



MAKING TRADE POLICIES GENDER-RESPONSIVE:

**DATA REQUIREMENTS,
METHODOLOGICAL DEVELOPMENTS AND
CHALLENGES**





MAKING TRADE POLICIES GENDER-RESPONSIVE:

DATA REQUIREMENTS,
METHODOLOGICAL DEVELOPMENTS
AND CHALLENGES



UNITED NATIONS

Geneva, 2019

© 2019, United Nations

This work is available open access by complying with the Creative Commons licence created for intergovernmental organizations, available at <http://creativecommons.org/licenses/by/3.0/igo/>.

The findings, interpretations and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the United Nations or its officials or Member States.

The designation employed and the presentation of material on any map in this work do not imply the expression of any opinion whatsoever on the part of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Photocopies and reproductions of excerpts are allowed with proper credits.

This publication has been edited externally.

United Nations publication issued by the United Nations Conference on Trade and Development.

UNCTAD/DITC/2019/1

ACKNOWLEDGEMENTS

This study has been prepared by an UNCTAD Team including Nursel Aydiner Avsar (lead author) and Chiara Piovani. Useful comments and suggestions were provided by Anu Peltola and Simonetta Zarrilli. The study was coordinated and supervised by Simonetta Zarrilli, Chief of the Trade, Gender and Development Programme at UNCTAD.

CONTENTS

INTRODUCTION	5
THE GENDER AND TRADE NEXUS	7
THE METHODOLOGY OF THE TRADE AND GENDER TOOLBOX	9
WHICH DATA AND STATISTICS DO WE NEED FOR A COMPREHENSIVE EX-ANTE GENDER IMPACT ASSESSMENT OF TRADE REFORMS?	13
DATA REQUIREMENTS FOR AN ANALYSIS OF GENDER AND TRADE	14
HOW COULD THE TOOLBOX AND OTHER EX-ANTE ASSESSMENT METHODOLOGIES BE EXTENDED?	18
CONCLUSIONS	22
NOTES	24
REFERENCES	25

INTRODUCTION

Based on both economic theory and empirical studies, it is well established by now that an accurate evaluation of a country's trade performance and its distributional outcomes requires an analysis of an economy as a "gendered structure". Economic relations, economic activities and economic institutions, in fact, are embedded in the social values and social expectations that underlie the gender roles observed in a society. Typically, a gender bias detrimental to women is observed in the domains of capabilities (e.g. education), access to resources and opportunities, and security (UNCTAD, 2014a).

There is a two-way relationship between trade and gender. Gender disparities tend to impact trade, and trade impacts the relative economic positions of men and women. On the one hand, gender inequalities typically affect the outcomes of trade measures and strategies for trade competitiveness. For example, the gender wage gap and women's relatively lower bargaining power make women less costly employees than their male counterparts. On the other hand, trade reforms affect women's well-being and economic empowerment with implications for gender equality. Exports can open new markets for female entrepreneurs and can be a source of formal employment for female workers; women, however, can also be negatively affected – either as employees or as producers – if imports displace domestic production in female-intensive sectors.

The gender effects of trade extend beyond production and employment. Trade liberalization, in fact, also impacts consumption by changing the price of products, the government budget (which is negatively affected by the removal of tariffs), time use between paid and unpaid activities, and taxation. There are therefore multiple channels through which trade affects gender inequalities and women's economic empowerment. To ensure that trade has gender-equitable effects, which is not only instrumental for equity but also to promote inclusive development, it is important that gender considerations are mainstreamed in the design, implementation and evaluation of public policies, including trade policies (UNDP, 2016; UNCTAD, 2014a).

The gender effects of trade are country- and context-specific and need to be examined on a case-by-case basis. This paper explains how an ex-ante gender

assessment can help obtain a quantitative estimate of the gender impact of trade policies before their implementation and how it can help identify the measures that should be adopted to support gender equality.

UNCTAD (2017) developed the "Trade and Gender Toolbox", which constitutes the first attempt to establish a systematic framework for an ex-ante gender assessment of trade reforms. The Trade and Gender Toolbox helps answer the following question: what would happen to women if a given trade policy were implemented? Such ex-ante assessment is helpful when either positive or negative effects are found, as the Trade and Gender Toolbox also helps design effective complementary policies. When a negative gender impact is anticipated, the Trade and Gender Toolbox helps design accompanying measures to mitigate these negative effects; when a positive effect is anticipated, it can help select accompanying measures to reinforce these positive effects.

Over the last couple of decades, ex-ante impact assessments have increasingly attracted the interest of policymakers. Since the early 2000s, the European Commission has conducted Sustainability Impact Assessments (SIAs) to evaluate all trade agreements that are in the process of being negotiated. SIAs assess the potential economic, social and environmental impacts (and since 2012 also the potential human rights impacts) of a proposed trade agreement and include recommendations on the accompanying measures that should be considered – if the trade deal were to be adopted – to amplify positive effects or mitigate negative ones. SIAs are the result of both quantitative and qualitative analysis. The core of the quantitative analysis consists of a Computational General Equilibrium (CGE) model to simulate the impact of a trade agreement, and it is complemented by case studies whenever relevant; the qualitative analysis is the result of inputs received in a consultation process with stakeholder representatives of all interested parties in both the European Union and the partner countries (European Commission, 2016). Gender enters the assessment among the social themes under "equality"; gender equality is evaluated based on gender equality in employment and employment opportunities, education, social protection, and social dialogue. In practice, however, there are limitations in the analysis of gender equality and women's empowerment due the lack of consideration for socio-economic stratifiers such as age, race/ethnicity, and

class, in addition to the exclusion of the unpaid sphere of the economy (Specht, 2009).

In contrast to SIAs, the Trade and Gender Toolbox is specifically focused on the gender impact of trade and is intended to feed into effective gender-responsive policymaking. By doing so, the Toolbox helps ensure that trade works as a tool for inclusive development and for the economic empowerment of women, in line with the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). This paper illustrates how an ex-ante analysis based on the current formulation of the Toolbox is carried out and explores desirable future extensions of this instrument. Towards these goals, this paper is organized as follows.

Section 2 explains the two-way relationship between gender and trade. Section 3 presents the methodology of the Trade and Gender Toolbox; this section examines the different components of the Toolbox along with its data requirements and presents the case study of Kenya in the context of the Economic Partnership Agreement (EPA) between the European Union and the East African Community (EAC). Section 4 examines how the Toolbox could be further advanced to generate a more in-depth analysis, which critically depends on national and international efforts to develop statistics on the gender and trade nexus in a systematic, coherent and articulated manner. Section 5 concludes and emphasizes future directions for broadening the gender impact assessment of trade reform.

THE GENDER AND TRADE NEXUS

Trade and gender interact with each other through multiple channels in the economy. Trade liberalization leads to a change in the relative prices of goods and services, which in turn induces a change in the production structure. Export-oriented sectors tend to expand while import-competing sectors tend to shrink. Women may gain or lose under trade policy as workers and producers depending on their relative presence in those expanding and contracting sectors. Women as consumers may gain through cheap imports but may lose as producers if their products are unable to compete with foreign products. They can also lose as consumers if the loss in tariff revenue adversely affects spending on public services. Women as taxpayers may gain or lose depending on the kind of taxes introduced by governments to make up for the losses in tariff revenue.

According to standard economic theory, women as workers are expected to gain as a result of trade liberalization in developing countries. Women form the bulk of the low-skilled labour force in developing countries; as production and exports expand in low-skilled sectors based on the comparative advantage of those countries, the relative demand and returns to female labour are expected to increase (i.e. both employment and wage gains). In practice, under intense competition in global markets, exporting firms may rely on a cheap female workforce as a source of competitive advantage, which in turn leads to segregation of women into low-skilled sectors and low-paying jobs. The increased share of female employment in export sectors may lead to a deterioration in both wages and working conditions – a process known as the feminization of labour (Standing 1989; 1999).¹ This trend has recently reversed, especially in middle-income developing countries, where technological upgrading has often been followed by a contraction in the relative demand for women in export sectors. Gender norms designating higher-skilled positions as “masculine”, the declining importance of labour costs, and women’s limited access to training and skill development programmes in those sectors are among the factors that can lead to a process referred to as “defeminization” of labour (Tejani and Milberg, 2016).

