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Relationship between Trade Liberalisation, Economic Growth and Trade Balance: An Econometric Investigation

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ABSTRACT

This is a study of 42 developing countries of Asia, Africa and Latin America in which we first examine the impact of trade liberalisation on economic growth, investment share of GDP, openness, trade balance and current accounts (as percentages of GDP). Both panel data and country by country data are used to measure the impact of liberalisation on domestic economic growth measured in PPP terms from the data available in Heston, Summers and Aten (2001) study. Domestic economic growth is often positively related to liberalisation for many countries of our sample. Next we analyse the impact of growth on trade balance and current account to examine whether higher economic growth due to liberalisation leads to adverse effect on balance of trade. Trade balance is normalised by GDP to take into consideration different sizes of countries. We also allow control variables in both sets of regressions such as terms of trade, advanced countries' growth rates, liberalisation and debt related variables.

The balance of payments constrained growth model uses foreign exchange constraint that limits growth and using the Harrod multiplier, Thirlwall and Hussain derived a growth equation which is apparently constrained by balance of payments. We use this model in the first part as a behavioural equation and establish that liberalisation promotes growth and such output growth in pre-liberalisation period is lower than that in post- liberalisation period. Panel data of 42 countries, regional panel for three regions (fixed effect and random effect models) and country by country analysis (OLS regression) is conducted. These relationships suggest that liberalisation promotes growth but growth itself has negative effect on trade balance for a large majority of countries.

This study uses the latest available data on real GDP, growth rates of individual and advanced countries and examines the relationship between liberalisation and growth, liberalisation and trade balance and also the impact of exchange rate or terms of trade policies on trade balance. One of the models in a cross-section regression study makes use of political and security variables and concludes that the convergence or "catching-up" hypothesis is supported and extreme political repression tends to constrain growth. One unit change in liberalisation index leads on average to1.62 percentage point change in growth rates on average, ceteris paribus.

Key Words: liberalisation, trade balance, developing countries, panel data estimation

JEL-Classification: F32, F14, O24, C21, C23

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Introduction:

Many developing countries have embarked on programs of trade and financial liberalisation. The effect of the trend towards trade policy openness on per capita income growth is one of the most controversial issues as there is a tendency to improve imports more than exports leading to trade deficits and consequently contributing to low economic growth in future. Many analysts believed that trade policy openness and higher ratios of trade volumes were positively correlated with economic growth until Rodriguez and Rodrik (2000) raised some concerns about the robustness of these results as conclusions remained sensitive to difficulties in measuring openness, statistically sensitive specifications and collinearity of protectionist policies with other poorly executed policies in developing economies. Wacziarg (2001) attempted the measurement of liberalisation variable as Sachs and Warner classification posed problems on their categorisation of open and closed economies. Like Wacziarg, we intend to use the updated data on income levels (Summers, Heston and Aten, 2001) which provides us with the basic information to examine the relationship between trade openness and economic growth before and after liberalisation and study the relationship between investment, liberalisation and time period elapsed from liberalisation. Both aggregate region level and country level study for selected countries are attempted. Data period of our interest ranges from 1970 to 2000 and the relationship between trade balance and economic growth may have undergone changes from one decade to the next in many regions of the world. We intend to analyse whether region level growth and trade balance are affected by liberalisation. Timing of liberalisation within a country could also affect the relationship. This study is different form previous studies in at least three respects: (a) it uses the balance of payments constrained growth model in a behavioural form with liberalisation and oil prices as exogenous variables; (b) we use the latest available data on real GDP in PPP terms and growth rates from Heston, Smmers and Aten (2001) and (c) liberalisation index is used for three decades from two different studies namely Sachs-Warner (1995) and Wacziarg (2001) studies.

Previous research in this field tends to give conflicting results. Some studies show that the countries which went for liberalisation programmes have improved their export performance (Thomas et al, 1991; Weiss, 1992; Joshi and Little, 1996; Helleiner, 1994; Bleaney, 1999; and Ahmed, 2000). On the other hand, other studies have found little evidence of a relationship between trade liberalisation and economic growth (UNCTAD, 1989; Agosin, 1991; Clarke and Kirkpatrick, 1992; Greenaway and Sapsford, 1994; Shafaedin, 1994; and Jenkins, 1996). On the import side, there is a strong positive impact of trade liberalisation on the growth of

imports and this impact is through the sensitivity of price and income changes (Melo and Vogt, 1984; Bertola and Faini, 1991).

Thirlwall and Santos-Paulino (2004) found that the impact of liberalisation differs as to between highly protected countries and less protected countries. The positive effect of trade liberalisation on import growth is far greater in the industries that were highly protected during the period before liberalisation. Their results also showed that the impact of a more liberalised trade regime, independent of duty reductions, raised import growth by more than exports. They found that import growth increased by about 6% per annum while export growth rose only by approximately just under 2% per annum. This precipitated the worsening of trade balance by over 2% of GDP, however, the impact on current account had been less as worsening of current account was about 0.8 percent of GDP on average. Their overall conclusion was that free trade and flexible exchange rates do not always assure that unemployed domestic resources are easily converted into scarce foreign exchange.

Dollar and Kray (2004) have shown that the growth pattern of countries who have liberalised have shown acceleration in their real income and in the 1990s, globalising developing countries grew at 5% per capita, rich countries at 2.2% and non-globalising developing countries at only 1.4%. Their view is that the countries which have gone on globalisation path are catching up with rich countries while non-globalisers are lagging behind. Irwin and Tervio (2002) following Frankel and Romer (1999) conclude that the countries that trade more as a proportion of their GDP have higher incomes even after controlling for the endogeniety of trade. Overall, it appears that trade contributes to improvement in real income and per capita growth, however, if trade is not combined with adequate policies to balance imports against exports, it could generate the balance of trade and balance of payments deficits leading to deterioration in the growth of real incomes.

A simple indicator of liberalisation and openness does not distinguish between slow and fast growing countries. Dichotomous policy indicators such as liberalisation dummy have serious disadvantages as they do not consider the intensity of liberalisation and time period elapsed from the date of liberalisation. We examine a sub-sample of developing countries for which we collected detailed information on the broader economic and political context of trade reform and interpret our large sample results in the context of the country case studies.

Our paper is organised as follows: In section 2 we present a review and describe our data set, dates of liberalisation, openness indicator and various other variables. In section 3, we replicate growth versus liberalisation regressions for three different periods. In section 4, we

present the relationships between trade balance and liberalisation, openness and liberalisation along with liberalisation time period when the country was liberalised. This is presented for three different periods and three different regions. In section 5, we provide the relationships based on determinants of trade balance and current account where trade liberalisation, growth, advanced countries' growth and terms of trade are used in a panel framework where individual countries form a sample. In section 6, we provide some tentative conclusion on the evidence that balance of trade and economic growth are negatively related for a large number of developing countries and the evidence supports the hypothesis that faster growth with liberalisation could create balance of trade problems. We do not find a great deal of evidence on current account balances being affected by economic growth.

2. External Deficits and Growth in Developing Countries: A Review of Long term Trends[1]

2.1 All developing countries and territories

The ratio of the current-account deficit to gross domestic product (GDP) has been relatively stable for developing countries[2] taken as a group over the past decade and a half, although it has fluctuated between one and three per cent (Figure 1). This contrasts sharply with the 1970s, where developing countries faced strong fluctuations in their current account but experienced a surplus in most of the years. Developing countries' trade account has moved by and large in parallel with their current account. It is inferred from Table 1, however, that the early 1990s was the first period during which developing countries had a trade deficit for several consecutive years. This has caused the average (group) trade-account position to be worse during the 1990s than in previous periods, with an only slight difference compared with the 1980s but a very large one compared with the 1970s. The rate of growth in developing countries has fluctuated substantially over the past three decades: an average growth rate of about six per cent – but with significant fluctuations around a downward trend – during the 1970s was followed by a sharp drop in GDP-growth at the beginning of the 1980s. GDP-growth was relatively stable at around three to four per cent during the second half of the 1980s and subsequently rose to an average of about five per cent during the first half of the

[1] A large part of the Section 1 is presented in UNCTAD (1999) *Trade and Development Report*.

[2] Given that data on the current account for the 1970s with a comprehensive coverage of developing countries is available only from the IMF's World Development Outlook database, this section makes use of the IMF's country group convention, i.e. Hong Kong, China SAE, the Republic of Korea, Singapore and Taiwan, Province of China are not included in the group of developing countries.

1990s. Taking the evidence on external deficits and GDP-growth together, it seems that for developing countries the external deficits and financial requirements associated with any given growth rate have been larger over the past few years compared to earlier periods[3].

The evolution of the current account position in the non-fuel-exporting-developing countries excluding China has been largely determined by the evolution of their trade and income accounts, while their balances on services and current transfers have not been subject to important changes over the past three decades.[4] During the 1970s and the 1990s, high trade deficits were the main factor behind the rising current account deficit. By contrast, the rising burden of interest payments associated with developing countries' increased external indebtedness caused a strong deterioration in their incomes' account during the early-1980s. The consequent deterioration of their current account was offset by an improvement in their trade account (as can be seen in Figure 1 by the increased difference between the current and the trade account during the 1980s).[5] Figure 2 uses mean values of trade balance and current account deficits to GDP percentages. It can be seen that there is an increased difference between current account and trade deficits after 1990. Figures 3a-3c refer to regional mean values of trade balance to GDP, regional current account balance to GDP and regional growth rates for three regions, Africa, Asia and Latin America. For each region, the number of countries differs.

