

# Case Study: A Gender-focused Macro-Micro Analysis of the Poverty Impacts of Trade Liberalization in South Africa

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**ABSTRACT:** This case study examines the impacts on poverty and equality of the extended trade liberalisation strategy that South Africa has been following since 1994. The paper features an integrated CGE microsimulation model with explicit incorporation of non-market activities and gender decomposition. This makes it possible to assess the effects of trade liberalization on between and within-group poverty, as well as on gender-disaggregated household production and leisure. The findings reveal that trade liberalization is strongly gender biased against women.

**Keywords:** household production; leisure; South Africa; trade liberalisation; gender

## 1. INTRODUCTION

While South Africa has been following an extended trade liberalisation strategy since 1994, it remains unclear whether this has had a beneficial impact on equity and poverty reduction. Indeed, the country exhibits much higher poverty than expected for a country with its level of per capita Gross Domestic Product (GDP). Poverty has a strong gender dimension, showing that female-headed households have a 50 percent higher poverty rate than male-headed households. In addition, unemployment figures have shown that females suffer more from unemployment than males. This context makes it imperative to deal with the phenomenon of gender poverty.

To analyze the poverty impacts on South African men, women and children, a Computable General Equilibrium (CGE) microsimulation model including 4000 actual households from a nationally representative household survey and featuring the explicit modeling of male and female market and domestic work activities and leisure time is constructed and reported in detail in Cockburn *et al.* (2007). This paper is a summarized case study of that work. The rest of the paper is organised in the following way. Section 2 gives a background to trade liberalisation and gender in the South African economy. Section 3 gives a broad understanding of the modelling and discusses the key results. Section 4 concludes the paper, drawing some important policy lessons.

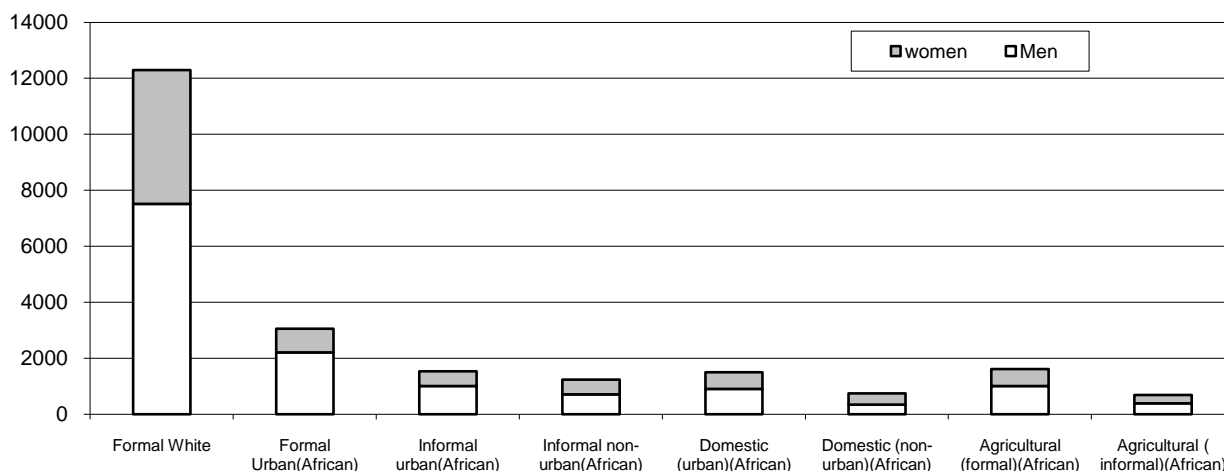
## 2. INTERNATIONAL TRADE AND GENDER IN THE SOUTH AFRICAN ECONOMY

The institution responsible for trade policy in South Africa is the Department of Trade and Industry. Trade policy is guided by multilateral arrangements as well as by bilateral and regional agreements. The Southern African Customs Union between South Africa, Botswana, Lesotho, Namibia, and Swaziland is the oldest Customs Union in the world. There are two Free Trade Areas between the European Union and the

