THE MYTH OF EXPORT-LED GROWTH

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Abstract

The relationship between openness and economic growth is rather complex. As Taylor (91) put it: ‘thinking about it involves several levels of abstraction: empirical; theoretical; political and ideological’. The present view focuses on the empirical level per se, but with minor excursions to the theoretical and historical levels at times. The central theme follows a well-established structuralist ‘ideology’ of asserting that arguments for a causal relation between economic policies and outcomes (in this case export promotion and growth) are meaningless outside a country’s historical and institutional context, especially its dynamics of growth and structural change. Building on this pre-analytical foundation, this paper begins by examining a strand of post-Keynesian growth theory developed by Thirlwall (1979), which emphasizes the role of exports in driving the process economic growth. The main critique here is that Thirlwall’s equation will necessarily yield statistically significant results for cross-country analysis. Several other basic empirical and theoretical problems with the Kaldorian model are also highlighted in this paper. This paper also asks how outward orientation affects growth at the country level, using Taylor’s (91) study on economic openness as a main empirical and theoretical reference. Stylized facts on trade (commodity and service) and growth examined here suggest Taylor’s (91) conclusion on trade and growth is still essentially relevant; ‘trade does not seem to be closely related to the way economies perform. Fast growing economies are more or less open, have diverse patterns of specialization and their success is not obviously led by exports, industrial or otherwise.’ Finally, crosssectional analysis of the relation between exports and growth yields little correlation outside the cluster of outlier (oil-based and export-savvy) economies. The theory of export-led growth cannot therefore be a general one; export-led growth remains a unique and predominantly exclusive phenomenon.

ملخص

إن العلاقة بين الإنفتاح والنمو الاقتصادي معقدة إلي حد ما، فهى كما صاغها تايلور (91) قائلا: "إن التفكير فيها يشتمل علي مستويات متعددة من الأفكار التجريدية: التجريبية؛ والنظرية؛ والسياسية؛ والأيدولوجية". إن الرأي الحالي يتركز حول المستوي التجريبي في حد ذاته، ولكن مع انحرافات ضئيله إلي المستويين النظري والتاريخي في بعض الأحيان. إن الفكرة الرئيسية تتبع "أيدولوجية" هيكلية مستقرة والتي تؤكد علي أن وجهات النظر حول العلاقة السببية بين السياسات الاقتصادية ونتائجها (في هذه الحالة تشجيع التصدير وتنميته) لا معني لها خارج نطاق الدولة التاريخي والمؤسسي، خاصة القوي المحركة للنمو والتغيير الهيكلي. وبناء علي هذا الأساس السابق علي التحليل، فإن هذه الورقة تبدأ بفحص خيط من نظرية نمو ما قبل الكينيزي والتي قام ثيرووال (1979) بتطويرها، والتي تؤكد علي دور الصادرات في قيادة النمو الاقتصادي الدائر. إن النقد الأساسي هنا هو أن معادلة ثيرووال سينتج عنها بالضرورة نتائج إحصائية ملحوظة للتحليل عبر الدولة. هناك مشاكل تجريبية ونظرية أساسية خاصة بنموذج كالدورين والتي تم توضيحها أيضاً في هذه الورقة. كما تتساءل في هذه الورقة عن كيفية تأثير التوجه نحو الخارج علي النمو علي مستوي الدولة، وذلك باستخدام دراسة تايلور (91) المتعلقة بالإنفتاح الاقتصادي كمرجع تجريبي ونظري أساسي. إن الحقائق المنطبقة علي أسلوب معينٍ stylized facts والخاصة بالتجارة (السلع والخدمات الأساسية) والنمو - والتي تم دراستها هنا – ترجح أن إستنتاج تايلور (91) بشأن التجارة والنمو لايزال ذو علاقة جوهرية؛ "إن التجارة لا تبدو متعلقة بشكل لصيق بأسلوب أداء الاقتصادات. إن الاقتصادات سريعة النمو مفتوحة تقريباً، ولها أنماط متنوعة من التخصص، ونجاحها لا تقوده بشكل واضح الصادرات أو الصناعات أو عكس ذلك". وأخيراً، إن التحليل المقطعي للعلاقة بين الصادرات والنمو ينتج عنه ارتباط ضعيف خارج تجمع الاقتصادات البعيدة (المعتمدة علي النفط أو ذكاء المصدر). وبالتالي فإن نظرية النمو الذي تقوده الصادرات لا يمكن أن تكون نظرية عامة؛ فإن النمو الذي تقوده الصادرات لايزال ظاهرة فريدة وخاصة بشكل كبير.

1. Introduction

Conventional wisdom purports a positive causal relationship between growth and export promotion. Empirical evidence and stylized facts that emerge from this work give policy conclusions that are far less decisive. Export-agnosticism is also backed by historical evidence. For example, cross-country analysis reviewed here shows two groups of countries that have achieved export growth over long periods: oil exporters and Asian 'Tigers'. For the first group of 'outliers', foreign exchange bonanzas (typically in the form of a sudden and significant jump in oil exports, labor remittances, service exports, etc) rarely came without complicating effects on growth. In one recurring scenario, demand pressure from an oil boom will result in cost-push inflation, overvaluation of the exchange rate, de-industrialization and asset bubbles. Furthermore, as in the case of larger developing countries, if wages are not fully indexed and the economy is wage led, income distribution worsens and growth lags behind.

The moral is clear: export growth per se is neither necessary nor sufficient for long-term economic growth. Unless an effort is made to channel windfall revenues wisely by promoting non-traditional exports or import-substitutes, where productivity gains can be reaped a la Korea or Taiwan, an export shock may induce output growth in the short-run, but then productivity losses and de-industrialization are bound to follow. Sadly, historical evidence indicates the replication of the Asian model is difficult under present circumstances for the majority of developing countries.

In more recent times, the significance of the capital account as a determinant of growth has become more apparent. Laissez faire economists focus on the benefits from financial de-repression and the technological gains associated with foreign direct investment leading to increasing competitiveness and better resource allocation. Revisionist economists, point to short-term speculative capital flows, which flooded some developing and transition economies in the aftermath of financial deregulation, triggering in turn a series of financial crises across the globe. The dynamics are relatively similar to the above 'Dutch disease' syndrome: after an initial episode of growth fueled by large influxes of capital flows, the inflicted economy faces a trilemma of maintaining independent (restrictive) monetary policy, a fixed exchange rate regime and an open capital account. Eventually, the exchange rate lets go, often ending the euphoric cycle with a huge burden of macroeconomic adjustment and a sizable foreign debt.

These stories suggest, *inter alia,* the relationship between exports, openness and economic growth is rather complex. As Taylor (91) put it: 'thinking about it involves several levels of abstraction: empirical; theoretical; political and ideological'. The present view focuses on the empirical level per se, but with minor excursions to the theoretical and historical levels at times. The central theme follows a well-established structuralist 'ideology' of asserting that arguments for a causal relation between economic policies and outcomes (in this case openness and growth) are meaningless outside a country's historical and institutional context, especially its dynamics of growth and structural change.

Building on this pre-analytical foundation, this paper begins by examining a strand of post-Keynesian growth theory developed by Thirlwall (1979), which emphasizes the role of exports in driving the process economic growth. Section 1 reviews Thirwall's model. Section 2 applies Thirlwall's equation to data from eighty-seven countries. Section 3 explains why Thirlwall's equation will *necessarily* yield statistically significant results, highlighting several basic empirical and theoretical problems with the Kaldorian model. Section 4 widens the scope of the discussion by examining the strength of the link between trade, particularly exports, and growth, using Taylor's (91) cross country study as a main methodological reference.

2. Growth and the Balance of Payments from a Kaldorian Perspective

The question of what determines the wealth of nations and why countries differ in their long-term rates of growth lies at the heart of modern economic theory and is recurring theme in the history of economic thought. Ibn Khaldun, the pioneer Arab sociologist, was perhaps the first to address this riddle in his inquiry into the sources of growth and decay of civilizations.[1] It was also the central issue facing Adam Smith and the classical economists. Centuries later, there is still a good deal of debate over which factors influence economic growth the most.

In neoclassical economics, growth is maximized in a 'free-market' where variations in prices are associated with variations in output such that the economy always tends towards a level of output with full-employment equilibrium. A familiar representation is the general equilibrium theory developed by Walras wherein equilibrium prices and output are determined simultaneously. If any excess demands or supplies exist then, following tatonnement, prices will adjust. Accordingly, as pre- Keynesian theorists such as Fisher, Marshall, Pigou and Robertson argued, disequilibrium must be solely due to the fact that competition, the gravitational force of the economy, is somehow being prevented from undertaking its task. For example, in the labor market context, involuntary unemployment persists if and only if prices and wages are not adjusting to clear the labor market. In this line of thought, disequilibrium is a result of wrong prices sustained by imperfections in the market system.

The neo-classical school's adherence to inherent full-employment is rooted in Say's law. As in a barter economy, production implies demand and a general glut of commodities is not possible (even though a partial glut is possible) since it is a logical impossibility that any person would continue to produce a product for which there is no demand.[2] Likewise, a failure of effective demand was regarded as impossible because, byassumption, all savings find an investment outlet through variations in the rate of interest.

It was against this backdrop that Keynes and Kalecki triggered their academic revolution. Their principal argument that -as opposed to being influenced by supply side factors- output growth is driven by growth in autonomous demand, changed the trajectory of economics.[3] Keynes' essential point was that there is no reason to expect that all of wages and profit will be converted into effective demand. Therefore there is no reason for full employment to be realized. Likewise, savings and investments are not simultaneously determined by a rate of interest that equates them. Rather, savings are an entirely passive variable, which always turns out to be equal to total investments. The remainder of this section will be devoted to review a strand of Keynesian growth theory developed by Thirlwall (1979).

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[1] Ibn Khaldun (born in 1332), in his magnum opus "Al-Muqadimmah" or introduction to history, studied the factors underlying the growth and decay of civilizations. The surplus arising from division of labor, the relation between labor and value, market forces and prices and the discrepancies in wealth between nations are but few of the areas which marked his contribution.

[2] It should be noted however that the classical economists were largely justified in this respect. The conditions of the 18th and early 19th century were such that there was indeed a full exhaustion of resources. Overproduction seemed like an absurdity when famines were still relatively common. Hence, it was true that quantities not consumed must be invested - there is no other vent. Moreover, the classicists assumed there would not be any coordination problems of the sort raised by Kalecki since investors are themselves savers via abstinence; decisions to save are decisions to invest. Say's assertion that the creation of one commodity opened the vent for the sale of others was therefore an empirically justifiable one. In addition, being more realistic than their successors, the classicists never assumed full employment in labor market. That also would have been absurd given rampant poverty and unemployment. Income distribution was thus socially determined for the classical economists.

[3] But he obviously did not believe one could make real economies grow at any speed just by changing demand growth.

2.1 Thirlwall's Law

Nicholas Kaldor's interpretations of economic growth went through stages. The final one emerged in the 1970s as he drifted closer to the Keynesian camp and away from the models featuring forced saving as a macroeconomic adjustment mechanism. Following Thirlwall and McCombie (94), his main arguments on export-led growth can be summarized as follows:

1. Faster rate of growth in manufacturing will cause a faster rate of growth of output and labor productivity as a result of the transfer of labor to high productivity sectors with increasing returns such as experienced in advanced countries before the 1970s.
2. The growth of manufacturing output is not constrained by supply, but is fundamentally determined by demand from agriculture in the early stages and exports in the later stages.
3. Export demand is major component of aggregate demand in an open economy, which must match the leakage of income into imports.
4. The level of industrial output will adjust to the level of export demand in relation to the propensity to import, through the Harrodian foreign trade multiplier.
5. A fast rate of export growth and output growth tend to set up a virtuous growth cycle. This makes it difficult for other newly industrialized countries to establish export activities.

Thirlwall (1979) and Thirlwall and Dixon (1979) formalized those insights in a simple model. They argue that the equilibrium growth rate of income, which is consistent with the balance of payments constraint, is determined by the ratio of the growth of exports to the income elasticity of demand for imports. McGregor and Swales (in Thirlwall and McCombie (1994)) offer a simple derivation. First, the quantity of exports (X) is taken as a multiplicative function of relative prices measured in common currency (P_d/P_f) and world income (Z). Therefore:

$$X = (P_d/P_f)^{\delta} Z^e \quad (1)$$

where P_d is the domestic price of exports; P_f is their foreign price; δ is the negative price elasticity of exports and e is the positive income elasticity of demand for exports.

Similarly, the quantity of imports (M) is taken as a function of relative prices and

domestic income (Y).

$$M = (Pd/Pf)^{\delta} Y^p \quad (2)$$

where δ is the negative price elasticity of demand for imports, and p is the positive income elasticity of demand for imports.

If relative prices are taken as constant, equations 1 and 2 simplify to:

$$X = Z^e \quad (3)$$

$$M = Y^p \quad (4)$$

In their dynamic forms, equations (3) and (4) are:

$$x = ez \quad (5)$$

$$m = py \quad (6)$$

where small letters represent growth rates and z, e, and p are assumed to be exogenous.

The condition for balance of payment equilibrium is:

$$P_dX = P_fM \quad (7)$$

In its dynamic form, (7) can be written as:

$p_d + x = p_f + m$[4] (8)

Since the constancy of relative prices hypothesis equates the growth rates of domestic and foreign prices, the growth rate of exports must also equal the growth rate of exports if the current account is to balance continuously. In addition, the exogeneity of the growth rate of world income (z) and the income elasticities of demand for exports and imports (e, p) renders the balance of payments constrained or equilibrium growth rate (y*) as uniquely determined from (5) and (6):

$y^*p = ez$ (9)

Rearranging (9) using (5) yields:

$y^* = x/p$ (10)

Equation (10) is basically a dynamic version of the static Harrodian foreign trade multiplier. The rule is simple; the growth rate consistent with the balance of payments equilibrium (y*) increases with a higher rate of growth of exports (x) and a lower income elasticity of demand for imports (p). In other words, the long-term growth of domestic income is constrained by foreign trade performance and the position of the balance of payments, which sets a limit to growth of demand to which supply can adjust. The policy implication is that faster growth can only be achieved alongside sound manipulation of the Harrodian foreign trade multiplier so that if export goods are made more attractive and the income elasticity of demand for imports is reduced, demand can be expanded without producing balance of payments difficulties.

Thirlwall's model differs from its neoclassical counterparts in two major respects:

First, Neoclassical models often invoke a 'purchasing power parity' rule which assumes the exchange rate will adjust to equalize the price of tradable commodities across countries. If home prices exceed their international counterparts, this will lead to a trade deficit and an increase in supply of foreign goods until home prices are forced down or the exchange rate moves up. The story is self-consistent but, as Taylor (88) suggests, it violates an ancient rule of thumb in applied economics: arguments involving long chains of causality can easily be broken along the way. For example, readily adjusting exchange rates are not generally observable nor is it typical for developing countries to produce instantaneous export jumps in response to incremental depreciation in their exchange rates.

