



# Trade Policy and Transport Costs in Tanzania

by

**Josaphat Kweka**

## **Abstract**

Recent studies on trade policy for low-income countries have established that high transport costs associated with poor quality infrastructure in countries such as Tanzania represent a barrier to trade and an additional source of protection to domestic producers of import competing goods. Using the analytical framework applied by Milner et al (2000) to Uganda, this study reports results for Tanzania on transport costs as a barrier to trade. The estimates are used to identify sectors most vulnerable to transport costs. The results shows that although substantive trade policy reforms have succeeded in lowering average tariff levels and associated protection, transport costs increase the level of protection for almost all sectors; notably Beverages and Tobacco, cash crops, manufactured foods and building materials. In addition, decomposition of disprotection (taxation) effects on exports shows that measures to reduce transport cost burdens on exporters are essential to improve export performance for Tanzania. Simulation of the protection effects under the new EAC Customs Union shows that overall the level of tariff protection may increase but any adverse impacts could be offset by greater efficiency at Customs and ports and additional investment to reduce infrastructure-related transport costs.



# Trade Policy and Transport Costs in Tanzania

by

**Josaphat Kweka**

**JEL Classification:** F14, O10, O55

**Keywords:** Effective Protection, Transport Costs, Trade, Tanzania

## Outline

1. Introduction
2. Trade Policy and Performance since the 1990s
3. The Transport Sector in Tanzania
4. Methods and Data
5. Estimates and Results
6. Conclusions and Policy Implications

## The Authors

At the time of writing, Dr Kweka was a Research Fellow at the Economic and Social Research Foundation (ESRF), Dar-es-Salaam, Tanzania.

## Acknowledgements

An earlier version, 'Transport Cost and Trade Policy in Tanzania', was prepared as an ESRF Draft Report (October 2004) for the CREDIT project on 'Trade and Transport Costs' as one of 23 projects funded by EC-PREP, a programme of research sponsored by the UK Department for International Development. All EC-PREP research studies relate to one or more of the six focal areas of EC's development policy in the context of their link to poverty eradication. EC-PREP produces findings and policy recommendations which aim to contribute to improving the effectiveness of the EC's development assistance. For more information about EC-PREP and any of the other research studies produced under the programme, please visit the website [www.ec-prep.org](http://www.ec-prep.org).

# 1 INTRODUCTION

Although trade policy has not featured prominently in Tanzania's Poverty Reduction Strategy Paper (PRSP), it is recognised that trade can play an important role in poverty reduction.<sup>1</sup> Central to this role is increasing exports (especially, in Africa, of agricultural products from which rural households derive incomes) and the ability of sectors to adjust to increased competition following liberalisation of imports. It is also recognised that trade liberalisation does not ensure that exports will increase, or that import-competing sectors will be able to adjust smoothly. In general, domestic supply side constraints have increasingly been identified as constituting major impediments to export growth in low-income Sub Saharan African countries such as Tanzania. One explanation is that transport costs represent a significant burden that constrains export competitiveness.

In Tanzania, policy makers are increasingly prioritising investment in transport infrastructure as one of the ways to achieve the development objective of poverty reduction (rural road transport is identified as one of the priority sectors in the PRSP). For example, the government policy to promote agriculture (peasant farming), includes subsidizing transportation of agricultural inputs (especially fertilizers) to the biggest grain producing regions in the southern part of Tanzania. Since Tanzania exports mostly traditional agricultural products, the bad road network in the rural areas imposes high costs of freighting goods to the market centres and eventually to the ports. The high transport cost will therefore reduce producer farm gate price or increase the price paid by buyers, hence impair trade competitiveness. Likewise, high transportation costs on imported goods widen the wedge between international and domestic price of imports beyond the import tariff, thereby providing additional source of protection to the domestic import competing sectors. Clearly, such protective effects can compromise the contribution of trade to poverty reduction. This study considers the importance of transport costs as impediments to trade in Tanzania, measuring transport costs in an effective protection framework, applying the analytical framework developed and applied to Uganda in Milner *et al* (2000).

The paper is organised as follows. Section 2 reviews aspects of trade policy performance for Tanzania and highlights trends in transport costs. Section 3 describes the transport sector in Tanzania, highlighting features and reforms in the transport system, which have concentrated on restructuring and liberalisation (with moderate investment in infrastructure) but with less

---

<sup>1</sup> For a review of Trade content of PRSPs, see Gilson and Hewitt (2003). In the case of Tanzania, a study by Booth and Kweka (2004) addresses the linkage between trade and poverty.

impact on reducing transport costs that will enhance trade competitiveness. Section 4 explains the analytical framework used in estimating protection and the data required. The results are presented in section 5 before concluding in section 6.

## **2 TRADE POLICY AND PERFORMANCE IN THE 1990s**

Trade policy reforms were intended to move Tanzania away from a centrally-planned to a market-determined and private-sector-led economic development with limited government intervention. This was necessarily a gradual process. A number of policy and institutional reforms were adopted during the 1990s, leading to a more open trade regime. First, trade reforms have succeeded in lowering of import tariffs (Table 1) with a growth in imports, but have not been effective in promoting exports. Reductions in tariffs will only be effective if accompanied by complementary measures to address non-tariff barriers to imports or supply-side constraints to exports. Although the New Trade Policy for Tanzania (URT, 2003) seeks to address such limitations, the issue of transport costs due to inefficient infrastructure is neither stated as an explicit or immediate concern.

Second, the agenda of trade reforms has yet to be completed. Further harmonisation of the tariff structure is needed to enhance economic efficiency, and continued improvements are needed in agricultural marketing and the supply of inputs. On import liberalisation, the current agenda is towards further elimination of non-tariff barriers by improving custom administration and management of cross-boarder trade. In the agriculture sector, the main aim of policy has been to increase agricultural production and improve marketing and transport. However, this agenda is by no means complete, and government actions are not always consistent with it.

Third, as the National Trade Policy (NTP) aims to achieve trade competitiveness, implementation is complex. Achieving competitiveness requires, *inter alia*, economy-wide improvement in productive capacity and institutional efficiency (coordination of various public and private actors) in both of which Tanzania has disappointingly poor performance. Policies to enhance agriculture (the largest contributor to exports) appear very attractive on the paper but in practice peasant farming has had little support. On the institutional front, sector coordination to enhance trade performance has been poor.

**Table 1: Import Tariff as a % share of c.i.f. value (1998-2001)**

<b>Product</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>Average</b>
Livestock	19.3	19.9	21.0	18.8	19.7
Food Products	9.5	12.3	11.4	8.7	10.5
Coffee, tea, cotton & sugar	15.3	15.7	12.7	14.1	14.4
Fish Products	14.3	3.2	3.9	4.6	6.5
Manufactured foods	13.0	11.5	10.9	12.4	11.9
Beverages and Tobacco	18.3	19.6	16.4	2.5	14.2
Mineral Products	1.4	1.5	4.7	1.4	2.2
Chemical Products	5.5	5.0	5.2	3.3	4.8
Forestry Products	10.4	8.8	7.6	8.7	8.9
Building Materials	14.8	10.5	15.0	10.5	12.7
Textile and clothing and leather	22.0	17.8	17.9	17.0	18.7
Metal products and machinery	7.4	5.3	4.7	3.3	5.2
Transport equipment	7.2	6.1	7.9	7.0	7.0
Other manufactures	12.0	10.2	10.6	7.5	10.1
<i>Average</i>	8.0	6.9	7.7	5.8	7.1

**Source:** Own computation from Customs Data (various years)

### ***The Thrust of the New Trade Policy (NTP)***

The main trade agenda for Tanzania has been to formulate a policy that will enable Tanzania to boost exports, raise growth and attain development and poverty reduction goals, given domestic supply constraints. The New Trade Policy aims to transform the economy from a supply-constrained one into a competitive export-led entity responsive to integration and wider participation in the global market. Although the NTP has managed to put in place a comprehensive detailed implementation program based on identified problems, there are debates about getting the priority and strategy right, i.e. what needs to be done first by the government to make the trade policy effective (see Booth and Kweka, 2004).

A major issue in trade policy reforms is export promotion – concerted efforts to support export marketing and development in order to achieve a favourable balance of trade by increasing export earnings. A number of programs and schemes were designed, but generally were ineffective as they were not accompanied by the necessary action to address domestic supply constraints. The Government of Tanzania’s trade-policy agenda includes attempting to

ameliorate this situation in five distinct ways. First, export diversification to promote non-traditional exports. Second, emphasise value-added in agricultural and mineral raw exports to increase value of exports. Third, review of the legal and regulatory regime (e.g. BEST programme) with a view to encouraging and simplifying export procedures including decisions to remove export taxes and permits and simplify export procedures (e.g. lifting of the ban to export cereals). Fourth, put in place Export Development Programmes to enhance export facilitation, marketing and promotion activities. Fifthly, address the structural impediments that impinge on trade performance. These include, among others: lack of trade facilitation, insufficient quality and quantity of traded goods, poor standards, infrastructure limitations, uncompetitive market environments and other production constraints such as high taxes and power tariffs and an unstable supply of utilities (for details see Amani *et al*, 2003). Recently the Government has reinstated the export credit guarantee scheme, which is being implemented by the Bank of Tanzania, initially planned for the traditional agricultural exports only. These measures have yet to produce significant results.