A comparison of the average external positions and growth rates for these three periods reveals a similar general pattern for developing countries as a whole, as well as for several

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3 The evolution of the world market price for crude oil has strongly influenced the external position and rate of growth of developing countries, with significantly different implications for fuel- and non-fuel-exporting countries. The difference in the experience between these two country groups has of course been marked most in the years immediately following the two oil-price hikes in 1973 and 1979 but has been very distinct also over the past few years when the price of oil declined drastically. Given the strong dependence of the major fuel-exporting developing countries on just one export item with a strongly fluctuating price on the world market, they face very specific problems. Therefore, the remainder of this analysis will focus on non-fuel exporting developing countries. The People's Republic of China will also be excluded from the following analysis for two reasons. First, China may be characterized best as an economy in transition which over the past few years has undergone a change in nature of the way in which the economy functions comparable to that of the transition economies in Central and Eastern Europe which are also excluded from the analysis. Secondly, given that China alone accounts for about 15 per cent of GDP of all developing countries; its external accounts have often moved opposite to those of the group of developing countries as a whole and China's growth rate has been very substantially higher than that of most other developing countries over the past few years, its inclusion would introduce a bias to the analysis.

4 The GDP-ratio of the services account has fluctuated between 0 and –0.5 per cent, while that of the current transfers has fluctuated between 1.5 and 2.0 per cent. With the fuel-exporting developing countries included, the average services/GDP ratio becomes –0.8 to –3.0 per cent and that of the current transfer/GDP ratio 0 to 0.8 per cent. For detailed empirical evidence, see Table A31 in International Monetary Fund, *World Economic Outlook*, various issues.

5 Fuel-exporting developing countries experienced a sharp deterioration in the services account following the first oil-price shock, which explains why in Figure 1 the discrepancy between the GDP ratios of the trade deficit and the current-account deficit widened already during the second half of the 1970s.

sub-groups.[6] Between the 1970s and the 1980s, developing countries reduced their external trade deficits by about 2–3 percentage points but experienced a drop in the rate of growth by about two percentage points; by contrast, between the 1980s and the 1990s, their trade deficits increased strongly with the rate of growth remaining by and large unchanged. There are a few notable exceptions from this basic pattern of a similar deficit/GDP ratio and a lower growth rate in the 1990s compared with the 1970s:

— the average external trade position of developing countries including the major fuel-exporting countries has worsened throughout the period;

— the group of non-fuel exporting countries in sub-Saharan Africa has experienced a worsening of both its external position and its growth rate;

— the group of non-fuel developing Asia excluding China raised its growth rate while improving its external position during the 1980s; it is the only region for which the relationship in the first half of the 1990s is not substantially different from that in the 1970s.

Similar movements in the trade account/GDP ratios can be caused by different trends in exports and imports. Export and import value indices give some indication as to whether an improvement in a trade balance of the country was achieved by an increase in exports, a decrease in imports, or both. Statistical evidence shows that after a continuous increase of both exports and imports in developing countries during the 1970s, their exports stagnated and their imports dropped during the first half of the 1980s (Table 2). By contrast, both imports and exports have risen strongly since 1986. Looking at regional sub-groups suggests that the drastic improvement in the trade balance of non-fuel developing America during the 1980s was due to a slight increase in exports but mainly due to a very substantial compression of imports. This contrasts sharply with the experience of non-fuel developing Asia excluding China whose trade-balance improved in the 1980s due mainly to a very strong increase in exports. Hence, while import compression is likely to have choked economic growth in developing America, rising imports were associated with rising growth and rising exports in developing Asia. Sub-Saharan Africa is the other developing region that experienced strong

[6] Given the fact that for many countries country-specific data on the current account are available only from the mid-1980s onwards, the argument presented in this paragraph refer only to the trade account. However, since the available data at the aggregate level shows that trade and current account positions have moved by and large in parallel, it seems reasonable to assume that the following argumentation also applies to the current account.

import compression during the 1980s and, contrary to the situation in developing America, this experience has not improved much over the past few years[7].

2.2 World growth and terms of trade

World growth, and in particular growth in developed countries, experienced a marked and secular decline in the early1970s. But while developed countries were still growing at an annual average rate of about three per cent during the 1970s and 1980s, their rate of growth slowed down to an average rate of below two per cent during the 1990s. One consequence of this has been a decline in the demand for exports from developing countries as many of the export items serve as inputs for production to the manufacturing industries in developed countries. This decline in the demand for their exports has been particularly harmful for developing countries over the past few years when many have adopted an export-led growth strategy. The combination of slow growth in demand and the attempt by many developing countries to capture the same export markets is likely to lead to a situation of falling terms of trade for developing countries. Falling terms of trade for many developing countries have indeed resulted into a decline in the purchasing power of their exports.

Economies with a relatively specialized export structure are more vulnerable to adverse terms of trade shocks so that the sustainable level of their current-account deficit tends to be lower than that of economies with a more diversified export structure. As is well known, many developing countries continue to be heavily dependent on a narrow range of primary commodities for their export earnings. Despite temporary primary commodity price hikes – most recently in the mid-1990s – most developing countries have been subject to a downward trend in their terms of trade over the medium- and long-term. There is strong statistical evidence suggesting that the decline in commodity prices since the early-1980s has been mostly of a secular and persistent nature, and that only a small part is attributable to reversible

[7] The pattern of adjustment regarding the combination between the external trade position and growth has not been uniform across developing countries. As already mentioned, it can be expected that rising (falling) growth is associated with a deteriorating (improving) trade account/GDP ratio. An improving trade account/GDP ratio accompanied by rising growth may be called an unusual and virtuous combination, while falling growth accompanied by a deteriorating trade account / GDP ratio is clearly unsustainable. Given that a good part of the 1980s can be considered as a period of crisis and adjustment and hence as exceptional for developing countries, it appears most appropriate to compare the past few years with the 1970s. Looking at trends in external trade and growth at the level of individual developing countries shows that 34 out of the 84 countries which are included in the analysis have had on average a worse position in both external trade and growth over the past few years compared to the 1970s; 23 countries have had the 'normal' but adverse experience of an improving trade position and falling growth, 18 countries had the 'normal' and positive experience of rising growth combined with a deteriorating trade position, while only 9 developing countries have succeeded in improving both the external trade position and GDP growth (UNCTAD, (1999)).

cyclical forces. Moreover, there is evidence that suggests that the volatility in commodity prices has risen steadily and considerably since the early 1970s (Reinhart and Wickham, 1994). There can be little doubt that both these movements have had detrimental impacts on economic growth and investment in developing countries.

The adverse impact of the recent financial crises in the Asian economies on the demand for primary commodities has added further to the decline in the terms of trade of commodity-exporting countries and the expectation is that commodity prices will remain depressed well into the 21st century. (World Bank 1998).

An obvious policy conclusion from the above is that developing countries need to strive for diversification with a view to raising the proportion of manufactures in their exports. However, even those developing countries for which manufactures have been the main source of export earnings have not succeeded in obtaining a lasting improvement in their terms of trade; the terms of trade of these countries have fallen on average by somewhat over 1 per cent per annum since the beginning of the 1980s.[8] Output expansions of low-technology manufactured goods with no barriers to entry in the world market have resulted in falls of export prices for developing countries[9].

2.3 Trade liberalisation and growth in exports and imports

It is convenient to distinguish the immediate impact of trade liberalisation on the growth rate of imports and exports from its more medium-term impact because exports usually pick up only after a time lag. Data for 14 countries were obtained to look at the growth in exports and imports immediately after liberalisation and few years after liberalisation. Regarding the period immediately following trade liberalisation, imports grew faster than exports in all ten countries from Latin America as well as in Kenya; the other four African countries show a more balanced development (Table 3). In a medium-term period after trade liberalisation, by contrast, exports and imports grew at about the same speed, except in Brazil where imports

[8] UNCTAD (1995, Table 2.5). The group of developing countries classified as major exporters of manufactures include Brazil, Hong Kong (China), Malaysia, Mexico, the Republic of Korea, Singapore, Taiwan (Province of China), Thailand, Turkey and the former Yugoslavia.

[9] This notion of a 'commoditisation' of some manufactured goods refers to the fact that there are few, or no barriers to enter the markets of such low-technology manufactures and output expansions induce price falls. A possible explanation of this phenomenon regards the entry of China into global markets as a major exporter of manufactured products after 1985. It has been argued, for example, that this has resulted in an approximately 20 per cent decline in the terms of trade of developing countries' manufactured exports between the mid-1980s and the mid-1990s (Wood 1997).

grew very significantly stronger than exports and Argentina where exports grew much faster than imports. However, Argentina's imports had grown at a rate of over 60 per cent during the period immediately following liberalisation, compared to a two-per cent growth of exports, so that it is not surprising that the rate of import growth slowed down. Looking at the two periods combined, the exports of most of the liberalising countries have not grown fast enough after trade liberalisation to compensate for the rapid growth of imports during the years immediately following trade liberalisation. This evidence suggests that trade liberalisation in developing countries has tended to lead to a deterioration in the trade account.