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4 Domestic price can be decomposed as follows:

pd = w – r + t

where w is the rate of growth of the nominal wage rate, and r is the rate of growth of labor productivity, and □is the rate of growth of the mark-up on unit labor costs. In addition, the Kaldorian model assumes, following Verdoorn's Law, that the rate of growth of labor productivity is a positive function of the rate of growth of output. The rationale is that high expected labor costs induce firms to seek productivity gains and high output stimulates learning. So higher productivity responds to a rising capital/labor ratio. In other words, labor productivity varies pro-cyclically following Verdoon (1949) who also asserted a positive relation between manufacturing output growth and productivity. The implication is that a substantial part of productivity growth is endogenous to the growth process, being determined by the rate of expansion of output through the economies of scale. Rapid expansion of production will lead to and result from a greater rate of innovation and a climate more favorable to risk taking. This no doubt has strong bearing on both import-substituting industrial policies and export-led growth. It suggests that there is an inherent tendency for growth to proceed in a selfreinforcing manner and provides an economic rationale for Myrdal's (1957) notion of 'cumulativecausation'. Thus:

r = ra + cy

Where ra is the rate of autonomous productivity growth, and c is the Verdoorn coefficient. The virtuous cycle of economic growth is evident since the higher the rate of output growth, the faster the rate of productivity growth, the lower the rate of increase in unit costs and thus the faster the rate of growth of exports and output.

Second, in contrast with neoclassical explanations of export-led growth, the positive effect of exports on growth in the Kaldorian model is not related to improvements in resource allocation. Expansionary demand policies have cumulative effects in the Kaldorian model, which is essential for the explanation of income disparities between countries. An increase in exports leads to higher output growth, which in turn leads to higher productivity. This in turn leads to an increase in price competitiveness and growth. Thus, in the Keynesian school the adjustment is different: it arises from the notion that few countries can afford to finance a structural deficit in the current account. An incipient trade deficit creates a binding foreign exchange gap so that imports (and growth) are necessarily curtailed. Hence the crux of Thirwalls' argument: *assuming relative prices remain relatively unchanged, then it is the adjustment of quantities rather than the adjustment of prices that brings about the convergence between actual and equilibrium rates of growth.*

3. Does it hold?

In testing Thirlwall's equation, several studies have used cointegration (e.g. Brid, 99) and ordinary least squares (e.g. Atesoglu, 95) to compute the import demand functions. The test here estimates the multiplier from an import regression equation that allows for income and terms of trade (measured in terms of real 1995 US$ as export prices divided by import prices) or relative price effects[5] on a sample of twenty-four countries using both methods (see Appendix for details). As shown in Section 2, the validity of Thirlwall's Law rests on the assumption of constant relative prices. Thirlwall and McCombie give three reasons to explain why relative prices measured in common currency will not differ in the long run: (i) highly competitive markets, (ii) oligopolistic market structures, and (iii) domestic prices mirroring devaluation effects.

If the balance of payments equilibrium is a requirement, this will generate equation (1). Figure 1, which plots the change in relative prices over four decades, i.e. p_d-p_f- e, shows that the constancy hypothesis appears to hold for most countries in this sample. A notable exception is in the Latin American continent, which is understandable given its history with price instability.

To test Thirlwall's law, an average balance-of-payments constrained growth rate is calculated for each country and then compared with its corresponding actual growth rate. As expected, the model tends to over-predict average growth for export-driven economies such as the oil-producing economies of the Middle East and, albeit to a lesser extent, for the Asian economies since, though it may be plausible to assume that either 'prices' or the balance of payments constraint (or both) will act to keep trade balanced for most countries, it is much difficult to argue that those factors will eliminate a structural surplus.

The regression results for this sample are summarized in figure 2 and in Tables 1-6 in the appendix. In figure 2, real GDP growth (y) is drawn as the smoothed line. The equilibrium BOP constrained growth rates (y*1) and (y*2) were estimated based on the normalized cointegration coefficient for income and exports, respectively, (y*3) from the OLS coefficient for income in the import demand function, and (y*4) from the simple income elasticity of demand for imports (see table 2 for the tedious details).

Table 2 shows that regardless of the method used to calculate the income elasticity for imports, the model tends to give a fairly close approximation of the average long-term growth for the entire set of countries, deviating by only one percent or so. Actual and estimated growth rates were plotted against each other and yielded a very good fit as shown in Figure

[5] Calculated based on constant 1995 US$ as P_fE/P_d, where P_f denotes US consumer price index, E is the nominal exchange rate and P_d is the domestic consumer price index.

3a (oil producing outliers excluded). Figure 3b shows similar results from applying the simple elasticity formula to estimate the equilibrium rate of growth for a second sample of eighty-seven countries (see Table 3 in the Appendix for computational details). Regressing y against y* also yielded a strong correlation coefficient.

One major problem with the previous test is that the acceptance or rejection of the law hinges on only one observation for each country. In Atesoglu's (94) terms, "*the country's estimated balance of payments equilibrium rate may turn out to be identical to the actual average growth rate, but this outcome may very well be a sampling curiosity, valid only for that particular period"*.

To address this concern, the test was repeated for sample 2 over three periods: 1960-72, 1973-85, and 1986-99. The results were similar to those obtained earlier as the average equilibrium rates of growth for the three periods: 5.3, 3.8, and 3.1 did not differ from their corresponding actual rates: 5.0, 3.6, and 3.0, respectively. In addition, the y=y* regression coefficients were 0.63, 0.68, and 0.74 for the three periods, respectively.

4. Comments on the Theoretical and Empirical Validity of Thirlwall's Law

At first glance, the 'close' fit between Kaldorian and actual rates of economic growth across countries in this sample does seem rather puzzling. Section 3.1 solves this puzzle by rearranging equation (10) and critically examining the empirical results in Section 2. Section 3.2, focuses on more fundamental theoretical weaknesses in the Kaldorian approach.

4.1 A critique of the empirical strength of Thirlwall's Law

$$y^*/y = x/m \qquad (11)$$

Equation (11) tells a simple story. As a reincarnation of equation (10), it states that the extent to which y is observed to diverge from y* will depend on the extent to which m is observed to diverge from x. If there is good reason to believe that x/m approaches unity in the long run, it becomes apparent (given the assumptions of constancy of relative prices and ignoring capital inflows) that y*/y will also approach unity over long time periods. Yet the convergence of growth rates of exports and imports is well known and emerges from the data as a stylised fact. This is clearly demonstrated in the perfect fit between both variables shown in Figure 4a (correlation coefficient = 0.96).[6] By corollary, if trade balances in the long run, error terms from regressing y on y* and m on x should be highly correlated (Figure 4b). Thus, as deviations from actual growth rates tend to cancel each other out, it is no surprise that the model successfully predicts the average growth rate for all countries in the sample. This no doubt calls into question the explanatory power of Thirlwall's Law.

This equalizing effect is even more pronounced at the country- projection level where the variance in the fit between trends for actual and equilibrium growth from 1960- 99 is very large (table 3 shows less than 10% of the countries scored a correlation coefficient above 0.5 between y1961-99 and y*1961-99). Oddly enough, Figure 5a shows the fit is near perfect for Kuwait (R2=0.8) despite it being the second highest outlier in the sample (other oil-exporting countries also show a significantly higher correlation). On the other hand, Figure 5b, which plots the same data for Argentina shows little relation between actual and equilibrium growth

[6] In fact, one could define an alternative reduced-form import-led growth equation in which the rate of growth of output is a positive function of the growth rate of imports and a negative function of the income elasticity of demand and still demonstrate its empirical robustness. This of course is a highly improbable scenario. Nonetheless, as shown in table 3 in the Appendix, the estimated growth rates from y*= m/(x/y), are in fact nothing less than a mirror image of those computed on the basis of Thirlwall's Law, only now the model underestimates growth for countries with a net positive growth in exports and vice versa.

rates in spite of the close range between its average growth and the one predicted by the model. The reason, again, is that deviations (over shooting and under shooting within each country's time series) tend to cancel each other out over time.

4.2 Theoretical problems

One major problem with Thirlwall's equation is that it cannot be empirically falsified since its prediction emerges from the data as a stylized fact. Any small deviations from the equilibrium growth rate will be interpreted as the outcome of variations in prices or of changes in capital flows so that estimated growth will always be identical to actual growth, which is determined by the Harrodian multiplier. To illustrate this point one can easily derive another rule where growth is related to the internal gap between available savings and required investment ($y^*/y = i/s$). Obviously this rule fails to take into account specific foreign exchange requirements for production and capital formation in developing countries, but its the empirical validity also holds *a priori since savings and investment are bound to converge in the long run across countries*.

Three other theoretical and empirical problems with Thirlwall's model are easily discernable. First, ***the balance of payments constraint is not equally binding to all countries***. Larger developing countries such as India and Brazil are more self-sufficient and can more easily increase investment and growth by substituting imports. If, as empirical evidence suggests, their growth is also wage-led, then (at least for larger developing countries), the dynamics of growth shift to the domain of re-distributive fiscal and industrial policies. Likewise, the United States has a structural trade deficit. However, the US economy does not grow notably less rapidly than those of its trading partners; the dollar fluctuates widely but does not suffer strong secular real depreciation.[7] Shaikh offers an answer. The problem, according to him, is not that terms of trade are relatively inflexible (so that the BOT does not clear), but that they fulfill a different function altogether (competitive pricing). Prices can behave as they should without clearing the BOT, even in a classical or Harrodian growth context. But then, the adjustment mechanism is not quantities either, since these too do not bring the BOT into balance. Here, it is because output serves a different function altogether (aggregate demand/supply equilibrium). In this argument, "both prices and quantities react to the BOT, and vice versa, but neither serve to make it automatically balance. So then, it is not a matter of a BOP payments constraint, on the contrary, it may instead be the extent to which outsiders will accept your currency as part of their holdings, or will countenance your foreign debt burden, which may be the ultimate constraint."[8] In the case of the US, a global dollar has played a far more important role than exports in influencing economic growth in the past.

Second, combined current and capital account deregulation have added serious complications to the process of growth and macroeconomic adjustment. In a typical scenario, capital inflows, created and induced by an interest rate spread, will cause local currency appreciation, asset bubbles and a surge in the trade deficit. Growth may pick up initially from the capital inflows, but then surely lags behind when debt and default rates rise; the economy becomes dependent on new financial flows to pay high interest rates on short-term speculative capital (i.e. it reaches a state of Ponzi finance). As the crisis is finally unleashed, the trade imbalance is corrected by contractionary macroeconomic policies, devaluation and a lagged export response. Taylor (03) points out an example: "Brazil's response during the 1980s to an ex-ante external constraint imposed by the debt crisis featured export promotion

[7] As Shaikh put it (in unpublished correspondence): 'for the US, it is not a matter of a BOP payments constraint, on the contrary, it may instead be the extent to which outsiders will accept your currency as part of their holdings, or will countenance your foreign debt burden, which may be the ultimate constraint.'

[8] Unpublished correspondence.

and contractionary macro policy to reduce imports. So *y* was held down, *m* was reduced, and *x* pushed up. ***Ex-post, the Thirlwall equation misses the macroeconomics of Brazil's lost decade."***

Third, the Kaldorians' emphasis on export-led demand makes them ignore questions related to income distribution entirely. In a standard Kaldorian growth model, output growth responds to productivity growth in one differential equation, and causality runs the opposite direction in a second dynamic relationship. This positive mutual feedback can underlie demand-led economic expansion. Authors collected in Setterfield (2002) present several models along these lines. However, Kaldorian models are incomplete. They ignore distribution, a puzzling omission in light of Kaldor's own concentration on distributive issues in the 1950s and 1960s.[9] Following Taylor (03), one can show in a closed economy that the identity $r\hat{}] /) 1 [(\hat{} \psi \psi \omega \rho - + =$ must hold. Positive productivity growth ρ generates an income "surplus" that vents into real wage growth $\omega\hat{}$ and/or profit rate growth $r\hat{}$. Which institutional factors determine how the flow surplus gets distributed between real wage and profit increases in the short and long runs? How do these income shifts stimulate or retard demand growth *y*? These dynamics are not captured by Thirlwall's equation.

5. Getting the Story Right on Growth and the Balance of Payments

Evidence does not count much for present day economics since data can easily be manipulated to give a desired result. Theories can also be twisted to rationalize any inconvenient facts. Still, any sensible discussion should begin with a knowledge of the quantitative aspects of the issue being inquired. This section asks how economic openness affects growth at the country level by using Taylor's (91) study on economic openness as a main empirical and theoretical reference. Stylized facts on trade (commodity and service) and growth are examined in Section 4.1, which asks whether openness in the form of high proportions of trade (especially exports) in GDP accelerates growth. Section 4.2 takes this cross-country examination a step further by examining in depth the relation between the rate of growth of exports and GDP over long periods.

5.1 Revisiting the 'stylized facts'

Table 7 combines data for trade in both merchandise and services from the United Nations. An earlier version from McCarthy, Taylor, and Talati (1987) and Taylor (1991), shows average trade proportions of GDP for a sample of sixty-four developing countries covering the period from 1992-00 (with growth rates over the period from 1980-00). The countries are classified into four groups by per capita GDP (below and above $1,000) and 'performance'. Following Taylor (91), the latter is measured by whether a country lies above or below a regression line of growth rate on per capita GDP over 1980-00 (shown in Figure 6). Several points identified in Taylor's (91) study, which covered average trade proportions of GDP for 1980-82 and growth from 1964-82, are apparently still relevant to the prospects of developing countries:

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[9] Kaleckian models, on the other hand, focus entirely on distribution and demand. Following Taylor (03), the output-capital ratio $K\ Y\ u\ /\ =$ is used to gauge demand and the wage share $P\ Y\ W\ L\ /\ = \psi$ (with *W* as the nominal wage, *P* as the price level, and *L* as employment) measures distribution. Ignoring depreciation for simplicity, the capital stock growth rate is $K\ I\ g\ K\ i\ /\ \hat{}\ = =$ where *I* is investment. Short-term macro equilibrium with *u* as the adjusting variable follows from the condition $0\ )\ ,\ (\ )\ ,\ (\ = - \psi\ \psi\ u\ g\ u\ g\ s\ i$ in which $i\ g$ and $s\ g$ are respectively investment and saving functions scaled to the capital stock. At such an equilibrium, *u* is a function of ψ . Questions of interest are whether *u*, $K\hat{}$, and the profit rate $u\ r\ )\ 1\ (\ \psi - =$ respond positively or negatively to increases in ψ (or other distributive variables like the real wage $P\ W\ /\ = \omega$). The consensus is that all three variables appear to be "wage-led" in developing economies (they rise as ψ increases), but "profit-led" in the industrialized world. Nonetheless, the Kaleckian model misses labor productivity $L\ Y\ /$ an equally important determinant of ψ . Adding Kaleckian distributional dynamics to the Kaldorian growth model makes sense.