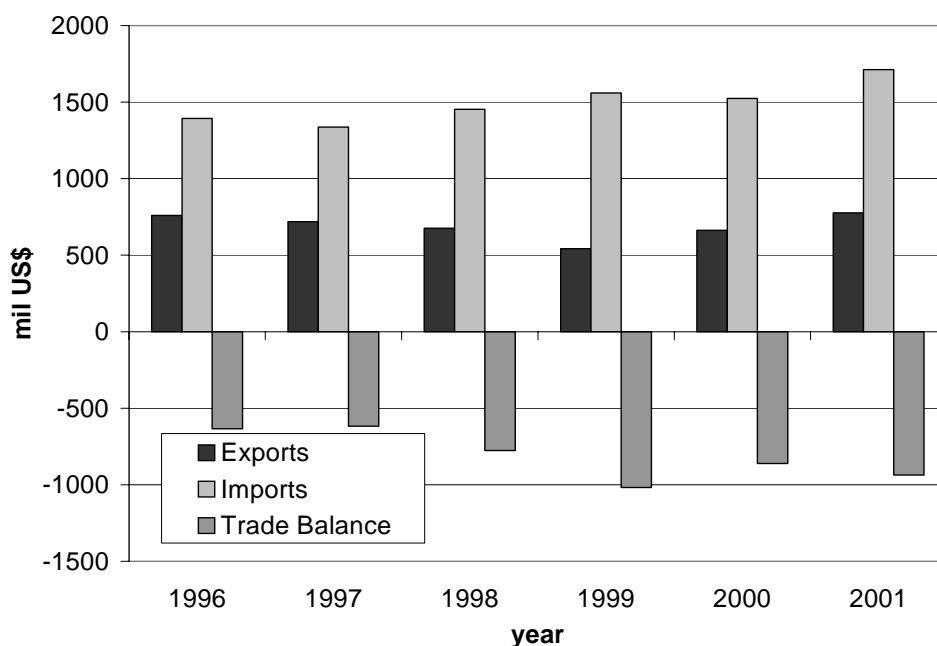
### ***The Structure and Performance of Tanzania's External Trade***

Figure 1 shows the volume of Tanzania's exports and imports over 1996-2001; the trade balance is negative throughout the period. The worst year during this period was 1999 when the value of exports amounted to roughly one third of the value of total imports, resulting in a trade balance deficit of over one billion US\$. Exports have been picking up over the last three years, after a continuous decline in previous years, but not by enough to make up for what seems to be a steady positive trend in imports, leading to an increasing negative trade balance. A further reduction of import tariffs is likely to exacerbate this worrying situation, at least in the short run. In recent export growth, major agricultural crops have played a declining relative role and goods exports declined relative to services, especially tourism, with services earnings reaching between 43 and 48 per cent of total export earnings in this period. This reflects the slump in world prices for agricultural products as well as the fast growth of the mining and tourism sectors (see Wuyts, 2003; Kweka *et al*, 2003).

The structure of exports has substantially changed in recent years. By the end of 2002 the share of non-traditional exports had increased to 78% of the total exports, whereas traditional exports accounted for 60% in 1998 (Bank of Tanzania, 2002). This increase is mainly due to large-scale investment in the mining sector (accounting for 38% of total export value in 2002). At the same time, traditional exports have declined both as a share of total exports and

value, mainly as a result of low world market prices<sup>2</sup>. The structure of traditional exports has also changed significantly in the last 5 years. The dominant share of coffee and cotton before 1990 has been declining both in favour of reviewed cashew nut industry and also due to overall decline in world prices.

**Figure 1: Tanzania's Trade Balance 1996 - 2001**

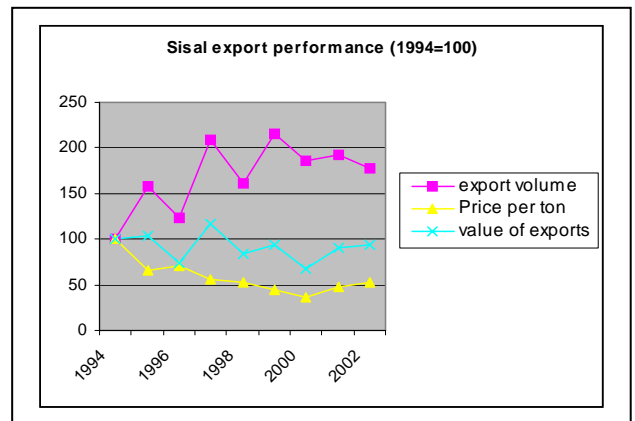
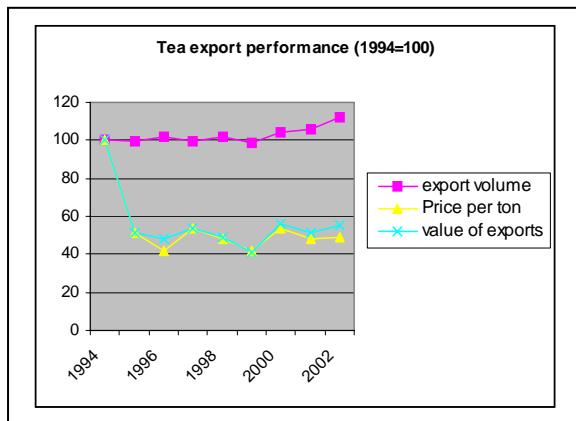
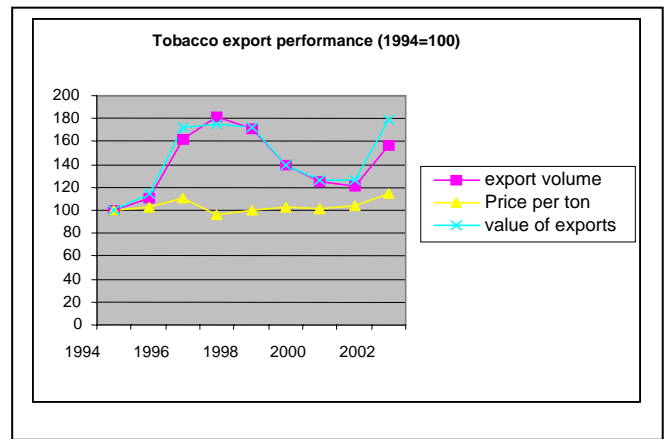
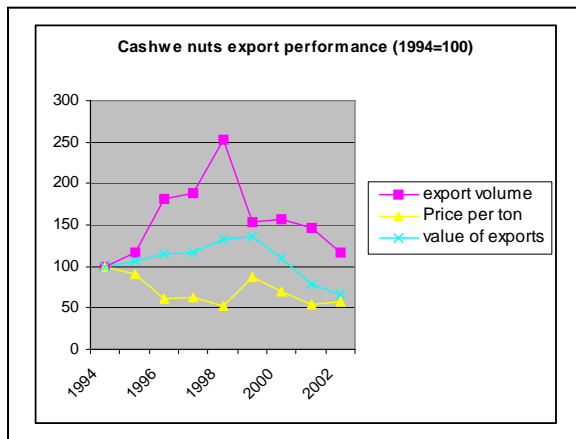
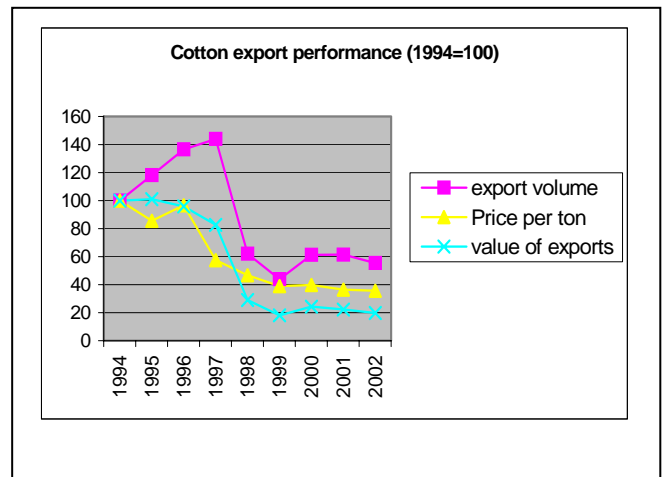
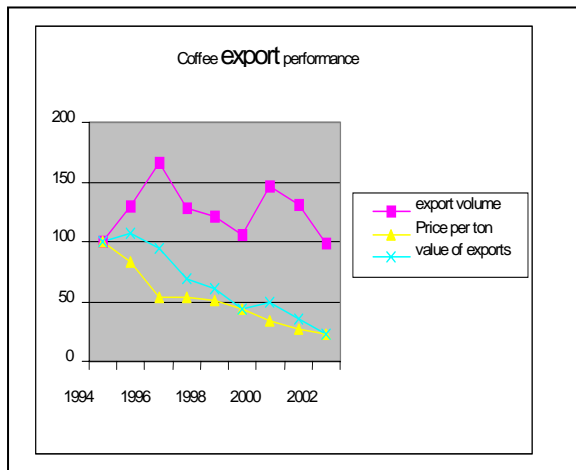


*Source:* Bank of Tanzania (various years)

Figure 2 shows the performance of major cash crops for Tanzania. With the exception of tea, many cash crops experienced a significant fall in export volume especially in 1998/99 (most serious for cotton) after a period of sustained growth in the early 1990s due to a decline in international prices. While the negative impact of price on the value of exports is significant for tea, it is less so for coffee, and was negligible for tobacco exports whose value increased due to a rise in volume exported. Both price and volume have impact on the value for sisal and cashew nuts. It is important to note, however, that the recovery experienced in the early 1990s (starting from late 1980s) is attributable to increased volume of exports due to increased production rather than price.

<sup>2</sup> Tanzania's traditional exports are coffee, cotton, sisal, tea, tobacco and raw cashew nuts. Its non-traditional exports include petroleum products, minerals and manufactured goods.

