WORKING PAPER SERIES

WORKING PAPER NO 1, 2008

Swedish Business School at Örebro University

Trade Policies and Export growth – employment and poverty impact in Tanzania

By

Jörgen Levin
jorgen.levin@esi.oru.se
Swedish Business School
Örebro University
Sweden

Mikael Olin
mikael.olin@esi.oru.se
Swedish Business School
Örebro University
Sweden

http://www.oru.se/esi/wps
SE-701 82 Örebro
Sweden

ISSN 1403-0586

Trade Policies and Export growth – employment and poverty impact in Tanzania

Jörgen Levin and Mikael Ohlin
Department of Economics
Örebro University

Abstract

This report focuses on trade and exchange rate policies in Tanzania. The composition of Tanzanian exports has changed dramatically since early 2000. In examining the determinants of trade with a particular focus on Tanzanian exports, we found that changes in the real exchange rate did not have a significant impact on exports. However, supply-side effects and trading partner economic performance are more important, as is the distance to market (or transport cost).

The second part of this report discusses the impact of trade reforms on employment and poverty in the Tanzanian economy. In the long-term scenarios poorer households seem to gain more from trade liberalisation compared to the richer household groups. In the short-term, trade liberalisation would be beneficial to female workers and poor households, if labour is able to move between sectors. If wages are rigid, trade liberalisation will lead to unemployment and wages for casual labour will drop significantly. A nominal wage increase during liberalisation can have a significant impact on unemployment, driving casual workers' wages down further. If the trade union adjusts worker premiums during trade reform, this would not only save some of the jobs of members, but also benefit non-unionised workers in other sectors as well. The alternative option of a reduction in export taxes would have a stronger impact on export supply, poor households would gain more than with liberalisation..

JEL classification: F1, F16, C68
Keywords: Trade liberalisation, labour markets, poverty, Tanzania

Table of Contents

Figures and Tables

1. Introduction

International trade is arguably the most direct economic means by which rich countries influence poor countries. Exports of manufactures by developing countries have increased rapidly over the last 30 years, due in part to falling tariffs in OECD as well as developing countries, declining transport costs, increased specialisation, and sustained economic growth. This has benefited many developing countries, helping them make the transition away from agriculture, and lifting many out of poverty. Africa has been one of the last regions to open up to the global economy, at least in the sense of putting together the necessary policy and infrastructure to enable it to engage gainfully in world trade.

The impacts of trade policy on poverty are also increasingly arising in the national policy debate in the region. Without an analytical framework it is hard to evaluate the impacts of trade policies on the poor. To place future debates on a firmer economic foundation, new policy modelling frameworks are needed to evaluate the claims of special-interest groups, and identify policy packages that promote poverty reduction (Harrison, Rutherford and Tarr, 2003).

As in many other countries, the Tanzanian government has been cautious in liberalising its trade regime. Opening up to trade has raised concerns among policy makers and in particular on how to balance short-term cost versus long-term benefits. Labour markets are important transmission mechanisms, both for external shocks and in terms of possible economic integration. The market's flexibility determines the pace at which certain policy goals can be achieved: for instance, how quickly resources can be moved across sectors by shifting relative earnings, and how labour-market changes impact on the well-being of households and their individual members. However, complexities arise because labour is not homogenous: There is a huge variety of different skills. Moreover, differences in location, gender, and unionisation result in a large number of separate labour markets, each having its own characteristics. They are all linked to each other, and to other markets in the domestic economy.

Trade liberalisation and accompanying exchange rate policies are sometimes argued to have an adverse impact on employment and to worse poverty, particularly in urban areas. This report focuses on trade and exchange rate policies in Tanzania. We explore the determinants of trade with a particular focus on Tanzanian exports. For example, what is the impact of neighbouring-country performance, distance to other markets, protection and changes in the exchange rate? How will different export sectors be affected by changes in the exchange rate?

The analysis also discusses whether there are particular constraints and if there is a difference with regard to manufactured and agricultural export. To explore this we will use a gravity model, looking both at the various sectors and Tanzanian export as a whole.

The second part of the report is more concerned about the distributional and poverty impact of changes in relative prices, after trade liberalisation or changes in the exchange rate. We will also discuss the outcome under different labour market specifications and how it affects urban and rural regions. The analysis is based on a dynamic general equilibrium simulation coupled with incidence analysis based on household survey data.

Finally, as a synthesis of the above the current poverty reduction strategy is discussed and suggestions made on how reforms could be improved to address the findings with regard to trade and exchange rate policies and their impact on employment and poverty in Tanzania.

The outline of the report is as follows: In the second chapter recent growth and export performance are described. The third part uses a gravity model to analyse determinants of exports in the Tanzanian economy. Chapter four discusses changes in relative prices and whether any degree of liberalisation has taken place in the economy. In the fifth chapter we look at impact on trade liberalisation, both in the short and in the longer term. In the last chapter we also discuss labour market rigidities and trade promotion. The final chapter concludes.

2. Macroeconomic developments

Tanzania has been progressing steadily toward political stability and strong economic growth. Successful macro-economic stabilisation and the implementation of a broad range of structural reforms have resulted in a steady acceleration in economic growth during the past decade. Since 2000, the country has been generating about 6 percent Gross Domestic Product (GDP) growth on average.

Sectoral growth rates have accelerated across the board during the past five years. Agriculture is still the most important sector and agriculture growth averaged 4.9 percent during the past five years (Table 2.1). Mining and construction have seen a rapid expansion. However, despite continued high growth rates of value added in the mining sector, its overall contribution to economic growth remains small, given the small share of mining in overall GDP (Table 2.2).

Table 2.1: Real sectoral GDP growth, 1986-2006 (%)

	1986-1990	1991-1995	1996-2000	2001-2006
Agriculture	3.4	3.2	3.1	4.9
Mining and Quarrying	3.7	10.9	15.4	15.7
Manufacturing	3.4	0.0	5.3	8.0
Electricity and Water	8.6	3.8	5.7	3.1
Construction	21.4	-5.8	8.5	10.6
Trade, Hotels and Restaurants	2.9	1.2	5.1	7.4
Transport and Communication	3.9	4.8	4.8	6.3
Financial and Business Services	4.8	2.7	4.5	4.6
Public Administration and Other Services	10.2	0.8	2.9	4.4
Total GDP (factor cost)	4.4	2.0	4.2	6.2

Source: United Republic of Tanzania (various issues)

The construction sector grew by an average of 10.6 percent during the past half-decade and part of the rapid growth is attributed to public investment in infrastructure, but there is also increased investment in residential and business structures. The manufacturing sector has started to recover, growing at an average of 8 percent per year over the past five years. Service sectors such as trade, transportation and financial services show an improvement compared to the previous decade. Growth was particularly strong in the areas of trade, tourism, transport, and communication.

The past five years have witnessed continued structural change of the Tanzanian economy, with the expansion of the mining sector the most important change. Other sectors show a modest change in their respective contribution to GDP. For example, the contribution

to GDP from the manufacturing sector is still below the level of the late 1980s. The share of agriculture has fallen by two percentage points from 48.8 percent to 46.5 percent.

Table 2.2: Sectoral contribution to real GDP (%)

	1986-1990	1991-1995	1996-2000	2001-2006
Agriculture	48.8	49.2	49.4	46.5
Mining and Quarrying	0.8	1.2	1.9	3.1
Manufacturing	8.9	8.2	8.2	8.7
Electricity and Water	1.4	1.6	1.7	1.6
Construction	9.2	9.2	8.8	8.9
Trade, Hotels and Restaurants	16.4	15.8	16.0	16.9
Transport and Communication	4.8	5.1	5.3	5.4
Financial and Business Services	5.5	5.8	5.9	6.2
Public Administration and Other Services	8.2	8.7	7.8	7.2
Less Financial Services indirectly measured	-4.1	-4.8	-4.9	-4.5
Total GDP (factor cost)	100.0	100.0	100.0	100.0

Source: United Republic of Tanzania (various issues)

Although macroeconomic performance has been very good in recent years, weaknesses have to be addressed if growth is to be sustained (World Bank, 2007). The slow response of private sector investment is reason for concern with respect to the sustainability of growth. Most of the growth acceleration can be explained by demand-side effects of foreign aid as well as greater efficiency of the economy. But the growth effect of efficiency gains is likely to diminish over time and aid inflows cannot be expected to increase indefinitely. Thus, future reforms need to strengthen the investment climate and Tanzania's competitiveness. Diversification of exports is critical both with respect to the dynamic impact of greater integration into international markets as the driver of innovation and technological change. Increased export is also an important source for efficiency gains and scale effects through the production for a larger market.

Indeed, since 2001 export earnings have increased at an annual average rate of 18 percent (Table 2.3). Cotton, tobacco, cloves, minerals, manufactured goods and others goods have all seen a substantial increase in earnings the last five years. There is also a significant change in the composition of exports. Mining (gold) grew significantly during both periods, while other export goods, which include non-traditional export commodities such as floriculture, horticulture, fish, certain manufactured products, saw a dramatic increase in the latter period (2001-2006). Minerals and other commodities have increased their average export share from 34 to 70 percent between the two periods. Manufactured exports have grown significantly during the last five years, but still their share in total exports remains low.

Table 2.3: Export performance, 1996-2005 (%)

	Annual average growth		Average export share	
	1996-2000	2001-2006	1996-2000	2001-2006
Coffee	-9.2	0.5	15.8	4.3
Cotton	-12.4	16.3	10.6	4.2
Sisal	2.9	2.0	1.0	0.6
Tea	9.4	0.3	4.4	2.3
Tobacco	12.1	12.9	7.4	4.4
Cashew nuts	8.3	-8.1	14.9	4.2
Cloves	-9.9	15.7	1.0	0.7
Petroleum products	18.1	0.0	0.6	0.0
Minerals	57.7	30.6	11.8	42.3
Manufactured goods	-7.3	28.8	9.8	8.1
Others*	2.8	21.9	22.8	28.9
Total	0.6	17.6	100.0	100.0

Source: United Republic of Tanzania (various issues)

Coffee, cotton, tobacco and cashew-nuts are Tanzania's largest export crops. Export performance within these crops has been less successful and average export shares have been shrinking rapidly. Their share of export earnings represent only one third of their level in 1996-2000. This also highlights the structural change within the agriculture sector itself, horticulture is becoming more important.

Even though exports of gold rose from virtually nothing to about 5 percent of GDP, their contribution to economic growth has been only around 0.4 percentage points. There is some concern that gold and other natural resource-based export products are reaching the limits of expansion of extraction. A key challenge for the Tanzanian economy is thus to strengthen and diversify its export base.

How does Tanzania's export performance compare with other developing countries? Figure 2.1 shows export/GDP ratios and GDP in 2005, both measured in USD, for countries in sub-Saharan Africa with less than 800 USD in GDP per capita. In comparison, Tanzania's export/GDP ratio is quite low, and is indeed among the lowest. In addition, among the countries with similar GDP per capita, Tanzania has the lowest export/GDP ratio. Thus, compared to other African countries its export/GDP ratio is quite low.

What about export dynamics in the Tanzanian economy? With respect to other African economies, Tanzania's performance is mixed. Compared to the average for the whole sample Tanzania did quite well in the early 1990s (Table 2.4). From 1996 up to 2000 performance was considerably below the average compared to the other countries under review. During the last five years Tanzania's export performance is close to the average performance in sub-Saharan Africa.