1. ***Trade proportions vary widely***. Countries with smaller populations typically have higher trade shares. Asian countries have larger shares of industrial exports, while African economies specialized in primary-product exports and are substantial net importers of services. Furthermore, supporting the findings in the earlier section, there is no relationship between performance and overall openness to trade (measured by the ratio of exports plus imports to GDP).

2. ***The importance of primary exports diminishes with per capita income.*** As mentioned earlier, poorer countries are more vulnerable to adverse terms of trade. The mean ratios of industrial to primary trade by groups are I, 0.72; II, 2.25 (but 1.4 without China and Nepal); III, 2.83 (but 2.2 without Libya which has a deceivingly high ratio due to its pitifully low base); IV, 3.40 (but 2.10 without Korea, a distinct outlier). The averages reported by Taylor (91) were, respectively: 0.45, 0.42, 1.29, and 1.80. To a large extent, his observation that industrial exports rise with per capita income, but independently of the rate of growth still holds. It can be backed by further statistical analysis. Figures 7a and 7b plot the ratio of industrial to primary exports against per capita income and growth, respectively, for the period from 1980 to 2000 for a larger sample of countries. No relation is evident in the former, but a positive trend-line is apparent in the latter (outliers with very high ratios of industrial to primary exports, such as Japan and Hong-Kong, were excluded from the regression). This fact also strikes the eye in Fig. 6, where countries with high shares of industrial exports for their size and income level (underlined) are scattered above and below the regression line.

3. ***Export led growth does not stand out.*** If shares of exports in GDP rose more rapidly with income in fast rather than in slow growing economies, then trade expansion might naturally be associated with good performance. This argument has to overcome a rather inconvenient stylized fact; growth does not correlate with export shares of GDP. As shown in Fig. 7c, a strong positive relation between the share of exports to GDP and income does not characterize this sample. Even net oil exporters marked in italics in Fig 6 are spread across the growth rate spectrum.

4. ***Most developing countries are highly dependent on net service imports.*** This is also more pronounced for lower income countries. Exceptions are large exporters of tourism and/or labor to industrialized countries and the Gulf (this also explains the resistance of Third World countries to liberalization of trade in services in global trade negotiations).

5. ***With a few large, import-substituting exceptions (India, Brazil etc.), almost all countries allocate more than 5 per cent of GDP to capital goods imports.*** The averages for the groups range between 6.4 to 11.8 per cent of GDP. Average current account deficits in this sample exceed capital goods purchases for low-income countries only. However, the average current account deficit for group III exceeds that for capital goods imports by 2 per cent once surplus oil countries are excluded. The implication is that financial capital and transfer flows to poorer developing countries exceeded their physical counterpart. The transfer component is shown in the final column of Table 7. As noted by Taylor (01), it varies widely in relation to the size of the emigrant labor force and geopolitical rents.

6. ***Size bears some positive relationship to growth but capital inflows do not.*** In Figure 6, whitened circles indicate nations with populations exceeding 20 million. Notice the clustering of larger countries in the area above the mark for 5 percent growth. Countries receiving larger average capital inflows (indicated by brackets) are mostly grouped in the lower west quadrant.

7. ***Countries engage in non-competitive merchandise trade, buying and selling commodities, which do not loom large in domestic production and consumption activity.***

Primary exports dominate for low-income countries. The mean GDP share of merchandise imports is 26 per cent for the entire sample, with primary products and intermediates making up 9 per cent and capital goods 17 percent. These '*stylized facts'* suggest Taylor's (91) conclusion on trade and growth is still relevant; 'trade does not seem to be closely related to the way economies perform. Fast growing economies are more or less open, have diverse patterns of specialization, and their success is not obviously led by exports, industrial or otherwise.'

5.2 Revisiting the Export-growth Nexus

Whether through its effect on aggregate demand (Keynesians) or by creating market induced efficiencies (Neoclassicals) a la the World Bank's "Asian Miracle", contemporary economists favor a positive causal relation between exports and growth.[10] However, even until the early seventies, export-led growth was not considered a viable policy option by most developing countries. The collapse in World prices during the great depression revealed how vulnerable they were to external sources of demand. Moreover, as Perbisch (1950) argued, the difference in price and income elasticities between primary and manufactured goods kept developing country exports below what was necessary to pay for their long run imports. Naturally, developing countries responded by launching grandiose import substituting industrialization programs. It was not until the early eighties, with the apparent success of outward-oriented Asian economies, that export-led acquired its unprecedented popularity.

Ocampo and Parra (02) look at the evolution of the terms of trade between commodities and manufactures in the twentieth century. Their statistical analysis of the relative price series for 24 commodities and of eight indices supports Perbisch's hypothesis, revealing a significant deterioration in their barter terms of trade over the course of the twentieth century. Furthermore, their paper shows this decline was neither continuous, nor was it distributed evenly among individual products. The far-reaching changes that the world economy underwent around 1920 and again around 1980 led to a stepwise deterioration, which, over the long term, was reflected in a decline of nearly 1% per year in aggregate real prices for raw materials.

The link between trade and growth is also unclear at the other end of the intellectual spectrum. If, as neoclassical theorists believe, the economy is always at full employment, then what difference does it make for an economy with no BOP constraint and operating at full capacity if the source of its demand is external or internal? The answer hinges on price-driven export-induced productivity gains - so the popular story goes. Perhaps to compensate for this weak theoretical link, mainstream investigations of the empirical relationship between exports and growth have developed into a thriving econometric industry over the past three decades.

However, even at the cross-country level, the strength of the relationship between exports and growth can be shown to depend on the inclusion of export-savvy and oil producing economies. If so, the generality of the export-led growth must be disputed. Figures 8.a-8.b plot x and y from 1960-1999 for eighty-seven and eighty-one countries, respectively. The scatter diagrams give an interesting result: the coefficient drops quite significantly (from 0.76 to 0.3) once the "outliers" (oil producers: Kuwait and Saudi Arabia and Asian economies:

[10] As Lance Taylor once remarked, the weak cross-sectional relation between exports and growth is particularly problematic to neoclassical theorists since for them the economy is always at full employment. What difference does it make for an economy with no BOP constraint and operating at full capacity if the source of its demand is external or internal? The answer must hinge on a dubious link between exports and induced allocative efficiency or cost-saving technical change. A firm or country engaged in international trade will be more efficient as it responds to 'right prices' - so the popular story goes. This argument, however, has to overcome a rather inconvenient stylized fact; growth does not correlate with export shares of GDP.

Korea, China, Thailand, Hong Kong) are excluded from the sample. Figures 8.a.1-8.a.4 divide the eighty-seven countries in 8.a further into four categories of export performance. Thus, tiers 1,2,3, and 4 corresponded to countries with export growth rates of >8%, 6-8%, 4.5-6%, and <4.5%, respectively. Again, the results show that export-led growth is only applicable to Tier 1. Similar results were obtained when countries were grouped according to their growth performance (tiers 4,3,2, and 1 corresponding to countries with growth rates 0-3%, 3-4%, 4-5%, and >5% respectively).

One final empirical observation related to 8.a.1-4 is worth noting; Asian and Gulf outliers excluded, all other categories of income and export performance include a mix of countries that differ in terms of level of development, size of population, economic policy orientation, economic openness and structures of production and trade; the very same factors that are invoked in any conventional analysis of the relationship between exports and growth. Figures 8.c-8.d plot the same variables using a larger dataset, which includes data from over 130 countries, but for the period after 1980 only. One remarkable difference between both periods is the significant drop in growth rates of exports and output for oil-exporters after 1980 (which stood at 1.5% and 3% for the growth of exports and output, respectively). This may be attributed to the end of the oil boom. It also explains the significantly lower R-square in figure 8.c compared with 8.a. However, the R-square drops to 0.26 once the eight export oriented Asian economies are excluded (China, Singapore, Thailand, Malaysia, Korea, Hong Kong, Indonesia, and Taiwan) and even further (to 0.15) once other negative outliers (the five countries with negative rates of growth of output and exports: Djibouti, Rwanda, Bulgaria, Haiti, Romania) are also omitted. That means that there is little correlation between both variables across 120 countries.

The conclusion is that a positive relation between exports and growth applies to a minority of Asian countries and to the oil-rich Middle East in the period from 1960-1980 only. Since it is only with the former group that export rates were sustained due to unequivocally non-divine factors, the replication of their economic model by the remainder of developing countries is a question that merits further investigation.

6. Conclusion

Owing in large part to its simplicity and empirical strength, the balance of payments constrained model of export-led growth elaborated by Kaldor (1968) and formalized by Thirlwall and Dixon (1979) has been celebrated within post-Keynesian circles as the demand-side response to mainstream growth theory. To a large extent, the results here confirm the empirical validity of the Kaldorian model: actual growth rates do tend to hover around their corresponding equilibrium (predicted) rates for most countries. However, such an affinity emerges from the data as well-established stylized fact: the ratio of the growth rates of exports to imports across countries will generally approximate to unity in the long run. Moreover, as the aggregate effect of overshooting will roughly offset that of undershooting, it should not be surprising (since the deviations tend to cancel each other out) that the model closely predicts the average growth rate of the eighty-seven countries in the sample. Also, Thirlwall's correlation does not apply to many developing countries where IMF engineered recoveries in the post debt-crisis era resulted in lower rates of growth and imports (but not exports), nor to developed countries, such as the US, which can use the global acceptance of their national currencies to evade the balance of payments constraint.

This paper also asks how outward orientation affects growth at the country level, using Taylor's (91) study on economic openness as a main empirical and theoretical reference. Stylized facts on trade (commodity and service) and growth examined here suggest Taylor's (91) conclusion on trade and growth is still essentially relevant; 'trade does not seem to be closely related to the way economies perform. Fast growing economies are more or less open,

have diverse patterns of specialization, and their success is not obviously led by exports, industrial or otherwise.' Finally, cross-sectional analysis of the relation between exports and growth yields little correlation outside the cluster of outlier (oil-based and export-savvy) economies. The theory of export-led growth cannot therefore be a general one; export-led growth remains a unique and predominantly exclusive phenomenon.

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Figure 1: The change in relative prices (1960-99)

