

**IDS Working Paper 140**

**Identifying winners and losers in southern Africa from  
globalisation: integrating findings from GTAP and poverty  
case studies on global trade policy reform**

**David Evans**

September 2001

INSTITUTE OF DEVELOPMENT STUDIES  
Brighton, Sussex BN1 9RE  
ENGLAND



## Summary

This paper aims to develop a methodology for identifying poor winners and losers from trade policy changes. Two methodologies are frequently employed to assess the linkages between trade and poverty, case studies and general equilibrium trade models. It is argued that insights from both can be mutually reinforcing.

Zambia is used as an ‘example’ country. The key proposition from the case study literature is that country, regional and global trade policy reforms affecting Zambia over a 10–15 year period have been pro-poor. This is tested using the GTAP dataset and the standard GTAP general equilibrium model for 1997. A post simulation calculation based on four classes of households in Zambia for the poverty impacts. A variety of country, regional and global trade policy experiments were then applied.

A key preliminary finding is that the early unilateral trade policy reforms had strong over-all welfare effects in Zambia compared with other trade policy shocks considered. However, the results suggested that the unilateral trade policy reforms were not pro poor whereas later regional and potential global reforms were. On the model specification, the GTAP dataset and standard runGTAP model imposes a number of important limitations for trade and poverty work. The standardised GTAP dataset throws away too much useful information for trade and poverty analysis that is available in the readily available underlying datasets on which the GTAP dataset was built. Resolution of these problems cannot be readily accommodated within the standard GTAP modelling framework.

The above suggests an alternative research strategy, in which the CGE model and country case study interface is first explored with country models. Later point, such country models could be tied into a global model using the GTAP dataset for scenario calculations and a common sectoral classification. Further work on these lines is more likely to complete the bottom-up strategy for the analysis of trade and poverty impacts.



## Contents

	Summary	iii
	List of tables	vi
	<b>Executive summary</b>	<b>vii</b>
<b>1</b>	<b>Introduction to globalisation, trade and poverty issues</b>	<b>1</b>
	1.1 Aggregate vs. disaggregated approach	1
	1.2 Methodology	2
	1.3 Developing the argument. case studies and GTAP: a Zambia 'example'	3
	1.4 Hypothesis in detail	3
<b>2</b>	<b>Regional context of the Zambian 'example'</b>	<b>4</b>
	2.1 Economic structure of Southern African economies	4
	2.2 Regional context of trade policy liberalisation	4
	2.3 Poverty estimates for Southern Africa	5
<b>3</b>	<b>Some salient features of Zambia case studies</b>	<b>6</b>
	3.1 Salient features summarised	6
	3.2 Received wisdom on trade policy liberalisation	7
<b>4</b>	<b>Zambia in the context of a multi regional trade model</b>	<b>7</b>
	4.1 Income poverty impact of trade policy change	7
	4.2 The dataset	7
	4.3 Overview of model and assumptions	8
	4.4 Measurement of protection and structure of protection in Southern Africa	9
	4.5 The trade policy experiments	10
<b>5</b>	<b>Some preliminary results</b>	<b>11</b>
<b>6</b>	<b>Conclusions</b>	<b>17</b>
	<b>References</b>	<b>18</b>

## Tables

Table 1	Winners and losers from trade policy change: impact on income poverty	2
Table 2	Economic structure of southern African economies	4
Table 3	Poverty monitoring for seven southern African countries	5
Table 4	Structure of GTAP database	8
Table 5	SADC applied tariffs used in policy models, 1990s	10
Table 6	Major trade policy interventions affecting southern Africa: changes in factor prices, welfare and real rate of return on capital	13
Table 7	Trade shocks, household income poverty in Zambia: real household income net of taxes change %	15
Table 8	Change in output in Zambia %: trade policy shocks	16

## **Executive summary<sup>1</sup>**

The impact of globalisation on poverty is a rapidly growing and multifaceted area of research. This paper concentrates on a part of this literature, namely trade and poverty, to help develop a methodology for identifying poor winners and losers from trade policy shocks. In so far as the method is successful, it can be applied to the identification of poor winners and losers from other aspects of globalisation.

The International Financial Institutions (IFI's) rely on twin propositions that poverty alleviation is best pursued through increased growth, and that trade liberalisation encourages growth and thereby poverty alleviation. These aggregate propositions are not disputed in this paper. Rather, the argument is made for disaggregation to identify the winners and losers among the poor in the short and medium run from further trade policy liberalisation, both between and within countries. Disaggregation is important on both equity grounds, especially when the losers are among the poor. It is also important on efficiency grounds, particularly when designing policies to help poor losers realise the opportunities for gain from trade policy liberalisation in the longer run.

Two methodologies are frequently employed to assess the linkages between trade and poverty. Country and sector case studies dominate the literature. The key difficulty with case studies is that it is not possible to deploy their rich descriptive data in a consistent analytical framework. It is usually not possible to construct a quantitative counterfactual situation, for example the impact of a trade policy change on the poor. Obtaining a counterfactual through the second methodology, namely general equilibrium trade models, has its own catalogue of difficulties arising from data availability, model assumptions and interpretation of results. The two methodologies lie at extreme ends of a spectrum, but insights from both can be mutually reinforcing.

This paper uses Zambia as an 'example' country to explore the possibility of combining the rich case study material available for that country, with the results for Zambia of a general equilibrium trade model. It describes some of the salient features of some of the available Zambia case studies on economic structure and policy, particularly those with a poverty focus. A common thread runs through many of the case studies, that trade policy reform in Zambia is likely to be pro-poor. This key proposition, that trade policy reform in Zambia is pro-poor, is tested in the context of regional and global level reforms that have taken place over a similar time scale using the GTAP dataset and the standard runGTAP general equilibrium model for 1997. The modelling strategy is described including an extension for Zambia dataset to include four classes of households from the 1996 LCMS Survey for Zambia used in the post-simulation poverty impact calculations. The trade policy experiments, in summary, used to generate the poverty impacts were:

---

<sup>1</sup> Earlier versions of this paper have been presented to a seminar at DfID in January 2001, to the ESRC International Economics/Development Economics conference at Nottingham University in April 2001, and at Fourth Annual Conference on Global Economic Analysis, Purdue University, West Lafayette, June 2001. I am particularly grateful to Tom Hertel, Sherman Robinson, Howard White and Alan Winters for comments and support. I thank them all but implicate none.