3: Theoretical Basis of Relationship between Trade Balance and Economic Growth

There exists a large literature on the relationship between economic growth and external balance. The literature on two gap models, three gap models and World Bank and IMF models all adopt the constraints on balance of payments, savings-investment and budget balances. In the two-gap models (Chenery and Bruno, 1962), the first gap relates to the resources needed for investment as external capital flows permit developing countries to invest more than their domestic savings. This alone is sometimes not sufficient to accelerate capital accumulation and economic growth because the foreign exchange gap becomes dominant. Both investment and growth in developing countries are dependent on imported intermediate and capital goods. It is probable that even if domestic savings are sufficient to finance all the investment, a developing country may not be able to carry out investment projects if the foreign exchange available to run the projects is not adequate. Investment in this instance would be lower than could be financed by savings generated at full employment. Hence, the production capacity would be underutilized and income and savings would be reduced. Capital inflows can reduce the foreign exchange gap, allowing imports, investment and savings to be raised above the levels constrained by export earnings.[10] Bacha (1990) introduced the third gap, namely fiscal gap, and analysed the consequences of foreign resource transfers on the GDP growth rate of developing countries. The utilisation of excess

[10] Two gap models treat one gap as being more binding than the other and this provides a lower limit on growth, given the available capital flow. The Chenery-Strout (1966) model provided an absorptive capacity constraint stating the peak capital inflow a developing country could absorb. Bacha (1984) was the first to mention that the two gaps were identical to the internal and external balances of open economy macroeconomics in a developing country framework. Three gap model provides a general framework under which the role and significance of domestic private and public sector saving as well as foreign saving can be assessed. Rapid growth in exports, improvement in the trade position and declining external debt levels would make the foreign exchange constraint redundant in some economies and the model which permits interaction between capacity expansion and capacity utilisation will become more realistic given the structural constraints and bottlenecks the growth process would generate.

capacity was not considered in the original two-gap models until Taylor (1991) brought the capacity utilisation explicitly into the analysis of foreign capital requirements for developing countries. In the three gap models, the constrained growth rate corresponding to each gap can be derived; and with respect to foreign exchange gap, one can show how a decline in foreign transfers affects the economies' growth rate in short and medium run. Basically, the model is static and does not go far enough to analyse the complex process of dynamics of capital accumulation, trade balance and economic growth.

Ranaweera (2003) provides a summary of the three gap model of the World Bank and a critique of the single constraint model of Thirlwall (1979) and Thirlwall and Hussain (1982). Thirlwall (1979) proposed a balance of payments constrained growth model where the dynamic foreign trade multiplier of Harrod became the law for providing the sustainable growth[11]. According to this law, the growth rate for a developing economy is the rate of growth in real exports divided by the income elasticity of demand for imports. Earlier versions (1979) did not introduce capital flows until Thirlwall and Hussain (1982) augmented the model with the capital flows. The model was still incomplete as debt service was not included in the derivation of growth or capital requirements. Elliott and Rhodd (1999) incorporated the debt servicing in Thirlwall-Hussain's model. Despite some of these modifications, various criticisms can be levied against the model as the model is still not a complete model; the model leaves out the savings-investment gap, the fiscal gap and the monetary implication of the balance of payments. The Thirlwall-Hussain model does not show foreign exchange requirements relating to the maintenance of a desired or target level of reserves. However, in the absence of any other model which can be easily applied to study liberalisation, we cast the basic Thirlwall-Hussain model in behavioural equations and estimate the reduced form to study the impact of liberalisation, terms of trade and oil prices on GDP growth. We present here the basic model of Thirlwall

$$m = \varepsilon(p_f - e - p_d) + \pi y \qquad (1)$$

$$x = \beta(p_d + e - p_f) + \sigma w \qquad (2)$$

$$p_f + m = p_d + e + x \qquad (3)$$

[11] It postulates that the most binding constraint on growth in an open economy is likely to be the balance of payments. It argues that the balance of payments position of a country is the main constraint on economic growth because it imposes a limit on demand to which supply can adapt.

In the above equations, m is the rate of growth of real imports, x is the rate of growth of real exports, y is the rate of growth of real income, w is the rate of growth of world income, p_f is the rate of change in the foreign price of imports, p_d is the rate of change in domestic prices. e is the rate of change of exchange rate of foreign currency per unit of domestic currency. The model's parameters are: ε is the price elasticity of demand for imports, (ε<0); β is the price elasticity of demand for exports (β<0), π is the income elasticity of demand for exports (π>0) and σ is the income elasticity of demand for imports (σ>0). The model yields the rate of growth as the sum of two effects: (i) terms of trade effect and (ii) the effect of growth of world income.

$$y = \frac{(p_d + e - p_f) + \sigma w}{\pi} \qquad (4)$$

If terms of trade remain unchanged and the current account is balanced[12], then the balance of payments constrained real income growth is given by

$$y = \frac{\sigma w}{\pi} \qquad (5)$$

As mentioned before, other authors incorporated debt servicing and capital inflows in the above model. Equation 4 or 5 yields the long-run growth constrained by the balance of payments. Krugman (1989) provides a simple rule (45 degree rule) that the relative rates of growth in a domestic economy against the foreign economy are equivalent to the relative income elasticity of exports and imports. The fundamental logic in this rule is that if countries are basically alike, then the prices of their typical traded outputs should be the same, and apparent income elasticities will be such as to make continued price equality possible.

As this study is with a view to examine the impact of trade liberalisation we intend to incorporate liberalisation (LIBER), oil prices (GROIL), long term debt (GDEBT), debt servicing (DEBTSIMP) and world interest rate (CINTEREST) in their influence on growth. Similarly, we examine the impact of liberalisation, terms of trade and oil prices on economic growth, separately. In the basic equation (4) we introduce liberalisation and oil price rise as exogenous variables to study the trade balance over time. Terms of trade do not remain

[12] In the short-run countries can run balance of payments deficits financed by capital inflows, but they cannot finance ever increasing deficits. Deficits above a certain percentage of GDP trigger signals in the international markets that force the countries to adjust. Likewise, the terms of trade or real exchange rat fluctuate in the short run but in the long run it appears to remain stable.

constant over time in reality so our behavioural equation (6) also has PPI, the terms of trade effect.

$$GROWTH_{it} = \alpha_{0i} + \alpha_{1i} PPI_{it} + \alpha_{2i} ADVGR_{it} + \alpha_{3i} LIBER_{it} + \alpha_{4i} GROIL_{it} + \varepsilon_{it} \qquad (6)$$

i=1,2….42 (countries) t=1,2…31 (time periods)

The other alternative model which we estimated was the following:

$$GROWTH_{it} = \beta_{0i} + \beta_{1i} PPI_{it} + \beta_{2i} ADVGR_{it} + \beta_{3i} LIBER_{it} + \beta_{4i} GROIL_{it} + \beta_{5i} GDEBT_{it} + \beta_{6i} DEBTSIMP_{it} + \beta_{7i} CINTEREST + \upsilon_{it} \qquad (7)$$

i=1,2….42 (countries) t=1,2…31 (time periods)

In equation (7), we consider the determinants of balance of payments which includes both current and capital account transactions. Long term debt and service payments on accumulated debt as a proportion to total payments are introduced as separate explanatory variables. Equation (6) uses the explanatory variables which determine trade balance while equation (7) uses the explanatory variables which are determinants of balance of payments. The results of these estimated behavioural equations are discussed in the next section.

4. Liberalisation and Growth Relationship

Data for this study are from various sources, the main ones being the International Financial Statistics, the Penn World Tables and Wacziarg's study on liberalisation and growth and Sachs-Warner measure of liberalisation. Trade balance and current account figures are obtained from the IMF issues while an openness indicator and liberalisation dummy for the period 1990-99 was taken Wacziarg (2001). Means and standard deviations of GROWTH, TBGDP1 (trade balance to GDP in %) and CAGDP1 (current account to GDP in %) for each country are presented in the annex 1. For the cross-sectional study the data on various variables were from Barro and Lee (1994), Banks (2001) and Heston, Summers and Aten (2001). We have considered 75 developing countries at the outset dispersed over different regions of the world, namely Africa, Asia and Latin America. We excluded China for the reasons given before. Growth, investment and openness can be stimulated under liberalisation if the appropriate conditions prevail in the economies under consideration[13]. We have used the

[13] Edwards (1993) considers the openness-growth relationship using existing indicators. Overall, nine indicators were used: (i) The Sachs-Warner index (ii) The World Bank Integration index (iii) the Edward Leamer Openness Index (iv) the average black market premium (v) the average tariff rate as developed by Barro and Lee (1994),(vi) the average coverage of non-tariff barriers (Barro and Lee) (vii) the Heritage Foundation index of distortions (viii) the ratio of total revenues on trade taxes to total trade and (ix) the regression index of Holger Wolf on import distortions. His conclusion on various

year of liberalisation and time period elapsed from liberalisation as two separate variables affecting investment, growth and openness. The openness indicator is the ratio of imports plus exports to GDP while investment rate is in percentage and growth rate in per capita GDP is in real terms in cross-section regressions. Growth rates in the panel study refer to the growth rate in total real GDP at PPP rates in dollar terms for the countries under consideration. Variables used in cross-sections are fully summarised in Annex 2.

Panel Study:

Liberalisation, Growth and Trade balance relationships:

We ran both fixed effects and random effects models (Table 4) on a binary liberalisation indicator, defined by the dates of liberalisation. We regressed growth in real GDP on the liberalisation dummy for the entire period, and three separate periods namely 1970-79, 1980-89 and 1990-99. Overall liberalisation contributes significantly to openness and investment rates for the entire period. For period by period analysis we are looking for any change in the pattern of relationship between trade balance to GDP ratios and current account to GDP ratios. For the whole period, we find a significant positive relationship between deficits and economic growth. Deficits (TBGDP2 and CAGDP2) are defined as positive observations. The behaviour of current account with respect to growth is reverse of trade balance relationship. For a decade by decade relationship, we find that growth reduces current account deficits in period 1980-89 while it has no significant relationship in earlier or later periods. Liberalisation worsens trade deficits while growth, current account and investment rate are all encouraged by liberalisation. Timing effect[14] (Table 4B) of liberalisation (LIBERTM) is significant as in the period 1970-79, trade balance to GDP deteriorated in the first period, improved in the second period and the impact was not significant in the last period.