Trade-induced technological upgrading may also reduce the need for physically demanding skills, and

hence increase the relative productivity of women in blue-collar or production jobs (Juhn et al., 2014). UNCTAD (2018a) and UNCTAD (2018b) find that tariff liberalization in export markets in the EAC and SADC regions, respectively, had a positive impact on the female share of employment in manufacturing firms only for production workers. This seems to reflect the positive influence of technological upgrading on women’s access to production tasks. It should be noted that it might also reflect the segregation of women into lower-skilled jobs that tend to concentrate on production tasks. This feminization of labour observed only in blue-collar jobs is likely to occur in low-skilled labour-intensive sectors; in contrast, the process leading to defeminization is related to the shift from low-skilled to higher-skilled sectors of manufacturing.

Women as producers can benefit from trade liberalization if they have the capacity to participate in export sectors, but they may also be hurt if they produce in import-competing sectors. A large share of women in developing countries participates in the agricultural sector as smallholder farmers, mainly producing subsistence-oriented staple food. They may be adversely affected by the influx of cheap food imports and the resulting decline in the domestic price of agricultural products. Women who manage to produce cash crops for export or non-traditional agricultural exports may benefit by the expanded markets and opportunities to integrate into global supply chains. However, their capacity to do so depends on their endowment of productive resources, access to training, skill and technology, and exposure to various market access barriers such as phytosanitary standards, technical barriers to trade, and product and process regulations. Women who participate in manufacturing as small-scale or home-based producers face similar constraints as in agriculture (UNCTAD, 2014a).

Women as consumers of imported products benefit from trade liberalization as imports expand and become cheaper. This can have important welfare-enhancing effects for female-headed households, for whom basic consumption goods hold a large share of their consumption basket. In contrast, women as consumers of public services may be affected adversely if social spending is cut due to the loss in tariff revenue. Women tend to experience this adverse effect to a greater extent than men due to their primary role as providers of unpaid care and domestic work in

the household. Finally, women as taxpayers are likely to be affected negatively if the newly introduced taxes to offset the losses in tariff revenue are mainly in the form of indirect taxes such as sales tax or value added tax, which tend to have a higher incidence on women as they tend to be poorer and therefore spend a larger proportion of their incomes than men. Increasing taxes on luxury goods while reducing or maintaining rates on basic consumption goods would instead benefit the poor, many of whom are women (UNCTAD, 2014a).

Looking at the other side of the two-way relationship, gender inequalities in different domains of economic and social life (e.g. capabilities, access to resources and opportunities, security) have implications for trade outcomes. For example, gender inequalities in the labour market, such as occupational segregation and the gender wage gap, may serve as a cost-cutting strategy. In global markets, women have become a “source of competitive advantage” in the form of a cheap labour force in labour-intensive segments of production for those firms that face stiff price competition; women

are also disproportionately represented among informal and contributing family workers. When women participate in the economy as entrepreneurs and self-employed workers, they are more likely than men to be “underachievers of competitive advantage”, due to their more limited access to productive resources and market information; as a result, they tend to be concentrated in lower value-added activities (UNCTAD, 2014a). These gender disparities result from norms and institutions that classify women as second-tier agents in the economy. Promoting gender equality is thus an essential pre-condition to ensuring equal and successful economic participation of men and women under trade reforms. Gender equality certainly matters for equity reasons, as women’s rights are human rights. Gender equality, however, also matters for the growth and development prospects of countries. In the case of developing countries, there is evidence that empowering women has a positive impact on education and outcomes in family planning and agriculture, in turn promoting social and economic development (Seguino, 2000).

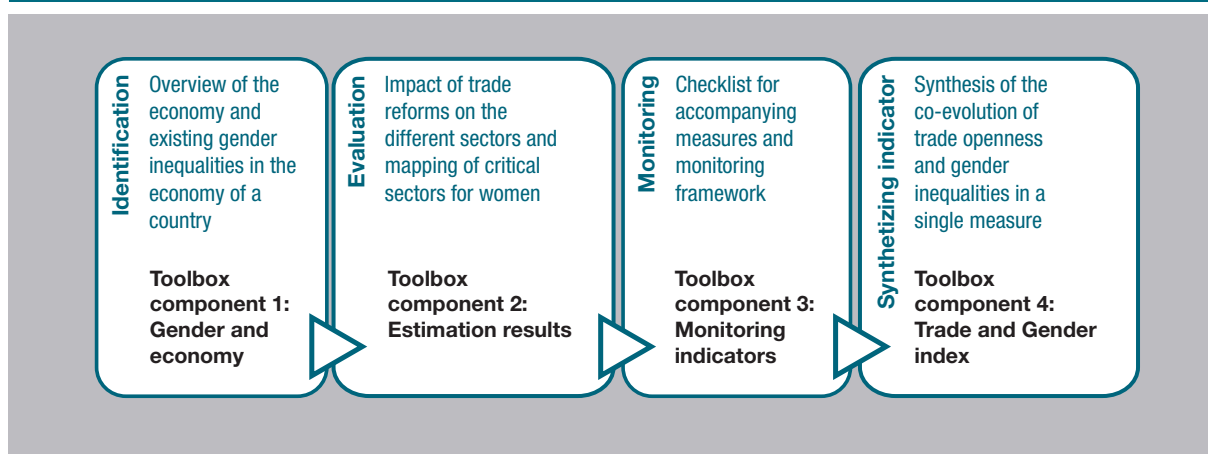
THE METHODOLOGY OF THE TRADE AND GENDER TOOLBOX

The Trade and Gender Toolbox uses a stepwise approach to evaluate the impact of trade reforms on women's wellbeing and gender inequalities. As shown in Figure 1, the Trade and Gender Toolbox is made of four components: 1) Gender and economy; 2) Estimation results; 3) Monitoring indicators; 4) Trade and Gender Index.

Component 1 provides an economic overview of the country under consideration, examines women's contribution to the economy, and identifies the multiple dimensions of gender inequality through an analysis of both economic data and legal texts.

Component 2 generates quantitative estimates of the economic impact of a specific trade reform using sectoral variables, including labour demand. The estimation results are matched with the female intensity of employment in each sector (identified in the first component). This way it is possible to identify sectors in which gender employment inequalities are expected to either improve or worsen.

Figure 1: The Components of the Trade and Gender Toolbox



Source: UNCTAD (2017)

Component 3 is composed of a checklist to guide policymakers in the design and evaluation of gender-sensitive accompanying measures to either enhance the positive effects of the trade reform on gender inequalities or reduce the negative effects. The third Component also includes a series of monitoring indicators to follow the evolution of gender inequalities over time, both before and after the implementation of the trade reform (e.g. changes in female employment, gender wage gap and access to productive resources). These indicators can help policymakers assess the effectiveness of any accompanying measures that may have been introduced.

Component 4 develops a Trade and Gender Index (TGI), which allows for calculating the co-evolution of trade integration and gender inequalities in employment at the sectoral level. The TGI is calculated as the ratio of the Gender Employment Gap (GEG) and Trade Openness (TO) per sector and per year:

$$TGI_{s,t} = \frac{GEG_{s,t}}{TO_{s,t}} \quad (1)$$

where s refers to the sector and t to the year; $GEG_{s,t}$ is calculated as the ratio of the difference between male employment and female employment to male employment (per sector s and year t); $TO_{s,t}$ is the share of the sum of the values of exports and imports to GDP (per sector s and year t), which aims to measure the contribution of trade flows in the economy of a country. It is important to note that the TGI does not illuminate causality (i.e. it is not able to distinguish the contribution of trade to the worsening or improvement of the gender inequalities over time), but it does shed light on the simultaneous evolution of trade openness and gender employment disparities over time. The TGI helps summarize the evolution of gender inequalities and trade in a single indicator. It can be used to evaluate whether trade openness has been associated with benefits or not for women over time and, in turn,

to consider the potential implementation of corrective policies. It is also important to note that the TGI is not meant to be used for cross-country comparisons, but only for a within-country analysis.

