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DEVALUATION UNDER DECREASING MARKETING MARGINS THROUGH INFRASTRUCTURE INVESTMENT

by

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Abstract

The paper analyzes the impact of different transport and marketing cost scenarios on the effectiveness of an exchange rate devaluation. Intersectoral linkages among factor and commodity markets in an economywide, multi-sector, computable general equilibrium (CGE) environment are exploited to determine price and quantity effects. The CGE model incorporates marketing margins for imports, exports, and domestic supply, which are gradually reduced, simulating increasing government investment into infrastructure after devaluing the exchange rate. The results indicate that devaluation is much more effective when marketing margins are reduced and that the effects are especially important for agricultural goods which lack full market integration.

Keywords

Tanzania, Sub-Saharan Africa, Marketing Margins, Computable General Equilibrium (CGE) Modeling

Devaluation under decreasing marketing margins through infrastructure investment

Tanzania, like most other African countries, undertook structural adjustment programs in the late 1980s and 1990s involving substantial changes in its macroeconomic policies. The impact of such macro policy reform on the structure of the economy — including production, demand, employment, and distribution of income — depends critically on how well product and factor markets operate. The smooth operation of such markets is typically assumed in most macro analysis. However, Tanzania and many other African countries are characterized by extremely high transportation and marketing costs, which effectively weakens market linkages and the transmission of macro changes across the economy. This paper explores the importance of these linkages by analyzing the impact of a devaluation of the exchange rate (a common feature of almost all structural adjustment programs) under different marketing margin scenarios in the framework of an economywide, multisectoral, computable general equilibrium (CGE) model.

The importance of high transportation and other marketing costs in developing countries is documented in a broad empirically-based literature, as well as in more theoretically-focused modeling literature (*e.g.*, George and King, 1971; Gardner, 1975; Lyon and Thomson, 1993, and Antle, 1999). A number of factors lead to high marketing margins: (a) weak infrastructure in telecommunication systems, hampering the effectiveness of exchange of information and ultimately market transactions; (b) insufficient road and railway infrastructure, which restricts the access of some areas to regional and national markets; (c) irregular energy supply (especially petrol) in remote areas; and (d) high costs for purchase, maintenance, and repair of transport equipment relative to the value of transported goods *and* relative to the mileage supplied. For example, a case study on one of Tanzania's major maize producing regions, the Sumbawanga District (Rukwa Region), by Ashimogo (1995) shows that, due to varying road conditions, some areas might be completely excluded from regional market participation.

Modeling approach and design of the marketing margin experiments

The CGE model applied in this study is neoclassical in structure and extends the approach in Dervis, de Melo, and Robinson (1982). The core features of a CGE model guarantee the integration of macro, market, and micro levels into the modeling procedure. Through a functional specification that assumes complex product differentiation, a CGE model captures a variety of sector and market linkages within the economy and linkages with the rest of the world. The CGE approach in this study reflects Chenery's (1975) view of "neoclassical structuralism". On the one hand, the model has a neoclassical foundation, and, on the other hand, it incorporates some structural rigidities. The major rigidities of the applied model are (a) foreign trade restrictions following the Armington assumption where imports and exports are imperfect substitutes for domestic produce; (b) high import dependency, especially in intermediate and capital goods; (c) segmented factor markets, which restrict

migration between agricultural and non-agricultural sectors; (d) fixed sectoral capital, which captures the rigid investment structure of the economy;(e) minimum required quantities of marketed and non-marketed household demand in order to guarantee minimum levels of food consumption; and (f) high marketing costs. Furthermore, one single good in a CGE model appears in a variety of states, namely as domestic produce, export, domestic supply, import, composite aggregate, and final consumption good. Thus, the model features both extended product differentiation as well as market differentiation.

In particular, the model incorporate various features characterizing Tanzania's regional and national economic conditions. First, the model incorporates own-household consumption which considers the production of non-marketed food crops and their contribution to total household consumption and nutrition.[1] In an economy where 85 percent of the population lives in rural areas and is mainly engaged in food cropping, the appropriate specification of own-household consumption behavior is essential for household-specific welfare analysis. Second, the model contains explicit marketing margins for domestic supply, export, and import commodities in order to capture the extreme differences between producer and consumer prices due to high transportation and other marketing costs in an economy with low infrastructure standards and long transit distances. Third, the model specifies a commodity-specific food aid variable to simulate food aid injections in the case of production failures caused by a drought or any other productivity decreasing events. Taking such productivity decreases into consideration is of utmost importance in the context of Tanzania's agriculture-dominated economy, which remains vulnerable to internal and external shocks despite previous achievements through agricultural sector reform measures. Finally, the model incorporates a European-style value-added tax (VAT) with a rebate mechanism in order to capture Tanzania's introduction of a VAT tax in 1998.