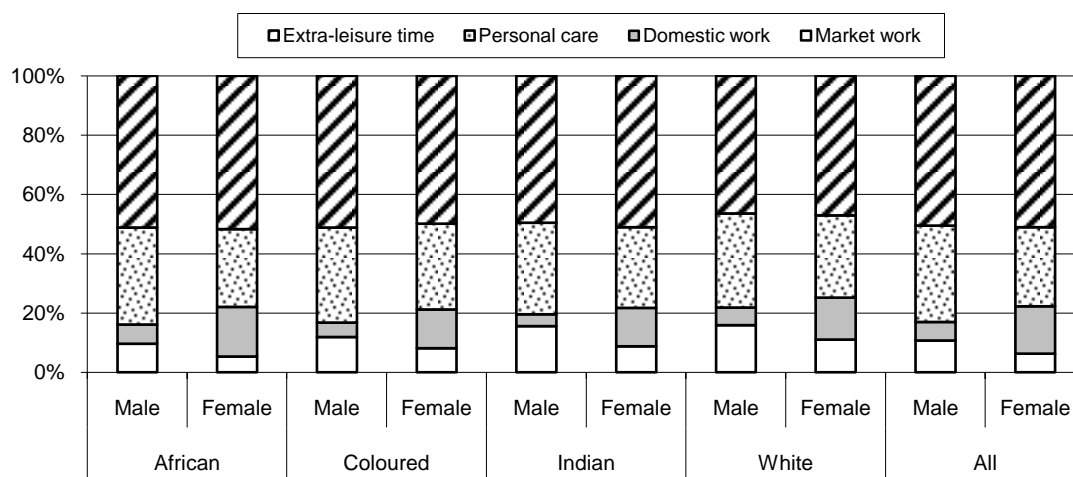
Southern Africa Development Corporation that the country has so far concluded. The country also benefits from the United States of America's African Growth and Opportunity Act. There are planned Free Trade Areas with India, the United States of America and MERCOSUR countries.

Between 1925 and the 1970s trade policy followed broadly an import substitution strategy while in the 1980s there were attempts to open the economy through export stimulation policies. By 1994 when the country officially became reintegrated into the global system following a successful transition from apartheid policies towards democracy, most quantitative restrictions had been removed, although quantitative restrictions on agricultural products were still in place. In the same year, the country signed the Marrakech Agreement under the Uruguay Round of the GATT. Essentially, this involved removal of quantitative restrictions, export incentives and a reduction in the number of tariff lines. Government agreed to binding 98 percent of all tariff lines, reducing the number of tariff lines to six, rationalising the twelve thousand commodity lines and replacing quantitative restrictions on agriculture by tariff equivalents. South Africa has made a lot of progress towards meeting these commitments implying that there has been substantial trade liberalisation. Average tariff rates have been halved.

Men are more active than women in the labour market contributing roughly 60 percent of total market labor while women are more dominant in the area of domestic unpaid work (75 percent). Men and women tend to work in different sectors. Some sectors are male-intensive (i.e. mining, food, beverage and tobacco, heavy manufacturing and construction), while others are female-intensive (i.e. textile, and private services). Women are engaged primarily in tertiary activities, while men are spread throughout primary and secondary sectors. Unemployment rates for women are much higher than for men. This is true for all population groups, especially in urban areas where unemployment was estimated



**Figure 1** Mean monthly income by gender (1999)  
 Source: Statistics South Africa (1999)



**Figure 2** Household and gender time allocation  
 Source: Statistics South Africa (2001a)

at over 28 percent for women, compared to 24.1 percent for men. Higher female unemployment may be explained, inter alia, by lower education and literacy rates. In situations of declining demand during the liberalized and deflationary period, women were pushed into the informal sector.

There is a growing literature showing that gender differences are also seen in terms of earnings. According to Figure 1, there are substantial monthly earning differentials in favor of men. The 2000 South African survey of time use also shows that men have more market labor and leisure time. Women do more of the work of rearing and caring for children, caring for other household members, cooking, and cleaning (Figure 2).

**3. MODELLING GENDERED EFFECTS OF TRADE LIBERALISATION AND RESULTS**

The study uses a CGE model that is based on the neoclassical-structuralist specification by Decaluwé *et al.* (2001). The model assumes profit

maximization among producers and utility maximisation among consumers. Relative prices then adjust simultaneously in such a way that the markets clear. In addition, the model distinguishes between male and female workers as well as market and non market activities, thereby resulting in a gender-aware model. The gender-aware integrated micro-macro model is constructed in several steps. First a standard Social Accounting Matrix (SAM) is constructed using the Supply and Use Tables (Statistics South Africa, 2003) and the integrated economic accounts for South Africa, both for 2000. Second, labour market segmentation between male and female workers is incorporated into the standard SAM. These are considered as different factors of production in the same way workers are differentiated according to skill or geographical location in other contexts. Third, non market activities and leisure time are incorporated into the model with the recognition that women are more likely to perform household work while men are more active in the labour market and have more leisure time (Statistics South Africa, 2001a). Thus, this accounting framework brings together

