Trade Liberalization in Sub-Saharan Africa: Stagnation or Growth?

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This paper argues that the greater the liberalization of imports in a Sub-Saharan African country, the more significant is the decline in its rate of growth due to the recession in high income economies during the late eighties and early nineties. This could be explained by the fact that when industrial countries are suffering from recession, the terms of trade may move in favor of developing countries due to a fall in the dollar price of importables. The volume of competitive imports may not rise in this circumstance in a country that has a well designed `interventionist' trade regime.

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1. Introduction.

The contribution of a structural adjustment program can be calculated as the difference between actual performance and an estimated counterfactual scenario of what would have happened without the program, given the initial conditions in the country, the external environment facing it and policies in the period before the program was initiated. The statistical approach that has been used for this purpose is known as `modified control group comparison' (Corbo and Rojas, 1992 ; World Bank, 1990 and 1992a). These studies estimate a target equation of the following type:

$$\Delta Y_i=\alpha +\beta (Y_i)_{-1}+\gamma (X_i)_{-1}+\delta W_i +\theta d_i + e_i \qquad (1)$$

where,

Y_i = Target variable in country i (total real GDP growth)

X_i = A k-element vector of the macroeconomic policy instruments that would have been observed in the absence of a program in country i.

W_i = A m-element random vector of world non-program variables relevant to country i.

d_i = 1 for a program country, 0 otherwise.

The total effect of a Bank supported program is significantly favorable if θ is positive and significant. The inclusion of $(Y_i)_{-1}$ as an explanatory variable effectively determines the program effect on the current value of a particular target variable (Y_i). In other words, θ reveals the program effect on the current growth rate (not on ΔY_i) after we control for the external shock, $(X_i)_{-1}$ and the growth rate in the previous period $(Y_i)_{-1.}$

The most important finding that emerges from various exercises is, the GDP growth rate of the intensive adjustment lending countries (IAL) shows an improvement during the late eighties when compared with the performance of the control group (the non adjustment

lending countries (NAL) and the other adjustment lending countries (OAL)).[1] In other words, the `program effect' is positive and significant.

Mukhopadhyay (1998) questioned these findings on many grounds. A significant portion of this paper revolved around a very interesting observation. Real gross domestic product in the low income IAL countries grew slowly but steadily till 1988 and then started declining from 1989, and this was the year when the growth rate of the high income economies also started declining. It was argued in Mukhopadhyay (1998) that the World Bank results, therefore, may not hold if we consider the intertemporal distribution of the growth rate as opposed to the average growth rate in adjustment lending countries after the mid-eighties. However, more importantly it had been shown that low income IAL countries suffered in terms of the decline in the growth rate during the period 1989 to 1992 due to a significant rise in the negative contribution of imports to GDP , and this phenomenon could be attributed to two things: (1) the recession in high income economies; and (2) liberalization attempts in those IAL countries.[2] In other words, the greater the liberalization of imports in a low income country, the more significant is the decline in its rate of growth due to the recession in high income economies. This could be explained by the fact that when industrial countries are suffering from recession, the terms of trade may move in favor of developing countries due to a fall in the foreign currency price of importables. The volume of competitive imports may not rise in this circumstance in a country that has a well designed `interventionist' trade regime. Mukhopadhyay (1998) could not establish this channel econometrically while establishing the result that the growth rate of low-income adjustment lending countries suffered primarily due to the joint impact of two factors, namely the recession in high income economies and liberalization of trade. Therefore, this paper seeks to test the proposed causal link that might have caused this particular result. In other words, I shall try to establish two

[1] IAL countries are those that have received two structural adjustment loans or more of any type that became effective by June 1990 with the first loan becoming effective by June 1986. OAL countries are those that have received at least one loan effective by June 1990. NAL countries did not receive any loan by June 1990. Low Income IAL countries are Bolivia, Ghanna, Guinea-Bissau, Kenya, Madagascar, Malawi, Mauritania, Nigeria, Pakistan, Senegal, Tanzania, Togo, and Zambia.