The core of the Trade and Gender Toolbox consists of a CGE model, which allows for simulating how an economy may react to changes in policies, technology or other economic factors. A fundamental constraint on the use of gendered CGE models, and especially for capturing the degree of inclusiveness of economic transactions, is the availability of accurate and systematic gender-disaggregated data. In its current form, the Trade and Gender Toolbox is based on the Global Trade Analysis Project (GTAP), which uses a static, multi-country, multi-sector CGE model. Specifically, it uses the GTAP 9 Data Base, which is a publicly available database covering 140 countries, 57 sectors and 8 factors of production in three reference years (2004, 2007, and 2011). The model consists of a set of equations indicating how economic variables are linked and how they respond to each other. The model uses two types of data: first, input-output tables (or a social accounting matrix), which provide a comprehensive accounting of the flows of all economic transactions between different economic agents and productive activities (distinguishing between final goods and services, primary factors, and sectors) within an economy and – when international trade is introduced – with the rest of the world; second, behavioural parameters – elasticities – which measure how economic agents respond to economic or policy changes (e.g. how the demand of private households responds to changes in import tariffs) (Aguiar, Narayanan and McDougall, 2016; Hertel, 1999).

The Trade and Gender Toolbox has been applied to the case of Kenya in the context of the EPA between the EAC and the European Union, which was signed by all European Union members, Kenya and Rwanda, and ratified only by Kenya in the EAC; the agreement will enter into force when the other three EAC members at that time (Burundi, Uganda, and United Republic of Tanzania) sign and ratify it (UNCTAD, 2017). The agreement includes immediate duty-free quota-free access for all EAC exports, while granting gradual and partial liberalization of the EAC market to imports from the European Union. The Trade and Gender Toolbox enables the evaluation of how the removal of tariffs on European Union exports to Kenya impacts women's employment in Kenya. The analysis starts with the first Component of the Trade and Gender Toolbox, which

requires an identification of the multiple dimensions in which gender disparities are observed in Kenya. The data indicate that gender gaps exist in education (with the exception of primary education, in which girls actually outnumber boys), employment, earnings and access to resources. With respect to employment, women – more than men – tend to be absorbed by the informal sector (e.g. retail trade selling second-hand items or food in open-air markets, operating small grocery kiosks, hairdressing, etc.). In the formal economy, the sectors with the largest share of total female employment are education, public administration and agriculture. Women are under-represented in manufacturing, especially in non-production tasks.² According to the ranking of women's employment by industry using the World Bank Enterprise Survey, food absorbs 55 per cent of women among permanent workers; textiles and garments follow with 13 and 9 per cent, respectively. Chemicals, furniture, and transport machines are worth mentioning, with 6, 4, and 3 per cent, respectively.

In regard to earnings, the raw gender wage gap is over 30 per cent. This comparison does not account for education, experience and age, so by itself it cannot reveal pure discrimination. Nonetheless, because of the existence of institutional barriers that prevent women from having access to higher education on a par with men, the raw gender wage gap remains a useful measure of gender disparities in earnings. In regard to access to resources, even though under the law women have the same property rights as men, in practice women only hold one per cent of registered land in their name and 5–6 per cent of registered land jointly with men. This is at least partly explained by customary law, which discriminates against women and tends to remain dominant over formal legal developments that favour gender equality. Access to formal finance is biased against women as well. Because of lack of collateral, lower wages, lack of adequate information and greater participation in the informal labour market, women have a higher probability than men of resorting to informal financial services.

As part of the first component, the Trade and Gender Toolbox also includes an economic analysis evaluating the sectoral composition of the economy under consideration and the evolution of trade flows and trade partners. In the case of Kenya, agriculture and services represent the dominant sectors (each was around 30 per cent of GDP in 2014), followed by manufacturing (10 per cent). Exports are dominated

by agricultural products, whereas imports are dominated by petroleum and industrial machinery. The European Union is an important trade partner for Kenya; in this context, the EPA can be seen as an opportunity to exploit market potential in the 28 countries of the European Union beyond the traditional destination markets based on the flexible rules of origin negotiated under the EPA.

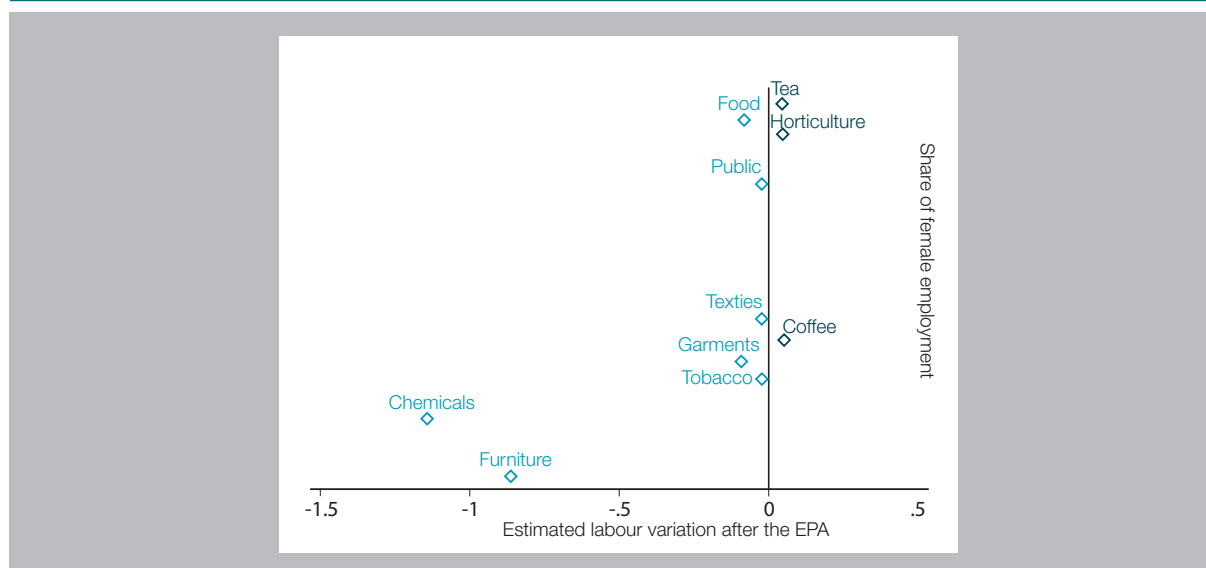
Following the identification phase, the analysis proceeds with a quantitative estimate of the impact of the EPA. The conventional GTAP CGE model is modified to adapt it to the specificities of the EPA between the EAC and the European Union. The first issue that needs to be addressed is the choice of the baseline scenario. Since the end of the temporary access granted to all EAC exports to European Union markets between 1 January 2008 and 30 September 2014, Kenya's exports to the European Union have been covered by the Market Access Regulation (MAR). MAR allows a quota-free duty-free regime for the Africa, Caribbean and Pacific (ACP) countries that have negotiated EPAs with the European Union. In the event that the EPA fails to become effective, Kenya will fall under the Generalized System of Preferences (GSP) granted to developing countries by the European Union, which does not require reciprocity. As a baseline scenario, either the current MAR or the GSP in case the EPA is not adopted would be appropriate. Because MAR is only temporary, the latter scenario can be considered more relevant; the empirical analysis is therefore used to answer the following question: what would the economic impact of the EPA be compared to the case in which no EPA is signed? The second issue that arises in the empirical analysis concerns both the tariff and non-tariff dimensions of the agreement. Some studies have indicated the difficulty of incorporating non-tariff measures in CGE analysis and the high likelihood of obtaining spurious results (Fugazza and Maur, 2008); in addition, there is uncertainty about the forms and magnitude of possible non-tariff measures. For these reasons, the analysis only deals with tariff removal.

Based on the CGE estimation, the EPA – in comparison to the GSP – has a positive but small impact on income and exports. Also, regarding labour demand, the estimates indicate that the EPA has a small impact in most sectors. To evaluate the impact on women's employment, the statistics

used in the first Component of the Toolbox are used to rank sectors according to the share of female workers in total employment. The ranking is then restricted to the sectors in which the female share of employment is at least 5 per cent. To refine the identification of women's employment, other data sources are used as well to enrich the ranking with the main agricultural commodities exported and the shares of women's employment by sub-sectors and occupation type in manufacturing. Based on this analysis, formal female employment in Kenya is concentrated in the following sectors: public sector (primarily education, administration and health); agriculture (with tea, coffee, horticulture and tobacco being the main crops); wholesale and retail trade; and manufacturing (with food, textiles, garments and tobacco being the more relevant sub-sectors for women's employment). These results are then adjusted to account for informal employment based on the most recent Population and Housing Census in Kenya (Minnesota Population Center, 2015).