In order to incorporate marketing costs, three different sectoral marketing margins are included in the Tanzania CGE model: for imports, exports, and domestic sales. The margins are incorporated as sector-specific coefficients specifying demand for *Trade and Transportation Services*, i.e., the delivery of each unit of a commodity requires trade and transportation services. Market prices will reflect the costs of trade and transportation services, as shown in the following price equations:

[1] This is sometimes termed "auto-consumption" and represents the share of total production that is not marketed but consumed by the producing household itself. This substantial part of national production used to be neglected in the national accounts statistics and has only recently been added to the official national accounts data as non-monetary GDP accounting for more than one third of the monetary GDP for the years 1987-1996 — see Table 1 and 2 of the Revised National Accounts of Tanzania 1987-1996 (URT 1997).

Domestic import price of commodity cm[2]:

$$PM_{cm} = pwm_{cm} \cdot (1 + tm_{cm}) \cdot EXR + mrm_{cm} \cdot PC_{CTRAD} \quad \textbf{(1)}$$

where: PM_{cm} is the domestic price of imports
pwm_{cm} is the world price of imports in foreign currency
tm_{cm} is the tariff rate of import commodity cm
mrm_{cm} is the marketing margin coefficient for import commodity cm
PC_{TRAD} is the final consumer price for commodity *Trade and Transportation*

Domestic export price of commodity ae:

$$PE_{ae} = PWE_{ae} \cdot (1 - te_{ae}) \cdot EXR - mre_{ae} \cdot PC_{CTRAD} \quad \textbf{(2)}$$

where: PE_{ae} is the domestic price of exports
PWE_{ae} is the world price of exports in foreign currency
te_{ae} is the export tax rate of commodity ae
mre_{ae} is the marketing margin coefficient for export commodity ae
PC_{TRAD} is the final consumer price for commodity *Trade and Transportation*

Domestic supply price of domestically produced commodity comm:

$$PDC_{comm} = \sum_{act} m_{activ,comm} \cdot PDA_{activ} + mrd_{comm} \cdot PC_{CTRAD} \quad \textbf{(3)}$$

where: PDC_{comm} is the domestic supply price of domestically produced commodity comm
$m_{activ, comm}$ is the make matrix, a linear combination of activities creating a particular commodity
PDA_{activ} is the domestic supply price for activity ae
mrd_{comm} is the marketing margin coefficient for domestically produced commodities that are domestically supplied
PC_{TRAD} is the final consumer price for commodity *Trade and Transportation*

The model is used to simulate the impact of a devaluation given different levels of marketing margins. First, the model simulates the impact of a major devaluation, reducing the

[2] For reasons of clarity equations (1) and (3) do not contain their respective value-added tax multipliers.

initial trade balance by 50 percent.[3] Then, in a series of four additional experiments, the devaluation experiment is repeated while lowering marketing margins in consecutive steps of 12.5 percent decrements, finally reaching 50 percent of their initial values. Assuming that high marketing costs are mainly due to inadequate infrastructure, the reduction of trade margins can be seen as increasing economywide efficiency based on infrastructure investment. The Tanzania CGE model does not incorporate a formal link between government expenditure on construction (road projects) and (a) the price for trade services and/or (b) the physical marketing margin coefficients, which are the two components of the marketing costs of each sector. Furthermore, since the general modeling approach is comparative statics, investment appears as a component of final demand, but does not increase the effective capital stock of the economy. Therefore, the economic impact of infrastructure investment is implicitly modeled through the decrease of the marketing margin coefficients. The investment itself—including additional government spending on infrastructure development—is not explicitly modeled but is assumed to be part of total investment demand.

The objective of infrastructure investment has a clear medium-term focus because road and other infrastructure projects are not completed overnight and substantial improvement of the national infrastructure system has to be accomplished through medium-term investment programs. In accordance with the medium-term nature of the analysis, the model allows for migration between rural labor mainly employed in agriculture and unskilled labor employed in non-agriculture. In other words, physical factor units can be transformed from rural agricultural to unskilled urban labor indicating rural-urban migration and *vice versa*. For all other factor markets (capital, land, and all other labor categories) the model assumes segmentation between aggregate agriculture and aggregate non-agriculture. In other words, factors can move among agricultural (non-agricultural) activities, but *not* between any agricultural and non-agricultural activity.

