ECONOMIC AND SOCIAL RESEARCH FOUNDATION (ESRF)

Policy Dialogue Seminar on: Extent and Impact of Food Import Surges: The Case of Tanzania

1st June, 2006

Extent and Impact of Food Import Surges in Tanzania

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1.   Introduction

Imports of food products in Tanzania have grown significantly during the past decade. Trade statistics indicate food import bill increased from $44.2 million in 1995 to $183 million in 2003 (Table 1). Escalation of food imports is partly associated with further opening up of food markets in line with WTO policy of tariff reduction. Similarly the share of food and foodstuff in the import budget has been increasing. For instance, during the 4 years period before Tanzania joined the WTO in 1999, the shares of food in total merchandise imports averaged 7.3 percent, but 4 years after (1999-2002) it increased to 12.6 percent.

Table 1: Tanzania's trade balance (Million US $) 1995 – 2003

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Exports (f.o.b.)	682.9	763.8	752.6	588.5	543.3	663.3	776.4	902.5	1,129.2
Imports (c.i.f.)	1,340.5	1,212.6	1,148.0	1,382.1	1,415.4	1,367.6	1,560.3	1,511.3	1,933.5
Trade balance	-657.6	-448.8	-395.4	-793.6	-872.1	-704.3	-783.9	-608.8	-804.3
Imports of food & foodstuffs	44.2	52.7	97.0	180.9	230.7	183.0	169.4	147.3	183.0
Food % share of imports	3.3	4.3	8.5	13.1	16.3	13.4	10.9	9.7	9.5

Source: Bank of Tanzania, Quarterly *Economic Bulletin*, 2000 & 2003

Concerns have been expressed regarding the potential impact of these increased imports of food products on domestic production. At the root of these concerns is the suspicion that imported food products would compete with, or displace, local products. Such arguments are supported by the fact that some 'cheap' products originate**s** from countries where either governments subsidize their farmers or have much more developed food processing industries producing better quality products at lower production costs. It is further urged that these cheap imported products could be a disincentive to domestic production if the imported quantity is sufficiently large to depress domestic prices. This could also contribute to increase in a country's dependence on food imports as consumers often have a preference for imported products.

Counter-arguments provided by importers are that the quantities of imports are small relative to domestic production and therefore have negligible effect on domestic prices and that. due to the seasonality of domestic production, it is important to import these products to ensure continued operation of their processing plants during the low season. Importers also contend that markets for imported products and domestic production are segmented and there is no overlapping either geographically,

seasonally or by population segment. They argue that imported products either target the low-season of domestic production, urban markets with insufficient supply from distant/remote production areas and/or high income consumers including expatriates and tourist hotels who prefer specialty products such as basmati rice and brands of cheese and butter that are not readily available locally.

2.   Objectives of the study

FAO's project on the *Extent and impact of import surges in developing countries*, including Tanzania initiated in January 2005, has the following objectives:

- Analyse import surges in order to develop a critical mass of empirical evidence on the nature and source of the problem, and on linkages through which these factors cause or threaten to cause negative effects on agriculture and agro-industries as well as on various household groups;
- Develop a broader understanding of the problem in the developing countries through a process of consultation and debate involving all stakeholders, including the government;
- Make substantive contributions to analytical approaches and methodologies that would ultimately help governments in the countries affected strengthen their capacities on trade surveillance and in responding to the problem;
- Contribute analyses to inform the debate on trade remedy measures in the context of the WTO agreements.

3.   Analytical Approach

The Tanzania's case study analyses the extent and impact of import surges of rice, maize and dairy products. The commodities were selected for evaluation in part as a response to stakeholders' concern of the possible adverse impact of imports surges and the consequent government response and media coverage of the issue, and in part on the basis of statistical analysis by FAO using annual import data which identified that 3 import surges had occurred for rice and dairy and 2 for maize during the period 1999-2003[1].

The analytical approach for the case studies is based on typical steps taken in the investigation of the WTO trade remedy measures (i.e. anti-dumping, countervailing and emergency safeguards) for the purpose of the WTO disputes.

The analysis is based on a) trade data from the Statistics Unit of the Customs Department of the *Tanzania Revenue Authority (TRA),* b) wholesale prices in domestic markets from the *Ministry of Trade, Industries and Marketing*, and c) production data from the *Ministry of Agriculture, Food Security and Cooperatives*.

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[1] *A surge is said to occur when current import volume and import price deviate from established base period values.*
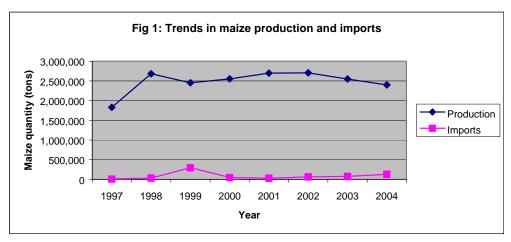
4.   Identification of the Surge

Using three different definitions of import surges, a 30 percent positive deviation from a three-year moving average of imports; one standard error above the moving average; and the WTO-defined special agricultural safeguards, an FAO study identified that a number of surges have occurred in maize, rice and dairy in Tanzania over the 1980-2003 period. Based on the preliminary analysis by FAO, further analysis was conducted in order to examine the extent and impact of import surges in the country.

Statistical analysis using annual data suggested that surges have occurred in Maize, Rice and Dairy between 1997-2004 (Figures 2-4) as follows:

- Rice imports increased by over 200 percent from 84,176 tonnes to 181,968 tonnes.
- Dairy imports doubled from 3,459 tonnes to 7,111 tonnes, with a significant increase in the most recent years.
- While a similar trend in maize imports was not observed, it is notable the import volumes fluctuated widely between 12,879 and 298,921 tonnes.

As suggested previously, import volumes often vary in accordance with changes in domestic production. Tables 2 to 4 and Figures 3 to 5 depict trends in import volumes and in domestic production for the three aggregate products.

Figure 1 suggests that for maize the pattern of import volumes has indeed reflected changes in domestic production. For instance, maize imports peaked in 1999 when domestic production was at its lowest level.
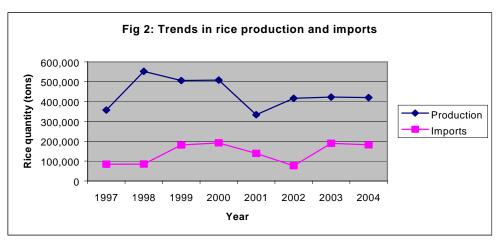

Source: Production data from FAO database and Import data from Customs Department of Tanzania Revenue Authority:

Table 2: Maize imports versus domestic production (tonnes)

Year	Maize production	Marketed volume (30%)	Maize imports	Total market volume	% Market share of import
1997	1,831,200	549,360	12,879	562,239	2.29
1998	2,684,600	805,380	35,587	840,967	4.23
1999	2,451,700	735,510	298,921	1,034,431	28.90
2000	2,551,160	765,348	49,455	814,803	6.07
2001	2,698,000	809,400	31,047	840,447	3.69
2002	2,704,849	811,455	63,375	874,830	7.24
2003	2,550,000	765,000	77,993	842,993	9.25
2004	2,400,000	720,000	128,376	848,376	15.13

Source: Production data from FAO database and Import data from Customs Department of Tanzania Revenue Authority

The volume of imported rice seems to be driven by factors other than domestic production, with import volumes often low when production levels have been depressed. Although domestic rice production has decreased by over 150,000 tonnes from its peak in 1998 to about 4.2 million tonnes in 2004, the year in which imports were at their highest level.

