, for example, the processing (e.g. smoking) of fish.

Dutch Disease: A situation when the discovery of new natural resources in a country or a boom in prices of such resources lead to a real appreciation of the country’s currency, which in turn makes the country’s non-natural resources exports less price-competitive on the world market, thus hampering the growth of manufacturing or other tradable sectors. Dutch Disease is often considered to be a temporary problem. In contrast, the so-called “resource curse” is the possible negative longer-term impact of Dutch Disease on technical progress in the country, mainly in manufacturing, caused by the diversion of financial resources from productive, growth-oriented use, due to rent-seeking behaviour (UNCTAD, 2012).

Efficient allocation: Distribution of assets and/or resources between economic actors (e.g. individuals and firms) that achieves the best outcome possible and makes everyone better off; each actor can only gain from a redistribution of assets and/or resources at the expense of someone else.

Export Processing Zones (EPZs): Areas generally set up in developing countries to attract foreign direct investment. The advantages offered by EPZs to firms (usually foreign owned) include: duty-free imports of raw and intermediate inputs for the processing of export products, facilitated licensing or building permits, reduced customs constraints, and overall fiscal advantages. Potential benefits of EPZs for the host country include: increase in foreign capital inflows, expansion of exports, transfer of technology and overall positive spillover effects on the domestic economy.

Factor endowments: Amount of production factors, typically land, labour and capital, which are available and can be exploited for the production of goods and/or services within a country.

Female (male) intensity of employment: The concentration of female (or male) employment in any given industry, sector or at the aggregate level. It is measured as the female (male) share of total employment. For example, EPZs display a high female intensity of employment, reaching up to 90 per cent in some countries. See also “Feminization of labour”.
Feminization of labour: The increase in the share of women employed in wage work in a given sector. For example, the expansion of the manufacturing sector following a free trade agreement or foreign investment inflows may provide new work opportunities for women. See also “Defeminization of labour”.

Foreign Direct Investment (FDI): “[FDI] is defined as an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy in an enterprise resident in an economy other than that of the foreign direct investor. FDI implies that the investor exerts a significant degree of influence on the management of the enterprise resident in the other economy. Such investment involves both the initial transaction between the two entities and all subsequent transactions between them and among foreign affiliates, both incorporated and unincorporated. FDI may be undertaken by individuals as well as by business entities” (UNCTAD, 2013c).

Gender: Defines the socially constructed set of attributes, roles and opportunities ascribed to male and female sex categories. Aspects of gender vary greatly across socio-cultural contexts and determine what is the expected, valued and allowed behaviour in men and women. Substantial gender differences and inequalities can be found in most societies. See also “Gender equality”.

Gender equality: The enjoyment of equal rights, opportunities, access to resources and decision-making power across different sex categories and genders in social, economic and political life. See also “Gender parity”.

Gender mainstreaming: The process of taking gender considerations into account in different institutions with the objective to promote gender equality. The United Nations Economic and Social Council defined the concept as: “the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality” (United Nations Economic and Social Council, 1997).

Gender parity: Equal representation of men and women. Gender parity can be achieved in employment (e.g. parity in all the professional levels of the workplace), in education (e.g. parity in enrolment rates, completion rates and literacy) or in political participation (e.g. parity in all the levels of government and decision-making bodies). See also “Gender equality”.

Gender segregation: Unequal distribution of men and women in different occupations and functions produced by gender bias. Gender segregation in employment can be vertical (where men are typically concentrated at the top of the occupational hierarchy, while women at the bottom) or horizontal (where women and men carry out different tasks across occupations).

Gender wage gap: Difference between men’s and women’s pay as a result of discrimination and/or concentration in different occupations. It can be measured in various ways, including the difference between male and female average earnings expressed as a percentage of male earnings.

Global supply chains: The chains of supply of raw materials and components that contribute to production systems globally. Global supply chains integrate inputs originating from several countries, with each country specializing in a given stage of the production process that transforms raw materials and components into a finished product and delivers it to final customers (UNCTAD, 2013b).

Global value chains (GVCs): GVCs comprise the set of different activities, involving two or more countries, which are needed to bring a product or service from conception, through the intermediary phases of production, delivery to final consumers, and final disposal after use. A typical GVC producing any end-product for final consumption will involve activities across multiple sectors and industries – from extractive industries or primary sector activities, to manufacturing and services – incorporating value added along the chain (UNCTAD, 2013c).
**Heterodox economics**: Heterodox economics is an umbrella term that is used to loosely describe non-neoclassical approaches to economics such as Keynesian, Marxist, feminist and institutionalist schools that are generally critical of the standard approach and based on different theoretical foundations. See also “Orthodox economics”.

**Informal cross-border trade**: Informal cross-border operators can be classified into three categories: (a) unregistered traders operating entirely outside the realm of formality; (b) traders who are registered but who fully evade trade-related regulations and duties; and (c) operators who are registered but who partially evade regulations by resorting to illegal practices. Informal cross-border trade covers a wide spectrum of agricultural and manufactured items and refers to both small volumes of goods transported across the border on foot or by bicycle, and large volumes transported by land, sea or air. See also “Cross-border trade”.

**Informal economy**: It refers to all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements. Their activities are not included in the law, which means that they are operating outside the formal reach of the law; or they are not covered in practice, which means that – although they are operating within the formal reach of the law, the law is not applied or not enforced; or the law discourages compliance because it is inappropriate, burdensome, or imposes excessive costs” (ILO, 2002).

**Informal employment**: Work without legal or social protection inside or outside informal enterprises (Chen and Vanek, 2013).

**Labour intensity**: Ratio of the amount of labour and capital used in production. It is commonly measured as the ratio of the number of workers to net fixed capital stock. See also “Capital intensity”.

**Labour standards**: A set of international conventions on labour and social policy that safeguard the rights of working persons. Core labour standards are basic human rights and include principles related to freedom of association and the right to collective bargaining, forced labour, equality of opportunity and treatment, and child labour (ILO, 1998). Core labour standards are defined in the Declaration on Fundamental Principles and Rights at Work, adopted by ILO member states in 1998.

**Macroeconomic analysis**: Branch of economics dealing with the study, forecast and research of the economy as a whole (at the national, regional or global level) as opposed to individual markets. It focuses on economy-wide indicators such as GDP, unemployment and inflation. See also “Microeconomic analysis”.

**Maquila (or maquiladora)**: Mexican export-oriented assembly factories operating in the EPZs on the border with the United States. The term maquila (or maquiladora) is also used with reference to similar factories in other countries in Latin America and Asia. See also “Export Processing Zones (EPZs)”. 

**Market access**: The conditions, i.e. tariff and non-tariff measures (e.g. quotas, subsidies, technical regulations, etc.), for the entry of goods into national or regional markets. From an exporter’s perspective, the level of market access depends on: (a) the disadvantages or advantages that exporters face as compared to domestic producers; and (b) the relative advantages or disadvantages that exporters have over other external competitors.

**Market entry**: The ability of exporters to meet necessary requirements to enter a market. Market entry conditions may refer to product characteristics – including quality, appearance, or taste; safety – for example the presence of pesticide or artificial hormone residue; and authenticity – such as guarantee of geographical origin or use of a traditional production process. Other parameters may relate to the nature of the production process (e.g. with respect to workers’ health and safety, or environmental impact), prices and speed of delivery. Market entry conditions are not mandatory by law, but are usually
imposed by large distribution networks and large commercial customers. Failure to satisfy market entry conditions would result in de facto market exclusion (UNCTAD, 2003).

**Micro-business**: A business operating on a small scale and employing a limited number of people. Most microenterprises specialize in goods and services that are provided within a limited area and are a common feature in developing countries where they play a key role in job creation and poverty alleviation.

**Microeconomic analysis**: Study, forecast and research of the behaviour of economic entities (e.g. consumers, producers and firms) in the allocation of available and limited resources. It includes the study of the determinants of demand and supply, which in turn determine market prices. See also "Macro-economic analysis".

**Millennium Declaration**: The United Nations Millennium Declaration, adopted at the Millennium Summit on 8 September 2000, aimed to shape the international agenda for the 21st century, calling for policies and measures to respond to the needs of developing countries and economies in transition. The Declaration set out a series of time-bound targets – with a deadline of 2015 – that are known as the Millennium Development Goals (MDGs).

**Multi-Fibre Arrangement (MFA)**: International trade agreement of 1974 that governed trade in textile and clothing through quotas negotiated bilaterally between developed and developing countries. This meant that selective quantitative restrictions were applied when surges in imports of particular products caused, or threatened to cause, serious damage to the industry of the importing country. On 1 January 1995, the MFA was replaced by the WTO Agreement on Textiles and Clothing. See also "Agreement on Textiles and Clothing (ATC)".

N

**Non-tradable sectors**: Sectors producing goods and/or services that cannot be traded on international markets because of their nature, high trading costs or logistical reasons. Their prices are largely determined on the domestic market. For example, infrastructure and hair cutting services are non-tradable sectors. See also "Tradable sectors".

**Non-market activities**: Refers to the production of goods and services that household members produce for their own consumption (e.g. subsistence agriculture), or reproduction and unpaid care work (such as taking care of children, the elderly, ill and able-bodied adults). See also "Reproductive sphere".

**Non-tariff measures (NTMs)**: NTMs are policy measures, other than customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, their prices or both. They can be divided into three categories: (a) measures which are directly trade-related (e.g. import quotas, import restrictions, licences, anti-dumping measures); (b) measures which have a link to trade in as far as their implementation is monitored at the border (e.g. labelling, packaging, sanitary and phytosanitary requirements, technical specifications); and (c) measures arising from general public policy (e.g. government procurement, investment restrictions, subsidies, extent of intellectual property rights protection) (UNCTAD, 2013a). See also "Tariffs".

O

**Orthodox (standard) economics**: "Traditional" economic theory taught in most universities that is based on the assumptions of a utility-maximizing individual with rational preferences and expectations, and full information about the market. Orthodox economists often use mathematical models including calculus, optimization and comparative statistics to describe individuals’ behaviour. See also "Heterodox economics".

P

**Patriarchal social system**: A social system based on the authority of elder males. Broadly, patriarchal society is a system where women are subordinate to men, who have authority and privilege in the family, politics and society. It also includes social mechanisms that reproduce male dominance and privilege.
Perfect competition: A type of market structure characterized by: (a) a large number of small producers (firms) and consumers; (b) price-taking behaviour; (c) production of homogeneous goods and/or services; (d) free entry and exit of producers from the market; and (e) availability of complete information on prices and quantities produced.

Productive capacity: The productive resources, entrepreneurial capabilities and production linkages that together determine the capacity of a country to produce goods and/or services and generate productive employment. Productive capacity determines the type and quantity of goods and services a country can export. Productive capacity is influenced by trade through, for example, economies of scale, more efficient use of resources and acquisition of technology (UNCTAD, 2006).

Relative measure: A metric that compares two absolute measures. For example, a ratio of female to male primary enrolment of 63 per cent indicates that there are 63 females enrolled in primary education for every 100 males. See also “Absolute measure”.

Reproductive sphere: Refers to the domestic realm and is associated with family and household tasks, including childbearing and childrearing responsibilities, food preparation, housekeeping, water and fuel collection.

Sex-disaggregated: Compilation of statistical and analytical information (e.g. education, employment, health) by sex. Sex-disaggregated data are essential to assess differences in the conditions of women and men and determine whether or not such conditions change over time.

Skill level: Defines the complexity and range of tasks and duties to be performed in an occupation. It is measured by considering the nature of the work performed, the level of formal education required for a given occupation, and the amount of informal training and/or previous experience required to carry out the tasks and duties involved. The International Standard Classification of Occupations (ISCO) defines four skill levels: these range from occupations involving simple and manual tasks and requiring basic literacy levels (low-skilled), to occupations involving complex problem-solving and decision-making for which high levels of education and training are required (high-skilled) (ILO, 1990).

Spillover effect: Consequences resulting from an economic activity or process that spread into areas not directly in its sphere. For example, investment in infrastructure can have positive spillover effects by stimulating the economy through employment, improved labour mobility and increased demand of related productive sectors.

Structural Adjustment Programmes (SAPs): Set of economic policies prescribed by the World Bank and the IMF and implemented in many developing countries since the 1980s as part of a loan package to countries that were in economic difficulty. SAP guiding principles included export-led growth; privatization and liberalization; and the efficiency of the free market. To achieve these objectives, countries were required to take several of the following measures: devalue their currencies against the dollar; lift import and export restrictions; balance their budgets; and remove price controls and state subsidies. Due to the criticisms surrounding SAPs, in 1999, it was determined that concessional lending would be negotiated under nationally-owned poverty reduction strategies (Poverty Reduction Strategy Papers – PRSPs).

Structural barriers/constraints: Fundamental impediments to the achievement of a specific goal, rooted in the economic, political, cultural and social systems in which the actor operates. For example, gender bias in educational institutions about women’s limited technical abilities can translate into discriminatory admissions policies.

Structural transformation: The shift of output and employment in an economy from agriculture to manufacturing and services that is characteristic of the development process. It is usually accompanied by rising urbanization and the growth of a modern industrial and service-based economy.
Subsidized credit: Loans and/or cash payments provided at more favourable conditions than normally applied market rates. They are usually granted by governments to promote particular forms of economic activity. For example, subsidized credit can be targeted at small and own-account farmers in agriculture-based economies to expand production.

Subsistence crop: Agricultural crop grown for the farmer’s and his/her family’s own consumption. See also “Cash crop”.

T

Tariff: Tax imposed on goods imported into a country. A tariff is specific when it is imposed as a fixed sum per unit of the imported good. A tariff is ad valorem when it is calculated as a percentage of the value of the imported good. Mixed and compound tariffs are combinations of specific and ad valorem tariffs. Bound tariff rates are those that are negotiated by countries under bilateral, regional or multilateral trade agreements. Once agreed upon, they represent the maximum level of tariffs the parties are authorized to use in relation to imports from countries. The applied tariff rates are those de facto used by countries; they are generally lower than the bound rates (UNCTAD, 2001).

Tariff escalation: Tariffs escalate when they increase with the level of processing: tariff rates on semi-processed and processed products are thus higher than on unprocessed products and raw materials. Tariff escalation protects the processing industry in the importing country against foreign competition as it makes it difficult for suppliers of raw materials or unprocessed products in the exporting country to move to higher stages of processing and diversify their production.

 Tradable sectors: Sectors producing goods and/or services that are or can be traded between countries. Their prices are largely determined in the world market. Most goods and several services are tradable. See also “Non-tradable sectors”.

Trade liberalization: Removal or lowering of barriers and restrictions to international trade. Measures of trade liberalization include removal or lowering of tariff (e.g. import duties) and non-tariff obstacles (e.g. quotas, import licensing rules, etc.). See also “Trade protectionism”.

Trade openness in policy: Set of government measures including laws, regulations and requirements determining the degree to which countries are open to international trade. Openness in policy is defined in relation to barriers to international trade imposed by governments, which may include tariff and non-tariff measures (such as quotas, import licensing systems, sanitary regulations, prohibitions, etc.).

Trade openness in practice: Indicates a country’s degree of integration into the world economy, and thus, the importance of international trade relative to domestic activities. Measures of trade openness in practice include either import or export values, or both as shares of GDP.

Trade protectionism: Restrictions of trade meant to protect domestic producers from competition originating from imported goods. Protectionist measures may include tariffs on imports, restrictive quotas, subsidies and tax cuts. See also “Trade liberalization”.

Trade reforms: Change in laws and practices that govern a country’s international trade. Generally speaking, trade reforms can include both measures directed towards liberalization and protectionism.

U

Upstream activities: Initial stages of the production process which include searching for, collecting, gathering and extracting raw materials. In the case of the fisheries sector in the Gambia, for example, upstream activities involve the fishing of the fish. See also “Downstream activities.”
V

**Vocational training:** Education and training aimed at providing workers with specific professional skills to perform successfully in a given occupation. Examples of professions requiring vocational training include: IT specialist, electrician, or cook.

W

**Women’s empowerment:** The process of enabling women to participate fully in the economic, social and political life and to ensure that they can exercise their right to make independent choices, to have access to opportunities and resources and to have control over their own lives, both within and outside the domestic sphere. See also “Women’s economic empowerment”.

**Women’s economic empowerment:** Women’s ability to enjoy full economic rights and independence. This includes access to employment; appropriate working conditions; equal pay for equal work; access to training, information and technology; access to markets; control over economic resources; and the ability to influence economic decision-making, including the formulation of financial, monetary, commercial and other economic policies. See also “Women’s empowerment”. 
REFERENCES


ENDNOTES


2. Same as above.


4. See for instance Darity (1995), in Module 3 of this teaching material, who built a model of gender segregation in a low-income country and examined how gender segregation can negatively affect the productive capacity of the economy.


6. Informal jobs are those where the employment status of the person employed is not, in law or in practice, subject to national labour legislation, income taxation, social protection or entitlement to employment benefits (e.g. advance notice of dismissal, severance pay, paid annual or sick leave, etc.).

7. Horizontal segregation refers to a situation in which the workers of a specific industry or sector are mostly made up of one particular gender. For example, construction in many countries is a male occupation whereas childcare is almost exclusively a female occupation.

8. Vertical segregation refers to hierarchies between individual occupations. It means that opportunities for career progression within a company or sector for a particular gender are restricted. In the literature, vertical gender segregation is also referred to as the "glass ceiling effect", which indicates the existence of visible and/or invisible barriers that prevent women’s ascent to higher-level positions.

9. The ILO definition of "contributing family workers" includes those workers who hold a self-employment job in a market-oriented establishment managed by a related person living in the same household who cannot be considered as a co-worker. This is because their degree of commitment to the operation of the establishment, in terms of working time or other factors to be determined by national circumstances, is not at a level comparable to that of the head of the establishment. See http://laborstla.ilo.org/app18/data/icsheer.html.

10. The ILO definition of "vulnerable employment" includes both contributing family workers and own-account workers. We prefer to focus on contributing family workers only. The category of own-account workers is rather heterogeneous and some of the jobs included in it do not carry a high economic risk. Across the world, more men than women on average are own-account workers and more women than men are contributing family workers.

11. OECD defines informal cross-border trade as “trade in legitimately produced goods and services, which escapes the regulatory framework set by the government, as such avoiding certain tax and regulatory burdens” (OECD, 2009:9). For more details, see Glossary.

12. Unfortunately, many datasets and policies dealing with these issues continue to treat households as if they were homogeneous units made up of people with the same preferences and the same decision-making power. Treating households as single homogenous units is not only based on the assumptions of homogeneity of preferences and decisions but it avoids modelling heterogeneity within the household. Although most of the household data have disaggregated information, little research has been able to cope with difficulties arising when treating households as heterogeneous entities, such as simultaneity and time schedule of decisions. Such heterogeneity is not an easy issue to deal with and research is ongoing to find proper ways of addressing it. Nevertheless, information on allocation of resources within the household is still scattered and limited to small ad hoc surveys. More systematic documentation of this kind would significantly improve the ability of policymakers to design policies that take these dynamics into account. For further discussion, see IFPRI (2003), and, for more recent evidence, see e.g. UNDESA (2010) Chapter B, Part B.

13. For more information on the gender dimension of taxes, see Barnett and Grown (2004) and Huber (2005).

14. However, if purchases from lower income groups are concentrated on goods with a lower tax rate, the higher tax incidence is not necessarily observed.

15. Casual workers are individuals who are called in to work only as and when they are needed. Their activity is therefore dependent on the level of their employers' workload and on its fluctuations. Women more than men tend to be recruited as casual workers.

16. Aggregate indices of gender equality include: the Gender-Related Development Index (GDI) and the Gender Empowerment Measure (GEM) produced yearly by the United Nations Development Programme (UNDP) in the Human Development Report, the Gender Gap Index (GGI) introduced by the World Economic Forum (WEF) in 2006, and the Social Institutions and Gender Index (SIGI) launched in 2009 by the Organisation for Economic Co-operation and Development (OECD).

17. Despite being a useful measure, the GPI is scarcely used in the literature and we will therefore not concentrate on it in this teaching material.

18. Rearranging terms, the relative gap can also be calculated as 1–GPI. Therefore, the closer the relative gap is to 0, the greater the parity between the sexes.
The unemployment rate measures the number of unemployed persons in the labour force who are officially looking for jobs as a percentage of the labour force.

ISCO-88 is the International Standard Classification of Occupations approved and adopted by the ILO Governing Body in 1988. It is gradually being replaced by its more updated version, the ISCO-08.

The best is probably to use both exports and imports. Yan-nikaya (2002) notes that both are important for economic performance. Standard international trade theory suggests that trade leads to a more efficient use of a country’s resources not only through the production of goods that use intensively the country’s abundant factors of production but also through the imports of goods and services that otherwise are too costly to produce within the country. However, a lot depends on whether one is looking at economic performance in terms of cheaper access to goods, in which case imports are important, or in terms of economic development where the evidence is more on the side of exports increasing GDP while there is little evidence about the same with respect to imports.

For an explanation of the concept of comparative advantage see Box 9 in Module 2.

For an example, see UNCTAD’s database on international trade in goods and services at: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx.

For an example, see the UN classification of products grouped by technology-intensiveness at: http://unstats.un.org/unsd/tradekb/Attachment64.aspx.

Note in this respect that about half of the ACP countries have an LDC status. These countries already enjoyed duty-free and quota-free access to the EU for all their exports, with the exception of arms. There may however be further market access gains, even for LDCs, in terms of less stringent rules of origin for some products. Much depends on the pattern of trade specialization of the country concerned. See for example South Centre (2012), Naumann (2010), and UNCTAD (2011) for a review of trade facilitation provisions in selected EPAs.

For a comprehensive list and definition of trade terms, see Deardorff (2006).

The analysis draws extensively on UNCTAD (2013).

Kwanza is Angola's currency.

The term “Dutch Disease” refers to the large inflow of foreign currency due to the discovery of new natural resources or a boom in resource prices that leads to a real appreciation of the country’s national currency, which in turn adversely affects the competitiveness of other export-oriented sectors, in particular manufacturing, and hampers the country’s efforts to develop and diversify domestic production.

The Cotonou Agreement, signed between the EU and the ACP countries in 2000, is a broad trade and development treaty whose declared aim is to help reduce poverty, and contribute to sustainable development and an integration of ACP countries into the world economy.

The Paris Declaration on Aid Effectiveness, endorsed in 2005 by more than 100 signatories – developed and developing country governments, multilateral donor agencies, regional development banks and international agencies – adopted five central principles aimed at improving the effectiveness of aid. These principles include ownership, alignment, harmonization, managing for results, and mutual accountability. More information is available at: http://www.oecd.org/dac/effectiveness/parisdeclarationandacraagendaforaction.htm

Defined as female employment over total employment.

Standard (orthodox) economics and heterodox economics are broadly two schools of economic thought that differ in their assumptions, methods and topics. Standard economics refers to neoclassical economic theory taught in most universities, which builds on the main assumptions of a utility maximizing individual with rational preferences and full information about the market. Heterodox economics is an umbrella term that is used to loosely describe non-neoclassical approaches to the field, such as Keynesian, Marxist, feminist and institutionalist schools that are generally critical of the standard approach and based on different theoretical foundations. They do not generally ascribe to the idea of perfect markets and disavow methodological individualism. These are only rough definitions however and the interested reader is advised to refer to other sources (e.g. Dequech, 2007; Lawson, 2013).

A full account of the main critiques to the HOSS model in general is beyond the scope of this module. Here we focus only on aspects that are particularly relevant to its application to a gender perspective.

See Shaikh (2007) and van Staveren et al. (2007) for a more in-depth overview of competitive advantage.

These include Hong Kong (China), Taiwan Province of China, Singapore and the Republic of Korea.

For twenty years (1974–1994), the MFA ruled most trade in textiles and clothing on the basis of quotas negotiated bilaterally between developed and developing countries. The MFA represented a major departure from the basic General Agreement on Tariffs and Trade (GATT) rules and particularly the principle of non-discrimination. On 1 Janu-
For a discussion on the measurement of the gender wage gap, refer to Box 5 in Module 1.

This would be the "unexplained residual" in the decomposition of the raw gender wage gap (see Box 5 in Module 1).

A good account of the Heckscher-Ohlin theory of trade as well as the debate on trade and wage inequality can be found in the UNCTAD Virtual Institute Teaching Material on Trade and Poverty (2010), specifically in Sections 1.2.3 and 2.2.3.

Tiano (1994), Barrientos et al. (2004) and McMichael (2012) also discuss the decline in the female share of employment in Mexico, and Fleck (2001) refers to the increasing employment of older married women in maquiladoras in Mexico over time.

More recent wage data are not yet available.

Note that the reverse but equivalent results hold for the foreign country.

According to WTO rules, a country can raise its applied tariff rates up to the level of its bound tariff rates without infringing its WTO obligations.

For example, a country like Rwanda is not allowed to levy duties on imports originating from other members of the East African Community (EAC), and applies the EAC common external tariff on imports from outside EAC.

For developing countries, 10 per cent of the value of total agricultural production (for non-product specific support) and 10 per cent of the total value of production of the agricultural product in question (for product-specific support).

If they are not directly involved in export production, women often increase the amount of time they contribute to their husbands’ commercial crops, leading to higher female unpaid work burdens. In spite of their significant contribution in this regard, women often have no control over the income generated from their work, as studies on NTAEs in India, Kenya, Senegal and Guatemala show (Singh, 2002, for the Indian Punjab; Dolan, 2001, for Kenya; Maertens and Swinnen, 2009, for Senegal; Katz, 1995, for Guatemala).

It is important to note though that once enterprise characteristics such as size, formality and capital investment are controlled for, the gender productivity differential between male- and female-owned enterprises disappears (Kabeer, 2012).

According to the World Bank, "Trade taxes include import duties, export duties, profits of export or import monopolies, exchange profits, and exchange taxes." See http://data.worldbank.org/indicator/GC.TAX.INTT.RV.ZS.

The authors explain their choice of capturing infrastructure by the percentage of the population with access to improved sanitation facilities and telephone lines per 100 people in the following way: Improved sanitation is expected to have a positive effect on the gap between female and male employment through, for example, improved overall health outcomes and reduced time spent by women as care-givers. The effect of telephone lines on relative access to employment is indirect and this variable serves as a proxy for other direct measures of time-saving infrastructure improvements for which data are sparser.

See Module 2 for an explanation of the concept of competitive advantage.

See Module 1 for an explanation and definition.


We use the category “flexible” labour in the sense that Standing (1989) does. Flexible labour implies short-term contractual, temporary, casual and/or informal labour, generally with no benefits as opposed to permanent and formal labour.

Economies of scale refer to the decrease in costs per unit of output that a firm experiences because its fixed costs can be spread over more units of output.

Imports of raw commodities would not have the same technological spillover effects.

However, not everyone agrees with this view and the debate on the link between trade liberalization and economic growth is still open. See Winters et al. (2004) for a survey of the literature on this topic.


Group of countries that underwent rapid industrial growth between the 1970s and 1980s, such as the Republic of Korea, Singapore, Hong Kong (China) and Taiwan Province of China.

See [http://www.capturingthegains.org/about/index.htm](http://www.capturingthegains.org/about/index.htm) for an overview of the research programme on economic and social upgrading in GVCs.

However, consumers’ awareness does not always translate into better working conditions for vulnerable workers. See for example Basu’s (1998) paper on child labour.

This section draws on Berik (2000).

Note that men’s share of own-account work is higher than women’s, but more women than men work as unpaid family labour, which increases the women’s share of vulnerable employment globally (ILO, 2012).

Refer to Section 3.1 in Module 1. For a full report on the underlying causes of gender inequality by region see OECD (2012).

We also need to keep in mind that in general, girls have a higher school dropout rate than boys and that the education they receive is often of lower quality and lacking in adequate learning resources, infrastructure and facilities (UNESCO, 2012; UNICEF, 2000). Overall, the lack of adequate education and schooling may diminish opportunities for women.

The issue of women’s time poverty was discussed in Module 1.

In this case, the bias against women is indirect. Extension services typically target export-oriented cash crops that tend to be male-dominated. Furthermore, in their design and implementation, extension services often do not acknowledge the gender-specific obstacles that women may face (such as limited access to radios and mobile phones, time constraints, mobility constraints, etc.).

The following section draws on UNCTAD-EIF (2014).

Poverty rate refers here to the national poverty line of 64,000 Rwandan francs per adult equivalent per year, in January 2001 prices (National Institute of Statistics of Rwanda, 2012).


Foreign income is a trade-weighted average of inflation-adjusted gross national product (GNP) data for the United States, the United Kingdom, Japan and Germany.

Introduced by Robert Solow in 1957, growth accounting measures the contribution of each economic factor to economic growth and defines the “residual” as the productivity differences achieved due to technological progress. After the pioneering work of Solow, many economists have worked on enhancing Solow’s model with further economic variables that can explain economic growth, such as human capital (education), government expenditure, etc.

The SIEO index was calculated as the sum of the share of exports in GDP, the ratio of machinery and transport goods to non-oil primary commodities in exports, and the share of manufacturing in GDP. The first term is an indicator of export orientation while the second and third terms indicate the status of a country as a semi-industrialized one. Countries with SIEO values above 1 are classified as semi-industrialized. For example, according to Seguino’s calculations, between 1980 and 1993, Paraguay had a SIEO index of just below 2, while Taiwan Province of China and Singapore had a SIEO index of around 10.

One measure is a basic wage gap variable, namely the difference of the logarithm of male and female wages. A second measure refines the basic wage gap index and is calculated as the difference between the logarithm of the ratio of wages to years of secondary education for males and females of 15 years of age and above. The third measure is the interaction of the refined wage gap measure with average educational attainment in the economy. In this case, the wage gap should also capture the effect of skills required to adopt new technologies.

These include the percentage of females and males of 15 years of age and above who have completed secondary education and the growth rate of secondary school attainment by sex.

Revealed comparative advantage is an index that calculates the relative advantage or disadvantage a country has in a particular category of goods and/or services by comparing it with world exports or imports of the same category. Busse and Spielmann (2006) calculate it as the ratio of exports of labour-intensive products to imports of labour-intensive products over the ratio of total exports to total imports.

See Module 1 for a definition of SAPs.

Although export prices decrease and the country becomes more competitive in foreign markets, a currency devaluation can increase domestic prices by increasing the price of imports and aggregate demand for the domestic good.
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LIST OF ABBREVIATIONS

AIDS  ACQUIRED IMMUNODEFICIENCY SYNDROME
BEC  BROAD ECONOMIC CATEGORIES
BREAD  BUREAU FOR RESEARCH AND ECONOMIC ANALYSIS OF DEVELOPMENT
CIRI  CINGRANELLI-RICHARDS
CLAD  CENSORED LEAST ABSOLUTE DEVIATIONS
DHS  DEMOGRAPHIC AND HEALTH SURVEY
DOTS  DIRECTION OF TRADE STATISTICS
FAO  FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
FDI  FOREIGN DIRECT INVESTMENT
GDI  GENDER DEVELOPMENT INDEX
GDP  GROSS DOMESTIC PRODUCT
GEE  GENERALIZED ESTIMATION EQUATION
GEM  GENDER EQUALITY MEASURE
GMM  GENERALIZED METHOD OF MOMENTS
GTAP  GLOBAL TRADE ANALYSIS PROJECT
HIV  HUMAN IMMUNODEFICIENCY VIRUS
HS  HARMONIZED COMMODITY DESCRIPTION AND CODING SYSTEM
IHSN  INTERNATIONAL HOUSEHOLD SURVEY NETWORK
IDRF  HOUSEHOLD EXPENDITURE AND INCOME SURVEY (CAPE VERDE)
ILO  INTERNATIONAL LABOUR ORGANIZATION
IMF  INTERNATIONAL MONETARY FUND
ISIC  INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION
ITC  INTERNATIONAL TRADE CENTRE
I-TIP  INTEGRATED TRADE INTELLIGENCE PORTAL
ITS  INTERNATIONAL TRADE STATISTICS
IV  INSTRUMENTAL VARIABLE
KILM  KEY INDICATORS OF THE LABOUR MARKET
LSMS  LIVING STANDARDS MEASUREMENT SURVEY
MDG  MILLENNIUM DEVELOPMENT GOAL
MERCOSUR  SOUTHERN CONE COMMON MARKET
MICS  MULTIPLE INDICATOR CLUSTER SURVEY
OECD  ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
PISA  PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT
PWI  PENN WORLD TABLES
RTA  REGIONAL TRADE AGREEMENT
SAP  STRUCTURAL ADJUSTMENT PROGRAMME
SITC  STANDARD INTERNATIONAL TRADE CLASSIFICATION
SMART  SYSTEM OF MARKET ANALYSIS AND RESTRICTIONS ON TRADE
UN  UNITED NATIONS
UNCOMTRADE  UNITED NATIONS COMMODITY TRADE STATISTICS DATABASE
UNCTAD  UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
UNDP  UNITED NATIONS DEVELOPMENT PROGRAMME
UNICEF  UNITED NATIONS CHILDREN’S FUND
USAID  UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
WCO  WORLD CUSTOMS ORGANIZATION
WDI  WORLD DEVELOPMENT INDICATORS
WEF  WORLD ECONOMIC FORUM
WITS  WORLD INTEGRATED TRADE SOLUTION
WTO  WORLD TRADE ORGANIZATION
Module 1

Introduction to empirical analysis
1 Introduction

The objective of this volume is to explain to readers how to carry out empirical analysis of the impact of trade on gender inequality. Module 1 introduces three elements that are necessary for such analysis: (a) empirical methodology; (b) data sources; and (c) statistical software to analyse the data. Modules 2–4 discuss in detail specific methodological approaches (microeconomic, macroeconomic, and sectoral) and include hands-on applications that enable readers to replicate analysis from published research papers.

Section 2 of this module introduces the methodologies and, in particular, discusses how to examine the link between trade and gender inequality. Section 3 lists the different data sources that can be used for trade, gender, and welfare analysis. It also provides a brief description of trade policy simulation models, such as the Global Trade Analysis Project (GTAP) and the World Integrated Trade Solution (WITS) simulation tools, and discusses how to use them. Section 4 contains a short description of Stata, one of the statistical software packages that can be used for data management and statistical analysis. The section describes the basic commands that serve to enter, explore, modify, manage, and analyse data, as well as the advanced commands that will be used in different estimation methods in Modules 2–4. It also provides references to open-source material that may help the reader learn Basic Stata, Advanced Stata, and Stata for Poverty Analysis. Section 5 puts forth a number of conclusions.