The devaluation experiment, alone and in combination with the reduction of the marketing margins, allows for the analysis of two interrelated issues. First, how the macroeconomic policy goal of reducing the trade deficit (or devaluing the real exchange rate) affects sectoral and overall economic performance under different trade cost scenarios. Since the cut in trade balance is the same for all the experiments, the combined effects of the induced macroeconomic policy (devaluation) in combination with the respective marketing margin level can be measured by comparing each experiment result to the initial base. Second, since the change in the trade balance in the first experiment applies to all subsequent experiments, the different experiment results can be compared to each other in order to isolate

[3] The Tanzania CGE model allows for a choice between (a) fixing the exchange rate at any desired level to simulate a particular exogenous devaluation and solving the model endogenously for the adjusting trade balance or (b) fixing the trade balance at any desired level (which would indicate that the macroeconomic goal is the reduction of the existing trade deficit by a certain percentage) and equilibrating the model through the required depreciation of the exchange rate.

the net welfare effect of the reductions of the marketing margins in the new macroeconomic setting with devaluation.

Results of the marketing margin experiment

This analysis is based on a 1992 social accounting matrix (SAM) for Tanzania (Wobst 1998).[4] The sectoral structure of the 1992 SAM used for the base run calibration of the CGE model is presented in Table 1.

Table 1: Sectoral structure of the Tanzanian economy based on 1992 SAM

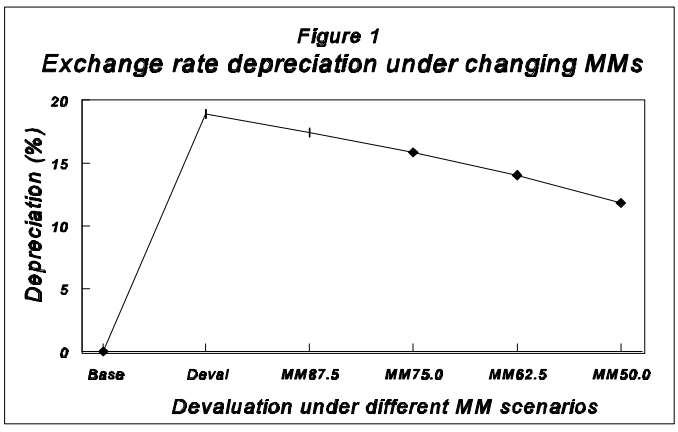
	Composition (%)				Ratios (%)		Elasticities	
	X	VA	EX	IM	EX/X	IM/Q	SIGT	SIGC
Cotton	0.7	0.7	11.8	-	83.1	-	5.0	-
Sisal	0.2	0.1	1.9	-	53.7	-	5.0	-
Tea	0.2	0.2	1.4	-	31.2	-	5.0	-
Coffee	0.3	0.4	3.1	-	53.4	-	5.0	-
Tobacco	0.4	0.6	0.6	-	6.8	-	5.0	-
Cashew Nuts	0.3	0.5	1.9	-	31.4	-	5.0	-
Maize	5.1	7.2	0.0	-	0.0	-	1.2	-
Wheat	0.3	0.2	0.1	0.1	0.8	6.2	1.2	2.0
Paddy	1.4	1.6	-	-	-	-	-	-
Sorghum	0.4	0.6	0.0	-	0.1	-	1.2	-
Other Cereals	0.1	0.2	0.0	0.7	0.6	58.3	1.2	3.0
Beans	1.6	2.6	0.2	-	0.6	-	1.2	-
Cassava	0.8	1.4	0.4	-	2.5	-	1.2	-
Other Roots	0.9	1.6	0.0	0.2	0.2	11.0	1.2	3.0
Oil Seeds	0.9	1.4	0.6	0.0	3.3	0.8	1.2	3.0
Sugar	2.9	1.3	-	-	-	-	-	-
Other Horticult.	3.0	5.1	0.7	0.0	1.3	0.3	1.2	3.0
Other Crops	0.8	1.3	0.3	-	2.1	-	1.2	-
Livestock	2.3	3.4	0.1	0.2	0.3	2.2	1.2	3.0
Fishery	1.7	2.5	1.0	-	3.0	-	1.2	-
Forestry&Hunt.	2.5	4.4	0.2	0.1	0.4	0.8	1.2	3.0
Mining	2.1	3.5	1.1	2.3	2.8	18.4	1.3	1.5
Meat&Dairy	1.8	2.0	0.5	0.3	1.5	2.7	1.3	1.5
Process. Food	2.5	1.4	1.0	7.5	2.1	53.7	1.3	3.0

[4] The 1992 Tanzania SAM has been constructed under a three-year project on *Macroeconomic Reforms and Regional Integration in Southern Africa* (MERRISA) at the *Trade and Macroeconomics Division* of the *International Food Policy Research Institute*, Washington, D.C.