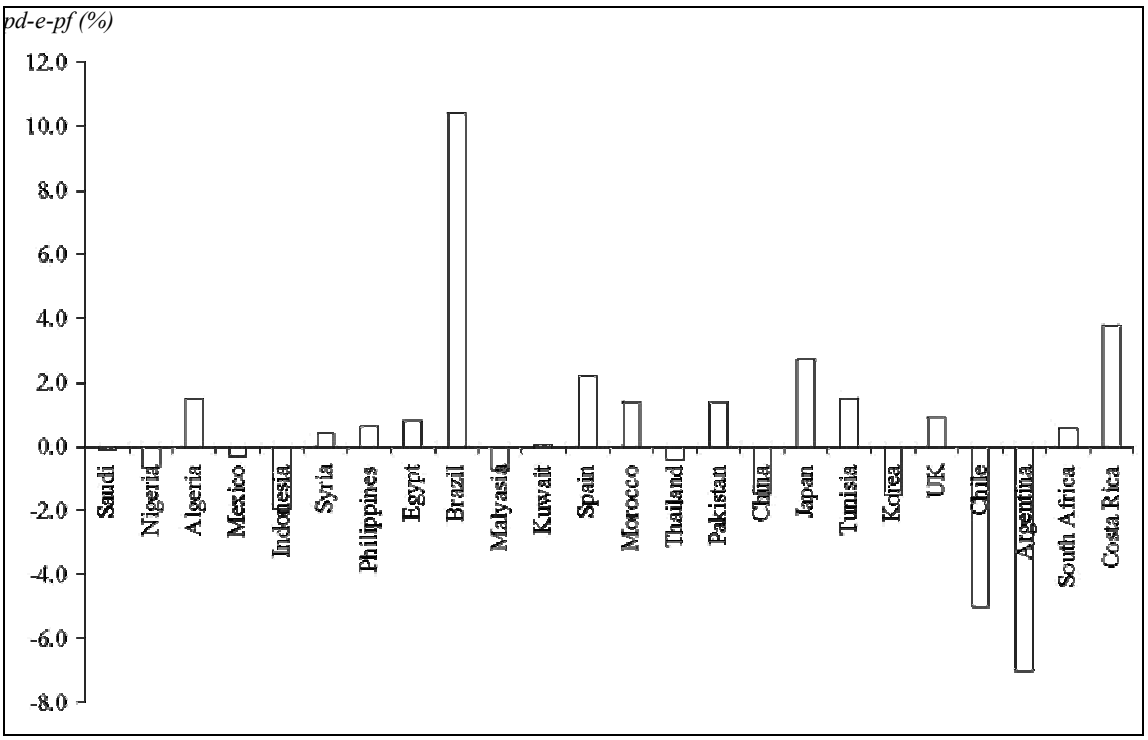


Figure 2: Actual (y) and predicted (y*1-4) GDP growth 1960-99

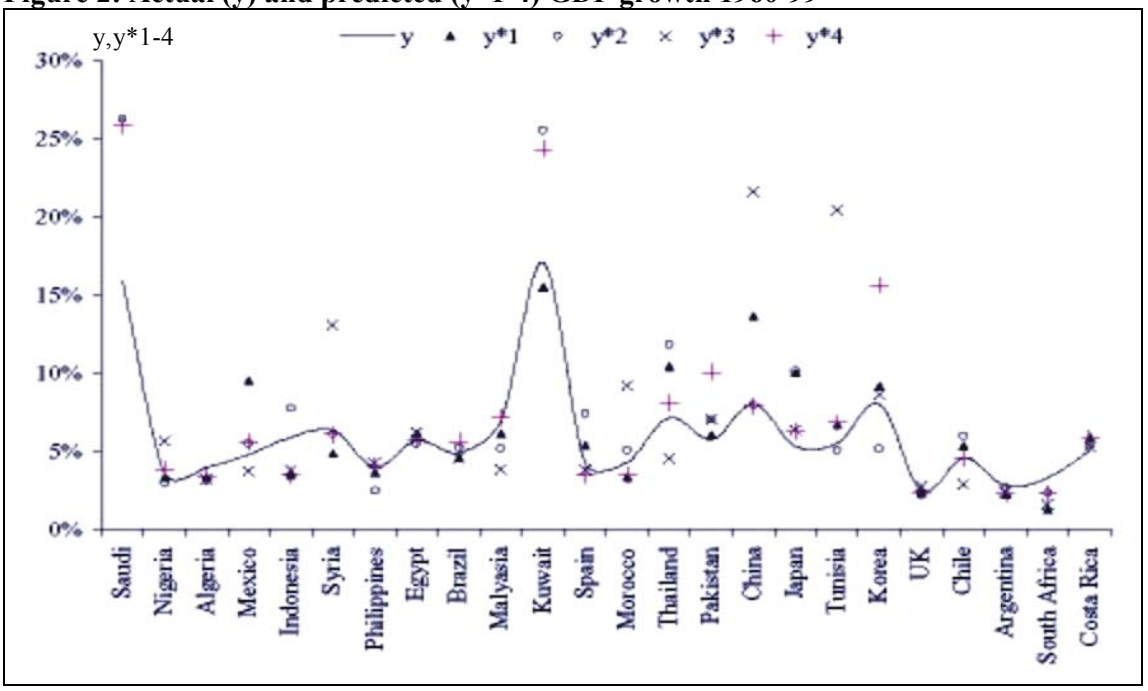


Figure 3: Actual and Equilibrium Growth Rates

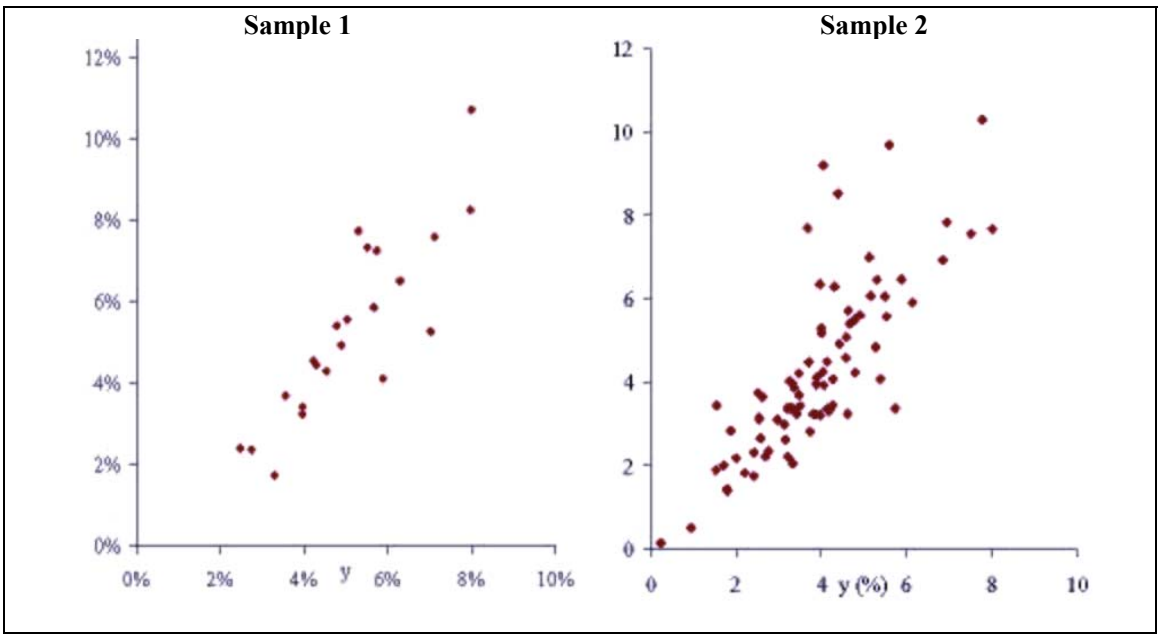


Figure 4: Actual and Equilibrium Rates of Growth

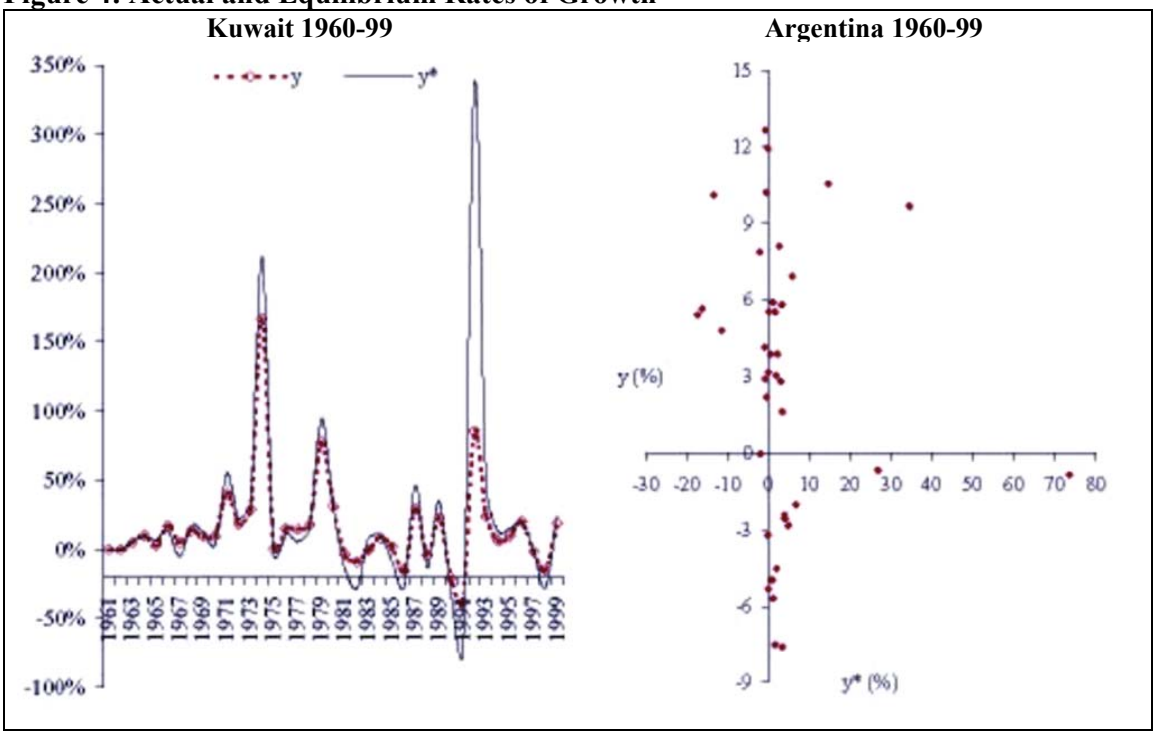


Figure 5:

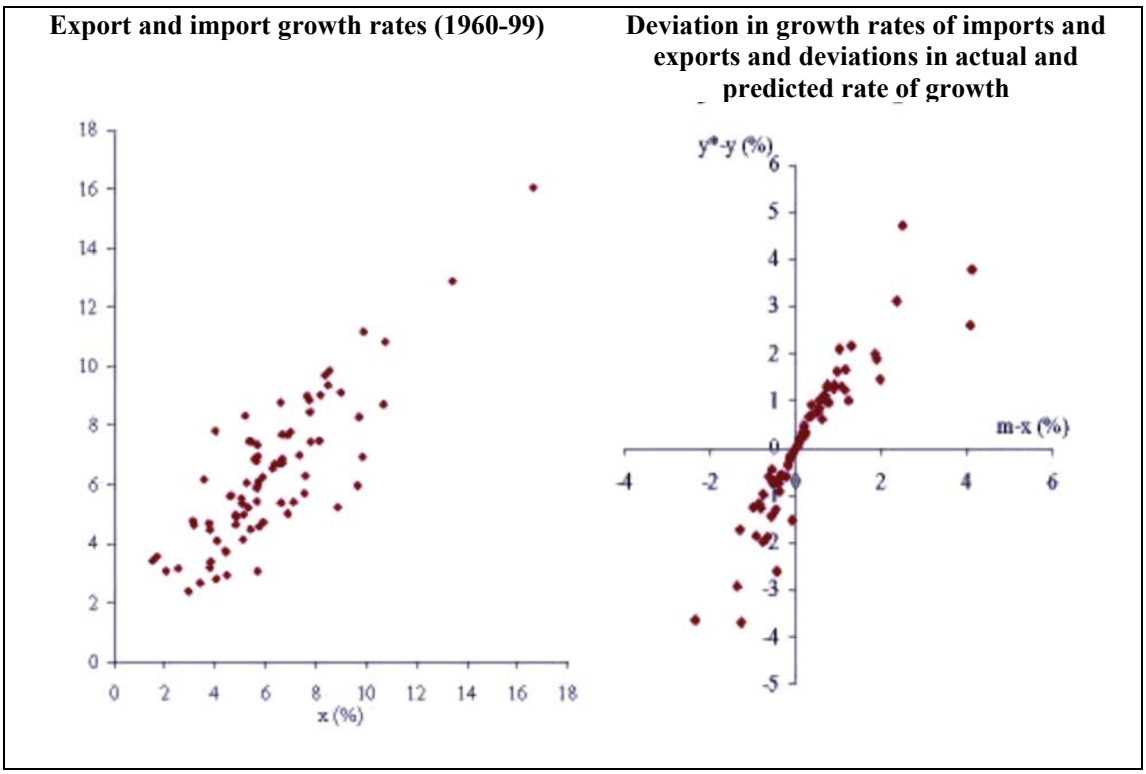


Figure 6: GDP growth (1980-2000) and GDP per capita (1999-2000)

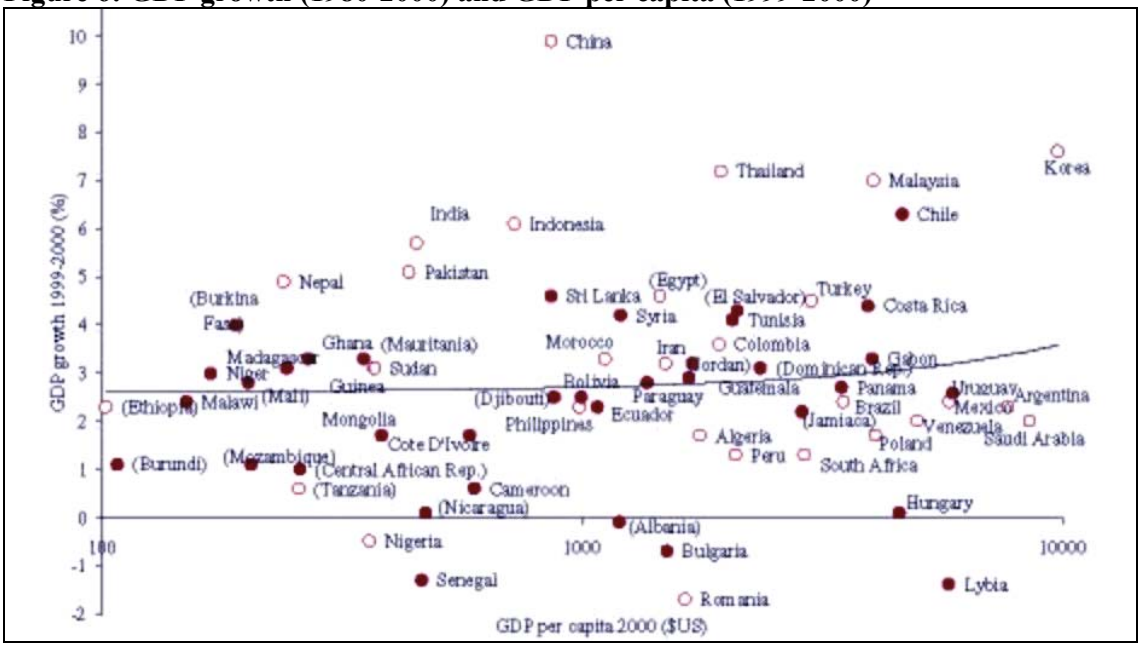
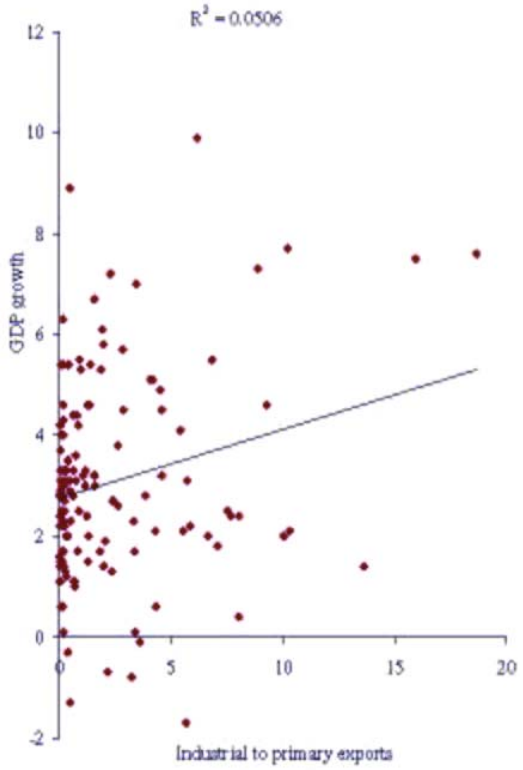
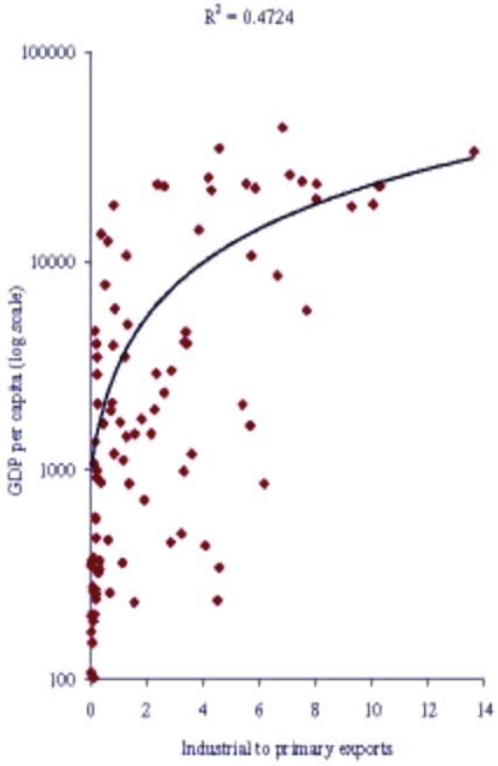


Figure 7:

7a: GDP growth and industrial to primary exports (1980-2000)



7b:GDP per capita and industrial to primary exports (1980-2000)



7c: GDP growth and exports to GDP (1992-2000)