At the end of this module, students should be able to:

- Describe the three methodological approaches currently used in the literature to empirically assess the relationship between trade and gender, and compare the strengths and weaknesses of each of them;
- Identify which of the three methodological approaches best fits their particular research question;
- Understand the difference between ex-ante and ex-post studies;
- List relevant sources of trade data, household-level data, and macro-level data, as well as open-source trade models;
- Use the Stata statistical package and its basic commands for the manipulation and analysis of data.

2 Overview of empirical methodologies

The modules that follow discuss different quantitative methodologies that are useful to understand the relationship between international trade and gender outcomes—that is, the implications of trade for women’s economic and/or social status. However, it is important to note that in some cases qualitative methods of collecting observational data, such as focus groups, semi-structured interviews, and ethnographic studies, are equally or even more useful in capturing and understanding this relationship. The way trade affects gender outcomes often depends on the social dynamics in households, communities, and institutions where social norms, values, beliefs, personal experiences, and interests all play an important role. Uncovering and understanding this complex dynamic is not an easy task. Quantitative methods may be useful in this regard, but qualitative research methods can provide a very valuable and sometimes indispensable complement to the analysis. Qualitative methods can help shed light on the processes at work rather than just the “effects”, identify issues and questions for surveys, confirm the validity of proxy variables, establish the hypotheses that will be tested, and explain and interpret survey findings. The interested reader can find more about the use of qualitative methods in gender studies in Jarvilauma et al. (2003), Metso and Le Feuvre (2006), and Warren (1998).

Box 1

Definitions of trade in Volume 2

As extensively explained in Volume 1 of this teaching material, we need to be specific about which aspect of “trade” we are referring to when we analyse the relationship between gender and trade. The aim here is to highlight the relevant definitions of trade that are used in Volume 2, referring the interested reader back to Module 1 of Volume 1 for a more detailed discussion.

In Module 2 of this volume, where we focus on the microeconomic approach, we use the concepts of trade policy and trade reform interchangeably. These terms make up a set of policy measures affecting international trade, including changes in tariff schedules, quotas, certifications, standards, and even subsidies (especially in agriculture). These changes can occur in the country’s own policies or the policies of its trading partners.
2.1 Microeconomic approach

The microeconomic approach uses micro survey data to assess the distributional effects of trade policy in terms of gender by looking at the impact of those effects on individual agents such as consumers and producers. We will cover the details in Module 2.

This approach is useful for understanding the channels through which trade policy can affect the welfare of households or individuals. The methodology empirically explores two links: one that connects trade policies to prices of goods and factors of production, and a second that relates prices to household welfare. Results then can be aggregated by the relevant dimension – region, gender, income, etc. – so as to identify any subgroup that would gain or lose from trade policy measures or trade shocks. In this module, we focus on the gender dimension.

The elimination of tariffs on a certain good as a result of trade liberalization, for instance, may lead to a reduction of domestic prices of this good. The same trade policy measure may increase competition on the domestic market and thus pull down the wages (labour factor remuneration) in the production of this particular good. With respect to the link between prices and household welfare, changes in the price of the good will affect households as consumers via reduced or increased expenditure, while changes in wages will affect them as labour suppliers (workers) through reduced or increased income. As a consequence, households will adapt to new prices and wages through consumption and production decisions, affecting even the allocation of tasks within the household.

Moreover, in many countries, a large proportion of the poor do not necessarily work for wages – instead, they are self-employed or contributing family workers in household enterprises or farms. This is particularly true for women, who are often engaged in household production or informal activities. Therefore, price changes may also affect the income of households through reduced or increased sales of their products.

How does trade liberalization affect these different components of household income? And how does trade liberalization affect consumption? Do these effects differ depending on the gender of the household head? When attempting to answer these questions, consider that changes due to liberalization may affect different members of the household differently. Suppose for instance that trade liberalization has a negative impact on household income in total. This could mean that in addition to the responsibility for childcare, women would have to start to work outside the household. Trade liberalization may even affect crucial household investment decisions, such as whether or not to send children to school or to work. Further questions could be asked. Does trade liberalization reduce women’s welfare in the presence of imperfect labour markets? How can labour market reforms, education and training (skill development) policies, and trade reforms/policies contribute to reducing the gender-specific harmful effects of trade liberalization?
trade liberalization? We could look at the impact on female labour market participation by sector and see whether new trade opportunities in the expanding export sectors employ women and whether this would have any consequences for family planning.

There are several ways in which trade liberalization can affect households. First, prices are one channel through which trade liberalization may affect household members. Both the price of consumption goods and the remuneration of factors (e.g. wages) may be affected by trade reforms. These effects may have a gender bias. Therefore, we need to ask to what extent these price changes are transmitted to and within households and whether there are barriers to price transmission. Second, competition and price changes induced by trade liberalization may sometimes be so intense that certain markets upon which the poor rely for income or consumption disappear. On the other hand, trade liberalization may create opportunities for new markets to emerge (for goods not traded before, or for new consumer goods), which in turn may benefit poor households and women. Third, trade policy and trade shocks often also have an impact on government revenues, affecting transfers and social programmes that may target more vulnerable groups, including women. Finally, trade liberalization may affect vulnerability and food security. Trade directly and indirectly affects the four components of food security as defined by the Food and Agriculture Organization of the United Nations (FAO): physical availability of food and food production, economic access to food (through the income effects of trade), stability of access to food (through control of the volatility of world food prices), and access to healthy and safe food (Diaz-Bonilla and Ron, 2010).

In this framework, the questions to answer are the following: How do households respond to price changes induced by trade shocks and can they adjust to these changes? How well can households protect themselves against the adverse effects induced by changes in markets and prices?

There are two types of microeconomic studies:

• **Ex-ante studies.** These studies analyse the welfare effects of trade reforms *ex ante*, i.e. before the reform takes place. They use simulation methodologies, such as partial equilibrium models or general equilibrium models, which can be combined with microsimulation models to conduct the analysis using household survey data. The GTAP and WITS models discussed later in this module are good examples of models employed in this type of analysis.

• **Ex-post studies.** These studies analyse the situation before and after a trade policy reform, and try to identify the reform’s effects on key outcome variables such as poverty and welfare. To carry out such an analysis, it is critical to have data about the situation before and after the trade reform episode and also to be able to unequivocally link the change in the outcomes of interest with the reform.

Despite its popularity, the microeconomic approach presented in the next module is far from perfect. As discussed in Section 3.3 below, the main problem is the dearth of reliable micro-level data, as well as a number of related issues that are highlighted in the rest of this section.

First, the microeconomic approach is limited by the fact that it is difficult to find data on capital investment and government transfers, especially for developing countries. Consequently, studies adopting the microeconomic approach often assume that the only sources of income for households are the wages of each of their members and/or the income from selling the household’s agricultural production. However, additional sources of income may derive from capital investment and government transfers. While we can assume that the amount of capital investment is negligible for households living in developing countries, government transfers also represent an indirect channel of influence of trade on household welfare. This implies that studies based on the microeconomic approach might be excluding an important and interesting piece of information from the analysis.

Second, studies using the microeconomic approach are often unable to capture substitution effects. According to Friedman et al. (2002), households may substitute goods that become more expensive with goods that are cheaper after trade liberalization. To capture this effect, a model should include cross-price elasticities, especially for goods that may substitute one another (e.g. wheat and rice), but data are not always available for their exact calculation.

It is also worth noting that the first applications of the microeconomic approach (see e.g. Porto, 2006) assume that changes in domestic prices of imported goods perfectly reflect changes in import tariff rates; in other words, the elasticity of the prices of imported goods with respect to import tariff rates is assumed to equal one. This,
However, is not always the case and a few authors have tried to address this problem. For instance, Nicita (2009) and Borraz et al. (2012) find that trade costs (proxied by distance from the border), domestic production prices, and exchange rates significantly affect domestic prices of imported goods. Trade costs are particularly relevant because the extent to which tariffs influence the prices of imported goods may depend on the region where the household is located. For example, Nicita (2009) finds that Mexican households living next to the border are more affected by changes in import tariff rates than households living in remote areas of the country. In this sense, import tariffs imperfectly pass through on prices; assuming a one-to-one relationship between tariffs and prices without appropriate controls (if the data are available) may yield misleading results about the effects of international trade on household welfare.

2.2 Macroeconomic approach

The macroeconomic approach focuses on the interconnections between trade policy and its outcomes at the economy-wide or macroeconomic level using aggregate data. Trade policy may trigger structural transformations in the economy as well as shifts in the level and growth of employment and income, which are the subjects analysed by macroeconomic studies of gender and trade. This approach is covered in detail in Module 3.

In macroeconomic studies, the basic empirical specification used by authors to estimate the relationship between trade and gender is:

\[ y_{ct} = \alpha + \alpha_{c} \text{Tradect}_{ct} + \alpha_{t} \text{Xct}_{t} + \eta_{t} + \gamma_{c} + \nu_{ct} \]  

where \( y_{ct} \) stands for the gender outcome variable of interest (for instance, the gender wage gap or women’s empowerment) in period \( t \) of country \( c \), \( \text{Tradect}_{ct} \) stands for a measure of openness (e.g. trade share), \( \text{Xct}_{t} \) is a vector of other control variables (e.g. gross domestic product – GDP – per capita), and \( \eta_{t} + \gamma_{c} \) are country- and time-fixed effects. Alternatively, the estimation can be done in two stages. First, we can assess the relationship between trade and the aggregate macro variables of interest (e.g. growth, employment creation, etc.) and then use a similar equation to study how those changes in the aggregate variables are transmitted to or distributed among the population, with a particular emphasis on gender outcomes. As far as growth is concerned, the literature on the existence of pro-growth effects of trade is inconclusive (Rodriguez and Rodrik, 2001). Also, the evidence that the poor, particularly women, benefit from growth is rather scant. Regarding employment creation, greater openness to trade may cause significant shifts in the demand for low- and high-skilled labour and may have different effects on different groups. According to standard economic theory, for example, developing countries experience an increase in the demand for low-skilled labour as a result of trade liberalization, which theoretically should benefit women given their overrepresentation among low-skilled workers (Wood, 1995). Despite the advantages of the macroeconomic approach compared to the microeconomic approach – most notably the higher reliability of macro-level data as well as its more frequent collection – there may also be some issues with regard to the macroeconomic analysis.

Several authors have pointed out the many difficulties of using cross-section and panel data approaches involving countries that are very different in several dimensions and over long periods of time. Critics have focused on the controversial “empirical growth literature” for its lack of robustness (Florax et al., 2002). However, most of the problems in this strand of research are also relevant for other studies using panel data with data at a very aggregate level. Levine and Renelt (1992) examine growth regressions and find that the conclusions from existing studies are not robust to small changes in the set of explanatory variables; in other words, the results are sensitive to any change in the number and type of explanatory variables included in the original model. Mankiw et al. (1995) emphasize three problems with macroeconomic regression analysis: the simultaneity problem (entangled cause and effect), the multicollinearity problem (most of the potential determinants of growth are correlated with each other and are imperfectly measured, making it hard to figure out which is the true determinant), and the degrees-of-freedom problem (there are more plausible hypotheses than data points). Additionally, Harrison and Hanson (1999) point out that studies linking trade reform and growth are fragile because of problems associated with identifying the links between policies and economic performance, namely (a) endogeneity problems associated with the relation between trade policies and growth, and (b) problems with correctly interpreting the proxies for trade orientation, and difficulties with measuring trade openness. Winters et al. (2004) list the following problems with empirical macro-level research on openness and growth: (a) difficulties in measuring trade openness accurately, (b) the problem of causality (trade may stimulate growth, but countries may also only open up to trade, or may trade more, once
their growth rates are higher); (c) general problems with cross-country regressions (trade is assumed to affect growth similarly in poor and rich countries); and (d) the need for supportive policies and institutions that are required for trade to have long-term, permanent effects on growth.

It is not easy to empirically disentangle the role of trade volumes and supporting economic policies from other in cross-country analyses of economic growth. The same caveats of the trade and growth literature also apply to cross-country regressions attempting to link trade and growth to gender outcomes. In particular, as shown in Volume 1 of this teaching material, the relationship between trade and gender outcomes involves direct and indirect transmission mechanisms going both ways – i.e. trade affects gender but at the same time gender bias affects trade – that may be captured by employing sophisticated econometric techniques.13

2.3 Sectoral approach

This last methodology assesses the relationship between trade and gender by analysing changes within specific sectors or industries of the economy. The value chain analysis examines the entire process chain of procuring raw material, production, and distribution of goods within a particular sector or industry (see Module 4). Sectoral studies may either use macroeconomic or microeconomic data. Furthermore, while the empirical strategies in the previous two approaches were more or less defined, sectoral studies often do not share a common strategy. For instance, Nicita and Razzaz (2003) study the effect of a boom in the textile sector on wage differentials in Madagascar first using a propensity score model to identify the individuals who would likely switch to the textile industry, and then estimating the wage premium this industry commands. When addressing the gender impact of agricultural exports in Ecuador, Newman (2002) uses a different approach, namely quasi-experimental data where the “treatment” group is in a geographical area where the cut flower industry, which has a high demand for female labour, is located. The “control” group is in a culturally similar but economically more traditional valley that does not produce flowers for the export market. This approach addresses the problem of endogeneity that arises when measuring the effects of contemporaneous household labour supply decisions. Furthermore, Depetris et al. (2011) look at the cash crop sector in Africa using a methodology similar to the microeconomic approach, but instead of analysing the effects of trade policy on prices, they examine the internal marketing arrangements and assess how changes in the level of competition in one of the layers of the value chain affect farmers, with a particular emphasis on female-headed and poor households.

Although the sectoral approach allows us to focus on the extent to which trade-related changes in the structural composition of an economy translate into more economic opportunities for women, it has some shortcomings that are worth discussing here.

The first issue, as is often the case with empirical research on developing countries, concerns the availability of data. Sector-level data are usually derived from the aggregation of lower-level data that are not always available, especially for developing countries. In some cases, we are able to retrieve information on, for example, output, value added, wages, and number of employees available at a very aggregated level (such as the one-digit level of the International Standard Industrial Classification – ISIC) for agriculture, manufacturing, and services. However, gender-disaggregated information is only available for some countries, which makes it difficult to analyse the distribution of employment in terms of gender by sector and to understand the gender repercussions of trade at the sectoral level.

It should be noted that there have been recent improvements in the collection of gender-disaggregated data. However, assuming that this information is available and that we are able to carry out our research on trade and gender using the sectoral approach, there is a second issue that emerges. By looking at only one sector of the economy, this methodology cannot grasp the effects of trade on gender in the economy as a whole. Oversimplifying, assume that, for example, trade results in a shift of a country’s patterns of specialization from relatively higher female-labour-intensive products (e.g. textiles) to relatively higher male-labour-intensive products (e.g. machinery). On the one hand, this would adversely affect women employed in the textile sector who may lose their jobs. On the other hand, it would favour men engaged in the machinery sector who may experience an increase in their wages. If we only looked at the textile sector, our conclusion would be that trade has hurt women workers. But this might not be the end of the story. In the best-case scenario, women in the textile industry have received training, which has contributed to their skill development and their ability to relocate to better-paid positions in other sectors of the economy. The sectoral approach might fail to capture this effect and therefore yield misleading results.
It is important to note that there is no best or worst methodology as such. There is, however, the most or least appropriate approach to employ for the purpose of your particular study. Literature published on the topic in academic journals can be a useful guide in terms of ascertaining the empirical and theoretical approaches that would be appropriate for your study.

3 Data sources

3.1 Trade data

Access to detailed trade data is useful for the type of analysis we will pursue in this teaching material. The main source of information and data on a country’s trade policies, regulations, and flows is the country itself. Most countries have an official statistical agency, although sometimes trade statistics and information about trade policy are recorded by the Ministry of Foreign Affairs or the Ministry of Trade.

Besides the national statistical agency or data collection agency, there are a number of international organizations, research centres, and think tanks that systematically gather trade data and information. These organizations are a good source of data and information for both the quantitative and qualitative analysis, in particular when such analysis involves multiple countries. The main sources of this type of trade data and information are described below.

3.1.1 World Trade Organization

The World Trade Organization (WTO) is an international organization with 160 member countries or economies (as of June 2014) that have signed WTO agreements containing global rules for trade between countries. The following sources of trade data and information can be accessed on the WTO website (http://www.wto.org):  

- **International Trade Statistics** (http://www.wto.org/english/res_e/statis_e/its_e.htm) is an annual publication that analyses trends in trade, including at the product level. In addition, the WTO statistics database (http://stat.wto.org/Home/WSDBHome.aspx) allows for interactive data retrieval of international trade statistics.

- The **Integrated Trade Intelligence Portal (I-TIP)** (http://www.wto.org/english/res_e/statis_e/itip_e.htm) provides a single entry point for information compiled by the WTO on trade policy measures. It covers both tariff and non-tariff measures affecting trade in goods, as well as information on trade in services, regional trade agreements, and the accession commitments of WTO members.

- The **World Trade Report** (http://www.wto.org/english/res_e/reser_e/wtr_e.htm) is an annual publication that aims to enhance understanding about trends in trade, trade policy issues, and the multilateral trading system.

- The **Trade Policy Reviews** (http://www.wto.org/english/res_e/tratop_e/trpr_e.htm) contain, among others, policy statements from governments about changes in their countries’ trade regulations, policies, or practices, as well as reviews written by the WTO Secretariat on specific countries.

- **Regional trade agreements (RTA) and preferential trade agreement (PTA) databases** (http://www.wto.org/english/res_e/tratop_e/region_e/RTA_PTA_e.htm) contain WTO records on notified RTAs and PTAs.

- The **trade monitoring database** (http://tmdb.wto.org) provides detailed information on trade measures implemented by WTO members and observers since October 2008.

3.1.2 United Nations

- The United Nations **Commodity Trade Statistics Database** (http://comtrade.un.org/db) is the most comprehensive trade database available (over 1 billion records), and it is continuously updated. The database has import and export data reported by almost 200 countries since 1962, and standardized by the United Nations. Data can be searched by products, which are classified according to the Harmonized Commodity Description and Coding System (HS) product classification at the 6-digit level.

- The United Nations also publishes the **International Trade Statistics Yearbook** (http://comtrade.un.org/pb/first.aspx), which provides information on the international trade performance of some 180 countries or regions and, in particular, on world trade flows of selected commodities (at the 3-digit level of the Standard International Trade Classification – SITC – revision 3). The publication is composed of two volumes. Volume 1 contains information on: (a) trade flows of individual countries in terms of values and, if available; (b) quantities of the key commodities traded by individual countries (for the latest four
years); (c) the countries’ trade with their main trading partners and regions (for the latest five years); (d) imports by Broad Economic Categories (BEC);\textsuperscript{18} and (e) the percentage share of countries’ trade with each region of the Millennium Development Goals’ (MDG) regional groupings. Volume 2 contains tables showing total trade for selected commodities (at the 3-digit level of the SITC, revision 3) for each MDG regional grouping and main trading countries. It also provides analytical data on total trade, exchange rate conversion factors, trade indices, and import and export flows.

- The International Trade Centre’s (ITC)\textsuperscript{19} Trade Map (http://www.trademap.org) is a good source for indicators on export performance, foreign demand, and alternative and competitive markets. All the information is organized in tables, graphs, and maps covering 220 countries and territories and 5,300 products of the HS product classification. The data about monthly, quarterly, and yearly import and export flows are available from the most aggregated level to the tariff line level.

- The ITC’s Market Access Map (http://www.macmap.org) is a market analysis tool that provides information on market entry requirements of a particular country. It contains data on tariffs, non-tariff measures, and trade flows, as well as information on trade agreements and rules of origin by country of interest.

### 3.1.3 International Monetary Fund

- The International Monetary Fund’s (IMF) Direction of Trade Statistics (DOTS) (http://elibrary-data.imf.org/FindDataReports.aspx?d=33061&ie=179921) records countries’ exports and imports and their area of distribution by trading partner. The DOTS yearbook covers seven years of data for about 187 countries. The DOTS quarterly issue provides data for the most recent six quarters and the latest year for about 156 countries, as well as data for the most recent 10 quarters and the latest five years for the world and selected regions of the world.

### 3.1.4 Other sources

- The Global Trade Alert (http://www.globaltradealert.org) provides real-time information on government measures that are likely to affect foreign trade. It goes beyond other monitoring initiatives by identifying the trading partners that are likely to be harmed by these measures.

- The standard GTAP model (https://www.gtап.agecon.purdue.edu/models/current.asp) is a computable general equilibrium (CGE) model covering different regions and sectors. The model is based on perfect competition with constant returns to scale. The GTAP model enables users to choose between different closure options, including unemployment, tax revenue replacement, and fixed trade balance closures, as well as a selection of partial equilibrium closures (which facilitate comparison with results obtained using partial equilibrium assumptions). The website also contains a list of books explaining the basic functioning of the model. The model’s code is downloadable.

- WITS (http://wits.worldbank.org/wits) is a software developed by the World Bank, in close collaboration and consultation with various international organizations, including UNCTAD, the ITC, the United Nations Statistical Division, and the WTO.\textsuperscript{21} The WITS Global Tariff Cuts and Trade Simulator enables you to:
  
  - Simulate tariff cuts by cutting the applied tariff rates according to already available formulas. In particular, users can implement a new or new maximum tariff rate, apply a linear percentage cut, or apply the Swiss formula.\textsuperscript{22} Tariff cuts can also be simulated with different formulas (or the same formula with different parameters) applied to different products and countries; in this case, both pre- and post-tariff cut rates are shown for each HS 6-digit-level product and each combination of importer-exporter.

- Carry out a global simulation using the Global Simulation Model (GSIM), a partial equilibrium model developed by Francois and Hall
By employing national product differentiation, the model aims to analyse global trade policy changes at the industry (product) level on a global, regional, and national scale. Results from the global simulation reveal the distributional effects of tariff revenues, exporter (producer) surplus, and importer (consumer) surplus. More information on the GSIM methodology is available at: http://wits.worldbank.org/data/public/GSIMMethodology.pdf.

• Use the System of Market Analysis and Restrictions on Trade (SMART) with the users’ own data. This module enables users to export the available template and run a simulation with their own data. The package allows you to download the missing data from WITS. More information on the SMART simulation methodology is available at: http://wits.worldbank.org/data/public/SMARTMethodology.pdf.

• The ITC’s Market Access Map (see above) also provides a tool for simulating tariff reductions. This can be used to prepare for trade negotiations and study the welfare effects of trade policy changes.

• Simple Excel models (https://sites.google.com/site/jgilberteconomics/Home/excel) bring together a number of general and partial equilibrium numerical simulation models on various aspects of international trade theory and policy, all built in Excel and using both tabular and graphical presentations.

3.3 Micro-level data

Some of the best microeconomic data for analysis of the effects of trade on gender outcomes are those coming from household surveys and labour force surveys. Module 2 discusses how to use microeconomic data to analyse the effects of trade policy and other shocks on gender outcomes (the microeconomic approach). There are nearly 2,500 types of household survey questionnaires in the world. They vary in design and selection of variables, and therefore some familiarization with their structure is required prior to potential use. The International Household Survey Network (IHSN) houses a catalogue of more than 4,000 household surveys that include economic and social variables from most countries in the world. A subset of 266 of these surveys provides data on income and expenditure. The IHSN does not have ownership rights to the data and is not mandated to disseminate country microdata. However, the network maintains a central survey catalogue and provides links to national or international databases from which the survey data can often be retrieved.

The main advantage of household survey data is that they allow the researcher to examine the effects of policies at the household level, while controlling for various household characteristics. For instance, we can assess if a policy measure has a gender bias, if it is pro-poor, or if it benefits urban more than rural areas. The level of detail in household data can help policymakers devise better ways to implement policies. However, the analysis of trade policies using household surveys is complicated for several reasons:

• Household surveys can be costly, and countries may reduce survey frequency, sample size and content in order to cut costs. The quality and frequency of household surveys vary significantly between and within countries. A country may change the thematic emphasis from one survey to another, depending on its policy design needs. Analysts often have to adjust their estimation methods, depending on questionnaire and sample variability between different waves of surveys.

• Another issue with household surveys is the reliability of data. For instance, individuals may not declare their true level of income or if they are involved in informal work.

• Household survey methods have evolved over the years, and redundant questions are often included in surveys in an effort to improve cross-checking and accuracy.

• Despite the decreasing costs of computing, data management and processing have tended to grow more complex.

• There is wide variation in the definition of key variables.

Notwithstanding these difficulties, household surveys are useful for the analysis of the effects of trade policies. The volume and quality of information at the household level tend to be good enough to provide accurate estimations of poverty impact, which may help in developing strategies to reduce poverty in line with the MDGs. Household expenditure, level of education, gender, household location, and other variables can have a significant influence on the effect of a given trade shock.

Three surveys have made particular efforts to address some fundamental issues related to
data collection such as solving methodological and statistical problems, documenting the preparation, implementation, and analysis of surveys, and publicizing and publishing the survey results. These surveys are the World Bank’s Living Standards Measurement Study (LSMS); the United States Agency for International Development’s (USAID) Demographic and Health Survey (DHS), and the United Nations Children’s Fund’s (UNICEF) Multiple Indicator Cluster Survey (MICS). These sponsoring institutions have collaborated with many countries to implement household surveys. Such collaboration has contributed to strengthening national capacity, which was another important goal of the sponsoring institutions.

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<thead>
<tr>
<th>Module Information</th>
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<tbody>
<tr>
<td>Household composition Household roster, demographic data, information on parents of all household members</td>
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<tr>
<td>Food expenditures Food expenditures in the past two weeks and past year; consumption of home production in the past year</td>
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<tr>
<td>Non-food expenditures Non-food expenditures in the past two weeks and past year; remittances to other households in the past week and past year</td>
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<tr>
<td>Housing Type of dwelling, housing and utilities expenditures over the week and year of the interview</td>
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<tr>
<td>Durable goods Inventory of durable goods and their characteristics</td>
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<tr>
<td>Economic and production activities and assets Non-farm employment, agro-pastoral production, land, livestock, and equipment owned in the past week and past year</td>
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<tr>
<td>Savings Savings and debts</td>
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<tr>
<td>Education Completed schooling and schooling expenditure for all household members; attendance and non-attendance information</td>
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</tr>
<tr>
<td>Health Health expenditure of all household members and use of health services in the past four weeks</td>
<td></td>
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<tr>
<td>Migration Place of birth, length of stay at current residency</td>
<td></td>
</tr>
<tr>
<td>Fertility Subsample with data on birth history, use of maternity services, and duration of breastfeeding</td>
<td></td>
</tr>
<tr>
<td>Anthropometrics Height and weight measurements of all household members</td>
<td></td>
</tr>
</tbody>
</table>

Source: IHSN.

<table>
<thead>
<tr>
<th>Modules in USAID’s Demographic and Health Survey</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
<td>Information</td>
</tr>
<tr>
<td>Household composition</td>
<td>Name, age, sex, marital status</td>
</tr>
<tr>
<td>Education</td>
<td>School attendance and attainment, literacy from birth to age 24, literacy test for people older than age 7</td>
</tr>
<tr>
<td>Characteristic of the dwelling</td>
<td>Water, sanitation, second-hand smoke, construction materials, electricity, mosquito netting, inventory of possessions (durable goods, livestock)</td>
</tr>
<tr>
<td>Anthropomorphic measurements</td>
<td>Measurements for each household member, including hemoglobin and HIV tests</td>
</tr>
<tr>
<td>Reproductive health</td>
<td>Contraception, pregnancies, and birth outcomes, pre- and post-natal care</td>
</tr>
<tr>
<td>Child immunization, health, and nutrition</td>
<td>Vaccination records for all children, types of food given to infants</td>
</tr>
<tr>
<td>Marriage and sexual activity</td>
<td>Data on sexual partners, fertility preference</td>
</tr>
<tr>
<td>Work and work decisions</td>
<td>Employment and work decisions by men and women</td>
</tr>
<tr>
<td>Human immunodeficiency virus (HIV)</td>
<td>Knowledge, behaviour</td>
</tr>
</tbody>
</table>

Source: IHSN.
Aside from the central survey catalogue and the links to national and international datasets maintained by the IHSN, there are other sources of micro datasets for development economists and others:

- Bureau for Research and Economic Analysis of Development (BREAD) (http://ipl.econ.duke.edu/dthomas/dev_data/index.html);
- World Bank Central Microdata Catalog (http://microdata.worldbank.org/index.php);
- Datasets for Development Economists (http://devecondata.blogspot.com.ar);
- OpenMicroData (http://openmicrodata.wordpress.com);

### 3.4 Macro-level data

This section presents a non-exhaustive list of sources of macroeconomic data that will be useful when we present the macroeconomic approach in Module 3. Such data will allow you to analyze the interaction between trade and gender at a higher level of aggregation (units of analysis are usually countries, regions, or groups of regions), where it is easier to collect the data. Most of the shortcomings of micro-level data – notably the reliability of the data itself – do not apply in this case. However, one needs to take into account that micro and macro variables serve different purposes and complement rather than substitute for each other. Most international organizations keep a record of macroeconomic variables (GDP, female labour force participation, etc.) and make this information available on their websites. Most national statistical offices also collect these data, and their websites can be a useful source of this type of information. Sources of macro-level data include:

- The World Bank Gender Statistics database (http://data.worldbank.org/data-catalog/gender-statistics), which provides indicators on key gender topics. Themes included are demographics, education, health, labour force, and political participation. The data are available annually since 1960 and cover 213 economies.
- World Development Indicators (WDI) (http://data.worldbank.org/data-catalog/world-development-indicators), the World Bank’s primary database of development indicators collected by officially recognized international sources. By providing over 800 indicators covering more than 150 countries, WDI is the most updated and accurate open-source global development database available. Users can access a selection of WDI data online and browse the information by country, indicators, and topic.
- Penn World Table (PWT) (http://www.rug.nl/research/iggdc/data/penn-world-table), developed and maintained by researchers at the University of California, Davis, and the Groningen Growth Development Centre of the University of Groningen in the Netherlands. The PWT contains information on national accounts, capital, productivity, employment, and population, and is currently covering 167 countries over the period 1950–2011. The information is constantly being updated. Compared to other databases, such as the World Bank’s WDI,
the PWT allows for more time coverage as well as more data to compare productivity across countries and over time. However, it does not contain gender-specific variables.

- UNCTAD’s Foreign Direct Investment (FDI) Statistics database (http://unctad.org/en/Pages/DIAE/FDI%20Statistics/Interactive-database.aspx), which contains annual FDI data (flows and stocks) for 189 countries starting in 1970, as well as data on mergers and acquisitions (sales and purchases) starting in 1987. The database is the main source of data for UNCTAD’s World Investment Report.

- UN Data (http://data.un.org), an Internet search engine that allows for retrieving and downloading data series provided by the United Nations system on a number of different topics, such as education, employment, energy, environment, food and agriculture, health, and human development.

- The Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/statistics), which publishes comparable statistics for OECD member countries on a wide range of topics. The statistics are available in several forms: (a) as interactive databases on iLibrary; (b) as static files or dynamic database views on the OECD Statistics portal; and (c) as StatLinks (in most OECD books, there is a URL that links to the underlying data). OECD statistics represent a good source of data on such areas as gender differences in employment outcomes (i.e. labour force participation, hours spent on paid and unpaid work, and employment conditions), gender equality, gender wage gap, and mean scores and gender differences in the Programme for International Student Assessment (PISA) rankings.

- The ILO’s Labour Statistics (http://laborsta.ilo.org). The ILO collects and provides access to a series of labour market statistics that are often useful to study gender outcomes. Among these datasets are:
  - ILOSTAT: Provides annual, monthly, quarterly, and semi-annual labour market statistics for over 100 indicators and 230 countries, areas, and territories;
  - Key Indicators of the Labour Market (KILM): Published every two years since 1999, the KILM is a collection of 20 key indicators of the labour market, ranging from employment and variables relating to employment (status, sector, hours, etc.) to education, wages and compensation costs, labour productivity, and working poverty.

- Labour force surveys: These surveys compile websites that contain data from national statistical agencies, the ILO, and other sources. The surveys include links to source websites, and references to print publications available in the ILO library;

- NATLEX: Provides abstracts of legislation and relevant citation information, indexed by keywords and by subject classifications;

- NORMLEX: Comprehensive database providing open access to the latest information on ILO international labour standards as well as national labour and social security laws.

- Other sources such as the Harvard Dataverse Network (http://dvn.iq.harvard.edu/dvn), the Cingranelli-Richards Human Rights Dataset (http://www.humanrightsdata.com/p/data-documentation.html), the Socio-Economic Database for Latin America and the Caribbean (http://sedlac.econo.unlp.edu.ar/eng), and the Harvard University Centre for International Development Data (http://www.cid.harvard.edu/ciddata/ciddata.html).

4 The Stata statistical package

4.1 Online references to learn Stata

We will use the Stata statistical package for estimation and data analysis. Stata is a modern command-line driven package for statistical analyses, data management, and graphics. It provides commands for the analysis of panel, cross-sectional, time-series, survival-time, and cohort study data, as well as other data. Stata is user-friendly and provides a large set of references with online access. The software package also has networking capabilities that facilitate installing new commands or updating installed packages.

Using this teaching material does not require extensive previous knowledge of Stata because we will discuss many commands in detail. However, the interested reader can gain further knowledge by referring to the following learning material:
Stata for beginners

- A good place to start learning Stata is the Stata Starter Kit (http://www.ats.ucla.edu/stat/stata/sk/default.htm), which contains class notes, learning modules, and other useful resources;

- The LSE Research Laboratory (http://rlab.lse.ac.uk) has a good Stata manual that includes an introduction to Stata (http://rlab.lse.ac.uk/it/it_docs/introduction_to_stata.pdf) and training and practical notes, which are class notes from the London School of Economics;

- The Stata tutorial from Princeton University is also a good introductory resource for Stata (http://data.princeton.edu/stata).