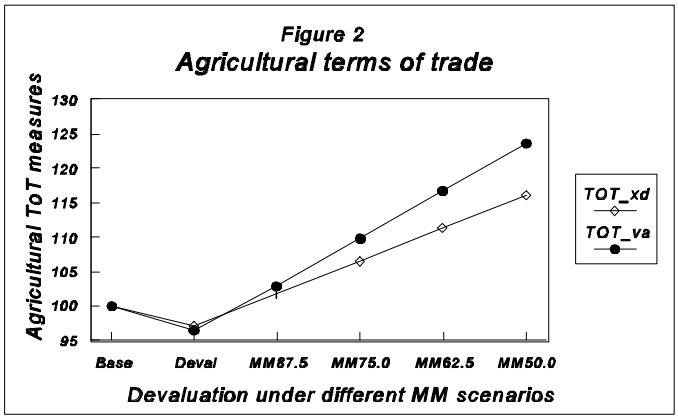
	Composition (%)				Ratios (%)		Elasticities	
	X	**VA**	**EX**	**IM**	**EX/X**	**IM/Q**	**SIGT**	**SIGC**
Grain Milling	5.1	1.0	0.0	2.5	0.0	8.8	1.3	1.5
Beverages	3.8	3.0	0.3	0.6	0.4	2.8	1.3	1.5
Text.&Leather	2.5	1.2	14.2	4.2	28.7	29.7	1.3	1.0
Wood&Paper	1.9	1.4	4.9	1.8	13.1	15.9	1.3	1.5
Chemicals	0.9	0.4	-	12.5	-	68.1	-	0.8
Rubber	1.7	1.0	1.7	8.0	5.2	45.4	1.3	0.8
Iron&Steel	1.9	0.7	2.6	8.7	6.9	47.2	1.3	0.8
Machinery Eq.	1.0	0.9	-	35.7	-	75.7	-	0.8
Electrical Eq.	2.4	2.5	-	-	-	-	-	-
Construction	7.0	5.2	-	-	-	-	-	-
Trade	10.4	12.8	-	-	-	-	-	-
Tourism	0.9	0.7	17.9	-	100.0	-	0.5	-
Hotels&Rest.	2.1	2.3	7.5	1.3	17.9	12.8	0.5	1.5
Trans.&Comm.	7.2	6.6	6.2	0.9	4.4	2.5	0.5	1.5
Financial Inst.	2.9	3.5	0.0	4.4	0.1	23.1	0.5	1.5
Real Estate	2.6	4.4	-	7.9	-	37.7	-	1.5
Public Admin.	10.3	6.8	0.1	-	0.1	-	0.5	-
Other Services	1.8	1.5	17.6	-	50.7	-	0.5	-
Tot / Avg Ag	27.0	37.3	24.3	1.4	4.7	1.3	-	-
Tot / Avg Non-Ag	73.0	62.7	75.7	98.6	5.3	21.8	-	-

Notes: X = Output, **VA** = Value-Added, **EX** = Exports, **IM** = Imports, **Q** = Absorption, **SIGT** = Elasticity of Transformation, and **SIGC** = Elasticity of Substitution.

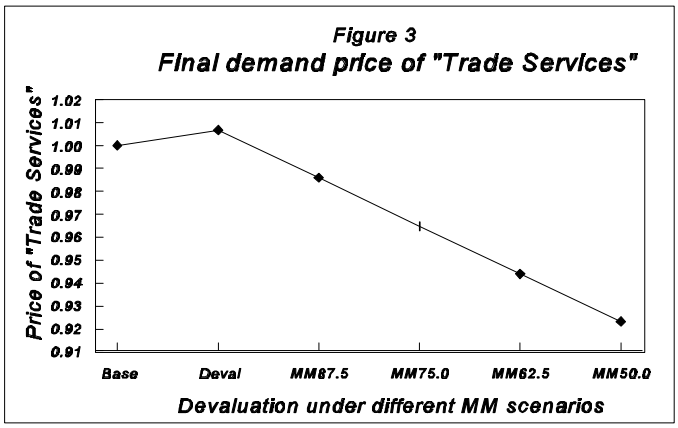
The effects of the analysis on the real exchange rate and two agricultural terms of trade indices (producer price and value-added price) are shown in Figures 1 and 2.