Table 5 presents regionwise relationships for the entire period 1970 to 2000. In most cases, our choice based on Hausman test rejects the random effect model. Liberalisation promotes

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measures was that "inspite of significant efforts and ingenuity, there has not been too much progress in this area". There existed positive relationship between trade intensity and growth performance on the basis of cross-country plot of average annual growth rate against the average annual growth rate in trade.

[14] Timing effect was introduced by looking at the number of years before and after liberalisation. If the country was liberalised in 1976, it gets the value of 1 for that year and it rises to 24 in year 2000 while for 1975, the year before liberalisation is given the value of –1. Different countries were liberalised at different times so the variable time elapsed from liberalisation and time period prior to liberalisation (negative number of years) capture the timing effect. We could define dummy variables for different decades for liberalisation but this was not considered important.

growth, openness and investment in Asian countries. Trade deficits tend to rise with economic growth in Asian economies while there is no such evidence for either Latin American or African economies. For Latin American economies, the direct impact of liberalisation is to increase the trade deficits while for African economies liberalisation has improved trade balance in a bivariate relationship. We have a mixed bag of results at a regional level as the data and number of observations differed. For the earlier period, we did not have many observations on trade balance for many African economies and this could have led to the conclusion that there is no significant relationship between liberalisation and growth. The between country regression indicates that the liberalisation contributes positively to growth in African economies. On the other hand, investment responds negatively to liberalisation[15].

Tables 6A and 6B report the results of **cross country** regressions. These allow the possibility of using some political and other variables in regression models. The liberalisation dummy enters highly significantly with a magnitude of about 1.18-1.20 per cent point of annual growth. This is much smaller than that in Wacziarg's study and it could be due to non-inclusion of developed countries in the sample. As in the Sachs-Warner study, the open economies tend to converge unconditionally while closed economies do not, however, this evidence is very weak with our sample of countries. When other variables are used, we find evidence of convergence. Openness, base-year real GDP, investment rate, density of population and government consumption to GDP turn out to be highly significant in the remaining regressions of table 6A. However, we find that the results of Sachs-Warner break down completely for the 1990s. Openness dummy is not significantly different from zero. Liberalising economies do not show any unconditional or conditional convergence. Our conclusion is that openness measure could be quite weak for the period under study.

In Table 7 we use date based indicator and do three period analysis using panel of three **cross-sections.** We constructed a panel with 3 periods, 1970-79, 1980-89 and 1990-98 in order to estimate the effects of openness indicator on growth over different decades. We relate average growth over the period 1970-79 (country observation) with the base year real GDP and liberalisation variable. The estimated coefficient on liberalisation variable lies between insignificant to 3.26 when other variables are introduced. For the period 1989-98 period,

[15] This kind of contradiction is bound to be observed when the role of other variables is not allowed in a simple bivariate relationship. Omitted variable tends to exaggerate the impact of included variable if omitted variable is positively correlated with the liberalisation variable.

liberalisation coefficient is not significantly different from zero. In Table 8, when estimates are constrained, we find that liberalisation has an effect on growth and the impact for 1 unit change is 1.62 per cent point change on growth. Conditional convergence hypothesis holds. Extreme political repression tends to reduce economic growth while increase in density of population increases economic growth. Constraining intercept to be identical for three periods does not change any of the other results substantially.

Growth and Liberalisation Relationship at a country level

In this section we examine the relationship between growth and liberalisation at a country level first. We relate for the period 1970-2000, growth with liberalisation variable, trade balance to GDP (TBGDP1) and current account to GDP (CAGDP1) with liberalisation variable to examine the extent to which liberalisation alone explains each of these macro variables at a country level. Both TBGDP1 and CAGDP1 are no longer deficits but recorded trade balance and current account balances to GDP. We present significant results on the liberalisation coefficient in Table 9. For five countries, we find that liberalisation has a positive and significant effect on growth. For 12 countries we find that trade balance worsens with liberalisation. Impact varies from 0.23 point decline for Brazil in trade balance to GDP to 7.18 point decline for Nicaragua. For three countries the impact of liberalisation on current account to GDP percentages is negative and significant. Investment to GDP ratio rises with liberalisation in about 10 countries and the impact varies from 1.74 point increase to 6.05 point increase in investment to GDP percentage. Openness and liberalisation are highly interrelated and hence we find that the impact of liberalisation in opening trade is large and highly significant for 18 countries.

We next tested the hypothesis whether growth was determined by changes in terms of trade, real exchange rate changes, percentage change in oil prices and liberalisation. Using equation 6, we tested the hypothesis whether the above determinants of growth are significant at a country level. In most of the cases, individual coefficients of changes in terms of trade, advanced countries' growth rate and percentage change in oil prices were insignificant. The liberalisation variable was significant and positive in a few cases. Similarly, we tested the hypothesis whether growth was determined by the determinants of current account and we

found no strong evidence in favour of long term debt and/or debt service ratio or interest rate influencing the growth rate for majority of countries[16].

5. Effect of Trade Liberalisation and Growth on Trade Balance and Current Account

The effect of trade liberalisation on the trade balance and current account of the balance of payments is ambiguous irrespective of the framework used for the analysis of balance of payments. In the elasticities approach to balance of payments, the effect of liberalisation will depend upon the price elasticities of exports and imports. If the impact is measured in foreign currency, export earnings will increase if the price elasticity is greater than one and import payments will increase if the price elasticity is less than one in absolute terms. In the absorption approach to balance of payments, the effect of liberalisation will be realised through real income changes. Even if real income increases, the balance of payments may not improve if the absorption propensity is greater than unity. If trade liberalisation reduces prices, this will increase real absorption through a real balance effect and money illusion, but it could decrease absorption if there is a redistribution of income to the traded goods sector where the propensity to save is higher than that in non-traded sector. In the monetary approach to balance of payments, the liberalisation could affect both demand and supply of real money balances. In one of the studies, Ostry and Rose (1989) conducted the analysis on the impact of tariff changes on trade balance and have found no statistically significant effect of tariff changes on real trade balance.

The impact of liberalisation on trade performance is measured using monetary units because it is the nominal gap which measures a country's shortage of foreign exchange and by how much country requires to borrowing to sustain growth in case liberalisation worsens the payments on current account. Relative prices are introduced by making use of terms of trade variable. We do not have data on nominal (barter) terms of trade and hence we have to use the income terms of trade meaning thereby the index of purchasing power of exports. Income variable is introduced as growth in real income in Purchasing Power Parity terms. Liberalisation improves growth performance as our results demonstrate in the previous section. We also use interaction dummy between liberalisation and growth which takes the value of one for post-liberalisation growth and zero otherwise. If the sign of this variable is negative then it has raised the growth rate which in turn has raised import growth and

[16] These results can be obtained from the authors.

worsened the trade balance/balance of payments. The coefficient on the shift dummy variable (LIBER) should be regarded as pure liberalisation effect on trade balance, independent of liberalisation working through its impact on growth performance. Liberalisation could interact with PPI (LIBPPI) meaning thereby that liberalisation increases imports in the short-run and could affect import prices more than export prices leading to adverse terms of trade. A negative coefficient with LIBPPI would mean that liberalisation leads to probably worsened terms of trade leading to a fall in trade balance if the sign of LIBPPI is negative. We also have to consider different sizes of nations and this is done by using trade balance to GDP (TBGDP) ratios in percentage terms. The following equations are estimated using panel data.

$$\left(\frac{TB}{GDP}\right)_{it} = \delta_1 + \delta_2(ADVGR)_{it} + \delta_3(GROWTH)_{it} + \delta_4(PPI)_{it} + \delta_5(LIBER)_{it} + \delta_6(LIBGROWTH)_{it} + \delta_7(LIBPPI)_{it} + \delta_8(LIBADVGR)_{it} + \varepsilon_{it}$$

i=1,2….42 and t=1,2,….31 (8)

and

$$\left(\frac{CA}{GDP}\right)_{it} = \varphi_1 + \varphi_2(ADVGR)_{it} + \varphi_3(GROWTH)_{it} + \varphi_4(PPI)_{it} + \varphi_5(LIBER)_{it} + \varphi_6(LIBGROWTH)_{it} + \varphi_7(LIBPPI)_{it} + \varphi_8(LIBADVGR)_{it} + \varphi_9(DEBT)_{it} + \varphi_{10}\left(\frac{DEBT}{GDP}\right)_{it} + \varphi_{11}(CINTEREST)_{it} + \zeta_{it}$$

i=1,2….42 and t=1,2,….31 (9)

The above two equations are similar to equation (6) and (7) as (6) uses the determinants of trade balance while (7) uses the determinants of current account balance as mentioned before.
In Table 10A we provide the results based on multiple linear regression whether there exists any relationship of trade balance with liberalisation and growth. Only significant relationships are presented in the Table 10A. Trade balance deteriorates with liberalisation in a few countries if the country has experienced liberalisation during the period 1970-2000, while for other countries, such as Chile, Costa Rica, India, Kenya, Mauritius, El Salvador and Uganda the relationship is positive. For many other countries the relationship is significantly negative. When we examine slope coefficient with respect to domestic growth, the relationship is negative for many countries although on a country by country basis the relationship is not strong as many negative slope coefficients with respect to growth are not statistically significantly different from zero.