**Figure 2: Export Performance for major crops (1994-2002)**



**Source:** Own computation using Data from the Economic Survey (various years).



Clearly, there has been a fall in real prices for all major export crops relative to the 1994 prices. For this reason, cash crop exports have had a limited impact on the welfare of poor farmers. The fall in real price is more pronounced in the case of the three biggest cash crops - cotton, coffee and tea - where prices fell by more than 50% from 1994 to 2000.

### **Regional Integration for Tanzania**

Regional integration agreements (RIAs) generally result in a lower tariff regime as tariffs on trade between members are lowered or eliminated, and any common external tariff (CET) is likely to be lower than initial tariffs for many members. Tanzania has actively pursued RIAs and is currently a member of SADC and EAC (after pulling out of COMESA in 2000). Although there is much enthusiasm that RIAs will be beneficial to Tanzania in the long run, the short run effects are less favourable as there is very weak export potential to the region, given supply constraints and common structure (all produce similar agricultural exports). Tanzania's intra-regional trade with other EAC (and SADC) members is low, as is the case for most sub-Saharan African countries in RIAs (Lyakurwa *et al.* 2001: 19).

In the case of EAC where RIA is more advanced than in SADC (a Custom Union for EAC was signed in March 2004), Kenya is the dominant regional supplier (over 80% of regional imports for Tanzania and Uganda). Tanzania imports more goods than it exports to the regional market. In 1999, for example, the volume of Tanzania's imports from the region was 265% higher than exports (Musonda, 2000). There is very limited, albeit increasing, trade between Tanzania and Uganda (Rajaram *et al.*, 1999: 41). About 60% of Tanzania's exports to Kenya consist of raw cotton and fresh fish, whereas Tanzania's imports from Kenya are mainly detergents, beer (10%), iron and steel (13%).

### **3 THE TRANSPORT SECTOR IN TANZANIA**

Existing evidence suggests that producers in sub-Saharan Africa often face a transport disadvantage against their competitors. Though the size and nature of this disadvantage varies from country to country, the international transport costs margin seems to be higher for imports than for exports. However, internal transport costs incurred in getting exports from production areas through ports and out of the country, and imports from their point of entry into the country to producers and consumers, is in most cases a more serious source of competitive disadvantage than inter-country transport costs (UNCTAD, 1999). Furthermore,

high international and internal transport costs reduce returns to producers in Africa as they typically sell at a given world price set in hard currency.

By many standards, the transport sector in Tanzania is poor, inefficient and highly inadequate. The sector has averaged about 5% of GDP over 1990-2002, declining from 8% in the early 1980s, although the share of government spending allocated to infrastructure development has been relatively small (Table 2).

**Table 2: Contribution of Transport Sector to the Economy (selected years)**

Year	Percentage Values		Indices (1990=100)	
	%Share of GDP	%Share of Govt Spending	%Share of GDP	%Share of Govt Spending
1980	7.8	9.0	144.6	304.9
1990	5.4	3.0	100.0	100.0
1995	5.7	4.1	105.6	138.8
1996	5.6	4.6	103.7	156.3
1997	5.1	4.4	94.4	148.2
1998	4.8	8.4	88.9	285.0
1999	4.9	7.6	90.7	258.0
2000	4.9	7.1	90.7	241.0
2001	4.7	6.4	87.0	214.8
2002	4.7	6.9	87.0	234.0

**Source:** Own computation from *Economic Surveys* (various years)

As part of its response to adopting economic reforms, the government launched the 'Transport Sector Recovery Programme' in 1987 that included restructuring and implementing reforms aimed at loosening the regulatory framework and moving to market based operations, management and determination of freight rates. The reforms were also intended to bring in more private players in the provision of services to, and operation of, transport facilities. In the case of road transport, the government is implementing the 'Integrated Road Programme' (IRP) focused on investment, resource mobilization, institutional improvement and market liberalization to improve the poor state of the road network. TANROADS (the national road agency) and the Road Fund Board have been formed to oversee implementation of these programs.

As regards railways, TRC have been implementing a number of major restructuring programmes including the Railway Restructuring Project (RRP) in 1991 and Institutional Change (IC). These measures have impacted favourably on the performance of the railways and enhanced their commercial status, making them attractive candidates for privatisation. Similar restructuring and reforms are being implemented by TAZARA. In the case of the Port Authority, the DSM Port Development Programme coordinated by the World Bank started in 1985, and in 1994 the authority adopted a commercialisation strategy which has been slowly implemented since then. Liberalisation of the domestic air transport industry for wider participation of the private sector started in 1992. Tanzania's transport policy does not explicitly address trade concerns but has focused on reforms that could lead to reductions in transport costs.

The poor state of infrastructure contributes significantly to the high cost of domestic transport. In the case of international trade, high transport cost may provide protection to import competing goods and limit export competitiveness. Following the reforms described above, most freight rates and passenger fares are market determined. Internal overland transport costs have shown mixed trends: freight rates for railways have slightly increased while road transport real freight rates have declined (in part as a result of improvement in the road infrastructure). International sea transport costs have been decreasing in real terms since the mid 1990s, but air freight rates have remained constant.<sup>3</sup> Given the introduction of new private operators in the air industry and successful privatisation of the ATC, the rates are likely to increase.

Freight performance and the efficiency of transport services has improved notably following the reforms, with annual growth rates exceeding 6% on average in the late 1990s compared to about 1% in the 1980s (see *Economic Survey*, various years). Freight through Dar es Salaam (DSM) port has been increasing and the port has been ranked by an independent assessment as the most efficient port in the East and Southern Africa region in terms of container handling and shipment time (*Daily News*, February 2004).

#### **4 METHODS AND DATA**

As a result of protection, a price wedge between imports and domestically produced goods occurs. The effective rate of protection (ERP) captures the effects of tariffs on outputs and on inputs to identify protection of the value added. Consider first producers of import-competing

---

<sup>3</sup> With the exception of human remains, precious gemstones, Bank of Tanzania cargo or minerals, all cargos are charged at the same rate depending only on weight. Between 1992 and 1994 the average freight rates for ATC increased by 5% for the below 45 KG cargo and by 6% for above 45 KG cargo; and by 18.5% and 22.8% respectively between 1994 and 2002. Rates did not change between 2002 and 2005.

goods. In the absence of ‘natural’ barriers to trade the effective protection afforded to the value added of commodity  $j$  by tariffs on product  $j$  and inputs  $i$  is given by  $e_j$ :

$$e_j = [t_j - \sum_i a_{ij}t_i]/[1 - \sum_i a_{ij}] \quad [1]$$

The  $t_j$  and  $t_i$  are *ad valorem* tariff rates on imported final output ( $j$ ) and intermediate inputs ( $i$ ) respectively. The  $a_{ij}$  is the technical coefficient that represents the share of input  $i$  in the cost of producing one unit of output  $j$ . We can allow for non-tradables by adjusting the value added measure in the denominator.<sup>4</sup> Equation [1] measures the protection afforded to domestic producers competing with imports of  $j$ .

To take into account the effect of high transport costs we distinguish between internal or overland ( $d$ ) and international ( $s$ ), sea or air, transport costs (TC), measured as *ad valorem* freight rates on output  $j$  or input  $i$ . Importers incur international transport costs for freighting goods up to the point of entry and additional domestic transport cost for moving or distributing the goods to their final consumption point. Exporters incur transport costs in moving export merchandise to the port and additional international costs of freighting them to their final point of sale. From the perspective of a producer of import-competing goods, the relevant issues are the difference in TC (for getting the product to the point of sale) between domestically produced and imported goods, defined as  $[s_j - d_j]$ . In general  $d_j = 0$ , as production is at the point of sale or imports and domestic goods incur the same local TC (if production is at the point of entry). The major exception would be if domestic production is in the interior (e.g. Mwanza) whereas sale is at the point of entry (e.g. DSM). Thus, nominal protection due to transport costs ( $NRPT_j$ ) will be within the range  $s_j$  and  $[s_j - d_j]$ , and the latter could be negative (i.e. disprotection). Both of these values are reported in Tables 4.1 – 4.3.

The additional  $TC$  of importing inputs rather than sourcing locally, defined as  $[s_i - d_i]$  for input  $i$  is required to calculate effective protection due to transport costs ( $ERPT_j$ ). Where inputs are not available locally,  $d_i = 0$ , and  $s_i$  represents  $TC$  element of using imported inputs (and reduces effective protection on final output). To examine the effects of transport cost in estimating levels of protection, the ERP equation can be extended to incorporate any price raising factors such as freight costs.

---

<sup>4</sup> Two ways have been outlined in the literature to deal with non-tradable goods in the estimation of protection: the Balassa and Corden Method. Traded inputs are subtracted from the value of output under the Corden method, while both traded and non-traded inputs are subtracted under the Balassa method. Following Milner *et al* (2000), we use the latter approach assuming that all non-traded inputs are supplied to the production process at a constant cost.

$$ERPT_j = \{[s_j - d_j] - \sum_i a_{ij} [s_i - d_i]\} / [1 - \sum_i a_{ij}] \quad [2]$$

Tariffs are usually levied on the import price inclusive of TC ( $s$ ), and this should be allowed for. To measure combined effective protection due to tariff and freight charges we have (omitting the denominator for convenience):

$$e_j^T = (t_j - \sum_i a_{ij} t_i) + \{[s_j - d_j] - \sum_i a_{ij} [s_i - d_i]\} + (s_j t_j - \sum_i a_{ij} t_i s_i) \quad [3]$$

Equation [3] gives the total protection that would result from both tariffs and transport costs under the c.i.f. valuation system. That is, the first term on the right hand side is the tariff protection effect only, the second term is the natural protection effect only, and the last term is the protection due to interaction of tariffs and transport costs.