A 50.0 percent reduction of the trade balance under the initial marketing margins induces a 19 percent depreciation of the exchange rate. Decreasing all sectoral marketing margin coefficients uniformly in steps of 12.5 percent decrements to 50.0 percent of their initial values reduces the required depreciation to 11.9 percent at the last step.



Lowering marketing margins increases the responsiveness of the economy to a change in the real exchange rate, with import and export transactions becoming cheaper. Decreasing marketing costs lower domestic import prices and raise domestic export prices, making both imports and exports more attractive. Note that it is not just the exchange rate and the marketing margin *coefficients* which directly influence domestic prices of tradable goods, but the final demand price for trade services as well. Calibrated at one in the base run of the model, it decreases throughout the experiment series in response to the decreasing demand for trade services. Both the decreasing physical demand due to the cut in marketing margins and the decreasing final demand price of trade services contribute to the lower required devaluation indicated in the experiment series. Although the price response is relatively small compared to the 50.0 percent decrease in marketing margin coefficients, its contribution is significant (see Figure 3).



The required devaluation under the initial marketing margins first increases the price for trade services since the 50.0 percent reduction of the trade balance requires more exports. Then the price drops below its initial value and further decreases with each step of the experiment series, finally falling 7.7 percent.

The reduction in the trade balance deteriorates the agricultural terms of trade measures by 3.0 and 3.6 percent for producer prices and value-added prices, respectively. However, the first 12.5 percent reduction of all marketing margin coefficients offsets the negative effect caused by the initial devaluation.[5] The improvement in the agricultural terms of trade as the marketing margins decrease reflects the higher average marketing margin coefficients in agriculture compared to non-agriculture. The three quantity-weighted average coefficients for aggregate agriculture and non-agriculture respectively are presented in Table 2 as computed from the base run of the model.

Table 2: Average marketing margin coefficients and respective total values for aggregate agricultural and non-agriculture

	Average marketing margin *coefficients* per aggregate			Total marketing margin *values* of aggregates (billion TShs)		
	Domestic sales	Exports	Imports	Domestic sales	Exports	Imports
Agriculture	0.25	0.48	0.26	141.7	6.5	0.5
Non-Ag	0.10	0.32	0.13	102.0	11.8	58.4

Source: Base solution

The three average marketing margin coefficients are larger for agriculture than for non-agriculture. However, the relative impact of a uniform percentage reduction of all coefficients on agricultural performance depends on the quantities being effected. Looking at the coefficients for imports, the average marketing margin rate for agricultural imports is twice as high as for non-agricultural imports. But, since the base year data show very little agricultural imports, nominal marketing costs associated with agricultural imports are insignificant — 0.5 compared to 58.4 billion TShs in non-agriculture. The high average coefficient for domestic absorption (0.25) applies to nearly all agriculture absorption (91.4 percent), generating nominal marketing costs of 141.7 billion TShs. The much lower average coefficient for non-agriculture (0.10), though applied to a higher value of non-agriculture absorption ultimately applies to only 38.3 percent of *total* non-agriculture absorption, generating 102.0 billion TShs

[5] Remarkably, the degree of the devaluation only decreases by 1.4 percentage points (to 17.6 from 19.0 percent) and therefore contributes only marginally to the positive influence on the agricultural terms of trade from lowering trade margins.

of marketing costs. Consequently, the positive effect on the agricultural price index is much higher than for non-agriculture, and overall agricultural performance improves, indicated by the increasing agricultural terms of trade (see Figure 2 above).

In terms of production, the initial devaluation under existing marketing margins primarily causes an increase in value-added of export agriculture and a decrease in value-added of non-export agriculture. Note that this gain and loss are of similar magnitude and thus offset each other in the aggregate — given that factors which are initially employed in agriculture only move within agriculture, which reflects the assumed factor market segmentation. When the marketing coefficients are gradually reduced, nominal value-added of non-export agriculture at first reestablishes its old level and finally increases 28.2 percent compared to its base value. On the other hand, nominal value-added in export agriculture maintains the same level of improvement throughout the experiment series (see Figure 4).