Figure 2.1: Export/GDP ratios across sub-Saharan Africa (less than 800 USD)

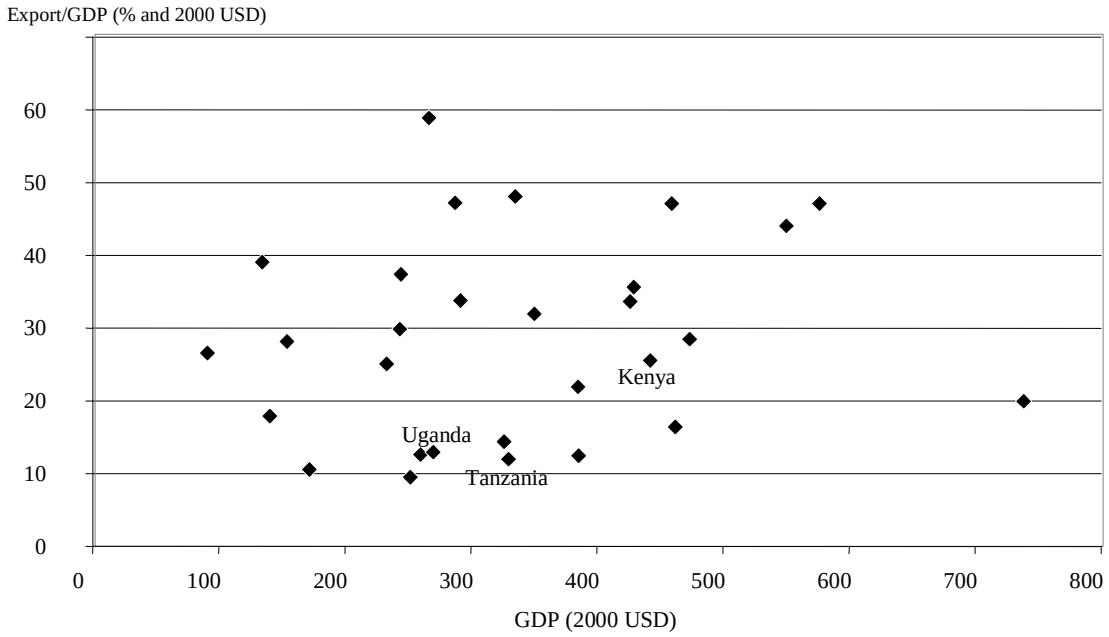


Table 2.4: Export/GDP ratios across sub-Saharan Africa (%)

Country	1991-95	1996-2000	2001-05	Country	1991-95	1996-2000	2001-05
Angola	35.4	5.4	-3.7	Madagascar	9.3	5.8	2.8
Benin	8.6	-5.0	-2.3	Malawi	10.7	-0.2	1.3
Botswana	-1.4	0.9	-0.6	Mali	6.1	5.6	0.2
Burkina Faso	2.8	-4.5	-0.9	Mauritania	1.8	6.3	-3.7
Burundi	11.3	-1.5	4.0	Mauritius	-1.9	1.6	-1.9
Cameroon	6.1	1.6	0.5	Mozambique	14.3	5.9	11.4
Cape Verde	9.7	9.6	4.9	Namibia	-0.9	-1.6	0.5
Central African Republic	11.0	-6.3	-4.3	Niger	3.1	1.1	-3.2
Chad	11.7	-4.7	38.5	Nigeria	1.1	6.8	0.6
Comoros	8.0	-1.0	-5.4	Rwanda	0.6	13.0	5.8
Congo, Dem. Rep.	8.9	0.2	8.1	S. Tome and Princ.	8.4	10.6	3.8
Congo, Rep.	5.0	4.6	0.6	Senegal	8.7	-2.6	-1.7
Cote d'Ivoire	6.8	-0.6	4.6	Seychelles	-2.5	7.1	8.2
Ethiopia	18.3	6.1	5.5	Sierra Leone	-0.8	2.4	6.4
Gabon	5.1	-7.8	12.1	South Africa	-1.1	4.2	-0.2
Gambia, The	-3.1	-0.1	-0.2	Swaziland	0.1	2.0	1.9
Ghana	8.3	16.8	-5.9	Tanzania	12.5	-6.6	3.7
Guinea	-6.8	2.8	3.2	Togo	0.5	-0.8	1.9
Guinea-Bissau	17.4	31.7	4.1	Uganda	11.9	0.7	3.4
Kenya	6.7	-7.4	5.0	Zambia	0.2	-10.1	-3.7
Lesotho	5.2	7.7	12.3	Zimbabwe	10.9	-0.3	28.1
				Average	8.3	2.3	3.8

Source: World Development Indicators 2007

Although Tanzania on average has been a top performer when it comes to GDP growth, its export performance has, however, been less successful. The need to expand and diversify its export base is of crucial importance if the Tanzanian economy is to sustain high growth and

reduce poverty. Available evidence suggests that higher export performance contributes positively to firm growth – one percentage increase in export growth delivers almost a one percent increase in firm growth (World Bank, 2007). Moreover, exporters invested substantially more than non-exporters. If the domestic constraints to production are relaxed further, manufactured exports could yield some rapid short-term gains.

3. Determinants of export – the case of Tanzania

As discussed in chapter two, Tanzania's export performance has been lagging behind other African countries. What are the structural characteristics in the Tanzania economy that hinder further export growth? The gravity model has been the workhorse model in analysing determinants of trade flows between countries.[1] In its simplest form, it is almost completely analogous to the physical counterpart that has given it its name, and which relates bilateral trade flows to GDP, distance and other variables such as countries sharing a common language, a past colonial relationship, or countries having a mutual border.

In this study we have used a specification based on Egger - Pfeffermayer (2003) and Bénassy-Quéré Lahràche-Révil (2003). The right-hand side of the equation below lists explanatory variables, which are assumed to explain Tanzania's export pattern.

$$\ln X_{ijt} = \alpha \ln GDP_{it} + \beta \ln GDP_{jt} + \gamma \ln POP_{it} + \delta \ln POP_{jt} + \eta \ln DIST_{ij} + \lambda_1 COMLANG_{ij} + \lambda_2 COLONY_{ij} + \lambda_3 COMCOLONY_{ij} + \lambda_4 CONTIG_{ij} + \zeta \ln RER_{ijt}$$

The dependent variable (X_{ijt}) is the volume of Tanzanian export to country j at year t. The explanatory variables are GDP in constant dollars for Tanzania and its partners (GDP_{it}, GDP_{jt} respectively), population for Tanzania and its partners (POP_{it} and POP_{jt}), whereas $DIST_{ij}$ is the distance between the trading countries in question[2]. $COMLANG_{ij}$, $COLONY_{ij}$, $COMCOLONY_{ij}$ and $CONTIG_{ij}$ are dummies, signifying that the trading countries share an official language, a past colonial relationship, a colonial power or have a common border. Finally, RER_{ijt} is the real exchange rate between the trading countries at year t.

A priori it is expected that the GDP variables, which represent supply (Tanzania: i) and demand (importer:j), would have a positive impact on exports between Tanzania and its trading partners. A larger population, implying lower GDP per capita, is expected to have a negative impact on exports. Distance is assumed to have a negative effect. The colony variables are supposed to facilitate trade, due to the historical links. A common official language and common border are also believed to encourage trade. The real exchange rate is

[1] Originally a descriptive model specified by Tinbergen (1962), the gravity equation has been given a theoretical basis by most notably Anderson (1979) and Bergstrand (1985, 1989).

defined, and change such as an increase indicates a lower price for firms and consumers in the importer countries, and therefore is expected to be positive.

In order to get a more complete picture of the impact of the exchange rate on exports, the model will be applied to different sectors as well as different income levels of trading partners. The data used in the regression are based on COMTRADE and other sources such as IMF and the World Bank's World Development Indicators. The data cover the period 1995-2005.

Table 3.1 shows the results both at aggregate and sectoral level.[3] Looking at the determinants of exports at an aggregate level (the second column), the results are significant as expected, except for the exchange rate variable. The GDP related variables behave as expected, although are high compared to other studies in the field. The negative elasticity of the exporter population variable is also high, as is the one for distance. The importer variable, on the other hand, is quite small. All four dummies, however, are more or less of the expected signs and size. As for our key variable, the real exchange rate, its impact is surprisingly small, and, even more surprising, negative.

This means that the most important determinants of Tanzanian exports are population (POP) and GDP, implying that Tanzanian export supply is of greater importance than trade costs. As a common border is also important it would appear that the economic performance of the neighbouring countries is important for Tanzania's export growth. The current crisis in Kenya which will slow down GDP growth would then have repercussions on Tanzanian exports. The aggregate result indicates that a one point drop in Kenya's GDP would generate a corresponding drop of close to 1 percent in Tanzanian export to this country.

[2] The distance variable is defined as the geodesic distance and is calculated with the greater circle formula, using the distance between the greatest cities in terms of population.
[3] Sectoral level follows Comtrades's SITC 3 classification

Table 3.1: Gravity equation estimation, total export and by sectors[4]

	S3-Total	*S3-0* (Foods and Live Animals)	*S3-1* (Beverages and tobacco)	*S3-2* (Crude materials)	*S3-3* (Fuels and lubricants)	*S3-4* (Animal. Veg. Oils. Fats. Wax)	*S3-5* (Chemicals)	*S3-6* (Manufactured Goods)	*S3-7* (Machines)	*S3-8* (Miscellaneous manufactured goods)	*S3-9* (Goods not classified by kind)
	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)	Coefficients (t-statistic)
GDP_{it}	4.56 *	-0.50	4.86	6.28*	5.37	-1.32	6.67*	12.78*	-1.88	1.95	-49.35*
	(2.01)	(2.69)	(3.78)	(2.70)	(6.28)	(4.28)	(3.02)	(2.53)	(3.53)	(3.10)	(11.37)
GDP_{jt}	0.97 *	1.11*	0.47*	0.69*	-0.22	0.35*	-0.09	0.61*	0.31*	0.34*	1.16*
	(0.04)	(0.06)	(0.10)	(0.06)	(0.24)	(0.16)	(0.08)	(0.06)	(0.08)	(0.08)	(0.38)
POP_{it}	-11.49*	-1.24	-11.58	-16.94*	-20.90	1.49	-12.78**	-31.00*	0.12	-7.75	113.60*
	(5.15)	(6.74)	(9.73)	(6.89)	(16.25)	(11.08)	(7.69)	(6.65)	(8.91)	(8.13)	(27.56)
POP_{jt}	-0.09**	-0.37*	-0.21**	0.10	0.11	-0.13	0.57*	0.09	0.05	0.04	-0.41
	(0.05)	(0.08)	(0.12)	(0.07)	(0.21)	(0.22)	(0.09)	(0.07)	(0.10)	(0.08)	(0.34)
$DIST_{ij}$	-1.24*	-0.98*	-0.51	-0.27	-0.75	1.35	-0.31	-1.04*	-1.00*	-0.56*	-3.25*
	(0.14)	(0.18)	(0.32)	(0.20)	(0.58)	(0.63)	(0.23)	(0.20)	(0.27)	(0.25)	(1.15)
$COMLANG_{ij}$	0.65*	1.00*	-0.41	-0.04	-0.43	-0.45	0.01	0.64*	0.63*	0.23	1.65
	(0.17)	(0.20)	(0.29)	(0.20)	(0.66)	(0.38)	(0.31)	(0.20)	(0.26)	(0.24)	(1.01)
$COLONY_{ij}$	2.23*	1.32*	2.09*	1.75*	1.95	0.13	1.42*	3.40*	1.19**	4.58*	1.75
	(0.29)	(0.23)	(0.40)	(0.27)	(1.02)	(0.68)	(0.48)	(0.42)	(0.69)	(0.33)	(1.53)
$COMCOLONY_{ij}$	0.38*	0.26	-0.10	1.04*	0.87	0.52	1.07*	0.16	-0.22	-0.45**	-2.30*
	(0.18)	(0.23)	(0.37)	(0.23)	(0.58)	(0.55)	(0.28)	(0.22)	(0.31)	(0.27)	(1.11)
$CONTIG_{ij}$	2.91*	3.01	0.78	2.17*	0.61	3.93	1.76*	2.64*	2.60*	3.40	-0.38
	(0.27)	(0.39)	(0.62)	(0.41)	(0.91)	(1.35)	(0.39)	(0.33)	(0.46)	(0.41)*	(1.81)
RER_{ijt}	-0.06*	-0.07*	0.08	-0.03	-0.07	0.01	0.07**	-0.11*	-0.03	-0.04*	0.30**
	(0.03)	(0.04)	(0.05)	(0.03)	(0.08)	(0.07)	(0.04)	(0.03)	(0.04)	(0.04)	(0.17)
No. of observations	969	749	363	699	121	135	323	671	372	450	132
F-value	175.15*	208.27*	13.84*	59.72*	7.47*	3.79*	30.82*	69.70*	35.30*	104.14*	7.87*
(Degrees of freedom)	(10. 958)	(10. 738)	(10. 352)	(10. 688)	(10. 110)	(10. 124)	(10. 312)	(10. 660)	(10. 36)	(10. 439)	(10. 121)
R2	0.53	0.44	0.15	0.31	0.34	0.25	0.40	0.41	0.35	0.39	0.37

[4]Constant not reported, t-statistics are heteroskedasticity robust. * and ** correspond to a 5% and 10% significance level respectively.

Moving on to the sectoral results, the coefficients have the expected sign, but there are many notable exceptions. The foods and live animals sector (S3-0) has the "wrong" signs for Tanzania's GDP and the real exchange rate variables, but otherwise the coefficients have the right signs. The beverages and tobacco sector (S3-1) exhibits the "wrong" signs for the common language and common colonizer dummies. On the other hand, the real exchange rate has the expected positive sign. The crude materials sector (S3-2) has the wrong signs for importer population, common language and the real exchange rate. The fuels and lubricants sector (S3-3) has the wrong signs for importer's GDP, Tanzania's population, common language and the real exchange rate.

The food-oil sector (S3-4) exhibits the wrong sign for Tanzania's GDP and population, distance, common language and the real exchange rate. The chemical sector (S3-5) has the wrong signs for importer GDP and population. For manufactured goods (S3-6) importer population and the real exchange rate have the wrong signs. The machinery sector (S3-7) has negative signs for Tanzania's GDP and both population variable as well as real exchange rate and common colonizer variables. Importer population, common colonizer and real exchange rate have the wrong signs for miscellaneous manufactured goods (S3-8). For the last sector, goods not classified by kind (S3-9) the variables with the wrong signs are Tanzania's GDP and population, common colonizer and common border.