Figure 2 plots the impact of the EPA on women's employment as indicated by CGE estimates. The vertical axis reports sectors based on the share of female employment; the horizontal axis reports the estimated change in labour demand following the implementation of the EPA. As shown in figure 2, the impact of the EPA is uneven across sectors, and – on average – the impact is small. In agriculture, employment is estimated to increase, although by a small magnitude. Agricultural crops, however, are included in the list of "sensitive products", and thus excluded from the liberalization schedule of the EPA. Employment in the public sector is expected to shrink, albeit slightly, as a result of a contraction in the government budget following the removal of tariffs. In the manufacturing sector, textiles and tobacco are the least negatively affected, whereas chemicals and furniture are the most negatively impacted. The chemicals and furniture sectors, however, are not key trade sectors for Kenya; as shown in figure 2, female employment in these sectors is also very limited. Overall, in comparison to the GSP, the EPA is expected to have a limited impact on women's jobs. Yet, the effects are on average negative in the sectors that exhibit the largest shares of female employment. This indicates that accompanying measures should be adopted to minimize these negative effects. Key policy areas include export promotion, support for import-competing sectors, and welfare measures.

Figure 2: Identification of the critical sectors for female labour after implementation of the EPA



Source: UNCTAD (2017)

Note: The vertical axis refers to the number of women employed in the different sectors; the scale is not reported as it is represented in logarithmic form for reading convenience. The data about the labour force are from the Kenyan National Bureau of Statistics Economic Survey, 2016 and the data about the informal workforce are from Kenya's 2009 Population and Housing Census, available via the Integrated Public Use Microdata Series (IPUMS) International (Minnesota Population Centre, 2015). The estimated variation in the labour force (represented on the horizontal axis) is obtained from the estimation of the GTAP-CGE model. EPA: Economic Partnership Agreement.

The third Component of the Trade and Gender Toolbox makes available a checklist of the dimensions that should be considered in order to ensure that the accompanying measures are designed in a gender-sensitive manner. In addition, the third Component also provides a monitoring framework to assess the evolution of gender disparities before and after the EPA, which can help policymakers identify the obstacles to gender equality and ways to address them. The monitoring indicators crucially depend on the gender-disaggregated statistics that are available; in the case of Kenya, the targeted dimensions include employment, wages, working conditions and access to resources. Based on the data available, for example, it is found that women are under-represented across economic sectors; in most occupations, they earn a wage that is

below men's; and they tend to have less access to resources (e.g. land and credit) than men.

The last Component of the Trade and Gender Toolbox requires calculating the TGI at the sectoral level; in the case of Kenya, based on data availability, the TGI is calculated for agriculture and manufacturing. Using data collected from the United Nations Comtrade database for trade flows and from Kenya's Economic Surveys, the TGI for Kenya is computed for the period 2008-2015. The most important observation derived from calculating the index and its components is the worsening of the gender employment gap (GEG) since 2013. This indicates that gender inequalities need to be monitored and addressed, especially in case the EPA is adopted as it is likely to lead to a deterioration of work conditions in those sectors that employ a large share of female workers.

WHICH DATA AND STATISTICS DO WE NEED FOR A COMPREHENSIVE EX-ANTE GENDER IMPACT ASSESSMENT OF TRADE REFORMS?

Trade policies affect women's economic empowerment and gender inequalities through multiple channels in their various economic roles as workers (e.g. employment, wages, working conditions), producers (e.g. production, trade, entrepreneurship), consumers (e.g. consumption, household well-being), and taxpayers (e.g. tax incidence, government social spending). A comprehensive account of the ex-ante gender impact of trade reforms requires consideration of these multiple channels of influence. The academic and policy research on trade and gender is concentrated on the employment channel as gender-disaggregated data on gender and trade linkages are available for the labour market in most country cases. For the same reason, the Trade and Gender Toolbox estimates the impact of tariff changes associated with trade reform on gendered employment patterns. This section discusses the possible ways through which tools such as the Trade and Gender Toolbox, could be developed further to also examine other channels of influence from trade policy to gender inequalities.

The lack of internationally coherent statistics linking trade and gender (which are typically collected for different purposes), in addition to the limited availability

of qualitative data, constitutes the main challenge to analysing the multiple dimensions of the gender and trade nexus, by expanding from the traditional focus on employment. Therefore, we first discuss the data requirements for a full account of gender and trade linkages, and articulate ways forward to improve the data collection and compilation process, nationally and internationally. We also discuss the need for more solid data on the informal economy for a more accurate analysis of the gender impact of trade policies on the informal sector, which accounts for a larger share of employment than the formal sector in most developing countries. Given the increasing role of services trade in the exports of many countries, we also briefly discuss how to incorporate an analysis of the gender impact of trade in services.

After discussing data issues, we move to articulating ways to develop the different components of the current toolbox approach. In particular, we focus on the second Component of the Toolbox – the GTAP CGE model – and investigate how the current modelling framework could be used to analyse other channels of transmission such as production, consumption, entrepreneurship, etc., under the condition that broader and more systematic statistics on the links between gender outcomes, trade flows and trade policies are developed at the national and international levels. We then discuss the possible ways to develop a gendered CGE model for an ex-ante gender impact assessment of trade reforms and the data requirements to do so. Special attention is given to the role of unpaid care and domestic work in understanding the gender and trade nexus. Finally, we introduce additional dimensions to further develop components 3 and 4 of the Toolbox.

DATA REQUIREMENTS FOR AN ANALYSIS OF GENDER AND TRADE

The availability of gender-disaggregated data shows significant differences across different domains of gender inequality. For example, education, health and labour market statistics as well as statistics on political participation are among the most widely available data on gender inequality. Gender-disaggregated survey data on consumption and time use patterns are available mostly at long intervals. Data on entrepreneurship and economic opportunities by gender are usually available from ad-hoc surveys with limited comparability over time and across countries. Data on intra-household dynamics and decision-making are scarce as is gendered data on security issues such as domestic violence and conflict. Data on policies and laws that influence gender equality have become available more recently (UNCTAD, 2018c).³

A complete analysis of gender and trade requires an examination of the different economic roles that women and men play in trade directly. This means making a gender and trade analysis of employees/workers engaged in international trade; of firms/producers that produce traded goods and services, use imported inputs or sell in domestic markets that compete with imported products; of entrepreneurs engaged in international trade; and of consumers of traded goods and services (UNCTAD, 2018c). Different data sources provide information to analyse certain aspects of the gender and trade nexus. They range from censuses (e.g. population census), establishment surveys (e.g. structure of earnings survey) and household surveys (e.g. labour force, budget, income and living conditions, and time use surveys), which collect data at the individual and household levels, to administrative data (e.g. social security and business registration), business surveys (e.g. financial statements and production records), and trade statistics, which collect data at the firm level. These data are aggregated to produce figures by sector, product group, population group, etc. There are also national or global ad-hoc surveys carried out on specific issues.

These data sources provide a great deal of relevant statistics for an analysis of gender and trade. However, a major challenge arises when linking data across domains. Surveys are carried out on samples

of households and businesses that are based on different populations, and statistics are collected on different statistical units for specific purposes (UNCTAD, 2018c).⁴ Moreover, even if one could analyse household or business statistics on gendered economic outcomes with sectoral trade data through the sector or product group identifier,⁵ the discrepancy in the level of disaggregation for sectors or product groups across the two data sets creates a challenge. This makes it difficult to form a robust causal link between trade policy and gendered economic outcomes.⁶ For instance, assessing women's role in trade by simply identifying how many women work in each export- or import-oriented industry does not really tell us about their economic status in trade. All of these observations point to the difficulty in building a suitable information basis for a comprehensive analysis of gender and trade.

Another challenge in the analysis of gender and trade is the degree of gender-disaggregation in the data that are currently collected through different economic surveys. While labour market characteristics are collected at the individual level, economic outcomes such as consumption, income, welfare spending receipt, tax payment, living conditions, etc. are often collected at the household level without considering their incidence at the individual level, which would allow for a gender analysis. For example, in the case of consumption, existing data, which tends to be collected at the household level, do not indicate who (men, women, boys, girls) consumes what and how much within a household. Moreover, surveys measuring non-material aspects of well-being such as agency, cultural norms, social relations, household decision-making power, etc. are very scarce.