- Unilateral trade policy reforms in Southern Africa that took place from 1992–4 up to 1997.
- A seven-country version of the SADC FTA.
- A ‘suppose’ WTO Round.
- A ‘suppose’ effective extension of the EU/South Africa FTA into an EU/SADC7 FTA through Least Developed Country access into the EU through negotiations about to begin.

A key finding is that the early unilateral trade policy reforms that were carried out across the region had strong over-all welfare effects compared with other trade policy shocks considered. However, the unilateral trade policy reform had an adverse impact on household income distribution in Zambia compared with regional reforms such as the SADC FTA, a possible WTO Round or an opening of the whole of SADC to the terms of the EU/South Africa FTA. Whilst these findings are suggestive, the research strategy on the modelling side using both the GTAP dataset and standard runGTAP model has a number of important limitations. On the data side, for Southern Africa applications, the standardised GTAP dataset throws away too much useful information for trade and poverty analysis that is available in the underlying MERRISA SAMs, upon which the Southern Africa dataset for GTAP was built. This is most notable for household aggregation, factor aggregation at the low income or subsistence end, margins aggregation, and a rudimentary treatment of government income and expenditure. On the runGTAP modelling side, satisfactory resolution of the database problems for poverty analysis poses serious programming problems.

The above suggests an alternative trade and poverty research strategy, in which the CGE model and country case study interface is first explored with country models, without the constraints of the standard GTAP dataset aggregation. An obvious starting choice is the GAMS based standard model Lofgren, Harris and Robinson (2001). At a later point, such country models could be tied into a global model using the GTAP dataset for scenario calculations using a common sectoral classification to complete the bottom-up strategy for the analysis of trade and poverty impacts.



# **1 Introduction to globalisation, trade and poverty issues**

## **1.1 Aggregate vs. disaggregated approach**

The impact of globalisation on poverty is a rapidly growing and multifaceted area of research. This paper concentrates on a part of this literature, namely trade and poverty, to help develop a methodology for identifying poor winners and losers from trade policy shocks. In so far as the method is successful, it can be applied to the identification of poor winners and losers from other aspects of globalisation.

The IFI's rely on twin propositions that poverty alleviation can be achieved through pro-poor growth, and that trade liberalisation encourages growth and thereby poverty alleviation.<sup>2</sup> These aggregate propositions are not in dispute. Rather, the argument is made for disaggregation to identify poor winners and losers in the short and medium run from further trade policy liberalisation, both between and within countries. Disaggregation is important on both equity grounds, since inevitably there will be both winners and losers among the poor. It is also important on efficiency grounds, when designing policies to help poor losers realise the opportunities for gain from trade policy liberalisation in the longer run.

Normally, trade policy reform will yield winners and losers. In the context of post-war GATT rounds, this was dealt with structurally, since the participants in these rounds were essentially OECD members with similar levels of development. The distribution issue was dealt with by mutually reinforcing growth from trade policy liberalisation and complementary policy intervention of national governments. The Uruguay Round posed new problems since developing countries were participants for the first time, and general equilibrium trade model estimates of gains and losses showed that African countries were likely to lose.<sup>3</sup> In the case of the proposed WTO Millennium Round, the Group 77 countries are all too aware of the possibility of significant gains and losses for the poorest countries and groups within these countries. No firm predictions of poor winners and losers has yet been made, but even the highly simplified view of some of the interactions between trade and poverty, shown in Table 1, suggests that it is very likely that there will be poor winners and losers.

In Table 1, the first two columns provide a profile of poor households and some consequences that follow. The third column sets out some channels through which poverty alleviation policies can work. The final column sets out some poverty consequences of trade policy liberalisation. The key point illustrated by Table 1 is the complexity of translating a simple description of the profile of poor households to the poverty impact of trade policy liberalisation. The general observation, that trade policy liberalisation yields winners and losers, holds a fortiori for the likely impact on poor households.

---

<sup>2</sup> A strong version of the aggregate argument can be found in Dollar and Kraay (2000). Various aspects of the disaggregated argument can be found in DfID (2001), Kanbur (2001), White and Anderson (2000), White (2000).

<sup>3</sup> See the survey by Whalley (1999).

Acceptance of the argument for disaggregation to facilitate the identification of poor winners and losers from trade policy reform poses a methodological problem.

**Table 1 Winners and losers from trade policy change: impact on income poverty**

<b>Poverty profile comparison with better off households</b>	<b>Consequences of poverty:</b>	<b>Poverty alleviation channels:</b>	<b>Gain or loss to poorest through trade policy change in the medium run:</b>
Larger households	Higher population growth	Medium run: Increased market opportunities especially for women	Impact effects mainly on increased returns to abundant labour and employment in low skill tradable formal, subsistence and informal sectors.
Less well educated and less human capital	Less able to respond to new economic opportunities with higher skill; higher population growth	Improved access to training and education	Impact effects unlikely to favour returns to skills. Induced effects on growth may improve income from skill accumulation by poorest.
Fewer financial and physical capital assets	Less able to respond to new economic opportunities with higher capital requirements	Improve access to credit and physical capital assets	Impact effects unlikely to favour returns to capital. Induced effects on growth may improve income from financial and physical assets accumulated by poorest
Poorer land, housing and access to infrastructure	Low returns to fixed assets especially land, housing and infrastructure	Improve use of land, including redistribution of land; improve housing and infrastructure for market access	In rural areas, affects poorest mainly through returns to land in tradable subsistence sectors; in urban areas affects poorest mainly through returns to fixed assets in tradable informal sectors and access to formal low skill export sectors
<b>Winners and losers: impact on income poverty</b>	Income poverty effects mainly depends on factor price and employment changes induced by trade policy change, the initial resource endowments of the poorest in relation to over all resource endowments, and country comparative advantage		

## **1.2 Methodology**

Two methodologies are frequently employed to assess the linkages between trade and poverty, country or sector case studies and general equilibrium trade models. The analysis of trade policy liberalisation in developing countries from the 1970s onwards has always started with a country case study analysis, with quantification as best possible through effective protection and other measures of the resource allocation effects of protective structures. Since the early 1990s, particularly through the World Bank, there has been a large amount of energy spent on developing country case studies of poverty, complemented by a bewildering variety of country and sector case studies using wider definitions of poverty by other agencies and researchers. In the Southern African context, country and sector case studies dominate the literature and some distillation of these case studies from a trade and poverty perspective has recently been made.<sup>4</sup>

<sup>4</sup> See Winters (2000) for an early distillation of this on-going research for a Handbook of Trade and Development, financed by DFID.