In the case of exports, transport is a cost that can be interpreted as a tax on exports – excess TC are an additional cost (relative to competitors) of getting the product to the point of sale, defined as  $[s_j + d_j]$ . Only where export production is at the point of exit do we have  $d_j = 0$ ; this is most likely to apply to products exported by air. In general, nominal *taxation* due to transport costs ( $NTT_j$ ) is  $[s_j + d_j]$ . These estimates are reported for specific major export commodities of Tanzania for selected years in Table 5.7; and for the 14 sectors in Table 4.4.

Tanzania exports mostly relatively unprocessed commodities and few intermediate inputs are actually used. Insofar as inputs are imported, such as fertilizer, production costs are increased by  $[s_i + d_i]$  for input  $i$ . This is required to calculate effective taxation due to transport costs ( $ETT_j$ ). Measures that protect import-competing producers of a given good disprotect, or tax, exporters using that good as an input. If domestic producers are exporters of  $j$ , we simply set  $t_j = 0$  in [1] to capture the negative protection of exports. It will be convenient to redefine this measure as positive, and interpret it as net taxation of exports:

$$T_j = \sum_i a_{ij} t_i / [1 - \sum_i a_{ij}] \quad [4]$$

All TC on final products are a cost to exporters, so [2] becomes:

$$ETT_j = \{[s_j + d_j] + \sum_i a_{ij} [s_i - d_i]\} / [1 - \sum_i a_{ij}] \quad [5]$$

To measure combined effective taxation of exports due to tariff and freight charges we have (omitting the denominator for convenience):

$$ETX_j^T = \Sigma a_{ij}f_i + \{[s_j + d_j] + \Sigma_i a_{ij}[s_i - d_i]\} + \Sigma a_{ij}t_i s_i \quad [6]$$

Estimation of NRP is simple and straightforward if one has data on the value of imports and their respective import duty charges. Calculation of ERP requires information on the input-output coefficients ( $a_{ij}$ ) obtained from the national Input-Output (I-O) Tables. In the case of Tanzania, the 1992 Input-Output Table has been used. Two problems are obvious in such an exercise. First, although we compute ERP for different years, it is not possible to get I-O tables for each year. However, in the context of countries where technological progress changes slowly, the I-O coefficients are not expected to change within the short to medium term. Second, matching I-O sectors with the customs-based commodity classification may be difficult and there is a possible *aggregation bias*. The estimates should be considered as an approximation. We aggregated the 79x79 I-O Table into a 20x20 I-O Table containing 14 tradable sectors (1-14) and 6 non-tradable sectors (15-20) and matched the commodities in the customs data (import volumes, values and tax revenue collected) to these 20 sectors (see Appendix Table A4.1).

Data on *ad valorem* freight rates (freight charge per unit value) are difficult to obtain and we rely on data on rail transport costs from the Tanzania Railways Corporation (TRC). This is expressed as freight charges per unit for a range of commodities over 1995 – 2001. The commodities reported by TRC data are matched with the 14 sectors. From the 1992 Input-Output Table we obtained data on the input-output technical coefficient for transport and communication services as a share of output of each sector ( $A_i$ ). We computed a price index of the freight cost for each commodity for the 1998-2001 period to obtain the rate of change in freight costs for each year and for each commodity ( $\Delta_{ti}$ ). This rate of change (expressed as a coefficient) is then used in updating the freight rate per value of output computed from the I-O data (i.e.  $A_i$ ) to obtain an estimate of *ad valorem* freight rate for each year ( $TC_i$ ):

$$TC_i = (1 + \Delta_i)A_i. \quad [7]$$

A similar methodology was followed in deriving *ad valorem* estimates of international transport costs using data from the Tanzania Central Freight Bureau (TCFB) on sea/ocean transport costs per unit. From this, we compute the rate of change in transport cost (corresponding to  $\Delta_i$ ) and apply it to the *ad valorem* freight rates (corresponding to  $A_i$  in equation [7]) for 1992 from Amjadi and Yeats (1995) to obtain *ad valorem* freight rates ( $s$ ) for different commodities in selected years in real terms after being deflated by the Transport

Consumer Price Index in 1992 prices obtained from the Bank of Tanzania.<sup>5</sup> These are rough estimates that can give magnitudes for variation of freight rates across different sectors.

### **Estimates of Transport Costs and Protection**

Table 4.1 reports estimates of international (sea freight) transport costs ( $s_j$ ), based on the costs of shipping imports from Europe to DSM (the main market), or vice versa for exports. Domestic (overland) transport costs ( $d_j$ ) in Table 4.2 represent an average cost of shipping goods from the interior of Tanzania to DSM. The difference ( $s_j - d_j$ ) in Table 4.3 is a measure of the excess cost of shipping foreign goods to DSM compared to domestically produced goods, i.e. nominal protection due to transport costs ( $NRPT_j$ ) for import-competing goods. The sum ( $s_j + d_j$ ) in Table 4.4 captures the cost of shipping goods produced in the interior, as most exports are, to foreign markets, transport costs for exports. (The price index showing changes by year of domestic transport charges is shown in Appendix Table A4.2.) As shown in Tables 4.1 and 4.2, there is a marked difference between the magnitude of international and domestic transport costs, where the former are about twice the size of the later. Lower domestic transport costs reflect in part the extent of subsidies in the public transport sector before reforms (rates were not commercially determined). Most manufacturing and processing industries are concentrated near DSM or other main commercial centres, thus requiring little domestic transport. The cost of domestic transport is borne disproportionately by agriculture products, especially cash crops, mostly produced in the North or West.

Table 4.1 shows that international transport costs have declined slightly between 1998 and 2002, from an average of 12% to 11%, perhaps reflecting increasing competition as a result of (international) liberalisation of the freight industry. In contrast, domestic transport costs increased on average from 4.2% to 6.6% (Table 4.2); the biggest change occurred between 2000 and 2001, when commercial freight rates for TRC replaced subsidised. Sea freight costs for Beverage and Tobacco, Cash Crops and Foods sectors are relatively high (mostly over 15%), while Fish, Chemical products, Textiles and Clothing, Transport equipment, Metals and Machinery face relatively low costs (mostly below 6%). Overland costs are relatively high for Beverage and Tobacco, Livestock, Cash Crops, Chemical products and Building materials (over 6%), these are mostly bulky (low value to volume ratios); Foods, Fish and Forestry products face relatively low costs (below 3%).

---

<sup>5</sup> Bank of Tanzania (2002), Economic and Operations Report for the Year ended 30<sup>th</sup> June, 2002.

**Table 4.1: International (sea) Freight rates ( $s_j$ )**

Sector	1998	1999	2000	2001	2002	Average
Livestock	0.062	0.058	0.058	0.055	0.070	0.060
Food Products	0.179	0.184	0.163	0.116	0.119	0.152
Coffee, tea, cotton & sugar	0.276	0.254	0.287	0.343	0.162	0.265
Fish Products	0.056	0.058	0.058	0.049	0.066	0.057
Manufactured foods	0.166	0.163	0.152	0.142	0.173	0.159
Beverages and Tobacco	0.251	0.266	0.250	0.209	0.260	0.247
Mineral Products	0.103	0.109	0.107	0.100	0.115	0.107
Chemical Products	0.059	0.059	0.050	0.045	0.061	0.055
Forestry Products	0.130	0.134	0.136	0.116	0.178	0.139
Building Materials	0.134	0.132	0.140	0.105	0.137	0.130
Textile and clothing and leather	0.069	0.063	0.062	0.074	0.059	0.065
Metal products and machinery	0.057	0.061	0.060	0.058	0.045	0.056
Transport equipment	0.057	0.060	0.059	0.040	0.052	0.054
Other manufactures	0.102	0.100	0.107	0.080	0.104	0.099
Average	0.121	0.122	0.121	0.109	0.114	0.117

**Source:** Calculated as described in the text.

**Table 4.2: Domestic (overland) Freight rates ( $d_j$ )**

Sector	1998	1999	2000	2001	2002	Average
Livestock	0.071	0.096	0.102	0.097	0.110	0.082
Food Products	0.027	0.028	0.029	0.036	0.036	0.028
Coffee, tea, cotton & sugar	0.058	0.069	0.073	0.077	0.083	0.064
Fish Products	0.000	0.000	0.000	0.000	0.000	0.000
Manufactured foods	0.006	0.009	0.011	0.012	0.012	0.009
Beverages and Tobacco	0.092	0.099	0.105	0.115	0.121	0.095
Mineral Products	0.041	0.060	0.064	0.069	0.073	0.054
Chemical Products	0.055	0.081	0.087	0.095	0.100	0.073
Forestry Products	0.025	0.027	0.028	0.029	0.031	0.026
Building Materials	0.071	0.082	0.090	0.181	0.150	0.100
Textile and clothing and leather	0.023	0.008	0.008	0.009	0.010	0.011
Metal products and machinery	0.032	0.044	0.047	0.044	0.050	0.039
Transport equipment	0.031	0.043	0.045	0.043	0.049	0.038
Other manufactures	0.059	0.060	0.086	0.103	0.104	0.072
Average	0.042	0.050	0.055	0.065	0.066	0.049