Stata for advanced users

- The UCLA Stata website (http://www.ats.ucla.edu/stat/stata) is the most complete Stata resource on the Internet, featuring textbook examples, class notes, tutorials, and other useful links;

- The Stata Journal (http://www.stata-journal.com/archives) posts the latest news on Stata commands, data analysis, statistics and econometrics techniques, and programming tips;

- The Stata Users Group (http://ideas.repec.org/g/stataus.html) provides useful resources such as working papers, journal articles, books, and Stata packages;

- Ben Jann’s website (http://www.soz.unibe.ch/content/ueber_uns/jann/stata_packages) is an excellent source for Stata packages used in data analysis, graphics, statistics, programming, and matrix manipulation. However, the content of his website goes beyond what we will need for the modules in this teaching material.

- The World Bank’s introduction to Poverty Analysis manual (http://siteresources.worldbank.org/PGLP/Resources/PovertyManual.pdf) provides an overview of the basic methods related to poverty measurement and diagnosis, and also shows you how to apply these methods using household survey data in Stata.

- The International Food and Policy Research Institute’s manual titled Using Stata for Survey Data Analysis (http://www.ifpri.org/publication/using-stata-survey-data-analysis) is another good source that is freely available.


4.2 How to use Stata

4.2.1 The Stata interface

When you start Stata you will see five docked windows, initially arranged as shown in Figure 1. The windows are as follows:

- Results window – all outputs, except graphs, appear in this window;
- Command window – where you type your commands to execute them;
- Variables window – all variables in the currently-open dataset will appear here;
- Review window – previously used commands are listed here and can be transferred to the command window by clicking on them;
- Properties window – introduced in version 12 of Stata, this window displays properties of your variables and dataset.

It is important to keep in mind that this material will cover only a small portion of the possible methodologies used in gender analysis. Our focus will remain on the effects of trade on gender outcomes. However, there are a number of methodologies and approaches related to poverty, inequality, and gender measurement and diagnosis, most of which are implemented in Stata. Below are relevant links to these methodologies.
At the top of the screen, you will find the menu bar and the toolbar. The most important functions on the toolbar are:

- **Open** (equivalent to command `use`) – opens a new data file
- **Save** – saves the current data file
- **Print Results** – prints the content of the results window
- **New Viewer** – opens a new viewer window
- **New Do-file Editor** – opens a new do-file editor
- **Data Editor** – opens the data editor window
- **Data Browser** – opens the data browser
- **Break** – allows for cancelling currently running calculations

Commands can be called from the menu bar, but using them will slow you down, so we always recommend working with the command window or writing do-files.

Stata syntax mostly follows the basic structure in which square brackets denote optional qualifiers (see `help language`):

```
[by varlist:] command [varlist] [=exp] [if] [in] [using filename] [, options]
```

Example: `bysort gender: tabulate age if weight < 50, nolabel`

---

**4.2.2 Do-files**

A do-file is a set of Stata commands typed in a plain text file that allows you to run your commands repeatedly and not lose them once Stata is closed. When the do-file is run using the do-file editor, all commands are executed automatically in the same order as in the do-file. If all steps of a project have been documented in one or more do-files, all analyses and results can be reproduced by other users at a later stage. To access Stata’s do-file editor, use Ctrl-9 in versions 12 and 13 (Ctrl-8 in earlier versions) or select “Window > Do-file Editor > New Do-file Editor” in the menu bar.

**4.2.3 General commands**

Most Stata commands can be abbreviated. For example, instead of typing `generate`, Stata will also accept `gen`. The help screen demonstrates how each command can be abbreviated by showing underlined letters in the syntax section.

**cd:** Stata uses a working directory where datasets are saved if no path has been entered. The current working directory is displayed on the status bar at the bottom of the user interface. You can also display the current directory in the results window by using the command `pwd`. The working directory can be changed by using the command `cd` (change directory). If a directory name contains spaces, the whole path has to be entered with quotation marks, e.g. `cd "C:/Documents and Settings/Admin/My Documents/gender data"`.

**help:** The help screen for any command can be displayed in a separate window with the command `help`. The syntax is `help commandname`. 

---

Source: Stata 12.1.
findit: The command findit is the best way to search for information on a topic across all sources, including online help, FAQs on the Stata website, the Stata Journal, and all other Stata-related Internet sources. The syntax is: findit word.

You can look up the meaning of error messages by either clicking on the return code or by using findit rc#, where # stands for the number of the return code.

set memory: Stata reads the whole dataset into the working memory; thus, sufficient memory has to be available or an error message will be displayed. Therefore, you should set the size of the working memory reserved for Stata before loading a (big) dataset with the command set memory. Example: set memory 100m.

4.2.4 Data input and saving

insheet: If the data come from an external source (Excel, Access, SPSS, etc.), they first have to be read into Stata. The data should be exported as tab-separated, comma-separated, or semicolon-separated text (ASCII) files. This option can generally be found in the file menu under “Save as” or “Export”. Other methods for reading non-Stata data are described in help infiling. In Stata, this text file is then read with the command insheet: insheet using filename [, options]. It can be specified in the options if the external data file is tab-separated or otherwise (see help insheet). A check on the raw data then needs to be performed to determine whether these data are complete or correctly imported, and if further data management tasks are required. Common data management tasks include renaming variables, changing string variables to numerical or date format, replacing a comma as decimal separator with a period, and labelling. Vice versa, data can be exported from Stata to a tab-separated text file with: outsheet using filename.

use: Datasets with the Stata specific ending .dta can be opened with the command use. The syntax is: use filename.dta or use "c:/.../gender_paper.dta" for a file from a parent directory.

edit: Data can also be manually entered or changed using the data editor with edit.

save: The data are saved with the command save. The syntax is: save filename.dta [, options]. Take into account that old versions of Stata may not be able to open data saved in new versions of Stata. If you want to keep compatibility, you should save your data with the command saveold.

In do-files, you would use the option replace for the command save most of the time, as datasets are overwritten every time the do-file is run. This means that you should pay attention when using this command, as you might lose the file with the original dataset if you do not save the edits made under a different name.

4.2.5 Data management

by: The by qualifier tells Stata to execute the subsequent command repeatedly along with the different values of a given varlist. Note that not all commands support this feature. To use the command by, data have to be first sorted by varlist. Using bysort instead of by makes previous sorting redundant. For example, we could summarize the variable educational level (edlevel) by gender (sex), as shown in Figure 2.

.by sort sex: summarize edlevel

Example of data management using the by-qualifier

Source: UNCTAD’s estimations, based on data from Newman (2002)
if: if can be put at the end of a command in order to use only the data specified. It is allowed with most Stata commands. Example:

summarize edlevel if sex == "Male" would generate only the top panel in the figure above, as observations recorded as female will not be considered. Several if qualifiers can be used to define the range of the data. For example:

summarize edlevel if (age > 45 & edlevel >= 5). The if qualifiers are connected with logical operators and are used with relational operators. Logical operators are: & for and, | for or, and ! for not. Relational operators are: > greater than, < less than, >= greater than or equal to, <= less than or equal to, == equal to, != not equal to.

Note that string values have to be put in quotation marks (example !="Male" is a female). Note also that Stata marks a missing value for numerical variables as . (period) and interprets it as infinite. This is very important when referring to "greater than" and when you do not want to include missing values (so you could use >100 & !=.).

in: The qualifier in at the end of a command means the command should only use the specified observations. Example: summarize edlevel in 1/100 summarizes the educational level of individuals in observations 1 through 100.

4.2.6 Data manipulation

generate: New variables are generated with the command generate (can be abbreviated as gen). The syntax is: generate newvar =exp [if] [in], where exp can be either an algebraic or a string expression. An empty algebraic variable can be created with generate varname = ., while an empty string variable can be created with generate varname = "".

For an overview of functions that can be used in expressions, type help functions. Arithmetical operators are: + addition, - subtraction, * multiplication, / division, and ^ power. Important mathematical functions are: abs(x) absolute value, sqrt(x) square root, ln(x) natural logarithm, and round(x) round to nearest whole number. Example: gen age_sq = age^2.

egen: Extensions to generate can be found in the command egen which offers a set of algebraic or string functions that are sometimes needed for data management tasks (see help egen for an overview of available functions). The syntax for the egen function is: egen newvar = fcn(arguments) [if] [in] [i. options]. For example, egen average_income = mean(income) creates a variable with the average value of the variable income.

replace: The values of existing variables can be changed with the command replace. It works similarly to the command generate, accepting expressions and allowing for if and in qualifiers. The syntax for replace is: replace oldvar =exp [if] [in]. Example: replace income = income/100.

drop: Variables or observations can be deleted using the command drop. Variables are deleted using the following version of drop: drop varlist.

Observations are deleted by applying another version of drop, and the syntax is: drop if exp or drop in range [if exp]. Example: drop if gender == "Male".

keep: This command is an opposite of drop as it keeps variables or observations instead of deleting them. Keeping variables is done with: keep varlist.

For keeping observations, you use: keep if exp or keep in range [if exp].

Remember that if you modify or drop variables and save the file, you will lose your original dataset.

4.2.7 Data formatting

rename: A variable can be renamed with the command rename. The syntax is: rename old_varname new_varname.

label: There are two ways to label variables. The first one is to label the variable itself; in this case, the syntax is: label variable varname ["label"]. Example: label variable hh_income "Household income".

The second option is to assign labels to the values of categorical variables. This is done in two steps. First, a value label has to be defined. For this first step, the syntax is: label define lbname # "label" [ # "label" ...]. Example: label define city_label 1 "Buenos Aires" 2 "Rio de Janeiro". Second, this value label is assigned to the respective variable. The syntax is: label values varname [lbname]. Example: label values city city_label.

4.2.8 Data description

describe: General information about the dataset can be retrieved using the command describe. This command displays the number of observations, number of variables, and the size of the dataset, and it lists all variables together with basic information.
codebook: The command codebook delivers information about one or more variables, such as storage type, range, number of unique values, and number of missing values. The command offers further interesting features that can be seen with help codebook. The syntax for this command is: codebook [varlist] [if] [in] [, options].

sort: Data can be sorted in ascending order with the command sort. The syntax is: sort varlist. Example: sort gender age income.

browse: The data browser can be opened with the command browse. Example: browse age income. The browser does not allow data manipulation (as does edit), but data can be sorted using the sort button.

list: Similar to the data browser, values of variables can be listed in the results window with the command list. Here, if and in qualifiers are often useful. The syntax is: list [varlist] [if] [in] [, options].

summarize: The most important descriptive statistics for numerical variables are delivered with the command summarize. The syntax for summarizing descriptive statistics is: summarize [varlist] [if] [in] [weight] [, options].

This command displays the number of (non-missing) observations, mean, standard deviation, minimum, and maximum. Additionally, summarize varlist, detail shows certain percentiles, skewness, and kurtosis. Tables of summary statistics can be drawn with table.

tabulate: One-way and two-way frequency tables for categorical variables can be drawn with the command tabulate. The syntax is: tabulate varname [if] [in] [weight] [, options].

4.2.9 Data merging

append: A second dataset can be appended to the end of the one currently used by using the command append. Note that Stata will automatically match variables that are common to both datasets, provided they have the same label and are of the same type (e.g., numeric or string) and will keep any other additional variable from the two datasets. The syntax is: append using filename.dta [, options].

merge: Datasets sharing the same kind of observations, but having different variables, can be joined with the command merge. The currently used dataset (“master” dataset) is merged with the corresponding observations from one or more other files (“using” datasets). The “master” and “using” datasets need to share at least one common variable, the so-called “primary key”, in order to make the match possible. The match variable(s) is (are) defined in varlist. After merging, Stata automatically generates a variable that contains information about the matching of the data:

_merge == 1 Observations only from “master” dataset
_merge == 2 Observations only from “using” dataset(s)
_merge == 3 Observations from “master” and “using” dataset(s)
_merge == 4 Observations from both, missing values updated
_merge == 5 Observations from both, conflicting non-missing values

4.2.10 Graphs

One of the advantages of Stata is its vast graphing capabilities. However, commands for comprehensive graphs can get quite long, and it takes some time to get used to the code structure. Using dialogue boxes might have an advantage in certain cases. The starting point for learning about graphs is help graph. In addition, the Stata command help offers a separate tutorial for basic graphs that can be accessed with help graph_intro. An example of a simple bar graph of two variables would be: graph bar variable_1 variable_2. A basic histogram of the variable age would be: histogram age. If you want to show the relationship between two variables, you could use the command twoway. You can use it, for example, with a scatter (twoway scatter) or a line (twoway line).

5 Conclusions

In this introductory module, we have set the stage for the subsequent modules where we describe in more detail how the relationship between trade and gender can be analyzed using the microeconomic, macroeconomic, or sectoral approach. We have seen that there are numerous sources of trade, micro- and macro-level data at your disposal; identifying the source that is most appropriate for your purposes depends on the objective of your study. You will also need to know whether you wish to conduct an ex-post or ex-ante analysis of the impact of trade on gender. In the latter case, there are open-source trade models at your disposal that allow you to simulate the welfare effects of a trade policy or reform of a particular country.
At a later stage, when the aim of your study is clarified and you have collected the necessary data and information for your research, you will need to manage and analyse the data to test your hypothesis. As a reference for this exercise, this module has provided an introduction to the statistical software package Stata that is the most widely used in academic circles. We will use Stata to replicate the studies reviewed in the following modules. This module has therefore presented the key commands needed to perform those replications. It is important that you master these commands, since you will also need them to work on the data for your own empirical analysis.
REFERENCES


UNCTAD (2012). Virtual Institute teaching material for the online course on trade and poverty. UNCTAD Virtual Institute, Geneva.


Module 2
The microeconomic approach
1 Introduction

This module analyses the gender effects of trade policies and shocks using household survey data. The approach follows the two-step methodology that characterizes recent trade and poverty literature. The first step studies how trade policies and trade shocks affect prices of goods and factor remuneration in the domestic economy. The second step uses household survey data to assess the welfare impact of those price changes.

Trade policies have diverse effects on individuals and households: some may benefit from trade liberalization or facilitation, others may suffer, and yet others may not be affected. The results depend mainly on two factors:

- The influence that trade policies and trade shocks have on domestic prices of goods and factors of production; and
- The degree of exposure that individuals have to the various goods and factors of production.

As we will see below, trade policies and shocks have three main effects on households:

- Consumption effect – the effect on the price of goods consumed by the households directly (traded goods) and indirectly (non-traded goods);
- Income effect – the effect on household income, including labour wages, earnings from the sales of agricultural products or any other goods, and other forms of income;
- Revenue effect – the effect on the generation and distribution of government revenues that may indirectly affect household welfare through government transfers and the provision of public goods.

This module will not consider the revenue effect but will rather focus on the first two effects. For methodological reasons, we will split the income effect into two components, the production effect and the labour income effect. We will explain the difference later on.

As we will show, once the welfare impact has been estimated for each household, we can aggregate it by the relevant dimension – geography, gender, or income level – to identify “winners” and “losers” from trade policy. In this module, we focus on the gender dimension.

Section 2 of this module provides a brief literature review of studies that have applied the microeconomic approach presented here as well as a list of types of microeconomic studies. Sections 3 and 4 provide the intuition behind the methodology, leaving the more technical presentation for the interested reader in the two annexes, A and B, at the end of this module. Section 5 offers the basics on non-parametric regression techniques, which are commonly applied to explore how trade-led price changes can influence household welfare. In the hands-on application in Section 6, we then explain step by step how to replicate in Stata the estimations from an UNCTAD (2011) study on gender and trade in Cape Verde. Section 7 presents concluding remarks.

At the end of this module, students should be able to:

- Describe the microeconomic approach relating changes in trade policy and/or shocks to changes in household welfare;
- Review and summarize the literature using the microeconomic approach to disentangle the effects of trade on gender;
- Understand the mechanisms linking changes in trade policy and/or shocks with changes in consumer and producer prices – i.e. the pass-through effect;
- Split the effects of trade on household welfare into three components: (a) the consumption effect, (b) the production effect, and (c) the labour income effect;
- Understand how the microeconomic approach can be used to analyse the relationship between trade and gender;
- Understand non-parametric estimation tools;
- Replicate, using Stata, the 2011 UNCTAD study on trade and gender in Cape Verde.

2 Review of the literature

The aim of this section is to discuss a series of papers that have used the microeconomic approach described in this module. The section will focus mostly on the trade and poverty literature with a gender dimension, for example, focusing on the impact of trade on female-headed households (see the hands-on application in Section 6). In this regard, it should be noted that this literature review is mostly concerned with providing a non-exhaustive collection of papers linking trade policy with welfare at the household and individual levels. At the end of the section, several studies on trade and gender are cited that have not necessarily employed the methodology presented in this module, thereby illustrating the existence of alternative microeconomic empirical approaches.

One of the most influential papers in the trade and poverty literature is Porto (2006), which
extends Deaton (1994a) to study the impact of international trade on household welfare. The work of Porto (2006) is innovative because it considers the impact of international trade liberalization both on household consumption and wages. In this respect, it represents a general equilibrium analysis. As such, it simultaneously explores more than one channel of interaction between trade and poverty — i.e. the consumption channel and the labour market channel. It is thus different from earlier partial equilibrium analyses that considered only one sector of the economy (for instance, labour markets) at a time (Goldberg and Pavcnik, 2007). Porto (2006) identifies two stages that link changes in trade policy with changes in household welfare: First, trade reforms cause direct changes in the prices of consumption goods; and second, these price changes affect households both as consumers (because households purchase consumption goods) and as income earners (because changes in the prices of goods affect the wages of workers living in the household).

Porto (2006) applies his theoretical framework to study the distributional effects of the Southern Cone Common Market (MERCOSUR) on household welfare in Argentina. For this purpose, he employs household level data as well as data on the intra-zone tariffs applied to MERCOSUR members. The findings suggest that the MERCOSUR agreement had a pro-poor distributional effect and that trade liberalization was not responsible for the increase in poverty and income inequality experienced in Argentina throughout the 1990s.

Empirical studies employing Porto’s framework have mushroomed over the years. For example, Nicita (2009), Marchand (2012), and Borraz et al. (2012) analyse the cases of Mexico, India, and Paraguay and Uruguay, respectively. Their contribution is to adapt Porto’s price transmission mechanisms from tariffs to prices by allowing trade costs (proxied by distance from borders), domestic producer prices, and exchange rates to influence prices of goods as well. In this scenario, there are more data requirements that cannot always be met, especially for developing countries. Despite analysing two very different regions of the world, Nicita (2009) and Marchand (2011) arrive at a similar conclusion: the distributional effects of trade liberalization on household welfare depend on the region where the individuals live, their consumption basket, and the factors of production owned (whether skilled or unskilled labour). Borraz et al. (2012) analyse the distributional implications of MERCOSUR on household welfare in Uruguay and Paraguay and also account for poverty and inequality effects separately. They find that preferential trade liberalization affected households in Paraguay and Uruguay differently, thereby suggesting that trade has different effects across countries as well. In sum, there is still no agreement on the welfare effects of trade liberalization at the microeconomic level, and there is scope for further research in this direction.

Despite its validity, the microeconomic approach introduced here represents only one of the existing ways to analyse the link between trade and gender. When it comes to exploring the gender implications of trade, one strand of literature focuses on intra-household dynamics. The basic assumption is that households are heterogeneous units comprised of men and women who differ in their control over resources and consumption preferences. By affecting prices and wages, trade may bring changes to the allocation of resources among members of the household and ultimately to the well-being of the household as a whole. This theoretical framework has been applied in a series of papers included in Bussolo and De Hoyos (2008). For example, by focusing on the case of Senegal, Bussolo et al. (2008) test the idea that in developing countries’ rural households, education spending, mostly controlled by women, can be affected by a trade-related increase in the prices of export crops, from which men benefit the most. The findings support this hypothesis: men’s income share increases relative to women’s share, with negative though limited repercussions on the amount of education spending for children. De Hoyos (2008) focuses instead on the implications of trade for female wages. In particular, the study looks at better working opportunities for women, including lower gender wage gaps, offered by the maquila sector of Honduras that has developed and grown thanks to the liberalization policies implemented by the country since the early 2000s. The study also tries to explore the link between women’s improved working conditions and poverty by simulating the level of poverty that Honduras would have reached if the maquila had not existed. The results show that in this scenario poverty levels would have been 1.5 percentage points higher.

In conclusion, what we want to say is that although this module focuses on a particular type of microeconomic approach, it is not the only approach. The aim of this brief literature review is to stimulate your interest and enrich your knowledge about the multiple approaches you can use to study the linkages between trade and gender at the microeconomic level.
3 From trade policy to prices

Going back to the two-step methodology introduced by the trade and poverty literature, this section explains the first step in detail. The key idea is that domestic and international prices are linked, and that trade policy and trade shocks will therefore have an effect on domestic prices and factor remuneration. According to Brambilla and Porto (2009), standard models of international trade assume competitive markets (with homogeneous goods) and frictionless trade. In this scenario, markets are integrated and the law of one price holds. Domestic prices are equal to international prices converted into the local currency. That is, if a product costs $5 abroad and the exchange rate in your country is two units of the local currency for each unit of the foreign currency ($), then the product should cost 10 units in local currency. Of course this is a simple model, as it does not consider transportation and distribution costs, or the fact that the price of the good may also be affected by trade policy instruments (such as tariffs). In this case, if \( p_i \) is the domestic price of an imported good, \( p_i^* \) is the international price, \( e \) is the exchange rate, \( r_i \) is the sum of international transaction costs (i.e. transportation), and \( r \) is the tariff rate applied to good \( i \), then we may write:

\[
p_i = p_i^* e (1 + r_i) (1 + r) + \gamma_i
\]

where \( \gamma_i \) represents internal transportation, resale, marketing, and distribution costs. If good \( i \) is exported, then equation (1) becomes:

\[
p_i = p_i^* e (1 - r_i) (1 - r) - \gamma_i
\]

where \( r_i \) is the export tax if different from zero.

Let us assume for simplicity that internal costs \( \gamma_i \) are zero so we can focus on the response of domestic prices to changes in international prices, exchange rates, national trade policies, international trade policies, and transaction costs. Clearly, if these equations hold, then a proportional change in the exchange rate \( e_i \), in the international price \( p_i^* \), or in the tariff rate \( r_i \) (or rather \( 1 + r_i \)) will be fully transmitted to domestic prices. This can be formally derived from the log-linearized version of equation (1), where we have excluded internal costs \( \gamma_i \):

\[
\ln p_i = \ln p_i^* + \ln e_i + \ln (1 + r_i) + \ln (1 + r_i)
\]

The derivative of \( \ln p_i \) with respect to any determinant of the price (e.g. \( \ln e_i \)) is equal to one. This derivative corresponds to the elasticity of domestic prices with respect to the determinants of this elasticity. This implies that any relative change on the right-hand side of the expression would be fully transmitted to domestic prices. We call this perfect pass-through. However, there is strong evidence against this prediction, especially for exchange rates. Most studies consistently reject the law of one price for a variety of products and countries. There are many reasons why the law of one price may fail, some of which are presented by Feenstra (1989) and Nicita (2009). When the relative change in the domestic price of a good is lower than the relative change in international prices, tariffs, or exchange rates, we say that there is imperfect pass-through. For instance, if the international price increases by 10 per cent but the local price only increases by 5 per cent, keeping everything else (tariffs, transportation costs, and exchange rate) constant, the pass-through is 50 per cent. Sometimes prices take time to adjust following a shock because there are signed contracts, accumulated stocks, and other market frictions. For that reason, the pass-through is often lower in the short run than in the long run, and this should be taken into account when analysing the effects of trade policies.

Even though pricing equations (1) and (2) do not provide an accurate framework for measuring and estimating pass-through effects, they are useful to conceptually show different effects of price changes. For instance, it is often observed that governments react to exogenous changes in international prices by changing tariffs and export taxes (and sometimes also by altering the exchange rate via devaluations). In some instances, when the price of food imports increases, governments may reduce tariffs to alleviate the increase in domestic prices. In some exporting countries, the government’s response to skyrocketing commodity prices has been to increase export taxes. Increasing export taxes reduces the incentives for national producers to export, which increases the supply of the good in the domestic market and consequently decreases the domestic price of the good. Since food products represent consumption goods, such policies can be supported on distributional grounds. Export taxes are also a good source of public revenue, especially in the context of increasing international prices, which provides additional motivation for their implementation (UNCTAD, 2012).

There are several methodological approaches and models to study price changes assuming both perfect and imperfect pass-through. These studies are beyond the objective of this module, but we have included a reference to them in Annex A for the interested readers.
4 From prices to welfare impact

A useful way to study how trade affects household welfare is by noting that trade affects the prices faced by producers and consumers. In consequence, we can investigate the trade-welfare link by tracing how trade policy affects prices and, in turn, how prices affect welfare (Porto, 2006; Nicita, 2009). The previous section examined how trade affects prices. Here we focus on the second step of the two-step methodology discussed so far and look at how price changes translate into welfare effects.

The consumer and producer surplus measures covered in introductory microeconomics courses are useful to illustrate how price changes affect welfare. Consider all households consuming a good $i$ whose initial price $p_i$ changes. We can estimate the impact on consumer surplus by multiplying the amount of the price change by the quantity consumed by all households before (or after) the price shock. In the case of a price increase of good $i$, this would be an approximation of the loss in consumer surplus because each household has to pay a higher price for each unit it consumes. This loss would correspond to the shaded area in panel (a) of Figure 3. Conversely, if households produce and sell the good and its price increases, then all producing household will be better off as they will receive a higher price for each unit they sells in the market. In this case, the change in the producer surplus would be positive, and it can be approximated by the price differential multiplied by the production level before (or after) the shock that generated the price change (panel (b) in Figure 3).

![Figure 3](image-url)

**Impact of a price increase ($p_0 \rightarrow p_1$) on consumption and production**

- (a) Consumer welfare loss from a price increase
- (b) Producer welfare gain from a price increase

Source: UNCTAD (2012).

Note: $p_0$ is the initial price which increases to $p_1$ after an exogenous price shock.
To evaluate the overall impact of the price change on household welfare, we need to consider the changes in both the consumer and producer surpluses. If the household is a net producer of the good (i.e. its production exceeds consumption), the loss in the consumer surplus is lower than the gain in the producer surplus and the welfare of the household will increase. On the other hand, if the price of the good increases and the household is a net consumer (i.e. its consumption exceeds production), the welfare of the household will decrease.\footnote{36}

If a household is a net consumer of the good (consumption > production), the loss of welfare after the price increase can be approximated by:

$$\Delta W = -\Delta p (c_0 - q_0)$$  \hspace{1cm} (4)

or

$$\Delta W = -\Delta p (c_1 - q_1)$$  \hspace{1cm} (5)

where $\Delta p$ is the amount of the price change, $c_0$ and $q_0$ are the quantities consumed and produced before the price shock (respectively), and $c_1$ and $q_1$ are the quantities consumed and produced after the price shock. Panel (a) in Figure 4 shows the loss for the net consumer.

In the case of a net producer household (production > consumption), the impact of a price change on welfare will be positive and can be approximated by:

$$\Delta W = \Delta p (q_0 - c_0)$$  \hspace{1cm} (6)

or

$$\Delta W = \Delta p (q_1 - c_1)$$  \hspace{1cm} (7)

Panel (b) in Figure 4 shows the gain for the net producer.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure4.png}
\caption{Loss and gain from price increase of good \textit{i}}
\end{figure}

(a) Welfare loss from a price increase for a net consumer ($c_0 > q_0$ or $c_1 > q_1$)

(b) Welfare gain from a price increase for a net producer ($q_0 > c_0$ or $q_1 > c_1$)

Source: UNCTAD (2012).
Unfortunately, in most surveys the quantities households consume and produce are not observed and therefore it is not possible to use this type of intuitive approximation in practical applications. As discussed below, this can be overcome by using consumption expenditure shares and production income shares, information that is often available in household surveys. Aside from this difficulty, this simple approximation does not take into account possible labour market changes following the price change. It also does not consider the general equilibrium effects that can affect the price of non-traded goods as a response to changes in the price of traded goods. We will look at these issues now.

Figure 5 provides us with the basic intuition of the transmission of a traded good price increase to prices of non-traded goods and the labour market equilibrium. In panel (a), we have a representation of the labour demand curve (which decreases as the wage level rises) and the labour supply curve (which increases as the wage level rises; their intersection determines the equilibrium wage paid to the workers. Assuming an exogenous price increase of a traded good \( (p_o \rightarrow p_1) \), companies selling that good would like to sell more of it. Consequently, at each level of wage, the labour demand from firms will increase, shifting the demand curve upwards \( (D_o \rightarrow D_1) \). As a result, there will be a new equilibrium in this market, with higher wages \( (w_o \rightarrow w_1) \) and more labour employed \( (L_o \rightarrow L_1) \) in the economy.

This change in a particular market will have spillover effects on other markets. For instance, this could be the case because the traded goods are an input in the production of non-traded goods. It could also be the case that following an increase in the wages paid to workers in traded sectors, the firms in the non-traded goods sectors would have to increase the wages paid to their employees in order to keep them. In panel (b) of Figure 5, we observe the effect of this wage increase on non-traded goods. The wage increase implies a higher production cost of non-traded goods, causing the supply curve for the non-traded goods to move to the left \( (S_o \rightarrow S_1) \). Finally, we observe that the equilibrium price of the non-traded goods increases \( (p^k \uparrow) \) and the quantity sold in the market decreases \( (q^k \downarrow) \).

Figure 5

Effect of a price increase on labour market equilibrium and prices of non-traded goods

(a) Effect on labour market equilibrium

(b) Effect on prices of non-traded goods

Source: UNCTAD (2012).
The welfare effect will now depend not only on how trade affects the price of the goods the household consumes and produces, but also on the effect of trade on labour income. As mentioned previously, we rarely observe the quantities of a good a household buys or sells in the household surveys. However, we often have information on budget shares and income shares. We know what percentage of total household expenditures a household spends on a good \( i \). We also often know from the household surveys about the source of income of the household, that is, what percentage of the total income of the household comes from selling good \( i \) or from selling its labour in exchange for wages. Therefore, we can approximate the welfare impact of a trade policy or shock by estimating three effects:

\[
\begin{align*}
\text{Consumption effect for household } h &= -\left( \text{Share of good } i \text{ in total expenses of household } h \right) \cdot \left( \text{Change in the price of good } i \right) \\
\text{Production effect for household } h &= -\left( \text{Share of income household } h \text{ gets from selling good } i \right) \cdot \left( \text{Change in the price of good } i \right) \\
\text{Labour income effect for household } h &= -\left( \text{Share of income household } h \text{ gets from selling its labour} \right) \cdot \left( \text{Change in the wage perceived by household } h \right)
\end{align*}
\]

Finally, the total welfare effect for the household is the combination of the three effects:

\[
\text{Welfare effect} = \text{Consumption effect} + \text{Production effect} + \text{Labour income effect}
\]

Annex B presents a detailed derivation of this result.

5 Methodological approach: Non-parametric regressions

Most of the papers in the trade and gender literature that use the microeconomic approach follow the standard two-step approach of the trade and poverty literature presented above and in Annex B. However, the 2011 UNCTAD study that we will review below skips the first step. Rather than trying to answer how trade liberalization would increase or reduce prices and household income, the paper just assumes those changes and tries to estimate the welfare impact at the household level and determine if that impact is different, depending on the gender of the household head and the number and share of women in the household.

The second step of the approach is based on non-parametric analysis. Non-parametric methods let the data show the “shape” of the relationship between the \( y \) and the \( x \) variables without any parameters that would, for instance, appear in linear regression analysis. The UNCTAD study uses non-parametric methods to estimate densities (Figures 2–5 in the paper) and regressions (Figures 6–15 in the paper). We provide the intuition behind both the non-parametric densities and regressions and briefly explain how to estimate them using Stata.

5.1 Basic idea of density estimations

Suppose you have a large number of observations on a variable \( x \) and you would like to “draw a picture” of the density function of \( x \). The simplest method is to divide the range of \( x \) into a small number of intervals and count the number of times \( x \) is observed in each interval—basically, to use a histogram. You need to choose the number of “bins” (number of columns) into which you will split the data. If you choose too few, you will not capture the shape of the distribution very well. On the other hand, choosing too many will make the distribution too erratic due to the small number of points in each bin. The larger the sample, the more scope for using smaller bins (Cameron and Trivedi, 2005).

There are two problems with histograms. First, for a given number of bins, moving their exact location (boundary points) can change the figure. Second, from the technical point of view, the density function produced is a step function and the derivative either equals zero or is not defined (at the cut-off point for two bins). This represents a problem if we are trying to maximize a likelihood function that is characterized by a step function of the distribution. The first problem with histograms—i.e. the arbitrariness in the location of the bin cut-off points—can be avoided by having a “moving” bin that is defined for every possible value of \( x \). The second problem of discontinuities in the estimated (“empirical”) density function can also be avoided by using kernel
estimation (Glewwe, 2013). For continuous data taking many values, kernel density plots are preferable to histograms, as they result in a smooth curve that directly connects the midpoints of a series of histograms rather than forming the histogram step function.

Figure 6 shows graphically the difference between a histogram and its non-parametric estimation using kernel densities for numbers generated randomly from a given distribution. You can easily see that the non-parametric estimation is smoother.

![Figure 6](image)

Figure 6

Histogram and kernel density function

Source: UNCTAD Secretariat.

In Stata, the command for kernel densities is \texttt{kdensity}. It has different options:

- \texttt{bwidth(#)} specifies the half-width of kernel, i.e. the width of the density window around each point;
- \texttt{generate (newvar \_x newvar \_d)} stores the estimation points in \texttt{newvar \_x} and the density estimate in \texttt{newvar \_d};
- \texttt{n(#)} indicates the number of points at which the density estimate should be evaluated; if not specified, the default is \texttt{min(N,50)} with \texttt{N} the number of observations;
- \texttt{at(var \_x)} estimates a density using the values specified by \texttt{var \_x};
- \texttt{nograph} suppresses the graph.

We will use some of these options in our Stata estimation below.

5.2 Intuition behind non-parametric regressions

Suppose you want to regress a variable \( y \) on a single explanatory variable \( x \), without using any functional form on the relationship (e.g. without imposing the functional form of the relationship). This is not the same as looking at a density estimate of a bivariate distribution; a plot of a bivariate distribution has not yet defined one variable as the dependent variable and the other as the independent variable. With regressions, we are ultimately interested in the expectation of \( y \) conditional on \( x \). Assuming away problems of endogeneity of \( x \), measurement error, etc., the relationship that we are interested in estimating is the expectation of \( y \) conditional on \( x \): \( E[y | x] \). The relation of interest is:

\[
y_i = m(x_i) + \varepsilon_i, \quad i = 1, 2, \ldots, N \tag{8}
\]

where \( \varepsilon_i \sim i.i.d\ (0, \sigma^2) \). The functional form of \( m(.) \) is unknown and we will not approximate it using some parametric functional form. Kernel regressions are weighted average estimators that use kernel functions as weights. Technically, a kernel regression estimator is a local constant regression because it sets \( m(x) \) equal to a constant in the very small “neighbourhood” of \( x \) (Glewwe, 2013).