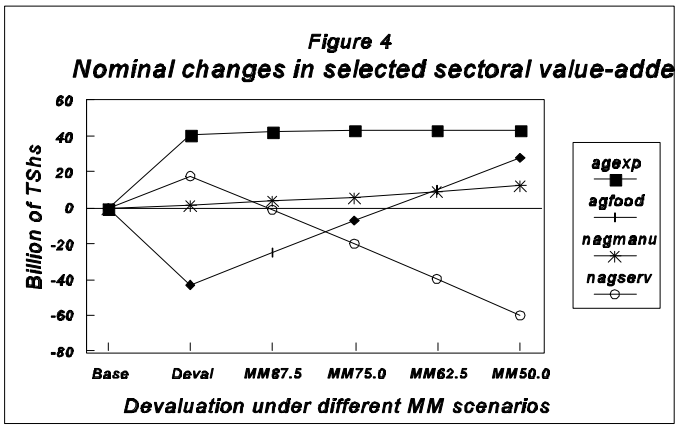
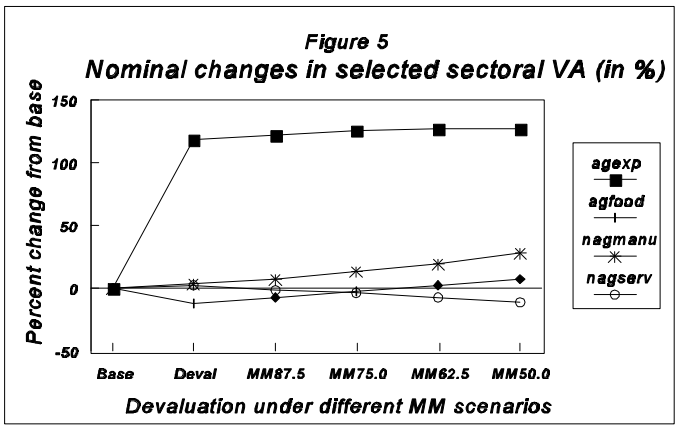
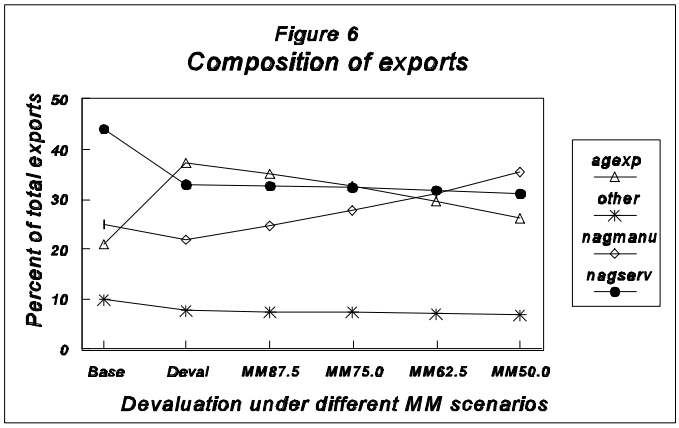


Figure 5 presents the respective percent changes from the base.



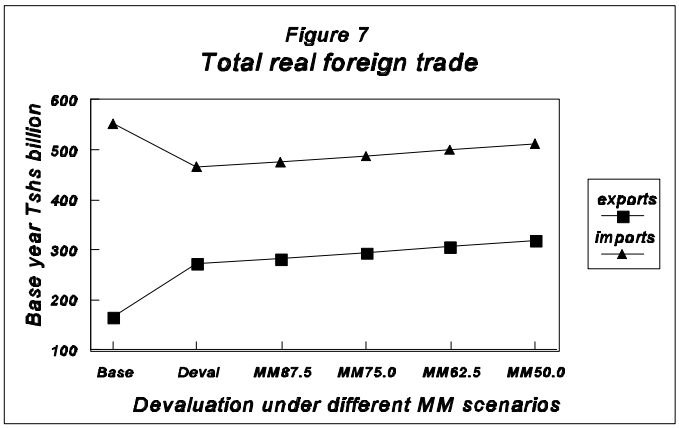
Two factors contribute to the different performance of export and non-export agriculture. First, although the average marketing coefficient of export agriculture is higher than the marketing coefficient for domestically marketed agriculture (0.48 compared to 0.25), its impact on associated costs is only a fraction of the domestic cost effect (6.5 compared to 141.7 billion TShs). Second, the coefficient for export agriculture (0.48) is also higher than the coefficient for non-agriculture exports (0.32), indicating a potential competitive advantage for agricultural exports as marketing margins are reduced. However, looking at the sectoral composition of total exports reveals that the share of agricultural exports decreases by 10.8 percentage points, while exports of manufactures increase by 13.4 percentage points in reaction to the 50 percent reduction of the marketing coefficients (see Figure 6).