In Table 10B, we examined the relationship between current account to GDP percentages and liberalisation and domestic economic growth. There were only 10 countries for which one of

the variables namely liberalisation or growth had a significant coefficient. For Colombia, the relationship was positive. Liberalisation improved the CAGDP for eight of ten countries and it was only Uganda and Colombia that the CAGDP worsened due to liberalisation.

Tables 11a and 11b record the results of these two equations using country level data. We find that growth is significantly related to annual change in terms of trade and liberalisation as the goodness of fit statistic is very high. However, due to multicollinearity, individual coefficients are not significant. For Bolivia, liberalisation is significant. Liberalisation indeed plays a positive role in improving the country's growth rate for Argentina, Bolivia and Chile.

In Table 11B, we regress growth on terms of trade changes, liberalisation, debt service to exports, annual change in interest rate as these are determinants of current account balance. This is basically the estimates of equation (8) which are provided in Table 11B. Liberalisation plays a positive role on the Indian economy while for Uganda, liberalisation reduces growth. Higher debt service payments reduce economic growth and higher world interest rate reduces growth.

Tables 12 shows the results of regional analysis where the developing countries of Africa, Asia and Latin America are separately considered. Both fixed effects and random effect models are estimated. Our choice is for fixed effects models and these results for all countries for which data are available indicate that liberalisation has a strong negative effect on trade balance to GDP while liberalisation improves current account to GDP ratio. Surprisingly an increasing debt-service ratio (to total payments) improves current account while the growth in long term debt reduces the current account balance. The most important result in this table is the negative relationship between TBGDP1 and GROWTH. Higher economic growth in a developing economy by 1 per cent tends to deteriorate trade balance by 0.06 to 0.08 point of the TBGDP percentage. For Africa, growth is not a significant determinant of TBGDP1 and it is the annual change in terms of trade and liberalisation interacted with the terms of trade change are the most significant variables. Liberalisation possibly leads to higher imports and deteriorates terms of trade. For Asia, growth deteriorates TBGDP1 and similarly, for Latin America, similar result holds. Liberalisation interacted with growth improves TBGDP1. There were no significant relationships between CAGDP1 and growth and other variables for Latin America or Asia. The above regional differences is likely to arise due to perhaps omitted variables, misspecification of the true dynamic structure through a static model and differences in behaviour of economic agents in each geographical region or country. Our aim

was to consider a general framework under which the relationship between trade balance, economic growth, terms of trade and advanced countries' growth rates can be considered.

Summary and Conclusions:

In recent research on trade liberalisation, not much attention has been given to the issue of imports, the balance of trade and current account of the balance of payments. It is conceivable that trade liberalisation may lead to faster growth of imports than exports if the countries were highly protected in pre-liberalised period. The faster growth in imports in relation to exports could have serious implications for balance of trade and this in itself could constrain economic growth in some of the developing economies. Trade liberalisation may promote growth on the one hand from the supply side through a more efficient allocation of resources while it may constrain growth from the demand side unless a balance between exports and imports can be maintained through trade policies such as real exchange rate depreciation or deficits in the short run can be financed by capital inflows.

Our study encompassed three decades and about 42 developing countries dispersed over three geographical regions of Asia, Africa and Latin America. Our tentative findings are on the relationship between liberalisation and growth and liberalisation, growth and trade balance or current account while other factors affecting these relationships are taken into consideration.
Overall, liberalisation contributes significantly to economic growth, openness and investment rates over the period 1970-1999. Liberalisation worsens trade deficits while it improves current account deficits when the entire period is considered. Economic growth in a domestic economy reduces current account deficits in the period 1980-89 while it has no significant relationship in earlier or latter decades. Trade deficits tend to rise with economic growth in Asian economies while there is no such evidence for either Latin American or African economies. In cross-section study, openness, investment rates, density of population and government consumption to GDP have strong positive effects on growth. Political and other national security variables do not show a great deal of importance in these cross-country regressions. Base year real GDP has a negative and significant coefficient suggesting that there is strong evidence of convergence in the sense that countries which have low per real income in the base year show faster growth when factors controlling for other variables are considered. Liberalisation again has a significant positive relationship with economic growth.

In one of the regressions we also looked at different decades and constrain the slope parameters to be identical. We find that one unit of liberalisation contributes about 1.62 per

cent point increase in economic growth. Our country level study did not permit us to reach unambiguous conclusions. For five countries, liberalisation has a positive and significant effect while for twelve countries, trade balance tends to worsen with liberalisation. When Thirlwall's basic equation was used in a behavioural form at a country level, we did not find that the growth was significantly constrained by changes in terms of trade, advanced countries' growth rates or annual percentage change in oil prices. Liberalisation indeed has a positive effect on growth in many economies. We examined the relationship of trade balance to GDP and current account to GDP percentage while including control variables namely terms of trade, liberalisation, advanced countries' growth rates and interactions of each of the variables with liberalisation. We found that trade balance obviously deteriorates with liberalisation and economic growth and hence countries would have difficulty in reaching potential or planned growth in the subsequent periods after liberalisation. Deterioration in trade balance could impact on economic growth in subsequent periods. Current account balances, however, did not deteriorate with the impact of liberalisation and economic growth for many economies.

The above conclusions are very tentative given that our model is static and lags in economic behaviour are not considered in this study. So far, our econometric estimation used fixed effects, random effects and OLS and SURE regression models. This and the economic model underlying balance of payments constraint remain the basic limitations of the study.

Figure 1.

GDP-growth rates, merchandise trade-deficit/GDP ratio and current account/GDP ratio of developing countries and territories, 1970–97, %. From UNCTAD database

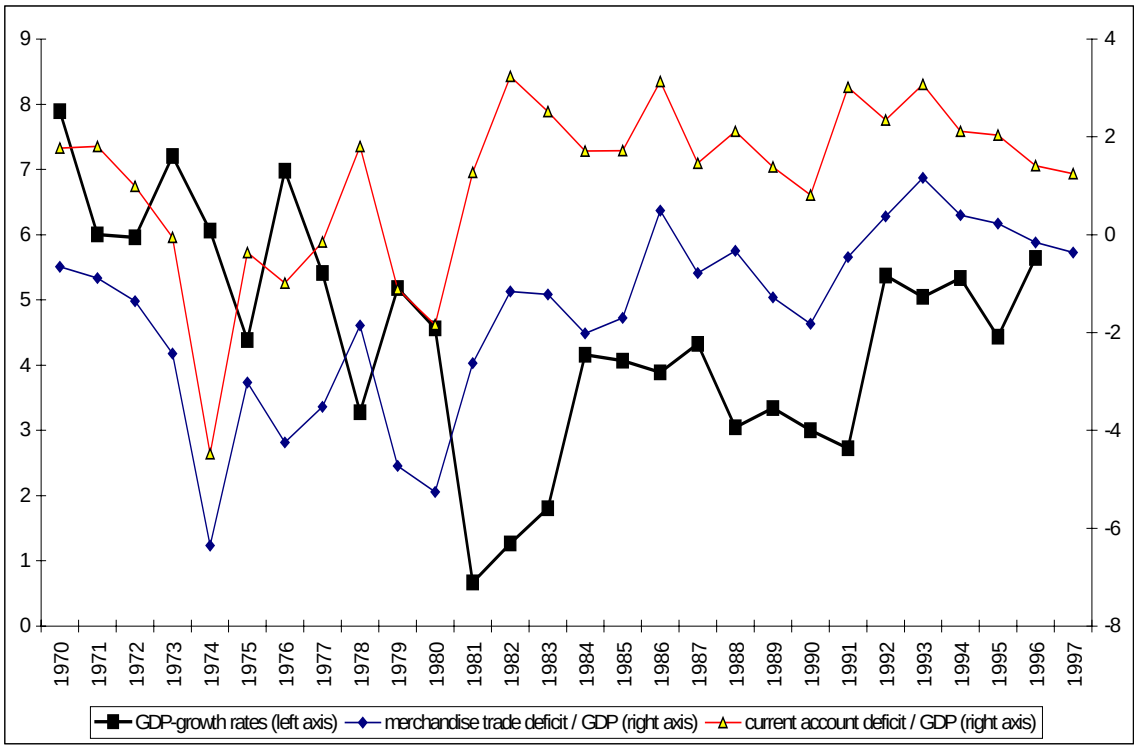
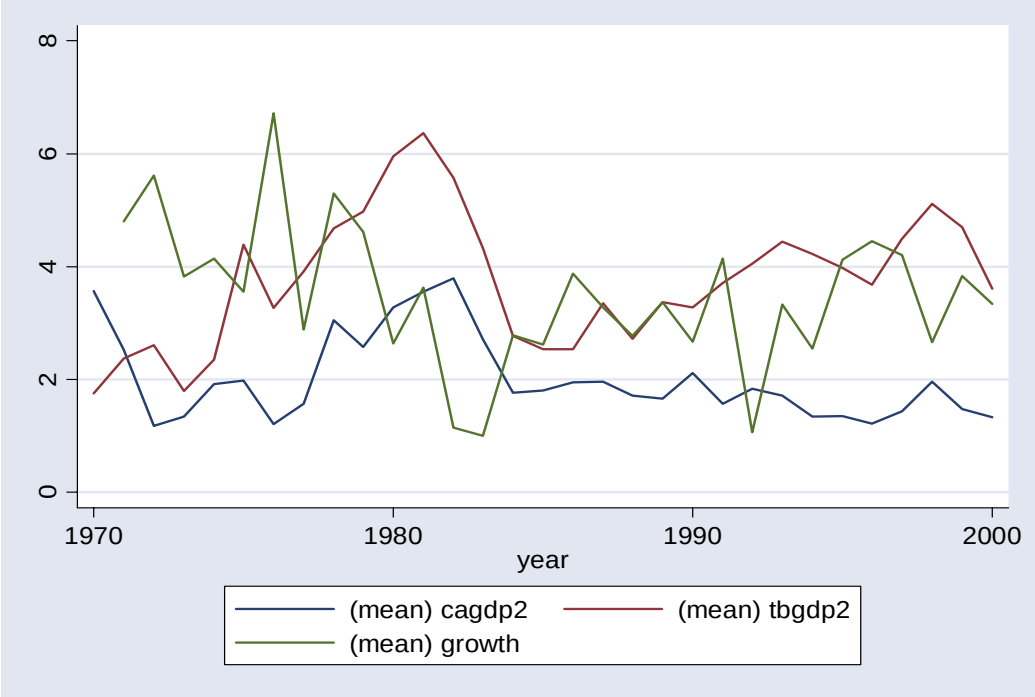
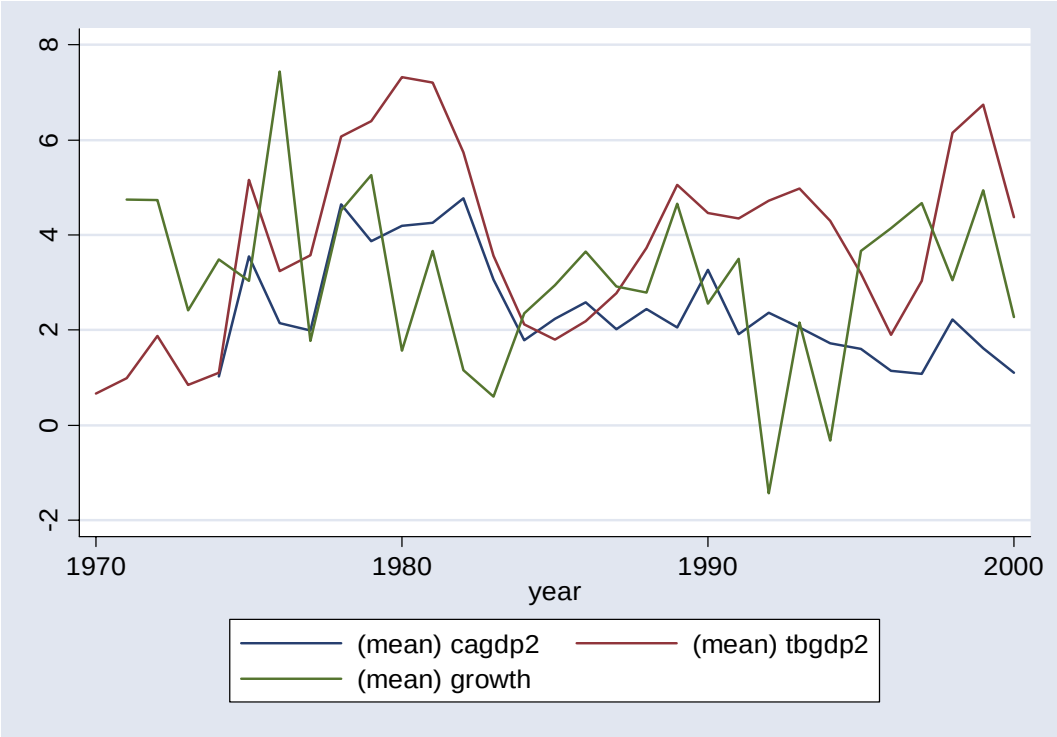