The best overall performing estimation is the aggregate exports (S3-Total) with only one coefficient that is not significant at the 5% level (importer population). With respect to the wrong signs, it is difficult to see a clear and understandable pattern. However, if one looks at the variables having an unexpected sign and significance, they do suggest at least a pattern: it is only the real exchange rate that repeatedly and significantly has the wrong sign. It is significant and with an elasticity value found in other studies only for goods not classified by kind (SITC 9).[5]

Although the low significance makes it hard to draw any distinct conclusions, it is worth noting that export supply variables (i.e., GDP and POP of Tanzania) have a notable impact. The other traditionally strong determinant, distance to the market, has a lower impact.

Instead of focusing on sectoral details, we now look at aggregate exports to examine whether the determinants of Tanzanian exports differ between developed and developing countries. Two different classifications are used. In the first, countries are divided into the following four groups, which correspond to World Development Indicators income levels:

[5] For a comparison, Bénassy-Quéré, Lahrèche-Révil 2003, Martínez-Zarzoso, Nowak-Lehmann, 2003 have between 0.21 and 0.28, whereas Egger Pfaffermayr, 2003 find a higher elasticity between 0.46 and 0.62.

low income, lower middle-income, upper middle-income and high-income countries (Table 3.2). The second classification merges low income- and lower middle-income countries into one group and upper middle and high income-countries into another group.[6]

For those variables estimated, the GDP variables behave as expected, although importer GDP has a very wrong sign on one occasion. Tanzanian population has the right sign, but varies considerably in size. The importer population variables behave less predictably, and are mostly positive. Distance is always positive. For most dummies the estimations are in line with expectations, expect common language (on one occasion) and common colonizer (once). The key variable seems to decrease with the income of the partner, indicating that exchange rates seem to have a negative impact when Tanzania trades with richer countries.

The low-income category has the expected signs, with the exception of the importer population. For the lower middle-income category, importer GDP and population as well as common language and real exchange rate have the wrong signs. The upper-middle income category has wrong signs for the importer population and the real exchange rate variables. For the high-income category, it is the common colonizer and the real exchange rate that show the wrong signs. The lower-income category has the wrong sign only for importer GDP population. For the final category, higher-income, the real exchange rate is the only variable that has the wrong sign.

Again the results were rather disappointing with low levels of significance. However, when looking at significant coefficients with unexpected signs, it is only the real exchange rate and importer population that qualify. The importer population is both positive and significant on four occasions, for all income strata except the two highest. It seems as if within these income strata, trade diminishes with the importer GDP per capital, but this occurs within the higher income groups. The only time the real exchange rate is significant is for the high-income group, although it is small and negative.

[6] A drawback of this classification is that it causes the country and colony variables to drop out in certain cases.

Table 3.2: Gravity equation estimation, by income levels[7]

	Low Income Coefficients (t-statistic)	*Lower Middle Income* Coefficients (t-statistic)	*Upper Middle Income* Coefficients (t-statistic)	*High Income* Coefficients (t-statistic)	*Lower Income* Coefficients (t-statistic)	*Higher Income* Coefficients (t-statistic)
GDP_{it}	7.54*	7.24	1.02	5.40**	6.93*	3.42
	(3.71)	(4.85)	(4.94)	(2.93)	(3.07)	(2.63)
GDP_{jt}	0.22	-0.10	0.18	1.38*	0.10	1.40*
	(0.20)	(0.31)	(0.44)	(0.26)	(0.11)	(0.10)
POP_{it}	-16.50	-18.70	-3.76	-14.32*	-16.01**	-9.93
	(10.36)	(12.81)	(12.55)	(7.18)	(8.32)	(6.50)
POP_{jt}	0.75*	0.75*	0.78*	-0.37	0.70*	-0.39*
	(0.21)	(0.30)	(0.40)	(0.29)	(0.12)	(0.11)
$DIST_{ij}$	-0.18	-0.83*	-1.78*	-1.68*	-0.60	-1.88*
	(0.21)	(0.33)	(0.29)	(0.41)	(0.17)	(0.23)
$COMLANG_{ij}$	0.76*	-0.77**	0.67	0.58**	0.19	0.90*
	(0.23)	(0.47)	(0.68)	(0.33)	(0.24)	(0.24)
$COLONY_{ij}$				1.71*		1.71*
				(0.38)		(0.34)
$COMCOLONY_{ij}$	0.20	0.40	1.60*	-0.07	0.63*	0.46
	(0.24)	(0.43)	(0.53)	(0.40)	(0.23)	(0.30)
$CONTIG_{ij}$	3.50*				2.92*	
	(0.31)				(0.28)	
RER_{ijt}	0.07	-0.03	-0.06	-0.11*	0.04	-0.14
	(0.05)	0.05	(0.07)	(0.04)	(0.04)	(0.04)
No. of observations	230	228	172	339	458	511
F-value	92.87*	13.01*	16.91*	72.41*	122.29*	93.17*
(Degrees of freedom)	(9. 220)	(8. 219)	(8. 163)	(9. 329)	(9. 448)	(9. 501)
R2	0.72	0.30	0.43	0.56	0.54	0.57

[7] Constant not reported, t-statistics are heteroskedasticity robust. * and ** correspond to a 5% and 10% significance level respectively.

Once again, export supply seems to be the main driving force behind trade, although it seems this force is of less importance when trading with the higher-income groups. Transport cost seems, on the other hand, to have a larger effect in that context. A possible explanation could be that price is one advantage of Tanzania products exported to higher-income countries. The fact that the real exchange has the expected effect supports this hypothesis.

The gravity approach can give us only some hints on the determinants of exports, and the results were disappointing. Other studies using firm-level data have analyzed the determinants of exports in the Tanzanian manufacturing industry. Some of the key determinants are access to bank finance, export experience, human capital, non-bureaucratic hurdles and destination of exports (World Bank, 2007). Exports destined to SADC or the local regional markets in Kenya and Uganda do not grow as fast as those destined to markets outside Africa such as Western Europe, Eastern Europe, the US, and other Asian countries.

4. Real exchange rate – impact output, poverty and income distribution

In chapter three we analysed factors important in explaining Tanzania's trade pattern. In general, changes in the real exchange rate had an insignificant impact on trade. Other factors such as export supply, trade partners' GDP per capita and distance to markets were, however, found to be important. One explanation of why changes in the real exchange rate do not impact on sectoral trade pattern could be the level of aggregation. Other studies focusing on agricultural commodities found that domestic export crop prices have been affected by movements in the real exchange rate, world prices and marketing margins. A real exchange rate appreciation had a negative impact on producer prices of rice, wheat, maize and main export crops such as coffee (World Bank, 2000). Hence, a real depreciation would have a positive impact on producer prices on the main export crops.

However, generating export growth also needs to address supply-side constraints such as inadequate infrastructure: ports, roads, rails systems, and energy supplies. For example, World Bank (2000) provides evidence that spatial marketing margins declined over time for previously regulated goods such as wheat, rice and maize. However, transport costs are still very high in Tanzania, which imply that the absolute spatial margins are quite high. Unless there is substantial improvement in infrastructure, marketing margins will remain at a high level. This will also reduce the net impact of favourable changes in the real exchange rate.

The concept of the real exchange rate (RER) has a central role in the debate on economic development and growth strategies, and in the literature on economic reform programmes. In a small open economy, the real exchange rate is one of its most important relative prices. Although views might differ on how to achieve a real depreciation, most researchers agree on the importance of maintaining the RER close to its equilibrium level. It is also of crucial importance in analysing the impact of economic reform measures on the poor, particularly in a agriculture-based economy such as Tanzania, where the rural areas account for three-quarters of the overall population, and agriculture accounts for at least 80 percent of total employment in the country.

Since 2001, both the nominal and the real effective exchange rates have been depreciating and the 2004 level of the Real Effective Exchange Rate (REER) is considered to be consistent with equilibrium in the external accounts (Li and Rowe, 2007). This is in sharp contrast to the 1970s when the real exchange rate was undervalued or the mid-1980s when it was sharply overvalued.

The analytical framework used here is based on the Salter-Swan-model. At the core of the model is the distinction between tradable and non-tradable goods and services. Tradables comprise all goods and services produced in an economy that are actually or potentially imported or exported. Non-tradables are goods and services that do not cross country borders, either because transport costs prohibit the export or the import of a good, or because of the virtually non-tradable nature of the goods in question (e.g. public services, land and housing). The most notable difference between tradables and non-tradables arises from the price formulation process. In an open dependent economy, the price of tradables is assumed to be determined by world market prices, 'translated' through the exchange rate into domestic market prices. The prices of non-tradables are assumed to be determined by domestic supply and demand.

We now highlight some of the macroeconomic shifts, notably changes in relative prices that characterised the period 1993-2005 in Tanzania. The political and economic trade-offs inherent in reforming economies are sometimes portrayed with the help of the dependent-economy model (Bevan et al. 1990), where the goods are divided into tradables and non-tradables. In an economy like Tanzania, the tradable sector tends to be split into exportables (in Tanzania mainly agricultural and mining products), which compete with the rest of the world, and importables (the bulk of the manufacturing sector) which operate behind tariff walls. Since exchange rate adjustments and trade reform shift relative prices, it also is bound to bring about real changes in production patterns, and ultimately in the welfare of the households engaged in the two sectors.

The analysis is done with the help of two relative prices: the export-to-import price ratio (P_x/P_m) and the non-tradable-to-import price ratio (P_n/P_m). When economies are opened up, the P_x/P_m ratio rises as import tariffs and related taxes are lowered. This should then draw resources from the importable sector towards exports. However, the ultimate outcome is a result of adjustments in internal demand. To ensure that resources actually flow to exportables, the rise in the P_n/P_m ratio, which can also be regarded as a proxy for the domestic cost structure, should not be large. Otherwise, resources would flow into non-tradables (or services) and export expansion would not be realised.

In Figure 4.1 we have plotted the P_x/P_m and P_n/P_m ratios on the vertical and horizontal axes, respectively, for the period 1993-2005. The points have been joined to indicate clearly the regime shifts over the period. Ideally, we would expect that fiscal and monetary policies would ensure that P_n remains relatively constant to enable a real depreciation to take place. On the other hand, we would want the implied export promotion drive to lead to a rise in the

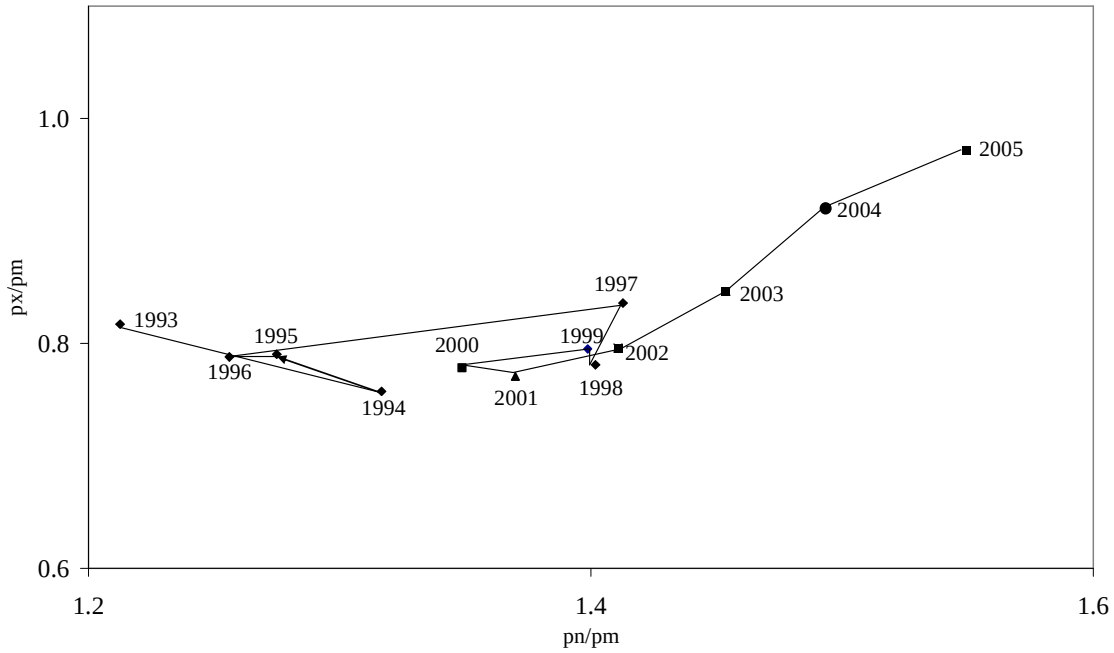
P_x/P_m ratio in order to ensure that resources flow towards exportables. Thus from the point of view of economic liberalisation, only upward movements in the P_x/P_m - P_n/P_m space would be desirable, while downward or leftward movements would indicate relative price changes that would favour importables and non-tradables. The liberalisation effort would have failed.