Source: Production data from FAO database and Import data from Customs Department of Tanzania Revenue Authority

Table 3: Rice imports versus domestic production (tonnes)

Year	Paddy production	Rice Equivalent (45%)	Marketed volume (45%)	Rice imports	Total market volume	% Market share of imports
1997	549,700	357,305	160,787	84,176	244,963	34.36
1998	849,100	551,915	248,362	85,271	333,632	25.56
1999	778,400	505,960	227,682	181,409	409,091	44.34
2000	782,300	508,495	228,823	191,585	420,408	45.57
2001	514,000	334,100	150,345	139,055	289,400	48.05
2002	640,189	416,123	187,255	76,532	263,788	29.01
2003	650,000	422,500	190,125	189,623	379,748	49.93
2004	647,000	420,550	189,248	181,968	371,216	49.02

Source: Production data from FAO database and Import data from Customs Department of Tanzania Revenue Authority

Unlike maize and rice, there is no systematic monitoring of milk production in Tanzania. The current production statistics published by the Ministry of Agriculture are based on estimated potential production from livestock population data, which ignores important production parameters such as rainfall.

The Statistics used in the report of 188 million liters per year are based on a supply chain study. The data from the Ministry of Livestock Development indicate a much higher domestic production (see table 5), while the value chain analysis estimated the actual milk in the market during the period of study. The Ministry data are consistent with those found in FAOSTAT

Table 4: Dairy imports versus domestic production (milk equivalent '000' litres)

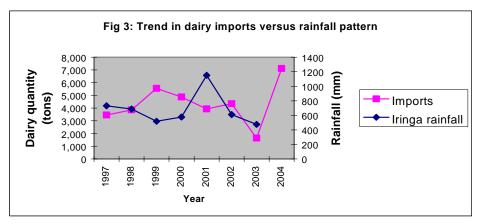| Year	Domestic production	Marketed volume (67%)	Milk equivalent imports	Total market volume	% share of market volume	Processed milk market (27%)	Volume in formal market	% share in processed milk market
1997	188,000	125,960	30,151	156,111	19.31	50,760	80,911	37.26
1998	188,000	125,960	29,442	155,402	18.95	50,760	80,202	36.71
1999	188,000	125,960	46,732	172,692	27.06	50,760	97,492	47.93
2000	188,000	125,960	36,169	162,129	22.31	50,760	86,929	41.61
2001	188,000	125,960	30,305	156,261	19.39	50,760	81,061	37.38
2002	188,000	125,960	32,269	158,229	20.39	50,760	83,029	38.86
2003	188,000	125,960	16,608	142,568	11.65	50,760	67,368	24.65
2004	188,000	125,960	69,568	195,180	35.46	50,760	119,980	57.69
				Average	21.82		Average	40.26

Source: Production data from Kurwijila *et al* (1995) and Import data from Customs Department of Tanzania Revenue Authority

Table 5: Milk production and consumption from the Ministry of Agriculture

Year	Indigenous cattle ('000' litres)	Improved Cattle ('000' litres)	Total milk production ('000' litres)	Human population (mil.)	Milk consumption per capita
1995/96	390,000	195,000	585,000	29	20
1996/97	370,000	230,000	600,000	29	20
1997/98	430,000	240,000	670,000	30	22
1998/99	437,000	250,000	687,000	32	22
1999/2000	445,000	265,000	710,000	33	22
2000/2001	514,000	300,000	814,000	33	25

Source: Ministry of Livestock Development

In the absence of reliable annual milk production data, figure 4 depicts rainfall data in Iringa, a catchment area for milk processors, as proxy for domestic milk production. The correlation between rainfall and dairy imports volumes appears to be negative (as expected) during the 1990s, although the relationship has become less clear in recent years, suggesting that import volumes are determined by factors other than domestic production.
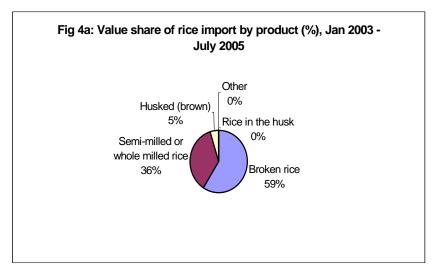

Source: Rainfall data from Tanzania Meteorological Agency and Import data from Customs Department of Tanzania Revenue Authority

The fact that there is evidence of the expected relationship between the level of rainfall and the level of imports does suggest however that basing output on animal numbers is likely to result in a significant overestimate of production, particularly in low rainfall years. The discussion of aggregate dairy production therefore needs to bear these significant discrepancies in mind.

In order to develop the basis for further analysis however, it is necessary to investigate the import trends at a more disaggregated level to determine which sub-products are particularly problematic in order to identify the source of and reason for the surge.

Rice:

Two main components of rice are imported to Tanzania (Figure 4a): broken rice and (semi) milled rice. Since 1998 there has been a significant shift in the composition of rice imports with broken rice surpassing milled rice imports (Figure 4b). The change in rice import composition reflects the changing consumption pattern particularly in the growing food service industry. The emergence of supermarkets and the growing tourist hotel industry has created demand for some specialized food products such packed broken rice (as opposed to unpacked rice sold in mainstream open markets). The increase in imports of husked rice, observed in recent years, might be explained in part by the decrease in tariff of the product from 30 percent in 1998 to 25 percent in recent years.

Fig 4a: Value share of rice import by product (%), Jan 2003 - July 2005

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data
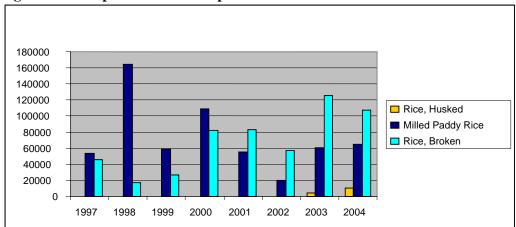
Figure 4b: Components of rice imports

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

Contrary to importers' claim that rice imports are to close the food demand gap arising from the seasonality of domestic production, there is no indication that imports arrive only at points in the production year where domestic supplies are at their lowest (Figure 5).
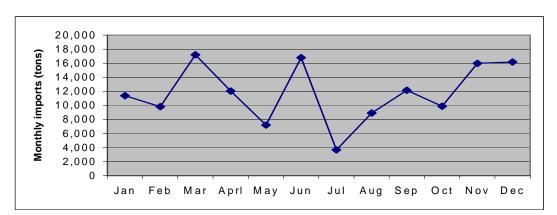
Fig 5: Average monthly imports of rice, Jan 1997- Jul 2005

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

Rice was imported from 22 different countries and in general most rice was imported from Asia. Vietnam is the single largest source of rice imported to Tanzania, accounting for slightly over a half of rice imports (Figure 6). Other important sources of rice imports are China, Thailand and Japan. Japan is one of the leading rice food aid donors to Tanzania. Analysis of products by source indicates that broken rice was mainly imported from Vietnam and Thailand, husked (brown) rice from India, and semi-milled rice from Vietnam, China and Japan.
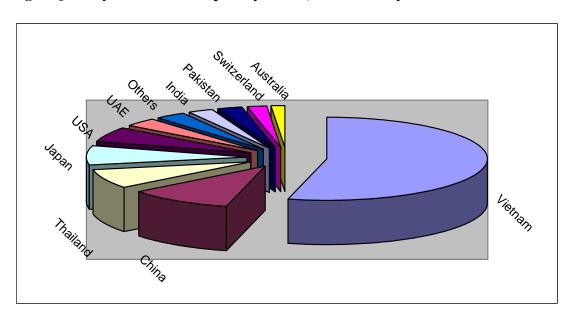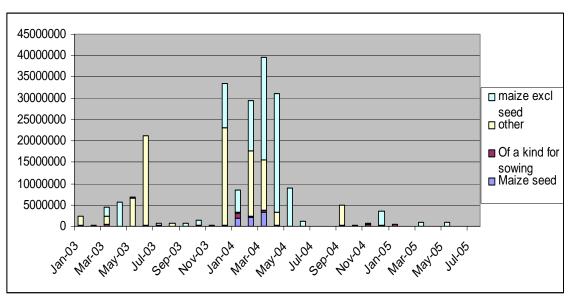
Fig 6: Quantity share of rice import by source, Jan 2003-July 2005

Maize

Maize imports are variable and tend to be reflective of production shortfalls.