[2]The negative contribution of imports to GDP rose from -0.5 in 1988 to -1.0 in 1989 and -3.65 in 1990. Furthermore, the percentage change in the dollar price of importables for all the IAL low income countries together declined from 8.93 in 1989 to -2.9 in 1990 (see Mukhopadhyay, 1998 for detail).

results in this paper. First, there must be a positive but non linear relationship between the average tariff rate, and / or non tariff barriers and the dollar price of importables, and furthermore, this result gets strengthened by the growth performance in the high income economies. Secondly, real imports is a negative function of the dollar price of importables given the average tariff rate, domestic price, and domestic income. The second result is well documented in the empirical literature, but to the best of my knowledge, the first result is hitherto undiscovered. Our results, therefore, show that a reduction in the average tariff rate boosts imports not only through a reduction in the local currency price of importables, but it also raises imports through a reduction in the dollar price of importables.

2. Trade Liberalization and Growth in Imports.

It is clear that real imports grew much faster during the period 1989-1993 in most of the sample countries (Table1). It may also be noted from Table 2 that the dollar price of importables grew much slower, and even declined for some countries in the sample during the late eighties and early nineties. This was the time when many low income SSA countries reduced the average tariff rates and also reduced the number of commodities subject to the Non Tariff Barriers (NTBs) (table 3). However, it is quite possible that imports rise significantly in a country that becomes liberalized after a long period of restrictive trade. The rise in imports could be attributed to a reduction or elimination of various quantitative restrictions. Furthermore, a rise in real imports may be beneficial for the country if the composition of imports is aimed at raising domestic output, and is efficiency-improving.

Table 1: Growth in Real Imports in Local Currency Price (per cent)

	1986	1987	1988	1989	1990	1991	1992	1993
Ghanna	38.70	6.35	0.00	2.60	117.72	11.16	13.96	18.31
G-Bissau	-1.80	14.40	12.50	25.46	-4.07	33.66	8.90	-8.00
Kenya	16.84	13.29	9.03	9.77	3.38	-4.48	-2.34	32.14
Madagascar	20.89	0.30	-9.62	0.87	33.04	14.87	0.62	8.21
Malawi	26.19	-2.86	20.58	21.26	2.95	20.17	-7.80	-29.69
Mauritania	4.83	-8.95	-6.90	-5.16	6.87	-0.91	8.42	-8.04
Nigeria	28.11	28.66	-1.73	4.79	13.72	12.20	1.34	100.00
Senegal	6.30	3.73	-1.73	1.20	-1.97	0.40	12.31	0.00
Togo	30.30	-2.43	4.90	-11.93	9.63	-8.64	-12.71	-33.15
Zambia	13.26	2.75	-0.18	-16.23	-6.41	18.03	16.38	15.49

Source: World Tables, World Bank (*STARS* software).

Table 2: Unit Value Index of Imports($ based) (Percentage Change)

	1987	1988	1989	1990	1991	1992	1993	1987-88	1989-93	1990-93
Ghanna	12.36	-5.40	-2.43	13.22	0.57	2.76	0.74	3.48	2.97	4.32
G-Bissau	104.08	10.20	3.54	4.73	-1.42	1.87	-6.25	57.14	0.49	-0.27
Kenya	13.64	0.70	0.00	1.99	-10.03	-2.49	-33.41	7.17	-8.79	-10.98
Madagascar	9.89	7.90	2.41	16.20	-0.55	5.01	-2.39	8.90	4.14	4.57
Malawi	9.89	13.20	0.80	11.22	3.23	2.90	-5.34	11.55	2.56	3.00
Mauritania	16.28	7.00	0.28	5.68	0.09	3.17	-1.71	11.64	1.50	1.81
Nigeria	0.00	-11.80	9.30	23.03	-5.99	14.17	-22.94	-5.90	3.51	2.07
Senegal	2.04	-0.20	-0.70	19.17	-3.73	-31.05	6.76	0.92	-1.91	-2.21
Togo	0.00	4.10	0.86	8.67	-1.49	1.16	-5.19	2.05	0.80	0.79
Zambia	14.94	20.90	65.34	-4.25	5.80	-8.99	-18.61	17.92	7.86	-6.51

Source: African Development Indicators, World Bank, 1995, 1997.