Figure 4.1 shows different 'policy clusters', separated by slow and rapid implementation periods. The P_x/P_m ratio did not show any significant changes during 1993-2002. However, since 2002 the price ratio has been steadily increasing upwards, indicating a shift in relative prices favouring export products. As world market prices did not change significantly during the period, the relative price shifts indicate a liberalisation period. Taken as a whole, therefore, liberalisation was effected during 2002-2005. This might also explain the dramatic shift in the structure of exports. Favourable movements in relative prices have given incentives to increase production of non-traditional export products. However, the relative poor performance of traditional export crops pinpoints other constraints facing rural exporters. In particular, supply-side constraints such as inadequate infrastructure and accessibility of credit need to be addressed.

Figure 4.1 also highlights vertical shifts in the P_n/P_m relative price. A dramatic shift can be seen between 1996 and 1997. During this period government consumption expenditures increased by 65 percent, which created excess demand for non-tradable goods, shifting the relative price to the right. In the aftermath, stabilisation measures managed to reduce the excess demand for non-tradable goods and the relative shifts were relatively small until 2002. However, since then, the P_n/P_m relative price has been increasing steadily, moving to the right as a result of increased aid flows and public spending. As discussed earlier, most of the GDP growth acceleration is explained by demand-side effects and this would lead to an increase in the price of non-tradable goods.

As a result, the P_x/P_n price ratio has been fairly constant over the last decade (Figure A.1 in appendix). This means that price incentives have improved for exporters relative to those producing goods competing with imports, but prices have not changed in favour of exporters relative to those producing non-traded goods. Despite the increasing prices of non-traded goods, a steady depreciation of nominal exchange rate has kept the relative price P_x/P_n constant. However, the recent appreciation of the exchange rate might reverse this outcome favouring incentives to the non-tradable sector. Then the risk for Dutch Disease might become real.

Figure 4.1: Changes in relative prices, 1993-2005



Note:
Px: Weighed GDP deflator for agriculture and mining
Pm: The GDP deflator for manufacturing sector
Pn: Weighted GDP deflator for construction, transport, and communication, financial and business services, public administration and electricity and water supply.

Relative price changes impact on sectors and households, both as producer and consumers. We saw that relative prices have been changing over the last decade, and we now turn to policies that can induce these shifts in relative prices. A change in capital inflows (aid), changes in terms-of-trade (ToT) and trade liberalisation are usually assumed to have exerted a significant influence on the real exchange rate. In the case of Tanzania, the real exchange rate appreciates (depreciates) with an improvement (decline) in the ToT and depreciates (appreciates) with a more open (closed) trade regime (Li and Rowe, 2007). Interestingly they also found that aid surges are associated with depreciation of the real exchange rate, both in the short run and in the long run. In the next chapter we focus on relative price changes following the liberalisation of trade, and reduced export taxes.

5. Trade reform

In an era of trade reform and further integration into the world market, the fear of job losses provides an effective threat for halting previous liberalisation efforts. In addition, critics of globalisation sometimes argue that poor people in developing countries will suffer as wages would continue to fall. In the next section we analyse the impact of continued trade liberalisation on employment and household welfare.

Mkenda (2005) found that globalisation, defined either as the degree of foreign ownership of firms or the extent to which firms export their final product, leads to an increase in the earnings of workers. Exporting firms employ a workforce with relatively higher education levels. The ratio of skilled-to-unskilled workers in exporting firms is double that of non-exporters, and exporters pay a premium for higher skills. Exporters also have a larger proportion of foreign managers with more experience. Thus, promoting foreign direct investments should be encouraged as it increases the incentives for further investment in human capital.

However, globalisation has put pressure on firms to increase competitiveness, and this puts pressure on employers to undertake cost reduction measures. A common strategy by companies is to reduce the number of permanent workers, and employ more casual or part-time workers. In areas where informal sector employment has expanded rapidly, this is the result of a segmented labour market combined with high-cost entry into the formal sector and a competitive free-entry self-employment sector. Over the decade, real wages in the Tanzanian manufacturing sector have grown quite rapidly and by 2000 wages were some 40 percent above their 1992 level (Kingdom, Sandefur and Teal (2005). In addition, being a member of the trade union generates a premium of around 22 percent and this does not change significantly when skill and gender are controlled for.

This indicates that the labour market in Tanzania is segmented and that a significant share of the labour force is excluded from the formal labour market. Compared to an estimated labour force of about 17 million people, the trade union's 300,000 members constitute a unionisation rate of less than 2 percent. However, in relation to the formal sector workforce with paid employment, the unionisation rate is higher and not negligible. In workplaces where the union is active, particularly in manufacturing, the unionisation rate is on average 56 percent (LO/FTF Council, 2003).

One of the key issues in reforming trade is changes in relative prices. As discussed in chapter four, trade protection acts as a disincentive for exporters.[8] Even though export taxes are still in use, there has been some progress in reducing tariff rates. Since January 2005, the East Africa Cooperation common external tariff (CET) has been Tanzania's main trade policy instrument. The adoption of the CET in January 2005 led to a reduction in Tanzania's applied tariffs from an average rate of 13.5 percent at the end of 2003 to 12.9 percent. However, the CET is expected to be reduced further and some exempted commodities will see reduced protection in the near future.

5.1.1 Long –term impact of trade reform

What are the impacts on employment, wage structure and poverty in the Tanzanian economy following continued liberalisation of trade? Establishing whether trade liberalisation has any impact on growth and employment is not straightforward for three reasons (Greenaway et al. 2002). We need, first to frame an appropriate counterfactual; second, to disentangle the effects of trade reform from other effects, and third, to consider how long to wait before conducting an assessment of the reforms. Different methodological approaches, such as cross-country and time series analysis, have been suggested for evaluating the outcome of trade liberalisation. A third approach, used in this report, is computable general equilibrium modelling, which has the advantage of simulating different scenarios.

We use a dynamic computable general equilibrium model incorporating a micro-simulation module.[9] The dynamic Tanzania model represents an extension of the standard static CGE model developed at the International Food Policy Research Institute as described in Lofgren, Harris and Robinson (2002).[10] The model is a recursive dynamic model, which implies that the behaviour of its agents is based on current and past conditions as opposed to future conditions. The model identifies 43 productive sectors or activities that combine

[8] As outlined in the previous chapter, an import tariff would reduce the Px/Pm ratio, favouring production of goods competing with imports.

[9] Micro-simulation models play an important role in policy analysis, particularly in connection with the monitoring of the distributional impact of tax and benefit reforms. The models begin with a household data set, which is broadly representative of the population at large, and then try to simulate the consequences of tax and benefit changes taking, where possible, account of the behavioural responses of individuals. The objective is to show how the changes affect different types of households in different ways, and to assess the overall impact on individual living standards, poverty rates, and other indicators of household well-being. The advantage of micro-simulation models is that they pay explicit attention to heterogeneity of experience across the population. Usually, the drawback is that behavioural response is modelled in a rudimentary manner.

[10] See also Asmah and Levin (2007) for a description of the model and an application of increased foreign aid-flows and Dutch Disease in the Tanzanian economy.

primary factors with intermediate commodities to produce output. The twelve factors of production identified in the model include: (i) nine types of labour distinguished according to maximum education attained and gender (uneducated, primary, secondary, and post-secondary); (ii) two types of capital (agricultural and non-agricultural); and (iii) agricultural land.

The model distinguishes between various institutions within the Tanzanian economy, including enterprises, the government, and 12 types of households. The household categories are initially separated into rural and urban. The remaining disaggregation is based on the income level of the household and on the education of the head of the household. In terms of adult equivalent income levels, the poorest households are those below the food poverty line, followed by households that fall between the food and basic needs poverty lines. The remaining households that do not fall into either of these categories (approximately 60 percent of the population) are divided according to the highest educational attainment of the head of the household (see Thurlow and Wobst, 2003 for details).

Table 5.1 shows the results following a base-scenario and four different trade liberalisation episodes. All episodes include a tariff reduction of 50 percent, but differ in terms of financing and impact on growth. Trade reform-1 assumes that no additional taxes are changed to compensate for the revenue loss following reduced tariff rates.

Table 5.1: Base projection and simulation results (% average growth)

	Initial conditions	Base scenario	Trade reform-1 /1	Trade reform-2/2	Trade reform-3/3	Trade reform-4/4
Real GDP growth	7576.0	6.02	5.96	6.04	6.13	6.22
Total real household consumption	6949.3	5.2	5.3	5.3	5.4	5.4
Real consumption, rural households	4826.8	4.6	4.6	4.6	4.7	4.8
Real consumption, urban households	2122.5	6.7	6.7	6.7	6.8	6.9
Real investment	1286.5	9.1	8.5	9.1	9.1	9.2
Real private investment	861.9	11.5	10.8	11.6	11.6	11.7
Real public investment	424.5	2.0	2.0	2.0	2.0	2.0
Real government consumption	513.3	3.0	3.0	3.0	3.0	3.0
Total real exports	1298.5	8.2	8.2	8.4	8.5	8.6
Total real imports	2002.2	6.9	6.8	7.0	7.1	7.2
Real exchange rate	100.0	2.6	2.7	2.8	2.8	2.9
Investment (% of nominal GDP)	16.0	8.2	6.9	8.2	8.1	8.0
Private savings (% of nominal GDP)	10.9	0.1	0.2	0.1	0.1	0.1
Government savings (% of nominal GDP)	1.2	3.1	1.5	2.9	2.9	2.8
Foreign savings (% of nominal GDP)	4.0	5.0	5.2	5.2	5.2	5.1

1/Tariff rates are reduced by 50%. All other tax rates fixed. TFP-trade elasticity equals 0.1.
2/ Tariff rates are reduced by 50%. Direct tax rates are flexible.
3/ Tariff rates are reduced by 50%. Direct tax rates are flexible. TFP-trade elasticity equals 0.2.
4/ Tariff rates are reduced by 50%. Direct tax rates are flexible. TFP-trade elasticity equals 0.3.

Trade reform-2 assumes that direct taxes are adjusted to compensate some of the revenue shortfall following liberalisation. The last two scenarios are similar to trade reform-2 but differ in their impact on total factor productivity (TFP). The assumption here is that a more open economy has a positive impact on TFP growth, which in turn has a positive impact on GDP growth. Trade reform-4 assumes a stronger impact compared to the other scenarios. All scenarios are run over a period of 10 years, in order to obtain some dynamic impact of the outcome.

Tables 5.1-5.3 report selected results for the five different scenarios. In our baseline the growth rate of GDP is assumed to be 6 percent.[11] Exogenous government real current expenditure is assumed to grow by 3 percent. Total investment is assumed to increase at around 9.1 percent where private investment is assumed to expand faster than public investment. Export volume is assumed to grow by 8.2 percent while imports increase by 6.9 percent. The real exchange rate is depreciating by 2.6 percent per year.

From a macroeconomic perspective the gains from trade liberalisation are small.[12] In the first scenario, real GDP growth actually declines compared to the base scenario. As government revenue drops when import duties are reduced, this widens the budget deficit, which crowds out private investment. It is, therefore, often recommended that trade liberalisation be accompanied with other tax-revenue efforts. In the second scenario, it is assumed that direct taxes adjust in order to compensate for the duty revenue shortfall, which avoids crowding-out effects. In fact, investment is slightly higher than in the base scenario, hence real GDP is growing faster. Still, the difference is rather small and does not have any impact on household consumption.

Li and Rowe (2007) found that a more open environment, the Tanzanian economy will depreciate the real exchange rate. This is also the result reported in our different reform scenarios.[13] As tariffs are lowered, the price on imported goods will be reduced, which would increase their demand. However, additional imports have to be paid for by higher export earnings, unless additional aid or foreign borrowing is used to cover the trade deficit. Assuming no additional capital inflows, this means that relative prices have to change in favour of export goods relative to non-tradables. Hence the real exchange will depreciate, which will give incentives for producers to shift some production towards exports. In the last

[11] Although the model reports annual changes in a number of variables, we report only the average annual change for the whole period.
[12] This is in line with the results from most studies analysing welfare effects from trade liberalisation.

three scenarios we note that the real exchange rate is depreciating and the growth rate of exports is increasing. The larger the impact trade on productivity in the economy, the larger the impact of liberalisation on export and GDP growth.

Which sectors would benefit after a trade liberalisation? In the baseline scenario it is assumed that the mining sector continues to grow at high rates over the whole period (Table 5.2). The annual average growth rate of the other sectors in the economy also reflects some of their more recent performance. Agriculture is assumed to grow at 5.4 percent, other industrial activities at 6.7 percent, while service sectors are assumed to grow at 5.9 percent over the period. Looking at broad sectoral aggregates the agricultural sector is the only sector that benefits in the first scenario. In the following scenarios all sectors improve their performance. However, it is difficult to see any structural change after a trade liberalisation. Looking at more disaggregated data, we note that it is mainly the traditional export sectors that would benefit while manufacturing sectors would experience a reduction in export (Table A.2). As discussed in chapter two, growth in the traditional exports has been lagging behind non-traditional exports and even though relative price changes have favoured agricultural exports, other supply-side constraints hinder further export growth.