**Source:** Calculated as described in the text.



**Table 4.3: Difference in freight costs between international and domestic goods ( $s_j-d_j$ )**

Sector	1998	1999	2000	2001	2002	Average
Livestock	-0.008	-0.038	-0.044	-0.043	-0.040	-0.021
Food Products	0.152	0.156	0.134	0.080	0.083	0.124
Coffee, tea, cotton & sugar	0.218	0.185	0.213	0.266	0.079	0.201
Fish Products	0.056	0.057	0.058	0.049	0.066	0.057
Manufactured foods	0.160	0.154	0.141	0.131	0.160	0.150
Beverages and Tobacco	0.159	0.168	0.145	0.094	0.139	0.152
Mineral Products	0.062	0.049	0.043	0.031	0.042	0.053
Chemical Products	0.004	-0.022	-0.037	-0.050	-0.040	-0.018
Forestry Products	0.106	0.107	0.108	0.087	0.146	0.113
Building Materials	0.063	0.050	0.050	-0.076	-0.013	0.030
Textile and clothing and leather	0.046	0.055	0.054	0.065	0.049	0.054
Metal products and machinery	0.025	0.018	0.013	0.013	-0.005	0.017
Transport equipment	0.025	0.018	0.014	-0.003	0.003	0.016
Other manufactures	0.043	0.040	0.021	-0.023	0.000	0.026
Average	0.079	0.071	0.065	0.044	0.048	0.068

**Source:** Calculated as described in the text.

**Table 4.4: Total (international and domestic) Transport costs ( $s_j+d_j$ )**

Sector	1998	1999	2000	2001	2002	Average
Livestock	0.133	0.154	0.160	0.152	0.179	0.142
Food Products	0.206	0.212	0.193	0.151	0.155	0.180
Coffee, tea, cotton & sugar	0.334	0.324	0.360	0.421	0.245	0.328
Fish Products	0.056	0.058	0.059	0.049	0.067	0.058
Manufactured foods	0.172	0.172	0.163	0.154	0.185	0.168
Beverages and Tobacco	0.343	0.365	0.355	0.324	0.381	0.342
Mineral Products	0.144	0.169	0.171	0.168	0.188	0.160
Chemical Products	0.113	0.141	0.137	0.141	0.161	0.128
Forestry Products	0.155	0.161	0.164	0.145	0.209	0.164
Building Materials	0.205	0.213	0.230	0.286	0.287	0.229
Textile and clothing and leather	0.092	0.071	0.070	0.083	0.069	0.077
Metal products and machinery	0.089	0.105	0.106	0.102	0.095	0.095
Transport equipment	0.088	0.103	0.105	0.084	0.101	0.091
Other manufactures	0.162	0.161	0.192	0.183	0.209	0.171
Average	0.164	0.172	0.176	0.174	0.181	0.167

**Source:** Calculated as described in the text.

As shown in Table 4.3, Livestock, Chemical products and in recent years Building materials face negative net transport costs implying that domestic transport costs are greater than international transport costs, hence dis-protection due to transport costs (imports could be cheaper in DSM than goods produced in remote parts of Tanzania). Cash crops, manufactured foods, beverages and tobacco have the highest estimates of net transport costs (over 15%) compared to most sectors (about 6% on average). Total transport costs in Table 4.4 are used in measuring export taxation; for cash crops and beverages and tobacco, total transport costs are equivalent to a significant share (almost one-third) of value. Products in these sectors are bulky in nature, and in the case of beverages (mainly beer and soft drinks) distribution costs constitute the large component of the total cost.

## **5 EFFECTIVE PROTECTION ESTIMATES**

This section reports estimates of effective rates of protection due to tariffs (*ERP*) and transport costs (*ERPT<sub>j</sub>*) for selected years. Discussion of results is organised into three parts. Firstly, we report estimates of the NRP and ERP arising from imposition of tariff on imports. Secondly, we report estimates of protection arising from transport costs. Finally, we examine changes in total ERP (sum of tariff, natural and interactive effects of both barriers). The objectives are to examine the extent to which transport cost is an important source of protection for domestic sales, and show the extent to which sectors are affected differently by the protection arising from policy (tariff) and non-policy (natural) barriers to trade. We report protection estimates for 1995 (when tariff rates were relatively high), the 1998 - 2001 period, and also for 2005 based on the common external tariff rates after the adoption of the EAC Custom Union in 2005.

The estimates for nominal and effective rates of protection are given in Tables 5.1 and 5.2 respectively. In both estimates, the general trend shows declining levels of nominal protection from an average of 15% in 1995 to about 8% in 2001, and of effective protection from 19% to 10% respectively. This decline implies that trade reforms have reduced barriers to trade. The estimates also show higher and in some cases increasing protection of agricultural sectors. For instance, the Livestock sector ERP increased from 9% in 1995 to about 20% in 2001, while Cash crops have an ERP (23%) well above the average (14%) for all sectors.

Although significant sectoral variations exist, the sectors with the highest/lowest values are essentially the same for NRP and ERP (compare Tables 5.1 and 5.2). High protection is

notable in cash crops, textiles, livestock and manufactured foods; protection is lowest in the mineral products, metals and machinery, fish products and chemical products sectors. For most sectors these results can be explained by Tanzania's desire to protect 'infant industries' such as clothing/textiles and agriculture products, while providing fiscal incentives to capital or technology intensive sectors such as mining, metal products and machinery.

**Table 5.1: Nominal Rates of Protection due to Tariff charges**

Sector	1995	1999	2000	2001	Average
Livestock	0.086	0.199	0.210	0.188	0.171
Food Products	0.106	0.123	0.114	0.087	0.108
Cash crops	0.319	0.157	0.127	0.141	0.186
Fish Products	0.134	0.032	0.039	0.046	0.063
Manufactured foods	0.118	0.115	0.109	0.124	0.117
Beverages & Tobacco	0.150	0.196	0.164	0.025	0.134
Mineral Products	0.104	0.015	0.047	0.014	0.045
Chemical Products	0.130	0.050	0.052	0.033	0.066
Forestry Products	0.137	0.088	0.076	0.087	0.097
Building Materials	0.291	0.105	0.150	0.105	0.163
Textile & leather	0.177	0.178	0.179	0.170	0.176
Metals & machinery	0.085	0.053	0.047	0.033	0.055
Transport equipment	0.072	0.061	0.079	0.070	0.070
Other manufactures	0.174	0.102	0.106	0.075	0.114
Average	0.149	0.105	0.107	0.085	0.112

**Source:** Calculated as described in the text.

As shown in Table 5.2, levels of effective protection increased for most sectors. While the average ERP increased by three percentage points (from 11% to 14%), it increased by 81% for building materials (mostly cement and iron sheets), followed by manufacturing sectors (42%) and Beverage and Tobacco (40%). Sectors with low levels of NRP experienced lesser increases in ERP. Although this analysis has concentrated on protection of domestic sales from imported goods, it indicates that there has been gradual opening up to external trade that can benefit exporting. In practice though, export (or more generally trade) performance is limited by other non-(trade) policy barriers. We now evaluate the importance of transport costs as a non-policy (natural) barrier to trade.

**Table 5.2: Effective Rates of Protection due to Tariff Charges [Eq. 1]**

Sector	1995	1999	2000	2001	Average
Livestock	0.086	0.223	0.238	0.214	0.190
Food Products	0.110	0.131	0.121	0.091	0.113
Cash crops	0.397	0.191	0.153	0.173	0.229
Fish Products	0.134	0.017	0.025	0.034	0.053
Manufactured foods	0.163	0.105	0.099	0.192	0.140
Beverages & Tobacco	0.192	0.322	0.261	-0.031	0.186
Mineral Products	0.114	0.014	0.051	0.013	0.048
Chemical Products	0.149	0.058	0.059	0.038	0.076
Forestry Products	0.155	0.100	0.086	0.099	0.110
Building Materials	0.528	0.191	0.272	0.190	0.295
Textile & leather	0.176	0.236	0.248	0.228	0.222
Metals & machinery	0.100	0.062	0.054	0.036	0.063
Transport equipment	0.076	0.068	0.088	0.079	0.078
Other manufactures	0.239	0.150	0.149	0.109	0.162
Average	0.187	0.133	0.136	0.105	0.140

**Source:** Calculated as described in the text.

We use the values of  $TC_t$  to estimate protection from internal surface and international sea transport - based on the analytical framework described above. Although the available data for analysis of transport costs are limited to rail (for  $d_j$ ) and ocean (for  $s_j$ ) freight rates, the results indicate the relative significance of transport costs for each sector. Rail is mostly used in competition with road in transporting bulky goods (low value to volume ratios) from the vast interior of Tanzania.<sup>6</sup> Most imports and exports (except for high value/delicate or perishable goods) are freighted by sea. Table 5.3 reports measures of ERP from transport costs ( $ERPT_j$ ) based on the additional transport cost incurred by importers over that incurred by domestic producers, the net transport cost ( $s_j - d_j$ ). The extent of protection due to transport costs is significant but less than that due to tariffs. This is not surprising, given the geographical position of Tanzania where most firms are situated near the major market centres/ports (such that the transport cost is mainly driven by  $s_j$ ). There has been substantial reduction in the protective effect of transport costs from nearly 10% to 5% between 1995 and 2001. This may not be surprising given the decrease in freight rates over the period.

<sup>6</sup> Rail is also used for transporting most exports and imports of neighbouring land locked countries - Uganda, Burundi and Rwanda – that are shipped through Tanzania.

Livestock and chemical products experience dis-protection (effective taxation) from transport costs (negative  $ERPT_j$ ). A few sectors are highly protected from imports by transport costs with  $ERPT$  over 20%, compared to the average of less than 8%, including cash crops (29%), Manufactured foods (25%) and Beverages and Tobacco (20%). Most other sectors have  $ERPT_j$  below 5%.

