THE ULTIMATE CONSTRAINT ON GROWTH IN AN OPEN DEVELOPING COUNTRY IS THE BALANCE OF PAYMENTS BECAUSE IT SETS THE LIMIT TO THE GROWTH OF DEMAND TO WHICH SUPPLY CAN ADAPT - A DISCUSSION PAPER.

ABSTRACT

This paper draws on Thirlwall's Law which asserts that if long term balance of payments equilibrium on current accounts is a requirement and the real exchange rates stay relatively constant, then the long term growth of an economy can be approximated by the ratio of the growth of exports to the income elasticity of demand for imports (Thirlwall, 1979). On this premise, a discussion is carried out mindful of the neo-classical growth theories which are closed economy models with no demand constraints. Several relevant theoretical, empirical and policy implications are then drawn from this view of balance of payments constrained growth.

Keywords: Balance of Payments, growth, developing countries

1. INTRODUCTION

Whether aggregate demand does play a critical role in the progression of an economy in the long or short term is debateable. Traditionally, however, in most macroeconomic models, economic activities such as output and employment are said to be determined by the interaction of demand and supply in the short term. In the context of an open economy, the non-neoclassical line of thought emphasises the fact that demand-oriented activities are the ultimate external constraints to economic growth. This is the so called 'balance-of-payments-constrained growth'; also known as 'Thirlwall's Law'.[1] According to Thirlwall (1979), if an assumption is made that the real exchange rate is constant and that trade balance in the long run is a requirement, there is a close correlation between the growth rate of output and the ratio of growth of exports to the income elasticity of demand for imports. This actually is very similar, if not the same as the result to the prediction of a dynamic version of Harrods trade multiplier (1993)[2].The latter is, however, not the central interest of this essay.

Consequently Thirlwall emphasises that, 'There are not many countries in the world, particularly developing countries, that could utilise (or generate) more domestic resources given the greater availability of foreign exchange...and the fundamental importance of exports as a component of demand is that it is the only component that can provide foreign exchange to pay for the import content of other components of demand – consumption, investment and government expenditure' (Thirlwall, 1997; pp. 380). However neoclassical thought has an opposing view to Thirlwall's stylised facts. Both the original model developed by Solow (1956) and the several endogenous growth versions that have been developed since the mid-1980s explain economic growth by assuming that the

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[1] This is named after Anthony P. Thirlwall (1972, 1978, 1983, 1989, 1994, 1999, 2003, and 2006).The rest of the paper will refer to this as the BOP-constrained growth.

[2] In fact in a paper by McCombie and Thirlwall (2004), it was said that that the balance of payments equilibrium growth rate derived by Thirlwall (1979) is now known as the dynamic Harrod trade multiplier result.

growth rate of per capita income is determined solely by the supply-side factors. In this respect, by assuming that in the long run, capital and labour are fully utilised, neoclassical thought seems to be oblivious of the potential possibility that growth can be affected by effective demand.

The rest of the paper is structured as follows: section two will specify the fundamentals of the balance-of-payments (BoP) constrained model, drawing on Thirlwall's original work. This will be followed by a discussion of the theoretical literature; empirical findings as well as criticisms to BoP-constrained growth will be outlined in section three. Section four will comprise some policy implications of the model and a conclusion will be made thereafter.

2. BALANCE OF PAYMENTS CONSTRAINED GROWTH MODEL SPECIFICATION

Basically, the fundamental principle upon which the BOP-constrained growth model is founded is that the balance of payments of a country is the main constraint to its growth rate, since it sets a limit on demand to which supply would usually adapt. Indeed it turns out that observed differences in the growth rate between countries (developing countries in particular) are closely associated with the relative stability or strength of their balance of payment position. It is appropriately fair at this point to stress that, despite being demand-oriented, the BoP-constrained approach does acknowledge the importance of the supply characteristics of goods. Arguably Thirlwall's law could be referred to as Keynesian owing to how he derived the model originally. The model can be described as follows:

The BoP equilibrium condition is given by:

$$P_d X = P_f M E \qquad [1]$$

Where P_d and P_f are average export and import prices, M and X are the quantities of imports and exports respectively and, E is the nominal exchange rate. Basically, Thirlwall employs two standard export and import functions:

$$X = (P_d / P_f E)^r Z^s \qquad [2]$$

$$M = (P_f E / P_f)^t Y^u \qquad [3]$$

Where Z and Y are foreign and domestic income, s and u are income elasticity of demand to export and import, and r and t are price elasticities of demand to export and import respectively.[3] Taking natural logarithms and differentiating equations [2] and [3] with respect to time, the growth rates of exports and imports are derived as:

$$x = r(p_d - p_f - e) + s(z) \qquad [4]$$

and $\qquad m = t(p_f + e - p_d) + u(y) \qquad [5]$

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[3] The assumption is that s and u are positive while r and t are negative.