Figure 7 is an example of a graph generated by the non-parametric regression of the share of income that households in Ghana earn from selling cocoa (vertical axis) on the logarithm of the household per capita consumption (horizontal axis). The non-parametric regression will be useful to assess the effect of a price change in cocoa. As cocoa is a cash crop that in most cases is not consumed by Ghanaian households, the consumption effect is nil. The figure shows that the share of income coming from cocoa in Ghana increases with the level of income. It also shows the non-parametric regressions conditional on the location of the household (rural or urban areas) – we can see that rural households have a larger share of their income coming from cocoa than urban households.
Several methods can be applied for non-parametric regressions. In Stata, two commands are used: `lpoly` and `lowess`. In the paper which we will review below, the author uses `lpoly` that performs a kernel-weighted local polynomial regression of $y$ on $x$ and displays a graph of the smoothed values. See the command `help lpoly` in Stata (Manual: [R] lpoly) for a more extensive and complete explanation about smooth regression and local weighted regressions.

6 Hands-on application: “Who is benefiting from trade liberalization in Cape Verde? A gender perspective” (UNCTAD, 2011)

6.1 Context and overview

The objective of this study developed by UNCTAD’s Trade, Gender and Development Section is to explore whether there are any differential effects of trade policy on men and women and, in particular, to analyse whether there is a gender bias in the potential gains from trade in Cape Verde. A small and open country, Cape Verde is largely dependent on imports, remittances, and tourism. The export sector is small and limited to primary and low technology-intensive goods. In general, the country has a very large deficit in its balance of trade. A portion of this deficit is financed by tourism and travel receipts (19.5 per cent of GDP in 2008), and remittances from emigrants (8.5 per cent of GDP in 2008). Based on its analysis and results, the study also provides some policy recommendations.

The preparation of the study involved the following methodological steps:

- Preparation of a country profile that included identifying vulnerable groups and key economic sectors, with special emphasis on women;
- Description of the trade sectors, which identified major imports and exports, partners, trade agreements, and markets;
- Assessment of some of the effects of trade liberalization on household welfare (with a focus on gender issues), including an assessment of whether the effects depend on the location of the household (if located on an island or not), and an analysis of the effects from food prices, remittances, and tourism;
- Drafting of a set of policy recommendations.

This section focuses on the third step, i.e. the assessment of some of the effects of trade liberalization on household welfare using the microeconomic approach. In particular, we look at the effects of trade on some gender outcomes. The study follows the two-step methodology used in the trade and poverty literature described above. However, it does not cover the first step in detail, i.e. it does not look at the impact of trade liberalization on changes in food prices, tourism receipts, or remittances, but just assumes these changes. Given these assumptions, it then tries to estimate their welfare impact at the household level in Cape Verde, following the second step of the analysis. Table 4 provides a summary of the country case study of Cape Verde.
The microeconomic approach

## Objective

The objective of the study is to analyse some of the effects of trade liberalization on household welfare in Cape Verde, with a focus on gender issues. It looks at the effects stemming from:

- Changes in food prices: Cape Verde is highly dependent on food imports (80 per cent of the food it consumes is imported). In particular, the study simulates (a) an increase in international food prices; and (b) trade policy changes, including the phasing out of the Everything But Arms initiative (duty-free access to the European Union) on 1 January 2012 and subsequent implementation (although negotiations are still ongoing) of the Economic Partnership Agreement (duty-free access to the European Union but on the basis of reciprocity).
- Increase in income from remittances from the Cape Verdean diaspora.
- Expansion of the tourism subsectors (hotels and restaurants, trade and transport), given the potential of the tourism sector for economic empowerment of women.

## Methodology

- Two-step approach: (a) assumed induced price and income changes; (b) used price and income changes and household data to study the trade impact on household welfare.
- Non-parametric estimation techniques to describe the effects of changes in food prices, remittances and tourism, conditional on the level of income, the geographical area where the household is located, and the gender of the head of the household.

## Equation estimated

In non-parametric methods, we do not estimate equations, as there are no parameters to estimate. Results are displayed in terms of graphs and/or summary tables.

### Dependent and independent variables

**Dependent variables**

- The share of consumption spent on food \( (\text{share\textunderscore food}) \)
- The share of income coming from remittances \( (\text{part\textunderscore rem}) \)
- The gains coming from the simulated increase in remittances \( (\text{gain}) \)
- The gains coming from the simulated increases (three scenarios) in expenditure related to the tourism sector \( (\text{gain1, gain2, and gain3}) \)

**Independent variables**

- The log per capita expenditure of the household \( (\text{logpce}) \)
- The area, rural or urban, where the household is located \( (\text{area}) \)
- The location (which island) of the household \( (\text{ilha}) \)
- The gender of the household head \( (\text{female\textunderscore head}) \)
- The proportion and number of women in a household \( (\text{female and sfemale}) \)

## Results

- The price effects will be more strongly felt in rural areas than in urban areas but the gender differentiated effects from food price changes would only be marginal.
- In general, a drop in food prices will have a pro-poor effect, while higher food prices will have an anti-poor bias.
- The simulated increases in remittances and income from tourism seem to favour female-headed households. Female-headed households located in rural areas benefit in particular from increases in remittances, while those located in urban areas gain more from increases in income related to tourism.
- While the reduction of prices has a pro-poor impact, the increase in remittances and income from tourism would benefit mostly middle- and high-income families.


### 6.2 Data sources

The data for the analysis are already saved in Stata format \( (\text{graphs.dta}) \). There are two main sources of data:

- Cape Verde’s 2002 Household Expenditure and Income Survey \( (\text{Inquérito Às Despesas e Receitas Familiares – IDRF}) \);
- Cape Verde’s 2007 Questionnaire on Basic Welfare Indicators \( (\text{Questionário Unificado de Indicadores Básicos de Bem Estar}) \).

Detailed information regarding the methodology and questionnaires used in these two surveys can be found on the website of the Cape Verdean National Institute of Statistics. When we go through the methodology step by step, we will also discuss the content of the different variables.

The IDRF does not contain data that allow for identifying net producers and net consumers of food. However, considering that Cape Verde imports 80 per cent of the food it consumes, it seems reasonable to assume that most households consume imported food.

### 6.3 Step-by-step explanation of how to do the estimations in Stata

We will now show you how to estimate the kernel densities and non-parametric regressions of the Cape Verde study in Stata. To do that, we will describe each of the steps and commands in the do-file that is provided with this teach-
As explained in the previous module, although it is possible to use Stata interactively, in this and the following modules we will work with do-files. The advantage of writing a do-file is that you do not have to type the same commands again and again. You can run your programme as many times as you wish and correct typos or wrong commands.

Before going through the steps in the Stata do-file, we strongly recommend that you read the UNCTAD (2011) study.

Step 1: Open the database and explore the variables

The first step is to ask Stata to clean any result and data that may be in the memory and set an appropriate memory space level to work with. The commands are as follows:

```
clear matrix
clear
set mem 100m
```

We then tell Stata in which folder in the computer we will be working. You need to upload the data file (.dta file) to the computer first, and it is also where Stata will save the outputs by default. The command will appear as follows:

```
cd "c:\...\...\...\"
```

Note that you need to specify the disk (C" here), the folder, subfolders, etc. In sum, you need to specify the folder path. Note that we use "" to indicate the whole path.

We now need to tell Stata what database we will use in the analysis:

```
use "Data\graphs.dta", clear
```

Often we use different data files, and it is convenient to work with macros that allow us to call them separately. The command to define a local macro is `local`. We can tell Stata to create one and then to use it. The database we will use for the analysis (graphs.dta) is located in the subfolder `Data` that is inside the folder we specified above with the command `cd`. The command to create a local macro is the following:

```
local base_in_1 ="Data\graphs.dta"
```

We then tell Stata to use the dataset:

```
use "`, base_in_1"", clear
```

Now you have the data uploaded, and you can see the name of all file variables in the variables window. What does each variable contain? We can use the command `describe` to take a first look at the data. As you will see from the output of the command, most of the labels are in English but a few of them are in Portuguese, so we explain them below:

- `Actividad` is the economic sector where the individual works;
- `ilha` is the island where the household is located;
- `des_indi` is the per capita expenditure of the household;
- `area` takes two values: 1 corresponds to urban households, 2 corresponds to rural households;
- `pens_est` corresponds to the amount of foreign pensions received;
- `rem_emig` corresponds to the amount of remittances received.

Step 2: Describe the income distribution using kernel densities

We will use a kernel density function to describe the distribution of the log of per capita expenditure for all households, all urban households, all rural households (one graph combining the three), by island, and by the gender of the household head. This corresponds to Figures 2–5 in the UNCTAD (2011) study.

Note that the data do not contain the logarithm of per capita expenditure but the per capita expenditure (`des_indi`). We can create the logarithm of per capita expenditure using the command `gen`:

```
gen logpce = log(des_indi)
```

There are some variables and labels we will use repeatedly in the graphs, so it would be convenient to define them. In particular, we will often split the household data by area (rural vs. urban households). Let us make a value label called `area1` that associates 1 with an urban household and 2 with a rural household.

The command `label define` creates the value label called `area1` that associates 1 with an urban household and 2 with a rural household.

```
label define area1 1 "Urban" 2 "Rural"
```

The command `label values` associates the variable `area` with the label `area1`.
If we use the command `describe`, we can see that the variable `area` has a value label called `area1` assigned to it.

We are now ready to produce our kernel densities of log of per capita expenditure for the whole population and its different subsamples. We will use the command `kdensity` to produce the kernel densities and the command `twoway` to produce a graph. We could first produce the densities, save the outputs, and then build the graphs using those outputs, or combine everything in one single programme sentence. We will use the latter option as it is faster.

The Stata command to reproduce Figure 2 in the UNCTAD (2011) study is:

```stata
twoway (kdensity logpce [w=pondera], legend(lab(1 "National")))
(kdensity logpce [w=pondera] if area== 1, lpattern(dash) legend(lab(2 "Urban")))
(kdensity logpce [w=pondera] if area== 2, lpattern(dash_dot) legend(lab(3 "Rural"))), ytitle(Density) xtitle(Log per capita expenditure)
```

Figure 8 shows the distribution of the log of per capita expenditure in Cape Verde for all households, urban households, and rural households. The distribution is somehow similar to a normal distribution, with the urban density shifted to the right as urban households tend to be wealthier than rural ones.

We can split the population not only by area (urban and rural) but also by gender of the head of the household and obtain Figure 9 (Figure 3 in the study). The Stata command is similar to the previous one:

```stata
twoway (kdensity logpce [w=pondera] if female_head==1 , legend(lab(1 "Female-headed")))
(kdensity logpce [w=pondera] if female_head== 0, lpattern(dash) legend(lab(2 "Male-headed"))), by(area)
ytitle(Density) xtitle(Log per capita expenditure)
```
Figure 9 compares the income distribution among urban and rural female- and male-headed households. There is a left shift of the female-headed income distribution relative to the male-headed income distribution, in particular in urban areas. Therefore, the data show that, on average, female-headed households tend to be poorer than their male counterparts.

We can also produce a similar figure, shown here as Figure 10 (Figure 4 in the study), by island and area using:

graph twoway (kdensity logpce [w=pondera] if area == 1, legend(lab (1 "Urban"))) (kdensity logpce [w=pondera] if area == 2, lpattern(dash) legend(lab(2 "Rural"))), ytitle("Density",size(small)) xtitle("Log per capita expenditure",size(small)) by(ilha, cols(3)) legend(size(small))

By specifying cols(3) in the by option, we are telling Stata to display the panels in three columns.

Finally, Figure 11 (Figure 5 in the study) shows the distribution of income for each household by the gender of the head of the household. The syntax of the Stata command is similar:

```
graph twoway (kdensity logpce [w=pondera] if female_head==1, legend(lab(1 "Female-headed"))) (kdensity logpce [w=pondera] if female_head==0,lpattern(dash) legend(lab(2 "Male-headed"))), xtitle("Log per capita expenditure",size(vsmall)) ytitle("Density",size(vsmall))
```

In this case, we add `rescale` to the `by` option to allow the x and y axes to be different for each group. Also, the `ylabel` and `xlabel` options are added to the command `graph twoway` to indicate the size of the values on the y axis and x axis.

The figures by island and gender of the household head show that there are fewer disparities in the distribution of income for male- and female-headed households in Sal and Santiago. São Vicente and São Nicolau show a higher mode for men. In contrast, the mode seems higher for women in São Antão. Boa Vista, Brava, and Fogo show a greater dispersion for the log of per capita expenditure of female-headed households than of male-headed households.

**Step 3: Create graphs of the non-parametric regression of log of per capita income, food, and remittances shares**

In this step, the study analyses the relationship between two variables through figures derived from non-parametric regressions. The aim is to relate the level of livelihood to the consumption of food and the income from remittances. This allows us to see how changes in food prices or remittances affect different "types" of households.

Non-parametric regressions fit a local relationship between two variables, y and x. By “local” we mean that separate fitted relationships are obtained at different values of the explanatory variable, x. Two commands can be used to do this in Stata: `lpoly` and `lowess`. There are several other methods for running this type of analysis, but we will not discuss them in this material. Here, we will exclusively use `lpoly`, which performs a kernel-weighted local polynomial regression of y on x and displays a graph of the smoothed values with (optional) confidence bands.

Figure 12 (Figure 6 in the study) shows the non-parametric regressions of the share of food (how...
much a household in Cape Verde spends on food as a proportion of its total expenses) on the level of livelihood of the family (proxied by the log of per capita expenditure of the household). The figure has three different panels, one for the whole sample, one for households in urban areas, and one for households in rural areas. In each panel, we are interested in knowing, for each level of income, how much a family with a female household head spends on food compared to how much a male-headed household spends.

The command to create the figure is once again `twoway` and therefore we do not need to explain its syntax. This time, however, each line will not be a density function but a non-parametric regression. We then replace the command `kdensity` with `lpoly`. We regress `share_food` on `logpce`, recognizing once again that each observation in the sample has a different weight in the population by including the option `[w=pondera]`, and we perform the regressions for female-headed households (`if female_head==1`) and male-headed households (`if female_head==0`). We also want to eliminate possible outliers, so we remove the first and last observation in the sample (`logpce <16 & logpce>= 9`).

The Stata command for all households is:

```
twoway (lpoly share_food logpce [w=pondera] if female_head==1 & logpce <16 & logpce>= 9 , legend(lab(1 "Female-headed"))) (lpoly share_food logpce [w=pondera] if female_head== 0 & logpce <16 & logpce>= 9, lpattern(dash) legend(lab(2 "Male-headed"))), ytitle(Share of food (ratio)) xtitle(Log per capita expenditure)
```

The Stata command for rural households only is:

```
twoway (lpoly share_food logpce [w=pondera] if female_head==1 & area == 2 & logpce <16 & logpce>= 9 , legend(lab(1 "Female-headed"))) (lpoly share_food logpce [w=pondera] if female_head== 0 & area ==2 & logpce <14 & logpce>= 9, lpattern(dash) legend(lab(2 "Male-headed"))), ytitle(Share of food (ratio)) xtitle(Log per capita expenditure)
```

The outputs of these three commands are the non-parametric regressions panels in Figure 12. These regressions estimate the average food share at different levels of expenditure. The food budget share at the left tail of the income distribution is approximately 45 per cent (in both urban and rural areas). In rural areas, there are some differences between female-headed and male-headed households in the share spent on food. As expected and in accordance with Engel’s law, the share spent on food declines with the increase in the level of household well-being. It follows that lower food prices will have a pro-poor bias, while higher food prices will have an anti-poor bias when considering the consumption effect on welfare.
As the study notes, “Looking at the difference between female- and male-headed households does not necessarily capture all the impacts on women. [...] Women living in male-headed households can also benefit from lower food prices. This is explored by examining the relationship between the food share on the one hand and the total number of females in the household or alternatively the share of females in the household on the other.” UNCTAD (2011: 40).

To this end, we need to create the variables capturing the number of females in a household and the proportion of women in a household. To do that, we create an auxiliary variable aux that takes the value 1 if the member of the household is a woman and 0 otherwise. We then create a new variable female with the command egen to count how many women live in that particular household (houseid). The syntax of the command is egen <new variable> = <function>(<expression(s)> or <variable(s)>), by (variables). The functions actually determine what the command egen will do. There are many functions, all described in the manual. We also need to create a variable (sfemale) indicating the share of women in a household. The Stata commands are as follow:

gen aux = 1 if male == 0
gen female = sum(aux), by(houseid)
drop aux
gen sfemale = female / hsize

The variable hsize stands for the number of household members. As before, non-parametric regressions are estimated and reported in Figure 13 (Figure 7 in the study) according to the area where the household is located. The Stata commands are similar to the ones used before. Specifically, for plotting the relationship between the share of food and the number of females living in a household we use the following command:

twoway (lpoly share_food female [w=pondera] if head == 1 & female<11, msymbol(none) legend(lab(1 "National"))) (lpoly share_food female [w=pondera] if head == 1 & area == 2 & female<11, lpattern(dash) msymbol(none) legend(lab(2 "Rural"))) (lpoly

share_food female [w=pondera] if head == 1 & area == 1 & female<11, lpattern(dash_dot) msymbol(none) legend(lab(3 "Urban")), ytitle(Share of food (ratio)) xtitle(Number of females)

For plotting the relationship between the share of food and the share of females living in a household, we use the following command:

twoway (lpoly share_food sfemale [w=pondera] if head == 1 & area == 2, lpattern(dash) msymbol(none) legend(lab(2 "Rural"))) (lpoly share_food sfemale [w=pondera] if head == 1 & area == 1, lpattern(dash_dot) msymbol(none) legend(lab(3 "Urban"))), ytitle(Share of food (ratio)) xtitle(Share of females (ratio))

The option msymbol indicates the marker symbol that should be used in the figure.

What we can see from the results in Figure 13 is that, in principle, households with more women tend to allocate a slightly higher share of their expenditure to purchase food, especially in rural areas, and thus these households will enjoy higher gains from lower food prices. Note, however, that there are few differences in food shares for different gender structures (share of females) in Cape Verdean households.
The study then follows the same methodology to estimate the relationship between the share of income the household gets from remittances and the level of expenditure, again by area and by gender of the household head. The analysis is also carried out for the number and share of females in the household. The structure of the Stata command is very similar to the one used before. In particular, at the national level, the command to plot the figure is the following:

```
twoway (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 1, msymbol(none) legend(lab(1 "Female-headed"))) (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 0, lpattern(dash) msymbol(none) legend(lab(2 "Male-headed"))) , ytitle(Share of remittances (ratio)) xtitle(Log per capita expenditure)
```

Panel (a) in Figure 14 (Figure 9 in the study) presents the non-parametric regressions at the national level and shows that the share of remittances in total income is always higher for female-headed than for male-headed households, except for very poor households. For females, the share increases sharply with the level of livelihood until reaching values higher than 15 per cent of total income, then decreasing to less than 5 per cent of total income.

To plot the figure for households living in urban areas only, the command is the following:

```
twoway (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 1 & area == 1, msymbol(none) legend(lab(1 "Female-headed"))) (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 0 & area == 1, lpattern(dash) msymbol(none) legend(lab(2 "Male-headed"))) , ytitle(Share of remittances (ratio)) xtitle(Log per capita expenditure)
```

Panel (b) shows that in urban areas the share of remittances is higher for female-headed households at the left (poorest) tail of the distribution and in the middle, but the shares seem to converge at the richest tail.

To plot the figure for households living in rural areas only, the command is the following:

```
twoway (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 1 & area == 2, msymbol(none) legend(lab(1 "Female-headed"))) (lpoly part_rem logpce [w=pondera] if head == 1 & female_head == 0 & area == 2, lpattern(dash) msymbol(none) legend(lab(2 "Male-headed"))) , ytitle(Share of remittances (ratio)) xtitle(Log per capita expenditure)
```

As shown in panel (c), in rural areas the share of remittances in total income is low for the poorest households but increases sharply as the level of income increases. This analysis reveals that remittances are an important source of income, and more so for female-headed households than for male-headed households, reaching more than 30 per cent of the income of the richest rural households.
Finally, the study plots the relationship between the share of remittances in total income and the number of females living in the household, and the share of females in the total number of household members according to the area where the household is located (Figure 10 in the study, not displayed here). The code lines are, respectively:

\begin{verbatim}
twoway (lpoly part_rem female [w=pondera] if head == 1 & female<11, msymbol(none) legend(lab(1 "National"))) (lpoly part_rem female [w=pondera] if head == 1 & area == 1 & female<11, lpattern(dash) msymbol(none) legend(lab(2 "Urban"))) (lpoly part_rem female [w=pondera] if head == 1 & area == 2 & female<11, lpattern(dash_dot) msymbol(none) legend(lab(3 "Rural")) ), ytitle(Share of remittances (ratio)) xtitle(Number of females)
\end{verbatim}

**Step 4: Plot welfare gains in simulated scenarios**

Our last task is to study the welfare effects of different scenarios. The first simulation is an increase of 20 per cent in remittances. We want to see how this would affect household per capita income for different types of households. We will need to create a few new variables. First, we cre-
ate the log of per capita income using the same command we employed to create the logarithm of per capita expenditure (\texttt{logpc}):

\begin{verbatim}
  gen lipcf = log(ipcf)
\end{verbatim}

Second, we generate a variable that would be the new household per capita income simulated, that is, the initial income plus an increase of 20 per cent of the part of the income that comes from remittances:

\begin{verbatim}
  gen ipcf_sim = ipcf + 0.2 * part_rem * ipcf
\end{verbatim}

Third, we create the logarithm of the simulated income in the following way:

\begin{verbatim}
  gen lipcf_sim = log(ipcf_sim)
\end{verbatim}

Finally, we generate a new variable \texttt{gain} as the difference between the simulated and the original income, as follows:

\begin{verbatim}
  gen gain = lipcf_sim - lipcf
\end{verbatim}

We are now ready to create Figure 15 (Figure 12 in the study) using the command \texttt{twoway} and the same syntax as before. We are also eliminating potential outliers by restricting the analysis to households with a logarithm of per capita expenditure below 15. The code is the following:

\begin{verbatim}
  graph twoway (lpoly gain logpce [w=pondera] if female_head == 1 & logpce <15 , legend(lab(1 "Female-headed"))) (lpoly gain logpce [w=pondera] if female_head == 0 & logpce <15 , lpattern(dash) legend (lab(2 "Male-headed"))), ytitle("Gain (ratio)",size(vsmall)) xtitle("Log per capita expenditure",size(small)) legend(size(small)) by(area, cols(2)) ylabel(,labsize(small)) xlabel(,labsize(small))
\end{verbatim}

As shown in Figure 15, the effect would be significant, in particular for female-headed households both in urban and rural areas. While the effect is more or less constant in urban areas, it increases according to the level of income in rural areas.

We now move to the analysis of the gains from an increase in tourism. This simulation is more complex than the previous one because tourism generates income not only for those who work directly in this sector but also for those who provide services such as transport and communications, or who work in the retail sector. Therefore, we should consider simulations with both direct and indirect effects of tourism on workers in Cape Verde. We will follow four steps to do these estimations.

**Step 1:** We generate a new dataset that contains the original dataset twice. This is done by attaching the dataset to the original dataset again. We generate a variable called \texttt{case} and give it the value 1 for all households in the original dataset, and in the repeated dataset we assign the values 2 for households in rural areas and 3 for households in urban areas to the variable \texttt{case}. 

---

**Source:** UNCTAD (2011).
use "base_in_1", clear
gen case = 1
append using "base_in_1"
replace case = 2 if case ==.
& area == 2
replace case = 3 if case ==.
& area == 1

**Step 2**: We define labels also for graphical reasons as follows:

label define case1 1 "National” 2 "Rural” 3 “Urban”
label values case case1
label define female 0 "Male-headed” 1 "Female-headed”
label values female_head female

**Step 3**: We define the variables of interest using the command gen as follows:

gen pce = des_indi
gen lpce = log(pce)

We generate variables recording the activity of the household head for tourism, retail trade (commerce), and transport and communications. The variable actividad in the data records the economic sector, with 7 being tourism, 6 retail trade (trade), and 9 transport and communications (transport).52

* Tourism

gen aux_head_tourism = 0
replace aux_head_tourism = 1 if actividad == 7 & head ==1
egen head_tourism = sum(aux_head_tourism), by(houseid)
replace head_tourism = 1 if head_tourism == 2

* Trade

gen aux_head_trade = 0
replace aux_head_trade = 1 if actividad == 6 & head ==1
egen head_trade = sum(aux_head_trade), by(houseid)
replace head_trade = 1 if head_trade == 2

* Transport

gen aux_head_transport = 0
replace aux_head_transport = 1 if actividad == 9 & head ==1
egen head_transport = sum(aux_head_transport), by(houseid)
replace head_transport = 1 if head_transport == 2

head_tourism, head_trade and head_transport are thus dummy variables that take the value 1 if the household head works in tourism, trade, or transport and communications, or 0 otherwise.

**Step 4**: As you can see in the study, the idea is to simulate the welfare effects of an increase in income from tourism and related activities (retail trade, and transport and communications). In particular, the country case study proposes different scenarios (cases).

**Case 1**: Tourism 30 per cent (called Tourism in the labels of the figures)

30 per cent increase in per capita expenditure (pce) of households with the head employed in tourism. The code to build the variable corresponding to the gain obtained by households in this first case (gain1) is the following:

gen pce_sim1 = pce
replace pce_sim1 = pce * 1.3 if head_tourism == 1
gen lpce_sim1 = log(pce_sim1)
gen gain1= lpce_sim1- lpce

**Case 2**: Tourism 30 per cent and trade 10 per cent

10 per cent increase in pce of households with the head employed in retail trade. The code to build the variable corresponding to the gain obtained by households in this second case (gain2) is the following:

gen pce_sim2 = pce_sim1
replace pce_sim2 = pce_sim2 * 1.10 if head_trade == 1
gen lpce_sim2 = log(pce_sim2)
gen gain2= lpce_sim2- lpce

**Case 3**: Tourism 30 per cent, trade 10 per cent, and transport 10 per cent

10 per cent increase in pce of households with the head employed in transport and communications. The code to build the variable corresponding to the gain enjoyed by households in this third (gain3) case is the following:

gen pce_sim3 = pce_sim2
replace pce_sim3 = pce_sim3 * 1.10 if head_transport == 1
gen lpce_sim3 = log(pce_sim3)
gen gain3= lpce_sim3- lpce
We are now ready to generate Figures 16 and 17 (Figures 13 and 14 in the study). For Figure 16 (Figure 13 in the study), we calculate the gains for each of the three cases described above. We are also interested in finding out whether there are any differences in the distribution of gains between rural and urban households. The Stata command to perform these simulations is similar to those presented before:

```stata
graph twoway (lpoly gain1 lpce [w=pondera] if lpce<15, legend(lab(1 "Tourism"))) (lpoly gain2 lpce [w=pondera] if lpce<15, lpattern(dash)) (lpoly gain3 lpce [w=pondera] if lpce<15, lpattern(dash_dot)) , ytitle("Gain (ratio)",size(vsmall)) xtitle("Log per capita expenditure",size(vsmall)) legend(size(vsmall)) by(case, cols(3)) ylabel(,labsize(vsmall)) xlabel(,labsize(vsmall))
```

To eliminate any outliers, we only consider households with a logarithm of per capita expenditure smaller than 15.

The results in Figure 16 show that the gains mostly increase with the level of livelihood and are larger in urban than in rural areas. The panels also show that the effects can be important when we take into account both the direct and indirect effects of tourism.

Figure 17 (Figure 14 in the study) explores whether the expected gains are different depending on the gender of the household head (we find that they are larger for female-headed households). For that reason, we run the non-parametric regression for the whole sample (case==1) by gender of the head of the household (by female_head). The Stata command is as follows:

```stata
graph twoway (lpoly gain1 lpce [w=pondera] if case == 1 & lpce<15, legend(lab(1 "Tourism"))) (lpoly gain2 lpce [w=pondera] if case == 1 & lpce<15, lpattern(dash)) (lpoly gain3 lpce [w=pondera] if case == 1 & lpce<15, lpattern(dash_dot)) , ytitle("Gain (ratio)",size(vsmall)) xtitle("Log per capita expenditure",size(vsmall)) legend(size(vsmall)) by(female_head, cols(3)) ylabel(,labsize(vsmall)) xlabel(,labsize(vsmall))
```

Figures 15 (a) and 15 (b) in the study (not displayed here) run the same non-parametric regressions of the gains by gender of the household head and for urban and rural areas, as follows:

```
graph twoway (lpoly gain1 lpce [w=pondera] if case == 1 & lpce<15 & area == 1, legend(lab(1 "Tourism")))
(lpoly gain2 lpce [w=pondera] if case == 1 & lpce<15 & area == 1, lpattern(dash) legend(lab(2 "Tourism and Trade")))(lpoly gain3 lpce [w=pondera] if case == 1 & lpce<15 & area == 1, lpattern(dash_dot) legend(lab(3 "Tourism, Trade and Transport"))) , ytitle("Gain (ratio)",size(sm)) xtitle("Log per capita expenditure",size(sm)) legend(size(sm)) by(female_head, cols(2)) ylabel(lab(size(sm))) xlabel(lab(size(sm)))
```

```
graph twoway (lpoly gain1 lpce [w=pondera] if case == 1 & lpce<15 & area == 2, legend(lab(1 "Tourism")))
(lpoly gain2 lpce [w=pondera] if case == 1 & lpce<15 & area == 2, lpattern(dash) legend(lab(2 "Tourism and Trade")))(lpoly gain3 lpce [w=pondera] if case == 1 & lpce<15 & area == 2, lpattern(dash_dot) legend(lab(3 "Tourism, Trade and Transport"))) , ytitle("Gain (ratio)",size(sm)) xtitle("Log per capita expenditure",size(sm)) legend(size(sm)) by(female_head, cols(2)) ylabel(lab(size(sm))) xlabel(lab(size(sm)))
```


6.4 Discussion of findings and limitations of the analysis

By focusing on the second step of the two-step methodology (see Section 3 of this module), this study uses the microeconomic approach to analyse the potential welfare impact of further trade liberalization in Cape Verde. The study looks both at the household consumption impact of trade-induced changes in the prices of goods and the employment/income changes from the potential increase in remittances and tourism. The simulations find that the price effects would be more strongly felt in rural than in urban areas, but that the differences between male- and female-headed households from food price changes would only be marginal. On the other hand, the simulated increase in remittances and income from tourism seems to favour female-headed households. Female-headed households located in rural areas would benefit in particular from increases in remittances, while those located in urban areas would gain more from increased income from tourism. While the reduction of prices has a pro-poor impact, the increase in remittances and tourism would benefit mostly middle- and high-income families.

One limitation of this analysis is that it does not estimate the effects that trade liberalization would have on food prices, remittances, and tourism. The analysis assumes those changes and then studies the welfare impact, leaving open the question of the amount of gains there are for Cape Verde, which is an important question for policymakers. Another limitation of the analysis is that, due to the lack of data, it is limited to a comparison between female- and male-headed...
households, thus overlooking any potential intra-household reallocation effect. Male-headed households often have females living in the household, and it is therefore important to see how a trade shock affects the distribution of tasks within the household (e.g., whether domestic household activities are distributed fairly between males and females) and resources among various competing categories of expenditure (e.g., how much the household spends on food and on education).

7 Conclusions

This module has introduced the microeconomic approach (household and market channel) to study the welfare effect of trade policy at the household level and identify different gender outcomes. The approach follows the trade and poverty literature, where we first estimate the effects of trade on domestic prices and remuneration and then use those changes to estimate the welfare impact at the household level. For this purpose, this module uses information collected by household surveys. As these surveys often contain information about the gender of the household head and other members of the family, we can use this information to depict potential gender-differentiated effects. In the application we reviewed, the emphasis is on the effects of trade on earnings and expenditure, but a similar methodological approach could be used, for instance, to estimate health and education outcomes of trade policy.

The methodology reviewed in this module uses a specific definition of trade that refers to trade policy or reform and trade facilitation, as explained in Box 1 of Module 1 of this volume. The methodology can be used to analyse welfare effects of bilateral, regional, or multilateral trade agreements. Trade policy and reform can be measured, for example, by changes in tariffs. We reviewed the main sources of trade data in Module 1 of this volume. Additionally, we can analyse more general trade costs such as those linked to trade procedures, transportation, availability of infrastructure, and access to credit or inputs. When data are available, this methodology also makes it possible to study price transmission issues, including those related to market structure and competition that may have an effect on the degree of pass-through of international prices to domestic prices. The analysis can be applied both ex ante and ex post. In ex-post analysis, we compare various outcomes (wages, incomes, employment, expenditures, etc.) before and after episodes of trade liberalization or reform. We can sometimes distinguish those effects by the gender of the individual or the head of the household, but that often depends on the content of the dataset. In ex-ante analysis, we work with a two-step methodology, examining first the likely transmission effects from trade to prices, and then the effects from prices to households and/or firms. As described in Module 1, there are various open-source tools you can employ to conduct an ex-ante analysis. Again, how much we can say about differential gender effects may depend on the available data.

The method used in this module is based on non-parametric econometric techniques. The advantage of non-parametric analysis compared to the more traditional regression analysis is that you do not have to make any assumption regarding the relationship between the independent variable and the dependent variable. In other words, you let the data choose the best shape of the functional form. Additionally, in welfare analysis, the non-parametric approach allows you to look at the distributional impact of trade policy along the entire income distribution of households. Trade policy usually has different indirect effects on rich and poor households, since they have different consumption baskets and sources of income. For example, the case study of Cape Verde shows that, overall, the share of household income spent on food declines with the increase in the level of household well-being.
ANNEX

Annex A  Modelling price changes

This annex presents three ways of modelling ex-ante price changes: (a) econometric estimation within a model (homogeneous goods), (b) simulation models (heterogeneous goods across countries); and (c) CGE models.