**Table 1** Household income and expenditure effects (in percent)

	South Africa	Residential area		Head of household		Population group				
		Urban	Rural	Male head	Female head	Black	Colored	Asian	White	Unspecified
All incomes	0.04	0.09	-0.27	0.06	-0.04	0.04	0.05	0.16	0.00	0.46
Income taxes	-0.21	-0.21	-0.16	-0.23	0.00	0.04	0.08	0.05	-0.29	0.12
Transfers out	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Savings	0.22	0.44	-1.22	0.40	-0.10	0.07	0.02	0.23	2.67	1.68
Consumption	0.05	0.09	-0.13	0.07	-0.02	0.04	0.07	0.12	0.05	0.05
Consumer price index	0.92	0.89	1.05	0.90	0.99	0.86	0.79	1.19	0.99	0.72
<b>EV/Initial income</b>	<b>-0.23</b>	<b>-0.21</b>	<b>-0.35</b>	<b>-0.24</b>	<b>-0.15</b>	<b>-0.17</b>	<b>-0.11</b>	<b>-0.17</b>	<b>-0.31</b>	<b>-0.33</b>

**Table 2** Poverty and inequality indexes (in percent)

	Initial values				Variation			
	P0	P1	P2	Theil index	P0	P1	P2	Theil index
<b>South Africa</b>	53.0	25.3	15.0	1.6	0.29	0.26	0.20	0.06
<b>Residential area</b>								
Urban	42.4	18.4	10.2	1.6	0.23	0.21	0.14	-0.01
Rural	68.3	35.4	22.1	1.0	0.37	0.34	0.27	0.07
<b>Head of household</b>								
Male	43.6	19.5	11.1	1.6	0.19	0.22	0.15	0.03
Female	65.8	33.4	20.5	0.8	0.43	0.32	0.26	0.03
<b>Population group</b>								
Black household	61.0	29.5	17.6	1.1	0.31	0.30	0.23	0.07
Colored household	36.2	14.7	7.8	0.8	0.45	0.19	0.12	0.01
Asian household	6.4	2.3	0.8	0.3	0.00	0.04	0.03	0.01
White household	0.1	0.0	0.0	1.0	0.00	0.00	0.00	0.06
Unspecified household	11.4	3.1	0.8	1.7	0.00	0.08	0.04	-0.06

market and non market activities using macro- and micro-economic datasets for South Africa. The SAM also incorporates 4000 households derived from the Income and Expenditure Survey and Labour Force Survey of 2000 (Statistics South Africa, 2001b). The resulting SAM has household-level data on expenditure, income as well as the allocation of time to different activities.

This enhanced data set is used to construct and run the gender-aware CGE model. The simulation involves a complete removal of all import tariffs. Government revenue is held constant through the introduction of an endogenous adjustment in indirect taxes. The macroeconomic results suggest small positive gains in output.

The most immediate effect of the removal of all tariffs is a fall in import prices. Locally, consumers react by purchasing more imported commodities. This increase in imports naturally means a reduction in domestically produced competing goods and services. Thus the volume and price of their sales on the local market falls. The main affected sectors are footwear, electric machinery and other non-metallic mineral products. Given a fixed current account balance, the increase in total imports leads to a real exchange rate depreciation and, a corresponding increase in exports. Exports increase most in the export-intensive sectors, i.e. sectors with high export ratios (Exports/Output). Some of the main affected sectors are iron and steel, other mining and leather. These effects

translate into employment and incomes of the different households as seen in Table 1. The effects of poverty on the households are discussed next.

Foster, Greer and Thorbecke (FGT) poverty indicators (i.e. poverty headcount ratio (P0)<sup>1</sup>, poverty gap ratio (P1)<sup>2</sup> and the poverty severity ratio (P2)<sup>3</sup>) and the Theil inequality index are used for poverty and inequality analysis. A poverty line of 3864 South African rands per year in 2000 prices is used. The complete removal of tariffs leads to slight increases in poverty and inequality as seen in Table 2. Poverty indicators increase more in rural areas than in urban areas. Poverty increases more among female-headed, colored and black households, whereas they increase slightly or remain stable for male-headed, Asian, white and unspecified households. The reason is that most female workers are employed in the sectors that are hurt by trade liberalisation. These are the initially highly protected sectors. Male workers on the other hand are more concentrated in the export oriented sectors that receive a direct boost from trade liberalisation. African women are the worst affected due to their higher than normal concentration in the contracting sectors.

Exploring further the richness of the model, it is possible to go beyond the household level to the individual level to analyze poverty and inequality impacts separately for men, women and children as seen in Table 3. The finding is that poverty