Table 5.2: Trade liberalisation and sectoral impact (%)

	Base scenario	Trade reform-1[/1]	Trade reform-2[/2]	Trade reform-3[/3]	Trade reform-4[/4]
Agriculture	5.4	5.4	5.4	5.5	5.6
Industry	7.6	7.4	7.6	7.7	7.8
- Mining	15.5	15.2	15.8	15.8	15.9
- Other industry	6.7	6.6	6.7	6.8	6.9
Services	5.9	5.9	6	6	6.1
Exports					
Agriculture	10.1	10.2	10.4	10.6	10.8
Industry	14.8	14.6	15.1	15.1	15.2
- Mining	25.2	24.8	25.6	25.6	25.6
- Other industry	8.7	8.8	8.9	9.1	9.2
Services	5.9	5.9	6	6	6.1
Imports					
Agriculture	3.7	4.7	4.6	4.7	4.8
Industry	7	6.9	7.1	7.2	7.3
- Mining	0.6	0.9	1	1.1	1.2
- Other industry	7.1	6.9	7.2	7.2	7.3
Services	7.2	7.1	7.2	7.3	7.3

1/Tariff rates are reduced by 50%. All other tax rates fixed. TFP-trade elasticity equals 0.1.
2/ Tariff rates are reduced by 50%. Direct tax rates are flexible.
3/ Tariff rates are reduced by 50%. Direct tax rates are flexible. TFP-trade elasticity equals 0.2.
4/ Tariff rates are reduced by 50%. Direct tax rates are flexible. TFP-trade elasticity equals 0.3.

[13] In fact, this is a result by assumption. A CGE model requires pre-determined closure rules which close the system of equations. In this version of the model it is assumed that the exchange rate variable adjusts to clear the trade balance in the model.

In the second scenario where a reduction of duty revenue is compensated by increased direct taxes, there is significant change compared to the first scenario: all sectors see an improvement in their export performance. Thus, the major impact on industrial sectors might not come from changes in relative prices but from limited access or more expensive credit. The Tanzanian Government has already reduced tariff rates substantially and future tariff rate reductions might not change relative prices substantially. However, any revenue loss has to be compensated through adjustments in other tax instruments, otherwise there is a risk of crowding-out effects.[14]

Full employment is assumed in the various scenarios. This is not a realistic assumption in the short term and in the next section we switch to a short-term model which allows for unemployment. However, in the longer term one would expect some labour to reallocate between different sectors. In addition, the wages in the model are economy-wide wages take into account underemployment.

Table 5.3: Factor prices (% deviation from base-scenario)

	Base scenario	Trade reform-1[1]	Trade reform-2[2]	Trade reform-3[3]	Trade reform-4[4]
Child labour (age 10 to 14)	2.8	8.5	8.8	12.0	15.1
Female labour (no formal education)	2.5	10.7	9.9	13.5	16.7
Female labour (primary school not completed)	3.2	2.8	2.5	5.3	8.2
Female labour (secondary school not completed)	2.6	10.1	9.3	12.0	15.1
Female labour (secondary or higher education)	2.3	6.7	10.7	11.6	12.9
Male labour (no formal education)	3.4	6.4	7.9	10.5	13.5
Male labour (primary school not completed)	3.7	3.8	6.3	9.0	11.4
Male labour (secondary school not completed)	4.0	1.5	6.3	8.3	10.1
Male labour (secondary or higher education)	2.9	3.8	8.7	9.7	11.1
Capital	2.1	17.1	11.7	15.1	18.0
Land	4.0	6.5	6.3	8.5	11.0

Factor prices change as demand increases for a specific factor. Increased demand for factors is, in turn, determined by changes in output across sectors. A specific factor that is used intensively in the expanding sector would then see a higher increase in its price. Compared to the base scenario female workers with no formal education or those who have not completed secondary or higher levels of education would gain the most from liberalised trade (Table 5.3).

[14] A complete removal of import duties in the model would reduce government revenue by 15 percent.

Capital owners would also gain, as would proprietors of land. Labour categories that are likely to be hurt in the first liberalisation scenario are female workers lacking completed primary school and male workers without completed secondary school. Interesting, it would seem that female workers benefit more than male workers. One explanation of this result is that in the first scenario, it is mainly the agriculture sector that benefits from liberalised trade and as a majority of female workers, except those with the highest skills, are employed in agriculture, this drives their wages up in comparison to males.

In the second scenario, gains from trade liberalisation are spread across sectors and all labour categories, except one category of female labour, would gain compared to the base scenario. In the second scenario, the government compensates for lost duty revenue by increasing direct taxes, and hence avoiding crowding-out effects of the private sector. This would benefit the capital-intensive industrial sectors. The negative impact on female workers is caused by the fact that a large part of female workers without completed primary school are employed in the sugar industry, which is adversely affected by liberalisation.

In the third scenario we see a general increase in factor prices and further improvement is seen in the last scenario. The two last scenarios are similar to the second scenario, except that the assumed impact of additional trade on TFP is higher. The effect is spread across all sectors but the impact is, nevertheless, stronger among export sectors. All female labour categories, except one, benefit from a higher growth in real wages compared to the corresponding male labour category.

Finally, what is the impact of trade liberalisation on households' incomes and poverty? Looking at the impact on the different households specified in the model, we note that growth in household consumption exceeds population growth. The growth pattern is pro-urban: per capita consumption grows more rapidly for urban households than for their rural counterparts and liberalised trade would not change this significantly (Table 5.1).

The last two scenarios benefit all households compared to the base scenario. However, incomes for the urban food poor are declining over time but at a lower rate than in the base scenario (Table 5.4). Rural households below the food poverty line gain in the first scenario and the last three scenarios. In general, poorer households seem to gain more from trade liberalisation in comparison to the richer household groups. This is in line with the pattern of how factor prices change after trade reform. Thus, trade liberalisation is favouring the poor. Even if real incomes of the poor are improving in the post-trade reform period, these changes are not sufficient enough to make a significant impact on overall poverty.

Table 5.5 shows the degree of poverty in the last year of three scenarios. Some minor improvements in overall poverty are achieved; compared to the base scenario, poverty drops from 20.4 to 20.2 percent. Male-headed households and households located in rural areas see a decline in poverty.

Table 5.4: Per-capita real consumption across household groups (%)

	Base scenario	Trade reform-1[/1]	Trade reform-2[/2]	Trade reform-3[/3]	Trade reform-4[/4]
Rural (below food poverty line)	**0.12**	**0.34**	**0.11**	**0.21**	**0.31**
Rural (between food and basic needs poverty lines)	**2.12**	**2.10**	**2.11**	**2.21**	**2.31**
Rural (non-poor – head with no education)	1.18	1.21	1.18	1.28	1.37
Rural (non-poor – head without completed primary school)	0.36	0.57	0.35	0.45	0.54
Rural (non-poor – head not finished secondary school)	2.86	2.83	2.87	2.97	3.06
Rural (non-poor – head finished secondary school)	4.46	4.81	4.49	4.57	4.65
Urban (below food poverty line)	**-0.37**	**-0.21**	**-0.34**	**-0.25**	**-0.16**
Urban (between food and basic needs poverty lines)	**0.37**	**0.67**	**0.40**	**0.49**	**0.58**
Urban (non-poor – head with no education)	0.06	0.35	0.09	0.18	0.27
Urban (non-poor – head without completed primary school)	1.38	1.63	1.40	1.49	1.59
Urban (non-poor – head without completed secondary school)	4.91	4.85	4.93	5.03	5.12
Urban (non-poor – head finished secondary school)	5.79	5.75	5.81	5.89	5.96
Total	2.67	2.73	2.69	2.78	2.87

HRBFPL: Rural (below food poverty line), HRFBPL: Rural (between food and basic needs poverty lines), HRNOED: Rural (non-poor – head with no education), HRNFPS: Rural (non-poor – head without completed primary school), HRNFSS: Rural (non-poor – head without completed secondary school), HRSECP: Rural (non-poor – head finished secondary school), HUBFPL: Urban (below food poverty line), HUFBPL: Urban (between food and basic needs poverty lines), HUNOED: Urban (non-poor – head with no education), HUNFPS: Urban (non-poor – head without completed primary school), HUNFSS: Urban (non-poor – head without completed secondary school), HUSECP: Urban (non-poor – head finished secondary school)

Table 5.5: Inequality and poverty – trade liberalisation

Poverty (head-count ratio)	Total	Female-headed households	Male-headed households	Urban	Rural
Poverty level 2001	35.8	35.2	36.0	23.2	38.8
Base growth path	20.4	19.9	20.5	16.4	21.3
Trade reform-1	20.9	20.5	21.0	18.5	21.5
Trade reform-2	21.1	20.7	21.2	20.0	21.4
Trade reform-4	20.2	20.3	20.2	18.9	20.5
Inequality (Gini-index)					
Inequality 2001	33.6	33.5	33.7	35.0	32.0
Base growth path	40.8	39.9	41.0	42.7	36.0
Trade reform-1	40.9	40.2	41.1	43.3	35.9
Trade reform-2	41.2	40.4	41.4	44.0	36.1
Trade reform-4	41.2	40.4	41.3	43.6	36.0

Income inequality is worsening during liberalisation. Compared to the base scenario, it is only the rural households that do not experience a worsening in inequality. However, despite worsening inequality in the last liberalisation scenario, GDP growth is adequate to reduce poverty compared to the base scenario.

5.1.2 Short-term impact of trade reform

Opening up trade has raised concerns among policy makers, in particular with regard to how to balance short-term cost versus long-term benefits. Labour markets are important transmission mechanisms, both for external shocks and in terms of possible economic integration. In order to shed some light on these issues, a static CGE model was used to analyse the effects of trade liberalisation under different closure rules in the labour market. The two questions raised in this section are: (i) does labour market specification matter when trade is liberalised)?; and (ii) what is the impact when some sectors and labour categories are unionised and some are not?

Although the model structure is similar to the one described earlier, there are some major differences between the two models. First, the model is a static one, and second, the number of sectors has been reduced. Two agricultural sectors, three manufacturing sectors, a construction sector and two service sectors are included in the model. The latter two along with building and construction are considered less tradable. Third, the assumption of full employment has been relaxed as rigid wages and a trade union have been introduced into the model.[15]

Labour is still divided into nine different categories: one child labour, four female and male labour categories, respectively. Child labour in this model has been redefined as casual labour. As we introduce a rigid wage structure, this implies that we allow for unemployment. Unemployed workers spill over into the casual labour category and affect the market determined wage rate in that category. The workers are distinguished by the highest level of education attained. As before, twelve representative household groups are included in the model categorized in accordance to poverty status and rural-urban divide. The labour market structure in the model is shown in Table 5.6. The majority of the workers are employed in the agricultural sector. Skill-level of the labour force is higher in non-agricultural sectors. The two service sectors have a large share of highly skilled workers.

[15] See appendix 2 for technical details on labour market specification.

Table 5.6: Labour market structure ('000 labour units)

	Agric.	Building	Light mfg.	Coffee/ Tea	Food	Gov.	Heavy mgf.	Private services	Total
Casual labour	214.0	0.7	0.3		0.2		0.1	0.4	215.6
Female labour (without completed primary school)	682.3		1.6	7.2	1.9	1.9	0.0	6.5	701.3
Male labour (without completed primary school)	1921.6	26.3	8.0	154.0	2.2	6.3	2.5	11.5	2132.5
Female labour (not finished secondary school)	3918.8	1.8	25.3	88.6	14.2	41.0	1.0	39.6	4130.3
Male labour (not finished secondary school)	2231.4	169.5	51.1	88.8	26.6	68.3	33.3	87.9	2756.9
Female labour (no formal education)	615.9	0.2	1.3	12.3	0.6	0.5	0.1	3.6	634.6
Male labour (no formal education)	684.2	6.0	1.3	13.4	1.4	0.7	0.5	2.8	710.4
Female labour (secondary or higher education)	45.4	2.8	8.5		6.7	109.2	0.8	20.3	193.7
Male labour (secondary or higher education)	124.7	52.0	11.2	3.7	19.2	223.2	7.3	91.5	532.8
Total	10438.2	259.3	108.6	368.1	73.1	451.1	45.7	264.1	12008.1

Source: Integrated Labour Force Survey 2000/01 and own calculations

The tariff structure in the model reflects the current structure where the tariffs in agriculture and the coffee sector are 14 and 19 percent, respectively. The food and light manufacturing sectors have a tariff rate of around 12 percent while the capital-goods industry has considerable lower rates, 5 percent. As we will be focusing on short-terms effects, it is assumed that no additional taxes are charged across the scenarios.