A1  Econometric estimation within a model

The first methodology to study price changes in an open economy setting was the model by Hoeckman et al. (2005). These authors combined a simple structural model with parameter estimation. The model is used to estimate the welfare effects of the Doha Round of multilateral trade negotiations: it has a multi-country and multi-product setting and allows for estimations of changes in prices of more than 5,000 products. Based on estimates of demand and supply elasticities, the authors use their structural model to solve for equilibrium prices of agricultural products following a change in tariff rates.

The import demand and export supply functions are given by \( m_c (p, Z^*_c) \) and \( x_c (p^*, Z^*_c) \), where \( m_c \) and \( x_c \) are the import demand and supply vectors, respectively, for country \( c \) across all goods; \( p_c \) is the domestic price vector of imported goods in country \( c \); \( p^*_c \) is the vector of world prices; and \( Z^*_c \) and \( Z^* \) represent matrices of exogenous variables that determine imports and exports, respectively, in country \( c \). Each good \( g \) is homogeneous across all countries, but within each country, it is an imperfect substitute for all other traded goods.

World markets for each good clear so that \( \sum_c m_c (p, Z^*_c) - \sum_c x_c (p^*, Z^*_c) = 0 \) and the solution with respect to \( p^*_c \) yields equilibrium world prices. To see how this works, assume that all world and domestic markets are perfectly competitive so that \( p_c = p^*_c \tau_c \), where \( \tau_c \) is a vector of all goods of the form \( \tau_{c,g} = \left( \frac{1}{1 + \xi_{c,g}} \right) \), in which \( \xi_{c,g} \) is the level of protection in country \( c \) for good \( g \). We obtain world prices \( \tilde{p}^* \) by solving:

\[
\tilde{p}^* = [\sum_c E_{c} - \sum_c E^*_c]^{-1} \sum_c E^*_c \xi_c
\]  

(A1)

where \( E_c \) and \( E^*_c \) are square matrices in which elements are equal to the elasticity of import supply and demand (respectively) in country \( c \), multiplied by the share in world trade of each country’s imports of good \( g \). We can use equation (A1) to estimate the price effects of any change in trade protection in the local economy or abroad.

Balat et al. (2007) use this methodology to estimate the effects of the Doha Round on Zambia. They follow the two-step methodology of the trade and poverty literature. In the first step, they look at price changes resulting from the implementation of the Doha Round agreement for the main crops produced and consumed in Zambia. They find that cotton prices will increase by 3.5 per cent, hybrid maize prices will increase by almost 4 per cent, and tobacco prices will increase by 1.3 per cent. They find modest price reductions in vegetables and groundnuts. In the second step, given these price changes, the authors explore the net effect of trade liberalization at the household level, using Zambia’s 1998 Living Conditions Monitoring Survey.

The average budget share spent on food consumption is high, with poor households dedicating more than 70 per cent and non-poor households almost 60 per cent of their budget to food (see Table 5). The estimated price increases from the Doha Round agreement would therefore certainly have a negative impact on consumers. However, the overall effect needs to be carefully assessed, as most households are both consumers and producers of agricultural goods. Therefore, it is also important to consider the production effect, which in the case of Zambia will operate through the 10 per cent (5 per cent) of income derived from sales of poor (non-poor) households (see shares of food and non-food crop sales in Table 6).

Finally, the authors calculate the net welfare effect of price increases (Table 7). The consumption effect is negative for every decile, particularly for the poorest households, given that a large share of their expenditure is spent on food. The income effect is positive, but not strong enough to overcome the negative impact on consumption (except for households in the sixth decile). It appears therefore, that the Doha agreement would have on average a negative welfare effect in Zambia.
The microeconomic approach

### Table 5

| Average household budget shares in Zambia, 1998 (per cent) |
|-------------|-----------|-----------|
|            | Total     | Poor      | Non-poor   |
| Food       | 67.5      | 71.8      | 59.3       |
| Clothing   | 5.6       | 4.8       | 7.1        |
| Alcohol & tobacco | 3.6 | 2.9       | 4.9        |
| Personal goods | 7.1 | 6.8       | 7.6        |
| Housing    | 4.5       | 4.2       | 5.0        |
| Education  | 2.5       | 2.6       | 2.3        |
| Health     | 1.4       | 1.3       | 1.6        |
| Transport  | 4.2       | 3.2       | 5.9        |
| Remittances| 1.3       | 0.7       | 2.4        |
| Other      | 2.4       | 1.7       | 3.9        |

Source: Balat et al. (2007).

### Table 6

| Sources of household income in Zambia, 1998 (per cent) |
|-------------|-----------|-----------|
|            | Total     | Poor      | Non-poor   |
| Own production | 28.3   | 33.3      | 19.1       |
| Sales of food crops | 6.3   | 7.6       | 3.8        |
| Sales of non-food crops | 2.5   | 3.0       | 1.3        |
| Livestock & poultry | 5.5   | 6.8       | 2.9        |
| Wages       | 20.8      | 14.4      | 32.9       |
| Non-farm    | 22.3      | 20.9      | 24.9       |
| Remittances | 4.9       | 5.0       | 4.8        |
| Others sources | 9.5   | 9.0       | 10.3       |

Source: Balat et al. (2007).

### Table 7

| Average household welfare effects in Zambia, 1998 (per cent) |
|-------------|-----------|-----------|
|            | Income decile | Consumption | Income | Total |
| 1           | -1.44      | 0.84       | -0.60  |
| 2           | -1.26      | 0.78       | -0.48  |
| 3           | -1.22      | 0.37       | -0.85  |
| 4           | -1.14      | 0.75       | -0.39  |
| 5           | -1.04      | 0.72       | -0.32  |
| 6           | -0.93      | 0.96       | 0.03   |
| 7           | -0.87      | 0.67       | -0.20  |
| 8           | -0.77      | 0.23       | -0.54  |
| 9           | -0.66      | 0.30       | -0.36  |
| 10          | -0.49      | 0.17       | -0.32  |
| Total       | -0.98      | 0.58       | -0.40  |

Source: Balat et al. (2007).

### A2 Global Simulation Model

An additional modelling framework that can be used to study price changes is the GSIM developed by Francois and Hall (2009). The authors build a partial equilibrium framework of global trade policy changes at the industry level. This model can be used for the analysis of global, regional, and unilateral trade policy changes. One of the differences from the previous model is that here the authors assume imperfect substitutability across goods.

The WITS platform (mentioned above) has a computational package that can be used to estimate price changes, and combines modelling with data analysis. The simulation package requires the input of bilateral trade volumes for key partners in the agreement and the rest of the world, together with key export supply elasticities, import demand elasticities, and elasticities of substitution.

Porto (2007) uses the GSIM methodology to study the effects of the Central America-Dominican Republic-United States Free Trade Agreement (CAFTA) in Guatemala. The paper uses the two-stage approach. First, the model is used to estimate the effect of CAFTA on prices of several products. For instance, the author finds that following the agreement, yellow maize prices would decrease by 19 per cent, while prices of white maize would decrease by 38 per cent and prices of chicken by 18.6 per cent. In the second stage, the author uses the estimated price changes.
and household data for Guatemala to study the welfare changes. Food is the most important expenditure for all Guatemalan households, and the average food budget share is particularly high for poor and indigenous households (almost half of the budget, as shown in Table 8). Here, price decreases of food staples would be positive for consumers, but again, the net effect would also depend on the income effect, as some households are producers of agricultural goods.

Table 8
Average household budget shares in Guatemala – total and indigenous population, 2000 (per cent)

<table>
<thead>
<tr>
<th>Household budget item</th>
<th>Total</th>
<th>Poor</th>
<th>Non-poor</th>
<th>Total</th>
<th>Poor</th>
<th>Non-poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>35.3</td>
<td>45.4</td>
<td>26.7</td>
<td>42.4</td>
<td>47.0</td>
<td>32.8</td>
</tr>
<tr>
<td>Clothing</td>
<td>12.7</td>
<td>13.4</td>
<td>12.1</td>
<td>14.7</td>
<td>15.2</td>
<td>13.8</td>
</tr>
<tr>
<td>Alcohol &amp; tobacco</td>
<td>0.04</td>
<td>0.06</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Personal goods</td>
<td>21.2</td>
<td>19.4</td>
<td>22.8</td>
<td>19.7</td>
<td>18.8</td>
<td>21.6</td>
</tr>
<tr>
<td>Housing</td>
<td>3.3</td>
<td>1.9</td>
<td>4.6</td>
<td>2.1</td>
<td>1.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Education</td>
<td>3.8</td>
<td>2.9</td>
<td>4.6</td>
<td>2.7</td>
<td>2.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Health</td>
<td>5.5</td>
<td>4.0</td>
<td>6.8</td>
<td>4.1</td>
<td>3.4</td>
<td>5.6</td>
</tr>
<tr>
<td>Transport</td>
<td>10.5</td>
<td>6.0</td>
<td>14.3</td>
<td>7.9</td>
<td>5.4</td>
<td>13.1</td>
</tr>
<tr>
<td>Remittances</td>
<td>0.28</td>
<td>0.07</td>
<td>0.45</td>
<td>0.13</td>
<td>0.03</td>
<td>0.34</td>
</tr>
<tr>
<td>Other</td>
<td>7.3</td>
<td>6.9</td>
<td>7.7</td>
<td>6.3</td>
<td>6.1</td>
<td>6.8</td>
</tr>
</tbody>
</table>


Table 9 shows that own production is an important source of income for indigenous people (31 per cent of income) and the effect of price decreases will operate through sales of food crops by households. This negative production effect should in principle be a source of concern. However, as seen in Table 10, the net effect would be positive on average for all households, because the positive consumption effect would be larger than the negative production effect across all levels of income. In conclusion, according to this analysis, the CAFTA agreement is expected to have a positive effect on the welfare of Guatemalan households.

Table 9
Average household income shares in Guatemala – total and indigenous population, 2000 (per cent)

<table>
<thead>
<tr>
<th>Income source</th>
<th>Total</th>
<th>Poor</th>
<th>Non-poor</th>
<th>Total</th>
<th>Poor</th>
<th>Non-poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own production</td>
<td>18.1</td>
<td>30.1</td>
<td>7.9</td>
<td>10.8</td>
<td>36.6</td>
<td>18.6</td>
</tr>
<tr>
<td>Sales of food crops</td>
<td>7.1</td>
<td>10.3</td>
<td>4.3</td>
<td>10.3</td>
<td>11.3</td>
<td>8.0</td>
</tr>
<tr>
<td>Sales of non-food crops</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Livestock and poultry</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>Wages</td>
<td>45.2</td>
<td>39.0</td>
<td>50.5</td>
<td>34.6</td>
<td>32.7</td>
<td>38.5</td>
</tr>
<tr>
<td>Income non-farm</td>
<td>18.2</td>
<td>13.9</td>
<td>21.9</td>
<td>16.6</td>
<td>13.8</td>
<td>22.5</td>
</tr>
<tr>
<td>Remittances</td>
<td>5.1</td>
<td>3.2</td>
<td>6.7</td>
<td>3.9</td>
<td>3.0</td>
<td>5.7</td>
</tr>
<tr>
<td>Other sources</td>
<td>5.2</td>
<td>2.4</td>
<td>7.6</td>
<td>2.9</td>
<td>1.7</td>
<td>5.3</td>
</tr>
</tbody>
</table>


Table 10
Welfare effects of CAFTA in Guatemala, 2000 (per cent)

<table>
<thead>
<tr>
<th>Income decile</th>
<th>Vegetables</th>
<th>Cereals</th>
<th>Fruits</th>
<th>Total</th>
<th>Maize</th>
<th>Total</th>
<th>Net total effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.17</td>
<td>2.92</td>
<td>1.16</td>
<td>5.23</td>
<td>-3.52</td>
<td>-3.41</td>
<td>1.82</td>
</tr>
<tr>
<td>2</td>
<td>0.58</td>
<td>4.38</td>
<td>1.09</td>
<td>6.05</td>
<td>-4.38</td>
<td>-4.24</td>
<td>1.81</td>
</tr>
<tr>
<td>3</td>
<td>0.43</td>
<td>4.19</td>
<td>1.23</td>
<td>5.85</td>
<td>-4.17</td>
<td>-4.1</td>
<td>1.75</td>
</tr>
<tr>
<td>4</td>
<td>0.42</td>
<td>4.35</td>
<td>1.1</td>
<td>5.87</td>
<td>-4.62</td>
<td>-4.56</td>
<td>1.31</td>
</tr>
<tr>
<td>5</td>
<td>0.37</td>
<td>3.82</td>
<td>0.9</td>
<td>5.09</td>
<td>-3.62</td>
<td>-3.49</td>
<td>1.6</td>
</tr>
<tr>
<td>6</td>
<td>0.33</td>
<td>4.03</td>
<td>1.05</td>
<td>5.41</td>
<td>-4.06</td>
<td>-3.92</td>
<td>1.49</td>
</tr>
<tr>
<td>7</td>
<td>0.33</td>
<td>4.07</td>
<td>0.87</td>
<td>5.27</td>
<td>-4.24</td>
<td>-4.08</td>
<td>1.19</td>
</tr>
<tr>
<td>8</td>
<td>0.27</td>
<td>3.47</td>
<td>0.95</td>
<td>4.69</td>
<td>-3.39</td>
<td>-3.33</td>
<td>1.36</td>
</tr>
<tr>
<td>9</td>
<td>0.28</td>
<td>2.33</td>
<td>0.7</td>
<td>3.31</td>
<td>-2.66</td>
<td>-2.57</td>
<td>0.74</td>
</tr>
<tr>
<td>10</td>
<td>0.07</td>
<td>3.66</td>
<td>0.19</td>
<td>3.92</td>
<td>-3.27</td>
<td>-3.16</td>
<td>0.76</td>
</tr>
<tr>
<td>Total</td>
<td>0.425</td>
<td>3.722</td>
<td>0.922</td>
<td>5.069</td>
<td>-3.793</td>
<td>-3.686</td>
<td>1.383</td>
</tr>
</tbody>
</table>

A3 Computable general equilibrium model

Finally, another modelling alternative is the CGE model. CGE models are built to represent a given economy (region, country, group of countries) and assume optimizing behaviour by agents (firms, consumers). They not only apply market-clearing conditions as in the previous models – i.e. partial equilibrium models – but also deal with government and household budget constraints, labour market decisions, profit maximization, and other features. Data are used to infer (“calibrate” in technical terms) the parameters of the model in order to obtain an accurate representation of the economy under study. Concerning resulting price changes, a key feature of CGE models is that these results embody not only the direct price effects of the trade policy change, but also “second-round” indirect effects on the prices of non-traded goods and on factor returns, including effects operating through the government’s budget constraint. The solution of the model and its comparative statics provide predictions of the change in variables, such as prices, output, and economic welfare resulting from a change in a tariff, for instance. These price changes can then be used with household survey data to analyse the welfare impact of trade shocks.

An example of this type of methodology is Chen and Ravallion (2004). This paper evaluates the welfare effects of price changes in goods and factors following the accession of China to the WTO, using the GTAP model. Table 11 shows the price changes reported by the model over the period 2001–2007. With those price changes, the authors estimate the net income effect and the net welfare effect on households in rural and urban areas. As columns 5 and 6 of Table 11 show, the welfare effects are mostly negative for the rural population and mostly positive for the urban population. This suggests that trade policy has a diverse impact according to the household type and region, associated with differences in consumer behaviour and income sources.

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>Wholesale prices</th>
<th>Consumer prices</th>
<th>Rural Net revenue</th>
<th>Mean welfare change</th>
<th>Urban Net revenue</th>
<th>Mean welfare change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>-1.4</td>
<td>0.7</td>
<td>73.66</td>
<td>-1.39</td>
<td>-109.33</td>
<td>-0.75</td>
</tr>
<tr>
<td>Wheat</td>
<td>-1.5</td>
<td>0.7</td>
<td>40.86</td>
<td>-0.92</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Feed grains</td>
<td>-3.7</td>
<td>2.1</td>
<td>117.04</td>
<td>-4.90</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vegetable and fruits</td>
<td>-2.6</td>
<td>-0.6</td>
<td>123.41</td>
<td>-4.02</td>
<td>-378.69</td>
<td>2.24</td>
</tr>
<tr>
<td>Oilseed</td>
<td>-5.7</td>
<td>-5.9</td>
<td>37.05</td>
<td>-2.10</td>
<td>-1.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Sugar</td>
<td>-2.8</td>
<td>-3.5</td>
<td>13.74</td>
<td>-0.34</td>
<td>-174.06</td>
<td>6.01</td>
</tr>
<tr>
<td>Plant-based fibers</td>
<td>1.6</td>
<td>4.1</td>
<td>36.84</td>
<td>0.56</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Livestock &amp; meat</td>
<td>-1.5</td>
<td>0.7</td>
<td>194.62</td>
<td>-5.21</td>
<td>-500.65</td>
<td>-3.40</td>
</tr>
<tr>
<td>Dairy</td>
<td>-2.4</td>
<td>-0.5</td>
<td>2.50</td>
<td>-0.09</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other food</td>
<td>-3.1</td>
<td>-2.7</td>
<td>-8160</td>
<td>2.04</td>
<td>-343.13</td>
<td>9.32</td>
</tr>
<tr>
<td>Beverages and tobacco</td>
<td>-5.6</td>
<td>-7.7</td>
<td>-72.98</td>
<td>5.62</td>
<td>-1972</td>
<td>15.09</td>
</tr>
<tr>
<td>Extractive industries</td>
<td>-0.4</td>
<td>1.7</td>
<td>17.99</td>
<td>-0.86</td>
<td>-173.03</td>
<td>-2.92</td>
</tr>
<tr>
<td>Textiles</td>
<td>-0.2</td>
<td>-1.5</td>
<td>-11.08</td>
<td>0.17</td>
<td>-53.5</td>
<td>0.82</td>
</tr>
<tr>
<td>Apparel</td>
<td>2.6</td>
<td>0.8</td>
<td>-64.13</td>
<td>-0.51</td>
<td>-394.3</td>
<td>-2.98</td>
</tr>
<tr>
<td>Light manufacturing</td>
<td>-0.6</td>
<td>0.5</td>
<td>-16.15</td>
<td>-0.08</td>
<td>-82.96</td>
<td>-0.43</td>
</tr>
<tr>
<td>Petrochemical industry</td>
<td>-1.1</td>
<td>0.8</td>
<td>-325.39</td>
<td>-2.60</td>
<td>-398.23</td>
<td>-3.19</td>
</tr>
<tr>
<td>Metals</td>
<td>-0.6</td>
<td>1.3</td>
<td>-15.30</td>
<td>-0.20</td>
<td>-24.02</td>
<td>-0.31</td>
</tr>
<tr>
<td>Autos</td>
<td>-3.8</td>
<td>-4</td>
<td>-52.27</td>
<td>2.09</td>
<td>-377.6</td>
<td>1.52</td>
</tr>
<tr>
<td>Electronics</td>
<td>-1.2</td>
<td>-1.4</td>
<td>-24.27</td>
<td>0.34</td>
<td>-162.69</td>
<td>2.20</td>
</tr>
<tr>
<td>Other manufactures</td>
<td>-0.8</td>
<td>0.8</td>
<td>-264.61</td>
<td>-2.12</td>
<td>-43116</td>
<td>-3.46</td>
</tr>
<tr>
<td>Trade and transport</td>
<td>-0.4</td>
<td>1.7</td>
<td>-18.70</td>
<td>-0.32</td>
<td>-110.53</td>
<td>-1.85</td>
</tr>
<tr>
<td>Construction</td>
<td>-0.4</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>-311</td>
<td>-0.52</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.4</td>
<td>1.7</td>
<td>-16.72</td>
<td>-0.28</td>
<td>-152.04</td>
<td>-2.54</td>
</tr>
<tr>
<td>Commercial services</td>
<td>-1.1</td>
<td>0.9</td>
<td>-6137</td>
<td>-0.55</td>
<td>-533.33</td>
<td>-4.72</td>
</tr>
<tr>
<td>Other services</td>
<td>-0.7</td>
<td>1.3</td>
<td>-434.45</td>
<td>-5.39</td>
<td>-680.99</td>
<td>-8.76</td>
</tr>
</tbody>
</table>
The first panel of Table 12 summarizes the aggregate welfare impact of China joining the WTO over the time frames covering 1995–2001 and 2001–2007. In the short run (1995–2001), this trade reform has a positive impact on all Chinese households (a gain of 55.49 renminbi per capita). However, in the long run (2001–2007), the negative effect on rural households (–18.07 renminbi per capita) makes the aggregate effect at the national level slightly negative (–1.54 renminbi per capita during this time period). The second panel shows the changes in inequality measured by the Gini index with respect to the baseline. Inequality increases in all areas, yet mainly in rural areas (from 33.90 to 34.06 per cent). A similar conclusion can be drawn for the poverty indices for which all estimates show an increase of overall poverty in China.

Table 11

<table>
<thead>
<tr>
<th>Income sources</th>
<th>Per cent change</th>
<th>Wholesale prices</th>
<th>Consumer prices</th>
<th>Net revenue</th>
<th>Mean welfare change</th>
<th>Net revenue</th>
<th>Mean welfare change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm unskilled labour</td>
<td>-0.3</td>
<td>313.58</td>
<td>-0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-farm unskilled labour</td>
<td>1.0</td>
<td>287.19</td>
<td>2.96</td>
<td>122751</td>
<td>12.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled labour</td>
<td>0.4</td>
<td>360.87</td>
<td>1.55</td>
<td>3391.11</td>
<td>14.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>-4.7</td>
<td>170.87</td>
<td>0.80</td>
<td>3391.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital</td>
<td>0.6</td>
<td>21.14</td>
<td>0.13</td>
<td>126.01</td>
<td>0.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Chen and Ravallion (2004).

Table 12

<table>
<thead>
<tr>
<th>Item</th>
<th>Rural</th>
<th>Urban</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mean gains (remminbi per capita)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995–2001</td>
<td>34.47</td>
<td>94.94</td>
<td>55.49 (1.54$)</td>
</tr>
<tr>
<td>2001–2007</td>
<td>–18.07</td>
<td>29.45</td>
<td>–1.54 (0.04$)</td>
</tr>
</tbody>
</table>

Source: Chen and Ravallion (2004).

$Percentage of mean income.

§Official poverty line is from China National Bureau of Statistics, $1/day and $2/day poverty lines are from Chen and Ravallion (2001).
Annex B  Formal derivation of the first-order welfare effect

This annex aims to formally derive the first-order welfare effect that we presented intuitively in Section 3 of this module. The framework builds on standard agricultural household models, as in Singh et al. (1986), which we will modify to take into account that most urban households in middle-income countries are wage earners and do not produce agricultural goods. The unit of analysis is the household, denoted by \( h \). To measure welfare changes, we begin by adopting the indirect utility function approach, as in Deaton (1997). We will later derive the same result using the expenditure function (as in Dixit and Norman, 1980) where we will incorporate the effects of labour income.

The indirect utility function of household \( h \) depends on a vector of prices \( p \) and on household income \( y^h \):

\[
V^h (p, y^h) = V^h (p, x^h + \sum_i \pi^h_i (p_i))
\]

(B1)

where the vector \( p \) comprises consumer prices for all goods. In this equation, household income comprises profits from the production of goods \( j \), \( \pi^h_j (p_j) \), and exogenous income, \( x^h \). We purposefully leave labour income, transfers, and other sources of income (e.g. capital income) out for the moment.

Let us now consider the impact of changes in the price of commodity \( i \) (with \( i \in J \)). The short-term effects on the household can be derived by differentiating the indirect utility function. This delivers:

\[
\frac{\partial V^h}{\partial p_i} = \frac{\partial V^h}{\partial p_i} + \frac{\partial V^h}{\partial y^h} \frac{\partial \pi^h_i}{\partial p_i}.
\]

(B2)

Next, recall first that Roy’s identity indicates that the consumption of good \( i \), \( c^h_i \) is given by:

\[
c^h_i = - \frac{\partial V^h}{\partial p_i} / \frac{\partial V^h}{\partial y^h}.
\]

(B3)

Second, recall also that Hotelling’s lemma establishes that household production \( q^h_i \) is given by:

\[
q^h_i = \frac{\partial \pi^h_i}{\partial p_i}.
\]

(B4)

Dividing and multiplying the first term on the right-hand side of (B2) by \( (\partial V^h) / (\partial y^h) \) results in:

\[
\frac{\partial V^h}{\partial p_i} = \frac{\partial V^h}{\partial p_i} / (\partial y^h) \frac{\partial V^h}{\partial y^h} + \frac{\partial V^h}{\partial y^h} \frac{\partial \pi^h_i}{\partial p_i}.
\]

(B5)

Substituting (B3) and (B4) in (B5) yields:

\[
\frac{\partial V^h}{\partial p_i} = \frac{\partial V^h}{\partial y^h} (q^h_i - c^h_i) \quad \text{(B6)}
\]

Leaving aside, for the moment, the factor \( (\partial V^h) / (\partial y^h) \), this equation shows that the welfare impact of a price change depends on the difference between the production and the consumption level of good \( i \) by the household. Before discussing the implications of this result, note that, in empirical work, we seldom observe consumed and produced quantities. Instead, we observe total expenditure on various goods and services, and total income from various production activities. In order to be able to apply the framework to the data, we need some manipulation of equation (B6). In short, multiply and divide by \( p_i \) and by total household income \( y^h \) to get:

\[
\frac{\partial V^h}{\partial p_i} \frac{p_i}{y^h} = \frac{\partial V^h}{\partial y^h} (q^h_i - c^h_i) \frac{p_i}{y^h} \quad \text{(B6.1)}
\]

Furthermore, multiply each side of equation (B6.1) by \( y^h \), as follows:

\[
\frac{\partial V^h}{\partial p_i} \frac{p_i}{y^h} = \frac{\partial V^h}{\partial y^h} \frac{\partial \pi^h_i}{\partial p_i} \quad \text{(B6.2)}
\]

to get, after applying the properties of logarithms:

\[
\frac{\partial V^h}{\partial \ln p_i} = \frac{\partial V^h}{\partial \ln y^h} (c^h_i - s^h_i) \quad \text{(B7)}
\]

The left-hand side is the object we are trying to measure. On the right-hand side, \( (\partial V^h) / (\partial \ln y^h) \) is the marginal utility of money to household \( h \); \( \phi^h \) is the share of household income derived from the production of goods \( i \) equal to \( q^h_i (p_i / y^h) \); and \( s^h_i \) is the budget share spent on good \( i \) equal to \( c^h_i (p_i / y^h) \). In Deaton (1989b, 1997), the quantity \( \phi^h - s^h \) is the net benefit ratio, which is what we care about with regard to policy implications. In fact, \( \phi^h - s^h \) is the money equivalent of the losses or gains for different individuals. The benefit ratios are easily retrieved from the household surveys. Note that \( (\partial V^h) / (\partial \ln y^h) \) is the private marginal utility of income, which is not the focus of our analysis. Instead, we care about the social marginal utility of money, which informs us about the amount of resources the social planner needs to transfer to household \( h \).

We can now turn to the interpretation of this equation. Households are affected both on the consumption and income sides. On the consumption side, consumers are worse off if prices go up and better off if prices go down. In a first-order
approximation, these effects can be measured with budget shares, \( s_i \). On the income side, there is also a direct impact on profits if the household produces goods \( i \), which depends on the share of income derived from these goods, \( \Theta_i \). In rural economies, this source of income can account for a large portion of total income. In more urbanized economies with more developed labour markets (as in many countries in Latin America or Asia), the role of the direct production of (agricultural) goods tends to be much less important and may be treated as zero. When we do not consider labour income, the total effect of a price change will depend on whether the household is a net consumer or a net producer of the goods under study.

In a small open economy that faces exogenous commodity prices (determined in international markets), wages will respond to changes in those prices mainly because the demand for labour depends on prices (labour supply can be affected by prices as well, but we defer this discussion for the moment). Changes in relative product prices cause some sectors to expand and others to contract. If sectors use factors of production in different proportions, then the relative demand for factors (including skilled labour, unskilled labour, and capital) will change. Even with a fixed labour supply, wages will adjust. If the labour supply reacts as well, an additional channel emerges. In practice, the link between wages and prices depends on the way product prices affect factor demand and supply, and the way changes in factor demand and supply transmit to wages. It is possible to imagine situations where wages would not react to a change in a given price, or situations where wages would increase or decrease. The prices of non-traded goods can also be affected. In the simplest mechanisms, a change in the price of traded goods affects factor prices, as discussed above, and this, in turn, affects the cost of production of non-traded goods. As a result, the prices of these goods may change as well. How these prices (including wages) respond to trade policy is an empirical question.

It is relatively simple to amend the theoretical framework to account for these responses. We begin with wage adjustments. To illustrate them, we work with the expenditure function approach as in Dixit and Norman (1980). As before, the unit of analysis is the household, denoted by \( h \). In equilibrium, household expenditure (including savings) has to be financed with household income (including transfers).

\[
e^h(p, u^h, x^h) = \sum p_i w_i + \sum \pi_i^h(p, \varphi) + \tau^h + x^h_0 \quad (B8.1)
\]

The expenditure function \( e(\cdot) \) of household \( h \) on the left-hand side of equation (B8.1) is defined as the minimum expenditure needed to achieve a given level of household utility \( u^h \). It depends on a vector of prices of consumption goods, \( p \), on the level of utility \( u^h \) the household wishes to achieve, and on other household characteristics, \( x^h \) (such as household composition).

Income comprises the sum of the wages of all working members \( m \), (\( w^m \)), and the sum of the profits \( \pi_i \), made in different economic activities \( i \). Profits include, for instance, the net income from agricultural production or farm enterprises. They depend on prices, technical change, and key household characteristics (summarized by \( \varphi \)). Note that profits are defined as sales net of purchases of inputs so that some of the effects caused by protection on inputs or intermediate goods can be captured by \( \pi_i \). In equation (B8), \( \tau^h \) measures transfers (public or private), savings, and other unmeasured factor returns. Finally, we add exogenous income \( x^h_0 \) for technical reasons.

It is evident from equation (B8) that household welfare depends on equilibrium variables such as prices and wages (that affect household choices) and also on household endowments. For instance, household consumption depends on the prices of consumer goods and household income depends on the labour endowment (skilled, unskilled), the wage rate, and the prices of key outputs. It follows that changes in commodity prices affect welfare directly via consumption and production decisions, and that these effects are heterogeneous insofar as they depend on household choices and endowments.

The first-order impact of changes in the price of good \( i \) can be derived by differentiating equation (B8) (while keeping utility constant and adjusting \( x^h \)) and following a similar procedure to the one above in the case of the indirect utility function. Specifically, the terms of equation (B8) are re-arranged as follows:

\[
x^h_0 = e^h(\cdot) - \sum p_i w_i - \sum \pi_i^h(p, \varphi) - \tau^h \quad (B8.2)
\]

Assuming \( \tau^h \) constant or equal to zero, the differentiation for an exogenous change in the prices of consumption goods \( i(p) \) yields:

\[
dx^h_0 = \frac{\partial e^h(\cdot)}{\partial p_i} \frac{\partial p_i}{\partial p_j} - \sum \frac{\partial w_i}{\partial p_j} \frac{\partial p_i}{\partial p_j} - \frac{\partial \pi_i^h(\cdot)}{\partial p_j} \frac{\partial p_i}{\partial p_j} \quad (B8.2)
\]

Dividing all terms by \( e^h(\cdot) \) and manipulating the right-hand side of equation (B8.2), it follows that:
where \( \frac{dx_h^h}{e^h} \) is a measure of the compensating variation (as a share of initial expenditure) at the household level associated with a change in the \( i \)th price. The compensating variation is the revenue that the social planner needs to transfers to households to compensate them for the price change. If a household loses from a price increase, the compensating transfer of income from the planner is \( -\frac{dx_h^h}{e^h} \) and the compensating variation \( cv \) is negative (i.e. a deficit for the planner). Instead, if the household benefits from a price increase, the compensating variation is positive because it actually represents a transfer from the household to the planner (so that \( dx_h^h/e^h \) is negative).

Equation (B9) summarizes the first-order effects of a price change. The first term on the right-hand side re-establishes the net consumer/net producer result, as described in Section 3 of this module. Additionally, price changes affect wages. This channel is described by the second term on the right-hand side of equation (B9). The mechanisms are in principle simple. When there is a price change, demand for different types of labour (and also labour supply) can change, thus affecting equilibrium wages. In equation (B9), these responses are captured by the elasticities \( \epsilon \) or the share of wage income of the household member \( m \) in total household expenditure \( e^h(\cdot) \).

In the presence of wage adjustments, the standard net consumer/net producer proposition needs to be modified. Consider the case where a household consumes a product but does not produce it at all, yet its members earn an income from selling labour. Omitting wages, this household is a net consumer and could thus be hurt by a price increase. But if wages respond positively to prices, the final welfare effect may not necessarily entail a loss.

The microeconomic approach
REFERENCES


Module 3

The macroeconomic approach"
1 Introduction

This module uses country-level data to focus on the interconnection between trade openness and gender outcomes in terms of improving women’s economic, political, and social status. Because we use this level of aggregation in the data, we decided to title this module “macroeconomic approach”, but this does not necessarily imply that we will only use variables associated with macroeconomic theory such as inflation, unemployment, and growth.

The first macroeconomists in this area of research looked at the relationship between trade openness and macroeconomic outcomes by exploring the effects of trade openness on economic growth. It was only at a later stage that macroeconomists started to analyse the repercussions of trade on inequality, with some authors focusing on poverty among specific groups, such as women, and on gender inequality. It is well documented that opening an economy to international trade often produces significant changes that go beyond the changes associated with growth rates. For example, international trade often triggers structural transformation of the local economy, prompting shifts in employment with consequent feminization or de-feminization of the workforce (Tejani and Milberg, 2010). Moreover, access to new markets for exporting firms from low- and middle-income countries may generate higher income for workers in the exporting sectors. Local firms can also access higher-quality inputs and better technologies, which can help them close the productivity gap observed in most developing countries.