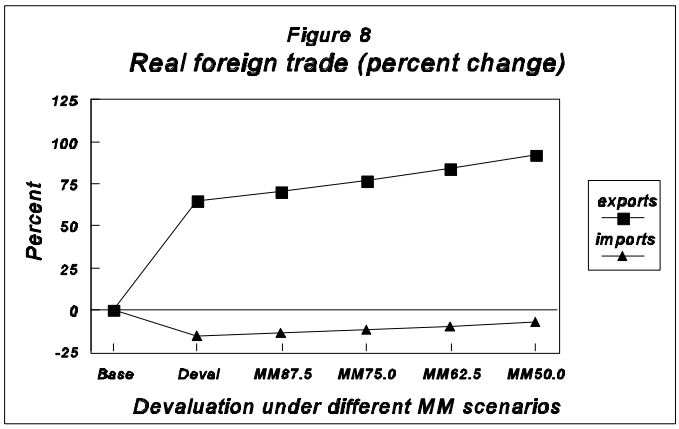


The competitive advantage mentioned is more than offset by something else; namely, the assumed factor market segmentation between agriculture and non-agriculture. The decreasing demand for trade services associated with the reduction of the marketing coefficients, releases resources from this sector and makes them available to other non-agricultural sectors. With devaluation, where both export agriculture and export non-agriculture compete with their respective non-export sectors for resources to expand production, this additional factor supply creates a substantial competitive advantage for non-agricultural export goods. Consequently, relative non-agricultural decrease and agricultural terms of trade increase as reported earlier in Figure 2.

The importance of the decreasing demand for trade services is also reflected in the sharp decrease of nominal value-added of the service sector (*nagserv*) in Figure 4, to which trade services contribute 75.8 percent. To assess the relevance of the trade services sector, note that it represents a large share in total GDP at factor cost (13.4 percent), in non-agriculture GDP at factor cost (21.8 percent), and in the services sector's GDP at factor costs (32.7 percent).

Figure 6 shows the sectoral composition of exports.[6] Since the trade balance is fixed at 50 percent of its initial value in the first experiment, and the model equilibrates through adjusting the real exchange rate, the absolute *difference* between total imports and total exports cannot change, but the *volumes* of total imports and exports do change (see Figures 7 and 8).



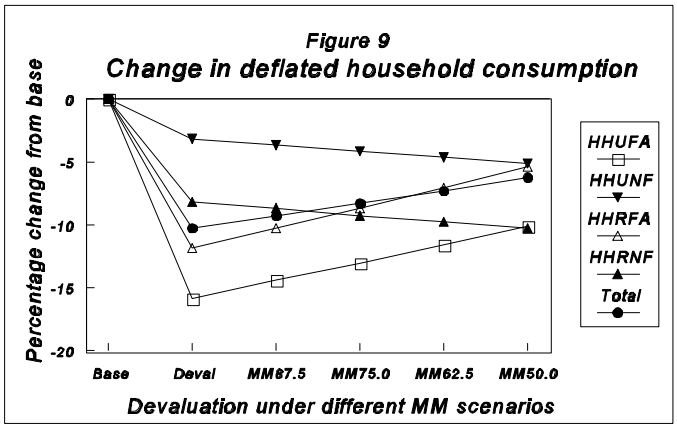


The absolute changes in total imports and exports are of the same magnitude, but represent very different percentage changes from base values due to their different base levels — 64.9 percent increase in exports, but only 15.6 percent decrease in imports. Lowering the marketing costs favors foreign trade and thus requires less depreciation to achieve the same trade balance. Usually a devaluation shows that lower depreciation is associated with lower

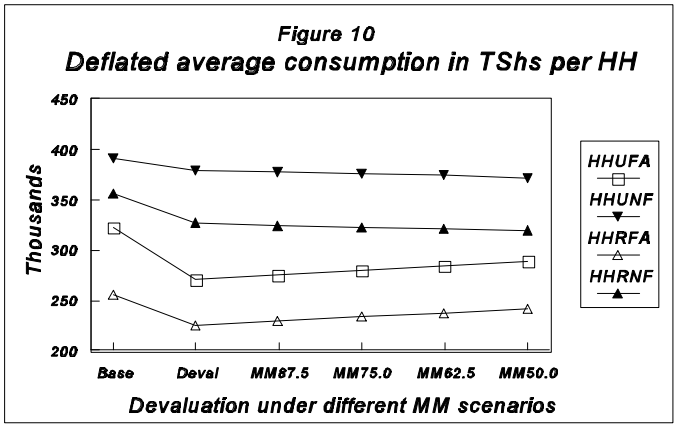
[6] The changes in the composition of sectoral export performance are the same in real and nominal terms, because the relevant world market prices are exogenous and fixed.