In the six scenarios we look at the effects of a 50 percent tariff reduction while assuming different closures in the labour market (Table 5.6). The flex-scenario assumes a flexible regime, where flexible wages are assumed to clear the labour market. The rig-scenario assumes nominal-wage rigidity, which allows for unemployment and spill-over effects.[16] The rig+3 scenario looks at the impact of a 3 percent increase in nominal wages among both female and male workers with different skills. The last two scenarios introduce a union where the uflex-scenario assumes flexible wages and the urig-scenario is combined with rigid wages. Workers with incomplete secondary school in the three manufacturing sectors are assumed to be union members.

With regard to changes in GDP, the flex-scenario generates a modest negative impact

[16] We have assumed that all labour categories, except the causal group and those who have completed secondary or higher education, are facing nominal-wage rigidities.

on GDP. Even though there are no dramatic losses, building and construction, capital and intermediate and the private service sectors are facing reduced levels of output. Building and construction contracts once private investments are reduced and, hence, demand for investment goods falls. As expected, labour demand generally increases in the expanding sectors and contracts in those where output is falling or constant. In the full employment scenario (flex) casual workers and lower skilled workers enjoy the highest increase in wage rates. The highly skilled workers see a minor increase in real wages. This is what we would expect when factors are fully mobile. Production factors, which are used intensively in sectors where production increased, would gain. In this scenario trade liberalisation has a positive impact on poor households and female workers. Would this change if we introduce distortions in the labour market?

The combination of trade liberalisation and nominal-wage rigidities (rig) has a negative impact on overall GDP, as well as on output in the construction industry and in the sector producing capital and intermediate goods. Sectors are unable to adjust their costs due to the rigidities, making it difficult to compete efficiently during liberalisation. The slowdown in these economic activities then has a negative impact on investment and employment in the construction and capital/intermediate goods industries.

Looking at unemployment (Table 5.7) we see layoffs among both the male and female workers who are without completed secondary education, constituting approximately 60,000 workers altogether. They add to the pool of casual workers and have a negative impact on the real wages there.

Based on an assumption of nominal-wage rigidities, and a 3 percent increase in the nominal wage, all sectors would be hurt. Looking at unemployment, additional layoffs are effected, concerning approximately 390,000 workers altogether. Again, they add to the pool of casual workers, inducing a negative impact on real wages there, which fall by over 60 percent. Female labour, with incomplete secondary school, are most seriously affected by the wage increase.

Table 5.7: Liberalisation and labour market setting (% change from baseline)

	Flex	rig	rig+3	uflex	Urig
Real GDP growth	-0.1	-0.2	-0.6	-0.1	-0.1
Producer price index	-0.9	-1.4	-1.1	-0.9	-1.0
Consumer price index	-1.6	-1.8	-1.6	-1.6	-1.6
Output					
Agriculture Products	0.3	0.0	-0.4	0.3	0.2
Building and Construction	-3.1	-2.6	-3.3	-3.0	-2.8
Coffee and Tea	5.2	1.1	-1.1	5.3	5.7
Food Products	0.7	0.2	-0.2	0.7	0.6
Government Services	0.0	0.1	-0.1	0.0	0.0
Capital and Intermediate Products	-2.1	-0.9	-1.3	-2.0	-1.8
Consumer Products	0.3	0.1	-0.7	0.4	0.4
Private Services	-0.3	-0.1	-0.4	-0.3	-0.2
Total	-0.1	-0.2	-0.6	-0.2	-0.2
Labour demand					
Agriculture Products	-0.1	0.1	0.4	0.0	-0.1
Building and Construction	-3.2	-4.8	-5.7	-3.3	-3.1
Coffee and Tea	4.9	2.3	-2.3	5.1	5.4
Food Products	0.4	1.1	-0.7	0.1	0.2
Government Services	0.0	0.1	-0.1	0.0	0.0
Capital and Intermediate Products	-2.4	-5.1	-7.7	-1.1	-0.6
Consumer Products	0.1	0.3	-1.3	0.1	0.1
Private Services	-0.6	-0.7	-2.8	-0.7	-0.6
Total	0.0	0.0	0.0	0.0	0.0
Factor prices (real) and unemployment					
Capital	0.3	1.1	-1.3	0.3	0.2
Land	1.0	1.0	-3.8	1.0	0.8
Casual labour	0.8	-21.1	-63.6	0.7	-10.4
Female labour (without completed primary school)	0.8	1.4	4.1	0.8	1.0
Male labour (without completed primary school)	1.1	1.4	4.1	1.2	1.0
Female labour (not finished secondary school)	0.9	1.4	4.1	0.8	1.0
Male labour (not finished secondary school)	0.7	1.4	4.1	0.7	1.0
Female labour (no formal education)	0.9	1.4	4.1	0.9	1.0
Male labour (no formal education)	0.9	1.4	4.1	0.9	1.0
Female labour (secondary or higher education)	0.4	0.7	0.9	0.2	0.5
Male labour (secondary or higher education)	0.2	0.2	0.3	0.2	0.2
Unemployment					
Female labour (without completed primary school)	0.0	3.6	24.5	0.0	2.2
Male labour (without completed primary school)	0.0	8.6	74.0	0.0	0.0
Female labour (not finished secondary school)	0.0	20.1	143.6	0.0	10.5
Male labour (not finished secondary school)	0.0	21.9	102.6	0.0	10.3
Female labour (no formal education)	0.0	3.1	22.1	0.0	1.7
Male labour (no formal education)	0.0	3.8	25.0	0.0	2.08
Total unemployment	0.0	61.1	391.9	0.0	26.9

Note: Flex scenario: Tariff reduction 100% + flexible wages
Rig scenario: Tariff reduction 100% + nominal wage rigidity
Rig+3 scenario: Tariff reduction 100% + nominal wage increased by 3%
Uflex scenario: Tariff reduction 100% + union with flexible wages + wage premium only.
Urig scenario: Tariff reduction 100% + union with rigidities + wage premium

Table 5.8: Liberalisation and labour market setting (% change from baseline)

Exports	Flex	rig	rig+3	Uflex	urig
Agriculture Products	0.5	0.3	-0.2	0.5	0.5
Coffee and Tea	5.6	1.2	-1.1	5.7	6.2
Food Products	1.1	0.5	0.1	1.1	1.0
Capital and Intermediate Products	-1.4	0.7	0.2	-1.3	-1.1
Consumer Products	0.7	0.5	-0.6	0.7	0.8
Private Services	0.0	0.5	0.3	0.1	0.2
Total	0.7	0.5	0.0	0.7	0.8
Imports					
Agriculture Products	6.7	6.2	6.0	6.7	6.5
Building and Construction	-3.8	-4.1	-4.3	-3.8	-3.6
Coffee and Tea	10.9	8.9	8.0	10.9	11.0
Food Products	5.7	5.2	5.0	5.7	5.6
Capital and Intermediate Products	-0.8	-0.8	-1.2	-0.8	-0.6
Consumer Products	6.0	5.7	5.3	6.0	5.9
Private Services	-0.9	-1.1	-1.4	-0.9	-0.9
Total	0.5	0.4	0.1	0.6	0.6
Household real income					
Rural (below food poverty line)	1.0	0.7	0.3	1.0	0.9
Rural (between food and basic needs poverty lines)	0.9	0.7	0.3	0.9	0.8
Rural (non-poor – head without completed primary school)	1.1	0.9	0.5	1.1	1.0
Rural (non-poor – head without completed secondary school)	0.9	0.7	0.3	0.9	0.8
Rural (non-poor – head with no education)	1.0	0.8	0.4	1.0	0.9
Rural (non-poor – head finished secondary school)	1.1	1.0	0.9	1.1	1.1
Urban (below food poverty line)	1.1	0.9	0.5	1.1	1.0
Urban (between food and basic needs poverty lines)	1.0	0.7	0.4	1.0	0.9
Urban (non-poor – head without completed primary school)	1.1	0.9	0.5	1.1	1.0
Urban (non-poor – head without completed secondary school)	1.0	0.8	0.5	1.0	0.9
Urban (non-poor – head with no education)	1.0	0.8	0.5	1.0	0.9
Urban (non-poor – head finished secondary school)	1.1	1.1	1.1	1.1	1.1
Total	1.0	0.8	0.5	1.0	0.9
Wage premium					
Food – female labour without completed secondary education				0.2	-0.1
Food – male labour without completed secondary education				0.3	-0.1
Lmfg – female labour without completed secondary education				0.0	-0.2
Lmfg – male labour without completed secondary education				0.2	-0.2
Hmfg – female labour without completed secondary education				-2.4	-2.7
Hmfg – male labour without completed secondary education				-2.5	-2.7

Note: Simulations are the same as explained in Table 2.

Perhaps surprisingly, demand for labour goes up even when output in the agriculture sector goes down,. The agriculture sector employs a large share of the casual workers and as factor prices of this category are reduced, the sector increases its demand for these workers.[17]

When tariffs are reduced in tandem with wage rigidities, the agriculture sector benefits from lower wage rates, while manufacturing industries continue to operate under fixed nominal wage rates. But as casual labour is more common in rural areas, this might also imply that poverty is increased not only among those who are laid off in the urban areas but also among rural residents. Indeed, real income is declining for poor household groups in both urban and rural areas.

Would the results change if some sectors and labour categories were unionised and some not? It is assumed that female and male workers without completed secondary education in the three manufacturing sectors are unionised. If the labour market is assumed to clear the adjustments in the real wage, introducing the union would add an additional premium to unionised workers employed in sectors with increased labour demand. Thus the union is able to increase the wage differentials in sectors where output and labour demand are increasing. But the union also adjusts the premium downwards in order to save jobs in sectors faced with increased competition from imports.

In a rigid labour market regime the presence of a union would not change the results dramatically. However, the adverse impact of lower protection seems to be reduced when the union is present. The number of unemployed workers that spill over to the casual category is less than in the non-unionised scenario. Again the union adjusts the wage premium downwards to save jobs in the unionised sectors. Compared to the case without a union, the number of unemployed workers is reduced by 49 percent. Even non-unionised sectors would be affected by fewer lay-offs. This has a beneficiary impact not only on wages among union members but also on wages among casual workers. A rigid regime with a union reduces the number of workers spilling over to the casual category and hence the wage rate for casual workers increases more compared to non-union scenario.

Thus, those who are laid-off are not the only to be affected by labour market regulations. As more workers try to find their livelihood in the informal sector, casual wages are pushed downward. As the difference between formal and informal sector wages becomes greater, an increasing number of individuals are pushed below the poverty line.

[17] Migration is not explicitly included in the model. However, labour categories move between sectors, which can be seen as implicit migration.

We can derive some important policy conclusions from the different scenarios above: first, if labour is able to move between sectors, liberalisation of trade would be beneficiary to female workers and poor households. But if wages are rigid, as seems to be the case in Tanzania, trade liberalisation will lead to unemployment and wages for casual labour will drop significantly. Nominal wage adjustments during trade reform could have a significant impact on unemployment further driving casual-worker wages down: if the trade union adjusts workers' premiums during trade reform, this would save jobs in the unionised sectors and protect against the wage drop among casual workers. Thus, a union that supports for employment with a downward adjustment of the wage premium would not only save their members jobs, but also benefit non-unionised workers in other sectors.

5.1.3 Reduction of export taxes

In the previous section we saw that lowering import tariffs with a real exchange rate depreciation had a positive impact on export supply. However, introducing rigidities in the labour market also adversely affected the sector competing with imported goods. In the Tanzanian economy, an alternative option of providing incentives to exporters would be an export tax reduction.

International experience has shown that export taxes have generally failed to achieve industrial development objectives, have led to informal trade, and frequently hurt small-holders who, as a result, receive lower prices. Excessive taxation and the negative role of commodity boards have been identified as the main supply-side constraints faced by export crops in Tanzania. Taxes are sometimes levied on transit goods as well as on sales. Taxes also vary by district; this creates uneven incentives, and encourages producers to transport their products to neighbouring districts to take advantage of lower local taxes. The authorities are undertaking measures, such as reducing the number of local government taxes, in order to rationalize the tax regime in agriculture.

Reducing export taxes would increase producer prices for exporters. Domestic prices would also increase, in particular, in sectors with a large export share. In a partial equilibrium setting, removing export tax would increase the welfare of producers, but reduce it for consumers and the government.

In the first scenario (tax-1) we reduce export taxes in the Tanzanian economy equivalent to the revenue loss generated by lifting import duties (flex-d). In the third scenario

we reduce export taxes assuming nominal wage increases and compare the results with a trade liberalisation scenario. All scenarios have the same costs in terms of lost government revenue.

A comparison of the export tax scenario to a trade liberalisation scenario shows that it has the completely opposite effect on price indices in the economy (Table 5.9). While trade liberalisation leads to a reduction in producer and consumer prices, reduced export taxes result in both higher producer and consumer prices. When the export tax is decreased, export prices are increased and this also spills over to goods produced for the domestic market. This implies that there will be substitution in some sectors between domestically produced goods and imported goods.