Table 3:Average Trade Tax and Non Tariff Barriers

Panel A: Average Trade Tax

	1986	1987	1989	1991	1993
Ghanna	21.40	17.25	15.54	14.01	9.68
G-Bissau	3.01	16.10	5.19	10.36	10.41
Kenya	0.00	0.00	0.00	0.00	0.00
Madagascar	20.98	22.74	19.74	13.13	16.71
Malawi	10.70	8.92	15.63	13.01	11.51
Mauritania	8.79	8.98	8.88	10.11	11.10
Nigeria	12.09	NA	NA	NA	NA
Senegal	14.62	16.41	13.28	19.26	13.69
Togo	12.51	12.88	12.11	13.55	10.22
Zambia	10.80	10.28	10.45	10.04	9.12

Source: African Development Indicators, World Bank, 1995, 1997.

Panel B: Non Tariff Barriers

	Before Reforms	Late 1992
Ghanna	All	2
Kenya	24 per cent	Zero
Madagascar	All	Zero (Substantial control remained through foreign exchange)
Malawi	All	Few
Mauritania	Hundred	Zero
Nigeria	All	19 categories
Senegal	Hundred	About 15
Togo	20	2
Zambia	Nearly All	Zero

Source: Adjustment in Africa: Reform Results and Road Ahead, Oxford University Press (Published for the World Bank), New York,1994.

As far as the composition of imports is concerned, the picture is also not very encouraging (Table 4). The share of consumer goods imports during the early nineties increased in many low income Sub-Saharan African (SSA)countries except Kenya , Mauritania and Togo.

Table 4:Consumer goods Imports as a % of Total Imports

	1986	1987	1989	1991	1993
Ghanna	15.73	13.97	13.55	17.36	30.03
G-Bissau	0.00	11.11	20.29	14.71	9.26
Kenya	38.56	34.14	36.87	32.70	27.15
Madagascar	15.41	16.93	18.13	15.91	15.69
Malawi	NA	11.68	13.33	13.15	13.22
Mauritania	7.48	7.63	6.80	5.97	3.47
Nigeria	NA	NA	NA	NA	NA
Senegal	15.97	19.67	20.34	16.61	17.76
Togo	73.99	63.06	50.11	44.15	45.82
Zambia	NA	NA	NA	NA	NA

Source: African Development Indicators, World Bank, 1995, 1997.

Many scholars reported that the availability of intermediate imports and/or consumer goods during the late eighties and early nineties in the SSA countries owing to trade liberalization was the critical constraint to capacity utilization in domestic industries (Ndulu, 1993; Mytelka, 1992; Moseley and Weeks, 1993; Lall, 1995; and Hutchful, 1996).[3] For example, Mytelka (1992) wrote about the Ivorian industries:

" As the domestic market shrank in the early 1980s and later the tariff liberalisation opened the door to imports, especially in the textiles and clothing industry, excess capacity became chronic. Capacity utilisation fell to less than 75 per cent during 1987-88."

Ghana is considered to be the most advanced country in Africa in terms of reaching low tariff based protection and free trade. Lall (1995) argued that many units of manufacturing sector

[3]Trade liberalization and devaluation including exchange rate unification in the case of multiple rates are the two important ingredients of most structural adjustment programs. Both these measures are believed to be helpful in establishing outward-oriented development policies. However, in many countries, increased competition from imports more than offset the greater availability of imported inputs. Consequently, the impact of both devaluation and liberalization on domestic output is negative (Krueger, 1978; p.159). See Also Rodrik (1992).

was devastated by import competition owing to the fact that rapidliberalization could not stimulate them to reach the world levels in a short period with relatively low investment. Similarly Hutchful (1996) argued that industrial recovery was very week in Ghanna during 1989-1993, especially in tobacco, textiles, wearing apparel and leather products. These industries came under considerable pressure from cheap imports. Moseley and Weeks (1993) noted that trade liberalization have done more harm than good if unaccompanied by real devaluation. They also noted that many African countries were involved in bilateral and /or multilateral arrangements that ruled out devaluation as a policy measures, with membership in the CFA Franc Zone was the most important of this.