As methods of quantification have improved, for example country computable general equilibrium models and regression analysis, the relative importance of quantification has increased compared with the case study analysis. The argument in this paper is that estimates of poverty impacts of trade policy shocks using case studies alone cannot be relied upon. This is because the general equilibrium interactions at the country, regional and global level can be sufficiently important to over-ride what are effectively partial equilibrium estimates of the poverty impacts from the case studies.

There is now a well-developed database and modelling software for global multilateral general equilibrium trade modelling through the Global Trade Analysis Project (GTAP). However, in its present form, the GTAP database has only one household and is therefore not suitable for the analysis of income poverty without extension of the database. Thus, the use of the GTAP database for poverty impact analysis is crucially dependent on the quality of the database extension for poverty analysis.

The key difficulty with sector and country case studies is that it is not possible to deploy their rich insights in a consistent analytical framework to construct a quantitative counter-factual situation, for example the impact of a trade policy change on the poor. On the other hand, a counterfactual can be constructed using a general equilibrium trade model. However, the general equilibrium models inevitably miss the rich texture of case studies. They also have their own catalogue of difficulties arising from data availability, model assumptions and interpretation of results. The two methodologies lie at extreme ends of a spectrum, but insights from both can be mutually reinforcing.

### ***1.3 Developing the argument. Case studies and GTAP: a Zambia 'example'***

This paper uses Zambia as an 'example' country to explore the possibility of combining the rich poverty case study material available for that country with the results for Zambia of a multilateral trade model based on the GTAP dataset and modelling software. There are several salient features of case studies of poverty in Zambia, but this paper explores as an example a common thread that runs through many of the Zambia economic policy and poverty case studies, that trade policy reform in Zambia is likely to be pro-poor. This key proposition is tested using the provisional GTAP database extended for Zambia to permit the analysis of income poverty impact for four classes of households. The modelling strategy adopted for this exploratory study is based on the standard runGTAP model and software.

### ***1.4 Hypothesis in detail***

The main hypothesis is that multi-country general equilibrium trade models and country poverty case studies are highly complementary in at least three ways. First, the country poverty case studies provide real-time, sector and institutional detail missing from a general equilibrium trade model. However, poverty impact estimates based on case studies are essentially partial equilibrium and lack the explicit construction of the counterfactual. Second, general equilibrium estimates of the poverty impacts based on an explicitly estimated counterfactual may confirm the case study findings, thus lending weight to the assessment of poverty impacts. However, thirdly, the general equilibrium findings may lead to different findings on the poverty impacts because of identifiable general equilibrium interactions. Of course, the case study and

general equilibrium findings may be irreconcilable, suggesting a gap in the information base of the case studies or missing data, or inadequate formulation of the general equilibrium analysis. The supplementary hypothesis is that it is feasible to exploit the low marginal cost of using the GTAP database and standard runGTAP model and software to estimate the poverty impact effects, gains and losses to complement the case study literature. These hypotheses are developed in the context of an ‘example’ country, Zambia.

## **2 Regional context of the Zambian ‘example’**

### **2.1 Economic structure of Southern African economies**

The first point to be made about the regional context of the Southern Africa trade policy reform in the immediate and recent past, in the pipeline, and in the possible future, is that the main countries represented are very heterogeneous. This is shown in Table 2 in terms of population, GDP and GDP per capita.

**Table 2 Economic structure of southern African economies**

<b>1997</b>	<b>Population m</b>	<b>GDP \$US m</b>	<b>GDP per Capita \$US</b>
Angola	10.8	6187	573
Botswana	1.5	4318	2879
Lesotho	2	1029	514
Malawi	9.8	1465	150
Mauritius	1.1	3919	3563
Mozambique	17.4	1467	84
Namibia	1.5	3162	2108
South Africa	41.5	136035	3278
Swaziland	0.9	1073	1192
Tanzania	29.6	3602	122
Zambia	9.0	4073	453
Zimbabwe	11.0	6522	593
<b>Total</b>	<b>136.1</b>	<b>172853</b>	

Notes: From GTAP v.5 database.  
GDP estimates based Atlas method.

### **2.2 Regional context of trade policy liberalisation**

The regional context of trade policy liberalisation in Southern Africa is complex. Post-Apartheid political forces were particularly important in developing the Southern Africa Development Community or SADC. Since the early 1990s, SADC has had a coherent economic rationale. Once South Africa joined, it looked as if it might become the leading force for Southern African regional integration, effectively expanding and modifying the Southern African Customs Union (SACU) that dates from the turn of the century. Less relevant is the Community of Eastern and Southern Africa or COMESA, which does not have South

African membership. However, two powerful forces have cut across the development of SADC. Unilateral trade policy liberalisation through the WTO and the World Bank SAP's has dramatically altered the landscape for regional integration, and North-South integration through the EU/S.Africa FTA has cut across SADC's weak attempts at institution building to establish a rule-based SADC FTA.

### **2.3 Poverty estimates for Southern Africa**

Not surprisingly, the estimated relative and absolute numbers of poor in Southern Africa reflect the different economic structures shown in Table 2. Poverty estimates of the seven Southern African countries represented in the GTAP data set are shown in Table 3.

**Table 3 Poverty monitoring for seven southern African countries**

Country	Per cent of population under national poverty line				Poverty measures under international poverty line		
	Year	Urban	Rural	National	Year	% of Population <\$1	% of Population <\$2
Malawi	1990-91			54			
Mozambique					1996	37.8	78.4
Botswana					1985-86	33.3	61.3
Zambia	1991	46	88	68	1996	72.6	91.7
Zimbabwe	1990-91	10	31	25.5	1990-91	35.9	64.2
Tanzania	1991			51.1	1993	19.9	59.6
South Africa					1993	11.5	35.8

Notes:

- 1) 0 represents a small number less than 0.1%.
- 2) The World Bank's international poverty lines are based on the World Bank's 1993 consumption PPP in 1993 price.
- 3) Source: World Bank Poverty monitoring for sub-Saharan Africa website. Also for data sources and methods.

Taking the broad measure of income poverty based on \$2US per day at 1993 prices, the per cent of population under an International Poverty line varies from about 35 per cent in South Africa, to over 90 per cent in Zambia. If the broadly based income poverty estimates are at all accurate for the earlier part of the 1990s, the Zambia 'example' for the methodological exercise appears well chosen.