where lower cases indicate the growth rate of each variable. From equation [1] we have:[4]

$$p_d + x = p_f + m \tag{6}$$

Substituting equations [4] and [5] into equation [6] gives the BoP equilibrium growth rate (g_b) as:

$$g_b = \frac{\left[(1 + r + t)(p_d - p_f) + s(z)\right]}{u} \tag{7}$$

Consequently one of the arguments advanced by Thirlwall (2006) regarding this growth rate g_b is that it depends on the rate at which the real terms of trade are changing $(p_d - p_f) \equiv (p_d - p_f - e)$.[5]A rise in $(P_d/P_f E)$, if $(p_d - p_f - e)$ is positive; it increases real income growth consistent with current account equilibrium (ceteris paribus). A fall in the ratio lowers BoP equilibrium growth rate. This is known as the pure terms of trade effect on income growth.

Subsequently, if we assume $(1 + r + t)(p_d - p_f) = 0$ equation [7] can be written as:

$$gb = \frac{s(z)}{u} \tag{8}$$

From equation[5], equation [8] can be expressed as:

$$\boldsymbol{g_b = \frac{x}{u}} \tag{9}$$

Finally this equation is called 'Thirlwall's Law' and implies that the BoP equilibrium growth rate depends on the long term growth rates of real exports and the income elasticity of demand for real imports. Regarding equation [9], McCombie (1993) asserts that the growth rates differences between countries is mainly due to disparities in the values of the world income elasticity of demand for their exports and their domestic income elasticity of demand for imports (s and u) respectively. This, then, establishes the fundamental premises for Thirlwall's laws as to why some countries grow faster than others. This is an aspect which is not clearly explained by the neo-classical supply-oriented model.

3. REVIEW OF THEORETICAL LITERATURE AND EMPERICAL FINDINGS

An immediate follow up to Thirlwall's (1979) original approach was the work developed by himself and Hussain (1982), where they modified the model to allow for imbalanced trade with capital flows in the long term. This work actually found supporting evidence in a sample of developing countries. Consequently, in Thirlwall (1983) it is shown that major centre-periphery models as developed by Prebisch (1950), Seers (1962) and Kaldor (1970), when brought down to essentials, have indeed their inferences dependent on the differences in the income elasticities of demand for exports and imports.

An interesting observation is that Thirlwall (1997) does admit that, 'It is true that the assumptions of the model (namely, that exports are the only component of autonomous demand, that trade is balanced, and the terms of trade remain unchanged) may appear unrealistic in the short term, but the model is designed to understand long-run differences in growth performance'. Moreover, McGregor and Swales (1985, 1986, and 1991) were among the first to provide both theoretical and empirical criticism to the BOP constrained growth model developed by Thirlwall (1979). To this end, adequate replies were provided by Thirlwall (1986) and McCombie and Thirlwall (1994, 1997).

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[4] Note that here m is nominal exchange rate adjusted, therefore we don't worry about e

[5] The real terms of trade is defined here as the $(P_d/P_f E)$ ratio

McGregor and Swales (1985) asserted that Thirlwall's (1979) model failed to distinguish between traded and non-traded goods and to take into account non-price competition. Thirlwall's model was eventually accused of behaving like a supply-oriented neoclassical model if price elasticities of demand for exports and imports are infinite and relative prices are constant. In the same vein, it's worth mentioning that Krugman (1989) does attack Thirlwall's contributions on the BOP-constrained growth (though he does not make direct reference) by suggesting that ratios of country growth rates appear equiproportional to ratios of income elasticities of demand for exports and imports–calling it the 45-degree rule. In a nutshell, Krugman challenged the view that income elasticities were exogenous parameters that constrain growth.

But in reply, Thirlwall argues that there are indeed many channels connecting slow growth induced by BoP constraints to slow productivity growth, and the opposite, where the possibility of fast growth unhindered by BoP problems leads to fast productivity growth. In contrast, the BOP-constraint is a demand-explanatory model based on the assumption that factor supplies and technical progress are largely endogenous (as opposed to being exogenous in the neoclassical model) to the growth of output itself. Thus the best thing for developing countries, in Thirlwall's view, is to enforce policies that will raise the income elasticity of demand for exports(s) in equation [8]) and reduce the income elasticity of demand to import (u).

Generally it is only fair to note that empirical results on the BOP-constrained growth model have not been able to reject Thirlwall's Law. Table 1 highlights the results of an empirical study, conducted by Moreno-Brid & Perez (1999, pp. 144-145), of five developing Central American countries. They found some interesting results which convinced them that the difference between the estimated and the actual average rate of growth of output did not seem significant. The sample covered more than forty years that included important changes in economic policy such as the opening of the domestic markets to foreign trade, the breaking down of protectionalism, and the periods of civil strike and prolonged economic instability.

Table 1. The BOP Equilibrium Growth Rates and Associated Statistics of selected Central American countries.