However, it is not clear at this juncture from our discussions whether the changes in the average tariff rate and/or the non tariff barrier frequency and the changes in the dollar price of importables bear any relationship and whether or not this relationship gets strengthened when the growth rate in the high income economies interacts with the average tariff rate. This is what we are going to explore in the next section.

3. Import Liberalization and the Changes in Real Imports:

We propose to estimate a relationship of the following type:

$$P^{\$}_{it} = \alpha_i + \beta\, ATR_{it} + \gamma\, ATR^2_{it} + \delta\, ATR_{it} * G_t \qquad (2)$$

where $P^{\$}_{it}$ = Dollar price of importables. We have used unit value index of imports (US $ based). ATR_{it} = Average trade tax (*ad valorem*). It is derived by dividing total revenue from trade taxes by total value of exports plus imports. This is used as a proxy for the average tariff rate. G_t = Growth rate in high income economies.

One practical problem must be discussed before we go further. There is no unique measure for openness or trade liberalization. Different authors have used different measures to proxy for the trade policy stance. Some of them are incidence-based measures like average tariff rate or the non tariff barrier frequency (NTB), and a few are based on outcome, e,g. structure-adjusted trade intensity (see Pritchett,1993 for a rigorous discussion on this issue). The

problem is further aggravated by the fact that all these measures are uncorrelated (Pritchett, 1993). The correct approach is, therefore, to select the proxy for trade liberalization that serves the objective best. A non tariff barrier frequency (fraction of imports subject to NTBs, each category weighted by fraction of world trade in that category), would have been the best variable for our purpose, because while tariffs are often high in developing countries, the predominant form of exercising control over imports in LDCs is the discretionary licensing of imports (NTBs). However, we could not find the data for two time points. UNCTAD (1989) provides a rolling cross section data set for many countries. Each country gives the most up-to-date information possible between 1985 and 1988. This clearly ignores structural changes in protection. Our use of ATR may be justified on the ground that it also captures the changes in NTB, because trade reforms are usually carried out by reducing the average tariff rate, and the number of commodities under non tariff barriers. In other words, ATR and NTB are highly correlated.

The relationship between ATR and $P^{\$}$ could be positive, but certainly it is not linear. A positive relationship between ATR and $P^{\$}$ essentially implies that a foreign supplier offers lower price for a lower ATR because he can get more revenue by selling more owing to the fact that a lower ATR may also imply a lower NTB during the adjustment period. A negative coefficient of $ATR_{it}*G_t$ implies that this effect is stronger when the developed countries are passing through recession. The non-linearity arises from the fact that the change in revenue with respect to a change in the dollar price of importables is a function of the existing NTBs. Let us discuss this point elaborately. Total revenue (R) is,

$$R = P^{\$}(t)\Theta(t)\, Q\{P^{\$}(1+t)\} \qquad (3)$$

We assume that $P^{\$\prime} > 0$, $\Theta' < 0$, $Q' < 0$

Total output Q is a function of domestic price.[4] The average tariff rate is denoted by t, and it is also assumed that t and NTB always move together.[5] Θ is a shift function ($0< \Theta <1$) that depends on the existing NTBs. Furthermore, we assume that $\Theta' < 0$, and Θ is almost zero for $NTB > NTB_0$. In other words, total import is nil for a very high value of the non tariff barrier frequency. $P_\$$ is also a function of t. Therefore, revenue maximization with respect to t yields,

$$P' = -P^{\$}(t) \{ \Theta' - (\Theta(t)\eta / 1+t)\} / \{\Theta(t) (1- \eta)\} \qquad (4)$$

Since $\Theta' <0$, therefore $P' >0$ for $|\eta| <1$. η is the price elasticity of demand. However, it can be verified that the sign of P'' is uncertain. The coefficient of ATR_{it}^2 should be negative if foreign suppliers reduce $P^{\$}$ by a bigger amount for an unit reduction in the ATR (denoted by t) as we move to the lower ATR / NTB zones. Needless to say, therefore the sign of ATR^2_{it} is purely an empirical issue.

The second equation that has been estimated in the paper is of the following type:

$$RIMP_{it} = \theta_i + \mu\ RGDP_{it} + \lambda\ RELPR_{it} \qquad (5)$$

where

RIMP = Real Imports in local currency price.