### 3. Some features of Zambia case studies

#### 3.1 Salient features summarised

A snapshot of some of the salient features of the Zambian ‘example’ that come through the country case study literature<sup>5</sup> can be summarised as follows:

- The Zambian context is very different from the structural context of the earlier GATT round reforms, because of the regional structural differences shown in Table 2 above. These structural characteristics increase the likelihood that future trade policy liberalisation will yield both winners and losers.
- In addition to the high percentage of the Zambian population who are also poor, income distribution is highly unequal as indicated by a Gini coefficient of 0.52 in the mid 1990s. The top 10 per cent of the population receive half the income and the bottom 10 per cent receive 0.5 per cent.
- The 1990s were characterised by sweeping economic reforms, for example macro economic stabilisation, liberalisation of agricultural marketing, a large privatisation programme, trade policy liberalisation, public sector reform, all of which have potentially important poverty impacts.
- For most of the 1990s, GDP growth performance was poor. In the years from 1990 to 1998 inclusive, per capita GDP growth was negative in six years. In 1999, per capita GDP growth was near zero, but some positive per capita growth has been estimated for 2000. In this context, the redistributive aspects of trade policy changes are likely to be particularly important for short and medium run poverty alleviation.
- Copper prices on the world market were unfavourable over the decade after a brief peak in 1995, whilst copper production and exports were hampered by delayed privatisation and only began to grow again by 2000. Here, there is a dilemma, for the re-emergence of copper as an export sector is not likely, on balance, to be pro-poor in the short and medium run, but could facilitate longer run pro-poor investment.
- Only 17 per cent of the workforce were employed in the formal sector at the beginning of the 1990s, declining to 10 per cent by the end of the 1990s. Thus a large part of the unskilled workforce identified in the GTAP database is in the subsistence sector.
- As a result of macroeconomic stabilisation, there were high real interest rates and a real appreciation of the kwacha over much of the 1990s. In the short run, this real appreciation of the kwacha is likely to dominate the effects of trade policy liberalisation, which tends to depreciate the real exchange rate. The focus of this paper is on the medium to long run impact of trade policy liberalisation on poverty.

---

<sup>5</sup> See for example McCulloch *et al.* (2000), Hanmer *et al.* (1999), Stevens (1999), White (1999), World Bank (1994), which focus primarily on the impact of historical unilateral trade policy liberalisation on poverty. Discussion of the impact of multilateral trade policy liberalisation on poverty alleviation is surprisingly absent in the recent Interim Poverty Reduction Strategy Paper, Government of Zambia (2000).

- Partly as a result of the macro imbalances induced by the real appreciation on the kwacha, overall poverty during the 1990s increased sharply at first and then declined to levels roughly comparable to the beginning of the decade.
- Over-all inequality fell over the 1990s from about 0.56 to about 0.51 due to the observed relative improvement in rural incomes.

### ***3.2 Received wisdom on trade policy liberalisation***

A key proposition that pervades many of the Zambia country case studies is that the past and anticipated trade policy liberalisation has improved both on the level of income of the poor and the distribution of income towards the poor. The empirical work reported in the rest of this paper tests these propositions using a preliminary version of the 1997 GTAP database and a multilateral general equilibrium trade model to estimate income poverty impact indicators of both historical, contemporaneous and possible future trade policy changes.

## **4 Zambia in the context of a multi regional trade model**

### ***4.1 Income poverty impact of trade policy change***

The multi-regional trade model was developed to explore the income poverty impacts of a variety of trade policy reforms and to compare the results with the received wisdom on the poverty impacts from the case study literature. A more extensive exploration of the poverty impacts of other policies such as debt relief, world copper price trends, infrastructure investment that impacts on access to markets, final reform of the MFA, other North-South FTA's that South Africa has negotiated, will not be explored here.

### ***4.2 The dataset***

A preliminary version of the 1997 v.5 GTAP dataset was used for multi-country general equilibrium trade models and associated modelling software. The complete GTAP database for 1997 has 65 regions/countries, 57 sectors and 5 primary factors. The aggregated preliminary v.5 dataset used in this paper was:

**Table 4 Structure of GTAP database**

<b>Regions</b>	<b>Sectors</b>	<b>Factors</b>
1 NAFTA	1 crops	1 Land
2 EU	2 livestock	2 UnSkLab
3 ROW	3 food_prod	3 SkLab
4 Malawi	4 natres_prod	4 Capital
5 Mozambique	5 textiles	5 NatRes
6 Botswana	6 apparel	
7 Zambia	7 oth_man	
8 Zimbabwe	8 post_tele	
9 Tanzania	9 trade_trans	
10 South_Africa	10 oth_services	
11 S_SE_Asia		
12 E_Asia		

The dataset is relatively disaggregated for the seven Southern African countries, and the five endowment factors. In terms of sectors and the rest of the world, the dataset is highly aggregated. The regional disaggregation turns out to be important for the Zambia ‘example’. The missing gap in the GTAP database for mapping from factor income to disaggregated households was drawn from the 1995 Zambia SAM for four types of households for post-simulation calculations of the impact on the disaggregated net income paid to the disaggregated households.<sup>6</sup> Finally, the LCMS (1996) Household Survey for Zambia was used to link income changes to changes in headcount poverty using a National poverty line for the Extremely Poor.

### **4.3 Overview of model and assumptions**

Some of the key assumptions and structural characteristics built into the general equilibrium trade model used that have important implications for the results include:

- Imperfect substitution between domestic and imported sources of supply;
- No scale economies;
- Competitive markets;
- Fully employed factors of production with a surplus labour variant described below;
- For policy analysis, a micro-based welfare function is usually included;
- Trade models have a rich specification of the ‘tax wedges’ that affect trade flows;
- The multi-country/region versions of the above that include multilateral trade flows are essentially a more complex version of a single country model;

---

<sup>6</sup> See Hausner (1999).



- Variation of the key assumptions above such as unemployment of one or more factors such as labour and imperfectly competitive markets can be introduced using advanced computation techniques and modelling software;
- A variant of a surplus labour model was specified for all of the Southern African countries by fixing the real unskilled wage at base levels so that the employment of unskilled labour is free to vary.