Fig 9: Trend in imports of maize products

For the period 2003 to 2005 for which monthly data by maize product is available, it is apparent that maize imports tend to occur pre-harvest (Figure 8).

Maize imports originated from 22 different countries with the largest sources being the USA, India and South Africa (Figure 9). A significant amount of maize was also

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imported from sources in the region (Eastern and Southern Africa). Maize originating from Kenya, Malawi and Zambia is mainly maize seed.

Fig 9: Quantity share of maize import by source, Jan 2003-July 2005

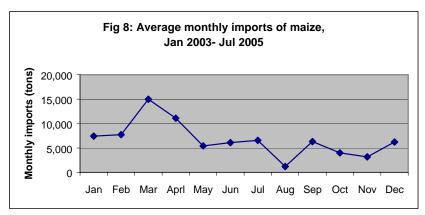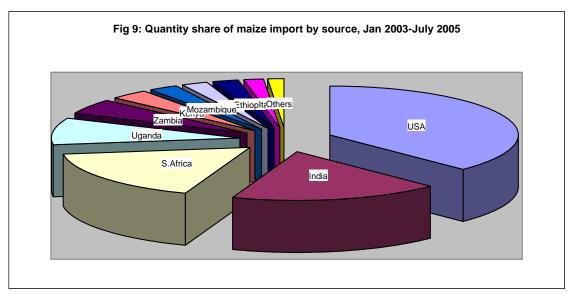**Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data**
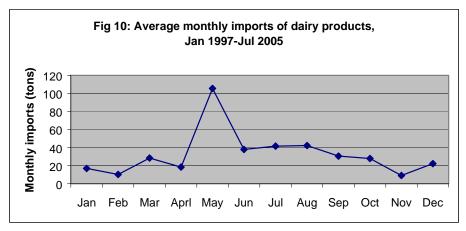
Dairy:

At face value, Figure 4, depicting total dairy imports is, with possible exception of 2004 not suggestive of significant surges. However, when imports are considered in milk equivalent and given the small market segment for processed milk (and other dairy products), the share imports is quite significant. For instance, as demonstrated in Table 8, only 67 percent of the domestic production (125 million liters if production of 188 million liters is assumed) enters the market[2]. It is further estimated that 27 percent of milk produced (or 50 million liters) is processed. Dairy imports in 2004 amounted 69 million liters when translated into milk equivalent, which is about 58 percent of market share for processed products.

Monthly averages suggest that imports occur mostly during May to August which coincides with the glut season for domestic production (Figure 10). Such observations negates the postulate of closing a demand gap arising from seasonality of production, as often claimed by importers.
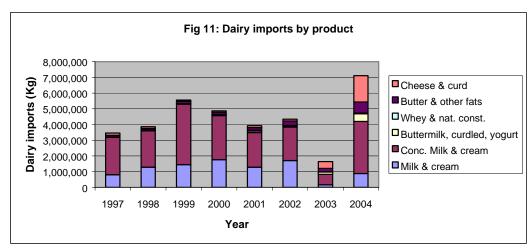
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[2] *Based on the supply chain study by Kurwijila*

**Fig 10: Average monthly imports of dairy products,
Jan 1997-Jul 2005**

Monthly imports (tons)

120
100
80
60
40
20
0

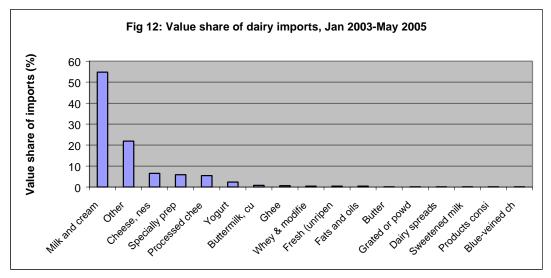Jan Feb Mar April May Jun Jul Aug Sep Oct Nov Dec

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

Broken down by product category, the period has been characterized by initial increases in both concentrated and un-concentrated milk and cream (1997-99) but more recently by significant increases in other higher value dairy products, e.g., cheese and curd, butter, buttermilk and yogurt. Although these products represent a relatively small component of the total dairy import value over the 8 year period (Figures 11 and 12) their importance as a proportion of the total is increasing quickly and could have important implications for the processing sector. The change in the composition of imported dairy products could be attributed to two factors, the changing demand pattern particularly in the food service industry and the development of specialized marketing by supermarkets. It is argued however that the significant increase in imports of these products may not have been as damaging as had the increase occurred in the milk and cream product category, given the respective points of competition in different market segments.

Fig 11: Dairy imports by product

Dairy imports (Kg)

8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0

1997 1998 1999 2000 2001 2002 2003 2004

Year

□ Cheese & curd
■ Butter & other fats
□ Whey & nat. const.
□ Buttermilk, curdled, yogurt
■ Conc. Milk & cream
■ Milk & cream

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

Fig 12: Value share of dairy imports, Jan 2003-May 2005

Source: Authors' calculations from Customs Department of Tanzania Revenue
Authority data

Sources of imports for dairy products are more diversified (50 countries) than for rice
or maize but led by South Africa, Kenya and Netherlands (Figure 13). The
multiplicity of dairy products and importers explains the diversity in import sources.
Analysis of products by source do not show any consistent pattern. For example, milk
and cream was mainly sourced from Kenya, South African, Zimbabwe and
Netherlands while yogurt originated from South Africa, U.K and UAE.

Fig 13: Quantity share of dairy imports by source

Source: Authors' calculations from Customs Department of Tanzania Revenue
Authority data

Identifying Like, Competitive and Substitutable Products

The argument of competition between domestic and imported products would be valid if the pair of products (domestic and imports) are considered to be 'like' or 'substitute'. "Like" product is interpreted to mean a product which is identical (i.e. alike in all respect to the product under consideration, or in the absence of such a product, another product which, although not alike in all respects, has characteristics closely resembling those of the product under consideration.) . In contrast to the technical nature of the word substitutable, the interpretation of the word competitive is based on economic reasoning, from the demand or consumer side. Usually elasticity of substitution is used as evidence for substitutes.

Imported products that are 'like' local products are broken rice, milled or semi-milled rice, maize grain, butter, cheeses, fats and oils, yogurt and ice cream (Table 6). Some imported products are vertically or horizontally linked with local products thus creating competition. For instance imported milk and cream is reconstituted into fluid milk and hence displaces raw milk from local producers that could be sold to processors. In addition, reconstituted milk competes directly in the market with unprocessed milk from smallholder producers. Confectionery industry is another example of a vertical link where domestic and imported products compete in the market. Because of multiplicity of products, competition in vertically and horizontally linked products is more pronounced in dairy than in rice and maize products.