Figure 2
Relationship between growth rates, trade balance and current account to GDP percentages (Means of 75 countries: 1970-2000)



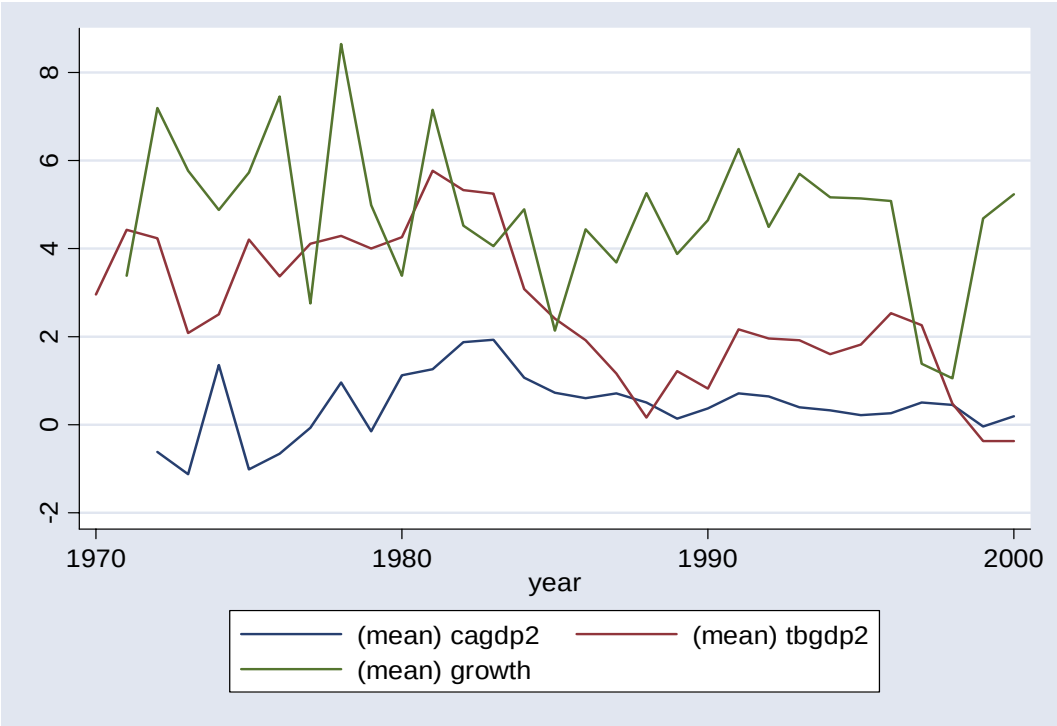
Note: Deficits Positive and Surplus Negative

Figure 3a.
Relationship between growth rate and trade balance and current account to GDP percentages – Africa (36 countries)



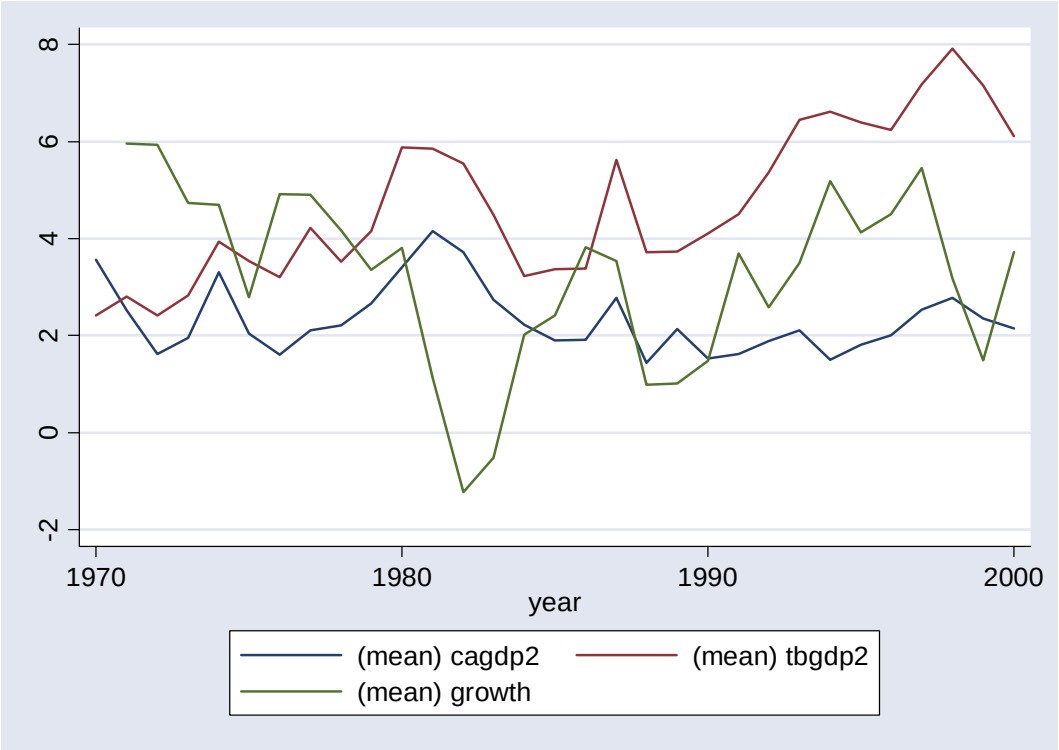
Note: Deficits Positive and Surplus Negative

Figure 3b.
Relationship between growth rate and trade balance and current account to GDP percentages – Asia (16 countries)



Note: Deficits Positive and Surplus Negative

Figure 3c.
Relationship between growth rate and deficit - Latin America
(23 countries)



Note: Deficits Positive and Surplus Negative

Table 1.
Trade account to GDP ratio and GDP growth: 1989–96 compared with 1970–79 (excluding 1974–75)