Microeconomic, macroeconomic and sectoral studies are the main approaches to analysing the gender and trade nexus in the empirical literature (UNCTAD, 2014b). The microeconomic approach includes both ex-ante and ex-post studies, and helps us understand the channels through which trade policy affects household or individual welfare.⁷ Ex-ante studies are based on simulation methodologies, such as partial equilibrium or general equilibrium models, which can be combined with microsimulation models to carry out the analysis using household statistics.⁸ Component 2 of the Trade and Gender Toolbox (i.e. quantitative analysis) is based on the GTAP CGE model, which is a global general equilibrium model. Ex-post studies require detailed statistics that cover both the period

before and the period after the trade reform to examine the effects of trade policy. The main constraint in carrying out microeconomic analysis, especially for developing countries, is the lack of reliable and sufficiently detailed statistics on economic variables such as capital investment, government transfers, etc.

The macroeconomic approach uses aggregate data and statistics to analyse the impact of trade policy on different gender outcome variables (e.g. gender wage gap, female share of employment, etc.) at the economy level. The macroeconomic approach has the advantage of using more aggregated statistics that have higher reliability and are more frequently compiled compared to detailed statistics needed for microeconomic studies. However, country level cross section and panel data have many empirical difficulties in terms of identification because of the large differences across countries and over time. Furthermore, the macroeconomic approach relies more on assumptions than on information describing the behaviour of individuals, households and firms more closely.

The sectoral approach, such as value chain analysis, investigates the trade and gender nexus by analysing changes within specific sectors or industries of the economy.⁹ Sectoral studies usually rely on aggregation of micro-level data, and allow for assessing the extent to which changes in the structural composition of an

economy translate into new economic opportunities for women in different sectors. The availability of gender-disaggregated sectoral data is the main constraint for carrying out sectoral studies, especially for developing countries. Sectoral studies also have the limitation of not indicating the gender effects of trade policy in the economy as a whole. Improvements in the collection of micro, macro and sectoral data on gender and trade that cover before and after the trade reform would feed into the first (i.e. gender and economy) and third (i.e. monitoring indicators) components of the Toolbox, which will be further discussed in section 4.2.

Table 1 presents a non-exhaustive overview of the most widely used approach (i.e. the micro approach) and its data requirements for a solid analysis of the gender and trade nexus with reference to women's different economic roles as workers, producers, and consumers. The empirical strategy for each economic role is based on analysing the impact of changes in trade policy measures or trade flows on gendered economic outcomes while controlling for other factors. The brief assessment presented here focuses on the microeconomic approach only, as it forms the basis for the modelling framework of ex-ante gender impact assessment of trade reforms. Improvements in the collection of data in these areas would help develop the current toolbox approach further, as discussed in detail in section 4.2.

Table 1. Data requirements for a micro analysis of gender and trade

	Women as workers	Women as producers	Women as consumers
The most widely adopted approach and data use	- Firm- or individual-level data on labour market outcomes combined with: - Firm- or sector-level data on trade measures	- Household- or firm-level data on farmer/producer characteristics and economic outcomes combined with: - Firm- or sector-level data on trade measures	- Household-level data on the share of different goods and services in total household consumption, the gender of the household head combined with: - Price data on traded goods and services
Possible data extensions for a more solid approach	Linked employee-employer survey that contains: - detailed trade statistics at a high level of disaggregation by employers and - detailed data on work characteristics by employees	Household or enterprise surveys that collect: - detailed data on trade made by farmers/firms and - detailed statistics on supply-side constraints (based on both quantitative and qualitative data) and economic outcomes of farmers/firms.	Household surveys that collect: - detailed information on goods and services (including public services) consumed by household members.

Source: UNCTAD Secretariat

The labour market channel (or “women as workers”) is the most widely analysed dimension mainly due to the greater availability of gender-disaggregated data on labour market outcomes. The most suitable data source for such an analysis is the linked (or matched) employee-employer surveys, which collect data on employee characteristics (i.e. age, sex, education, tenure, occupation, marital status, etc.) and firm characteristics (i.e. industry, firm size, sales revenue, exports, imports, etc.).¹⁰ However, such datasets are quite limited and are far from providing a source of comparable data both across countries and over time. Moreover, they often include data on total trade flows without providing information on detailed trade statistics, tend to cover medium, large and formal firms, and provide information on a limited set of work characteristics such as occupation and contract type.

Linked employer-employee surveys with broad coverage and more frequent collection are needed. There are a number of potential ways to strengthen the links between trade, economic and gender statistics for a more solid analysis of the gender impact of trade policy on labour market outcomes. First, the employer-employee link would enable matching of detailed trade statistics on exported/imported goods by value/volume, destination/origin of these goods, etc. to firms that are engaged in trade and their employees. This would allow direct assessment of the impact of changes in a firm’s trade on men and women as employees of these firms. Second, these employer-employee surveys should incorporate measures on different characteristics of work going beyond basic measures, such as status in employment (e.g. occupation and contract type) and information on overtime work, non-monetary benefits, labour rights in the workplace, etc. This would allow the analysis of the gender impact of trade on employment quality as well. Finally, business surveys usually focus on medium or large enterprises in the formal sector and may not adequately cover small and micro enterprises, in which women tend to be more highly concentrated. Although it is relatively hard to collect data on informal economic activities through business surveys, this issue needs to be addressed – to the extent possible – to ensure a broader representation of the population.

The production channel (or “women as producers”) is the second most widely studied dimension of the gender and trade nexus. The analysis of gender and trade with reference to women’s economic role as producers is particularly important for low-income

developing countries, where the majority of the population participates in economic activity as small-scale producers, mostly in agriculture. Most of the studies on gender and trade in agriculture either rely on field studies or use household surveys to analyse the impact of trade policy changes on the economic outcomes of farmers by gender. The analysis of gender and trade in industry or services relies on business surveys using gender-disaggregated data on ownership structure as the key gender indicator.

Surveys targeting the economy (i.e. agriculture, industry, services) with a consideration of gender and trade are needed.¹¹ Enterprise surveys that collect data on ownership structure by gender, business structure (e.g. information on supply-side constraints) and performance indicators could be linked by statistical authorities to detailed trade statistics by firm to enable analysis of trade measures and their gendered economic outcomes. They should cover both micro/small and medium/large enterprises. Especially for the analysis of gender and trade in agriculture, where production in most developing countries is often carried out by families for their own consumption and/or the market, there is a need for household surveys that collect data on the main crops produced for export, the specific role played by women and men in the production of these cash crops, household consumption and domestic markets as well as data on the distribution of and control over income and resources between female and male household members.

Despite its direct implication for overall household welfare, the gender impact of trade on consumption (or “women as consumers”) is studied to a lesser extent, mainly because household surveys usually collect data on the consumption basket and expenditures at the household – and not the individual – level. Most studies that examine the consumption channel use the information on the sex of the household head as the key gender indicator in the absence of data that form a link between traded goods and their individual consumers. Household budget and expenditure surveys carried out by national statistical offices are the main source of data for such studies. These surveys could be further developed to include data on goods and services (including public services) consumed by household members.¹² This would provide information on the top consumption goods and services of the male and female members of the household (based on the share of the household’s total consumption

expenditure) and would help form links to changes in the price of these goods following trade policy.

Unpaid care and domestic work form an essential Component of the economy, as these activities are key for the reproduction of the labour force. Women often shoulder the bulk of unpaid work to fulfil the physical and emotional needs of the household in the absence of supportive social policies and measures to transform the traditional gender division of labour. This double burden of combining paid work with unpaid care and domestic work, in turn, may undermine women's position and negotiating power in the labour market (as workers) and their access to resources, inputs and training (as producers). It may also influence consumption patterns within the household as women are found to allocate a greater share of time and income to children's nutrition, health and education compared to men. Therefore, the gender division of unpaid work is a cross-cutting issue that needs to be taken into consideration in the analysis of gender and trade. Although time-use surveys present detailed information on the gender division of paid and unpaid work, this information needs to be collected more frequently. One option would be to include questions

on the gender division of unpaid care and domestic work in surveys that collect data on the labour market, household production, and consumption patterns at the individual level.

Finally, whenever possible, it is important to complement quantitative analysis with qualitative methods of data collection such as focus groups, semi-structured interviews and ethnographic studies. The social dynamics in households, communities and institutions all influence the gender and trade nexus and are shaped by social norms, values, beliefs and experiences that could only be captured through qualitative studies. Qualitative methods can help form a better understanding of the processes at work rather than the outcomes only, identify issues and questions for surveys, and establish hypotheses and interpret findings from surveys (UNCTAD, 2014b). For example, understanding the impact of factors such as household decision-making processes over the division of labour and access to resources and assets, working conditions in the labour market and security issues in general on women's participation in trade would greatly benefit from supplementing a quantitative analysis with qualitative methods.