The choice of a surplus labour specification requires some justification and has important implications. In sub Saharan Africa, it is usually the case that there is unemployed unskilled labour and effectively full employment for skilled labour. Simplifying a little by merging natural resource endowments and land and ignoring capital inputs, the impact of changing tariff protection in a GTAP based model will closely follow Heckscher-Ohlin lines. Thus, when unskilled wages are determined exogenously and there is a high resource to skill ratio and high initial trade protection, across the board trade policy liberalisation is likely to benefit resource rents and harm skilled wages. By definition, unskilled wages do not change. The employment of unskilled labour will tend to rise or fall according to the unskilled labour intensity of exports compared with import competing production.

#### ***4.4 Measurement of protection and structure of protection in Southern Africa***

There are a number of well-known difficulties in measuring the structure of protection for modelling purposes. Tariff negotiations centre around changing bound tariffs, whilst in the GTAP database protection is primarily measured as average applied tariffs. Thus, the correspondence between negotiated tariff changes and applied tariff changes is at best an approximation. There are a variety of other protective measures such as tariff equivalents, measures tariff quotas for temperate agricultural imports and export controls in the MFA, some of which are included in the GTAP database. As a first approximation, tariff equivalents of non-tariff measures have been included as ordinary tariffs and have not been specifically modelled to take into account the particular forms of protection that lie behind them.

It is possible to assemble comparative data on the initial average applied sector tariffs in the Southern Africa from the end of the Uruguay Round up to 1997, the year for the GTAP v.5 database. The trade weighted country averages are shown in Table 5, columns (1) and (4).

As can be seen from Table 5, for the unilateral trade policy reductions roughly between 1992–4 and 1997, the average tariffs for the seven Southern African countries fell to less than 50 per cent of their initial levels. Column (2) shows the estimated country tariffs for around 1996, the time of the signing of the SADC Trade Protocol. These estimates are close to the 1997 estimates for v.5, which is reassuring since there were no large tariff cuts between 1996 and 1997. For comparison, the v.4 tariffs for 1995 are shown in column (3). These are a little out of line, but it is not possible to disentangle measurement error from differences in the countries included.

**Table 5 SADC applied tariffs used in policy models, 1990s**

Trade weighted estimates of actual applied tariffs %

	(1)	(2)	(3)	(4)
	Early 1990s	Mid 1990s	GTAP v.4 1995	GTAP v.5 1997
Malawi	23.7	21.2		7.6
Mozambique	21.6	16.5		12.2
Botswana	as SACU	2.0		12.2
Zambia	24.9	12.4		8.2
Zimbabwe	38.0	16.7		11.5
Tanzania	13.1	19.1		7.3
South Africa		5.7		
South Africa (i)				6.5
SACU	13.6			
SAF (ii)			10.0	
Rest SAF (iii)			8.8	
<b>Average tariffs</b>	15.7	7.0	9.6	7.3

Notes:

(i) SACU less Botswana

(ii) SACU

(iii) Angola, Malawi, Mauritius, Mozambique, Tanzania, Zambia

Sources: (Evans 1997, 1998, 2000b, GTAP datasets v.4 and v.5)

#### 4.5 The trade policy experiments

The form of the trade shock experiments performed follows from totally differentiating the national accounts identity:

$$dGDE = dC + dG + dI + dE - dM \quad (1)$$

and setting  $dG = 0$ ,  $dI = 0$  and  $(dE - dM) = 0$ . This is standard for trade policy experiments. However, in recent versions of runGTAP, it is technically difficult to set  $(dE - dM)$  exactly equal to zero when  $(E - M)$  is not initially equal to zero. In several of the Southern African countries, such as Mozambique, the initial trade balance was strongly negative so that the desired condition does not hold and a significant error enters into the results reported.<sup>7</sup>

Three specific types of trade policy reform and income poverty impacts were explored:

**Unilateral:** Post Uruguay Round Unilateral Tariff Reform under World Bank SAPs and WTO auspices were heavily concentrated in the period immediately after the completion of the Uruguay Round, roughly up until 1997. The impact of these changes was estimated using a backcast from 1997 back to the initial tariffs, shown in Table 5 column (1), disaggregated to the sector level.

<sup>7</sup> Tom Hertel has suggested modeling capital flows to eliminate the error. Such departures from the 'classical' trade policy shock assumptions will be explored in revisions to this paper.

**Regional:** The SADC FTA, implemented recently, was modelled for seven countries only on the 1997 base by setting the intra SADC7 tariffs and exports taxes to zero.<sup>8</sup> The strong assumption is that the rules of origin can be enforced. Modeling the EU/SA FTA is not straightforward, because not all of the intra trade barriers were set to zero. Translating the exclusions under the agreement into tariff equivalents has only been done in very recent work.<sup>9</sup> The approach adopted here is to assume that agricultural and food trade barriers are cut by 50 per cent and the rest were cut by 100 per cent on a 1997 base, a not very happy ‘guesstimate’ to deal with the lack of data at the time of calculation. The regional results of the EU/SA FTA were not reported for the Zambia specific results because the impacts were so small.

**Global:** A prospective WTO Millennium Round, and an extended version of the EU/SA FTA, also extended to an EU/SADC FTA. The ‘suppose’ Millennium Round was constructed in the spirit of the sketches in Wang and Winters (2000) and Hertel *et al.* (2000), whereby temperate agricultural and global manufacturing trade barriers were cut by 40 per cent. Service sectors tariff equivalents were not incorporated into the data set, so there were no service sector effects. It was notionally assumed that the WTO round begins in 2005. An updated base was calculated including the SADC7 FTA and an EU/SA FTA. No adjustments for GDP growth from 1997 to 2005 were included at this stage. The EU/SADC7 FTA simply extended the EU/SA FTA to all of the SADC7. Negotiation for this is about to begin with the EU for the Least Developed Countries (4 out of 7 of the SADC7) and is likely to be extended to all of SADC.<sup>10</sup>

## 5 Some preliminary results

Some preliminary results are summarised in Tables 6 and 7. Full details of the trade policy experiments can be obtained from the author.

The welfare effects (excluding terms of trade and capital goods revaluation effects) are shown in Table 6 as a percentage of base net factor income  $Y$ . Over-all, there are positive global welfare benefits from the trade policy shocks considered. In the case of the unilateral tariff reduction, the impact effects in the SADC7 are nearly three per cent of net factor income, which is large by any standards. The SADC7 countries should also gain negotiating credits from their unilateral liberalisation in any new WTO Millennium Round.<sup>11</sup> Whilst there are no aggregate losses for any particular country, there is a strong dispersion of the welfare benefits. Errors in the preliminary data are possibly largest in Botswana so the results for this country should be discounted. For the remaining six countries, the dispersion of the welfare gain for the unilateral tariff cuts is very large.