		Improving trade account				Deteriorating trade account			
		More than 10%	5 to 10%	2 to 5%	0 to 2%	0 to 2%	2 to 5%	5 to 10%	More than 10%
Rising Growth	More than 5% growth				Chile **China**				Uganda
	3 to 5%	PNG					Cyprus	Guyana	Ghana *Kuwait*
	1 to 3%	Benin	Chad			**Argentina** Bangladesh **India** Mauritania Niger Uruguay	**Thailand**		Jamaica Nepal
	0 to 1%	Guinea-Bissau Jordan Singapore			Pakistan			**Malaysia** **Peru** Sri Lanka	El Salvador
Falling Growth	0 to 1%				Senegal	Guinea Madagascar	Bolivia *Indonesia* *Iran*	Liberia Zimbabwe	Nicaragua Sudan Tanzania
	1 to 3%	Barbados Burkina Faso *Nigeria* *Syria*		Fiji *Venezuela*	Costa Rica	CAR **Colombia** Tunisia	Honduras Mali Mauritius **Turkey**	Guatemala	Dom. Republic *Libya* Zambia
	3 to 5%	Trinidad and Tobago	**Korea**	Hong Kong	**Mexico** Sierra Leone **Taiwan** Togo	Kenya Malawi Morocco		**Philippines**	Paraguay
	More than 5%	Botswana Congo	*Algeria* Cameroon *Gabon*	**Brazil** Cote d'Ivorie *Ecuador*			Zaire	**Egypt** Haiti Rwanda	Burundi Gambia *Iraq* *Saudi Arabia*

Note: 14 big countries in bold (defined as largest GDP in 1990-95 and GDP greater than US $60 billion in 1997 excluding the major oil-exporting countries, as well as Hong Kong, Singapore).
12 major oil exporting countries in italics. 9 main manufactures underlined.
All data from ETS except data on current GDP are from World Development Indicators for Ghana, India, Jamaica, Malaysia, Mauritania, Nigeria, Papua New Guinea, Rwanda, Sierra Leone, Sri Lanka, Thailand, Trinidad and Tobago, Zimbabwe. As no data on current GDP are available for 1996 for Barbados, Bolivia, Gambia, Iran, Iraq, Liberia, Libya, Saudi Arabia and Sudan, the second period comprises only 1989-95 for these countries.

Table 2A.
Average annual growth rates of import and export values,
selected developing country groups, 1970–96, percentages

	1970–79 less 1974–75		1982–88		1989–96	
	Exports	Imports	Exports	Imports	Exports	Imports
Developing countries and territories	22.0	18.6	2.0	2.6	11.7	12.4
Non-fuel developing countries	21.6	17.9	9.0	5.5	12.1	13.4
Non-fuel developing countries excl. China	21.4	17.5	8.8	4.8	11.7	13.5
Non-fuel sub-Saharan Africa	14.0	13.4	3.2	1.0	6.2	6.1
Non-fuel Developing America	18.8	15.0	2.9	-1.9	9.7	13.9
Non-fuel Developing Asia and Oceania	26.5	21.8	12.9	9.6	13.2	13.9
China	25.7	28.2	12.3	16.4	15.9	12.8

Source: UNCTAD database

Table 2B.
Average annual growth rates of import and export volumes
selected developing country groups, 1970–96, percentages

	1970–79 less 1974–75		1982–88		1989–96	
	Exports	Imports	Exports	Imports	Exports	Imports
Developing countries and territories	6.9	5.9	4.7	1.2	8.2	9.3
Sub-Saharan Africa	6.4	7.0	0.8	-6.8	3.6	2.4
Developing America	6.3	3.0	2.8	-4.5	6.7	9.1
South and South-East Asia	15.2	8.5	11.7	9.0	11.4	11.6
Non-fuel developing countries	10.6	4.9	8.6	3.9	11.6	10.0

Source: UNCTAD Handbook of International Trade and Development Statistics, various years

Table 3.
Growth of imports and exports and movements of real exchange rates after trade liberalization in selected developing countries

Name of country/region	Year of regime change in trade policy	First two years after regime change in trade policy			Subsequent ten years[a]		
		Growth[b] of		Real exch.	Growth[b] of		Real exch.
		Exports	Imports	rate[c]	Exports	Imports	rate[c]
Latin America							
Argentina	1991	2	65	87	22	13	76
Brazil	1990	2	5	110	8	33	104
Chile	1976	17	31	98	9	4	119
Colombia	1991	2	24	93[d]	14	12	75
Mexico	1986	6	18	93	15	16	64
Asia							
Malaysia	1988	18	32	103[d]	18	18	104[d]
Philippines	1986	15	18	107[d]	15	19	98[d]
Thailand	1986	31	32	98	17	19	86
Turkey	1989	5	15	85	11	18	82
Africa							
Ghana	1985	22	18	141[d]	12	21	247[d]
Kenya	1993	12	21	82	n.a.	n.a.	n.a
Morocco	1984	7	2	157[d]	7	9	119[d]
Tunisia	1989	16	13	103[d]	9	9	100[d]
Uganda	1988	-21	-25	136[d]	35	39	242

Note:
a Subsequent (under10) years until 1996, where the regime change was after 1986.
b Annual average growth of value in per cent.
c Index of average real exchange rate with the dollar unless otherwise indicated (year of regime change =100), and increase in the index indicates depreciation.
d Real effective exchange rate

Source: UNCTAD database, except real effective exchange rates which are from International Financial Statistics

Table 4A.
Bivariate relationship between trade balance, GDP growth, and liberalisation year using panel data

				Regression coefficient with respect to			
Period	Region	Dependant	Model	Constant	Liber	Growth	Hausmann test chi2
1970-1999	Developing countries	GROWTH	FE	3.46*** (17.73)	0.28 (0.88)		17.65a
	Developing countries	TBGDP2	RE	3.02*** (4.34)	0.82*** (3.46)		0.06
	Developing countries	CAGDP2	RE	2.40*** (8.24)	-0.91*** (-5.62)		0.27
	Developing countries	OPENK	RE	61.84*** (13.06)	4.05*** (3.20)		2.00
	Developing countries	KI	FE	13.17*** (83.37)	-0.56** (-2.10)		76.58a
	Developing countries	TBGDP2	RE	4.04*** (5.18)		0.04** (2.37)	1.52
	Developing countries	CAGDP2	FE	2.11** (27.67)		-0.02 (-1.65)	6.38a
1970-1979	Developing countries	GROWTH	FE	3.38*** (5.60)	8.23** (2.14)		2.18
	Developing countries	TBGDP2	FE	3.15*** (8.93)	0.17 (0.08)		0.63
	Developing countries	CAGDP2	RE	2.42*** (5.67)	-0.85 (-0.85)		0.07
	Developing countries	OPENK	RE	63.74*** (9.49)	7.31 (0.74)		0.05
	Developing countries	KI	RE	13.67*** (12.92)	0.4426 (0.23)		2.69
	Developing countries	TBGDP2	FE	3.34*** (18.21)		-0.001 (-0.04)	52.10a
	Developing countries	CAGDP2	RE	2.13** (5.79)		0.0051 (0.24)	0.29
1980-1989	Developing countries	GROWTH	FE	2.52*** (6.91)	1.11 (1.10)		1.49a
	Developing countries	TBGDP2	RE	3.25*** (3.98)	-0.40 (-0.64)		0.36
	Developing countries	CAGDP2	FE	2.29** (14.71)	-0.40 (-0.92)		1.21
	Developing countries	OPENK	FE	59.77*** (79.88)	-5.11*** (-2.46)		3.86
	Developing countries	KI	FE	12.35*** (63.17)	0.311 (0.57)		9.92a
	Developing countries	TBGDP2	FE	3.90*** (23.50)		0.03 (1.33)	5.41a
	Developing countries	CAGDP2	FE	2.42*** (21.00)		-0.002 (-0.13)	21.28a
1990-1999	Developing countries	GROWTH	FE	1.87*** (3.00)	1.93*** (2.72)		0.91
	Developing countries	TBGDP2	RE	2.94*** (4.06)	0.83** (2.00)		0.24
	Developing countries	CAGDP2	FE	2.32*** (8.12)	-1.13*** (-3.45)		0.72a
	Developing countries	OPENK	FE	61.90*** (38.35)	5.98*** (3.24)		4.02a
	Developing countries	KI	FE	10.87*** (27.75)	2.14*** (4.79)		8.49a
	Developing countries	TBGDP2	RE	4.22*** (5.01)		0.03* (1.81)	0.04
	Developing countries	CAGDP2	RE	1.86*** (6.43)		-0.031** (-2.25)	0.22

Note: ***significant at 1% ** significant at 5% * significant at 10%
a - random effect is rejected

Table 4B.
Multivariate relationship between trade balance, GDP growth, timing of liberalisation and liberalisation year using panel data

	Region	Time period	Model	Constant	Liber	Libertm
GROWTH	Developing countries	1970-1979	FE	2.34 (1.60)	8.68*** (2.23)	-0.08 (-0.83)
	Developing countries	1980-1989	FE	2.54*** (4.30)	0.96 (0.82)	0.02 (0.27)
	Developing countries	1990-1999	FE	1.71** (2.46)	2.69*** (3.00)	-0.06 (-0.77)
OPENK	Developing countries	1970-1979	FE	51.13*** (12.45)	11.38 (0.98)	-0.89*** (-3.42)
	Developing countries	1980-1989	FE	57.19*** (48.20)	-0.68 (-0.29)	-0.74*** (-3.80)
	Developing countries	1990-1999	FE	58.97*** (35.06)	-3.76* (-1.74)	1.50 (7.59)
KI	Developing countries	1970-1979	FE	14.77*** (15.69)	-2.55*** (-0.96)	0.33 (0.55)
	Developing countries	1980-1989	FE	10.63*** (35.54)	2.74*** (4.60)	-0.40*** (-8.28)
	Developing countries	1990-1999	FE	11.22*** (26.10)	2.47*** (4.47)	-0.06 (-1.17)
TBGDP2	Developing countries	1970-1979	FE	5.82*** (7.30)	-1.01 (-0.49)	0.19*** (3.74)
	Developing countries	1980-1989	FE	1.33*** (3.80)	1.99*** (2.77)	-0.43*** (-7.39)
	Developing countries	1990-1999	FE	2.71*** (6.53)	0.61 (1.24)	0.05 (1.15)
CAGDP2	Developing countries	1970-1979	FE	3.44*** (3.55)	-0.71 (-0.31)	0.12 (1.45)
	Developing countries	1980-1989	FE	0.74* (3.33)	1.65*** (3.61)	-0.35*** (-9.49)
	Developing countries	1990-1999	FE	2.40*** (7.24)	-1.23*** (-2.95)	0.01 (0.25)