Table 6: Identification of 'like', competitive and substitutable products

Imported Product	"Like"	"Competitive" or Vertically linked	"Substitutable" or Horizontally linked	Input/Output (other sectors)
Broken rice	Local broken rice	Milled rice Paddy rice	Maize,	Rice husk stoves (substitute for charcoal) Home made poultry feed
Semi-milled or whole milled rice	Milled rice	Paddy rice Broken rice	Maize	Input to husk stoves and poultry feed
Maize (excluding seeds)	Maize grain	Maize flour	Rice	Livestock feed Beer
Milk and cream (reconstituted to fluid milk by local industries)	None	Fluid milk, processed milk from domestic production	None	A range of products in the processed milk market, confectionery and food service Bread, Biscuits, Yogurt, Cheese, Butter, Ice Cream, Margarines
Cheese (nes, processed, fresh un-ripen)	Local processed cheese	Fluid milk from domestic production	None	Cheese in the up market food service industry particularly tourist hotels
Yogurt	Local industry processed yogurt and home made yogurt	Fluid milk from domestic production	Fluid milk from domestic production and a range of products in the food service e.g. ice cream, milk shakes, milk tea, etc.	Yogurt and fruit blended products
Specially prepared for infants	None	Fluid milk from domestic production particularly in middle and high income households	None	None
Fats and oils	Local industry processed fats and oils	Home (farm) made oils and fats	Fluid milk from domestic production	Food service industry including food vendors
Butter	Local industries processed butter	Home (farm) processed butter, Margarines	Fluid milk from domestic production	None
Others (ice cream)	Local industries processed ice cream	Home made ice cream	Fluid milk from domestic production	Processed ice cream from imported milk powder

5. Reason for the Surges

The "causes" of import surges are often discussed in terms of external factors. However, there have been a number of significant changes in domestic policies and institutions that may have increased the incidence of import surges. Such factors include trade policy reforms associated with multilateral and regional agreements, domestic policy reforms associated with domestic market liberalization, changes in price and exchange rate distortions, and increased levels of Foreign Direct Investment (particularly in supermarkets, tourist hotels and food service) which can also significantly affect trade flows.

5.1 Changes in trade policy

The escalation of food imports in Tanzania occurred during the implementation period of the UR AoA. In adhering to commitments made in the context of the WTO, the government of Tanzania adopted MFN WTO bound tariff rates in 1999. Since the EAC Customs Union became effective in January 2005, the common external tariff for dairy products has been raised to 60 percent for milk and cream and 25 percent for other dairy products, and the maize tariff has been increased from 25 to 50 percent.

During the 4 year period before Tanzania implemented their WTO commitments, the share of food in total merchandise imports averaged 7.3 percent, but in the 4 years after (1999-2002) it increased to an average of 12.6 percent . This increasing trend in food imports bill is contrary to the national trade policy objective of reversing the negative trade balance.

5.2 Domestic market liberalization:

Consistent with the adoption of policies in line with a market based economy, food markets were fully liberalized in 1994/95[3]. However, the government continues to operate the Strategic Grain Reserve (SGR) as the emergency and disaster food relief policy instrument. SGR operations are restricted to maize which is the country's staple. Market liberalization has undoubtedly contributed to increases in food trade including that of rice, maize and dairy products.

5.3 Price and exchange rate distortions:

Past studies on price distortions Effective Rate of Protection (ERP) and Nominal Protection Coefficient (NPC) and on comparative advantage of both food staples and traditional exports, indicate that Tanzania has a comparative advantage in production of rice and maize (with DRC<1). In most study areas, an NPC>1 suggests that farmers have been protected while consumers have been taxed. Such results conform with stakeholders' perceptions - for example, a prominent miller and import/exporter trader asserted that in normal (non-drought) years it is unprofitable to import maize to Tanzania. A recent study on informal cross-border trade also suggests that Tanzania is in most years, a net exporter of maize to neighboring countries.

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[3] For further detail, see Musonda and Wanga in Thomas ed 2006 for further detail

5.4 Foreign Direct Investment:

FDI is linked with trade (including food trade) through multinational investments in hotels, supermarkets and food services that procure some of their supplies from the country of origin of the financing. Tanzania has been among the leading destinations of FDI flows to Sub-Saharan Africa during the last decade. Statistics indicate that some of the leading sources of FDI flows to Tanzania originating from the Netherlands, South Africa and Kenya, contributed significantly to increased food imports to the country. Together with tourists, expatriates belong to the upper market segment, an important target market of the food service industry.

6. Understanding and Documenting Injury

6.1 Stakeholders' perceptions

Perceptions of the injury associated with food import surges vary across commodities and by the size of enterprises. For instance, amongst large milk processors and importers of powered milk for reconstitution into fluid milk, support continued for unrestricted dairy imports to sustain their production during the dry season when domestic milk is scarce. However, small and medium processors and milk producers believe that imports suppress fluid milk prices and displace their sales to processors. The dichotomy in the opinion of milk processors is reflected in government actions whereby a 25% suspended duty was imposed on dairy products in 1999 in response to small and medium processors lobbying but was later reduced to 20% in 2001 as the large processors complained. During one interview, a prominent dairy technologist revealed that dairy processors offer uncompetitively low prices to milk producers and hence milk sold to processing industry is only a 'residual' after producers have sold to households and hotels. Such observations support the notion that cheap imported milk powder competes with local milk at the processing stage.
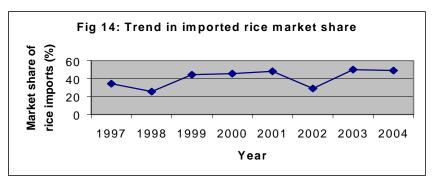
On the other hand, large millers of cereals appear indifferent to the level of imports of rice and maize as they have been driven out of the market by small millers and now focus almost exclusively on milling wheat. Moreover, they contend that even at a zero percent tariff, Tanzania is still competitive in maize production. Medium scale maize millers argue that imports are beneficial as they sustain their milling business during drought years. However, medium scale millers of rice have a different opinion as they think the infant rice processing industry needs protection to grow. Stakeholders in supermarkets and the food service believe that imports are beneficial as they supply products which are not available locally and create competition needed to promote better quality local products. Producers on the other hand have a negative perception of imports as they believe, perhaps understandably, that imports compete with domestic production.

6.2 Competition for market share:

Competition for market share is one indicator of 'injury' to local products arising from imported products (Figures 19 and 20 and Tables 6 to 8).

In the analysis of the share of maize imports in marketed volume, it is assumed that 30% of domestic production is marketed. Generally, imports comprise less than 10% of the total marketed volume but is subject to significant increases in drought years.

For rice, the market share is determined by assuming that 45% of the domestic production (in rice equivalents) is marketed, with the rest used in home consumption[4]. The total market volume is the sum of this value and the volume of imports. Under this assumption, it appears that the share of imports in the marketed volume has increased from 35% in 1997 to almost 50% in 2004 (see figure 14). The lower share in 1998 (25%) appears to be explained by a peak in domestic production, whilst in 2002 the share (29%) appears to be a result of a significant reduction in import volumes.
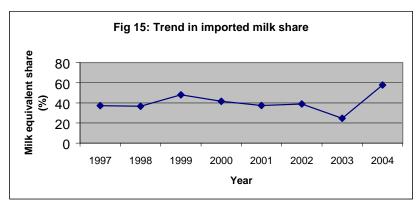

Fig 14: Trend in imported rice market share

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

The analysis of the share of dairy imports in total marketed volume assumes that 67% of domestic production is marketed. Given the difficulty in determining domestic production, as explained earlier, the share of imports in the total marketed volume is related solely to the level of imports (ie domestic production data is constant). Between 1997 and 2002, the share varied around 20%, it dipped sharply in 2003 (11%) before increasing to a peak of 35% in 2004. A similar pattern, but significantly higher share if calculated for the share of imports in the processed milk market (assumed as including 27% of domestic production in milk equivalents). In this market segment, imports provided almost 60% on the marketed volume in 2004 (figure 15).