But international trade can also increase unemployment, poverty, and income inequality in the short and medium term due to stiff international competition, as well as create a socially, economically, and politically unsustainable situation in which the potential benefits of trade sometimes do not materialize. One reason for this could be rigidities in labour markets. For the gains from trade to occur, resources need to be reallocated from less productive activities to more productive ones, which may not happen in the presence of imperfect labour markets. This suggests that the relationship between international trade and labour market outcomes is complex and that there are important complementarities between trade and labour market policies. All the more, even when we observe aggregate benefits from increased trade, some groups, including women, may lose as a result. The overall effect of trade openness in a developing country may depend on complementary policies, institutions, and infrastructure – which is why public policies are important and policymakers need to consider the gender effects of trade.

Besides its direct employment effect, international trade connects countries in a way that such matters as standards, laws, cultural norms, and gender roles in a given country may have spillover effects in other countries, particularly in those linked by commercial and financial flows. Of particular interest to us is the effect of globalization, proxied by a measure of trade openness, on women’s economic, political, and social status. We will see below how econometric techniques can be used to assess this question.

Consequently, we need to ask ourselves whether gains from trade actually happen, and then for the purpose of this teaching material, whether they reduce or increase existing gender inequalities. It is also important to evaluate whether international trade empowers women, and what its effects are beyond income-generating opportunities. While some dimensions of the effect of trade on gender inequality (e.g. employment and wages, mostly linked to export expansion) are better documented than others (e.g. intra-household resources and time allocation), there remains great scope for more research on developing countries.

Section 2 of this module summarizes the macroeconomic literature on trade and gender. Section 3 provides the intuition behind the methodology used to link international trade to several gender outcomes using aggregate data. In particular, we review a collection of panel data techniques. For the hands-on application in Sections 4 and 5, we present two papers estimating the effects of globalization, captured by a variety of measures of trade openness, on women’s status. In this sense, we depart from typical economist analyses that study the relationship between trade and labour market outcomes and instead present papers that take a broader view of globalization and women’s rights. The selected applications also allow us to see how similar data can be used with different estimation techniques. Section 6 draws some conclusions.

At the end of this module, students should be able to:

• Use the macroeconomic approach to analyse the link between trade and gender;
• Review and summarize the literature employing the macroeconomic approach to investigate the linkages between trade and gender;
• Understand how the macroeconomic ap-
The macroeconomic approach differs from the microeconomic approach presented in the previous module;

- Have a basic understanding of econometric models, such as panel data (including dynamic panel data) with fixed and random effects;
- Compare the fixed-effects model with the random-effects model and identify which is more appropriate to use according to the research question of interest;
- Replicate, using Stata, the results of the paper by Richards and Gelleny (2007) titled “Women’s Status and Economic Globalization”;
- Replicate, using Stata, the results of the paper by Neumayer and de Soysa (2011) titled “Globalization and the Empowerment of Women: An Analysis of Spatial Dependence via Trade and Foreign Direct Investment”.

2 Review of the literature

This section reviews a brief collection of macroeconomic studies on trade and gender. Its aim is to familiarize readers with a few well-known papers in the literature on trade and gender, rather than serve as an exhaustive literature review. The papers cited below may also prove useful when you are carrying out your own research.

The topic of trade and gender inequality is fairly recent. The policy prescription of trade liberalization was promoted in the 1970s and 1980s as a means to address (a) the efficiency distortions generated by the import substitution industrialization strategy, and (b) the disappointing economic performance of the inward-oriented Latin American countries in the 1960s and 1970s, which contrasted sharply with the success of the outward-oriented East Asian “Tigers”. Accordingly, the primary focus of economists in the empirical literature has been to establish the links between trade and growth and understand whether the latter could contribute to poverty alleviation and income equality, especially in developing countries, on the grounds that trade has greater potential as an engine of growth in countries with widespread poverty than in other countries. Economists have studied the empirical research on the relationship between trade liberalization and gender only at a later stage, and there is a need for more evidence, in particular for developing countries.

A number of papers have assessed cross-country evidence using a macroeconomic approach. The early work of Adrian Wood (1991) explores the changes in the gender composition of manufacturing employment for a set of developed and developing countries and investigates the extent to which these changes were caused by trade. His results suggest that the expansion of trade between developing and developed countries coincided with an increase in the intensity of female employment in the former but, contrary to prior evidence (Schumacher, 1984; Baldwin, 1984), did not result in a reduction in the demand for female workers in the latter. Wood (1991) provides several explanations for this asymmetry, including the possibility that it is easier for female workers in developed countries to relocate from one manufacturing sector to the other, (such as from textiles manufacturing to the manufacturing of food and beverages) since males are assumed to have more sector-specific skills. Kucera and Milberg (1999) update the work of Wood and focus on the employment effects of trade in terms of gender in the manufacturing sector of ten OECD countries. They find that in most cases trade with developing countries has adversely affected female manufacturing employment. Both the papers by Wood (1991) and Kucera and Milberg (1999) are part of a long-standing academic debate on the macroeconomic effects of trade on gender inequality. Another interesting study in this field is that of Bussmann (2009), who looks at 134 countries and discovers yet again that trade openness increases female labour force participation in developing countries, whereas the share of working women in OECD countries declines.

Also using cross-sectional data, Baliamoune-Lutz (2006) finds evidence that globalization and growth seem to have no effect on gender equality (measured as the difference between women’s and men’s illiteracy rates) in non-sub-Saharan African developing countries, but exacerbate gender inequality in sub-Saharan African countries. Wamboye and Seguino (2014) focus on 14 sub-Saharan African countries and claim that the employment effects of trade in terms of gender depend on the structure of a country’s economy rather than on its level of economic development. They find that trade liberalization plays a different role in women’s relative employment according to each country’s endowment of physical infrastructure (electricity, clean water, transport and communication infrastructure), which influences women’s care burdens and thus their labour supply. In a cross-country study on the effects of trade and FDI on the gender wage gap, Oostendorp (2009) finds evidence that increased trade and FDI contribute to narrowing the gender wage gap in developed countries but not in developing countries.

Other papers have explored indirect channels of interaction between trade and gender. For example, Black and Brainerd (2002) tested Becker’s (1959) hypothesis according to which there is
a negative correlation between employer discrimination and the degree of competition in the product market. Using data from United States manufacturing industries, the authors show that higher competition as a result of trade reduces the ability to discriminate against women in concentrated industries, and thus trade openness contributes to shrinking the gender wage gap. Berik et al. (2004) apply this framework to study the effect of trade on wage discrimination in Taiwan Province of China and the Republic of Korea. Contrary to Becker’s theory, the authors find that trade is linked to higher gender wage discrimination in more concentrated industries where women seem to be more affected by the cost-cutting strategy of their employers.

As explained in Volume 1 of this teaching material, the relationship between trade and gender is bi-directional. For this reason, among the macroeconomic literature on trade and gender you will also find studies that examine how gender affects trade. In particular, there is a wide range of studies that explore the linkages between gender inequalities and export performance. The basic idea of this strand of literature is that firms in labour-intensive, export-led sectors rely on cheap female labour to thrive in international markets. In this context, gender norms and stereotypes also play an important role in the clustering of the female workforce in labour-intensive manufacturing (see Module 3 of Volume 1). For instance, Seguino (2000) studies a group of semi-industrialized, export-oriented countries and shows that gender inequality reflected in lower wages for women contributed to higher growth through its positive effect on exports. This paper opened a lively discussion with Schober and Winter-Ebmer (2011) who find that gender inequality is bad for economic growth and criticize Seguino (2000) for promoting gender inequality as a growth-enhancing strategy. Seguino (2011) replies by raising some empirical concerns about the approach of the paper by Schober and Winter-Ebmer. She concludes: “A finding that gender wage inequality is a stimulus to growth is not a vote or indeed justification for inequality. Rather, it is an evidence-based approach for assessing how things stand and what we need to do at the policy level to promote equity-led growth.” (Seguino, 2011: 1487).

Busse and Spielmann (2006) adopt a broader definition of gender inequality, including wages, labour market access, and education inequality. They argue that gender bias does not influence the amount of export flows but rather the type of products exported. In their view, gender inequality may favour the export of labour-intensive products but would disincentivize countries to switch to higher-value products and thus limit their growth potential.

These are just a few macroeconomic studies in the area of trade and gender in addition to the two studies reviewed in Sections 4 and 5 of this module. The papers reviewed here differ in their scope and theoretical approach, and use different definitions of gender inequality and trade. For example, they define gender inequality in terms of women’s status rather than measuring inequality in terms of labour market outcomes (e.g. gender wage gap). For a more detailed literature review you may read Çağatay (2001) and Fontana (2008). In conclusion, the aim of this literature review was to demonstrate how extensive the macroeconomic literature on trade and gender is, but also to make you realize that the debate on the interlinkages between trade and gender is still open. We encourage you to contribute to it through your own research.

### 3 Methodological approach: Panel data models

Panel data are repeated measures of a variable \(i\) over time \(t\). This variable may be related to individuals, households, firms, countries, etc. over a period of time. The main characteristic of a panel dataset is the two-dimensionality of the data. Most papers adopting the macroeconomic approach in the trade and gender literature use panel data where the main variable is defined in the country and the year dimension.

A micro-panel dataset is a panel for which the time dimension \(T\) is largely less important than the individual dimension \(N\). A macro-panel dataset is a panel for which the time dimension \(T\) is similar to the individual dimension \(N\). In panel data with \(N\) units and \(T\) periods, we could independently estimate \(N\) time series models or \(T\) cross-section models. However, there are several advantages of using panel data rather than independent regressions. One of them is that panel data allow us to control for unobserved heterogeneous characteristics. Panel data also allow us to aggregate information in some way, and the more information we have to run the estimation of a set of parameters, the more efficient such estimation is. However, panel data also have some disadvantages. Sometimes it is not possible to aggregate cross-sectional and temporal data. Panels, especially for micro data, are often expensive and difficult to assemble. There may be selection problems in panels, as some individuals may disappear, decide not to answer some specific questions, or be selected for the panel because...
they have particular characteristics of interest for the purpose of specific research. In a nutshell, selection problems usually occur when individuals are not selected randomly to be included in the sample.

The basic model in a panel data framework is:

\[ y_{it} = x'_{it} \beta + \mu_i + \epsilon_{it} \]  

(1)

where \( y \) is the dependent variable of interest (e.g. the gender wage gap); \( x \) is a matrix of independent variables or covariates (e.g. GDP per capita, a measure of trade openness, etc.); \( \beta \) are the coefficients that identify the statistical relationship between \( y \) and \( x \); and

\[ \epsilon_{it} = \mu_i + \delta_t + \epsilon_{et} \]  

(2)

is the error term. The latter includes three components that represent the three sources of unobserved variability: \( \mu_i \) represents unobserved variability across individuals (some individual-specific characteristics that we are not able to capture); \( \delta_t \) represents unobserved variability across periods of time (in a particular period, variables may be affected by something we cannot observe); and \( \epsilon_{et} \) is pure unobservable variability specific to the individual and the time observation.

Assume that \( \delta_t \) is zero and that \( \epsilon_{et} \) satisfies all the classic assumptions.\(^66\) In the case that all individual-specific components \( \mu_i \) are zero, we have \( \epsilon_{it} = \epsilon_{et} \), the model becomes \( y_{it} = x'_{it} \beta + \epsilon_{it} \) and the panel data structure does not add any useful information for the estimation of the parameters.

### 3.1 Fixed-effects model

In a nutshell, a fixed-effects model is an econometric specification of panel data model that allows us to “net out” from the estimation results the effects of unobserved time-invariant and individual-specific characteristics (\( \mu_i \)) that are probably correlated with the independent variables \( x_{it} \). If we do not account for these fixed effects and they are related to the independent variables, we create an “omitted variable bias”. Assume that the model now is:

\[ y_{it} = x'_{it} \beta + \mu_i + \epsilon_{it} \]  

(3)

Here we can see the advantage of using panel data, as parameters \( \mu_i \) cannot be estimated with a cross-section but can be with a panel. If \( \mu_i \) is correlated with \( x_{it} \), the independent variables may be endogenous with respect to \( \mu_i \) but not to \( \epsilon_{it} \). This panel model can be seen as a linear model where each individual (or firm, country, etc.) has its own \( y \)-intercept. We can estimate this model using \( N-1 \) dummy variables per individual in the sample. Having a panel allows us to control for individual omitted variables that do not vary over time.

### 3.2 Random-effects model

A random-effects model is a statistical model that is used when we assume that \( \mu_i \) – the omitted or time-invariant component of the error term – are uncorrelated with \( x_{it} \) – the independent variables. Take the same model as before:

\[ y_{it} = x'_{it} \beta + \mu_i + \epsilon_{it} \]  

(3)

but now instead of considering \( \mu_i \) as constant for each individual, we assume that it is a random variable. In other words, the random-effects assumption refers to the uncorrelated individual-specific effects with the independent variables (the time-invariant characteristics \( \mu_i \) is purely random and uncorrelated with \( x_{it} \)). Contrary to random effects, the fixed-effects assumption is that the individual-specific effects are indeed correlated with the independent variables. We can estimate a panel data model with either of the two models. Which one will be better (more efficient)? It depends on which one of the two assumptions is true in the data. The discussion of the tests\(^67\) to assess which model fits the data best is beyond the scope of this teaching material but it is worthwhile noting that in practice most papers use fixed-effects models (see Box 2).

<table>
<thead>
<tr>
<th>Box 2</th>
<th>Fixed effects vs. random effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>In econometrics, fixed-effects models control for, or “partial out” the effects of omitted (unobserved) time-invariant variables that are correlated with one or more observed variables included in the model. This is true regardless of whether or not the time-invariant variables are explicitly measurable. By time-invariant variables, we mean variables whose value does not change over time; by time-invariant effects, we mean that the variables have the same effect on the dependent variable over time.</td>
<td></td>
</tr>
<tr>
<td>In a random-effects model, the omitted variables are assumed to be uncorrelated with (or, more strongly, statistically independent of) all the observed variables included in the model. This assumption will often not be valid, but a random-effects model may be still desirable under some circumstances.</td>
<td></td>
</tr>
</tbody>
</table>
3.3 Dynamic panel data models

We get a dynamic panel data model when we add to the independent variables of a panel data model the lagged value of its dependent variable. In other words, dynamic panel data models introduce the temporal dependency of the dependent variable into the equation. In equations, the latter can be represented as:

\[ y_t = \delta y_{t-1} + x_t \beta + \mu_i + \epsilon_t \]  

where \( y_{t-1} \) is the lagged value of \( y_t \). In this model, we have two sources of persistence: \( y_{t-1} \) and \( \mu_i \). If we use an estimator like ordinary least squares or fixed effects, the estimations will be biased and inconsistent because by construction, both \( y_{t-1} \) and \( y_{t-2} \) depend on \( \mu_i \), and \( y_{t-1} \) is correlated with \( \mu_i + \epsilon_t \). We therefore need a different estimator that gets around this problem. Arellano and Bond (1991) provide an appropriate solution. Assuming for simplicity that \( \beta = 0 \), our model is now:

\[ y_t = \delta y_{t-1} + \mu_i + \epsilon_t \]  

If we subtract \( y_{t-1} \) from both sides we get:

\[ \Delta y_t = \delta \Delta y_{t-1} + \Delta \epsilon_t \]  

In this equation \( \mu_i \), which was creating problems, has disappeared. The first period for which we have this relationship is \( t = 3 \), where we have:

\[ \Delta y_{i3} = \delta \Delta y_{i2} + \Delta \epsilon_{i3} \]  

In this case, \( y_{i3} \) is a valid instrument as it is correlated with \( \Delta y_{i2} = y_{i2} - y_{i1} \), but is not correlated with \( \Delta \epsilon_{i3} \). In \( t = 4 \), the relationship is:

\[ \Delta y_{i4} = \delta \Delta y_{i3} + \Delta \epsilon_{i4} \]  

In this case, \( y_{i4} \) and \( y_{i3} \) are valid instruments. Using the same logic, the valid instruments for \( T \) are \( y_{i1}, y_{i2}, \ldots, y_{iT-2} \). Arellano and Bond provide an estimator, the generalized method of moments (GMM), which optimally combines all these instruments.

In the following two sections, we will see how variants of these panel data models are used in the trade and gender literature.
4 Hands-on application I: “Women’s status and economic globalization” (Richards and Gelleny, 2007)68

4.1 Context and overview

Richards and Gelleny (2007) study the relationship between economic globalization and the status of women by looking at arguments advanced both by proponents and sceptics of globalization. According to the authors, addressing this issue has value for two main reasons. The first is because economic globalization is state-induced (“globalization from above”); those typically most adversely affected by globalization have no voice in its implementation. Therefore, it is important to provide a clear understanding of its nature. Second, the authors want to bridge a theoretical disconnect that exists in the literature between papers applying macro-level analytical methods and those looking at the effects of globalization on particular vulnerable groups that often do not use theoretically oriented methodologies at the country-year or macro levels of analysis. The authors use a panel of 130 countries between 1982 and 2003 and check robustness using alternative measures of economic globalization and women’s status. Table 13 provides an overview of their paper.

Table 13

Overview of Richards and Gelleny (2007)

<table>
<thead>
<tr>
<th>Objective</th>
<th>The objective of the paper is to analyse the relationship between economic globalization and the status of women.</th>
</tr>
</thead>
</table>
| Methodology | • The authors use five different measures of women’s status as the dependent variable.  
• The choice of estimation techniques depends on the nature of the dependent variable:  
  - For the United Nations indicators of women’s status, the authors use a generalized estimation equation (GEE) technique with robust standard errors;  
  - For the Cingranelli-Richards (CIRI) indicators (ordinal variables) of women’s status, the authors use the ordered logit estimation technique. |
| Sample description | • 130 countries  
• Period of analysis: 1982–2003  
• Panel data |
| Equation estimated68 | \[ y_{it} = \alpha + \beta_1 \text{Democracy}_{it} + \beta_2 \text{FDI}_{it} + \beta_3 \text{Portfolio}_{it} + \beta_4 \text{SAP}_{it} + \beta_5 \text{Development}_{it} + \beta_6 \text{Regime}_{it} + \epsilon_{it} \]  
Note:  
• In the CIRI indicators equations, the authors also control for the lagged dependent variable (\( y_{i,t-1} \)) to account for serial correlation;  
• All variables are observed for country \( i \) and year \( t \). |
| Dependent and independent variables | The dependent variable (\( y \)) are five different measures of women’s status:  
• Gender-Related Development Index (GDI) from the United Nations Human Development Report  
• Gender Empowerment Measure (GEM) from the United Nations Human Development Report  
• Women’s economic status from the CIRI database  
• Women’s political status from the CIRI database  
• Women’s social status from the CIRI database  
Six independent variables (\( x \)) are used to measure globalization:  
• Trade openness: total value of a country’s imports and exports of goods and services as a percentage of GDP (Open)  
• Foreign direct investment: net inflow of investment as a percentage of GDP (FDI)  
• Portfolio investment: net amount of transactions in equity securities and debt securities, expressed as a percentage of a country’s GDP (Portfolio)  
• Structural Adjustment Programmes: a dummy variable to account for the effects of the IMF and World Bank Structural Adjustment Programmes (SAP)  
• Development: log of per capita GDP as a proxy of the level of development of the country (Development)  
• Democracy: ordinal regime-type indicator from the Polity IV69 to measure the level of democracy in the country (Democracy) |
| Results | • Women’s status in a given country is associated with that country’s involvement in the global economy.  
• On average, economic globalization improves women’s status.  
67 per cent of the statistically significant globalization coefficients indicated an association with improved women’s status.  
• However, the relationship between economic globalization and women’s status differs by type of globalization, type of status, and era.  
• Trade openness has a generally positive influence on women’s status;  
• Portfolio investment is associated with lower scores on the CIRI women’s economic and social rights indicators and the UN’s GEM measure;  
• FDI does not show a statistically significant effect on women’s status;  
• There is weak empirical support for the proposition that SAP implementation affects women’s status. |

Source: Richards and Gelleny (2007):
4.2 Data sources

The dependent variables in the analysis are indicators that measure women's status. The authors use five different indicators to control for the sensitivity of any finding to a particular indicator.

The first two indicators of women's status are related to human rights and are drawn from the United Nations' annual Human Development Report. This report includes two gender-specific indices covering the political, economic, and social dimensions of development: (a) the Gender-Related Development Index, and (b) the Gender Empowerment Measure. The GDI is a composite index that measures longevity (measured by life expectancy at birth), knowledge (measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio), and standard of living (measured by GDP per capita in United States dollars in purchasing power parity terms). These features are combined in a manner so as to penalize gender inequality. The GEM is a composite index measuring gender inequality in three dimensions of empowerment: economic participation and decision-making power (measured as female shares of professional/technical positions and female shares of positions as legislators, senior officials, and managers); political participation and decision-making (measured as the female share of parliamentary seats); and power over economic resources (measured as women's estimated earned income as compared to that of men). Both indexes, the GDI and the GEM, range from 0 to 1.0, with a higher score being more desirable than a lower score.

The authors also use three government indicators for women's economic, political, and social rights from the CIRI Human Rights Dataset (Cingranelli and Richards, 2005). The CIRI economic rights indicator includes women's rights to equal pay for equal work, free choice of employment, gainful employment without the need to obtain spousal consent, equality in hiring and promotion practices, job security, non-discrimination by employers, freedom from sexual harassment in the workplace, and the right to work at night, to work in dangerous occupations, and to work in the military and police force. The CIRI political rights indicator includes women's rights to vote and/or run for political office, hold elected and appointed government positions, join political parties and petition government parties. The CIRI social rights indicator includes women's rights to equal inheritance; enter into marriage on a basis of equality with men; travel abroad; obtain a passport; confer citizenship to children or a husband; initiate a divorce; own, acquire, manage, and retain property brought into marriage, participate in social, cultural, and community activities; obtain an education; freely choose a residence/domicile; to be free from forced sterilization. All three indicators are ordinal and range from 0 to 3, with a score of 3 representing the highest level of government respect for women's rights, both in law and in practice.

The most important explanatory variables in Richards and Gelleny (2007) are those related to globalization. The authors use four indicators to account for a country's level of economic globalization: FDI (net flows as a percentage of GDP), portfolio investment (net amount of transactions in equity securities and debt securities, expressed as a percentage of a country's GDP), trade openness (total value of a country's imports and exports of goods and services as a percentage of GDP), and structural adjustment policy implementation (dichotomous measure to account for the IMF and World Bank Structural Adjustment Programmes). The first three measures are from the World Bank's 2005 World Development Indicators dataset. The last measure is from Abouharb and Cingranelli (2006).

Richards and Gelleny (2007) also control for the level of democracy in the country (using the Polity IV dataset) and its level of development (proxied by log of per capita GDP from the World Bank's WDI, 2005). The expectations are that, on the one hand, democratic regimes are more likely to implement and enforce laws promoting women's rights, and, on the other, countries with a higher level of economic development are more likely to provide all citizens with higher levels of income, thereby potentially giving women better prospects of social, political, and economic empowerment.

4.3 Empirical methodology

Richards and Gelleny (2007) use two different empirical methodologies according to the nature of the dependent variable.

Both the GEM and GDI data are interval-level, pooled cross-section, time-series data (with significantly more cross-section observations than temporal units). To deal with this type of data, the authors use the GEE estimation technique with robust standard errors. This approach extends generalized linear models to a regression setting with correlated observations within subjects, i.e. repeated observations on individuals over time.
and/or clustered observations. In these cases, the use of ordinary models to analyse data with correlated observations tends to produce incorrect standard errors and p-values for regression coefficients. Models that ignore clustering tend to underestimate standard errors of regression coefficients for covariates. However, with time-varying covariates, standard models may tend to overestimate standard errors. To solve this, we use GEE. This estimation technique can be used with a variety of models (linear, logistic, Poisson, etc.) and uses robust estimation of standard errors to allow for clustering. The robust standard errors are derived using the observed variability in the data rather than the variability predicted by an underlying probability model (which produces model standard errors).

The methodology applied in the estimations of the equations with the GDI and GEM indicators as dependent variables cannot be applied when the dependent variables come from the CIRI database, since the three CIRI indicators are ordinal (taking values 0, 1, 2, and 3). The authors therefore use the ordered logit estimation technique to estimate these models. A logit regression is a non-linear regression model that forces the output (predicted values) to be either 0 or 1 (estimating the probability of an outcome). When a dependent variable has more than two categories and the values of each category have a meaningful sequential order, where a value is indeed “higher” than the previous one, then you can use ordinal logit. This type of model is an extension of the logistic regression model that is applied to dichotomous dependent variables, allowing for more than two (ordered) response categories. The only difference is that the ordered logit model estimates the probability of each outcome as a subtraction of a cumulative probability. The authors incorporate a lagged dependent variable in this model to account for serial correlation, and also adjust standard errors to account for country-specific clustering. To account for the fact that the level of globalization was very different at the beginning and end of their sample period, the authors divide their sample into pre-globalization and globalization eras.

### 4.4 Step-by-step explanation of how to do the estimations in Stata

Together with this module, you are provided with the do-files that Richards and Gelleny created to run the estimations included in the paper. The authors created a do-file that contains the commands for applying the GEE and the ordered logit model. Therefore, you need to open the statistical software first, set a memory level that is reasonable for the analysis (for instance, 100m), as we have explained in Module 1 of this volume, and then open the dataset (DR_RG_ISOQ_07a.dta) manually. You can then open the do-file “STATA Richards”.

The structure of the do-file has eight command lines, two for each table. The first two lines estimate the GEE model, the results of which are shown in Table 1 in the Richards and Gelleny paper. One line corresponds to the GEM variable (gem) and the other to the GDI variable (gdi). Lines 3–8 estimate the ordered logit model for the other three variables: women’s economic rights (wecon) (see Table 2 in the paper), women’s political rights (wopol) (see Table 3 in the paper), and women’s social rights (wosoc) (see Table 4 in the paper). For each of the three variables, the data are divided into two sub-samples – pre- and post-1992 – because 1992 is the cut-off the authors choose to indicate the pre-globalization and globalization eras. Note that to do this, the authors created a dummy variable globz, taking a value of zero for data corresponding to years before 1992 and a value of one after 1992.

The Stata command to implement the GEE technique is xtgee (please refer to Stata help xtgee for a detailed explanation of the command). This command estimates longitudinal models and allows you to specify the within-group (within-subject) correlation structure. Using the command xtgee is equivalent to using the command xtreg, pa (the command for the estimation of the parameters of a linear panel data model using population averages).

#### Step 1: Run the GEE model for the GEM variable

For GEM as the dependent variable, the complete Stata command to estimate column 1 in Table 1 of the paper is:

```stata
xtgee gem tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap Logged democracy, i (country) t (time) robust
```

The command xtgee is followed by the dependent variable (gem), the four measures of globalization (tradeopenness_unlogged, fdi_unlogged, portgdp, and sap_implementation), the measure of economic development (gdppercap_logged), and the level of democracy (democracy). The dimensions i (country) and t (time) define the unit of analysis and the time dimension of the panel data, the option robust is included to obtain cluster-robust standard errors.
Step 2: Run the GEE model for the GDI variable

For the GDI variable (column 2 in Table 1), the command is the same, just replacing \textit{gem} for \textit{gdi}:

\begin{verbatim}
xtggee gdi tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy, i (country) t (time) robust
\end{verbatim}

Step 3: Run the ordered logit model for the women's economic rights variable

The Stata command to implement the ordered logit technique is \texttt{ologit} (see Stata help \texttt{ologit} for a detailed explanation of the command). This command fits ordered logit models of an ordinal dependent variable. The actual values taken on by the dependent variable are irrelevant, except that larger values are assumed to correspond to “higher” outcomes. The sign of the regressions parameters can be interpreted as determining whether the (latent) dependent variable increases with the regressor. If $\beta_i$ is positive, then an increase in $x_i$ reduces the probability of being in the lower category, and increases the probability of being in a higher category of $y_i$.

For women’s economic rights (\textit{wecon}) as the dependent variable, the complete Stata command to estimate column 1 in Table 2 of the paper is:

\begin{verbatim}
ologit wecon wecon_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==0 & year>1981, cluster(country) robust
\end{verbatim}

We have the same command syntax (column 2 in Table 2) for the period of globalization (\texttt{globz}=1):

\begin{verbatim}
ologit wecon wecon_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==1 & year>1981, cluster(polity) robust
\end{verbatim}

Step 4: Run the ordered logit model for the women’s political rights variable

The do-file then repeats the same estimation procedure replacing the women’s economic rights (\textit{wecon}) variable with the political (\textit{wopol}) and social (\textit{wosoc}) rights measures.

For Table 3, column 1 in the paper:

\begin{verbatim}
ologit wopol wopol_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==0 & year>1981, cluster(polity) robust
\end{verbatim}

For Table 3, column 2 in the paper:

\begin{verbatim}
ologit wopol wopol_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==1 & year>1981, cluster(polity) robust
\end{verbatim}

Step 5: Run the ordered logit model for the women’s social rights variable

For Table 4, column 1 in the paper:

\begin{verbatim}
ologit wosoc wosoc_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==0 & year>1981, cluster(polity) robust
\end{verbatim}

For Table 4, column 2 in the paper:

\begin{verbatim}
ologit wosoc wosoc_lag1 tradeopenness_unlogged fdi_unlogged portgdp sap_implementation gdppercap_logged democracy if globz==1 & year>1981, cluster(polity) robust
\end{verbatim}
The authors find that in most specifications, there is a relationship between the level of globalization of that country and the status of women. However, the relationship depends on the type of globalization we are considering, the type of status (economic, political, or social), and the period under consideration (before or after 1992). In most cases, globalization is associated with improvements in women’s status (a positive statistically significant coefficient), but there are negative coefficients for some variables (in particular the ones associated with the portfolio variable), and in some cases the coefficient is not statistically significantly different from zero.

These results show one of the difficulties of trying to establish relationships between aggregate macroeconomic variables using cross-section and panel regressions. The estimations of Richards and Gelleny show that, depending on the variables and time period we select for the analysis, the result could be different. There is also the possibility of omitted variables that may bias some of the results, which shows the difficulties the analyst faces when deciding on the set of relevant control variables that will be needed to account for the many dimensions in which the countries included in the sample differ. Another drawback with this type of analysis is the difficulties encountered when trying to establish causality between the variables. For instance, women’s status and the level of globalization could be caused by a common variable that was omitted in the analysis (e.g. the level of institutional development of the country).

Note that the authors assume somehow that what matters for women’s status is the level of globalization and not how this globalization happens (for instance, they do not ask if it matters with what countries an economy is trading). It could be argued that countries that trade with partners where women enjoy better status may benefit from spillover and demonstration effects. Something similar could be argued about FDI flows. In what follows, we will present a second paper that deals with the issues that were not addressed by Richards and Gelleny.

5 Hands-on application II: “Globalization and the empowerment of women: An analysis of spatial dependence via trade and foreign direct investment” (Neumayer and de Soysa, 2011)

5.1 Context and overview

Similar to Richards and Gelleny (2007), Neumayer and de Soysa (2011) also look at the effect of general openness to trade and FDI on women’s rights. However, their paper aims to identify a specific channel through which trade may affect the status of women, and it systematically addresses the question of whether trade and investment linkages can enable the empowerment of women. What matters in their analysis is not only if you trade but with whom you trade. However, the paper does not analyse the effects of certain policies often associated with globalization, such as capital account liberalization, trade liberalization, investment incentives, etc. The authors also do not analyse other important aspects of globalization, such as migration and the illegal trafficking of people.

The authors depart from previous studies in two important ways. First, they employ broader measures of women’s rights that include both economic and social rights (such as marriage and divorce rights, the right of movement, the right to property, the right to participate in social activities, the right to education, the right to inherit, etc.) as a better gauge of women’s empowerment than simple measures of the wage gap and employment ratios. Second, they examine whether it matters with whom one trades and from whom one receives FDI, whereas existing studies have only examined general openness to trade and FDI. For example, if a country mainly trades with and receives FDI from countries that violate rights, we would not expect domestic rights to be enhanced.

The paper is similar to the one by Richards and Gelleny both in terms of the questions being addressed and some of the data used. However, it is interesting to discuss these issues here to show how the same questions can be addressed from a different angle and using a different methodology. Table 14 provides an overview of the Neumayer and de Soysa paper.
The macroeconomic approach

Objective
The objective of the paper is to analyse whether the foreign country with which a country trades and from which it receives FDI matters for women’s economic and social rights in the home country. The main question is the following: If a country trades and receives FDI from countries where women’s status is high, would that lead to a higher status for women in the home economy?

Methodology
- The authors apply the “ordered logit” estimation method.
- However, ordered logit models do not allow to estimate country-fixed effects, alternatively, the authors use regional dummies. When the lagged dependent variable is added as an explanatory variable, Arellano and Bover’s system-GMM estimator is employed.

Sample description
- 152 countries
- Panel data

Equation estimated
\[ y_{it} = \alpha + \beta_{1} y_{it-1} + \beta_{2} \text{GDPpc}_{it} + \beta_{3} \text{democracy}_{it} + \beta_{4} \text{trade}_{it} + \beta_{5} \text{FDI}_{it} + \beta_{6} \sum_{k} w_{ikt-1} \text{trade}_{it} y_{kt-1} + \beta_{7} \sum_{k} w_{ikt-1} \text{FDI}_{it} y_{kt-1} + \delta_{t} + \epsilon_{it} \]

- Variables are observed for country i, year t, and partner country k (for trade or FDI).
- \( w \) are the weights estimated as the share foreign countries (k) have in trade and FDI stock of partner country i under observation.

Dependent and independent variables
Two dependent variables (y), both from Cingranelli and Richards’ (2009) Human Rights Database:
- Measure of women’s economic rights
- Measure of women’s social rights

Two main explanatory variables (the spatial lag variables):
- Women’s rights in foreign countries weighted by the amount of trade of each country with its trading partners (\( w_{\text{trade}} y_{kt-1} \))
- Women’s rights in foreign countries weighted by the amount of FDI received by each country from foreign countries (\( w_{\text{FDI}} y_{kt-1} \))

Other control variables:
- \( \text{GDPpc} \): log of per capita income in constant 2000 $ at market exchange rates (from the World Bank)
- \( \text{democracy} \): Polity II variable as a measure of democracy (from the Polity IV dataset)
- \( \text{trade}/\text{GDP} \): trade openness measured as the ratio of the sum of exports and imports to GDP (from the World Bank)
- \( \text{FDI}/\text{GDP} \): trade openness to FDI measured as the value of the total stock of inward FDI relative to GDP (from UNCTAD)
- \( \delta \): time-fixed effects

Results
The paper finds that who you trade with matters for the status of women:
- Spillover effects on women’s economic and social rights:
  - The trade-weighted spatial lag effect is positive and significant in most specifications;
  - One exception: the sample including only low-income countries.
- FDI links seems to matter less for women’s rights:
  - Spillover effects on women’s economic and social rights are limited and weak;
  - The FDI-weighted spatial lag effect is positive and significant only for economic rights in middle-income countries.