**Table 5.3: Effective Rates of Protection due to Transport costs [Eq. 2]**

Sector	1995	1999	2000	2001	Average
Livestock	-0.036	-0.072	-0.077	-0.068	-0.063
Food Products	0.166	0.172	0.147	0.088	0.143
Cash crops	0.278	0.238	0.277	0.347	0.285
Fish Products	0.056	0.057	0.059	0.047	0.055
Manufactured foods	0.249	0.230	0.226	0.275	0.245
Beverages & Tobacco	0.224	0.249	0.208	0.107	0.197
Mineral Products	0.069	0.054	0.048	0.035	0.052
Chemical Products	-0.001	-0.032	-0.049	-0.063	-0.036
Forestry Products	0.120	0.122	0.123	0.099	0.116
Building Materials	0.107	0.083	0.083	-0.152	0.030
Textile & leather	-0.003	0.025	0.013	0.013	0.012
Metals & machinery	0.028	0.019	0.014	0.015	0.019
Transport equipment	0.028	0.019	0.016	-0.003	0.015
Other manufactures	0.052	0.051	0.023	-0.040	0.022
Average	0.096	0.087	0.079	0.050	0.078

**Source:** Calculated as described in the text.

Relating these estimates to Tables 4.1 to 4.3 shows that sectors with high/low  $ERPT_j$  are identified with high/low  $s_j$  in both absolute and relative terms, showing that the protection effects of transport costs are largely from international transport. Sectors with negative  $ERPT_j$  (Livestock, chemicals) have  $d_j$  far greater than  $s_j$  (consistent with high distribution costs). In most cases,  $d_j$  reveals independent influence on  $ERPT_j$  from that of  $s_j$  and tends to be highest in sectors that are less traded, such as building materials. Estimates of total protection combining tariffs and transport costs are reported in Table 5.4. Protection due to the interactive effects between tariffs and transport costs are reported in Appendix Table A5.1; the inclusion of interactive effects increases the value of ERP estimates for almost all sectors. Overall, average total protection is about 23%. Certain sectors have very high total

protection, including cash crops (over 50%), Beverage and tobacco (43%), manufactured foods (over 40%) and Building materials (36%). Conversely, metals and machinery, transport equipment, and mineral products have levels of total protection below 10%.

**Table 5.4: Combined Effective Protection due to (and interactive effects of) tariff and freight costs [Eq. 3]**

Sector	1995	1999	2000	2001	Average
Livestock	0.054	0.162	0.173	0.156	0.136
Food Products	0.296	0.327	0.288	0.189	0.275
Cash crops	0.788	0.479	0.476	0.582	0.581
Fish Products	0.197	0.075	0.085	0.083	0.110
Manufactured foods	0.438	0.353	0.343	0.501	0.409
Beverages & Tobacco	0.472	0.665	0.540	0.073	0.437
Mineral Products	0.194	0.070	0.104	0.050	0.105
Chemical Products	0.156	0.029	0.013	-0.024	0.043
Forestry Products	0.296	0.235	0.220	0.209	0.240
Building Materials	0.706	0.299	0.393	0.059	0.364
Textile & leather	0.162	0.266	0.266	0.245	0.234
Metals & machinery	0.134	0.085	0.071	0.053	0.086
Transport equipment	0.108	0.091	0.109	0.079	0.097
Other manufactures	0.316	0.216	0.188	0.078	0.200
Average	0.308	0.239	0.234	0.167	0.237

**Source:** Calculated as described in the text.

To get a clearer picture of the contributions of tariff and transport costs to total protection, we calculate the percentage change/share in total ERP due to the individual effects of tariff and transport costs. The results are reported in Table 5.5. By incorporating effects of transport costs, average ERP increased by 69% (from 14% to 24%). Effects of transport costs constitute over one third (33%) of total protection (i.e. the share of tariff in total ERP is about 70%). On the average transport costs contribute about 30% of total protection. However, for chemical products, mining, and food-related sectors the level of protection from transport costs (over 50% of total protection) are notably higher than from tariffs, reflecting the fact that tariff rates are lower in these sectors. The most and least susceptible sectors to the protection effects of transport cost are evident from Table 5.5. The most susceptible sectors are mostly agriculture or natural resource based. Table 5.6 summarises the above discussion

by grouping sectors by the extent in which they are affected by different sources of protection and reporting respective average sector estimates.

**Table 5.5: Change in Total ERP due to effects of Transport cost (average 1998-2001)**

Sector	ERP	Trans	Total	% Change in ERP	% Transport effects
Livestock	0.19	-0.063	0.136	-28	-46
Food Products	0.113	0.143	0.275	143	52
Cash crops	0.229	0.285	0.581	154	49
Fish Products	0.053	0.055	0.11	108	50
Manufactured foods	0.14	0.245	0.409	192	60
Beverages & Tobacco	0.186	0.197	0.437	135	45
Mineral Products	0.048	0.052	0.105	119	50
Chemical Products	0.076	-0.036	0.043	-43	-84
Forestry Products	0.11	0.116	0.24	118	48
Building Materials	0.295	0.03	0.364	23	8
Textile & leather	0.222	0.012	0.234	5	5
Metals & machinery	0.063	0.019	0.086	37	22
Transport equipment	0.078	0.015	0.097	24	15
Other manufactures	0.162	0.022	0.2	23	11
Average	0.14	0.078	0.237	69	33

**Source:** Calculated as described in the text.

**Table 5.6: Sectors by Level of Protection**

Level of Protection	ERP - Tariff	ERP - Transport cost	ERP - Total
High	Building Materials	Beverage & Tobacco	Beverage & Tobacco
	Beverage & Tobacco	Cash crops	Cash crops
	Cash crops	Manufactured foods	Manufactured foods
	Textile and Leather	Food products	Building materials
Low	Chemical Products	Transport equipment	Fish Products
	Fish Products	Chemical products	Chemical Products
	Transport Equipment	Livestock Textile and Leather	Metals & Machinery
Average	0.14	0.08	0.24
(Share of Total)	(67%)	(33%)	(100%)

**Source:** Own computation

## Dis-protection (Taxation) of Export crops

Given the significance of agricultural export crops in Tanzania's trade performance, we report specific estimates of transport costs ( $s_j$  and  $d_j$ ) for five of the main export crops for Tanzania (all expressed as real *ad valorem* rates) in Table 5.7. High domestic transport costs (from farm to the port) and international transport costs (from the port to the world market) decrease export competitiveness and producer earnings. Examining the total transport cost in panel (c) one notes that, on the average, domestic transport costs are a relatively smaller share (nearly one third) of the total transport cost incurred by the exporters.

**Table 5.7: Freight rates for selected major export crops**

### (a) *International (sea) Freight rates*

Year	Cotton	Coffee	Tobacco	Sisal	Tea	Average
1996	0.102	0.108	0.250	0.324	0.114	0.180
1997	0.077	0.053	0.129	0.162	0.068	0.098
1998	0.063	0.025	0.063	0.048	0.022	0.044
1999	0.052	0.057	0.157	0.327	0.060	0.130
2000	0.087	0.067	0.158	0.193	0.068	0.115
2001	0.079	0.075	0.128	0.159	0.075	0.103
2002	0.054	0.035	0.116	0.156	0.057	0.084
Average	0.073	0.060	0.143	0.196	0.066	0.108

### (b) *Domestic (rail) freight rates*

Years	Cotton	Coffee	Tobacco	Sisal	Tea	Average
1996	0.029	0.036	0.072	0.109	0.036	0.057
1997	0.022	0.020	0.038	0.060	0.022	0.032
1998	0.010	0.010	0.010	0.019	0.006	0.011
1999	0.016	0.029	0.050	0.169	0.025	0.058
2000	0.028	0.031	0.052	0.090	0.027	0.046
2001	0.027	0.029	0.044	0.062	0.028	0.038
2002	0.033	0.028	0.072	0.123	0.040	0.059
Average	0.024	0.026	0.048	0.090	0.026	0.043



(c) *Total (International and Domestic) Freight rates*

Year	Cotton	Coffee	Tobacco	Sisal	Tea	Average
1996	0.132	0.144	0.322	0.433	0.150	0.236
1997	0.099	0.072	0.167	0.222	0.090	0.130
1998	0.073	0.034	0.073	0.068	0.029	0.055
1999	0.068	0.086	0.207	0.496	0.085	0.188
2000	0.115	0.098	0.209	0.284	0.095	0.160
2001	0.106	0.104	0.172	0.221	0.103	0.141
2002	0.087	0.063	0.188	0.279	0.098	0.143
Average	0.097	0.086	0.191	0.286	0.093	0.151

**Source:** Calculated as described in the text.

Thus, the larger share of transport costs is attributable to the international transport costs (72%). Furthermore, about 15% of the export value is taken up by transport costs (where  $s_j$  is about 11% and  $d_j$  is 4%). Except for sisal, which has the largest level of transport costs (29% of export value), results are similar for the selected products. Sisal exhibits the largest  $d_j$  (31%), cotton has a relatively high  $s_j$  and low  $d_j$ , while tea has the lowest estimates of both. If domestic producers are exporters of  $j$ , we can capture the negative protection effects on exports by regarding  $t_j = 0$  in [1]. For convenience, we redefine these measures as positive numbers, and interpret them as net taxation of exports. Consistent with the import protection reported above, we report estimates of dis-protection arising from import tariff ( $T_j$ ), transport costs ( $ETT_j$ ), and the combined effects of both ( $ETX_j$ ) in Tables 5.8 – 5.10 (corresponding to equations [1X], [2X] and [3X]) respectively.<sup>7</sup>

As shown in Table 5.8, some exporting sectors are seriously taxed by tariffs on imported intermediate inputs, such as manufactured foods (mainly cooking oils) where  $T_j = 23\%$ , beverages and tobacco ( $T_j = 14\%$ ) and cash crops ( $T_j = 12\%$ ); compared to the average  $T_j$  of 5%. Effective taxation of exports is found to decline significantly relative to the situation in the year 1995, but such declines have not persisted in the 2000s.