If only urban markets are considered (where most imported rice and dairy products are sold) the market share of imports is much higher. A Land O' Lake's study estimates the share of imported dairy products in the processed milk market to be 43%, similar to the average value in table 8.

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[4] This assumption is subject to the limitation that the share of domestic production that is marketed is assumed constant across the period. In years of above average harvest, it is possible that a greater share of domestic production is marketed.

Fig 15: Trend in imported milk share

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

The issue of timing of imports and geographical targeting a worthy considering in the analysis. It is noteworthy that the increase in the market share of food imports is coupled with a relatively stagnant domestic production in each product aggregate. For example, since 1998 annual domestic production for maize has not broken the ceiling of 2.7 million tonnes while in the same period paddy production declined from 849,100 tonnes to 647,000 tonnes. However, both the literature and stakeholders survey suggest the country is far from exhausting their production capacity for the 3 commodities.

6.3 Price competition

Another indicator of injury is 'price competition'
The issue of different 'qualities' within product aggregates obviously makes difficult to make a fair price comparison, particularly in dairy.

However, at an aggregate level, a comparison of unit CIF price and wholesale prices in the domestic markets reveals that imported rice is cheaper even after adjusting for a 25% tariff (Table 7 and Figures 16-18). For instance the average wholesale price of rice in Dar es Salaam in 2004 was Sh. 551/kg while the corresponding unit value for imported rice was Sh. 245/Kg (approx. $216/tonne) or Sh.306/kg (approx $270/tonne) after tariff. In 2004 Thailand's export prices per tonne (a proxy for international market prices) ranged between $210 and $280 per tone.

Table 7: Comparison of import price (unit CIF) and local (Dar) market prices

Weighted Means Unit prices of imports (CIF Dar)-Sh./kg			
PRODUCT	**2003**	**2004**	**2005**
MAIZE			
Maize (excl. seeds)	121	230	154
RICE			
Broken rice	206	245	186
Husked (brown)	184	372	661
Semi-milled or	148	292	294
DAIRY			
Blue-veined cheese		13005	
Butter	516	2815	6714
Buttermilk, curdled milk and cream, etc (excl. yogurt)	852	1052	1254
Cheese, nes	2424	1951	5549
Dairy spreads	287	12	2473
Fats and oils derived from milk (excl. butter and dairy spreads)	1166	423	10309
Fresh (un-ripened or uncured)cheese, including whey cheese and curd	1097	581	2590
Ghee	429	453	562
Grated or powdered cheese	444	3735	4749
Milk and cream	926	631	713
Other	614	675	1788
Processed cheese, not grated or powdered	688	2512	1418
Products consisting of natural milk constituents, nes	651	1454	351
Specially prepared for infants	2348	583	480
Sweetened milk and cream (excl. in solid form)	2320	802	
Whey & modified whey, whether or not concentrated or containing sweetening matter	681	1025	446
Yogurt	2653	2661	3421
Wholesale prices (Dar)			
Maize	191	174	162
Rice	411	521	551
Retail prices (Dar)			
Maize	259	340	248
Rice	521	669	710
Milk	400	400	400

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

Analyses of unit prices by country of origin indicate that cheaper sources on average had the largest share in the total value of imports. For instance, Vietnam which accounted for half (53.8%) of the value of imported rice had a unit CIF value of Sh.215/kg for broken rice in 2004 (see Map 1). Other countries with significant shares in the value of rice imports, and their corresponding unit prices for broken rice, are China (10%, Sh.266/kg), Thailand (7.6%, Sh.235/kg), and Japan (10%, Sh.220/kg).

Map 1: Sources of rice supply for Dar es Salaam

Volume market share of national rice production
(wholesale price-2004), and distance to Dar

| Morogoro 18%, Sh.498 200km | Mbeya 15%, Sh.485 893km | Shinyanga 17%, Sh.406 911km | Tabora 8%, Sh.427 889km |

Wholesale price
Sh.551/kg
DAR ES SALAAM
Unit CIF Sh./kg
215   266   235   220

| Vietnam 53.8% | China 10% | Thailand 7.6% | Japan 10% |

Market value share of rice imports

The situation is slightly different for maize where CIF unit prices of imports from some source countries are higher than wholesale prices (see Map 2). India, which is second in terms of value share of imported maize had a unit price of Sh.225/kg and slightly above that of maize from South Africa (Sh.275/kg). However, the USA, the largest source of maize imported to Tanzania (37.5%) has unit price of Sh. 146/kg, which is lower than Dar es Salaam wholesale price of Sh.174/kg.

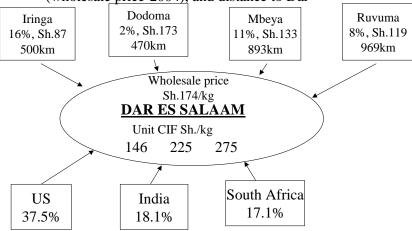**Map 2: Sources of maize supply for Dar es Salaam**

Volume market share of national maize production
(wholesale price-2004), and distance to Dar

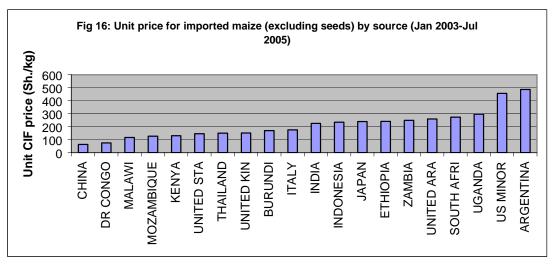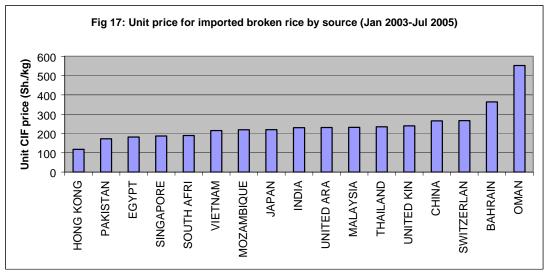| Iringa 16%, Sh.87 500km | Dodoma 2%, Sh.173 470km | Mbeya 11%, Sh.133 893km | Ruvuma 8%, Sh.119 969km |

Wholesale price
Sh.174/kg
DAR ES SALAAM
Unit CIF Sh./kg
146   225   275

| US 37.5% | India 18.1% | South Africa 17.1% |

Market value share of rice imports

Fig 16: Unit price for imported maize (excluding seeds) by source (Jan 2003-Jul 2005)

Categories (left to right): CHINA, DR CONGO, MALAWI, MOZAMBIQUE, KENYA, UNITED STA, THAILAND, UNITED KIN, BURUNDI, ITALY, INDIA, INDONESIA, JAPAN, ETHIOPIA, ZAMBIA, UNITED ARA, SOUTH AFRI, UGANDA, US MINOR, ARGENTINA

Y-axis: Unit CIF price (Sh./kg), 0 to 600

Source: Authors' calculations Customs Department of Tanzania Revenue Authority data

Fig 17: Unit price for imported broken rice by source (Jan 2003-Jul 2005)

Categories (left to right): HONG KONG, PAKISTAN, EGYPT, SINGAPORE, SOUTH AFRI, VIETNAM, MOZAMBIQUE, JAPAN, INDIA, UNITED ARA, MALAYSIA, THAILAND, UNITED KIN, CHINA, SWITZERLAN, BAHRAIN, OMAN

Y-axis: Unit CIF price (Sh./kg), 0 to 600

Source: Authors' calculations from Customs Department of Tanzania Revenue Authority data

Fig 18: Unit prices for milk and cream (not conc.), Jan 2003-July 2005

 Source: Authors' calculations from Customs Department of Tanzania Revenue
Authority data

6.4 Oligopolistic competition:

Analysis by importers' shares of imports reveals that despite the large number of
importers, food imports are dominated by a few large firms, a characteristic of an
oligopoly market. For example, the value share of rice imported by the single largest
firm is 27 percent (Table 8). Import shares of the largest importers of maize and dairy
are 41 percent and 16 percent respectively. Similarly, the top five percent of importers
imported 74 percent of rice, 94 percent of maize and 61 percent of dairy products. An
oligopoly market is liable to collusion particularly in fixing price, as some
stakeholders complained during an interview.