RGDP = Real GDP in local currency price.

RELPR= Relative Price ($P^{\$}e(1+ATR)$/ GDP Deflator).

e = Exchange Rate.

[4]We are ignoring the exchange rate.

[5]Let us reiterate that our intention is to make $P^{\$}$ a positive function of non tariff barrier frequency (NTB). Therefore, t is used here as a proxy for NTB.

Equation 5 is a standard import demand function where μ is a positive parameter and λ is a negative parameter. The purpose of estimating equation 4 is to estimate total effect of liberlization on imports.[6] The total effect of an unit change in ATR on $RIMP_{it}$ is,

$$\delta RIMP_{it} / \delta ATR_{it} = \lambda(e/ GDP\ Deflator)[(\alpha_i + \beta ATR_{it} + \gamma ATR^2_{it} + \delta ATR_{it}*G_t) + (1+ATR)(\beta +2 \gamma ATR_{it} + \delta G_t)] \quad (6)$$

Equations 2 and 5 have been estimated by the least-squares dummy-variable (LSDV) approach to take care of variable intercepts. Variable intercepts are assumed to reduce the heterogeneity bias.[7] It may be noted that the LSDV estimators of the slope coefficients can be found by measuring individual observations as deviations from individual means (over time). However, this transformation sweeps out the individual effects (variable intercepts) from the equation. Therefore, we estimate them in the following way:

$$\alpha_i = \bar{y}_i - \beta \bar{x}_i \quad (7)$$

We have selected 9 countries and 5 years (1986,1987,1989,1991, and 1993) for estimation. Therefore we have 45 observations. The countries are Ghanna, Guinea-Bissau, Kenya, Madagascar, Malawi, Mauritania, Senegal, Togo, and Zambia. We could not select Tanzania and Nigeria for the non-availability of certain data. It may be noted that these countries also belonged to the list of low income IAL countries.

Estimated parameters of equation 2 and the corresponding t-values are reported in table 5. The signs of the coefficients support our assertion that the foreign currency price of importables and the pace of trade liberalization are related and the intensity of their relationship improves depending upon the growth performance of high income economies. A negative coefficient of ATR_{it}^2 implies that the reduction in $P^{\$}$ is more for an unit reduction in the ATR as we move to the lower ATR / NTB zones.

Table 5: Parameter Estimates of Equation 2:

[6]Trade liberalization is assumed to be carried out through a reduction in the ATR and number of commodities under non-tariff barriers.

[7]It may be noted that heterogeneity bias may still persist because we have not allowed heterogeneous slopes.

Dependent Variable: Unit Value Index of Imports($ based)

	Coefficients	t-Values	Heteroscedasticity Consistent S.Es
ATR_{it}	9.85	2.39	3.64
ATR_{it}^2	-0.28	-1.82	0.12
Gt*ATRit	-0.51	-2.05	0.191
R^2 =0.20; F (6,35) =0.30,This is used for testing heteroscedasticity.			

Parameter estimates of equation 5 carry the correct signs, and they are significant. We have also reported heteroscedastic consistent standard errors (HSCE) in the tables 5 and 6. HSCEs reflect any heteroscedasticity in the residuals which is related to the regressors. When these are close to the OLS standard errors, there is little evidence of distortion of inference from untreated heteroscedasticity. Furthermore, the F statistics reported at the bottom of the tables also show that our results are free from heteroscedasticity.

Table 6: Parameter Estimates of Equation 5

Dependent Variable: Real Import at Local Currency Price

	Coefficients	t-Values	Heteroscedasticity Consistent S.Es
$RGDP_{it}$	3.25	6.86	0.71
$RELPR_{it}$	-0.51	-2.27	0.24
R^2 =0.53; F (6,35) =0.30, This is used for testing heteroscedasticity.			

Total change in real imports for one percent change in ATR is estimated for each country by using equation 6. These are derived by using the average value of each variable that enters in equation 6 (Table 7). For example, for one per cent reduction in the ATR, there will be a 10 per cent growth in real imports from the base (1987) level in Kenya holding all other variables constant.