In general terms, trade openness seems to be conducive to stronger women’s economic rights, whereas general FDI openness seems to not matter much.


5.2 Data sources

The measures of women’s economic and social rights, which represent the dependent variables in the analysis, are taken from the CIRI Human Rights Database. These data are also utilized by specialized agencies monitoring the progress of women in the economic and social spheres of their lives (UNIFEM, 2008).

Table 15 lists women’s economic and social rights covered in the database that are used for the estimations in Neumayer and de Soysa (2011). An older version of this dataset (Cingranelli and Richards, 2005) was used in the Richards and Gel- leny (2007) paper.
The main explanatory variables are the spatial lagged variables. They capture the dependent variable (i.e., women’s rights) in foreign countries, weighted by some link function connecting each country to its trading partners and the source countries of FDI, \( w_{\text{trade}} \) and \( w_{\text{FDI}} \), respectively. Other control variables included in the analysis are trade openness, measured as the ratio of the sum of exports and imports to GDP, taken from the World Bank’s WDI (2009) (\( \text{trade/GDP} \)); openness to FDI, measured as the value of the total stock of inward FDI relative to GDP, taken from UNCTAD (2009) (\( \text{FDI/GDP} \)); the natural logarithm of per capita income in constant 2000 $ at market exchange rates, taken also from the World Bank’s WDI (\( \text{GDPpc} \)); and a measure of democracy from the Polity IV dataset (\( \text{democracy} \)).

### 5.3 Empirical methodology

The spatial patterns in women’s rights are often not caused by spatial dependence but by observable as well as unobservable phenomena – such as cultures and customs, preferences and perceptions, constitutions and institutions, etc. – that are typically spatially clustered. These unobservable variables might lead to spatial patterns in the dependent variable, even in the absence of spatial dependence. A popular method for mitigating the problem created by spatial clustering is the inclusion of country-fixed effects. Such models take out all of the “between” variation in the data and are estimated based on the “within” variation of the data in each observational unit only (each of the countries in the study). This reduces bias because any spatial clustering or unobserved spatial heterogeneity in the levels of women’s rights is fully captured by the fixed effects.

However, the authors cannot apply country-fixed effects here because of the nature of their dependent variable (women’s economic and social rights taken from Cingranelli and Richards, 2009). Women’s economic and social rights are measured as ordered categorical variables, which take on values 0, 1, 2, or 3. Thus, we need to use an ordered logit or probit model, and this type of econometric technique does not allow for using country-fixed effects. As a compromise, the authors include regional rather than country-fixed effects in ordered logit estimations, using dummy regional variables. They later consider a model that adds a lagged dependent variable and use Arellano and Bover’s (1995) system-GMM estimator to perform the analysis. This estimator is preferable to a standard fixed-effects estimator because it can treat both the lagged dependent variable and the spatial lagged variables as endogenous.

Another problem of spatial analysis in cross-sectional time series analysis is that of common shocks and common trends, such as a general increase in awareness of women’s rights over time. The authors control for this by including year-fixed effects representing separate intercepts for each year of the period under study, as well as the temporally lagged dependent variable.
5.4 Step-by-step explanation of how to do the estimations in Stata

The file "Article for World Development (women's rights).do" contains the do-file to reproduce the tables in Neumayer and de Soysa (2011). The structure of the file is slightly more complicated than the previous one. We will therefore split the task into several steps.

**Step 1: Declare type of data**

Sometimes Stata does not recognize that the data have a time series dimension, so we need to indicate that using the command `tsset`. We can tell Stata we have a time series using `tsset` plus the name of the variable measuring time. If we have a panel, we use the same command followed by the variable recording the individual dimension (in this case the country) and the time dimension (e.g. `year`).

In this particular case, the command is:

```
+ tsset countryid year
```

**Step 2: Fix the estimation sample and construct basic descriptive statistics**

We will create a table with sample statistics of the main variables (Table 2 in the Neumayer and de Soysa paper) and their correlation matrix (Table 3 in the paper). When we run and present multiple analyses for the same paper, we often want to keep the same sample across all our models and estimations. If we do not indicate this to Stata, different models can have different sample sizes because different variables have different patterns of missing data (e.g. unbalanced panels). We can avoid this by using the command `e(sample)` that creates a variable that records the estimation sample, i.e. the sample used in the most recent statistical command. For this reason, the authors first run the estimation of the ordered logit model they will later use in order to fix the sample for the analysis. They use the command `quietly` because they do not want to display the results of the estimation. Since the dependent variable is categorical, as in the Richards and Gelleny paper reviewed above, the estimation command is `ologit`. We use the command `xi` to tell Stata to create dummy variables for variables preceded by an `i.` prefix. For example, by adding `i.year` to the list of dependent variables, Stata will create year dummy variables. We regress the variable measuring women's economic status using both FDI stocks (`l.wosocfdiinstockslrowst`) and bilateral trade flows (`l.wosoctrade`) as weights, and, finally, the year dummies (`iyear`) and the region dummies. Note that the authors could have listed the regional dummies one by one (`reg_eap reg_eca reg_lac reg_mena reg_na reg_sa reg_ssa reg_west`) but they preferred to use the suffix `*`, which is a shortcut that tells Stata to use all the variables that have the same root (in this case `reg_`).

```
+ xi: quietly ologit wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosocfdiinstockslrowst l.wosoctrade l.i.year reg_*
+ robust cluster(country)
```

We can summarize the variables of interest to obtain the number of observations, mean, standard deviation, and minimum and maximum values of each variable using the command `summarize`, here abbreviated as `su`. Note that we are asking Stata to use the observations that were included in the previous regression and defined as the sample we will work with throughout the entire paper.

```
+ xi: su wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wosocfdiinstockslrowst l.wosoctrade l.i.year reg_*
```

Similarly we ask Stata to produce the correlation matrix between the relevant variables using the Stata command `corr`. Note that we have also included here women’s social status and the trade-weighted spatial lag and FDI-weighted spatial lag variables, using the social status of women abroad.

```
+ xi: corr wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wosocfdiinstockslrowst l.wosoctrade l.i.year reg_*
```

We repeat the first quiet regression using women’s social status (`wosoc`) instead of economic status (`wecon`) as the dependent variable, and we summarize the variables related to women’s social status to include them in Table 2 of the paper.

```
+ xi: quietly ologit wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosocfdiinstockslrowst l.wosoctrade l.i.year reg_*
+ robust cluster(country)
```

```
Step 3: Estimate the results for women’s economic rights

Table 4 in the paper shows estimates for all countries (columns 1–3) and developing countries only (columns 4–6). The estimator used is ordered logit in models 1–2 and 4–5 and system-GMM in models 3 and 6. Models 1–2 and 4–5 contain regional dummy variables, while models 3 and 6 contain country-fixed effects. Year-specific fixed effects are always included.

As before, we use the command ologit to estimate the ordered logit model. We ask Stata to create and include year dummy variables using xi and i.year. We regress women’s economic status (wecon) on the given independent variables and ask Stata to estimate robust standard errors using the country as the cluster by adding the option robust cluster(country).

```
xi: ologit wecon lngdpconstpc polity2 trade fdiinstocktogoip  
    1.weconfdiinstockslrowst 1.wecontradesslrowst i.year reg_*,  
    robust cluster(country)
```

We repeat the procedure including a lag of the dependent variable (l.wecon). Results in column 2 of Table 4 in the paper are found by running the following command:

```
xi: ologit wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogoip  
    1.weconfdiinstockslrowst 1.wecontradesslrowst i.year reg_*,  
    robust cluster(country)
```

However, when we include a lag of the dependent variable, our panel becomes dynamic. By construction, the unobserved country-level effects are correlated with the lagged dependent variable, making standard estimations like the one above inconsistent. Arellano and Bond (1991) and Arellano and Bover (1995) derived a consistent GMM estimator for the parameters of this type of model. The Stata command for this procedure is xtabond2. There are other closer command versions xtabond and xtdpd, but the explanation of the differences between them is beyond the scope of this material. Note that xtabond2 is not an official Stata command, but a free contribution to the research community (see Roodman, 2009). To install it, type ssc install xtabond2, replace in Stata. If you do not want to install xtabond2, you can use the command xtabond and get similar results. See Stata help for xtabond. An interesting feature of the xtabond2 is that it allows you to determine the variables you would like to include in the GMM estimation as instrumental variables (IV).

```
xi: xtabond2 wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogoip  
    1.weconfdiinstockslrowst 1.wecontradesslrowst i.year,  
    robust iv(lngdpconstpc polity2 trade fdiinstocktogoip i.year)  
    gmm(l.wecon 1.weconfdiinstockslrowst 1.wecontradesslrowst, lag (2 8))
```

The results presented in Table 4 of the paper are those generated by the command xtabond2.

We can repeat the same procedure but considering a sub-sample of developing countries only. We will use the command preserve to tell Stata that we will modify the data but that we want the programme to keep (preserve) the original dataset to eventually recover it (with the command restore):

```
preserve
```

We only keep those countries that are not high-income OECD countries (inc_highoecd==0) using the command keep:

```
keep if inc_highoecd==0
```

We run the same estimation procedure we applied for columns 1–3 to get results in columns 4–6.

```
xi: ologit wecon lngdpconstpc polity2 trade fdiinstocktogoip  
    1.weconfdiinstockslrowst 1.wecontradesslrowst i.year reg_*,  
    robust cluster(country)
```

```
xi: xtabond2 wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogoip  
    1.weconfdiinstockslrowst 1.wecontradesslrowst i.year,  
    robust iv(lngdpconstpc polity2 trade fdiinstocktogoip i.year)  
    gmm(l.wecon 1.weconfdiinstockslrowst 1.wecontradesslrowst, lag (2 8))
```
We recover the original dataset (both developing and OECD countries) by typing:

```
restore
```

**Step 4: Estimate results for women’s social**

To generate Table 5 in the paper, we repeat Step 3 replacing the economic rights variables (wecon) by the social rights variable (wosoc):

```
** All countries
xi: ologit wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosoctradeslrowst i.year reg_*, robust cluster(country)
xi: ologit wosoc l.wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosoctradeslrowst l.wosoctradeslrowst i.year reg_*, robust cluster(country)
xi: xtabond2 wosoc l.wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosoctradeslrowst l.wosoctradeslrowst i.year, robust iv(lngdpconstpc polity2 trade fdiinstocktogdp i.year) gmm(l.wosoc l.wosoctradeslrowst l.wosoctradeslrowst, lag (2 8))
```

```
** Developing countries only
preserve
keep if inc_highoecd==0
xi: ologit wosoc lngdpconstpc polity2 trade fdiinstocktogdp l.wosoctradeslrowst l.wosoctradeslrowst i.year reg_*, robust cluster(country)
```

```
** Economic rights
* Low-income countries only
preserve
keep if inc_low==1
xi: ologit wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wecontradeslrowst i.year reg_*, robust cluster(country)
```

```
* Middle-income countries only
preserve
keep if inc_middle==1
xi: ologit wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wecontradeslrowst l.wecontradeslrowst, lag (2 8))
```

```
Step 5: Estimate the results for women’s economic and social rights in middle- and low-income countries
```

We repeat the steps above for the sub-sample of low- and middle-income countries (Table 6 in the paper) using keep if inc_low==1 and keep if inc_middle==1. Do not forget to use the commands preserve and restore to avoid modifying your original dataset. Note that all estimations in this step include the lagged dependent variable (lwecon).

```
** Economic rights
* Low-income countries only
preserve
keep if inc_low==1
xi: ologit wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wecontradeslrowst i.year reg_*, robust cluster(country)
```

```
* Middle-income countries only
preserve
keep if inc_middle==1
xi: ologit wecon l.wecon lngdpconstpc polity2 trade fdiinstocktogdp l.wecontradeslrowst l.wecontradeslrowst, lag (2 8))
```

```
restore
```
The authors studied whether stronger women’s rights abroad translate into stronger economic and social rights in the home country via international trade and FDI linkages. On the one hand, the authors find evidence of spillover effects working via trade links for both women’s economic and social rights: $w^{trade}_{kt-1}$ is statistically significant across most of the estimated models. This result holds for all the sub-samples except the one restricted to low-income countries. On the other hand, the authors only find weak and limited evidence of spillover effects via FDI links for women’s economic or social rights: $w^{FDI}_{kt-1}$ is statistically significant only in a few cases. They also find that general trade openness ($trade_{it}/GDP_{it}$) improves women’s economic and social rights in the home country whereas general FDI openness ($FDI_{it}/GDP_{it}$) contributes to the improvement of social rights, but not in developing countries.

Despite providing insightful evidence on the beneficial impact of trade openness on women’s rights, the paper has a few limitations. First, it cannot provide any conclusion on whether the improvement in women’s economic and social rights in absolute terms translates into greater gender equality in rights because the analysis does not consider any measure of men’s economic and social rights. Second, it does not provide any evidence supporting the assumption that improved rights for women leads to improved material outcomes for them.

From a technical point of view, most of the caveats we discussed for Richards and Gelleny (2007) – including the possibility of establishing causality, the problems of defining the variables, and of controlling for the many dimensions of heterogeneity, etc. – apply as well to Neumayer and de Soysa (2011).

6 Conclusions

This module discussed the macroeconomic approach that employs country-level data to study the relationship between trade and gender. Since the increased level of globalization starting in the 1990s and the liberalization policies carried out by many developing countries in the following decade, economists’ primary concern has been to study the relationship between trade, growth,
and poverty and income inequality. Subsequent-
ly, economists also started to be interested in
establishing the links between trade liberaliza-
tion and gender inequality. The basic idea is that
trade has gender consequences because it brings
structural transformations that have different
repercussions on men and women depending on
the role they play in the economy as a whole.

Although most studies have focused on the ef-
fects of trade on labour market outcomes (i.e.
women’s share of employment in the manufac-
turing sector, the gender wage gap, etc.), some
studies have analysed if and how trade, and more
broadly globalization, can contribute to the em-
powerment of women. For example, the papers
reviewed in this module represent a cross-coun-
try assessment on how trade openness in prac-
tice and trade orientation can improve women’s
status in political, economic, and social terms. In
terms of trade openness in practice, the papers
analysed here seek to capture the level of liberal-
ization of countries by measuring the amount
of trade flows; in terms of trade orientation, the
aim is to capture the spillover effect on women’s
rights from one country to another by focus-
ing on a country’s main trading partners rather
than the volume of trade. The trade analysis can
be extended to include other measures of trade
openness, such as changes in tariffs that, how-
ever, do not necessarily imply adjustments in the
volume of exports and imports. As regards the
status of women, the most widely used sources
of data are the United Nations Human Develop-
ment Report, the World Bank’s WDI, and the CIRI
data set (Cingranelli and Richards, 2014). There
are also more recent sources of information on
gender-related outcomes collected at the mac-
roeconomic level, such as the Global Gender Gap
Report launched by the World Economic Forum in 2006 or the Demographic and Health Surveys
Program. Each trade- and gender-related meas-
ure has its advantages and shortcomings and
there is no universal rule as to which measure
you should choose for your own research. One
point you should be aware of, however, is that the
most appropriate measure of trade and gender
inequality to employ is highly dependent on the
scope of your study.

For the purpose of this module, the method
reviewed is based on panel data econometric
techniques that are useful when dealing with
country-level data. The main characteristic of
panel data is that they contain observations for a
number of variables over a specified timeframe,
thereby allowing us to assess the effect of a po-
tential explanatory or independent variable on
the dependent variable of interest over time (e.g.
the impact of trade liberalization on the female
labour force participation rate). This module de-
scribed and compared two estimation methods
by means of which we can estimate panel data
models: the fixed-effects and random-effects
models. Additionally, the module introduced dy-
namic panel data models that are used when
we want to include among our explanatory vari-
bles (at least) the first-time lagged values of the
dependent variable, thereby allowing us to con-
trol whether the dependent variable at the time
of analysis is influenced by its past value. When
following these methods, the macroeconomic
approach becomes an ex-post analysis whereby
we can investigate the effect of trade and gender
after changes in a country’s trade patterns have
taken place.
REFERENCES


Module 4
The sectoral approach
1 Introduction

The aim of this module is to introduce the methodologies that can be used to analyse the effects of trade on gender at the sectoral level. In particular, we will look at how the existing empirical literature investigates the impact of trade shocks and trade policies on women engaged in specific sectors and industries of the economy. As mentioned in Module 1 of this volume, while there is value to qualitative studies on trade and gender (e.g. Shayo, 2012), the focus here is on a quantitative analysis.

Trade shocks and trade policies will affect different sectors in different ways. Some sectors will contract, as they will not be able to compete with imports, and others will expand as a result of trade-led specialization. This implies that resources, and in particular labour, will have to move from one sector to another. However, it is important to note that this process is not automatic, but is rather influenced by labour market frictions, which vary across countries and sectors and shape countries’ patterns of specialization. Sector- and country-specific labour market frictions also imply that unemployment rates vary by sector and country. As mentioned in Module 1 of Volume 1 of this teaching material, women also tend to be segregated into fewer economic sectors – what we have called “horizontal gender segregation”. Therefore, it is important to also evaluate the gender effects of trade at the sectoral level. With this type of study, we can estimate, for instance, export premiums or mobility costs by gender, and explore whether trade affects women more than men. We can also study indirect effects on important issues such as domestic labour-sharing among members of the household, investment in children’s education, and even gender selection at birth.

There has been a recent effort in economic literature to develop trade models that explore how the correlation between comparative advantage and labour market frictions at the sectoral level can explain the heterogeneous impact of trade on unemployment and gender inequality. Our objective here is not to review these new theoretical developments, but to look at some of the empirical studies that document the evidence these models try to explain.

Section 2 of this module is a summary of studies on trade and gender using the sectoral approach. In particular, we briefly introduce the literature on global value chains, which represents an additional method of exploring the relationship between trade and gender at the sectoral level beyond the study in the hands-on application, examined later in this module. Section 3 provides the intuition behind some of the methodologies applied in the empirical sectoral studies. For the hands-on application in Section 4, we have selected a paper that uses a quasi-experimental approach to study how labour income opportunities for women in a non-traditional exporting sector may affect the time women and men spend on housework. Some final remarks are offered in Section 5.

At the end of this module, students should be able to:

- Apply the sectoral approach to the research on the relationship between trade and gender;
- Review and summarize the literature exploiting the sectoral approach to study the relationship between trade and gender, including the literature on global value chains;
- Identify the differences between the sectoral approach and the microeconomic and macro-economic approaches presented in the previous modules;
- Understand and describe the difference between truncated and censored data;
- Understand the econometric techniques for the treatment of truncated and censored data, such as the Tobit and Heckman sample selection models;
- Replicate, using Stata, the results of the paper by Newman (2002) titled “Gender, Time Use, and Change: The Impact of the Cut Flower Industry in Ecuador”.

2 Review of the literature

This section discusses a few studies that have used the sectoral approach to analyse the inter-linkages between trade and gender inequality. In particular, the papers cited here look at the agricultural sector – where women represent the majority of casual and seasonal workers – and the garment sector – where women are mostly employed as subcontractors and home-based workers. This section is a non-exhaustive survey of the literature but it examines a few interesting papers that you may wish to add to your reading list.

We start by presenting the literature on global value chains, which includes a wide selection of detailed studies on trade and gender inequality at the sectoral level. The basic idea of this strand of literature is that developing countries should take advantage of global value chains to improve their economic performance and thus achieve better labour conditions or social improvements.
Participation in global value chains may on the one hand incentivize firms to produce higher quality/value-added goods, and thus foster the use of a more skilled and formalized labour force; on the other hand, firms may react to increasing global competitive pressures by cutting labour costs and increasing the flexibility of the work force. In the latter case, women, among other weaker groups of the population, would be the most affected because they represent a large portion of irregular and informal workers, and because gender constraints often limit their ability to access work opportunities in global production (Barrientos and Kabeer, 2004). Overall, the aim is to understand how both firms and workers can stand to benefit from increased participation of developing countries in global value chains (University of Manchester, 2010).

Barrientos (2013) offers a gender perspective to the analysis of global value chains. The author focuses on global value chains in the cocoa sector of Ghana and India and finds that the participation of female cocoa farmers and workers in global production contributes to their empowerment and to more sustainable and quality production. According to the study, women in both countries have been long relegated to household activities and forms of casual work due to gender social norms and practices. However, they play a relevant role in the production of quality cocoa because their work is mostly concentrated in activities (early plant care, fermentation, and dying) that are considered crucial to ensure good yields, thereby attracting foreign chocolate companies. Another paper on trade and gender inequality in the context of global value chains is Tallontire et al. (2005), who focus on the African horticultural sector, where women represent the bulk of insecure seasonal and casual workers. The paper explores whether ethical trading practices (codes of conduct covering employment conditions, and environmental and social standards) applied by European buyers in the horticultural value chain may reach women workers, among others, and whether those practices contribute to the improvement of their working conditions. The horticultural sector is also the focus of Maertens and Swinnen (2009), who present the various mechanisms through which women are directly affected by the emergence of modern supply chains. They also review existing empirical evidence and present new quantitative evidence for the high-value horticulture supply chains in Senegal. Their findings suggest that the growth of modern horticulture supply chains has been associated with direct beneficial effects on rural women, and that it has reduced gender inequalities in rural areas.

With regard to the textiles and garment sector, the integration of export-oriented firms in global value chains has been found to worsen the working conditions of women. Dedeoglu (2010) studies the case of Turkey, where garment exporters have increasingly relied on informal labour through subcontracted and home-based female workers as a strategy to reduce production costs. On a similar note, Rossi (2001) finds that in the garment sector of Morocco, women, who generally have less bargaining power, are mostly engaged to perform unskilled activities, including packing and loading. In conclusion, firms in the low-value segments of global value chains, which are mostly concentrated in developing countries, make use of informal and low-paid jobs, for which female workers are usually preferred, to compete in foreign markets.

We have already mentioned a couple of other types of sectoral studies in Section 2.3 of Module 1 of this volume. Here we include a few more, including Porto et al. (2011), who look at how the internal structure of agricultural export markets and the level of competition affect poverty and welfare in rural areas of Africa. They conduct twelve case studies and find that in nine of the twelve simulations the increased competition has a larger positive income effect on male-headed households than on female ones. This is not surprising, given that women normally face entry barriers to participation in cash crop production (Vargas-Hill and Vigneri, 2011). Ackah and Aryeetey (2012) instead focus on the cocoa sector. They assess whether cocoa production, and therefore the income generated by it, is controlled by males and whether this in turn causes gender inequalities to be reinforced by the promotion of cash cropping in rural areas. They find that this is not the case, at least not for cocoa in Ghana.

Of the three methodological approaches described in this volume, the sectoral approach is perhaps the most heterogeneous from a technical point of view. We have seen that sectoral studies on trade and gender can be carried out with a gender analysis of global value chains through simulations or with more traditional econometric techniques. The paper reviewed in Section 4 employs yet another technique based on quasi-experimental data. If your research question on trade and gender requires the adoption of a sectoral approach, you should also think about the most appropriate technique to use.
3 Methodological approach

While the microeconomic approach explained in Module 2 in this volume was taken from the trade and poverty literature, and the macroeconomic approach described in Module 3 was mainly based on the growth, trade openness, and women’s empowerment literature, empirical analyses on the relationship between trade and gender at the sectoral level can be carried out in many different ways.

Therefore, our focus in this section will be on providing the intuition of a series of econometric methods that are often used in case studies, but without exhausting the toolkit available to the researcher. These methods relate to the statistical treatment of truncated and censored data as described below.

3.1 Truncation and censoring

We define a variable as truncated or censored when we cannot observe all the possible values that this variable takes. Specifically, a variable \( Y \) is censored when we only know the true value of \( Y \) for a restricted range of observations. Values of \( Y \) are in a certain range and reported as a single value or there is significant clustering around a particular value, for instance zero. An example of a censored variable is when we consider data on consumers and prices paid for a good: if a consumer’s willingness to pay for a particular good is negative, we will have observations with consumers’ information but not the “real” price for that good, as price observations are censored at zero.

On the other hand, a variable is truncated when we only observe values of \( X \) in case \( Y \) is not censored. In this case, we do not have a full sample for \( \{Y, X\} \) as we exclude observations based on the characteristics of \( Y \). The truncation is a result of sampling only part of the distribution of the outcome variable. A variable can be truncated because of the survey design (you only have a sample of women who work) or because of a particular incidence (if you are studying the wage offered to married women, you only have wage information for those women who actually are in a job). Truncated data differ from censored data in that for the latter we still observe values for \( X \) when \( Y \) is censored.

3.2 Tobit model

The Tobit model is a censoring model applied to a linear model with normal residuals. The textbook example of a Tobit model is that of the labour supply of married women. In fact, labour supply is a two-stage decision process. In the first stage, a woman has to decide whether or not to work (is the salary higher than her reservation wage?)? This is a probit model¹ because her participation decision is a binary outcome variable (0 = no work, 1 = work). If she decides to work, the second decision is about the number of hours she is prepared to work. This can be considered as a linear regression model where several factors can explain how many hours (a continuous variable) she decides to work. Both decisions are related: factors that make a married woman more likely to participate in the labour market tend to make her work more hours. Typically, as regressors we would include variables such as education level, non-labour income, spouse’s income, number of children, general economic conditions. However, to estimate the labour supply, we require information on wage offers and we do not observe this information for those women who are not working. Moreover, a wage offer is also likely to be related to unobservable characteristics that also affect the decision to work. If we use only the observed wages and labour supply decisions to estimate the regression, the estimated coefficient will be inconsistent under ordinary least squares because of the selection bias.⁹² The Tobit model proposes an alternative to this, as it is a combination of a linear regression model for the estimation of the variables that influence the number of hours supplied and a probit model for the estimation of the likelihood for an individual to participate in the labour market. This model, which uses a full sample (i.e. both women who work and those who do not), can be estimated using maximum likelihood. Under normality, it provides consistent estimators.

3.3 Heckman sample selection model

The Heckman (1979) sample selection model is a type of Tobit model.⁹³ In the context of our example, the equation that estimates the labour supply of women (or the wage paid to those who work) is:

\[ w_i = \beta X_i + u, \]

where \( w \) represents women’s (hourly) wages, \( X \) is a set of individual characteristics, and \( u \) is the error term. However, there is a second equation that determines if a person is willing to work or not. This second equation is called the sample selection equation and it takes the following form:

\[ h_i = \gamma (w_i - w^*_i) = \pi Z_i + \varepsilon, \]

Here, the reservation wage \( w^*_i \) is the minimum wage at which individual \( i \) is willing to work and
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variable in equation (1) above, for working women. In this sense, the dependent working – i.e. we are only observing the wages as a whole but only that of women who are working – i.e. we are only looking at women in employment. The Heckman sample selection model is that by re-
novating the sample selection bias. This involves fol-
lowing two interconnected steps:

- In the first step, the researcher develops a model, based on economic theory, to estimate the probability for an individual to work (probit model) – the so-called “selection equation”;
- In the second step, the researcher corrects for self-selection by incorporating a transforma-
tion of these predicted individual probabilities as an additional explanatory variable in the wage equation (1).

For this procedure to work, however, we need at least one variable with a significant regression co-
efficient in the selection equation (the first-step one) that is not correlated with the error term of the second-step equation of interest (an “instrument” or so-called “exclusion restriction”). The other key assumption in this estimation method is that the errors in the two equations are jointly normal. If this is not the case, the estimator is generally inconsistent. Semi-parametric and other robust alternatives can be used in such cases.

3.4 Censored least absolute deviation model

The previous two models require that specific assumptions on the residuals must hold. Unlike those standard estimators, the censored least absolute deviation (CLAD) estimator is robust to heteroskedasticity and is consistent and asymptotically normal for a wide class of error distributions. In the paper analysed in the hands-on application below, as the residuals fail the normality test, the author uses the CLAD method to estimate the censored model.

The CLAD estimation method was proposed by Powell (1984). In its linear model version, the method of least absolute deviations produces regression coefficient estimates by minimizing the sum of absolute residuals:

$$ \sum_{i=1}^{n} |y_i - \max (o, x'_i \beta) | $$

Chay and Powell (2001) explain the intuition of the methodology. CLAD is similar to a typical regres-
sion model but in the context of censored data. When you run a standard linear regression mod-
el, you are looking at sample mean relationships between variables $y$ and $x$. In CLAD, you are look-
ing at the sample median (instead of the mean) relationship between the variables in a context where the dependent variable is censored.

Let us consider a latent variable model where the variable $y$ is only observed when it is positive:

$$ y^* = x \beta + \epsilon $$
$$ y = \max (o, y^*) $$

Assume that conditional on $x$ the error term $\epsilon$ has a median of zero: $\text{med}(\epsilon | x) = 0$. This assumption implies that the median of $y$ conditional on $x$ is $x \beta + o$ and zero if $x \beta < o$. Then, because not all true values of the dependent variable $y^*$ are observed, we cannot directly use the least absolute deviation method to estimate the unknown coefficients. The CLAD estimator ap-
plies extra censoring (e.g. applies censoring from above if the outcome is already censored from below) to a least absolute deviations (median regression) estimator. Unlike least squares
regression, least absolute deviations regression does not have an analytical solving method. Therefore, an iterative approach is required. For this reason, and as we will see in the hands-on application in this module, the CLAD command needs to be run more times before arriving at the final estimation output.

One of the solving methods is the iterative linear programming algorithm proposed by Buchinsky (1991). This is the procedure used by the command \texttt{clad} in Stata. The method consists of estimating successive quantile regressions, dropping in each estimation the observations for which the predicted value of the dependent variable is less than the censoring value (in our example, zero). The procedure is stopped when no negative predicted values are obtained in two consecutives estimations.

### 4 Hands-on application: “Gender, time use, and change: Impacts of the cut flower industry in Ecuador” (Newman, 2002)

#### 4.1 Context and overview

Newman (2002) studies women’s household time allocation in a context where economic reforms have led to the growth of a non-traditional agricultural export sector, specifically the Ecuadorian cut flower industry. The paper uses quasi-experimental data from Ecuador to understand the impact of an increase in women’s employment opportunities in the cut flower industry on household paid and unpaid labour allocation. For this purpose, the paper compares data from the cut flower industry area (with high demand for female labour) with data from areas that are culturally and ecologically similar to the previous one, but that have been less influenced by the boom of the non-traditional agricultural exporting sector.

The paper addresses two main questions concerning the changes in household time allocation as a result of the expansion of the cut flower industry. The first is whether women who work in the flower industry are working more hours as a result of combining market labour with unpaid household labour. The second is whether some responsibilities for unpaid household labour have been shifted from female to male members of the household.

The analysis in the paper shows that with the increase in labour market opportunities for women, women’s total time spent in the labour market remains the same, while men’s time in unpaid labour increases. Table 16 provides an overview of Newman’s paper.
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Objective

Equation estimated: Tobit vs. CLAD

\[ y_i^* = \beta_0 + \beta_1 x_i + \beta_2 w_i + \beta_3 h_i + \epsilon_i \]

\[ y_i = 0 \] if \( y_i^* \leq 0 \)

\[ y_i = y_i^* \] if \( y_i^* > 0 \)

The model is estimated first with Tobit and then with CLAD. Data are collected at the individual level \( i \) and the sample is split into two sub-samples: men and women.

Dependent and independent variables

- The dependent variables \( y_i \) are the share of time spent on unpaid and paid work of men and women above 10 years of age.
- The independent variables are:
  - Household characteristics (\( h \)): regional location, number of children, ratio of females to males in the household, household’s assets, and urban location;
  - Individuals’ characteristics (\( x \)): age, education, age difference between husband and wife, educational difference between husband and wife, migrant dummy, and marital status;
  - Hourly wage (\( w \)): own and husband’s/wife’s.

Note: In the CLAD model, \( x_i \) is a vector of household and individual characteristics, including hourly wages.

Results

Women’s employment in the non-traditional exporting industry (cut flower industry) affects the allocation of paid and unpaid labour within the household:

- Married men in Cayambe spent twice as much time on housework as did men in Cotocachi.
- This result is related to women’s increased participation in the labour market and their increased bargaining power.
- Regardless of the growth of the cut flower industry, the paper finds that women worked more than men when both paid work and housework were included.

4.2 Data sources

For the purpose of the analysis, a survey was designed and data collected in two regions of northern Ecuador – Cotocachi and Cayambe. These two regions are about 200 kilometres apart and are similar in their cultural and ecological characteristics. A total of 562 households were surveyed, resulting in 2,567 individual observations, covering all household members above the age of 10. The survey was modeled after the World Bank’s LSMS, which we reviewed in Module 1. The survey includes detailed modules on expenditures, economic activity, health, education, fertility, and credit and savings, as well as a detailed accounting of time use. Two types of time-use data were collected to capture different time allocation habits and, accordingly, two measures were calculated. The first one is an accurate indicator for activities carried out in the last 24 hours. The problem with this measure is that it may miss unusual or irregular activities. Therefore, a second indicator was designed to capture general time dedicated to housework, rest, recreation, and work over the prior week. These data are often less precise and more subject to recall error, but they have the advantage of being less burdensome for the interviewee. The 24-hour recall data were collected only for the male and female heads of the household. The weekly data were collected for all household members interviewed.

4.3 Empirical methodology

The paper uses as a framework a model in which household decisions are derived from the maximization of the weighted sum of individuals’ utilities. The survey was specially designed to calculate indicators that may influence the relative decision-making power of the individuals (Browning and Chiappori, 1998) and created utility weights based on them. In this model, wages affect the labour and domestic work supply functions directly as well as indirectly through the distribution function (through, for instance, a bargaining effect). As wage opportunities change among household members, the amount of labour supplied by each of them can be affected beyond the traditional substitution and income effects of a wage change. The bargaining effect of a higher relative wage would have an impact on domestic work supply as well as on unpaid work.

To capture this effect, the author used a quasi-experimental approach. Two groups were selected – the treatment group (households in Cayambe) and the control group (households in Cotocachi) – and the survey was detailed enough to capture many differences between these two groups. However, since the experiment was applied in a real economy, there are likely to be some unobservable differences that may affect the result. When carrying out this type of analysis, the main concern is the endogeneity problem. In this context, a problem would arise if the location of
flower production was correlated with the qualities of the workforce that might also influence time allocation decisions of working individuals. However, this seems not to be the case here as the flower producers interviewed for the study reported that the characteristics of the workforce are irrelevant to their choice of location, which is strictly guided by the unique combination of ecological characteristics in Cayambe, as well as its proximity to a regional airport. If this assumption is true, then we have a relatively clean quasi-experimental setting to study the question of interest.

The paper uses different methodologies. To compare the different time allocations between the treatment (Cayambe) and control (Cotocachi) areas, the author uses average time spent on different economic activities, household tasks, and wages received by region, gender, marital status, and labour market participation (Tables 2–5 in the paper). She then compares them to check whether there are significant differences among those averages (easily performed with the command ttest in Stata). The paper then asks the question of which characteristics are the determinants of time allocation differences between individuals’ activity choices. The paper controls for exogenous factors that might influence individuals’ decisions by including variables such as human capital, age, marital status, location, and other household and regional characteristics.

The objective of the paper is to separate the wage effect from the bargaining effect. If men in the treatment group work more at home, is it because of wage differences or because women in that region have gained bargaining power through increased access to paid work opportunities in the export-oriented industry? To capture this effect, the model includes a Cayambe dummy that, under the assumption that the two samples are comparable, captures the additional effect of the presence of the flower industry. The author also controls for own individuals’ wages and spouses’ wages to help separate the substitution effect from the bargaining effect. Indeed, while the Cayambe dummy is more likely to capture the bargaining effect as a result of changing social norms, the wages are more likely to capture the substitution effect because theoretically they have the most direct impact on utility.

From a technical point of view, three models are used to test the paper’s hypothesis. The Heckman model was originally chosen to correct for sample-selection, but a Tobit model was estimated instead. As a matter of fact, the Tobit model is preferred to the Heckman model because it allows for all the variables to be tested as possible determinants of the share of time spent by men and women on unpaid and paid work, whereas in the Heckman model, some variables need to be excluded for identification purposes without a clear theoretical guideline for making this choice. The Tobit model, however, requires errors to be normally distributed and, in this paper, the normality test fails for the sample analysed. Therefore, the paper estimates a CLAD model because it has the advantage of not requiring any assumptions about the distribution of the errors. However, the CLAD model has the disadvantage of being less precise (larger standard deviation) than the Tobit model.

4.4 Step-by-step explanation of how to do the estimations in Stata

The data file we will use for this application is called perscv.dta. We will use a separate do-file for each table in the paper, but you may also choose to write a single do-file that contains the commands to get all the tables and regressions included in the paper. In our case, each do-file is named after the table it generates.

Step 1: Generate Table 1 in the paper – Demographics of Cayambe and Cotocachi areas

To perform the first step, we use the do-file “Table 1 Final.do”. First of all, we tell Stata to clear anything that was initially stored in the memory (clear). We then tell the output to scroll down without requiring user assistance (set more 1), and we define the line size in the Stata do-file to have 132 characters (set linesize 132).

We then define in which directory we will work (cd) and what data we will use for the analysis (use perscv). To keep an output generated by the do-file, we will create a log file that captures all of the output from the time you open it until you close it, regardless of how much output is produced. You can later open this file with a text editor and edit the content to include it in your paper. You start a log file with the command:

log using name_of_file.log

and close it using the command:

log close

We want to create a table that compares variables across two populations, one being the treatment group (treat==1) and the other the
control group (treat==0). One of the characteristics of Cayambe is that it has a larger number of migrants. For this reason, the author wants to see if Cayambe’s subpopulation has different characteristics from that of Cotocachi, and also show a separate column for the subpopulation who are migrants (migrant==1) in the treatment group. To be able to tabulate the information using the command *by*, we need to first sort the data (*sort treat*). Then the tabulation is performed using:

by treat: tab name_variable

where the *name_variable* is the age group (*agegroup*), the education level (*edlevel*), marital status (*mar*), whether the household head is a female (*fhh*), if they have children less than 15 years old (*child*), if they have children less than 6 years old (*childlt6*), and the relationship to the head of the household (*rel2*). The commands always have the same structure:

by treat: tab name_variable
by treat: tab name_variable if treat==1 & migrant==1

The first line generates the columns “Cayambe All” and “Cotocachi”. The second/third line generates the column “Cayambe Migrants”.

**Step 2: Generate Table 2 in the paper – Use of time, by gender and marital status**

Next, we use the do-file “Table 2 Final.do”. The first command lines are as before. Now we have a new command *svyset* that declares a survey design for the dataset and the option *strata*(*dominio*) that indicates that *dominio* is the name of the variable identifying the strata:

*svyset, strata(dominio)*

Once Stata knows about the design of the survey via the command *svyset*, you can use the *svy:* prefix using syntax that is quite similar to the non-survey versions of the commands. For example, if you use the command *svy:* *regress*, it is like using a regular command *regress*, but it uses the information you have provided about the survey design and does the computations taking this information into consideration. In this application, we use *svy:* *mean*

*svy: mean farm pdwork comwork hwork24 totwk recre percare totime if treat==1 & sex==1 , over(treat)*

We use the command *svy: mean* with the option *over* (treat) to get the means for each variable (*farm, pdwork, comwork, hwork24, totwk, recre, percare, and totime*) for each subgroup in the variable *treat* (here our two distinct populations in Ecuador). The variables are the ones in Table 2 of the paper and represent different activities performed by the individual. The analysis is first done for all men (*sex==1*), and then only for married men (*if sex==1 & mar<=2*) and non-married men (*if sex==1 & mar>2*). Replacing *sex* by *sex==2*, we obtain the same tables as before, but this time for women.

We want to know if the estimated means are different across the two populations. For this purpose, we use the command *lincom* (in this case for all men, time spent in farm work):

*lincom [farm]1 - [farm]0 count if farm==. & sex==1 & treat==1 count if farm==. & sex==1 & treat==0*

*lincom* computes point estimates, standard errors, *t* or *z* statistics, *p*-values, and confidence intervals for linear combinations of coefficients (here the difference in the mean time spent by all men in farm activities in the two populations) after any estimation command (in this case, *lincom* will consider the calculated coefficients with the command *svy: mean*).

The command *count* provides the number of observations in the category indicated by the expression in if.

A similar procedure is then implemented to see if there are differences in the mean across gender groups and not only across populations. For instance, to display the means for men and women living in Cayambe you need to run the following command:

*svy: mean farm pdwork comwork hwork24 totwk recre percare totime if treat==1 , over(sex)*

*lincom [farm]Male - [farm]Female*

The bottom of Table 2 in the paper shows the ratio of men’s to women’s time in each activity. These numbers can be obtained from the means displayed with the commands above.

**Step 3: Generate Table 3 in the paper – Time spent performing household tasks, by gender, marital status, and labour market participation**

Here we turn to the do-file “Table 3 Final.do”. We want to estimate if there is a significant difference (*ttest*) in the time spent on household tasks (*hwork24*) conditional on the spouse work-
The sectoral approach

The do-file first looks at households where the head is a man (sex==1) who is married or in a free union (mar<=2). The file first looks at men who work and men who do not work (not used in the table because of too few observations) as well as men who work in the flower sector in the treatment region compared to men who work in any other sector in the control region. For each of them, the do-file also shows the results based on whether the spouse works (spwks==1) or not (spwks==0).

The command ttest is then used to compare the means between the two regions.

*Men who work

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==1, by(treat)

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==1 & spwks==1, by(treat)

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==1 & spwks==0, by(treat)

*Men who don’t work -- not used in table because too few observations available

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==0, by(treat)

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==0 & spwks==1, by(treat)

ttest hwork24 if sex==1 & mar<=2 & rel==1 & wklast==0 & spwks==0, by(treat)

The procedure is repeated for women to identify whether the same differences apply in the time spent on household chores across regions. Specifically, we look at households where the head is a woman as well as where the head is a man. The commands and syntax are similar to the previous ones and for this reason we do not specify them here.

Step 4: Generate Table 4 in the paper – Wages by gender, marital status, and work type

We use the do-file “Table 4 Final.do”. The command we use here is `summarize`. It provides mean, standard deviation, minimum, maximum, and number of observations for a variable. We can ask for more detailed information using `summarize, detail(sum, d)`, which provides us with additional statistics, including skewness, kurtosis, the four smallest and four largest values, and various percentiles.

The variable we are interested in describing is wage (jperhr) and we want to display it by region (treat), marital status (mar), gender (sex), and for those who work in the flower industry versus those who work in all other sectors (wkflows).

For example, if we want the summary statistics for wages in Cayambe for women who work in the flower sector and are married, the command line is:

```
sum jperhr if treat==1 & sex==2 & wkflows==1 & mar<=2, d
```

Step 5: Generate Table 5 in the paper – Average hours per week spent performing main activities, by gender and marital status

We now turn to the do-file “Table 5 Final.do”, which creates the table with the number of hours spent on different activities by gender and marital status for the two regions, using the time variable recorded on a weekly basis instead of the 24-hour measure of activities. The variables of interest here are paid work (hrsw), housework (hrsh), recreation (hrsr), and sleeping time (hrsl).

The commands used here (svy: mean and lincom) are the same as those in step 2 “Table 2 Final.do”.
Step 6: Generate Table 6 in the paper – CLAD and Tobit estimates of men’s share of time performing housework and paid work (dependent variable: individual’s share of housework)

We use the do-file “Table 6 Final.do”, where we estimate the Tobit and CLAD models of the determinants of time spent on household activities for men only.

We first run the Tobit estimation for the share of time that the individuals spend on housework. To generate a Tobit model in Stata, we use the command `tobit`, followed by the outcome variable and the predictors. We also can specify the lower limit and/or upper limit of the outcome variable. While the lower limit is specified in parentheses after `ll`, the upper limit is specified in parentheses after `ul`. A Tobit model can be used to predict an outcome that is censored from above, from below, or both.

```
tobit hwsh2w age age2 educ married widdiv sucre1 hhsize numchil ratiofm assets urban treat migrant if sex==1 & age>=10, ll(0)
```

Here `hwsh2w` is the share of unpaid labour and is explained by a list of individual characteristics, household characteristics, the individual’s own wage, and the dummy variable for the Cayambe location (`treat`). The analysis is performed only for males who are at least 10 years old. The share cannot be lower than zero, and therefore the lower limit `ll(0)` is specified.

A result not shown in the paper is the test for normality for the residuals of the Tobit model. As mentioned before, the Tobit model requires residuals to be normally distributed. The do-file performs this test by running a Tobit regression, predicting the estimated values of the dependent variable and generating the residuals (`gen res=hwsh2w-yhat`). We can then use the command `sktest` to perform a test for normality based on skewness and another one based on kurtosis, and then combine the two tests into an overall test statistic. The residuals fail the normality test, suggesting that using a Tobit model may not be the best approach in this case.

The author then runs CLAD estimations for housework (`hwsh2w`) and paid work (`pdsh2w`) for all men and married household heads. This generates columns 2–5 in Table 6 of the paper. One possibility to run the estimation is to use the command `clad`. This is not an original Stata command and therefore you need to install it typing `net install sg153.pkg`. This will provide you with the programme for estimating Powell’s (1984) CLAD model and obtaining bootstrap estimates of its sampling variance. The CLAD estimator is a generalization of the least absolute deviations estimator, which is implemented in Stata in the command `qreg`. This programme sidesteps the issue of programming analytical standard errors and provides instead bootstrapped estimates of the sampling variance. See Newton et al. (2000) for details on how to write the command line.

At the time of writing the paper, the command `clad` did not exist; the author therefore had to write an alternative routine in which she reproduced the algorithm explained in Chay and Powell (2001). We have left that routine for the interested reader in the do-file. Fortunately, today we have the command `clad` that simplifies the implementation of the procedure. The command line is the following:

```
clad hwsh2w age age2 educ married sucre1 hhsize numchil ratiofm assets urban treat migrant
```

The same procedure is then repeated to generate the other columns in Table 6 of the paper.

Step 7: Generate Table 7 in the paper – CLAD and Tobit estimates of women’s share of time performing housework and paid work (dependent variable: individual’s share of housework)

Finally, we use the do-file “Table 7 Final.do”. This estimates the Tobit and CLAD models of the determinants of time spent on household activities for women only.

The commands and syntax used here are the same as those used in the previous table, the only difference being that we focus on females (sex==2) instead of males (sex==1).

4.5 Discussion of findings and limitations of the analysis

The main findings of the paper analysed in this module show that increased participation of women in the labour market has a bearing on household labour allocation. Married men in the treatment group spend double the time on housework compared to men in the control group, and this is clearly related to women’s increased participation in the labour force because of the increase in employment opportunities in the non-traditional exporting sector. Women in the
The sectoral approach

The sectoral approach allows us to look at the shifts in a country's production and export and import structure patterns and if these have translated into changes in women's economic and/or social status. For instance, the economic reforms implemented by Ecuador in the 1990s contributed to the development of non-traditional agricultural exporting sectors, most notably the cut flower industry. Being an industry that is traditionally female-intensive, there have been relevant gender repercussions, particularly changes in the intra-household allocation of time and tasks, which are the object of the paper reviewed in this module.

When deciding to adopt a sectoral approach to the study of trade and gender, it is thus important to conduct an ex-ante assessment of the concentration of women workers at the sectoral level to understand the gender patterns of employment as well as the relevance of horizontal gender segregation for the economy at hand. The impact of trade on gender at the sectoral level will depend both on the kind of structural transformations resulting from trade and on where women workers are most concentrated. For instance, if trade causes an expansion of a female-labour-intensive sector, women wage workers employed in that sector could potentially gain by, for instance, experiencing an increase in their wages; conversely, if trade causes a contraction of a female-intensive sector, women employed in that sector could be adversely affected by being displaced. Furthermore, women workers could be concentrated in non-tradable sectors, most notably non-tradable services such as health and education, and thus be unexposed to trade-related changes in the structural composition of the economy. In this case, women in the non-tradable sector could still be indirectly affected when, for example, trade results in an increasing specialization of the country towards the production of non-tradable services. One of the causes of changes in the structural composition of the economy could be a trade shock. For example, in the paper by Newman (2002), the shock is caused by economic reforms, including trade reforms, that have led to a boom in the growth of non-traditional agricultural exports, specifically cut flowers, and thus to the growth of the cut-flower industry that is traditionally a female-labour-intensive sector.

5 Conclusions

This module used the sectoral approach to examine the effects of trade on gender. In other words, we looked at the impact of trade on women engaged in particular sectors and industries of the market as well as the non-market economy instead of looking at the individual-level (microeconomic) and aggregate-level (macroeconomic) implications of trade on gender-related outcomes. When data are available, the sectoral approach allows us to look at the shifts in a country's production and export and import structure patterns and if these have translated into changes in women's economic and/or social status. For instance, the economic reforms implemented by Ecuador in the 1990s contributed to the development of non-traditional agricultural exporting sectors, most notably the cut flower industry. Being an industry that is traditionally female-intensive, there have been relevant gender repercussions, particularly changes in the intra-household allocation of time and tasks, which are the object of the paper reviewed in this module.

As regards the method of analysis, this module presented a series of censored and truncated regression models that are often useful to estimate empirical specifications of women's participation in the labour market. In the hands-on application, we looked at the difference in the allocation of housework responsibilities between men and women, comparing one area where there are work opportunities in the exporting sector with another where those opportunities do not exist. The technique adopted in the paper analysed is the CLAD, which offers many statistical advantages compared to the most commonly used Heckman and Tobit models. However, as for the choice of data, the most appropriate econometric tool you should use depends on the purpose of your investigation. As already

module
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vant gender repercussions, particularly changes
tionally female-intensive, there have been rele-
flower industry. Being an industry that is tradi-
structured and if these have translated into changes
women's economic and/or social status. Overall,
the gender impact of the growth of the cut flow-
er industry is perceived as positive based on the
author's idea that the increase in the participa-
tion of women in the labour market itself leads
to cultural changes. One of the issues the study
does not consider is the possibility that some
of the housework is transferred to the children
within the household, which might leave them
with little time to go to school or to play.

From the technical point of view, most of the
problems with the quasi-experimental ap-
proach arise from self-selection and sample
selection, as well as the comparability issues
between the treatment and control group.
Quasi-experimental estimates of effects are
subject to contamination by confounding vari-
ables. The lack of random assignment in the
quasi-experimental design method may allow
studies to be more feasible, but this also poses
many challenges for the researcher in terms of
internal validity. Newman (2002) makes all pos-
sible efforts to find two comparable populations
and exploits the fact that the location choice for
flower firms seems to be unrelated to the char-
acteristics of the labour force and only depends
on agronomic conditions and available export
infrastructure.

5 Conclusions

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the study of trade and gender, it is thus import-
ant to conduct an ex-ante assessment of the con-
centration of women workers at the sectoral
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The impact of trade on gender at the sectoral
level will depend both on the kind of structural
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female-labour-intensive sector, women wage
workers employed in that sector could potential-
ly gain by, for instance, experiencing an increase
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analysed is the CLAD, which offers many statisti-
cal advantages compared to the most common-
ly used Heckman and Tobit models. However,
as for the choice of data, the most appropriate
econometric tool you should use depends on
the purpose of your investigation. As already
mentioned, the CLAD is one of many models that have been applied in sectoral studies. Other authors have also looked at the effect of trade on gender outcomes at the sectoral level using different methodologies. For instance, we have seen how the analysis of global value chains has been implemented to explore the relationship between trade and gender. Moreover, Nicita and Razzaz (2003) explore whether an increase in textile and apparel exports in Madagascar benefits the poor and examine its effect across gender groups by first using a propensity score. Depetris Chauvin and Porto (2011) use a methodology akin to the microeconomic approach. All these studies provide an ex-post assessment of the impact of trade on gender, but you can also decide to use the sectoral approach to carry out an ex-ante analysis. In this case, you can employ the simulation tools described in Module 1 of this volume.
REFERENCES


University of Manchester (2010). Capturing the gains. Development@manchester. Cross-Disciplinary Perspectives on Development Research, 6 (October). Available at: http://www.sed.manchester.ac.uk/idpm/research/publications/dev@man/devman-research-note-201006.pdf.


Ethnographic studies, which find their origin in anthropology and have subsequently been adopted by economists to perform qualitative research, focus on a group of individuals who share the same culture. In practice, the studies consist of observing a group over a prolonged period of time to identify daily behaviours, as well as the norms, beliefs, and social structure that shape these behaviours. Ethnographic studies allow for understanding, among other issues, the factors that trigger changes in a group’s culture over time (Williams, 2007).

This subsection and those that follow are largely based on the teaching material for the online course on trade and poverty developed by the UNCTAD Virtual Institute (UNCTAD, 2012).

Labour markets are defined as imperfect when they are not perfectly competitive. This is due to the scarcity or even complete lack of information for the actors involved. For example, workers might be unaware of better employment conditions elsewhere, which makes it possible for their current employer to exercise monopsony power and keep wages low.

While general equilibrium models study the effects that changes in demand/supply in one market bring to the markets that are connected to it, partial equilibrium models focus on one market in isolation and thus do not allow for capturing the interconnections between different sectors of the economy.

See Section 2 of Module 2 for further details on the difference between perfect and imperfect pass-through.

See the paper by Richards and Gelleny (2007) presented in Module 3.

See Module 1 of Volume 1 for an explanation of the gender wage gap.

See Module 1 of Volume 1 for a deeper discussion of the different measures of trade openness.

Country- and time-fixed effects are usually included in panel data regressions because they allow for netting out any country- and time-invariant, unobserved effects from the coefficients of interest. See Module 3 for further details on the fixed-effects model.


Module 2 of Volume 1 describes in more detail the theoretical expectations of standard economic theory regarding the employment and wage effects of trade on women as workers. The heterodox theory comes to different conclusions.

In statistics, we say that a variable is endogenous when it is correlated with the error term. This can happen because of measurement errors, simultaneity, and omitted variables.

When two variables influence each other, we say that there is a simultaneity problem that, if not accounted for, may lead to biased results. The instrumental-variable (IV) approach is the most widely used methodology to address this problem.

In the context of Newman (2002), endogeneity can arise if the location of the export flower industry is correlated with unobservables in the labour market participation equation for women. If this is the case, then the estimated coefficients will be biased and inconsistent (we will discuss this in detail in Module 4).

Trade data are available for the following product groups: agricultural products, fuels and mining products, and manufactures.

The HS is an internationally standardized and recognized system to classify traded products. It was introduced in 1988 and is currently maintained by the World Customs Organization (WCO – formerly the Customs Co-operation Council), an intergovernmental organization based in Brussels. Since 1988, the HS has been revised four times. The latest version is known as HS 2012. The previous revisions were undertaken in 1996, 2002, and 2007. The HS comprises approximately 5,300 article/product descriptions.

The SITC is a system of classification of traded products not only on the basis of their physical properties, but also according to the stage of processing, their economic use, and their technological properties. It was developed by the United Nations with the aim to facilitate economic analysis. The SITC maintains a correspondence with the HS and is less detailed than the HS.

The BEC, introduced by the UN in 1970, is a three-digit classification system that groups tradable goods according to their main end use. The seven main categories are: food and beverages, industrial supplies not elsewhere specified, fuels and lubricants, capital goods (except transport equipment) and parts and accessories thereof, transport equipment and parts and accessories thereof, consumer goods not elsewhere specified, and goods not elsewhere specified (United Nations, 2002).

The ITC is a joint agency of the WTO and UNCTAD. Its aim is to help businesses in developing countries become more competitive in global markets, thus speeding up economic development and contributing to the achievement of the MDGs.

The GTAP is a network of researchers and policymakers conducting quantitative analysis on international policy issues.
This subsection is largely based on the teaching material for the online course on trade and poverty developed by the UNCTAD Virtual Institute (UNCTAD, 2012).

A labour force survey is a standard household-based survey of work-related statistics. The International Labour Organization (ILO) lists the countries and territories that make their labour force surveys available online. See http://www.ilo.org/dyn/lfsurvey/lfsurvey.home.

See http://www.ihsn.org/home.

Not all the economies recorded in the database are independent countries.

The PISA is a worldwide study by the OECD of the scholastic performance of 15-year-old students in mathematics, science, and reading. It was first performed in 2000 and then repeated every three years. The study is conducted with a view to improving education policies and outcomes. The test is implemented in a large number of developed and developing countries.

The ILO defines “working poverty” as the proportion of employed persons in a household whose members are living below the $1.25/day poverty line.

See Subsection 4.2.2 below for further details on do-files.

Sections 2 and 3 and Annex A of this module are based on the teaching material for the online course on trade and poverty developed by the UNCTAD Virtual Institute (UNCTAD, 2012).

This assumption derives from the Stolper-Samuleson theorem, according to which there is a direct and positive relationship between changes in the price of a good and changes in the return to the factor intensively used in its production (and a direct and negative relationship with the return to the other factor). For example, an increase in the price of clothing – a relatively low-skilled labour-intensive sector – causes an increase in the wages of low-skilled workers and a decline in the wages of high-skilled workers.

Preliminary works of this kind include Sourabh Bikas (2009) and Cherkaoui et al. (2011), who focus on the case of India and Morocco, respectively.

The law of one price is an economic concept that states that a good must sell for the same price in all locations. Under incomplete pass-through, the law of one price does not hold.

Furthermore, if the law of one price holds and the country is a small producer and a small consumer, domestic demand or supply shocks do not affect domestic prices, given that supply in international markets is infinitely elastic at a fixed price (the country can buy or sell as much of the good at the international given price as it wishes).

This can also be seen as a reduction of the price received by exporters for each unit sold in international markets.

We are here considering only first-order effects, i.e. the direct impact of consumption and production price changes on household welfare. A complete assessment of the welfare implications of price changes would include the analysis of second-order effects, i.e. of the changes in the household’s consumption bundle deriving from the substitution of more expensive goods with cheaper goods. In this case, we would also have to calculate elasticities of substitution, or, in other words, we would need to have more information about the degree of substitutability between goods.

Assuming free movement of labour across sectors, workers move from the sectors with the lowest wages to sectors with the highest wages.

Empirical methods (regressions and densities) are defined as non-parametric when the resulting estimators do not have any fixed functional form (structure) and depend on all the data points to return an estimate.

For further details on non-parametric densities and regression, see Section 9.2 of Cameron and Trivedi (2005).

In this case, we say that the function presents a discontinuity.

A likelihood function is a function of the parameters that characterize a statistical model. The maximization of the likelihood function is done to find the estimated value of the parameters for a given probability function which will make it more likely to observe the data used in the maximization.


See http://www.ine.cv (in Portuguese only).

All application files are contained in the accompanying CD, and are available for download at http://vi.unctad.org/tag.

In general, Stata will stop running at a line that it cannot execute. When a Stata do-file stops running, you need to find the error in your do-file, correct it, and run the do-file again.
46 Macros are an alternative and more efficient way to recall a list of variables in Stata. Imagine macros as boxes where you store a set of variables. When you need to work on those variables, you can just recall the macro instead of recalling each of the variables.

47 `lowess` is the Stata command to carry out a locally weighted regression. The procedure is a combination of classical regression models and non-parametric ones, as it uses linear and non-linear regression techniques in a very small neighborhood but does not require the same functional form to be used globally.

48 See the manual for `lpoly` (enter `help lpoly` in the command window) for a more extensive and complete explanation of smooth regressions and local weighted regressions.

49 Enter `help egen` in the command window.

50 Households with a larger number of females usually have a larger number of household members. In developing countries, and especially in rural areas, poverty is concentrated in large households, which have a higher share of expenditure on food products.

51 This is done only for graphical reasons, as we want to apply the command `by` for all, urban, and rural households simultaneously.

52 The lines that begin with an asterisk (*) are treated as user comments and Stata does not take any action. They can however be useful for the user.

53 This annex is based on Module 4 of the teaching material for the online course on trade and poverty developed by the UNCTAD Virtual Institute (UNCTAD, 2012).

54 Moreover, one-third of poor households’ income and one-fifth of non-poor households’ income come from own production, which does not pass through the market.

55 Data taken from Encuesta Nacional de Condiciones de Vida (2000).

56 The GTAP model is a CGE model commonly used as a tool for measuring trade effects. See Module 1 of this volume for further details on GTAP.

57 This annex is based on Modules 2 and 3 of the teaching material for the online course on trade and poverty developed by the UNCTAD Virtual Institute (UNCTAD, 2012) and on Depetris and Ramos (2012).

58 In textbooks, a social planner is a decision-maker above all other parties. In practice, the role of the social planner is played by the government of a country.

59 In addition, there are short-term effects when households do not adjust, medium-term effects when households make partial adjustments, and long-term effects when growth, investments, and long-term choices have been made. However, we do not discuss these effects here.

60 The compensation variation is expressed in negative terms, see further on.

61 The authors would like to thank professors David Richards and Eric Neumayer for sharing their data and do-files.

62 See Gaddis and Pieters (2012), who investigate the impact of trade liberalization on labour force participation of women in Brazil.

63 See Balamoune-Lutz (2007), who explores the effects of increased trade openness and growth on gender inequality in Africa, and Tseloni et al. (2011), who study the link between globalization and socio-economic development and gender inequality for a panel of 68 countries.

64 The concept of women’s empowerment, and its difference from gender equality, is described in Module 1 of Volume 1 of this teaching material.

65 For more details on Becker’s theory of discrimination applied to international economics, see Section 2.2 of Module 2 of this teaching material’s Volume 1.

66 In brief, these include the so-called Gauss-Markov assumptions, which are the following: (a) the expected value of the error term is \( E[\varepsilon_i] = 0 \) for \( i = 1, \ldots, N \), (b) all explanatory variables are uncorrelated with the error term – i.e. \([x_1, \ldots, x_i, \ldots, x_N]\) are independent; (c) all the error terms have the same variance, which is referred to as homoskedasticity – i.e. \( V[\varepsilon_i] = \sigma^2 \) for \( i = 1, \ldots, N \); and (d) there is zero correlation between error terms, which excludes any form of autocorrelation – i.e. \( \text{cov}(\varepsilon_i, \varepsilon_j) = 0 \) for \( i, j = 1, \ldots, N \) and \( i \neq j \).

67 To determine whether the fixed- or random-effects model best fits your panel data, you can use the Hausman test. It tests the assumption about the independence of \( \mu \) with respect to \( x_i \). It basically compares the results from the fixed-effects and random-effects models and tells you which one is the most suitable. The Hausman test can be implemented in Stata with the `hausman` command.

68 The paper by Richards and Gelleny is available for download on Professor Richards’ personal webpage at: https://sites.google.com/site/drdavid68.

69 This is true in general, but note that for the specific sample used in the paper and contained in the Stata .dta file provided, the GDI ranges between 0.15 and 0.96 while the GEM ranges between 0.10 and 0.93.
70 In 2010, the GDI and GEM were replaced by the Gender Inequality Index (GII) to remedy the shortcomings of the previous indicators. More information on the GII is available at: http://hdr.undp.org/en/faq-category/faq-category-2-0.

71 For more details on GEE, see Section 23.2.6 of Cameron and Trivedi (2005).

72 For the interested reader, ordered logit models are explained in Section 15.9.1 of Cameron and Trivedi (2005).

73 All application files are contained in the accompanying CD, and are available for download at: http://vilunctad.org/tag.

74 Basically, this option replaces the command `tsset`, usually run before the estimation to define the unit of analysis and the time dimension of the panel data. See Section 4.4 below and the Stata help on command `tsset` for further details.

75 The paper by Neumayer and de Soysa is available for download at: http://www.le.ac.uk/geographyandenvironment/whoswho/profiles/neumayer/pdf/globalization_women_empowerment.pdf

76 These weights are standardized according to a particular methodology. More specifically, the weighting matrices are row-standardized. Row standardization is often used in spatial econometric models to yield standardized spatial weights.

77 See Marshall et al. (2006) for more information on the Polity IV dataset.

78 Spatial patterns refer to the geographical distribution of a feature (here women’s right) in the world.

79 Spatial dependence is a characteristic of the distribution of geographic data, meaning that the realization of a given estimated effect of any independent variable on the outcome variable in any regression model depends on the location variable (e.g. country, region, city level).

80 All application files are contained in the accompanying CD, and are available for download at: http://vilunctad.org/tag.

81 The regions are East Asia and Pacific (eap), Eastern Europe and Central Asia (eca), Latin America and the Caribbean (lac), Middle East and North Africa (mena), North America (na), South Asia (sa), sub-Saharan Africa (ssa), and Western Europe (we).

82 If you use Stata 12.1 to run your estimations, the results you obtain for the enhanced ordered logit model – i.e. with the lag of the dependent variable – might differ from those presented in the paper. This is because the authors used an earlier version of Stata.

83 We strongly recommend that you read Roodman (2009), in particular Section 3, for a detailed explanation of the system and different GMM estimators.


85 The Global Gender Gap Report assigns a score to each of the 136 countries analysed measuring inequality between men and women based on economic, political, education, and health-based criteria. The score ranges between 0 and 1, with 1 indicating complete gender equality. The 2013 Report (WEF, 2015) can be downloaded at: http://www.weforum.org/issues/global-gender-gap.

86 The DHS Program is funded by the United States Agency for International Development and implemented by ICF International. It collects various data measuring women’s status and empowerment. For more information on the DHS dataset see http://dhsprogram.com/Topics/Womens-Status-And-Empowerment.cfm. The DHS dataset is downloadable at: http://dhsprogram.com/Data/.

87 Frictions can basically be considered as anything that interferes with the smooth and instantaneous exchange of goods and services and, in the context of the labour market, the movement of productive factors, capital, and labour across sectors.

88 Anything that might create a difference in the productivity of two countries will influence their patterns of specialization. Labour market frictions are not an exception, as legislation about the length of the work week, minimum wages, skill endowments, market participation rates, etc., all have an effect on a country’s production patterns.

89 For the reader interested in gaining a deeper understanding of binary outcomes, the Tobit model and selection models, see Chapters 14 and 16 of Cameron and Trivedi (2005).

90 In labour economics, the reservation wage is the minimum wage rate at which an individual will accept employment.

91 A probit model is a type of regression where the dependent variable can only take two values, e.g. “works” (variable takes value 1) and “does not work” (variable takes value 0). The purpose of the model is to estimate the probability that an event, condition, or characteristic will occur.

92 Selection bias occurs when the statistical population is not the outcome of random sampling and there are other external factors influencing it. If not duly addressed, selection bias may lead to distorted results.

93 The Heckman model is specifically used to correct the estimations from sample selection bias, or, in other words, to correct the bias deriving from using a sample that is dependent on the variable of interest (e.g. studying the determinants of wages for the whole population based only on the sample of individuals who report their wages).

94 Semi-parametric selection models (including CLAD) are treated in Section 16.9 of Cameron and Trivedi (2005).
This method minimizes the sum of absolute errors. The errors are the vertical “residuals” between points generated by the function and corresponding points in the data.

Quantile regression is a type of regression analysis that seeks to estimate either the conditional median or other quantiles of the dependent variable. In Stata, the command to estimate quantile regressions is *qreg*.

If the censoring part of the distribution is instead the right tail, the procedure is similar but we drop the observations for which the predicted values are greater than the censoring value.


Quasi-experimental studies try to replicate the randomized experimental studies in non-random settings by generating control and treatment groups as if they were randomly generated. The treatment group is identical to the control group except that it is the one exposed to the treatment (in the paper presented here, households living in the region of Cayambe). The control group (households living in the region of Cotocachi) is used as a benchmark to assess the impact of the treatment on the treated group.

All application files are contained in the accompanying CD, and are available for download at http://vi.unctad.org/tag.

Note that in the do-file, there are some commands that are preceded by an asterisk (*). That means that those commands were not executed, as the author did not need them for the final paper.

As already mentioned, you may not immediately obtain the results shown in the paper when running the command *clad*. This may happen for two reasons. First, *clad* is a relatively new command that the author did not use at the time she wrote the paper. She generated her own algorithm, which is still included in the do-file contained in the accompanying CD. Second, both the CLAD and the algorithm need to be run a couple of times before they converge to the results presented in the paper, since they are based on an iterative approach.

Please note that there is a typo in the heading of the first column of Table 7 in Newman (2002): it should read “Tobit All women” instead of “CLAD All women”.