Sectors that stand to gain from reduced export tax are the coffee and tea sector, agriculture and the food sector. The building and construction sector is mainly hurt, as demand for investment goods is reduced. All sectors, except the capital and intermediate sector, would increase their exports once taxes are reduced. However, some sectors will face reduced domestic production as imports become relatively cheaper. This means that output in some sectors is reduced, despite the fact that exports in the same sectors are increasing. The large increase in the coffee and tea sector drives up demand for labour and land, and so wages as well as return on land are increased. In the flexible scenario, there is a favourable impact on households' income. Poor household groups benefit the most and the gains are higher relative to the liberalisation scenario. Thus, the reduction of export taxes compared to liberalisation would have a stronger impact on exports and be more favourable to factors with less skill.

Would the results change if we assume a rigid labour market? In general, introducing rigidities reduces the impact considerably. Still, an export tax is the favourable option compared to trade liberalisation. All sectors enjoy higher export growth but as domestic sales are reduced, total production drops, albeit less than with the liberalisation scenario. On the factor market an export tax scenario with nominal wage increases implies that unemployment would still expand. However, it is significantly less than in the liberalisation scenario and poor households would still gain. This is in sharp contrast to a liberalisation scenario, where all households except the richest group, would experience reduced incomes.

Table 5.9: Reduction of export taxes (% change from baseline)

	etax-1	Flex-d	etax-rig+3	Rig+3
Real GDP growth	-0.2	-0.1	-0.1	-0.4
Producer price index	9.2	-0.9	2.1	-0.1
Consumer price index	8.2	-1.6	1.9	-0.2
Output				
Agriculture Products	0.2	0.3	0.0	-0.3
Building and Construction	-5.2	-3.1	-1.3	-1.3
Coffee and Tea	17.5	5.2	1.0	-1.9
Food Products	0.6	0.7	0.0	-0.3
Government Services	0.0	0.0	0.0	-0.1
Capital and Intermediate Products	-3.4	-2.1	-0.4	-0.7
Consumer Products	0.0	0.3	-0.1	-1.0
Private Services	-0.3	-0.3	0.0	-0.3
Total	-0.3	-0.1	-0.1	-0.4
Labour demand				
Agriculture Products	-0.4	-0.1	0.0	0.3
Building and Construction	-5.5	-3.2	-2.3	-2.2
Coffee and Tea	16.9	4.9	2.0	-3.9
Food Products	0.1	0.4	0.1	-1.4
Government Services	0.0	0.0	0.0	-0.1
Capital and Intermediate Products	-3.9	-2.4	-2.4	-4.0
Consumer Products	-0.4	0.1	-0.1	-1.5
Private Services	-0.8	-0.6	-0.2	-2.2
Total	0.0	0.0	0.0	0.0
Factor prices (real) and unemployment				
Capital	1.3	0.3	-2.1	0.5
Land	2.7	1.0	0.5	-0.6
Child	2.0	0.8	-15.3	-61.7
Female labour (without completed primary school)	2.2	0.8	0.9	3.1
Male labour (without completed primary school)	3.4	1.1	0.9	3.1
Female labour (not finished secondary school)	2.5	0.9	0.9	3.1
Male labour (not finished secondary school)	2.2	0.7	0.9	3.1
Female labour (no formal education)	2.4	0.9	0.9	3.1
Male labour (no formal education)	2.4	0.9	0.9	3.1
Female labour (secondary or higher education)	1.5	0.4	0.5	0.4
Male labour (secondary or higher education)	1.1	0.2	0.3	0.2
Unemployment				
Female labour (without completed primary school)	0.0	0.0	2.6	21.9
Male labour (without completed primary school)	0.0	0.0	5.2	67.7
Female labour (not finished secondary school)	0.0	0.0	14.0	129.0
Male labour (not finished secondary school)	0.0	0.0	12.8	86.7
Female labour (no formal education)	0.0	0.0	2.2	19.9
Male labour (no formal education)	0.0	0.0	2.6	22.3
Total unemployment	0.0	0.0	39.4	347.6

Note:
Simulation 1: Export taxes are reduced generating the same revenue impact as removal of import tariffs.
Simulation 2: Full removal of import duties
Simulation 3: Export taxes reduced by 3.2% + nominal wage rigidities and 3% increase in nominal wages
Simulation 4: Trade liberalisation same revenue loss as in scenario3 + nominal wage rigidities and 3% increase in nominal wages.

Table 5.10: Reduction of export taxes (% change from baseline)

Exports	etax-1	Flex-d	etax-rig+3	Rig+3
Agriculture Products	0.9	0.5	0.3	-0.3
Coffee and Tea	18.9	5.6	1.1	-2.0
Food Products	1.5	1.1	0.4	-0.3
Capital and Intermediate Products	-1.6	-1.4	0.6	-0.3
Consumer Products	0.9	0.7	0.3	-1.0
Private Services	0.9	0.0	0.5	-0.1
TOTAL	2.5	0.7	0.5	-0.4
Imports				
Agriculture Products	5.2	6.7	1.1	1.4
Building and Construction	-1.6	-3.8	-0.6	-1.3
Coffee and Tea	11.3	10.9	1.4	1.3
Food Products	5.3	5.7	1.2	1.2
Capital and Intermediate Products	-0.2	-0.8	-0.2	-0.6
Consumer Products	4.6	6.0	1.1	1.1
Private Services	3.3	-0.9	0.7	-0.6
Total	1.7	0.5	0.3	-0.2
Household real income				
Rural (below food poverty line)	2.0	1.0	0.5	-0.2
Rural (between food and basic needs poverty lines)	1.9	0.9	0.4	-0.2
Rural (non-poor – head without completed primary school)	2.1	1.1	0.5	-0.1
Rural (non-poor – head without completed secondary school)	1.6	0.9	0.3	-0.1
Rural (non-poor – head with no education)	1.6	1.0	0.4	-0.2
Rural (non-poor – head finished secondary school)	1.2	1.1	0.3	0.2
Urban (below food poverty line)	2.4	1.1	0.6	-0.1
Urban (between food and basic needs poverty lines)	2.1	1.0	0.5	-0.1
Urban (non-poor – head without completed primary school)	1.9	1.1	0.4	-0.1
Urban (non-poor – head without completed secondary school)	1.7	1.0	0.4	-0.1
Urban (non-poor – head with no education)	1.4	1.0	0.3	-0.1
Urban (non-poor – head finished secondary school)	0.8	1.1	0.2	0.3
Total	1.7	1.0	0.4	-0.1

Note: Simulations are the same as explained in Table 2.

Conclusion

Tanzania has been progressing steadily towards political stability and strong economic growth. Since 2000, the annual average GDP growth rate has been around 6 percent. Most of the growth acceleration has been explained by demand-side effects of foreign aid and greater efficiency of the economy. Supply-side constraints have to be addressed if growth is to be sustained. Exports need not only to be increased, but also to be diversified. Even if export performance has improved significantly since 2001, Tanzania's export/GDP ratio is quite low, among the lowest sub-Saharan Africa.

During the last five years Tanzania's export performance has been close to the average performance in sub-Saharan Africa. There have also been significant changes in composition of exports. Average export shares for traditional export crops have been shrinking rapidly while mining and non-traditional export commodities increased their shares dramatically. Although manufactured exports have grown significantly during the last years, its share in total exports remains low.

In an attempt to explain export performance in Tanzania using a gravity model, we found that the real exchange rate had an insignificant impact on trade. However, other factors such as export supply, trade partners GDP per capita and distance to markets were found important. One explanation of why changes in the real exchange rate do not impact on the sectoral trade pattern could be the level of aggregation. Other studies focusing on agricultural commodities found that domestic export crop prices have been affected by movements in the real exchange rate, world prices and marketing margins.

Critics of globalisation sometimes argue that poor people in developing countries will suffer as wages would continue to fall when trade is liberalised. Our results supports the opposite view, female workers with no formal education or those who have not completed secondary or higher levels of education would gain the most from liberalising trade. Owners of capital would also gain, as would proprietors of land. Labour categories that are likely to be hurt in the first liberalisation scenario are female workers without completed primary school and male workers without completed secondary school. Interesting, it seems that female workers would benefit more than male workers. One explanation of this result is that in the first scenario, agriculture is the sector that mainly benefits from liberalised trade and as a majority of female workers, except the highest skill, are employed in the agriculture sector, this drive their wages up compared to male workers.

Finally, what is the impact of trade liberalisation on household incomes and poverty? In general, poorer households seem to gain more from trade liberalisation compared to the richer household groups. This is in line with the how factor prices change after trade reform. Thus, trade liberalisation is pro-poor.

However, the short-term impact of trade liberalisation is different from its long-term effect. Depending on how the labour market recovers, the results will differ. If labour is able to move between sectors, liberalisation of trade would be beneficial to female workers and poor households. However, if wages are rigid, as seems to be the case in Tanzania, trade liberalisation will lead to unemployment and casual labour wages will drop significantly. Nominal wage adjustments during trade reform could have a significant impact on unemployment, driving casual wages further down. If the trade union adjusts worker premiums during trade reform, this would save jobs in the unionised sectors and protect against the wage drop among casual workers. Thus, a union that promotes employment by adjusting the wage premiums downwards, would save not only some of the jobs of union members, but also benefit non-unionised workers in other sectors.

In Tanzania, an alternative policy option to increasing exports would be to reduce export taxes. Sectors that gain from a reduced export tax are coffee and tea, agriculture and the food sector. In the flexible scenario, there is a favourable impact on household income. Poor household groups are the main beneficiaries and the gains are higher than in the liberalisation scenario. Thus, in comparison to liberalisation, reducing export taxes would have a stronger impact on exports and provide greater benefit to the less skilled . Even in the scenario with a rigid labour market, reducing export taxes is still a favourable option compared to a liberalisation scenario. Unemployment would still increase, but significantly less than in comparison to the liberalisation scenario and poor households would gain. This is in sharp contrast to the liberalisation scenario, where all households except the richest group, experience reduced incomes.

References

Anderson, J. E. (1979), "A Theoretical Foundation for the Gravity Equation", The American Economic Review, vol. 69, March, 106-116.

Asmah, E. and Levin, J. (2007), "Aid-Financed Public Investments and the Dutch Disease: Evidence form Tanzania", World Bank mimeo

Benassy-Quere, A. and Lahreche-Revil, A. (2003), "Trade Linkages and Exchange Rates in Asia: The Role of China", CEPII Research Centre, Working Papers.

Bergstrand, J. (1985), "The Gravity Equation in International Trade, Some Microeconomic Foundations and Empirical Evidence", Review of Economics and Statistics, Vol. 67, August, p. 474 -481.

Bergstrand, J. (1989)," The Generalized Gravity Equation, Monopolistic competition, and the Factor-Proportions Theory in International Trade", Review of Economics and Statistics, vol. 71, February, p. 143-153.

Bevan, D., Collier, P. and Gunning, J.W. with Bigsten, A. and Horsnell, P. (1990), *Controlled Open Economies - A Neoclassical Approach to Structuralism*. Clarendon Press Oxford.

Egger, P, and Pfaffermayr, M. (2003), "The proper panel econometric specification of the gravity equation: A three-way model with bilateral interaction effects", Empirical Economics, Springer, Vol. 28(3), pages 571-580, July.

Harrison, G. W., T. F. Rutherford, and Tarr D. G. (2003), "Quantifying the Impact of Trade Reform on Poverty," paper presented at the "Conference on Empirical Methods in International Trade," Woodrow Wilson Center, Washington, DC, January 20-21.

Kingdom, G., Sandefur, S. and Teal, F. (2005), '"Labour Market Flexibility and Incomes in sub-Saharan Africa in the 1990s", *GPRG-WPS-030*, Global Poverty Research Group.

Li, Y and Rowe, F. (2007), "Tanzania's Real Effective Exchange Rate: Alternative Measures and Explanations of Long-Run Behavior, Economic Policy and Debt Department, World Bank.

Lofgren, H., Harris R. L. and Robinson S. (2002) "A Standard Computable General Equilibrium (CGE) Model in GAMS", Microcomputers in Policy Research, No.5, International Food Policy Research Institute, Washington D.C.

LO/FTF Council (2003), "Profile of the Labour Market and Trade Unions in Tanzania, Project No. 036/002/01, Danish Trade Union.

Martínez-Zarzoso, I, Nowak-Lehmann, F, Horsewood, F. (2006), "Effects of Regional Trade Agreements Using a Static and Dynamic Gravity Equation," Ibero America Institute for Econ. Research (IAI) Discussion Papers 149, Ibero-America Institute for Economic Research.

Martinez-Zarzoso, I. and Nowak-Lehmann, F. (2003), "Augmented Gravity Model: An Empirical Application to Mercosur-European Union Trade Flows" Journal of Applied Economics, November 2003, v. 6, iss. 2, p. 291-316.

Mitra, P. K. (1994), *Adjustment in Oil-Importing Developing Countries - A Comparative Economic Analysis.* Cambridge University Press.

Mkenda, B. (2005), "The Impact of Globalisation on Tanzania's Labour Market: Evidence from the Manufacturing Sector", paper prepared for a Policy Dialogue for Accelerating Growth and Poverty Reduction in Tanzania, held at the Conference hall, ESRF, on July 28th, 2005.