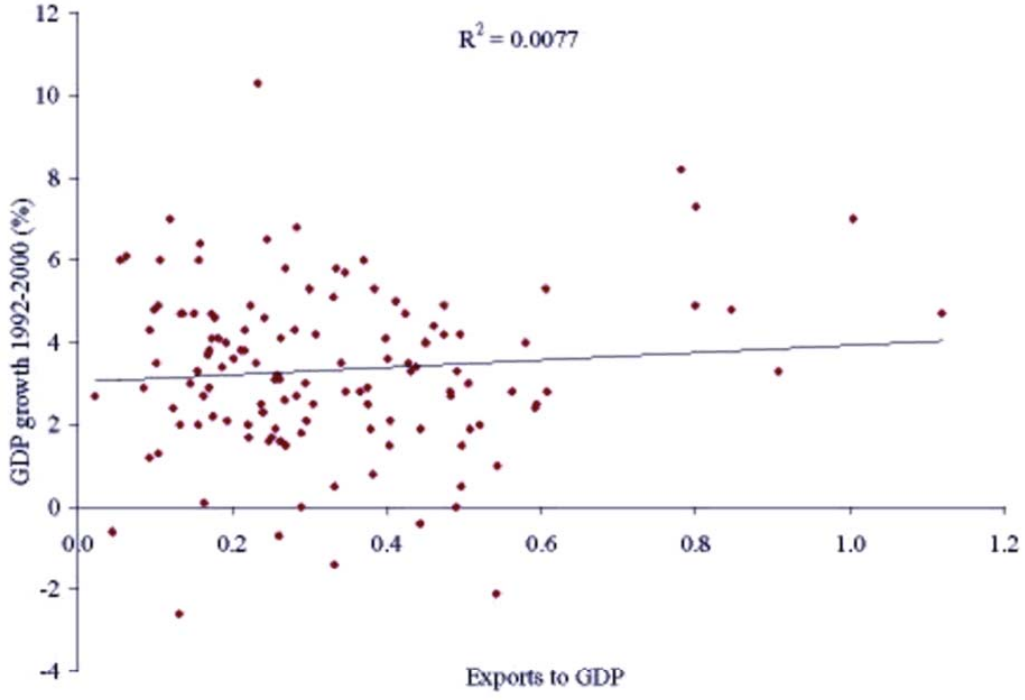


Figure 8.a GDP growth and export growth (1960-99) for 87 countries
(R-square = 0.73)

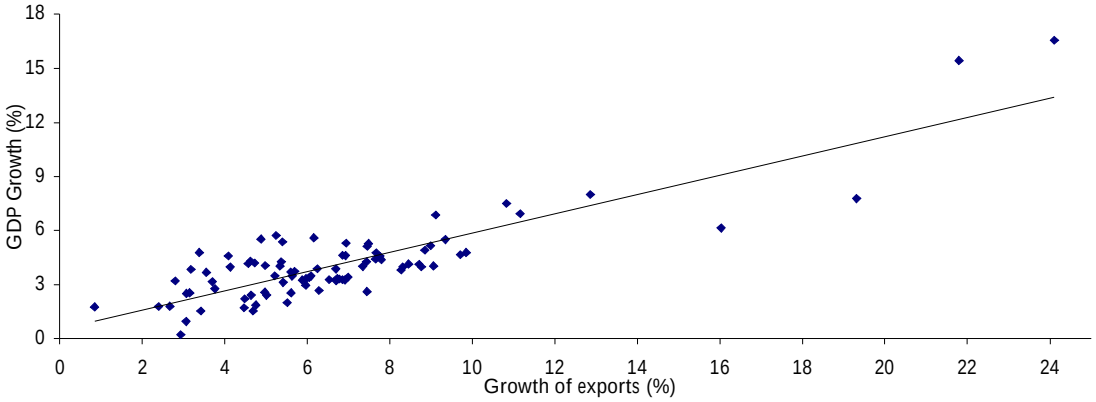


Figure 8.b GDP growth and export growth (1960-99) for 87 countries
(R-square = 0.30)

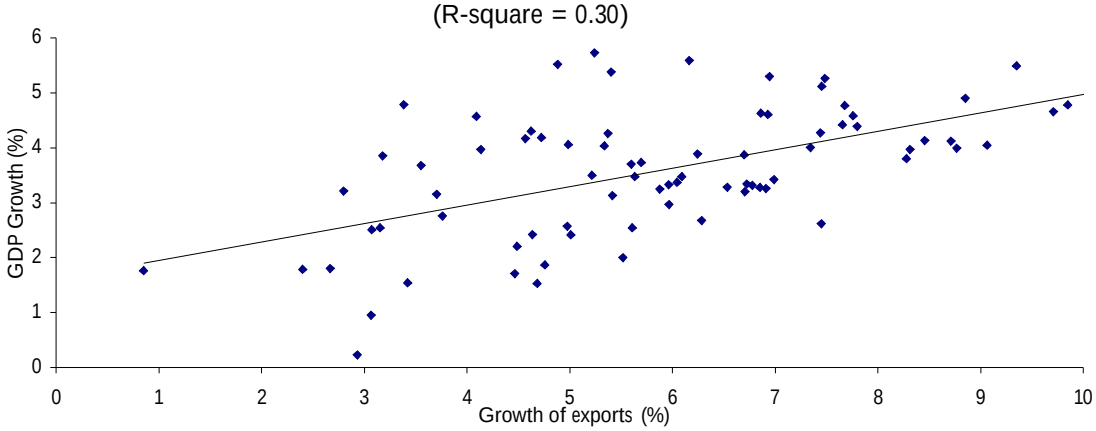


Figure 8.c GDP growth and export growth (1980-00) for 133 countries
(R-square = 0.39)

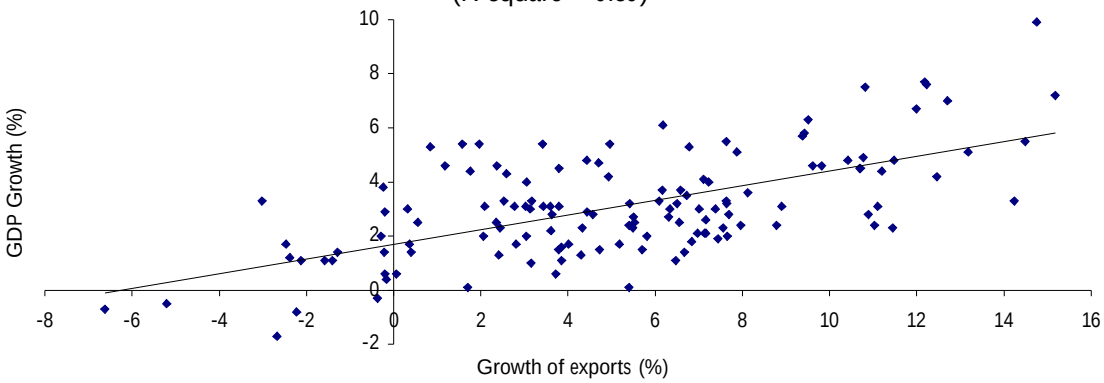


Figure 8.d GDP growth and export growth (1980-00) for 133 countries
(R-square = 0.26)

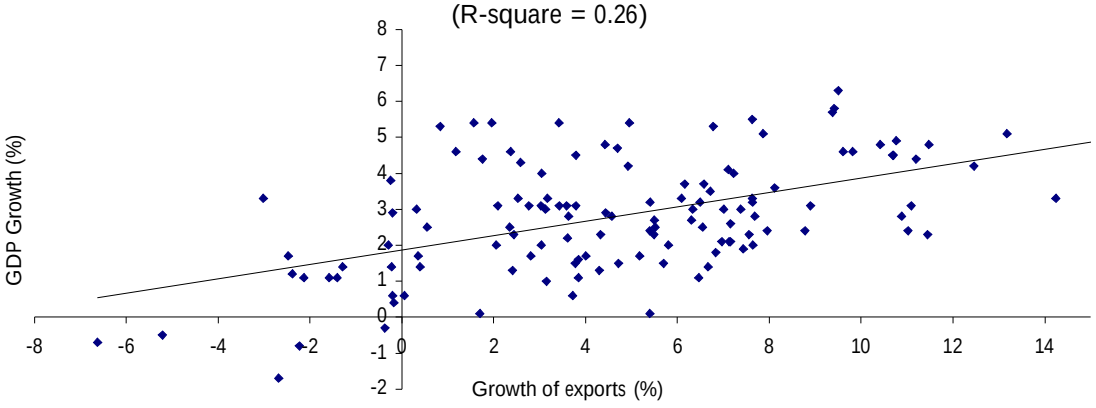


Figure 8.a.1 Exports and growth (1960-99): Tier 1

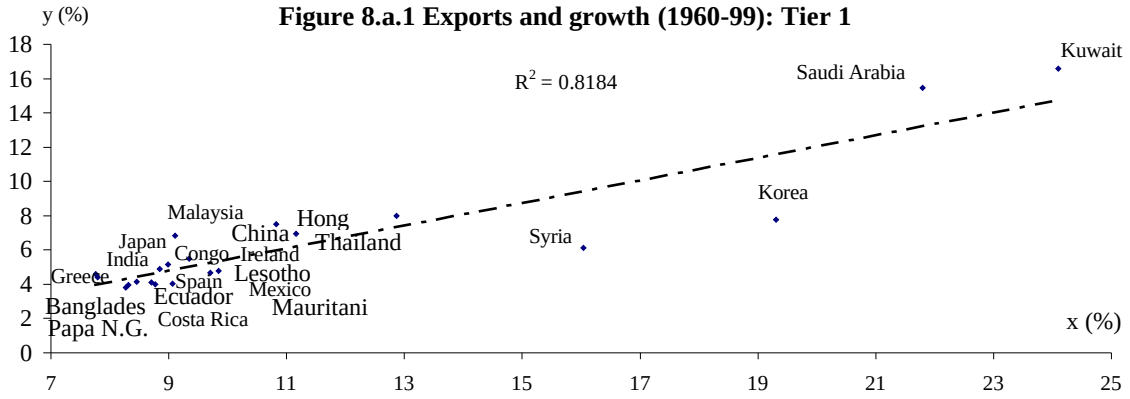


Figure 8.a.2 Export and growth (1960-99): Tier 2

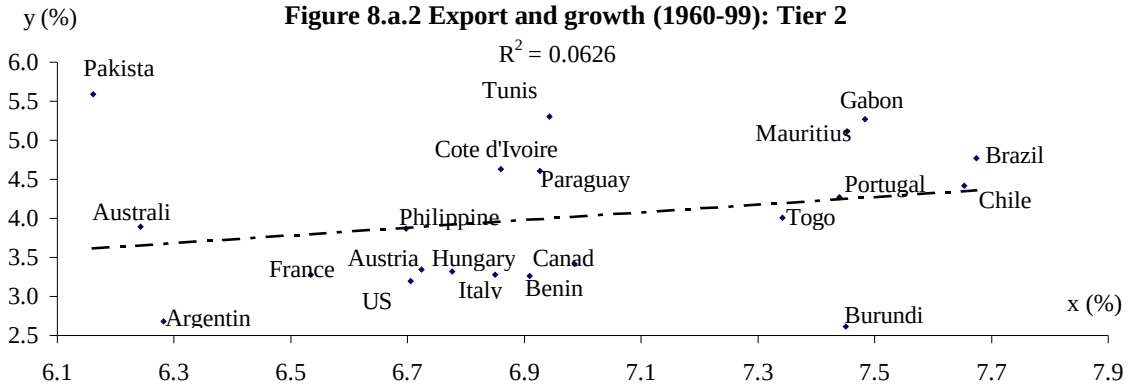


Figure 8.a.3 Export and growth (1960-99): Tier 3

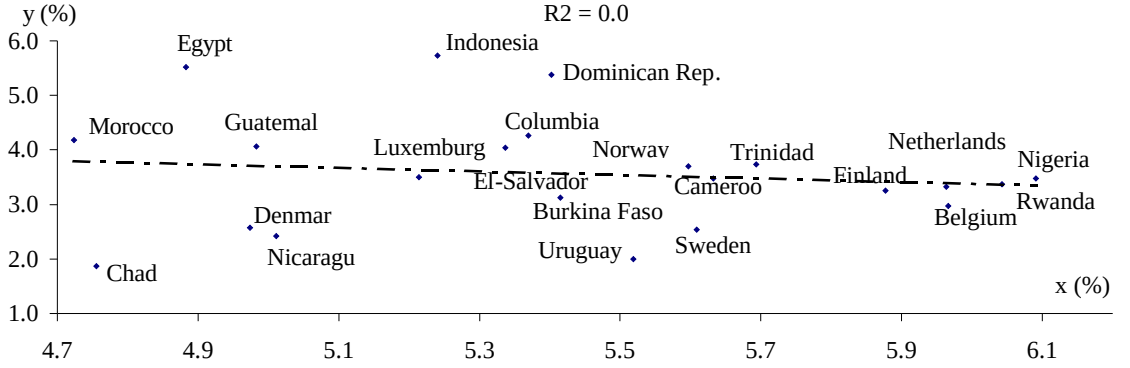
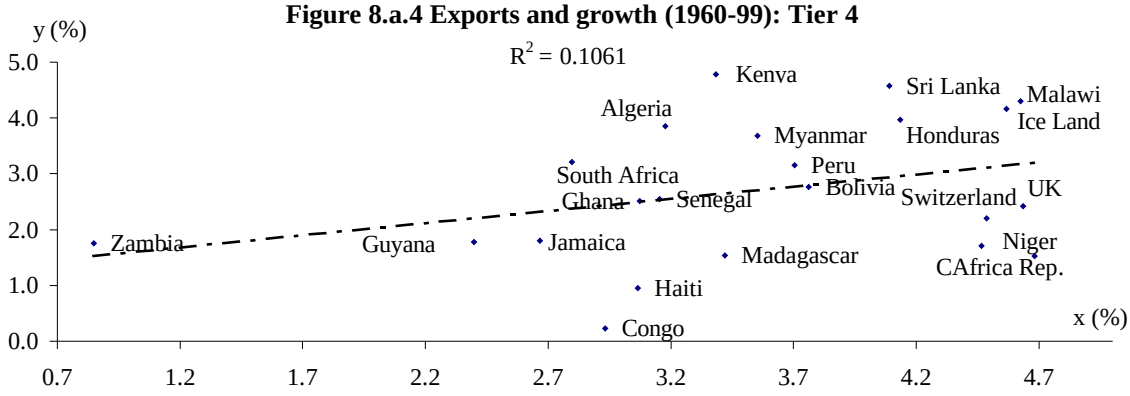


Figure 8.a.4 Exports and growth (1960-99): Tier 4



Annex

Data sources, methodology and detailed results for statistical analysis

1. Data sources

The source of data used here is the World Bank's World Development Indicators (02). The empirical variables, measured as the first difference of their logarithm, are: real exports, real imports, and real GDP. In addition relative prices were calculated based on a simple formula: $(P_fE)/P_d$ where P_f denotes the consumer price index in the US, E is the nominal US$ exchange rate and P_d is the domestic consumer price index. Terms of trade were also calculated based on the ratio of real export to import prices. The data covers the period from 1960 to 1999.