Table 8: Import share of importers (Jan 2003-July 2005)

	Rice	Maize	Dairy
Number of importers	116	70	175
Import value share (%)			
Largest importer	27.48	40.87	16.18
Top 5% importers	74.33	93.77	60.95
Top 10% importers	88.45	96.72	83.59

**Source: Authors' calculations from Customs Department of Tanzania Revenue
Authority data**

6.5 Concessional imports of food aid:

An analysis of importers of food commodities further indicates that United Nations
agencies such as WFP accounted for 95.6 percent of imported maize grain (excluding
seeds) between Jan 2003 and July 2005. The US is the single largest source of
imported maize. Although the CIF unit price for UN maize in 2004 (Sh.149.9/kg) was
below the wholesale price in Dar es Salaam (Sh. 174/kg), the concessional price at
which food aid is sold in the market (Sh. 50/kg) is the point of concern.

6.5 Seasonal and spatial competition:

Other points of concern are 'temporal' and 'spatial' competition. Analyses indicate that most maize imports occur in the first half of the year before harvest, with import volumes gradually tapering off towards the end of the year. However, rice imports are observed throughout the year and steadily increase during the harvest season. A similar trend is observed for dairy products where imports peak during April to June when there is already a glut in domestic production. Possibly, import patterns reflect seasonal production patterns and corresponding prices in the northern hemisphere where a large proportion of the imports originate.

Spatial competition emanates from the fact that the entry point for most imported food products is Dar es Salaam, the largest urban market, which is also targeted by local producers and processors. The impact of imported products on prices of other markets will, therefore, depend in large part on their degree of integration with the Dar es Salaam market.

The argument for market share and price competition are valid if imported products have corresponding 'like', or 'substitute' local products, or at least if there is a vertical or horizontal linkage among the products. Imported products that are 'like' local products are broken rice, milled or semi-milled rice, maize grain, butter, cheeses, fats and oils, yogurt and ice cream. Some imported products are vertically or horizontally linked with local products, thus creating competition. For instance imported milk and cream is reconstituted into fluid milk and hence displaces raw milk from local producers that could be sold to processors. In addition, reconstituted milk competes directly in the market with unprocessed milk from smallholder producers. Because of multiplicity of products, competition in vertically and horizontally linked products is more pronounced in dairy than in rice and maize products.

Competition for market share is exacerbated by the fact that 'like' or 'substitutable' products have the largest market shares. For instance the share of broken rice and whole or semi-milled rice in the value of imported rice were 59 and 36 percent, respectively (for the period Jan 2003 to July 2005). Similarly maize grain accounted for 53 percent of imported maize value while the share milk powder and cream in dairy imports was 55 percent in milk equivalents. A 2004 dairy consumers study by Land O' Lake indicates that among processed products, imported products received 'top of mind' listing while many Tanzania brands were not recognized.
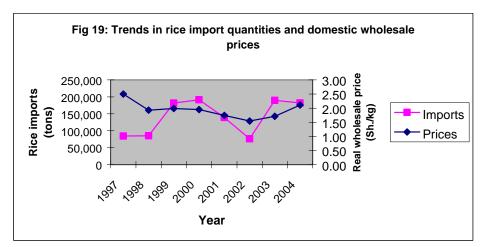
Another form of injury is the below capacity operation of processing plants particularly in the dairy sector. During the stakeholders' survey it was observed that some dairy producers cum processors import some products such as cheese to supplement their own production so as to ensure that they are in a position to supply their market outlets.
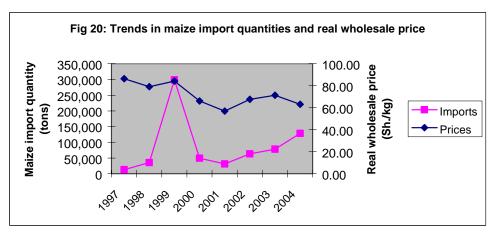
7. Causation: Analysis of price transmission

This section analyzes the relationship between imports and prices in local markets. The analysis is based on the hypothesis that imports exert downward pressure on local market prices.

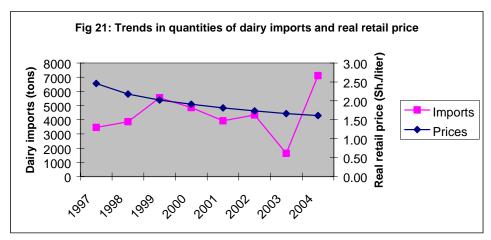### 7.1 The Dynamic Linkage Between Import Volumes and Local Prices

Figures 19-21 depict annual price movements for wholesale Dar es Salaam market after deflating them with Consumers Price Index (CPI). Corresponding import quantities are shown in the opposite axes. The graphs indicate that real prices are declining and fluctuating in all commodities and moving in the opposite direction to import quantities. As expected, milk exhibits the largest fall in real price, reflecting the stagnant nominal price.

Fig 19: Trends in rice import quantities and domestic wholesale prices

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

Fig 20: Trends in maize import quantities and real wholesale price

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

Fig 21: Trends in quantities of dairy imports and real retail price

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

7.2 Engle-Granger Cointegration and Causality Tests

The short- and long-run relationship between food import volumes and domestic market prices in Tanzania are analysed using cointegration analysis and error correction model (ECM). Cointegration and ECM has been widely used to describe the dynamic relationship between economic variables by using time series. For example Awudu and Jaquest (2002) examined the relationship between exports and economic growth in Cote d' Ivore. The technique has the advantage that it can be used to explore the extent of price transmission from international to domestic markets (George et al, 2004).

Cointegration can be thought of as a long run equilibrium relationship between economic variables. If two or more variables are integrated, there is a tendency for them to co-move in the long-run according to a linear relationship. In the short-run however, the variables my drift apart as shocks in the market may not be instantaneously transmitted to the other variable due to for example, the transaction costs associated with transport or import logistics. However, arbitration opportunities ensure that these divergences from the underlying long run (equilibrium) relationship are transitory and not permanent.

Data and Estimation

Monthly data on wholesale prices of rice and maize and their corresponding import volumes for the period of January 1997 to July 2005 are used in the estimation (i.e. sample = 103). The series of prices are deflated by the national Consumer Price Index (CPI, 1994=100). Price data was obtained from the Ministry of Industry, Trade and Marketing while import data was solicited from the Statistics Unit of the Customs Department of the Tanzania Revenue Authority. The maize price series had 5 missing values which were interpolated by using a linear trend. Moreover, 0 imports were

recorded in 3 months and since the model was estimated in log form, these 0 were converted to one[5].

On the hypothesis that imported food products could have adverse (depressing) effect on domestic market prices, the bivariate relationship between domestic wholesale food price and food import volume is expressed as follows;

$$DWP_t = f(IMPORTS) \tag{1}$$

For application of cointegration techniques, equation (1) can be expressed in the following linear logarithmic form:

$$LDWP_t = \alpha + LIMPORTS_t + \varepsilon_t \tag{2}$$

where L represents the natural logarithms of the variables and ε is the error term.