Rose, A. K. (2000), "One money, one market: the effect of common currencies on trade", Economic Policy, issue 30, p 7-45.

Tenreyro, S. (2003), "On the Trade Impact of Nominal Exchange Rate Volatility", unpublished, Federal Reserve Bank of Boston.

Tinbergen, J. (1962), Shaping the World Economy: Suggestion for an International Economic Policy, The Twentieth Century Fund, New York.

Thurlow, J. and P. Wobst (2003), 'Poverty-Focused Social Accounting Matrices for Tanzania,' *Discussion Paper* No. 112, International Food Policy Research Institute, Washington, D.C.

United Republic of Tanzania (various issues), Economic Survey, Ministry of Planning and Development.

World Bank (2007), 'Tanzania – Sharing and Sustaining Economic Growth', *Country Economic Memorandum and Poverty Assessment*, PREM Unit 2 Africa Region, Washington D.C.

World Bank (2000), "Tanzania at the Turn of the Century – from Reform to Sustained Growth and Poverty Reduction, World Bank, , Washington D.C.

Appendix 1: Gravity model

Table A.1. Descriptive statistics

	Obs	*Mean*	*Std. Dev.*	*Min*	*Max*
X_{ij}	969	13,37967	2,772685	6,216606	19,97493
GDP_{it}	969	22,97658	0,167402	22,72933	23,26064
GDP_{jt}	969	24,32384	2,306695	19,31421	30,04162
POP_{it}	969	17,36646	0,06538	17,24722	17,46171
POP_{jt}	969	16,36623	1,847531	11,22632	20,99774
$DIST_{ij}$	969	8,634846	0,640852	6,518178	9,637902
$COMLANG_{ij}$	969	0,317854	0,465883	0	1
$COLONY_{ij}$	969	0,011352	0,105994	0	1
$COMCOLONY_{ij}$	969	0,28483	0,451566	0	1
$CONTIG_{ij}$	969	0,073271	0,260716	0	1
RER_{ijt}	969	3,626489	2,716942	-3,4844	14,79668

Sources and definitions:

The trade data is from the Comtrade database and is in constant US dollars. The GDP and population variables are taken from International Financial Statistics (IFS). The GDP variables are also in constant US dollars. The distance variable is defined as geodesic distance and calculated with the greater circle formula, using the distance between the largest cities in terms of population. It is taken from the CEPII datebase (http://www.cepii.fr/francgraph/bdd/bdd.htm), together with the gravity dummies. The real exchange rate is defined as the ratio of CPIs converted into the same currency using nominal exchange rates. The dummies for income levels are based on the World Bank's World Development Indicators.

Country in the sample:

Based on the trade data available in Comtrade, estimations have been made for all countries for which necessary variables could be constructed. However there was a notable number of countries for which this could not be done. Both groups are listed below. Note that Macao is included in both groups, since necessary data was available for some years, but not all.

Trading partners present in the sample:

Albania
Angola
Argentina
Armenia
Aruba
Australia
Austria
Bahamas
Bangladesh
Belgium
Belize
Benin
Bhutan
Bolivia
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Burundi
Côte d'Ivoire
Cameroon
Canada
Cape Verde
Chad
Chile
China
China, Hong Kong SAR
China, Macao SAR
Colombia
Congo
Congo
Costa Rica
Croatia
Cyprus
Dem. Rep. of the Congo
Denmark
Dominica
Ecuador
Egypt
Estonia
Estonia
Ethiopia
Finland
France
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Grenada
Guatemala
Guyana
Honduras
Hungary
Iceland
India
Indonesia
Iran
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kenya
Kuwait
Lesotho
Libya
Lithuania
Luxembourg
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Mauritania
Mauritius
Mexico
Mongolia
Morocco
Mozambique
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Paraguay
Peru
Philippines
Poland
Portugal
Rep. of Korea
Romania
Russian Federation
Rwanda
Samoa
Saudi Arabia
Senegal
Seychelles
Sierra Leone
Singapore
Slovakia
Solomon Islands
South Africa
Spain
Sri Lanka
Sudan
Suriname
Swaziland
Sweden
Switzerland
Thailand
Trinidad and Tobago
Tunisia
Turkey
USA
Uganda
United Kingdom

Trading partners absent in the sample:

Afghanistan
Andorra
Angola
Antigua and Barbuda
Barbados
Bosnia Herzegovina
Br. Indian Ocean Terr.
Brunei Darussalam
Cayman Islands
China, Macao SAR
Cocos Islands
Comoros
Cook Islands
Cuba
Cyprus
Czech Rep.
Dem. People's Rep. of Korea
Djibouti
Eritrea
Faeroe Islands
Falkland Islands (Malvinas)
Gibraltar
Greenland
Grenada
Guadeloupe
Guinea
Iraq
Kiribati
Lao People's Dem. Rep.
Lebanon
Liberia
Libya
Martinique
Mauritania
Montserrat
Myanmar
N. Mariana Islands
Namibia
Nauru
Nepal
Neth. Antilles
Niue
Oman
Pitcairn
Qatar
Reunion
Saint Helena
Saint Kitts and Nevis
Saint Lucia
Saint Lucia
Saint Vincent and the Grenadines
Sao Tome and Principe
Serbia and Montenegro
Somalia
Suriname
Syria
Timor-Leste
Togo
Tokelau
Turks and Caicos Islands
Ukraine
United Arab Emirates
Venezuela
Viet Nam
Western Sahara
Yemen
Zambia
Zimbabwe

Figure A.1: Changes in relative prices 1986-2005

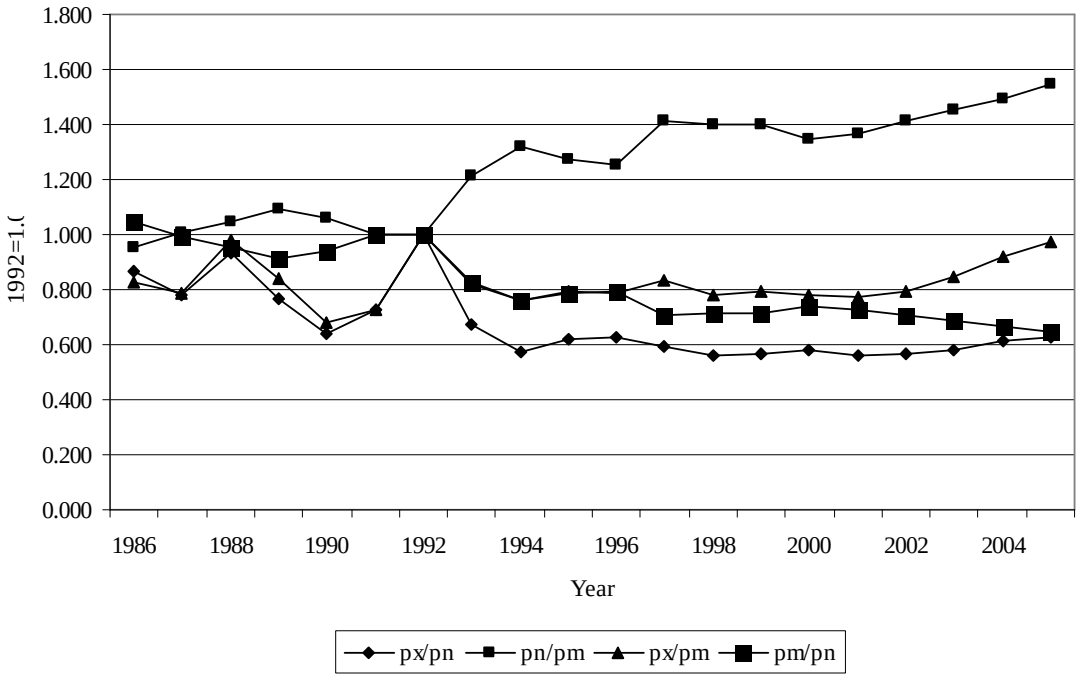


Table A.1: Export growth (deviation from base scenario)

	2001	Base scenario	Trade reform-1[1]	Trade reform-2[2]	Trade reform-3[3]	Trade reform-4[4]
CMAIZE	1.1	11.3	-0.1	0.2	0.4	0.6
CPADDY	2.6	9.9	0.0	0.2	0.4	0.6
CSORGH	0.1	13.8	-0.1	0.5	0.9	1.3
CWHEAT	0.1	13.2	-0.1	0.5	0.9	1.3
CBEANS	1.1	10.5	-0.1	0.2	0.4	0.6
CCEREA	0.2	12.1	-0.1	0.4	0.7	1.1
COILSE	4.0	10.5	-0.1	0.2	0.4	0.6
CCOTTO	38.3	9.4	0.1	0.3	0.5	0.7
CCOFFE	82.2	11.1	0.1	0.4	0.6	0.8
CTOBAC	45.4	9.9	0.1	0.3	0.5	0.7
CTEAGR	22.7	10.1	0.1	0.4	0.6	0.8
CCASHE	88.4	9.7	0.0	0.2	0.4	0.5
CSUGAR	12.0	9.3	0.1	0.3	0.5	0.6
COFRVE	24.6	10.9	-0.1	0.2	0.4	0.6
COCROP	4.1	10.9	-0.1	0.2	0.4	0.6
CLIVES	6.2	10.2	-0.1	0.2	0.4	0.5
CFISHI	61.9	9.5	0.0	0.2	0.4	0.5
CHUFOR	5.3	11.1	-0.1	0.2	0.4	0.6
CMIN	19.2	25.2	-0.4	0.4	0.4	0.4
CMEATD	0.7	9.4	0.0	0.2	0.3	0.5
CGRAIN	6.7	8.3	0.1	0.2	0.4	0.5
CPFOOD	7.0	8.1	0.3	0.4	0.6	0.7
CBEVER	1.2	8.8	0.0	0.2	0.4	0.5
CCLOTH	16.3	8.2	0.0	0.1	0.2	0.4
CWOODP	5.3	8.9	-0.1	0.1	0.3	0.4
CCHEMI	3.2	8.6	0.2	0.3	0.4	0.5
CPETRO	0.2	12.1	0.0	0.3	0.5	0.7
CRUPLA	1.3	9.9	0.0	0.2	0.4	0.5
CGLASS	6.4	9.6	-0.1	0.2	0.3	0.4
CMETAL	1.1	9.0	0.0	0.2	0.4	0.5
CEQUIP	7.6	8.9	0.0	0.3	0.4	0.4
CTSV	565.7	5.5	0.0	0.1	0.1	0.1
CPUB	70.2	5.7	0.1	0.1	0.2	0.3
CPRIVS	138.6	7.4	0.0	0.2	0.3	0.5
CFER	0.1	14.9	0.1	0.5	0.8	1.1
TOTAL	1298.5	8.2	0.0	0.2	0.3	0.4

Appendix 2: Labour market specification in the model

Adjustment in the labour market is a combination of the neoclassical closure, under which the wage rate adjusts to clear the labour market, and the Keynesian closure, with a fixed wage-rate and unemployment. Sticky wages were assumed with resulting unemployment among skilled, semi-skilled, and unskilled labour categories. Unemployed workers spill over to a "casual" category, adding to the supply there. Since wages for the casuals are market-determined, this will create downward pressure (see Mitra, 1994). missing from references

In the first and second regime it is assumed that intersectoral wage differences are constant. The wage differentials are exogenous, suggesting that factors acquire sector-specific skills upon entry into the sector and lose those skills upon exit. However, introducing the union in the model we explicitly model a behaviour that can generate the observed wage differentials.

There are many views on union behaviour, depending on the specification of the union's utility function. Here the union takes the demand for labour as given (L_u) and chooses the wage differential ($WD_{u,l}$) that maximises its utility (UNUTIL) according to equation 1 where WF_l is the economy-wide average wage and (L_{min}) is the minimum acceptable level of employment. This specification coincides with the behaviour observed in the Tanzanian labour market as the wage differential can be approximated to a wage premium including allowances.

$$(1) \qquad UNUTIL = \left(WF_l \cdot WD_{u,l} - WF_l\right)^{\mu} \left(L_u - L_{\min}\right)^{(1-\mu)}$$

Given a CES production function substituting the optimal labour demand in the union sector (L_u) into the union's utility function the optimal wage differential is:

$$(2) \qquad \frac{WD_{u,l} - 1}{WD_{u,l}} = \left(\frac{L_u - L_{\min}}{L_u}\right)\left(\frac{\mu}{1-\mu}\right)\left(1 + \rho_{p,u}\right)$$

where μ and $\rho_{p,u}$ are exponents in the union's utility function and the unionised sectors production function, respectively. This implies that when a sector contracts, perhaps as a result of lower protection, the decline in the wage differential ($WD_{u,l}$) can dampen the reduction in employment. This is the case when the economy-wide average wage is flexible. In the other case (unionrigid) when real wages are assumed fixed adjustment in the wage differential can dampen unemployment and spill-over effects.