2. Methodology

Following the standard procedure, the test for stationarity and its type was completed to verify that the variables are integrated of the same order (see table 1). Two tests for cointegration (but not the direction of causality) were implemented, first between imports, prices and GDP, then between GDP and exports. I also perform an OLS regression of the hypothesized model. A common econometric specification for the import demand function with the growth in relative prices lagged by one or two periods to factor in the so-called J-curve effect can be written as:

$$M = B_0 + B_1 (EP_f/P_d) + B_2 y_t + e_t$$

and in logarithmic form:

$$Ln\ m_t = B_0 + B_1 ln(ep_f/p_d) + B_2\ lny_t + e_t$$

where

m_t = logarithm of imports

p_{t-1} = logarithm of relative prices

y_t = real GDP

e_t = stationary disturbance term

B_i = parameters to be estimated

All results and test assumptions are summarized in table 2.

Table 1 ADF Test of Unit Root

lags	T	Variable	Level	First Dif.	Order of I	lags	T	Variable	Level	First Dif.	Order of I	lags	T	Variable	Level	First Difference	Order of I	lags	T	Variable	Level	First Dif.	Order of I
1	N	SAULNY	1.79	2.33	I(2)	1	N	PHILNY	1.47	3.55(**)	I(1)	1	N	MORLNY	2.14	4.45 (*)	I(1)	1	N	KORLNY	1.12	3.98 (*)	I(1)
1	N	SAULNM	0.06	5.17 (*)	I(1)	1	N	PHILNM	0.689	4.02 (*)	I(1)	1	N	MORLNM	0.12	3.87 (*)	I(1)	1	N	KORLNM	1.85	5.14 (*)	I(1)
1	N	SAULNP	2.59	2.41	I(2)	1	N	PHILNP	1.08	5.63(*)	I(1)	1	N	MORLNP	1.73	3.63 (*)	I(1)	0	N	KORLNP1	1.76	4.17 (*)	I(1)
1	N	SAULNX	1.52	3.26 (**)	I(1)	1	N	PHILNX	0.635	4.61 (*)	I(1)	1	N	MORLNX	0.7	5.62 (*)	I(1)	1	N	KORLNX	2.15	3.38 (**)	I(1)
1	N	NIGLNY	1.34	4.39 (*)	I(1)	1	N	EGYLNY	0.74	3.61 (*)	I(1)	1	N	THALNY	1.34	3.45 (**)	I(1)	1	N	UKLNY	0.68	4.77 (*)	I(1)
1	N	NIGLNM	1.62	3.02 (**)	I(1)	1	N	EGYLNM	2.08	4.92 (*)	I(1)	1	N	THALNM	0.97	4.46 (*)	I(1)	1	N	UKLNM	0.35	4.74 (*)	I(1)
1	N	NIGLNP	2.48	2.73 (***)	I(1)	0	N	EGYLNP	2.15	4.34 (*)	I(1)	1	N	THALNP	0	5.82 (*)	I(1)	0	N	UKLNP1	2.23	4.84 (*)	I(1)
1	N	NIGLNX	2.01	4.68(*)	I(1)	1	N	EGYLNX	0.56	5.09 (*)	I(1)	1	N	THALNX	0.39	3.71 (*)	I(1)	1	N	UKLNX	0.211	4.05 (*)	I(1)
1	N	ALGLNY	1.46	7.78 (*)	I(1)	0	Y	BRALNY	0.25	3.82 (*)	I(1)	1	N	PAKLNY	1.96	3.35 (**)	I(1)	1	N	CHILNY	0.39	3.66 (**)	I(1)
1	N	ALGLNM	1.78	10.2 (*)	I(1)	0	Y	BRALNM	1.36	4.31 (*)	I(1)	1	N	PAKLNM	1.65	6.2 (*)	I(1)	1	N	CHILNM	0.42	4.2 (*)	I(1)
1	N	ALGLNP	1.08	4.64 (*)	I(1)	0	Y	BRALNP	3.14	3.52 (***)	I(1)	1	N	PAKLNP	0.456	4.77 (*)	I(1)	1	N	CHILNP	1.3	5.32 (*)	I(1)
1	N	ALGLNX	0.91	14.8 (*)	I(1)	0	Y	BRALNX	2.5	7.34 (*)	I(1)	1	N	PAKLNX	0.95	4.42 (*)	I(1)	1	N	CHILNX	0.93	3.8 (*)	I(1)
0	Y	MEXLNY	1.21	4.8 (*)	I(1)	1	N	MALLNY	0.41	3.76 (*)	I(1)	1	N	CHNLNY	0.2	5.8 (*)	I(1)	0	Y	ARGLNY	0.89	5.42 (*)	I(1)
0	Y	MEXLNM	1.68	4.56 (*)	I(1)	1	N	MALLNM	0.4	3.8 (*)	I(1)	1	N	CHNLNM	0.34	4.6 (*)	I(1)	0	Y	ARGLNM	1.68	5.16 (*)	I(1)
0	Y	MEXLNP	2.85	5.47 (*)	I(1)	1	N	MALLNP	1	5.28 (*)	I(1)	1	N	CHNLNP	2.21	3.95 (*)	I(1)	0	Y	ARGLNP	2.96	6.15 (*)	I(1)
0	Y	MEXLNX	1.36	3.53 (**)	I(1)	1	N	MALLNX	2.02	3.92 (*)	I(1)	1	N	CHNLNX	0.33	3.54 (**)	I(1)	0	Y	ARGLNX	2.87	6.71 (*)	I(1)
0	N	INDLNY	0.32	4.01 (*)	I(1)	1	N	KUWLNY	1.48	4.33 (*)	I(1)	0	Y	JAPLNY	1.69	4.21 (*)	I(1)	0	Y	SOULNY	1.85	5.4 (*)	I(1)
0	N	INDLYNM	1.24	3.48 (**)	I(1)	0	N	KUWLNM	21.8	3.29 (**)	I(1)	0	Y	JAPLNM	2.11	5.2 (**)	I(1)	0	Y	SOULNM	2.01	5.41 (*)	I(1)
0	N	INDLYNP	0.54	5.4 (*)	I(1)	0	N	KUWLNP	1.55	4.41 (*)	I(1)	0	Y	JAPLNP	1.86	4.48 (*)	I(1)	0	N	SOULNP	1.34	5. (*)	I(1)
0	N	INDLYNX	0.86	3.69 (*)	I(1)	1	N	KUWLNX	1.47	5.23 (*)	I(1)	0	Y	JAPLNX	1.01	6.6 (*)	I(1)	0	N	SOULNP1	1.05	4.56 (*)	I(1)
0	N	SYRLNY	1.11	7.83 (*)	I(1)	1	N	SPALNY	1.93	2.87 (***)	I(1)	1	N	TUNLNY	1.54	4.35 (*)	I(1)	0	N	SOULNX	0.45	3.77 (*)	I(1)
0	N	SYRLNM	0.97	4.96 (*)	I(1)	1	N	SPALNM	1.17	4.05 (*)	I(1)	1	N	TUNLNM	0.65	3.16 (**)	I(1)	1	N	COSLNY	1.38	3.42 (**)	I(1)
0	N	SYRLNP	0.91	7.18 (*)	I(1)	1	N	SPALNP	2.44	3.52 (**)	I(1)	1	N	TUNLNP	1.08	3.32 (**)	I(1)	1	N	COSLNM	0.76	4.46 (*)	I(1)
0	N	SYRLNP1	1.42	7.2 (*)	I(1)	1	N	SPALNX	1.17	3.13 (**)	I(1)	1	N	TUNLNX	0.85	4.43 (*)	I(1)	1	N	COSLNP	1.3	5.55 (*)	I(1)
0	N	SYRLNX	0.85	4.87 (*)	I(1)													0	N	COSLNX	0.57	5.64 (*)	I(1)

LNY denotes the logarithm of real income

LNM denotes the logarithm of real imports

LNP denotes the logarithm of relative prices measured in common currency where US consumer price index (real 1995 prices) was taken as a proxy for international prices

LNP1 denotes the logarithm of terms of trade calculated as the ratio of real export to import prices

LNX denotes the logarithm of real exports

Table 2 Summary of statistical results for sample (1)

Johansen cointegration tests

	Results								Test 1							Test 2					OLS Analysis								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Country	Y	x	y*1 (2/12)	y*2 (2/19)	y*3 (2/23)	y*4 (2/8)	y=y* r-square	m/y	Lags	Trend	Sig. level	LNY coef.	SE	LNP coef.	SE	Lags	Trend	Sig. level	1/LNX coef.	SE	lags (LNP)	Trend	LNY	SE	t-Stat.	LNP coef.	SE	t-Stat.	R2
Saudi	15.9%	22.4%	na	26.2%	na	25.8%	0.52	**0.87**				-				1 6	y	*	**0.85**	0.05									
Nigeria	3.6%	6.3%	3.3%	3.0%	5.7%	3.8%	0.38	**1.64**	1 4	y	**	**1.89**	0.47	**0.91**	0.10	1 5	y	*	**2.11**	0.03	1	n	**1.11**	0.34	3.22	**-0.09**	0.12	-0.74	0.24
Algeria	4.0%	3.3%	3.3%	3.1%	3.2%	3.4%	0.72	**0.98**	1 1	n	**	**1.00**	0.12	**0.69**	0.15	1 1	n	**	**1.05**	0.23	1	n	**1.03**	0.29	3.50	**0.00**	0.01	0.00	0.18
Mexico	4.8%	10.0%	9.5%	5.5%	3.7%	5.6%	0.02	**1.79**	1 3	y	*	**1.05**	0.17	**0.26**	0.29	1 2	y	*	**1.82**	0.27	1	n	**2.69**	0.71	3.70	**0.15**	0.21	0.73	0.40
Indonesia	5.9%	5.4%	3.5%	7.7%	3.7%	3.5%	0.10	**1.54**	1 4	n	**	**1.55**	0.01	**0.81**	0.02	1 4	n	*	**0.69**	0.10	2	n	**1.44**	0.30	4.70	**0.50**	0.10	4.80	0.58
Syria	6.3%	16.5%	4.8%	6.1%	13.0%	6.1%	0.17	**2.71**	1 1	n	**	**3.40**	0.09	**0.83**	0.18	1 1	n	**	**2.70**	0.00	1	n	**1.26**	0.50	2.51	**0.30**	0.17	1.77	0.26
Syria*	6.3%	16.5%	5.3%		13.0%				1 1	n	**	**3.11**	0.04	**0.72**	0.09						1	n	**1.26**	0.36	3.46	**0.30**	0.18	1.63	0.25
Philippines	4.0%	6.9%	3.6%	2.5%	4.2%	4.1%	0.19	**1.69**	1 5	n	**	**1.89**	0.31	**3.75**	1.46	1 4	n	**	**2.80**	0.24	1	n	**1.63**	0.37	4.38	**-0.29**	0.09	-3.24	0.49
Philippines	4.0%	6.9%	4.2%		3.9%				1 4	n	**	**1.63**	0.17	**0.59**	0.23						1	n	**1.76**	0.38	4.68	**0.51**	0.15	3.31	0.50
Egypt	5.7%	5.0%	6.1%	5.5%	*6.2%*	5.7%	0.28	**0.88**	1 4	n	*	**0.82**	0.10	**1.01**	0.33	1 4	n	**	**0.91**	0.03	1	y	**0.81**	0.38	2.15	**0.01**	0.09	0.09	0.00
Brazil	4.9%	7.9%	4.6%	5.2%	4.6%	5.6%	0.01	**1.40**	1 1	n	**	**1.73**	0.23	**0.40**	0.25	1 2	n	*	**1.52**	0.07	1	n	**1.72**	0.43	4.04	**-0.30**	0.12	-2.57	0.39
Brazil*	4.9%	7.9%	6.2%		4.3%				1 3	n	**	**1.27**	0.37	**2.27**	3.00								**1.83**	0.49	3.72	**-0.14**	0.18	-0.77	0.29
Malyasia	7.0%	9.4%	6.1%	5.1%	3.9%	7.1%	0.30	**1.31**	1 2	n	**	**1.53**	0.15	**0.20**	0.50	1 1	n	**	**1.82**	0.27	1	n	**2.43**	0.39	6.24	**0.08**	0.19	0.44	0.54
Malyasia*	7.0%	9.4%	8.1%		3.7%				1 2	n	**	**1.15**	0.06	**1.58**	0.29						1	n	**2.50**	0.58	4.33	**0.06**	0.13	0.48	0.44
Kuwait	17.0%	24.8%	15.5%	25.5%	44.3%	24.3%	0.73	**1.02**	1 3	n	**	**1.60**	0.26	**3.58**	2.30	1 1	n	**	**0.97**	0.04	3	n	**0.56**	0.14	3.97	**-0.02**	0.55	-0.04	0.14
Spain	4.2%	8.9%	5.4%	7.4%	3.8%	3.5%	0.05	**2.59**	1 3	n	**	**1.67**	0.21	**1.80**	0.47	1 2	y	*	**1.20**	0.35	1	n	**2.35**	0.38	6.23	**-0.09**	0.10	-0.92	0.55
Spain*	4.2%	8.9%	4.3%		3.8%				1 4	n	*	**2.06**	0.04	**-1.04**	0.09	1 6	y	**			1	n	**2.37**	0.39	6.03	**0.07**	0.15	0.47	0.55
Morocco	4.3%	4.8%	3.3%	5.0%	*9.2%*	3.4%	0.01	**1.41**	1 4	n	**	**1.45**	0.05	**0.85**	0.13	1 2	n	**	**0.96**	0.79	1	y	**0.53**	0.43	1.23	**-0.02**	0.24	-0.09	0.05
Morocco*	4.3%	4.8%	4.1%		*9.2%*				1 3	n	*	**1.18**	0.08	**-0.64**	0.33						1	y	**0.53**	0.42	1.25	**-0.02**	0.16	-0.12	0.05
Thailand	7.1%	11.5%	10.4%	11.8%	4.5%	8.1%	0.08	**1.42**	1 4	n	*	**1.10**	0.14	**0.25**	1.60	1 6	n	*	**0.97**	0.42	1	n	**2.53**	0.45	5.65	**0.12**	0.28	0.44	0.51
Thailand*	7.1%	11.0%	6.1%		4.5%				1 4	n	**	**1.79**	0.13	**1.30**	0.31						1	n	**2.46**	0.43	5.72	**0.00**	0.15	-0.03	0.50
Pakistan	5.7%	6.3%	6.0%	7.0%	7.0%	10.0%	0.21	**0.63**	1 5	n	*	**1.05**	0.13	**1.02**	0.21	1 3	n	**	**0.90**	0.03	1	n	**0.90**	0.38	2.34	**-0.28**	0.21	-1.34	0.11
Pakistan*	5.7%	6.3%	10.0%		9.3%				1 1	n	**	**0.63**	0.05	**0.45**	0.18						2	n	**0.68**	0.39	1.73	**-0.03**	0.18	-0.16	0.05
China	8.0%	13.2%	13.6%	7.9%	21.6%	7.9%	0.00	**1.67**	1 4	n	**	**0.97**	0.74	**3.23**	2.61	1 1	n	**	**1.67**	0.29	2	y	**0.61**	0.40	1.54	**-0.25**	0.17	-1.51	0.14
Japan	5.3%	9.2%	10.0%	10.1%	6.4%	6.2%	0.18	**1.48**	1 1	n	*	**0.92**	0.36	**0.66**	0.70	1 2	n	**	**0.91**	0.33	2	n	**1.45**	0.30	4.86	**-0.13**	0.11	-1.23	0.44
Japan*	5.3%	9.0%	9.5%		6.3%				1 1	n	*	**0.95**	0.29	**0.37**	0.23								**1.44**	0.29	4.97	**-0.22**	0.12	-1.87	0.47
Tunisia	5.5%	7.1%	6.7%	5.0%	*20.4%*	6.8%	0.23	**1.04**	1 1	n	**	**1.06**	0.05	**0.11**	0.18	1 2	n	**	**1.41**	0.02	1	n	**0.35**	0.39	0.89	**-0.03**	0.17	-0.19	0.02
Tunisia*	5.5%	7.1%	9.2%		*21.1%*				1 2	n	**	**0.77**	0.16	**0.36**	0.23						1	n	**0.34**	0.39	0.87	**0.04**	0.12	0.36	0.02
Korea	8.0%	19.8%	9.1%	5.2%	*8.6%*	15.6%	0.11	**1.27**	1 2	n	*	**2.17**	0.07	**0.17**	0.02	1 1	n	**	**3.85**	0.28	1	n	**2.30**	2.35	0.48	**4.88**	-0.02	0.08	0.40
Korea*	8.0%	19.8%	7.4%		*8.6%*				1 4	y	**	**2.67**	0.30	**1.23**	0.13						1	n	**2.32**	0.35	6.61	**0.38**	0.19	1.96	0.67
UK	2.5%	4.8%	2.3%	2.3%	2.7%	2.4%	0.21	**1.99**	1 1	n	**	**2.07**	0.14	**0.15**	0.27	1 1	n	*	**2.08**	0.16	1	n	**1.74**	0.24	7.19	**-0.05**	0.06	-0.93	0.59