Table 5.9 reports trends in effective taxation of exporters due to transport cost ( $ETT_j$ ). Unlike  $T_j$ , estimates of  $ETT_j$  are influenced by the importance of both imported inputs (i.e.  $s_i$ ) and transport costs ( $s_j$  and  $d_j$ ). The results show that transport influenced taxation effects on exporters is significant, with some sectors taxed by about 100% of export value.

<sup>7</sup> Transport costs (as source of (dis) protection) include both international (sea) and domestic (rail) transport charges expressed as a share of value of merchandise.

**Table 5.8: Effective Taxation of exports due to import tariff [Eq. 1X]**

Sector	1995	1999	2000	2001	Average
Livestock	0.019	0.020	0.019	0.017	0.019
Food Products	0.018	0.017	0.017	0.013	0.016
Cash crops	0.201	0.103	0.086	0.090	0.120
Fish Products	0.024	0.021	0.021	0.020	0.022
Manufactured foods	0.212	0.259	0.247	0.202	0.230
Beverages & Tobacco	0.171	0.153	0.135	0.091	0.138
Mineral Products	0.007	0.003	0.004	0.002	0.004
Chemical Products	0.015	0.005	0.007	0.004	0.008
Forestry Products	0.029	0.019	0.016	0.018	0.021
Building Materials	0.038	0.014	0.020	0.014	0.022
Textile & leather	0.160	0.101	0.091	0.093	0.111
Metals & machinery	0.034	0.022	0.020	0.015	0.023
Transport equipment	0.009	0.005	0.005	0.003	0.005
Other manufactures	0.047	0.018	0.025	0.014	0.026
Average	0.070	0.054	0.051	0.043	0.055

**Source:** Calculated as described in the text.

**Table 5.9: Effective Taxation of exports due to transport cost [Eq. 2X]**

Sector	1995	1999	2000	2001	Average
Livestock	0.138	0.214	0.219	0.203	0.193
Food Products	0.231	0.271	0.245	0.190	0.234
Cash crops	0.497	0.716	0.799	0.941	0.738
Fish Products	0.057	0.079	0.080	0.068	0.071
Manufactured foods	0.287	0.805	0.738	0.628	0.615
Beverages & Tobacco	0.667	1.039	1.002	0.902	0.903
Mineral Products	0.163	0.198	0.200	0.195	0.189
Chemical Products	0.137	0.181	0.175	0.178	0.168
Forestry Products	0.186	0.239	0.243	0.214	0.221
Building Materials	0.382	0.429	0.461	0.560	0.458
Textile & leather	0.085	0.214	0.222	0.268	0.197
Metals & machinery	0.130	0.173	0.173	0.166	0.161
Transport equipment	0.102	0.123	0.124	0.098	0.112
Other manufactures	0.247	0.279	0.328	0.303	0.289
Average	0.236	0.354	0.358	0.351	0.325

**Source:** Calculated as described in the text.

Generally, effective taxation of exports due to transport costs averaged 33%. Beverage and Tobacco, cash crops, and manufactured foods are most seriously taxed by transport costs. Surprisingly, trends in  $ETT_j$  for the selected years do not indicate any sign of reversing. Instead, estimates of  $ETT_j$  have been increasing from 24% in 1995 to over 35% in 2001. This implies that, *ceteris paribus*, the competitiveness of Tanzanian exporters is disproportionately affected by transport cost burden. It seems also that there has not been any effective policy response to mitigate this effect. One reason for this failure may be the fact that much of the taxation effects are due to non-policy (natural) limitations (i.e. poor transport infrastructure).

**Table 5.10: Effective total Taxation of exports [Eq. 3X]**

Sector	1995	1999	2000	2001	Average
Livestock	0.160	0.238	0.241	0.221	0.215
Food Products	0.251	0.291	0.264	0.205	0.253
Cash crops	0.750	0.843	0.907	1.059	0.890
Fish Products	0.083	0.102	0.102	0.090	0.094
Manufactured foods	0.535	1.105	1.020	0.853	0.878
Beverages & Tobacco	0.874	1.225	1.165	1.010	1.068
Mineral Products	0.171	0.201	0.204	0.198	0.193
Chemical Products	0.154	0.187	0.183	0.183	0.177
Forestry Products	0.219	0.261	0.262	0.235	0.244
Building Materials	0.424	0.445	0.484	0.576	0.482
Textile & leather	0.279	0.332	0.330	0.381	0.330
Metals & machinery	0.165	0.197	0.195	0.182	0.185
Transport equipment	0.111	0.128	0.129	0.102	0.118
Other manufactures	0.299	0.299	0.355	0.318	0.318
Average	0.320	0.418	0.417	0.401	0.389

**Source:** Calculated as described in the text.

Table 5.10 reports total effective taxation of exports due to policy (tariff) and natural (non-policy) barriers (i.e. total taxation of exports,  $ETX_j$ ). We find that  $ETT_j$  influences  $ETX_j$  more than  $T_j$ . Sectors with highest or lowest  $ETX_j$  are same as those for  $ETT_j$ . The only notable exception is the textiles and leather sector, which is affected more by tariffs (34%) rather than

transport (60%) component of  $ETX_j$  and has the highest interactive effect (see Appendix Table A5.2).<sup>8</sup> Decomposition of  $ETX_j$  into  $T_j$  (14%),  $ETT_j$  (84%) and interactive effects implies that measures to reduce the transport cost burden on exports can (and that tariff liberalisation alone is not sufficient to) significantly improve export performance.

### **Protection under EAC Customs Union**

In this sub-section, we simulate the potential protection for Tanzania once the EAC custom union is implemented in 2005. The Custom union intends (articles 3 and 10) to facilitate flows of trade in goods within the region by removing all internal tariffs among the member countries. As part of this objective, three bands of external tariffs are to be imposed on extra-region imports: 25% on final consumption goods, 10% on raw materials and intermediate inputs and 0% on capital goods. Article 11 commits to gradual but progressive phasing out of internal tariffs over five years.

To understand the likely protection for Tanzania when the Custom Union is operational, we take the ERP estimates for 2001 as the base year. We assume that by 2005 all tariffs on intermediate inputs will be phased out to 0% (zero rated) and intermediate inputs face a 10% common external tariff (CET). Results are reported in Table 5.11. The overall level of protection increases (doubles) from an average of 20% in 2001 to 40% allowing for the 0% intra-regional tariff on imported inputs and falls to 37% once the 10% CET on inputs is included. Some sectors (especially cash crops and manufactured products, beverages and tobacco) will experience significant increase in the level of protection, while others (for instance livestock, food and fish products) will experience a slight increase.

The customs union is most likely to increase the current level of protection. It is important to note, however, that the EAC has potential to provide other trade (facilitation) provisions that may favorably enhance trade performance for Tanzania and the region in general. In the context of this study, one of the benefits from the regionalisation process that can bring about “quick wins” for trade performance is improvement in transport infrastructure. This is quite likely since one of its provisions is to cooperate in infrastructure development. In addition, improvement of transport infrastructure can hasten intra regional trade in the EAC, which has been found to be growing in importance (Kweka and Mboya, 2004).

---

<sup>8</sup> The % share of  $T_j$  in  $ETX_j$  for textile and leather is highest, relative to the average of 14%.

**Table 5.11: Potential Tariff ERP for Tanzania under the EAC Custom Union**

Sector	2001		2005		
	NRP	ERP	NRP	ERP [0%]	ERP [10%]
Livestock	0.150	0.167	0.250	0.307	0.290
Food Products	0.150	0.167	0.250	0.300	0.285
Cash crops	0.150	0.191	0.250	0.469	0.397
Fish Products	0.150	0.157	0.250	0.295	0.280
Manufactured foods	0.150	0.274	0.250	0.793	0.597
Beverages & Tobacco	0.150	0.272	0.250	0.605	0.494
Mineral Products	0.150	0.171	0.250	0.289	0.283
Chemical Products	0.150	0.185	0.250	0.316	0.303
Forestry Products	0.150	0.184	0.250	0.337	0.315
Building Materials	0.150	0.278	0.250	0.486	0.463
Textile & leather	0.150	0.191	0.250	0.474	0.411
Metals & machinery	0.150	0.220	0.250	0.392	0.357
Transport equipment	0.150	0.174	0.250	0.295	0.288
Other manufactures	0.150	0.232	0.250	0.411	0.377
Average	0.150	0.204	0.250	0.412	0.367

## 6 CONCLUSION AND POLICY IMPLICATIONS

Using the analytical framework applied by Milner *et al* (2000) for Uganda, this paper reports the results for protection due to trade and transport costs in Tanzania. The high transport costs associated with often inadequate infrastructure add to transaction costs, creating a barrier to trade and additional protection to domestic producers of import competing goods. The estimates are used to identify sectors most vulnerable to high costs of transport. The results show that trade policy reforms have lowered the protection due to Tanzania's trade regime. There has been a modest decline in the effective rate of protection from an average of 19% in 1995 to 11% in 2001. The effective rate of protection due to transport costs fell on average from 10% in 1995 to 5% in 2001. Transport costs represent an implicit tax on exporters. On average, domestic transport costs are relatively smaller share (nearly one third) of the total than international transport costs (72%) incurred on exports. The effective tax on exports increased from 24% in 1995 to over 35% in 2001, implying that, *ceteris paribus*, the competitiveness of Tanzanian exports was reduced. Much of the taxation effects are due to

non-policy (natural) limitations (i.e. poor transport infrastructure). Initiatives to enhance Tanzania's export competitiveness may require *selective* policy actions to improve transport and distribution efficiency and reduce costs.