Table 7: Estimated Total Change in Real Imports For One Percent Change in ATR

Countries	**δ RIMP$_i$ / δ ATR$_i$**
Ghana	-73.97
Guinea-Bissau	-334.04
Kenya	-10.35
Madagascar	-393.37
Malawi	-1.18
Mauritania	-52.83
Senegal	-151.89
Togo	-193.57
Zambia	-6.20

Source: Author's Calculation

4. Conclusion:

reiterate the main finding of the paper. The empirical analysis suggests that the liberalization attempts in low-income IAL SSA countries turned out to be counter productive due to an unfavorable international economic environment. The World Bank is aware of the fact that international economic setting of the 1980s and early 1990s adversely affected the sustainability of the reforms (World Bank, 1992b; p.203). Therefore, the question of links between openness and growth is far from being solved given these results. We strongly recommend that unplanned liberalization during the early phase of adjustments should not be entertained.[8] Countries, even within a same region, should not be put in the same basket. Liberalization of imports may be good but the timing of liberalization and the commodities to be liberalized should depend upon many country-specific socio-economic and political variables.

[8]See Wade (1990) for an argument in favor of controlled liberalization.

Data Appendix

All variables except exchange rate (conversion factor), real imports in local currency price, and real GDP in local currency price are obtained from African Development Indicators (1995,1997), World Bank. Conversion factor, real GDP and real imports are taken from World Tables (*STARS* software).

References

Corbo,V., and P. Rojas (1992),` World Bank Supported Adjustment Programs:Country Performance and Effectiveness'. In Vittorio Corbo,et.al.(eds.), *Adjustment Lending Revisited : Policies to Restore Growth*, Washington, World Bank.

Hutchful, Eboe (1996), `Ghanna′, in Poul Engberg-Pedersen, Peter Gibbon, Phil Raikes, and Lars Udsholt (eds.), *Limits of Adjustment in Africa*. Copenhegen, Centre for Development Research.

Krueger, A.O. (1978), *Liberalization Attempts And Consequences*. Cambridge, Massachusetts, Ballinger Publishing Company.

Lall, Sanjaya (1995), `Structural Adjustment and African Industry′. *World Development*, Vol.23, No.12, pp.2019-2031.

Mosley, P, and John Weeks (1993), `Has Recovery Begun? Africa's Adjustment in the 1980s Revisited′. *World Development*, Vol. 21, No.10, pp.1583-1599.

Mukhopadhyay, Hiranya (1998), ′Structural Adjustment Programs: Some New Findings′, *Review of Development Economics* (forthcoming), Vol.2, No.2.

Mytelka, Lynn (1992), `Ivorian Industry at the Cross-Roads′, in Frances Stewart, Sanjaya Lall, and Samuel Wangwe (eds.), *Alternative Development Strategy in Sub Saharan Africa*. London, Macmillan.

Ndulu, Benno.J (1993), `Tanzania′, in Lance Taylor (ed.), *The Rocky Road to Reform.* Cambridge, Massachusetts,The MIT Press.

Pritchett, L.H. (1993), ` Measuring Outward Orientation in LDCs: Can It Be Done'? Washington D.C, *World Bank Policy Research Working Paper*, No.566.

Rodrik, D. (1992), ` The Limits of Trade Policy Reform in Developing Countries'. *Journal Of Economic Perspective,* Vol.6, No.1, pp.87-105..

Wade, R . (1990) , *Governing the market : Economic Theory and the Role of Government in East Asian Industrialization*. Princeton, Princeton University Press.

World Bank (1990), Adjustment Lending Policies For Sustainable Growth. Washington, *Policy, Research and External Affairs,* No.14.

World Bank (1992a), Adjustment Lending And Mobilization of Private and Public Resources For Growth. Washington, *Country Economics Department*, No.22.

World Bank (1992 b), World Bank Structural and Sectoral Adjustment Operations: The Second OED Overview. Washington, *Operations Evaluations Department*, Report No.10870.

UNCTAD (1989), *Handbook of Trade Control Measures of Developing Countries Supplement: A Statistical Analysis of Trade Control Measures of Developing Countries*,1987. UNCTAD/ DDM / Misc.2 GE.89-55071.