Table 2 continued

Johansen cointegration tests

	Results								Test 1							Test 2					OLS Analysis								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Country	Y	x	y*1 (2/12)	y*2 (2/19)	y*3 (2/23)	y*4 (2/8)	y=y* r-square	m/y	Lags	Trend	Sig. level	LNY coef.	SE	LNP coef.	SE	Lags	Trend	Sig. level	1/LNX coef.	SE	lags (LNP)	Trend	LNY	SE	t-Stat.	LNP coef.	SE	t-Stat.	R2
UK*	2.5%	4.8%	2.3%		2.9%				1 1	n	**	**2.11**	0.03	**1.40**	0.29								**1.66**	0.26	6.40	**0.12**	0.12	0.95	0.59
Chile	4.5%	7.9%	5.3%	6.0%	2.8%	4.5%	0.07	**1.73**	1 1	n	**	**1.48**	0.09	**0.06**	0.07	1 1	n	**	**1.32**	0.26	1	n	**2.77**	0.27	10.40	**0.09**	0.09	1.00	0.78
Argentina	2.7%	6.4%	2.2%	2.6%	2.4%	2.3%	0.09	**2.83**	1 5	y	*	**2.90**	0.80	**1.70**	0.30	1 1	n	*	**2.44**	0.09	1	n	**2.68**	0.35	7.59	**-0.22**	0.07	-3.22	0.70
South Africa	3.3%	2.9%	1.2%	2.3%	1.6%	2.3%	0.00	**1.26**	1 4	n	**	**2.30**	0.53	**0.74**	0.44	1 1	n	*	**1.23**	0.21	1	n	**1.80**	0.24	7.56	**-0.31**	0.12	-2.53	0.65
South Africa*	3.3%	2.9%	2.4%		1.5%				1 4	y	**	**1.18**	0.58	**1.59**	0.73								**1.97**	0.24	8.29	**0.51**	0.26	1.99	0.64
Costa Rica	5.0%	9.1%	5.9%	5.4%	5.3%	5.8%	0.35	**1.57**	1 2	n	*	**1.54**	0.11	**0.26**	0.30	0 1	n	**	**1.69**	0.01	1	n	**1.72**	0.22	7.75	**-0.07**	0.11	-0.67	0.48
Costa Rica*	5.0%	9.1%	6.0%		5.3%				1 1	n	**	**1.52**	0.08	**0.21**	0.32						1	n	**1.70**	0.24	6.99	**0.12**	0.14	0.88	0.49
Average	**6.1%**		**6.2%**	**7.2%**	**7.7%**	**7.2%**																							
Average*			**6.4%**		**7.7%**																								

**** (*) Denotes 5% (1%) Significance Level**

XP/MP Denotes export prices/ import prices

m/y Denotes implicit income elasticity of imports claculated as average growth in imports/ average growth in GDP from 1960-99

Source: World Bank Development Indicators 2001 (CDROM) all variables are based on real 1995US$

Countries with (*) indicates test based on real export prices/import prices

Underlined and italics denotes statistically insignificant

R-square in column 7 refers to the goodness of fit between y and y*

Table 3 Estimated growth for export and import-led models

Country ($R^2 > 0.3$ from regressing $y_{1961-99}$ on $y^*_{1961-99}$ and $x_{1961-99}$ on $y_{1961-99}$)	**Population (millions)**	**x/y**	**X/Y**	**m/y**	**x**	**m**	**y**	**y*= x/(m/y)**	**y**= m/(x/y)**
Kuwait (0.8, 0.73)	1.9	1.5	59.8	1.1	24.1	17.5	16.6	22.8	12.0
Saudi (0.5,0.52)	20.2	1.4	87.2	0.9	21.8	13.4	15.4	25.1	9.5
Korea, Rep. (0.3, 0.4)	46.9	2.5	25.1	1.9	19.3	14.6	7.8	10.3	5.9
Syrian Arab Republic	15.7	2.6	20.4	2.7	16.0	16.6	6.1	5.9	6.4
China	1253.6	1.6	16.4	1.7	12.9	13.4	8.0	7.7	8.3
Thailand	60.2	1.6	26.0	1.4	11.2	9.9	6.9	7.8	6.1
Hong Kong, China (0.35, 0.3)	6.7	1.4	103.4	1.4	10.8	10.7	7.5	7.6	7.4
Ireland	3.8	2.1	49.2	1.8	9.8	8.5	4.8	5.5	4.1
Mexico	96.6	2.1	14.2	1.8	9.7	8.4	4.7	5.4	4.0
Lesotho	2.1	1.7	16.6	1.5	9.3	8.5	5.5	6.1	5.0
Malaysia	22.7	1.3	58.8	1.3	9.1	9.0	6.8	6.9	6.8
Congo, Rep.	2.9	2.2	45.4	1.0	9.1	4.0	4.0	9.2	1.8
Japan	126.6	1.7	11.2	1.5	9.0	7.6	5.2	6.1	4.4
Costa Rica (0.4, .35)	3.6	1.8	32.2	1.6	8.9	7.7	4.9	5.6	4.3
Mauritania	2.6	2.2	40.5	1.7	8.8	6.6	4.0	5.3	3.0
Spain	39.4	2.1	15.6	2.6	8.7	10.7	4.1	3.4	5.1
Greece	10.5	2.0	14.4	1.9	8.5	7.8	4.1	4.5	3.8
Papua New Guinea (0.45, 0.35)	4.7	2.1	36.9	1.3	8.3	5.2	4.0	6.4	2.5
Bangladesh	127.7	2.2	6.6	2.6	8.3	9.7	3.8	3.2	4.5
Ecuador (0.52, 0.57)	12.4	1.8	23.5	0.9	7.8	4.0	4.4	8.5	2.3
India	997.5	1.7	7.2	1.5	7.8	7.0	4.6	5.1	4.1
Brazil	168.0	1.6	8.2	1.4	7.7	6.7	4.8	5.5	4.1
Chile	15.0	1.7	22.1	1.6	7.7	6.9	4.4	4.9	4.0
Gabon	1.2	1.4	51.1	1.5	7.5	8.1	5.3	4.8	5.7
Mauritius (0.4, 0.4)	1.2	1.5	50.3	1.1	7.5	5.5	5.1	7.0	3.7
Burundi	6.7	2.8	10.6	2.0	7.5	5.3	2.6	3.7	1.9
Portugal	10.0	1.7	25.0	1.8	7.4	7.8	4.3	4.1	4.5
Togo	4.6	1.8	40.3	1.4	7.3	5.7	4.0	5.2	3.1
Canada	30.5	2.0	27.3	2.1	7.0	7.4	3.4	3.3	3.6
Tunisia	9.5	1.3	32.5	1.1	6.9	5.7	5.3	6.5	4.4
Paraguay	5.4	1.5	20.3	2.1	6.9	9.8	4.6	3.2	6.6
Benin	6.1	2.1	13.8	1.7	6.9	5.6	3.3	4.0	2.6
Cote d'Ivoire	15.5	1.5	37.3	1.2	6.9	5.6	4.6	5.7	3.8
Italy	57.6	2.1	19.7	2.0	6.9	6.7	3.3	3.4	3.2
Hungary	10.1	2.0	38.1	1.7	6.8	5.6	3.3	4.0	2.8
United States	278.2	2.0	7.9	2.0	6.7	6.7	3.3	3.4	3.3
Austria	8.1	2.1	33.0	2.0	6.7	6.4	3.2	3.4	3.0
Philippines	74.3	1.7	24.8	1.7	6.7	6.5	3.9	4.0	3.8
France	58.6	2.0	18.7	1.9	6.5	6.3	3.3	3.4	3.2
Argentina	36.6	2.3	7.9	2.8	6.3	7.6	2.7	2.2	3.2
Australia	19.0	1.6	15.7	1.5	6.2	5.9	3.9	4.1	3.7
Pakistan	134.8	1.1	12.5	0.6	6.2	3.6	5.6	9.7	3.2
Nigeria (0.3, 0.37)	123.9	1.8	22.7	1.6	6.1	5.7	3.5	3.7	3.3
Finland	5.2	1.8	26.9	1.6	6.0	5.3	3.4	3.9	2.9

Table 3 continued

	Population (millions)	x/y	X/Y	m/y	x	m	Y	y*= x/(m/y)	y**= m/(x/y)
Belgium (0.67, 0.66)	10.2	2.0	60.2	1.9	6.0	5.7	3.0	3.1	2.8
Rwanda	8.3	1.8	9.8	2.9	6.0	9.6	3.3	2.1	5.4
Netherlands (0.52, 0.6)	15.8	1.8	53.1	1.7	5.9	5.7	3.3	3.4	3.1
Trinidad and Tobago	1.3	1.5	47.2	2.0	5.7	7.5	3.7	2.8	5.0
Cameroon	14.7	1.6	23.7	1.3	5.6	4.6	3.5	4.2	2.9
Sweden	8.9	2.2	29.7	1.8	5.6	4.6	2.5	3.1	2.1
Norway	4.5	1.5	38.2	1.2	5.6	4.6	3.7	4.5	3.1
Uruguay	3.3	2.8	17.9	2.5	5.5	5.0	2.0	2.2	1.8
El Salvador	6.2	1.7	24.6	1.8	5.4	5.7	3.1	3.0	3.3
Dominican Republic	0.1	1.0	23.9	1.3	5.4	7.1	5.4	4.1	7.1
Colombia	41.5	1.3	14.8	1.6	5.4	6.6	4.3	3.5	5.3
Luxembourg (0.6, 0.55)	0.4	1.3	103.8	1.3	5.3	5.1	4.0	4.2	3.8
Indonesia	207.0	0.9	22.0	1.5	5.2	8.9	5.7	3.4	9.7
Burkina Faso	11.0	1.5	9.0	1.5	5.2	5.3	3.5	3.4	3.6
Nicaragua	4.9	2.1	26.6	2.9	5.0	6.9	2.4	1.8	3.3
Guatemala	11.1	1.2	17.6	1.3	5.0	5.1	4.1	3.9	4.2
Denmark	5.3	1.9	31.6	1.9	5.0	4.8	2.6	2.7	2.5
Egypt, Arab Rep.	62.7	0.9	20.1	0.9	4.9	4.8	5.5	5.6	5.5
Chad	7.5	2.5	15.0	1.7	4.8	3.1	1.9	2.8	1.2
Morocco	28.2	1.1	21.9	1.4	4.7	5.9	4.2	3.3	5.2
Central African Republic	3.5	3.1	22.5	2.5	4.7	3.8	1.5	1.9	1.2
United Kingdom	59.5	1.9	24.3	2.0	4.6	4.8	2.4	2.3	2.5
Malawi	10.8	1.1	24.3	0.7	4.6	3.2	4.3	6.3	2.9
Iceland	0.3	1.1	35.6	1.4	4.6	5.7	4.2	3.3	5.2
Switzerland (0.52, 0.46)	7.1	2.0	32.6	2.5	4.5	5.4	2.2	1.8	2.7
Niger	10.5	2.6	16.0	2.2	4.5	3.8	1.7	2.0	1.5
Honduras (0.41, 0.36)	6.3	1.0	30.9	1.3	4.1	5.1	4.0	3.2	4.9
Sri Lanka	19.0	0.9	31.2	0.9	4.1	4.1	4.6	4.6	4.6
Bolivia	8.1	1.4	24.8	1.6	3.8	4.4	2.8	2.4	3.2
Peru	25.2	1.2	16.3	1.4	3.7	4.4	3.2	2.6	3.8
Myanmar	45.0	1.0	6.8	0.5	3.6	1.7	3.7	7.7	1.8
Madagascar	15.1	2.2	16.0	1.0	3.4	1.5	1.5	3.4	0.7
Kenya	29.4	0.7	29.1	0.8	3.4	3.8	4.8	4.2	5.4
Algeria (0.73, 0.71)	30.0	0.8	26.2	1.0	3.2	3.8	3.9	3.2	4.6
Senegal (0.38, 0.4)	9.3	1.2	28.0	1.0	3.2	2.5	2.5	3.2	2.0
Ghana	18.8	1.2	18.3	0.8	3.1	2.1	2.5	3.7	1.7
Haiti	7.8	3.2	14.3	6.0	3.1	5.7	0.9	0.5	1.8
Congo, Dem. Rep.	49.8	12.9	19.0	20	2.9	4.5	0.2	0.1	0.3
South Africa	42.1	0.9	26.7	1.3	2.8	4.0	3.2	2.2	4.6
Jamaica	2.6	1.5	42.7	1.9	2.7	3.4	1.8	1.4	2.3
Guyana	0.9	1.3	70.2	1.7	2.4	3.0	1.8	1.4	2.2
Zambia	9.9	0.5	41.0	-0.2	0.8	-0.3	1.8	-5.5	-0.6
Average					**13.4**	**12.5**	**4.2**	**4.6**	**3.9**