Countries	h	y_{obs}	y_{est}
Costa Rica(1950-96)	1.10	4.7	5.3
El Salvador(1950-96)	1.75	3.4	1.9
Guatemala(1950-96)	1.35	3.8	3.3
Honduras(1950-96)	3.70	3.8	0.7
Nicaragua(1950-96)	2.04	2.6	2.1

Source: Moreno-Brid & Perez (1999)

h = income elasticity of imports; y_{obs}= annual average of the growth of actual GDP;

and y_{est} = annual average estimated growth rate of GDP

It can be observed that, with the exception of El Salvador and Honduras, the difference between the equilibrium growth rates $(y_{obs} - y_{est})$ nears zero, confirming the fact that Thirlwall's Law does hold for these Central American countries.

Using the method of cointegration VAR (Vector Autorregresion), M.Holland, F.V.Veira and O. Canuto (2004) carried out an investigation of the empirical validity of the BOP-constrained growth model for ten Latin American countries during the period 1950–2000.[6]They focused on the income side as proposed originally by Thirlwall. This paragraph from their conclusive remarks is worth quoting in full:

> We found strong evidence of a long-term association among real GDP, exports and imports
> mainly for the use the cases of Brazil and Chile. Moreover, our results indicated that the

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[6] It's worth noting that in the 1990s, Latin America experienced an intensive capital inflow and this is a fact one should not be oblivious of when testing Thirlwall's Law.

countries with the fastest long-term growth rates of real GDP are compatible with the BOP equilibrium condition expressed by low income elasticity of imports, except Mexico. The empirical results for Mexico indicated the presence of high income elasticities when compared to the other countries, but also of high rates of growth of real GDP. On the other hand, according to Thirlwall's rule, we have Uruguay, Argentina and Bolivia with low elasticities of imports and low real GDP growth rates (M.Holland, F.V.Veira and O.Canuto, 2004, pp. 66).

Looking at the South African economy, two Turkish economists, I. Ozturk and A.Acaravci (2009) regress the equilibrium growth rates as a function of the actual growth rates. McCombie and Thirlwall (1994) suggest that it is more appropriate to regress predicted growth rates as a function of actual growth rate because the former being derived from estimates of parameters, is subject to errors. Table 2, below, shows their regression results.

Table 2. Regressions of equilibrium growth rates.

$Y^* = -0.0007 + 1.0185y$	
(0.8956) (0.00853)	
R^2=0.034	Adjusted R^2=0.022
SEE = 0.040	Wald(2) = 0.0206 (0.9897)

Source: I. Ozturk and A.Acaravci (2009)
Notes: P values are in ( )

Wald is a joint test where the constant term is zero and the slope coefficient is unit. It has a X^2 distribution with two degrees of freedom. If this null hypothesis cannot be rejected, as is the case from these regressions results, then Thirlwall's Law holds. This result does confirm that the BoP position of South Africa is the main constraint on its economic growth. Similar empirical results have been obtained from the testing of Thirlwall's Law on different developing countries.

4. CONCLUSIVE REMARKS AND POLICY IMPLICATIONS FOR DEVELOPING COUNTRIES

BOP-constrained growth does hold critical policy implications for developing countries as they seek to improve their real GDP in the face of major shocks affecting world demand for their exports. Therefore, for developing countries, a successful economic growth policy is one that reduces income elasticities of imports and promotes exports. This helps the countries to have rapid growth in demand and supply without suffocating their balance of payments. Basically, referring to equations [8] and [9] these countries should adopt policy frameworks which reduce u and raise s hence improving exports. These exports will then bring in foreign exchange, a scarce resource and very much needed to pay for imports; for instance production factors. Consequently this would induce higher productivity and so the story goes on, leading to a happy ending of rapid economic growth.

Also from the empirical results, for example those of Perraton (2003)[7], there is continuing substantial evidence that developing countries should pursue export-led growth programmes. It is critical, therefore, that mechanisms to prevent the terms of trade from deteriorating and to foster structural change–through export promotion or import substitution–should be implicit in their developmental policies and goals.

At this point, it's safe to infer that long term equilibrium growth rates for countries, according to the BOP-constrained model, depend on four main key components. First is the rate of change of the terms of trade $(p_d - p_f - e)$. The second one is the price elasticities of demand for exports (r) and imports (t) if the real terms of trade are changing. The interdependence of the world economy is the third determinant and the country's desire to import (measured by u) is fourth. Consequently

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[7] Perraton (2003) tested Thirlwall's Model/Law looking at 53 developing countries over the period 1973-95.His results do support the model despite not being able to get stable estimates of income elasticities of demand for exports (u).

theoretical and empirical evidence in support of the BOP-constrained growth suggests that the positive impact of exports on GDP growth may operate primarily through relieving an external demand constraint. This sets the limit to the growth of demand to which supply can adapt.

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