HOW COULD THE TOOLBOX AND OTHER EX-ANTE ASSESSMENT METHODOLOGIES BE EXTENDED?

We focus on the UNCTAD Trade and Gender Toolbox because it is the first systematic framework to carry out an ex-ante gender impact assessment of trade reforms. It could be developed in a number of ways by making use of more detailed data on gender and trade, which could be collected through the formulation of links between trade statistics and other data sources, as discussed in section 4.1. Table 2 presents an overview of the possible future extensions of each of the four components of the Toolbox. For example, Component 1 of the Toolbox involves the analysis of the economy as a gendered structure and examines the multiple dimensions of gender inequality in an economy. These measures could be supplemented with trade-focused measures of gender inequality such as exporting firms' or farmers' access to extensions services, access to trade credit (e.g. through EXIM bank), and access to trade-related capacity-building

programmes – all disaggregated by gender – or the gender wage gap in export-oriented sectors. This would allow for a more nuanced depiction of the gendered structure of the economy with a focus on trade. Once more detailed data on gender and trade become available, it would be possible to extend the number and the depth of the indicators on gender and trade.

Component 2 of the Toolbox is based on the GTAP CGE model. It forms the core of the Toolbox, as it provides an estimation of the expected impact of the proposed tariff changes on labour demand by sector. Combining these sector-level estimates with descriptive statistics on the sectoral composition of female employment provided in Component 1 makes it possible to estimate the likely impact of the proposed trade policy reform on female employment patterns. The methodology used in Component 2 is the GTAP based on a static, multi-country, multi-sector CGE model, as explained in section 3. Even though the GTAP CGE model is not a gendered model, it provides a global economic model containing a database for a total of 140 countries or regions, making it widely applicable. This is the main reason for relying on the GTAP CGE model for Component 2 of the Trade and Gender Toolbox.

Table 2. Possible future extensions of the trade and gender toolbox

	Current approach	Possible future extension
Component 1	Basic indicators of gender equality	Trade-focused indicators of gender equality
Component 2	GTAP CGE model: - estimated impact on labour demand by sector & female intensity of employment by sector	GTAP CGE model: - estimated impact on production, export/import volumes and prices by sector & female ownership of exporting firms by sector, top consumption goods by gender Global gendered CGE model: - to disaggregate all activities by gender and introduce unpaid work and intra-household allocation in the modelling framework
Component 3	- Checklist for accompanying measures - Monitoring gender indicators on employment, access to resources, etc.	- Gender value chain analysis for key export sectors to develop specific accompanying measures - Monitoring indicators on trade-focused measures of gender equality
Component 4	Trade and gender index: - Gender employment gap/Trade Openness	Trade and gender index: - Trade elasticities of different gender equality indicators on employment, wages, consumption, unpaid work, etc.

Source: UNCTAD Secretariat

There are several possible extensions to the current use of the GTAP CGE model in the Toolbox. One could make estimations of the impact of trade reforms on other macroeconomic variables such as domestic output, export volume, import volume, export price and import price by sector. These estimations could be combined with descriptive statistics on relevant gender indicators to derive the gendered implications of tariff changes under the proposed trade reform. Similar to the way we derive estimations of the gendered employment effects of trade reforms to analyse the case of women as workers, we could estimate the likely gendered production effects of trade reforms to examine the case of women as producers. The standard GTAP CGE model may not be gendered, but it would be interesting to explore ways of using it to analyse other dimensions of the gender and trade nexus.

For example, one could combine the findings on the changes in domestic output, export volume and export price in each sector with the female share of entrepreneurs in the corresponding sectors. This way it would be possible to identify how output and exports change in female-intensive sectors where women are predominantly owners of firms as producers. Another channel to explore would be the relationship between the estimated changes in export volume and price of key export goods from the GTAP CGE model and descriptive statistics on the female and male shares of total producers in top export sectors. This would allow an assessment of how the price and volume of top export goods change for female and male producers in the corresponding sectors. It could also be possible to combine the estimation results on the import price changes by sector with statistics on consumption patterns of imported products by female- and male-headed households. This would make it possible to anticipate how the welfare of female- and male-headed households might be affected by the estimated changes in the price of key imported consumption goods.

Besides introducing new dimensions to the interpretation of the estimation results from Component 2 of the Toolbox, it would be desirable to develop a global gendered CGE model as a substitute for Component 2. This would require incorporating gender-differentiated data, such as gendered employment and wage data by occupation/skill and sector, into an existing global CGE model.¹³ With such a model, gender considerations could be

introduced directly into the modelling framework for ex-ante impact estimations. Even though the GTAP CGE model provides a practical tool with data for many countries and regions, a gendered global CGE model could benefit from the existing country-level gendered CGE models to carry out a more detailed ex-ante gender impact assessment of trade reforms. A gendered CGE model should ideally incorporate the following aspects (Fontana and Rodgers, 2005): (i) differentiate production activities both as female/male intensive sectors and as formal/informal sectors; (ii) account for gender segmentation of labour markets; and (iii) model the household economy by considering time use and intra-household allocation.

For example, Fontana and Wood (2000) extend the accounting framework of a standard CGE model by treating men and women as separate factors of production and by treating domestic work (i.e. unpaid services provided within households) and leisure activities (i.e. rest and recreation) as sectors in addition to the usual market-economy sectors.¹⁴ Arndt and Tarp (2000), Arndt and Benefica (2011) and Latorre (2016) account for the gender dimension in CGE models by incorporating gendered labour shares or male- and female-headed households in their modelling framework. They do not account for unpaid work though. Siddique (2009) distinguishes women's from men's labour in four skill categories and women's from men's consumption, which allows for a gender analysis of trade liberalization on production and consumption channels. More recently, Arora and Rada (2017) modelled intra-household dynamics through a household Social Accounting Matrix (SAM) that captures allocation of labour, resources and transfers among household members by explicitly introducing social norms in the allocation of labour by gender, linking agricultural production to time poverty, and treating leisure as a commodity.¹⁵ The main problem with single country CGE models is that they employ different assumptions and parameters, rendering it difficult to make direct comparisons across different studies. Moreover, they do not capture potential feedback effects to other countries as a result of a trade reform. Therefore, a global gendered CGE model that is based on the GTAP database or some other global CGE model is needed.¹⁶ Even though academic research has been carried out on the gender implications of trade since the 1990s, this has not materialized into direct changes in the policy arena. Increased awareness about the gender implications of trade reforms among policymakers, as exemplified by

the Buenos Aires Declaration on Trade and Women's Economic Empowerment, presents an opportunity to push forward directed efforts towards a systematic compilation of statistics and the development of more advanced methodologies for an analysis of gender and trade.

The development of a global gendered CGE model would only be possible with the availability of more detailed data and statistics on gender and trade linkages. SAMs could be extended for a deeper gender analysis by either disaggregating existing SAM accounts (i.e. "internal satellite accounts") or by adding new accounts (i.e. "external satellite accounts") (Fontana, 2003). In terms of internal satellite accounts, gendered structures could be introduced into the labour force and households in a number of ways. For example, agricultural production could be disaggregated based on the typical contribution of men and women in the sector or based on the distribution of revenue from sales between male and female producers. All market sectors could be disaggregated by gender in the same manner. Consumption could be recorded for each individual household member, as far as possible, instead of for the household. Statistics on asset ownership, receipt of transfers and use of public services could also be recorded at the individual level for each household member to allow for a gender analysis.

Besides disaggregation at the household level, transportation and other transaction costs could be disaggregated by gender for each sector. Given that women account for a larger share of informal employment, any gendered CGE model needs to consider the distinction between formal and informal sectors. The social reproduction sector could be further disaggregated by sub-sectors such as childcare, cooking, cleaning and other household activities for a better understanding of gender roles in the household. Alternatively, "external satellite accounts" could be added to provide a valuation of a household's own activities. Such extensions would allow one to incorporate the different economic roles of men and women and the various interactions between households and the market economy (Fontana, 2003).¹⁷

Services trade liberalization is another important issue that needs to be taken into account in the ex-ante gender impact assessment of trade policies. Services provide inputs into production and can foster factor

productivity. At the same time, services barriers differ from goods barriers substantially, and services trade often faces more restrictions than merchandise trade.¹⁸ Services trade barriers are modelled as tariff-equivalent price wedges in most CGE literature. However, inside-the-border effects are as important as border effects in the case of services. It is therefore necessary to take them into account while modelling services trade in the CGE framework (Fukui and McDaniel, 2010). The GTAP database has data on trade in services but has no data on trade barriers in services; therefore, an analysis of the removal of trade barriers on services is not possible using the GTAP database.