---

<sup>8</sup> For an over view of the impact of the SADC FTA using an earlier highly disaggregated dataset, see Evans (2000b).

<sup>9</sup> See Andriamananjara and Hillberry (2001). This greatly improves on earlier work on the EU/SU FTA by Davies (1998), Lewis *et al.* (2001), and Evans (2000a) which set the intra EU/ SA tariffs to zero, or Arndt *et al.* (2000) which sets the non-agricultural tariffs to zero.

<sup>10</sup> See Commission of the European Communities (2000)

<sup>11</sup> See Wang and Winters (2000) who argue the case for such credits rather well.

The over-all welfare effect of the SADC7 FTA is over 1 per cent, very much larger than the earlier estimates of around .1 per cent reported in Evans (2000b). Almost all of this difference in welfare gains can be attributed to the inclusion of unemployed unskilled labour in this study. Again, although there are no estimated negative effects on welfare, the dispersion of welfare benefits is very large. The 'suppose' WTO1 round shows welfare benefits of slightly more than 1 per cent with much lower dispersion of the size of benefits between countries. The WTO2, the EU/SADC7 FTA shows comparatively low overall welfare gains and substantial dispersion of the gains. The low aggregate gains for the SADC7 conceal the small welfare loss for South Africa and substantial welfare gains for the remaining SADC6 countries. The welfare loss for South Africa under the WTO2 arises because of increased competition from EU sources in the SADC6 markets and the elimination of beneficial trade diversion.

It is difficult to account for the relationship between post-tax factor income changes and the welfare changes, except to note that these are very different measures. The rate of return changes give an indicator of the changes in the growth potential from the reforms. As with the other indicators, there are substantial differences in the impact effects on the rate of return. In so far as the changes in the rate of return indicate the potential impact of the trade policy shocks on economic growth, the findings suggest a wide dispersion in the growth impact of the trade policy changes considered.

**Table 6 Major trade policy interventions affecting southern Africa**  
**Changes in factor prices, welfare and real rate of return on capital**

<b>Unilateral</b>	<b>NAFTA</b>	<b>EU</b>	<b>ROW</b>	<b>Mal</b>	<b>Moz</b>	<b>Bots</b>	<b>Zam</b>	<b>Zim</b>	<b>Tanz</b>	<b>S_Afr</b>	<b>SSE Asia</b>	<b>E_Asia</b>	<b>Total</b>	<b>SADC</b>	<b>Rest</b>
Factor income %	0.00	0.01	0.01	2.76	12.34	16.09	3.98	10.44	1.54	5.05	0.01	0.02	0.04	5.49	0.01
Welfare % Factor Y	0.00	0.01	0.01	1.93	0.02	7.97	2.09	3.94	0.05	2.93	0.02	0.02	0.02	2.95	0.01
Rate of return %	0.00	0.00	0.00	10.06	48.09	29.86	14.70	29.28	6.58	13.75	0.01	0.00	na	na	na
<b>SADC7</b>															
Factor income %	0.00	0.00	0.00	2.50	5.88	1.34	0.78	5.04	0.34	0.57	0.00	0.00	0.00	0.89	0.00
Welfare % Factor Y	0.00	0.00	0.00	2.08	0.53	0.44	0.09	2.48	0.01	0.36	0.00	0.00	0.01	1.04	0.00
Rate of return %	0.00	0.00	0.00	4.91	17.62	0.61	3.16	1.02	1.02	0.43	0.00	0.00	na	na	na
<b>WTO1</b>															
Factor income %	0.15	0.42	1.35	1.36	7.95	4.82	2.03	3.54	1.72	1.65	2.53	2.85	0.84	1.90	0.83
Welfare % Factor Y	0.04	0.17	0.28	1.05	4.12	2.53	1.29	1.38	0.70	1.03	0.41	0.52	0.19	1.11	0.19
Rate of return %	0.77	0.75	2.15	3.70	21.20	3.24	3.76	6.89	4.33	3.18	6.17	3.37	na	na	na
<b>WTO2</b>															
Factor income %	-0.01	0.02	-0.01	4.75	8.38	4.44	1.31	8.40	1.07	1.41	-0.02	-0.02	0.01	1.95	0.00
Welfare % Factor Y	0.00	0.00	0.00	0.62	4.00	2.33	0.63	1.30	0.29	-0.12	0.00	0.00	0.00	0.11	0.00
Rate of return %	0.00	0.00	0.00	1.82	15.95	1.58	1.13	4.13	2.79	-0.03	0.00	0.00	na	na	na

Key:

Unilateral lowering of sector tariffs

SADC7 FTA

WTO1 lowers all tariffs, export taxes and agricultural production subsidies by

WTO2 same as EUSA FTA except extended to all SADC7

Note: change in rate of return on capital deflated by change in GDP price

Factor income deflated by consumer price

The poverty impact of the above trade policy shocks on four types of households in Zambia is shown in Table 7. The household disaggregation and definition of the poverty line is based on the LCMS (1996) and the mapping on functional to household income is based on Hausner (1999). The first and second columns show the impact on high and low metropolitan households, and the third and fourth columns show the impact on non-metropolitan urban and rural households. The final column shows the aggregate effects. The poorest households are in the low-income metropolitan group, and rural households. The 1996 base data shows the total population, headcount, poverty gap, the Foster, Greer and Thorbecke welfare measures and the income share of the poorest. The implied absolute value of the arc elasticity of the headcount with respect to a hypothetical 1 per cent income change in all household types is .84, one measure of a headcount response that is poverty neutral. The poverty picture that emerges from the Base data is that the incidence of extreme poverty rises monotonically from the HHMH to the HHNR groups. The poverty gap and FGT welfare measures show that within the Extremely Poor groups, there are substantial numbers who have a much lower income than the Extremely Poor poverty line.