We project that the EAC customs union will increase the average level of protection by 100%, from 20% in 2001 to about 40% in 2005. Decomposing the figures suggests that measures to reduce transport costs can significantly improve export performance for Tanzania. In the context of this study, one of the most important benefits from the regionalisation process that can bring about "quick wins" for trade performance is improvement in transport infrastructure.

## REFERENCES

- Amani, H, D. Nyange, J. Kweka and V. Leyaro (2003) *Trade Policies and Agricultural Trade in the SADC Region: Challenges and Implications – Tanzania Country Report*, Dar es Salaam: Economic and Social Research Foundation, Jan.
- Amjadi A. and A.J. Yeats (1995), "Have Transport Costs Contributed to the Relative decline of sub-Sahara African Exports?" World Bank Policy Research Paper no. 1559, Washington, DC.
- Booth, D. and Kweka, J. (2004), "Priorities for Implementing the New Trade Policy for Tanzania" a report prepared for the Tanzania Trade and Poverty Programme for the Ministry of Industry and Trade, Dar es Salaam, Tanzania.
- Gillson I, and A. Hewitt (2003) "Trade Content of PRSPs" *ODI Working Paper*, Overseas Development Institute, London.
- Kweka, J., O. Morrissey and A. Blake 'Economic Potential of Tourism in Tanzania', *Journal of International Development*, 15, 335-351.
- LYakurwa, W. M., G. D. Mjema and L. Rutasitara (2001): A Regional Integration Study of East Africa – Tanzania Country Report – Final Draft, University of Dar es Salaam.
- Madani, D. (1998): A Review of the Role and Impact of Export Processing Zones, World Bank, [econ.worldbank.org/docs/965.pdf](http://econ.worldbank.org/docs/965.pdf), 16/05/2003.
- McKay, A., Ch. Milner and O. Morrissey (2000): The Trade and Welfare Effects of a Regional Economic Partnership Agreement, CREDIT Research Paper No. 00/8, University of Nottingham.
- Milner, C., O. Morrissey and N. Rudaheranwa (2000) 'Policy and non-Policy Barriers to Trade and Implicit Taxation of Exports in Uganda', *Journal of Development Studies*, 37:2, 67-90.
- Musonda, F. M (2000) The Impact of East African Integration on Tanzania's Economy, *Occasional Papers*, Konrad Adenauer Foundation, Kenya.

- Singh, B (1986) "Analysis of market Infrastructure Problems inn the Green revolution Region in Nigeria" *Economic Affairs*, Vol. 31, No 4.
- UNCTAD (1999), 'New Agenda for the Development of Africa in the 1990s: African Transport Infrastructure, Trade and Competitiveness', UNCTD Secretariat Report, Geneva.
- URT - United Republic of Tanzania (2000), 'Commercialization/Privatization of the Transport Sector in Tanzania: Review of Progress and Prospects' Ministry of Communication and Transport, Dar es Salaam.
- TTPP (2003) "United Republic of Tanzania: Tariff Policy and Effective Rates of Protection", a study by the Economic Research Bureau – University of Dar es Salaam for *United Republic of Tanzania*, as part of Tanzania Trade and Poverty Programme.
- URT - United Republic of Tanzania (2003b), National Trade Policy 2003 – *Trade Policy for a Competitive Economy and Export-Led Growth*, Ministry of Industry and Trade, Dar es Salaam.
- World Bank (2001) *Tanzania at the Turn of the Century: From Reforms to Sustained Growth and Poverty Reduction*, Washington, DC: Government of Tanzania and World Bank.
- Wuyts, Marc (2003) 'Economic Growth, Trade Integration and Employment: Reflections on Tanzania', paper submitted to the Forum to Assess Development Policies in Tanzania, Dar es Salaam, 24-25 April.

## APPENDIX

**Table A4.1: Matching the Aggregated Sector/commodities**

Code	Description	HS_2 Commodity <sup>1</sup>	I-O Sectors <sup>2</sup>	TRC Freights <sup>3</sup>
1	Livestock	01-02, 04-05, 41-43	23, 25-26	Livestock
2	Food Products	06-08, 10-14	01-09,18-21	Maize, Grains
3	Cash crops	09+17+52	10-11, 13, 17, 37	Cotton and Coffee
4	Fish Products	3	24	Refrigerated Container
5	Manufactured foods	15-16, 18-21, 23	32-36, 38	Cotton Seeds
6	Beverages & Tobacco	22, 24	12, 39-41	Sugar
7	Mineral Products	25-27	28-31, 54	Salt, Oil (Petroleum)
8	Chemical Products	28-38	52-53	Fertilizer
9	Forestry Products	44-49	27, 49-51	Timber
10	Building Materials	68	58	Cement
11	Textile & leather	50-51, 53-67	42-48	Container (20 ft)
12	Metals & machinery	72-85	59-62	Motor Vehicles
13	Transport equipment	86-89	63	Motor Vehicles
14	Other manufactures	39-40, 69-71, 90-97	55-57, 64	Others/general goods
15	Other Cash crops		14-16, 22	
16	Electricity and Water		65-66	
17	Construction		67	
18	Trade & Busin. Services		68, 69, 73-75	
19	Transport & Comm.		70-72	
20	Public and other services		76-79	

Sources: <sup>1</sup>URT, Tanzania Customs Department of Tanzania Revenue Authority (TRA); <sup>2</sup>URT, The 1992 Input-Output Table for Tanzania; and <sup>3</sup>Tanzania Railways Corporation (TRC) data files.

**Table A4.2: Indices of per Unit Surface Freight Charges by Commodities (1992=100)**

Sector	1992	1997	1998	1999	2000	2001	Average
Livestock	100	456	618	657	626	707	268
Food Products	100	220	226	240	290	293	120
Cash crops	100	287	341	360	379	407	162
Fish Products	100	167	174	185	194	209	90
Manufactured foods	100	184	290	340	356	383	139
Beverages & Tobacco	100	231	250	265	290	306	126
Mineral Products	100	259	382	407	435	464	173
Chemical Products	100	281	417	444	488	513	188
Forestry Products	100	184	203	208	219	235	103
Building Materials	100	292	337	373	749	620	200
Textile & leather	100	220	74	79	87	92	70
Metals & machinery	100	230	312	332	316	357	139
Transport equipment	100	230	312	332	316	357	139
Other manufactures	100	272	277	393	472	477	166
<b>Average</b>	<b>100</b>	<b>102</b>	<b>137</b>	<b>154</b>	<b>162</b>	<b>189</b>	<b>149</b>

Source: Calculated from data on Unit Freight Cost obtained from TRC Data files.

Note: The above estimates are in real terms after been deflated by using consumer price indices for the transport sector based on 1992 prices.



**Table A5.1: Effective Rates of Protection due interactive effects of tariff and transport costs**

Sector	1995	1999	2000	2001	Average
Livestock	0.003	0.011	0.012	0.011	0.009
Food Products	0.020	0.025	0.020	0.011	0.019
Cash crops	0.113	0.051	0.046	0.062	0.068
Fish Products	0.007	0.001	0.001	0.001	0.002
Manufactured foods	0.026	0.018	0.017	0.034	0.024
Beverages & Tobacco	0.056	0.094	0.072	-0.004	0.054
Mineral Products	0.012	0.002	0.005	0.001	0.005
Chemical Products	0.008	0.003	0.003	0.002	0.004
Forestry Products	0.020	0.013	0.012	0.011	0.014
Building Materials	0.071	0.025	0.038	0.020	0.039
Textile & leather	-0.011	0.004	0.005	0.004	0.000
Metals & machinery	0.005	0.004	0.003	0.002	0.004
Transport equipment	0.004	0.004	0.005	0.003	0.004
Other manufactures	0.024	0.015	0.016	0.009	0.016
<b>Average</b>	<b>0.026</b>	<b>0.019</b>	<b>0.018</b>	<b>0.012</b>	<b>0.019</b>

Source: Calculated as described in the text.

**Table A5.2: Effective Taxation of exports due to interactive effects of tariff and transport charges**

Sector	1995	1999	2000	2001	Average
Livestock	0.003	0.004	0.003	0.002	0.003
Food Products	0.002	0.003	0.002	0.001	0.002
Cash crops	0.052	0.024	0.022	0.028	0.032
Fish Products	0.002	0.002	0.002	0.002	0.002
Manufactured foods	0.036	0.041	0.035	0.022	0.034
Beverages & Tobacco	0.036	0.033	0.027	0.016	0.028
Mineral Products	0.001	0.000	0.000	0.000	0.000
Chemical Products	0.001	0.000	0.001	0.000	0.001
Forestry Products	0.004	0.002	0.002	0.002	0.003
Building Materials	0.005	0.002	0.002	0.001	0.003
Textile & leather	0.034	0.017	0.016	0.020	0.022
Metals & machinery	0.002	0.001	0.001	0.001	0.001
Transport equipment	0.001	0.000	0.000	0.000	0.000
Other manufactures	0.005	0.002	0.003	0.001	0.003
<b>Average</b>	<b>0.013</b>	<b>0.009</b>	<b>0.008</b>	<b>0.007</b>	<b>0.009</b>

Source: Calculated as described in the text.