The investigation of the long-run relationship between LDWP and LIMPORTS in a cointegration framework begins with an examination of the integration properties of data. Since the variables in equation (2) are generated through time series processes, there exists a possibility that they are non-stationary. If the variables are non-stationary, the standard regression techniques such as OLS are not appropriate to obtain coefficients in equation (2) due to what is called the "spurious regression" phenomenon. Therefore, variables in equation (2) must be tested to determine whether they are non-stationary or in particular whether they have unit roots, that is integrated of order zero ($I(0)$). To test for the presence of unit roots, the Augmented Dickey-Fuller (ADF) tests are performed on LDWP and LIMPORTS. The ADF test was performed in levels as well as in first-differences for each variable and results presented in Annex 1. Moreover, the ADF test was conducted separately with and without a time trend in the ADF equation. The hypothesis of the existence of unit roots is not rejected for both LDWP and LIMPORTS.

After determining the order of integration of variables, equation (2) was tested for the presence of any cointegrating relationship. Although individual series may be non-stationary, their linear combination could be stationary and hence cointegrated.

Once the long-run equilibrium is established, Granger causality is then tested using the ECM (equation 3). Given that the first differences reflect the rate of change of each variable, the following error correction model is used to examine the short-run and nature of causality in between domestic market prices and food imported.

$$\Delta LDWP_t = \alpha_0 + \alpha_2 LIMPORTS_t + \alpha\mu_{t-1} + \varepsilon_t \tag{3}$$

where Δ denotes first difference; μ_{t-1} is the one-period lagged value of the residual (or error correction term EC) from equation (2), the empirical estimate of the equilibrium error term, and ε is the error term. The error correction term accounts for the short-term deviations from the long-term equilibrium relationship implied by the co-

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[5] *All the testing and estimation processes were performed by using the computer package LIMDEP.*

integration. If the α_2 is statistically significant, it tells us what proportion of the dis-equilibrium in LDWP in one period (month) is corrected in the next period.

Testing for the Granger causality requires that the variables used in the regression be either stationary or nonstationary but cointegrated. Variable A Granger causes variable B if the lagged values of A help in explaining the current values of B. In other words, B is said to be Granger caused by A, if A helps in prediction of B, or equivalently if the coefficients on the lagged As are statistically significant.

The Empirical Results

The results of the stationarity tests conducted for the price and import variables are reported in Table 9. The ADF test evaluates the null hypothesis that a variable has a unit root against the alternative that it is stationary. At the conventional significance levels, the null hypothesis is not rejected for import quantity variables but rejected for prices in both maize and rice. However, testing for the same hypothesis for the first differences allows us to reject the unit root hypothesis at 1% level for all variables. Since differencing produces stationarity, it is concluded that that each of import quantity series are stationary or integrated to the order of $I(0)$ while each of the price series are non-stationary or integrated of order one (i.e., $I(1)$).

Table 9: Unit Root Test: AR model with constant and time trend (n=103 i.e. Jan 2003-July 2005)

Commodity	Variable	Levels		First-differences	
		ADF	Critical-values (1% and 5%)	ADF	Critical-values (1% and 5%)
Rice	Domestic price	-3.288	-4.06, -3.46	-10.922**	-4.06, -3.46
	Import quantity	-6.631**	-4.06, 3.46	-8.318**	-4.06, 3.46
Maize	Domestic price	-3.721*	-4.06, -3.46	-10.578**	-4.06, -3.46
	Import quantity	-4.740**	-4.06, -3.46	-19.419**	-4.06, -3.46

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

Since one of the variables (price) in equation (2) is non-stationary, direct estimation of the model would result into a spurious regression. Therefore, Engle-Granger technique is employed to examine the long-run equilibrium relationship between import quantities and domestic prices (Table 10). Testing for the long-term cointegration between domestic wholesale price and import quantities we note that we cannot reject the hypothesis of no cointegration, indicating strong evidence of long-run relationship between the variables (highly significant at 1% and 5%).

However, the degree of integration in maize imports and domestic prices is relatively weak (significant at 5% but not at 1%). Given the high degree of government intervention in the maize sector (discussed in previous sections) we can expect the price of maize to be more driven by policy decisions, rather than by the world market prices. The negative coefficients for the variables indicate rice and maize import quantities and domestic wholesale prices moved in opposite direction, thus supporting the notion that food imports depress domestic prices.

Table 10: Engle-Granger (EG) Cointegration Test: test between Domestic Price and Import quantities (n=103 i.e. Jan 2003-July 2005)

Commodity	AG ($\Delta\mu_t$)	t-value	Critical value (1% and 5%)	R	DW
Rice	-0.288**	-3.686	-2.589, -1.943	0.147	2.152
Maize	-0.219*	-3.583	-2.589, -1.943	0.113	2.120

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

After assessing cointegration, the short-run dynamics (or the direction of causality between the variables in the cointegration equation is examined by estimating the error correction model (Table 11). The key objective is to ascertain whether or not domestic prices are influence by imports or vice versa, or both hold true. The Engle and Granger error correction specification can be used to test for Granger causality as shown in equation (3).

Table 11: Error Correction Mechanism (ECM) and Short-run Dynamic Model (n=103 i.e. Jan 2003-July 2005)

Equation	Dependent Variable	$\Delta\mu_{t-1}$ (ECM)	t-value	P-value	R^2	D.W
Rice	Domestic price	-0.207**	-3.405	0.001	0.113	1.99
Maize	Domestic price	-0.185**	-3.075	0.002	0.090	1.925
Rice	Import quantity	-0.983**	-9.931	0.000	0.506	1.937
Maize	Import quantity	-0.920**	-9.531	0.000	0.482	2.026

Source: Author's calculations based on import price data from Customs Department of Tanzania Revenue Authority and domestic market prices (wholesale and retail) data from the Ministry of Industry, Trade and Marketing

These results show that short-run changes in import quantities of both rice and maize have significant negative effects on domestic prices. The estimated ECM for rice is 0.2 suggesting that about 20 percent of the divergence from the long-run equilibrium is corrected each month. The significance of the error correction coefficient (ECM) in the price equations implies changes in import volume Granger cause changes in domestic wholesale prices, that is, domestic wholesale prices adjust to changes in import volumes. The negative signs in both equations indicate import quantities of rice and maize exert pressure on domestic wholesale prices. The ECM coefficient for rice is much larger than that of maize which could be attributed to the larger market share of imported rice relative to that of maize.

When variables in equation (3) are reversed to make import quantity the dependent variables, ECM coefficients and R-square increases. The statistical significance of the

ECM coefficients in the reversed variable equations suggests that the direction of causality between domestic market prices and import quantities is two-way, in other words, that increase in market prices attract greater levels of imports and that greater levels of imports can depress market prices.

Market Integration and price transmission

The issue of market integration is pertinent to the assessment of the impact of import surges as it provides some insight as to whether the impact of imports volumes is restricted to Dar es Salaam, or transmitted to regions producing the commodities. Two trading markets are assumed to be integrated if price changes in one lead to price responses in the other. If Dar es Salaam market is integrated with regional markets, it implies that international market prices will also be transmitted to regional markets.

The analysis of the extent of price transmissions between Dar es Salaam and its supply regions uses the framework of co-integration, causality and error correction mechanism as explained above. Because of many gaps in the price series, the analysis is limited to one market for each commodity, i.e. Iringa for maize and Morogoro for rice. The results suggest that Dar es Salaam is integrated with both markets (Annex 1). The direction of causality is two way for rice but one way (Dar to Iringa) for maize. The implication of such finding is that the impact of import surges is not restricted to Dar es Salaam alone, but transmitted to these production areas.