For each of the policy experiments, the estimated change in household income, income share to the poorest, headcount, poverty gap and welfare are shown. The over view aggregate result emerges from the last column, the estimated income elasticity of the headcount for each of the policy experiments. The line of causality is from the trade policy shock, to the commodity composition of output, to the functional distribution of income and finally to the household distribution of income. Thus the aggregate elasticity of the headcount wrt household income change reflects the underlying structural shifts in the economy for each trade policy shock. For the unilateral tariff cuts, the relative size of income change and change in poverty measures goes from largest in the HHMH sector to the HHNR sector. That is, the strongest effects are on the household groups that have the lowest incidence of poverty. Moreover, for the unilateral tariff cuts, at .76 the elasticity of the headcount wrt income change is lower than neutral estimate of .84. In short, the unilateral tariff cuts are anti poor in their distributional effects. For the headcount measure P0, the SADC7, WTO1 and WTO2 tariff shocks turn out to be pro-poor when measured against the base headcount P0 elasticity. For the other poverty measures, comparisons of the elasticity of each indicator for the SADC7, WTO1 and WTO2 shocks with the same indicator for the unilateral tariff cuts suggests that the former trade policy shocks are all pro-poor in comparison with the unilateral tariff cuts.

**Table 7 Trade shocks, household income poverty in Zambia  
Real household income net of taxes change %**

1997 income change applied to 1996 base		HHMH	HHML	HHNU	HHNR	Total	Elasticity
Base	: Total population	347984	3172457	455273	5556261	9531974	wrt income
	: Headcount P0	0.11	0.29	0.52	0.70	0.53	
	: Poverty gap P1	0.03	0.10	0.24	0.34	0.24	
	: Welfare measure P2	0.01	0.04	0.14	0.20	0.14	
	: P0 elasticity wrt 1% income change	5.16	1.93	0.89	0.53		0.84
	: % income share to poorest	2.04	9.19	19.42	35.05	19.27	
Unilateral	: % change HH income	4.09	3.99	4.00	3.93	3.98	
	: % change income share to poorest	-13.61	-8.47	-5.13	-4.35	-5.39	1.35
	: % change headcount P0	-9.79	-5.79	-2.78	-2.30	-3.01	0.76
	: % change poverty gap P1	-9.09	-7.80	-4.44	-4.14	-4.66	1.17
	: % change welfare measure P2	-10.71	-8.47	-5.49	-5.20	-5.59	1.40
SADC7	: % change HH income	0.77	0.75	0.76	0.80	0.78	
	: % change income share to poorest	-6.30	-2.73	-1.67	-0.73	-1.27	1.63
	: % change headcount P0	-4.49	-1.84	-0.89	-0.38	-0.70	0.90
	: % change poverty gap P1	-1.83	-1.52	-0.86	-0.86	-0.95	1.22
	: % change welfare measure P2	-2.12	-1.67	-1.08	-1.09	-1.15	1.48
WTO1	: % change HH income	1.88	1.92	1.93	2.16	2.03	
	: % change income share to poorest	-11.01	-5.02	-3.52	-2.45	-3.15	1.55
	: % change headcount P0	-7.89	-3.40	-1.90	-1.28	-1.75	0.86
	: % change poverty gap P1	-4.32	-3.84	-2.18	-2.30	-2.50	1.23
	: % change welfare measure P2	-5.08	-4.20	-2.70	-2.89	-3.03	1.49
WTO2	: % change HH income	0.79	1.01	0.99	1.70	1.31	
	: % change income share to poorest	-7.24	-3.04	-1.67	-1.82	-2.14	1.63
	: % change headcount P0	-5.16	-2.06	-0.89	-0.95	-1.18	0.90
	: % change poverty gap P1	-1.87	-2.04	-1.11	-1.82	-1.81	1.38
	: % change welfare measure P2	-2.17	-2.23	-1.39	-2.30	-2.24	1.71

**Key:**

Unilateral reductions lower sector tariffs 1992-4 to 1997 levels

SADC7 FTA

WTO1 lowers all tariffs, export taxes and agricultural production subsidies by 40%

WTO2 EUSA FTA extended to all SADC7 countries

Real household income net of taxes defined in runGTAP/VIEW/BASE DATA

Extremely poor as defined in LCMS Report (1996: 126)

P0 = headcount

P1 = poverty gap

P2 = Foster, Greer and Thorbecke index for within sector poverty

See Deaton (1997: 144-8)

HHMH household metropolitan high income

HHML household metropolitan low income

HHNU household non-metropolitan urban

HHNR household non-metropolitan rural

The key findings on the poverty impact of the four trade shocks considered can be summarised as follows:

- The unilateral tariff reforms in Zambia were strongly income improving and poverty reducing, but the distributional effects were anti-poor. The unilateral tariff reforms were biased towards the metropolitan sectors and against the non-metropolitan sectors, particularly the poorest rural sector.
- SADC7 FTA combined had a surprisingly large favourable income effect with a pro-poor bias. A large component of the income effect was from improved employment of unskilled labour.
- The WTO1 shock had strong and income effects and a pro-poor bias towards non-metropolitan households.
- The WTO2 (EUSADC7 FTA) had modest income effects and a pro-poor bias.

The first finding, that the unilateral tariff reforms had an anti poverty metropolitan bias is counter to the received wisdom from the case study literature. It arises from the calculations above for two reasons. First, in a world of stable levels of protection, the unilateral tariff reforms in Southern Africa open these economies to an increased demand for imports. Second, given the fall in Southern African tariffs, the marginal source for these imports was from the SADC7 countries themselves. Whilst intra trade in Southern Africa is not particularly strong for all of the well-known reasons, it is not absent either, as noted in earlier studies, for example Evans (1997,1998). In the case of the unilateral tariff reforms, it appears from these preliminary estimates that the balance of net change in output in Zambia is like trade diversion and against comparative advantage. This observation is confirmed in Table 8 below:

**Table 8 Change in output in Zambia %:  
Trade Policy Shocks**

Sectors	Unilateral	EUSA FTA	SADC7 FTA	WTO1	WTO2
Crops	-0.66	0.00	0.32	0.74	1.61
Livestock	-0.72	0.01	0.07	2.24	3.08
Food_prod	-1.02	0.00	0.08	3.24	5.37
Natres_prod	0.34	0.01	0.14	0.67	0.39
Textiles	6.20	-0.01	-0.80	-3.32	4.31
Apparel	1.24	-0.12	-1.39	-1.18	0.05
Oth_man	-2.34	-0.04	1.06	1.36	-2.78
Post_tele	-2.02	0.01	0.24	0.86	0.14
Trade_trans	-2.00	0.01	0.27	0.79	0.06
Oth_Services	-2.08	0.02	0.25	0.27	-0.31



As can be seen from Table 8, the preliminary results show that sectors associated with inefficient import substitution, namely textiles and apparel, show modest output increases with the unilateral regional tariff reforms compared with the main export sectors. The preliminary finding on the income side, that the unilateral tariff reforms in the SADC7 countries may have been neutral or even regressive in Zambia. This is in contrast to the possible pro-poor income benefits of the SADC7, WTO1 and WTO2 reforms, and strengthens the case for negotiating credits in the proposed WTO1 and WTO2 reforms.