Component 3 of the Toolbox provides a checklist for gender-sensitive accompanying measures and a list of monitoring indicators to track the situation before and after the implementation of trade reforms, as explained in section 3 of this paper. The checklist covers several dimensions such as export promotion policies, gender disparities in import-competing sectors and gender disparities in welfare. As also highlighted by Fontana (2012), both men and women face various binding constraints while participating in a specific sector; however, gender interacts with socioeconomic inequalities and tends to exacerbate women's disadvantages. It is therefore important to develop accompanying measures to prevent the worsening of gender-intensified inequalities and to help transform them in the long term. One possible extension of Component 3 of the Toolbox could be to carry out gender value chain analysis for key export products and sectors identified in Component 1.¹⁹

Such a gender value chain analysis should aim to answer questions such as whether or not there are equal opportunities for upward mobility for male and female workers/producers, whether or not access to training is gender-differentiated, whether or not working conditions and enforcement of labour rights vary by gender, whether or not workers/producers can easily move from sector to another, whether or not there is gender equality in access to and control over resources such as land, credit and inputs, and how much time men and women spend on unpaid domestic and care work (Fontana, 2012). This would allow for identification of the major gendered constraints and the development accordingly of accompanying measures to support women's participation and reduce gender inequalities in the key export sectors during the implementation of new trade reforms.

Development of statistics, which show the participation of men and women in trade in their different economic roles as well as the trade-related gender outcomes for them, would make the monitoring of trade policy more nuanced and focused. For example, this could enable analysis of the gender wage gap or working conditions of women and men who are working in or managing a firm that is engaged in exports or faces import competition. The labour productivity of farmers by gender and type of crop (i.e. subsistence or export cash crop) would also be among measures to include in monitoring indicators.

Component 4 of the Toolbox introduces a synthesizing index to follow the co-evolution of trade openness and gender inequalities in a single measure. The current index, which is defined as the ratio of the gender employment gap to trade openness in each sector, requires one to assess the changes in the numerator and denominator separately to make a complete evaluation. In order to overcome this limitation, future extensions of the Toolbox methodology may benefit from the calculation of trade elasticities of gender equality, i.e. the ratio of the percentage change in a given gender equality measure to the percentage

change in total trade or exports (or some measure of its composition) over time. The interpretation of elasticities would not require separate interpretation of the changes in the numerator and the denominator, and therefore, would be a more practical synthesizing index than the current trade and gender index. For example, one could calculate the trade elasticity of the gender gap in earned income and human development (poverty impact); the trade elasticity of the gender gap in the labour force participation rate, unemployment rate, export employment and employment in import-competing sectors, and the trade elasticity of gendered job segregation in export sectors and import-competing sectors (employment impact); the trade elasticity of the gender wage gap and of women's relative wages in export sectors (wage impact); and the trade elasticity of the gender gap in unpaid labour time and leisure time (care economy impact) (Van Staveren, 2003). Such trade elasticities of gender equality could be calculated for all of these different domains based on data availability in each country or region. Even though they are simple measures, they would provide some guidance as to whether export expansion and changes in trade structure help women's empowerment.

CONCLUSIONS

In order to promote development, trade needs to be sustainable and inclusive. Towards this goal, it is critical for trade policies to help reduce gender inequalities and support women's economic empowerment. One way to make trade policies more gender-responsive is to use ex-ante gender impact assessments of trade reforms, which allows for anticipating gender effects before the implementation of trade reforms. Based on the insights of feminist economic theory and the results of empirical studies, it is well established that the gender effects of trade reforms critically depend on the country and the context under consideration. Therefore, ex-ante gender impact assessments need to be carried out for specific countries and for specific trade agreements.

UNCTAD (2017) developed the Trade and Gender Toolbox, which constitutes the first systematic framework for carrying out an ex-ante assessment of the gender effects of trade reforms. Component 1 of the Toolbox provides a descriptive overview of gender inequalities in various domains of economic life. Component 2, which is the core of the Toolbox, consists of a CGE Model, which serves to estimate the impact of proposed tariff changes on labour demand by economic sector. Combining these sector-level estimates with descriptive statistics on the female intensity of employment in each sector (found in Component 1), it is possible to estimate the expected gender impact of the proposed trade reform on employment patterns. Component 3 provides a checklist for designing adequate accompanying measures to prevent any estimated negative effects or to scale up any expected positive effects, and also introduces a list of monitoring indicators to track changes in gender inequalities over time. Component 4 introduces a synthesizing index on trade and gender (the TGI). Whenever possible, the quantitative estimates found using the Trade and Gender Toolbox should be complemented with qualitative data based on fieldwork, which would help obtain a more comprehensive and accurate analysis than what a statistical analysis alone would permit.

Ex-ante gender impact assessment tools for trade reforms, such as the UNCTAD Trade and Gender Toolbox or the gender Component in the European Union's SIA framework, can help inform gender-responsive policymaking and can be useful for the work of development practitioners engaged with gender

issues. The availability of internationally coherent and systematic statistics on the links between gender and trade is critical for developing gender-responsive trade policies. To help reduce gender inequalities, policymakers need to rely on a solid gender analysis, which critically depends on the availability of reliable statistics on gender and trade. There is therefore the need for joint efforts at the national, regional and international levels to build the capacity to collect and compile statistics, which would allow for producing sound evidence through analysis to inform the design of effective policy tools and instruments. Such statistics would also allow for monitoring progress on reducing gender inequalities in trade over time.

With these goals in mind, this paper has discussed possible ways to extend the coverage of instruments meant for ex-ante gender impact assessment of trade reforms, more specifically the UNCTAD Trade and Gender Toolbox. Since all four components of the Toolbox methodology rely on gender-disaggregated data relevant for trade, new ways of collecting data on gender and trade are needed. Trade statistics and data on different domains of gender equality are collected for different purposes and target different populations. It is therefore necessary to develop global surveys to collect data on different aspects of men's and women's participation in trade as workers, producers, traders and consumers, and data on detailed product groups that are exported and/or imported by corresponding firms.

More detailed statistics on gender and trade would produce a more nuanced picture of gender inequalities in the economy. This is important for understanding both the existing situation and the implications of trade outcomes in relation to gender equality and women's economic empowerment. Better data and statistics on gender and trade would make it possible to develop SAMs required for a gendered global CGE model, which forms the core Component of any ex-ante gender impact assessment methodology. They would make it possible to make gender impact assessments of trade reforms for channels of influence such as production and consumption, in addition to the employment channel that is the focus of most studies due to data constraints. The availability of trade-focused gender indicators would also allow for developing more specific accompanying measures and for a more detailed list of monitoring indicators to track changes over time. Finally, greater availability of statistics on gender and trade would allow the

calculation of trade elasticities of gender equality in different domains of economic life as supplementary indicators on trade and gender.

Besides these possible extensions to the Toolbox methodology, both statistics on gender and trade and the CGE modelling framework should make a distinction between informal and formal sectors given the large role of the informal economy in most developing countries. Even though it is easier to collect data on informal employment through household surveys, it is also important to ensure the coverage of both informal and small/micro firms in business surveys to have more complete coverage of the economy and

to capture women's contribution to the economy more fully. Another issue to consider in future developments of ex-ante assessment tools is the analysis of services trade liberalization. The GTAP database does not provide data on services trade barriers, however, this issue could be addressed in possible future extensions of the CGE modelling framework. The collection of detailed data on gender and trade linkages is critical for making trade policy more gender-responsive. In turn, this would contribute to achieving sustainable and inclusive development and serving the goals of the 2030 Sustainable Development Agenda and the Addis Ababa Action Agenda.