8. Conclusions and Policy Implications

8.1 Conclusions

The issue of import surges is pertinent to Tanzania for a number of reasons. First it involves commodities such as rice and maize that support the livelihood of many households. For instance 79 and 15 percent of Tanzania's 4 million farming households are engaged in maize and rice production respectively. Second, maize and rice are staples contributing 26 and 6 percent respectively of the daily calorie intakes of households. The respective food budget share for maize and rice are 5 and 13 percent. Third, food processing, though emerging, is still at its early stages of growth relative to a similar industry other countries in the continent such as Kenya, Zimbabwe and South Africa. Last, besides being a member of WTO, Tanzania has joined Customs Unions under regional trading blocks such as EAC and SADC and hence needs to evaluate the impact of its trade policies.

Analytical results show some evidence of import surges in rice and dairy but limited evidence for maize. Consequently, indicators of injury are more pronounced in rice and dairy than in maize. However, because of data limitation and multiplicity of dairy products, it has only been possible to examine comprehensively, the existence of injury by imports in the rice market. Injury in local markets is exhibited through competition between local and imported products in market share, price, spatial markets and seasonality. Another indicator of potential injury is the development of an oligopolistic market structure among food importers, which gives room for unfair market behavior such as price fixing.

8.2 Policy Implications

In view of the main findings above, policy and other implications are summarized into three categories: national-level policies; WTO negotiations; and areas for further analysis.

National-level policies

Import surges and similar shocks coming from world markets will not disappear even if all forms of "unfair" trade practices are eliminated through multilateral trade negotiations, as is seen in the case of non-agricultural goods where many of the distortions that the WTO rules allow for agriculture are not permitted. Therefore, it is essential that Tanzania strengthen their ability to respond to such shocks. In this regard, the following measures would seem to be appropriate for Tanzania and other developing countries:

- First, an *effective trade surveillance system* is the necessary step towards strengthening the capability of the affected sectors in responding to trade shocks. India, for example, has a system that closely monitors the import trend of 220 sensitive products which include 112 agricultural products.

- Second, the governments need to strengthen its capability to investigate the effects of import surges, once these are detected from the trade data. As found in this study, not only various stakeholders had different views about the impact of higher imports, even the government at times had to reverse policies as more came to be known about the effects. Policy reversals are unnecessarily costly.

- Third, the ultimate goal should be to develop institutional capability to resort to the WTO trade remedy measures like anti-dumping, countervailing and emergency safeguards. Until then, governments may take advantage of various WTO-compatible trade policy instruments to offset the effects of import surges, when these are deemed to threat material injury to the local industry, following careful analysis. These instruments include the following:

  - Where bound rates are high – as is the case for dairy – applied tariffs could be raised upwards temporarily in response to import surges. This is fully WTO-compatible.

  - Access to the special agricultural safeguard (SSG) would have been useful; however, Tanzania has not recourse to this mechanism, but a proposal is on the WTO negotiating table for Special Safeguard Mechanisms for developing countries that is expected to be similar to the SSG.

  - There could be other instruments in various WTO agreements that may be used to address temporary problems. The waiver Senegal requested and received from the WTO to maintain minimum reference prices for imports of selected products until 2005 is an example of these other instruments.

Countries need to improve capability to take advantage of Special and Differential Treatment provision in the WTO Agreements.

- Fourth, while the above points focus on responses and WTO-compatible measures, the dominant consideration has to be on what is best for the economy, i.e. the decision to respond or not would have to be based on economic and social analysis of the likely impacts. Ultimately, it is competitiveness and efficiency that count most in multilateral trade. There is a considerable need for capacity-building in this area.

WTO negotiations

The following two elements of the Agreement on Agriculture are particularly relevant for the issue being discussed.

- Export subsidies often contribute to instabilities in world commodity markets and so to difficulties in managing imports under a liberal trade regime. Therefore, any progress made in the ongoing trade negotiations towards curbing export subsidies, as committed in the Doha Development Agenda, helps those countries facing difficulties on account of import surges.

- Many developing countries, including Tanzania, do not have access to the agricultural SSG, which often forces them to respond to surges with other instruments that may not be first-best for the problem. Until the time when these countries develop capabilities to resort to general WTO safeguards, simpler safeguard like the proposed SSM would be useful.

Analytical needs

One of the general observations reached in the course of this study was that there are very few analytical studies on the impact of import surges relative to the widespread concerns and interest on this issue. Based on this study, the following topics would appear to be of priority for further research and analysis:

- More country case studies are desirable because the nature and magnitude of the impact of import surges depends very much on local specifics, the individual commodities, the resilience of local industries, and the level of market integration.

- One conclusion of the case studies, albeit somewhat tentative, is that the adverse impact of the import surge is limited to producers/processors in the major market or capital city. This conclusion is based on the argument that other markets are not well connected to the main market where imported products were sold. More in-depth analysis of the degree of inter-market integration is needed for assessing impacts in rural areas.

- Given widespread confusions, there is a need for clarifying the linkages between export subsidies and import surges at the global level.

- Similarly, in view of the lack of clarity in the literature, some statistical work towards defining what constitutes a "surge" in general and in different context (e.g. countries, commodities) would be useful. This analysis does not assess the overall economic impact of rising or surging imports, notably on consumer welfare gains and changes in government revenue. A broader assessment of these impacts would also be useful.

Adoption of International Standards in Food Supply Chains

One of the reasons given by stakeholders in food service as to why they prefer some imported foods than local products is the issue of quality and standards. The market for import substitution such as tourists, expatriates and medium to high income households, is sensitive to quality and is accustomed to international standards in food quality, safety and hygiene. Therefore adoption of international standards (or local standards with international accreditation) is inevitable.

Food exporters are gradually articulating their supply chains to international standards, sometimes under international pressure. For instance, Nile Perch processors adopted the HACCIAP system after their exports were withdrawn from EU market in 20001.

Institution of a traceability system is prerequisite to adoption standard systems in food supply chain in order to track standard compliance along the supply chain.

The private sector (processors and traders) has a role in instituting standard and traceability systems in their food supply chains under the facilitation of business associations, NGOs and the government.

Annex 1: Analysis of price transmission

A: Unit Root Test: AR model with constant and time trend (n=103 i.e. Jan 2003-July 2005)

Commodity	Variable	Levels		First-differences	
		ADF	Critical-values (1% and 5%)	ADF	Critical-values (1% and 5%)
Rice	Dar price	-3.288	-4.06, -3.46	-10.922**	-4.06, -3.46
	Morogoro price	-2.932	-4.06, 3.46	-12.722**	-4.06, 3.46
Maize	Dar price	-3.721*	-4.06, -3.46	-10578**	-4.06, -3.46
	Iringa price	-2.631	-4.06, -3.46	-10.273**	-4.06, -3.46

B: Engle-Granger (EG) Cointegration Test: test between wholesale market prices (n=103 i.e. Jan 2003-July 2005)

Commodity	Markets	AG ($\Delta\mu_t$)	t-value	Critical value (1% and 5%)	R	DW
Rice	Dar-Morogoro	-0.237**	-3.742	-2.589, -1.943	0.123	2.036
Maize	Dar-Iringa	-0.231**	-3.615	-2.589, -1.943	0.116	1.965

C: Error Correction Mechanism (ECM) and Short-run Dynamic Model (n=103 i.e. Jan 2003-July 2005) of wholesale prices

Equation	Dependent Variable	$\Delta\mu_{t-1}$ (ECM)	ECM t-value	P-value	R^2	D.W
Rice	Dar price	-0.232**	-3.707	0.0003	0.127	1.996
Rice	Moro price	-0.245**	-3.688	0.0004	0.126	2.227
Maize	Dar price	-0.231**	-3.583	0.0005	0.258	1.975
Maize	Iringa price	-0.942	-2.059	0.042	0.195	2.128