export levels. Here this relationship is reversed. Although the real exchange rate appreciates with the gradual reduction of the marketing costs, real total exports increase further— as do imports, since the direction of total import and export movements are strictly linked through the fixed trade balance. Marketing costs matter very much, particularly with respect to the economywide performance of foreign trade. Given the 50 percent reduction of the trade balance, total real exports further increase, from 164.9 to 192.9 percent of their base value, which is associated with an improvement in total real imports from 84.4 to 92.8 percent of their base value. Consequently, although the absolute value of the trade deficit remains the same, it occurs at a higher level of foreign trade and thus diminishes relative to the total volume of foreign trade. The reduced need for cuts in imports (7.2 instead of 15.6 percent) indicates that it is less "painful" for the economy as a whole to cope with the devaluation under a more cost-efficient transport and marketing infrastructure.

The welfare effects associated with the experiment series are straightforward. The initial devaluation requires (a) higher exports, which cause additional pressure on factor markets, and (b) fewer imports, which forces domestic industries to produce more substitutes at higher marginal costs. Due to segmented and sticky factor markets, both requirements lead to a slight contraction of total GDP at factor cost, which affects all households negatively. In general, farmers are more affected than non-farmers, but among farmers, rural farmers are affected less than their urban counterparts, and among non-farmers, urban households are less hurt than rural households. However, with the uniform relative reduction of marketing costs, farmers' welfare improves and partly recovers, whereas non-farmers' welfare further deteriorates — see Figure 9. This complies with the assumption that trade services are produced by non-farmers, and as the demand for trade services declines their income decreases.



All households[7] together lose 10.2 percent in aggregate consumption (welfare) due to the devaluation and reduced trade deficit, but recover 4.0 percentage points through the productivity increase associated with the lower marketing costs. The consumption levels of the different household groups (Figure 10) show that the economywide distributional effects of infrastructure investment and associated lower marketing costs favor poor rather than rich households.[8]



Recall that an inevitable shortcoming of this household-specific welfare analysis is the disaggregation of households, which relies on the standard disaggregation applied to most national surveys in Tanzania. Unfortunately, it groups subsistence and small-scale farmers together with medium- to large-scale farmers in rural areas, regardless of their size, technology applied, activity diversification, and relative income generation. However, we can differentiate small-scale, non-export producers from large-scale, export-oriented farmers. Consequently, the results suggest that (a) export-oriented farmers gain through the devaluation, but lose in real terms compared to non-export farmers during the subsequent experiment series; and (b) non-export farmers lose through the devaluation, but gain and even overcompensate their initial losses as a consequence of the uniformly lower marketing coefficients, which effectively increases aggregate productivity.

[7] HHUFA = urban farmers; HHUNF = urban non-farmers; HHRFA = rural farmers; HHRNF = rural non-farmers

[8] Annual average household consumption by group is deflated by household-specific cost of living indices, which incorporate own-household consumption and final household demand components.

Conclusions

The analysis in this paper compares the effect of devaluation under different levels of transport and marketing costs. The analysis suggests the following results and conclusions:

- An improved infrastructure, which allows for a more efficient transport and marketing system, releases scarce resources to other productive sectors.

- The decreasing demand for transport and marketing services per unit of output causes other commodity markets to perform more cost-efficiently, which in turn has an expansionary impact on the economy as a whole.

- Under higher cost-efficiency in transport and marketing, a much lower depreciation is required to achieve the same reduction in the current trade deficit.

- Given the initial marketing coefficients which are higher for agriculture, uniform reduction of the coefficients favors total agriculture in general and non-export agriculture in particular.

- This effect partly compensates for the impact of the initial devaluation, which favors export agriculture but disfavor non-export agriculture.

- The impact of a devaluation given better transport infrastructure is more equitable and less poverty enhancing, compared to the effects of a devaluation alone.

- The existing transport and marketing structure hampers non-export agriculture, which therefore is particularly favored by lower marketing cost.

- Low income, rural, non-export-oriented farm households benefit most from better infrastructure, since they often operate under very high transportation and marketing costs which exclude them from efficient market participation.

- The improvement of transport and marketing infrastructure has a substantial impact on the structural and sectoral performance of the entire economy and consequently on the impact of other macroeconomic policies such as a devaluation.

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