NOTES

- ¹ The term “feminization of labour” refers to an increase in the share of female employment in low-skill and low-wage activities, but also to the extension of insecure work conditions – traditionally associated with women’s jobs – to male jobs.
 - ² Non-production tasks refer to activities related to management, sales, administrative tasks, etc. and are made up of mostly white-collar jobs; however, they also include non-traditional white-collar categories such as vendors.
 - ³ The World Bank’s flagship publication “Women, Business, and the Law” has started to generate a database that makes it possible to make a comparison among countries based on their legal framework on gender equality (World Bank, 2018).
 - ⁴ For example, trade statistics are based on data on products exported or imported by firms while social statistics on economic status, outcomes, etc. are based on data from individuals and households.
 - ⁵ The use of different classification systems for sector and product groups across datasets may require making certain assumptions while converting one classification to another.
 - ⁶ For example, trade and administrative data on exports, imports, etc. use a detailed classification (at least four-digit level) for sectors or product groups. In contrast, household surveys, and to some extent establishment surveys, use a lower level of disaggregation (often at the two-digit level) while classifying the economic sector or product group of individuals or firms. Household surveys in some developing countries use broad sectoral classifications (i.e. agriculture, industry, services), which make these surveys unsuitable for an analysis of trade.
 - ⁷ Ex-ante studies analyse the welfare effects of trade reforms before the reform takes place, whereas ex-post studies analyse the situation before and after the trade reform and try to identify the effects of reforms on key outcome variables such as welfare, employment, poverty, etc.
 - ⁸ In this two-step approach, for example, one could estimate the impact of a policy change on commodity and factor prices using the CGE model; these estimations then can be fed into a micro simulation framework to calculate the impact on individual representative households (Turner et al., 2008).
 - ⁹ The value chain analysis examines the entire production process within a particular sector or industry ranging from the production and supply of raw materials to production and distribution of final goods.
 - ¹⁰ See Jensen (2010) for an overview of linked employer-employee surveys in a number of developed countries.
 - ¹¹ Even though there are global surveys such as the World Bank’s Enterprise Survey, they lack sufficient detail for a thorough analysis of gender and trade.
 - ¹² An alternative approach would be to ask about the top consumption goods and services without specifying volume or value as it may be difficult to identify who consumed how much of the total household consumption.
 - ¹³ One should note that this would require time and resources and therefore should be considered a long-term goal.
 - ¹⁴ These two additional sectors are assumed to behave qualitatively the same way as market sectors; however, there are important quantitative differences in setting the values of the parameters in each sector. For example, there is a lower price elasticity of demand in the reproduction sector because these services are necessities. The greater rigidity of the gender division of labour in reproduction compared to market sectors can be captured by setting a lower elasticity of substitution between female and male labour.
 - ¹⁵ Household level SAMs for each household type observed in the economy-wide SAM could be constructed to describe intra-household resource, time and power allocation. The household would be treated just like a national economy with production of non-traded goods for household consumption, and exports and imports as the household’s market transactions with the rest of the economy. Household members would be represented similar to institutions in the economy-wide SAM with the recording of income, assets, consumption and transfers for each of them (Fontana, 2003).
 - ¹⁶ Dimaranan (2011) provides a very first example of such attempt; however, it has not been fully developed since its first inception.
 - ¹⁷ Satellite time-use modules would be useful to record individuals’ time use on various tasks and impute a monetary value to the time spent on non-market activities – both household activities and leisure.
 - ¹⁸ There is a consensus among economists that tariff equivalents of prevailing restrictions on services trade are a multiple of those that restrict merchandise trade (Fukui and McDaniel, 2010).
 - ¹⁹ A global value chain analysis investigates the movement of goods from producers to processors, traders and finally, to consumers, how different actors exchange payments, credit and capital among themselves, price signals, pricing behaviour and value addition as well as technology and information flows across the chain. A gender value chain analysis would focus on where women and men participate in various nodes of the chain and how power imbalances shape gender relations, looking also at home-based and unpaid work, which is considered women’s work under the traditional gender division of labour (Fontana, 2012).
-

REFERENCES

- Aguiar A, Narayanan B and McDougall R (2016). An overview of the GTAP 9 data base. *Journal of Global Economic Analysis*. 1: 181-208.
- Arndt C and Benefica R (2011). Gender implications of biofuel expansion in Africa: The case of Mozambique. *World Development*. 39(9): 1649–1662.
- Arndt C and Tap F (2000). Agricultural technology, risk, and gender: A CGE analysis of Mozambique. *World Development*. 28(7): 1307–1326.
- Arora D and Rada C (2017). Gender norms and intra-household allocation of labour in Mozambique: A CGE application to household economics. Working Paper No. 2017-09. University of Utah.
- Dimaranan B (2011). Trade and gender in a global CGE model. Working Paper No. 5429. GTAP
- European Commission (2016). Handbook for trade sustainability impact assessment. Luxembourg: Office of the European Union.
- Fontana M (2003). Modelling the effects of trade on women, at work and at home: A comparative perspective. In: Methodological Tools for SIA, CEPS Working Paper No. 2003-19. Centre d'Etudes Prospectives et d'Informations Internationales
- Fontana M (2012). Lao PDR: Mapping the gender dimensions of trade – A preliminary exposition. World Bank, Washington DC.
- Fontana M and Y van der Meulen Rodgers (2005). Gender dimensions in the analysis of macro-poverty linkages. *Development Policy Review*. 23(3): 333-349.
- Fontana M and Wood A (2000). Modeling the effects of trade on women, at work and at home. *World Development*. 28(7): 1173–1190.
- Fugazza M and Maur JC (2008). Non-tariff barriers in CGE models: How useful for policy? *Journal of Policy Modeling*. 30(3): 475-490.
- Fukui T and C McDaniel (2010). Services liberalization and computable general equilibrium modeling: Beyond tariff equivalents. *Journal of International Commerce and Economics*. February: 1-21.
- Hertel TW (1999). *Global Trade Analysis – Modeling and Applications*. Cambridge: Cambridge University Press.
- Jensen P (2010). Exploring the uses of matched employer–employee datasets. *The Australian Economic Review*. 43(2): 209-216.
- Juhn C, Ujhelyi G and Villegas-Sanchez C. (2014). Men, women, and machines: How trade impacts gender inequality. *Journal of Development Economics*. 106: 179–193.
- Latorre MC (2016). CGE analysis of the impact of foreign direct investment and tariff reform in female and male workers in Tanzania. *World Development*. 77: 346–366.
- Minnesota Population Center (2015). Integrated public use microdata series, international: version 6.4 [dataset]. University of Minnesota, Minneapolis. Available at <https://international.ipums.org/international/>.
- Seguino S (2000). Gender inequality and economic growth: A cross-country analysis. *World Development*. 28(7): 1211–1230.
- Specht B (2009) A critical review of the trade sustainability impact assessment for the trade agreement between the EU and the Republic of India from a gender perspective. WIDE – Globalising Gender Equality and Social Justice, Brussels.
- Siddique R (2009). Modelling gender effects of Pakistan's trade liberalization. *Feminist Economics*. 15(3): 287–321.
- Standing G (1989). Global feminization through flexible labor. *World Development*. 17(7): 1077–1095.
- Standing G (1999). Global feminization through flexible labor: A theme revisited. *World Development*. 27(3): 583–602.
-

- Tejani S and W Milberg (2016). Global defeminization? Industrial upgrading, occupational segmentation and manufacturing employment in middle-income countries. *Feminist Economics*. 22(2): 24–54.
- Turner L, N Nguyen and K Bird (2008). An overview of ex ante tools for assessing the impact of trade liberalisation on the poor. Overseas Development Institute, London.
- UNCTAD (2014a). *Virtual Institute Teaching Material on Trade and Gender. Volume 1: Unfolding the Links*. New York and Geneva: United Nations.
- UNCTAD (2014b). *Virtual Institute Teaching Material on Trade and Gender. Volume 2: Empirical Analysis of the Trade and Gender Links*. New York and Geneva: United Nations.
- UNCTAD (2017). *Trade and Gender Toolbox – How Will the Economic Partnership Agreement Between the European Union and the East African Community Affect Kenyan Women?* New York and Geneva: United Nations.
- UNCTAD (2018a). *East African Community Regional Integration: Trade and Gender Implications*. New York and Geneva: United Nations.
- UNCTAD (2018b). *Trade and Gender Linkages: An Analysis of Southern African Development Community*. New York and Geneva: United Nations.
- UNCTAD (2018c). Better data and statistics for gender-responsive trade policy. Policy Brief No. 68 United Nations, New York and Geneva.
- UNDP (2016). *Human Development Report: Human Development for Everyone*. New York: United Nations Development Programme.
- Van Staveren I (2003). Monitoring gender impacts of trade. *The European Journal of Development Research*. 15(1): 126-145.
- World Bank (2018). Women, business and the law. World Bank, Washington DC.
-