**Table 3** Poverty indexes by gender and age

Category	Men			Women			Children		
	P0	P1	P2	P0	P1	P2	P0	P1	P2
<i>Base Year Values (in percent)</i>									
<b>South Africa</b>	<b>43.8</b>	<b>19.9</b>	<b>11.5</b>	<b>50.8</b>	<b>23.9</b>	<b>14.0</b>	<b>62.7</b>	<b>31.2</b>	<b>19.0</b>
Urban area	35.1	14.9	8.1	41.6	18.1	10.0	51.7	22.8	12.8
Rural area	61.5	30.2	18.5	65.9	33.4	20.5	73.7	39.7	25.4
<b>Male-headed</b>	<b>36.6</b>	<b>15.6</b>	<b>8.7</b>	<b>41.9</b>	<b>18.7</b>	<b>10.6</b>	<b>53.6</b>	<b>24.9</b>	<b>14.6</b>
<b>Female-headed</b>	<b>66.0</b>	<b>33.2</b>	<b>20.3</b>	<b>59.4</b>	<b>28.9</b>	<b>17.3</b>	<b>72.6</b>	<b>38.1</b>	<b>23.9</b>
Black	51.8	23.8	13.9	60.1	28.5	16.8	68.9	34.7	21.3
Colored	30.8	11.9	6.1	34.6	14.3	7.7	43.0	17.6	9.3
Asian	5.5	2.0	0.8	2.9	1.0	0.3	12.3	4.3	1.6
White	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0
Unspecified	0.0	0.0	0.0	7.9	2.1	0.6	21.8	5.8	1.6
<i>Variations after simulation (in percent)</i>									
<b>South Africa</b>	<b>0.22</b>	<b>0.22</b>	<b>0.16</b>	<b>0.31</b>	<b>0.26</b>	<b>0.19</b>	<b>0.32</b>	<b>0.30</b>	<b>0.23</b>
Urban area	0.26	0.17	0.11	0.26	0.21	0.15	0.15	0.25	0.17
Rural area	0.13	0.32	0.24	0.39	0.34	0.27	0.50	0.35	0.29
<b>Male-headed</b>	<b>0.19</b>	<b>0.19</b>	<b>0.13</b>	<b>0.23</b>	<b>0.21</b>	<b>0.15</b>	<b>0.14</b>	<b>0.26</b>	<b>0.19</b>
<b>Female-headed</b>	<b>0.30</b>	<b>0.31</b>	<b>0.25</b>	<b>0.38</b>	<b>0.31</b>	<b>0.23</b>	<b>0.53</b>	<b>0.35</b>	<b>0.28</b>
Black	0.23	0.26	0.19	0.35	0.31	0.23	0.33	0.33	0.26
Colored	0.42	0.17	0.10	0.37	0.18	0.12	0.55	0.22	0.15
Asian	0.00	0.03	0.02	0.00	0.02	0.01	0.00	0.07	0.05
White	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unspecified	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.15	0.08

increases slightly more among women and children than among their male counterparts. In particular, the elimination of import tariffs is likely to increase poverty more among women and children living in poverty than men. This gender and age bias in the poverty results is particularly strong for individuals in rural areas, female-headed and black households. These results are robust for a wide range of poverty lines. From a time use perspective, the study finds that women suffer from a heavy time use burden given their increased domestic work after trade liberalisation. The higher participation rates are, however, made possible by reductions in leisure time.

#### 4. CONCLUSIONS

This paper builds an innovative macroeconomic framework that integrates both market and non-market activities, while distinguishing male and female workers throughout, in order to evaluate impacts of tariffs elimination on men and women in South Africa. The findings reveal a strong gender bias against women with a decrease in their labor market participation, while men participate more in the market economy. This strong result is due to the fact that female workers are concentrated in contracting sectors that were initially among the protected sectors and that benefit little from the fall in input prices. In contrast, male workers are more concentrated in the expanding export-intensive sectors. Female labor market participation drops particularly for black African women, as they are more concentrated in contracting sectors. As male labor market participation and real wages increase more than for their female counterparts, their income share increases within the household. Women continue to suffer nonetheless from a heavy time

use burden given their increased domestic work with trade liberalization.

This work and results are important for policymaking in poverty reduction strategies that would otherwise go unnoticed in standard non gender-aware CGE models. In particular, two issues point to areas requiring immediate government attention. First, the simulations show that because of the many competing demands on women, they continue to suffer from a heavy time burden and it is therefore important to design complementary policies to reduce this time burden on women through measures that save time or improve the productivity of time use, such as women's access to education, land, credit, information, and technology. Second, the simulations show that government may offset revenue losses through an increase in indirect taxes. For the modeling community, the approach used in this paper was, to our knowledge, the first exercise of its kind in South Africa. Major innovations in the work are that unlike any previous CGE work in the country, the modelling incorporates explicitly non-market activities (household production and leisure activities). This integrated CGE microsimulation approach makes possible the assessment of between and within-group distribution, poverty and inequality following a trade liberalisation. Another advantage of the approach is that it enables explicitly working out how trade liberalisation influences household production and leisure.

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### Notes

- <sup>1</sup> The headcount ratio,  $P_0$ , is the number of poor (below the poverty line) out of total population.
- <sup>2</sup> The poverty gap is defined as the average poverty gap in a population as a proportion of a poverty line. It accounts for the intensity of poverty, meaning how poor the poor are.
- <sup>3</sup> The severity of poverty gives more weight to the lowest incomes.

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