## 6 Conclusions

The first and obvious point is that all of the above is preliminary because of:

- preliminary data, preliminary selection of sectors and regions
- service sector tariff equivalents excluded from the calculations
- simplistic modelling of complex trade policy reforms such as tariff quotas
- a string of other modelling simplifications, such as global rather than regional estimates of Armingtons and the extreme assumption of a perfect elasticity substitution between exportables targeted for domestic and export markets

Second, whilst the Zambia results are interesting, the particular disaggregation of households retains a strong metropolitan/non-metropolitan dichotomy. Further disaggregation may be warranted to capture more of the income distribution impacts on poverty. For example, breaking HHML into a medium and low income component, and breaking the HHNU HHNR into high and low income groups, would increase the sensitivity of the household income to factor income changes.

Third, there are a number areas of policy change where trade has an important bearing on the income poverty consequences that could be estimated for Zambia in a regional and country context. These areas range from debt relief to mineral sector rehabilitation to the consequences of infrastructure investment that affect both country, regional and international transport costs for the SADC7 countries.

Both the GTAP dataset constraints and the runGTAP modelling constraints limit the above preliminary findings. They suggest an alternative trade and poverty research strategy in which the CGE model and country case study interface is first explored with country models, without the constraints of the standard GTAP dataset aggregation. An obvious choice for a starting model is the standard model Lofgren, Harris and Robinson (2001) and the Hausner (1999) SAM for Zambia. At a later point, such country models could be tied into a global model using the GTAP dataset for scenario calculations using a common sectoral classification and country models with disaggregation consistent with the SAM data sources. This would provide a better basis for a bottom-up strategy for the analysis of trade and poverty impacts.

## References

- Andriamananjara, S. and Hillberry, R., 2001, 'Regionalism, trade and growth: the case of the EU-South Africa Free Trade Arrangement', *US International Trade Commission, Office of Economics Working Paper* No 2001-07-A, July, Washington, D.C.
- Arndt, C. *et al.*, 2000, 'Analysing the South Africa-European Union free trade area: a multi-country general equilibrium perspective', paper prepared for the TIPS/IDRC Southern Africa Regional Symposium, Johannesburg, South Africa, September 17
- Davies, R., 1998, 'Global trade analysis for southern Africa: the resource allocative effects of free trade areas in southern Africa', *Paper presented to the EAGER Semi-Annual Workshop*, Johannesburg, South Africa
- Deaton, A., 1997, *The Analysis of Household Surveys: a microeconomic approach to development policy*, Baltimore and London: Johns Hopkins Press for the World Bank
- DfID, 2001, *White Paper on Globalisation and Poverty*, London: Department of International Development, (draft)
- Dollar, D. and Kraay, A., 2000, 'Growth is good for the poor', mimeo, Washington, D.C.: World Bank
- Evans, D., 1997, 'Study of the impact of the removal of tariffs for the free trade area of the Southern African Development Community SADC', *Occasional Paper*, No. 5, Commonwealth Secretariat, December. Based on a report prepared for the SADC Industry and Trade Co-ordination Division SITCD, with the Assistance of the Commonwealth Secretariat, 1996
- 2000a, 'Trade employment and poverty in southern africa: the analysis of winners and losers in retrospect and prospect', TIPS Southern Africa Regional Forum, Glenbourne Lodge, Johannesburg, September
- 2000b, 'Options for regional integration in southern Africa,' *The South African Journal of Economics, Die Suid-Afrikaanse Tydskrif vir Ekonomie*, Vol 68 No 4, 2000, December – Desember
- Evans, D. with M.-J. Cortijo, 1998, '*The regional trade model of southern Africa: new data and results*', final report to the IDC and the DTI, Pretoria, May
- Government of Zambia, 2000, 'Interim poverty reduction strategy paper', Ministry of Finance and Economic Development, Lusaka, 7 July
- Hanmer, L.C., Pyatt, G., White, H., 1999, 'What do the World Bank's poverty assessments teach us about poverty in sub-Saharan Africa', *Development and Change*, Vol 30 No 4: 795–823
- Hausner, U., 1999, 'A 1995 Social Accounting Matrix for Zambia', *TDM Discussion Paper*, No 49, Washington, D.C.: IFPRI
- Hertel, T. *et al.*, 2000, 'Multilateral trade liberalisation and poverty reduction', October 10, mimeo, Purdue University

- Kanbur, R., 2001, 'Economic policy, distribution and poverty: the nature of disagreements', Cornell University, draft, December 2000, minor changes January 2001
- LCMS, 1996, *Living Conditions Monitoring Survey Report*, Republic of Zambia: Central Statistical Office
- Lewis J. *et al.*, 2001, 'Free trade agreements and the SADC economies', paper presented to the Fourth Annual Conference on Global Economic Analysis, Purdue University, June
- Loefgren, H., Harris, R.L. and Robinson, S., 2001, 'A Standard Computable General Equilibrium Model (CGE) in GAMS', *TMD Discussion Paper*, May
- McCulloch, N. *et al.*, 2000, *Poverty, Inequality and Growth in Zambia During the 1990's*, Washington, D.C.: World Bank
- Stevens, C., 1999, 'Liberalisation and poverty', *OXFAM-IDS Research Report*, Commissioned by DFID
- Wang, H.K and Winters, L.A., 2000, 'Putting "Humpty" together again: including developing countries in a consensus for the WTO', *CEPR Policy Paper*, No 4
- Whalley, J., 1999, 'Quantifying the impacts of WTO negotiating rounds: lessons for the millennium round and developing countries from the Uruguay Round models', very rough draft, Universities of Warwick and Western Ontario and the NBER
- White, H., 1999, 'A black sheep among the reformers: programme aid to Zambia', *SIDA Evaluation Report*, Evaluation of Swedish Programme Aid, Stockholm: Institute of Social Studies
- 2000, 'Pro poor growth', mimeo, Brighton: Institute of Development Studies
- White, H. and Anderson, E., 2000, 'Growth versus distribution: does the pattern of growth matter?', mimeo, Brighton: Institute of Development Studies
- Winters, L.A., 2000, *Trade and Poverty*, Geneva: World Trade Organisation
- World Bank, 1994, *Zambia Poverty Study*, Washington, D.C.: World Bank