Capital letters denote levels and small letters denote growth rates

Table 4 Estimated and actual growth regression results

Dependent Variable: Y
Method: Least Squares
Sample: 1 80
Included observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
YP	0.880673	0.023412	37.61578	0.0000

R-squared	0.558269	Mean dependent var	3.825000
Adjusted R-squared	0.558269	S.D. dependent var	1.419440
S.E. of regression	0.943401	Akaike info criterion	2.733770
Sum squared resid	70.31040	Schwarz criterion	2.763545
Log likelihood	-108.3508	Durbin-Watson stat	1.874175

Table 5 Import and export regression results

Dependent Variable: M
Method: Least Squares
Sample: 1 82
Included observations: 82

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X	0.961038	0.022492	42.72764	0.0000

R-squared	0.693081	Mean dependent var	6.136585
Adjusted R-squared	0.693081	S.D. dependent var	2.474787
S.E. of regression	1.371038	Akaike info criterion	3.481134
Sum squared resid	152.2595	Schwarz criterion	3.510484
Log likelihood	-141.7265	Durbin-Watson stat	1.920319

Table 6 Import and export cointegration results

Sample: 1 82
Included observations: 79
Test assumption: No deterministic trend in the data
Series: X M
Lags interval: 1 to 2

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.33	31.99	12.53	16.31	None **
0.00	0.129	3.84	6.51	At most 1

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level
Normalized Cointegrating Coefficients: 1 Cointegrating Equation(s)

X	M
1	-1.03
	0.02
Log likelihood	-299

Table 7 Current account components as a percentage of GDP, 1992-2000

*Country	Population (millions)	GDP growth rate 1980-2000	Per Capita GDP 1999-2000	Primary exports	Net oil exports	Industrial exports	Non-capital goods imports	Capital goods imports	Net commodity trade surplus	Net service exports	Current account net of transfers	Net transfers	Industrial to primary exports	Exports to GDP (minus oil)	Average tariff for non-agric.
Low income, low performance															
Djibouti	0.63	-0.30	875	0.84	-3.51	0.43	-29.78	-8.38	-40.41	-10.77	-51.17	14.10	0.51	-2.24	n.a.
Nicaragua	5.07	0.10	473	19.61	-7.86	3.95	-38.93	-16.81	-40.05	-2.46	-42.51	24.52	0.20	15.69	0.04
Cameroon	14.88	0.60	597	10.18	4.64	1.21	-9.29	-4.01	2.74	-3.44	-0.71	0.27	0.12	16.03	0.13
Central African Republic	3.72	1.00	259	5.11	-1.65	3.91	-12.67	-6.05	-11.35	-10.61	-21.96	8.64	0.76	7.37	0.17
Burundi	6.36	1.10	108	7.77	-2.51	0.19	-12.32	-5.13	-11.99	-4.64	-16.62	11.21	0.02	5.45	n.a.
Niger	10.83	1.10	169	9.97	-2.59	0.13	-13.03	-2.72	-8.24	-6.42	-14.65	3.17	0.01	7.51	0.11
Madagascar	15.97	1.40	243	5.87	-2.73	1.82	-8.28	-3.94	-7.26	-1.17	-8.42	4.24	0.31	4.96	0.06
Mongolia	2.53	1.70	383	43.32	-9.90	4.93	-30.89	-20.39	-12.93	-5.92	-18.85	7.44	0.11	38.35	n.a.
Côte d'Ivoire	16.01	1.70	585	26.29	-0.57	5.47	-15.85	-5.96	9.38	-7.79	1.59	-2.71	0.21	31.19	0.15
Philippines	75.65	2.30	988	3.86	-3.50	24.50	-30.43	-19.20	-24.77	0.68	-24.08	1.00	6.34	24.86	0.09
Mali	11.35	2.40	202	11.92	-5.35	0.18	-17.41	-6.39	-17.06	-11.14	-28.19	8.78	0.01	6.74	0.08
Ethiopia	62.91	2.50	102	6.61	-3.11	0.59	-11.28	-6.77	-13.95	-0.89	-14.84	10.71	0.09	4.09	0.16
Bolivia	8.33	2.50	994	9.77	0.64	3.63	-16.29	-10.33	-12.59	-2.22	-14.81	4.29	0.37	14.03	n.a.
Senegal	9.42	2.80	464	4.71	-3.42	4.53	-19.51	-6.38	-20.08	-1.28	-21.35	3.71	0.96	5.82	0.10
Mauritania	2.67	2.80	351	45.67	-10.63	0.05	-24.97	-12.40	-2.29	-14.75	-17.03	12.12	0.00	35.08	0.12
Nigeria	113.86	3.00	361	0.37	55.36	0.56	-15.27	-6.62	34.40	-8.60	25.80	3.59	1.49	56.29	0.19
Average	22.51	1.67	447	13.24	0.21	3.50	-19.14	-8.84	-11.03	-5.71	-16.74	7.19	0.72	16.95	0.11
Low income, high performance															
United Republic of Tanzania	35.12	3.00	257	7.76	-1.64	1.45	-15.83	-8.52	-16.77	-2.92	-19.69	7.86	0.19	7.57	0.16
Sudan	31.10	3.10	370	4.75	-2.39	0.19	-10.16	-4.76	-12.37	-1.43	-13.80	2.31	0.04	2.55	0.04
Malawi	11.31	3.10	150	18.27	-3.44	1.79	-21.36	-10.28	-15.03	-14.47	-29.50	7.04	0.10	16.62	0.15
Mozambique	18.29	3.30	205	5.74	-2.20	0.91	-16.85	-8.29	-20.70	-2.82	-23.52	13.29	0.16	4.45	0.10
Guinea	8.15	3.30	369	12.73	-3.90	3.86	-11.48	-4.73	-3.53	-5.64	-9.16	3.97	0.30	12.69	n.a.
Burkina Faso	11.54	4.00	190	6.62	-3.33	0.36	-14.19	-5.03	-15.56	-5.16	-20.73	13.96	0.06	3.65	0.17
Sri Lanka	18.92	4.60	862	6.05	-2.05	17.36	-15.75	-7.16	-1.55	-2.49	-4.04	6.32	2.87	21.36	0.14
Nepal	23.04	4.90	239	1.17	-3.02	7.34	-19.29	-4.57	-18.37	5.54	-12.83	5.58	6.28	5.49	0.18
Pakistan	141.26	5.10	436	2.09	-3.44	11.79	-12.50	-4.84	-6.90	-1.66	-8.56	5.47	5.65	10.44	0.39
India	1008.94	5.70	453	1.78	-2.37	6.06	-5.38	-1.67	-1.57	-0.44	-2.02	2.80	3.40	5.47	0.26
Indonesia	212.09	6.10	723	5.68	5.00	13.93	-14.26	-7.50	2.84	-4.21	-1.37	0.62	2.45	24.60	0.08
China	1252.95	9.90	862	2.28	-0.35	17.59	-12.42	-7.39	-0.29	-0.14	-0.43	0.44	7.73	19.52	0.16
Average	207.79	4.34	423	6.32	2.32	6.19	-14.56	-6.44	-6.17	-3.58	-9.76	5.75	2.25	14.83	0.16

High income, low performance															
Romania	22.44	-1.70	1636	3.22	-3.70	17.17	-14.78	-7.50	-5.59	-0.83	-6.42	1.47	5.33	20.39	0.12
Libyan Arab Jamahiriya	5.29	-1.39	5788	0.10	27.23	1.40	-12.19	-6.41	10.13	-2.47	7.66	-0.95	13.91	1.50	0.24
Bulgaria	8.00	-0.70	1500	11.35	-9.72	24.42	-22.89	-10.15	-6.99	1.78	-5.21	1.57	2.15	35.77	0.09
Albania	3.13	-0.10	1197	2.24	-1.61	7.20	-21.97	-7.61	-21.75	0.53	-21.22	22.65	3.22	9.44	n.a.
Hungary	9.97	0.10	4578	7.12	-3.13	29.23	-28.47	-18.19	-13.44	3.43	-10.01	0.86	4.10	36.35	0.07
Peru	25.66	1.30	2084	7.11	-0.76	1.70	-9.23	-4.97	-6.16	-1.25	-7.41	1.67	0.24	8.80	0.13
South Africa	43.31	1.30	2907	4.40	-0.86	10.28	-12.74	-7.19	-6.10	-6.44	-12.54	-0.51	2.34	14.69	0.08
Algeria	30.29	1.70	1760	0.27	24.40	0.62	-14.90	-6.12	4.26	-0.57	3.69	n.a	2.32	0.88	0.19
Poland	38.61	1.70	4086	3.40	-1.23	12.95	-16.53	-9.14	-10.56	2.19	-8.36	1.35	3.81	16.35	0.07
Venezuela	24.17	2.00	4985	1.91	19.03	3.02	-10.90	-6.50	6.55	-3.93	2.62	-0.23	1.59	4.93	0.12
Saudi Arabia	20.35	2.00	8517	0.48	33.43	3.44	-15.17	-8.26	13.92	-5.55	8.37	-12.14	7.13	3.92	0.12
Jamaica	2.58	2.20	2874	16.64	-6.61	4.74	-26.23	-11.81	-23.26	9.43	-13.83	10.87	0.29	21.38	0.14
Ecuador	12.65	2.30	1076	13.65	7.65	1.94	-15.13	-8.17	-0.07	-2.59	-2.66	3.54	0.14	15.58	0.09
Argentina	37.03	2.30	7695	4.29	0.65	2.55	-6.32	-4.13	-2.96	-1.32	-4.28	0.18	0.59	6.84	0.12
Gabon	1.23	2.30	4009	6.93	47.28	0.84	-11.69	-6.67	36.69	-13.78	22.91	-1.78	0.12	7.77	0.15
Brazil	170.41	2.40	3494	3.17	-0.96	4.13	-5.52	-3.10	-2.29	-0.98	-3.27	0.32	1.30	7.30	0.13
Mexico	98.87	2.40	5811	2.11	1.72	18.98	-17.81	-12.08	-7.08	-0.29	-7.37	1.42	8.99	21.09	0.11
Uruguay	3.34	2.50	5908	6.10	-1.58	5.59	-10.80	-5.75	-6.44	2.59	-3.85	0.34	0.92	11.69	0.08
Panama	2.86	2.70	3463	5.66	-4.28	1.28	-19.11	-10.77	-27.23	4.24	-22.98	2.14	0.23	6.94	0.09
Paraguay	5.50	2.80	1368	8.96	-2.87	1.83	-20.58	-11.44	-24.10	-0.37	-24.48	1.68	0.20	10.79	0.10
Guatemala	11.39	2.90	1668	8.53	-2.24	4.08	-14.91	-7.54	-12.07	-0.15	-12.22	3.89	0.48	12.61	0.05
Average	27.48	1.48	3638	5.60	5.80	7.49	-15.61	-8.26	-4.98	-0.78	-5.76	1.92	2.83	13.10	0.11
High income, high performance															
El Salvador	6.28	3.10	2104	5.38	-2.87	4.58	-17.09	-7.44	-17.44	-0.94	-18.38	14.82	0.85	9.96	0.05
Iran, Islamic Rep. of	70.33	3.20	1492	1.19	18.51	1.87	-11.69	-5.83	4.04	-2.75	1.29	0.93	1.57	3.06	0.03
Jordan	4.91	3.20	1697	8.05	-5.99	9.13	-34.55	-14.33	-37.70	4.80	-32.90	23.93	1.13	17.17	0.16
Morocco	29.88	3.30	1116	6.43	-3.45	9.53	-16.32	-7.18	-11.00	3.05	-7.95	7.34	1.48	15.95	0.27
Colombia	42.11	3.60	1931	4.20	3.54	3.87	-10.83	-5.37	-4.59	-1.12	-5.72	1.39	0.92	8.08	0.11
Tunisia	9.46	4.10	2058	3.47	-0.44	22.28	-22.80	-12.60	-10.10	6.94	-3.15	4.50	6.42	25.74	0.26
Syrian Arab Republic	16.19	4.20	1201	3.60	14.30	1.60	-9.90	-3.80	5.80	0.73	6.53	3.25	0.44	5.20	n.a.
Costa Rica	4.02	4.40	3940	14.85	-2.36	13.73	-21.80	-11.05	-6.63	1.45	-5.19	1.22	0.92	28.57	0.04
Turkey	66.67	4.50	2999	2.82	-2.60	9.46	-14.28	-7.87	-12.47	5.18	-7.29	2.58	3.35	12.28	0.06
Egypt	67.88	4.60	1454	1.02	1.55	1.86	-13.31	-4.72	-13.61	4.51	-9.10	8.01	1.83	2.87	0.18
Chile	15.21	6.30	4638	18.54	-2.54	3.27	-14.72	-9.47	-4.92	-0.12	-5.04	0.71	0.18	21.81	0.10
Malaysia	22.22	7.00	4035	12.85	4.52	65.86	-64.01	-47.81	-28.59	-2.82	-31.40	-1.27	5.13	78.71	0.05
Thailand	62.81	7.20	1945	8.97	-2.89	27.20	-28.00	-18.38	-13.10	-1.06	-14.16	0.44	3.03	36.17	0.18

Korea, Republic of	46.74	7.60	9782	1.30	-4.27	26.32	-18.23	-10.22	-5.10	-0.36	-5.47	0.24	20.27	27.62	0.06
Average	33.19	4.74	2885	6.62	1.07	14.32	-21.25	-11.86	-11.10	1.25	-9.85	4.86	3.40	20.94	0.12

*Countries in italics represent oil exporters with net exports to GDP ratio of over 6%

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