Note: ***significant at 1% ** significant at 5% * significant at 10%

	Region	Time period	Model	Constant variable	Growth	Liber	Libertm
CAGDP2	Developing countries	1970-1979	FE	3.99*** (3.88)	0.05* (1.70)	-2.05 (-0.86)	0.16** (1.95)
	Developing countries	1980-1989	FE	0.81*** (3.57)	-0.03 (-1.57)	1.69*** (3.69)	-0.35*** (-9.51)
	Developing countries	1990-1999	FE	2.46*** (7.35)	-0.028 (-1.29)	-1.16*** (-2.76)	0.01 (0.18)
TBGDP2	Developing countries	1970-1979	FE	5.63*** (6.45)	0.04 (1.28)	-1.78 (-0.84)	0.18*** (3.00)
	Developing countries	1980-1989	FE	1.25*** (3.50)	0.30 (1.12)	1.96*** (2.72)	-0.43*** (-7.38)
	Developing countries	1990-1999	FE	2.56*** (6.18)	0.07*** (2.90)	0.32 (0.64)	0.06 (1.57)

Note: ***significant at 1% ** significant at 5% * significant at 10%

Table 5.
Regionwise relationships between growth and liberalisation and other variables using panel data

Region	Dependant	Time period	Number of observations	Model	Constant	Liberalisation dummy	Growth	Hausmann test chi2
Africa	GROWTH	1970-2000	774	FE	3.22*** (10.47)	0.27 (0.48)		14.42
			26	BE	1.33** (2.36)	5.84*** (4.13)		
	TBGDP2	1970-2000	487	FE	3.78*** (19.38)	-1.09** (-2.54)		0.76
			26	BE	3.22** (2.36)	2.00 (0.57)		
	CAGDP2	1970-2000	580	RE	3.24*** (6.71)	-1.71*** (-5.28)		0.42
			26	BE	2.81*** (3.53)	-0.57 (-0.34)		
	OPENK	1970-2000	801	FE	71.12*** (69.15)	-9.52*** (-4.93)		n/a
			26	BE	48.02 (5.09)***	61.10 (2.52)		
	KI	1970-2000	801	FE	10.61*** (46.97)	-1.99*** (-4.70)		14.95
			26	BE	6.87*** (3.33)	9.36* (1.77)		
	TBGDP2	1970-2000	603	FE	3.91*** (23.96)		-0.01 (-0.69)	1.65
			36	BE	2.34 (1.39)		0.43 (1.09)	
	CAGDP2	1970-2000	771	RE	2.68*** (6.85)		-0.03 (-1.73)	0.05
			35	BE	2.82*** (3.96)		-0.07 (-0.36)	
Asia	GROWTH	1970-2000	390	RE	4.41*** (9.52)	0.85 (1.55)		3.39
			13	BE	3.67*** (5.94)	2.06** (2.41)		
	TBGDP2	1970-2000	391	RE	2.30** (2.10)	0.44 (0.65)		0.25
			13	BE	0.50 (0.13)	3.35 (0.60)		
	CAGDP2	1970-2000	328	RE	0.38 (1.60)	0.06 (0.23)		0.00
			13	BE	0.37 (1.00)	0.07 (0.13)		
	OPENK	1970-2000	328	RE	40.08*** (4.97)	23.25*** (8.00)		0.01
			13	BE	41.43*** (2.72)	21.05 (0.99)		
	KI	1970-2000	403	FE	15.13*** (33.79)	2.17*** (3.33)		4.24
			13	BE	10.07*** (3.02)	10.44** (2.24)		
	TBGDP2	1970-2000	459	RE	2.17 (1.28)		0.13*** (3.16)	0.15
			16	BE	-1.04 (-0.18)		0.79 (0.68)	
	CAGDP2	1970-2000	396	FE	0.56*** (4.38)		-0.01 (-0.03)	1.10
			16	BE	1.10** (2.12)		-0.12 (-1.11)	

Note: ***significant at 1% ** significant at 5% * significant at 10%

(continued)

Region	Dependant	Time period	Number of observations	Model	Constant	Liber	Growth	Hausmann test chi2
L.A.	GROWTH	1970-2000	599	RE	2.87*** (8.33)	0.43 (1.04)		0.25
			20	BE	2.52*** (3.32)	1.21 (0.76)		
	TBGDP2	1970-2000	538	RE	2.51** (2.46)	2.09*** (8.46)		0.01
			20	BE	2.80 (1.30)	1.36 (0.29)		
	CAGDP2	1970-2000	500	RE	2.40*** (4.73)	-0.45** (-2.34)		0.20
			20	BE	3.09** (2.25)	-1.80 (-0.71)		
	OPENK	1970-2000	618	FE	58.23*** (47.73)	12.47*** (6.43)		0.62
			20	BE	35.31 (1.26)	66.31 (1.11)		
	KI	1970-2000	619	FE	14.43*** (58.26)	0.14 (0.36)		0.65
			20	BE	16.18*** (7.17)	-3.91 (-0.81)		
	TBGDP2	1970-2000	568	RE	4.97*** (3.18)		0.06** (2.44)	0.14
			23	BE	2.70 (0.70)		0.75 (0.70)	
	CAGDP2	1970-2000	571	FE	2.26*** (17.99)		0.02 (0.76)	16.98
			23	BE	4.03*** (4.22)		-0.55* (-1.86)	

Note: ***significant at 1% ** significant at 5% * significant at 10%

Table 6A.
Cross section regressions using two periods, 1970-89 and 1990-99 decade

Dependent Variable Growth	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LRGDPCH70	0.1694 (0.44)	0.0401 (0.05)	-0.2487 (-0.60)	-1.2976 (-2.82)***	-1.3161 (-3.01)***	-1.4763 (-3.24)***	-1.3681 (-3.12)***
LIBERAL70-89					1.1909 (2.81)***	1.1833 (2.56)**	1.02259 (2.27)**
POL						-0.5981 (-1.12)	-0.7461 (-1.44)
SEC70				0.8014 (0.41)	0.4480 (0.23)	1.9431 (1.03)	-0.3708 (-0.19)
PRI70				0.8922 (0.72)	0.5009 (0.42)	0.2077 (0.17)	0.5949 (0.50)
GVDXE7084				-0.1166 (-3.53)***	-0.1142 (-3.63)***	-0.1098 (-3.34)***	-0.1158 (-3.61)***
REVCOUP7085				-0.9109 (-1.15)	-1.1062 (-1.47)	-0.7022 (-0.77)	-0.4516 (-0.52)
ASSASS7085				-0.1024 (-0.34)	-0.1993 (-0.69)	-0.1910 (-0.63)	-0.1313 (-0.45)
PPI70DEV				0.3020 (0.71)	0.2081 (0.51)	0.0188 (0.04)	0.1606 (0.39)
INV7089				0.1443 (3.49)***	0.1307 (3.31)***	0.1133 (2.73)***	0.1298 (3.24)***
DENSI60				0.0061 (2.74)***	0.0055 (2.54)**		0.0060 (2.76)***
Intercept7089	-0.3575 (-0.12)	1.4941 (0.26)	2.1766 (0.69)	9.6684 (2.88)***	9.9575 (3.11)***	11.7713 (3.51)***	10.66 (3.30)***
Adj R-sq	-0.0113	-0.0383	0.0086	0.4344	0.5804	0.5450	0.5989
Number of observations 70-89	73	28	43	63	62	63	61

Table 6B.
Cross section regressions using 1990-99 decade

Dependent Variable Growth	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LRGDPCH89	1.2078*** (3.22)	2.2549*** (6.15)	0.6803 (1.21)	1.7564 (1.72)*	-0.4094 (-0.60)	-0.3832 (-0.52)	-0.3533 (-0.48)
LIBERAL90-99					-1.1253* (-1.81)	-1.2435* (-1.90)	-0.8937 (-1.23)
POL						0.3658 (0.50)	0.2968 (0.41)
SEC85				6.1405** (2.11)	6.0446** (2.54)	6.3279** (2.50)	5.7521** (2.23)
PRI85				-4.5141** (-2.14)	-0.6065 (-0.33)	-0.6625 (-0.35)	-0.5047 (-0.26)
CG8998				-0.0145 (-0.24)	-0.0587 (-1.11)	-0.0633 (-1.17)	-0.0633 (-1.17)
REVOL8998				-0.8107 (-0.90)	-0.9353 (-0.97)	-0.9953 (-1.00)	-1.1495 (-1.15)
ASSASS8998				0.0339 (0.13)	0.6849** (2.00)	0.7338** (2.09)	0.7185** (2.04)
PPI89DEV				0.8334 (0.80)	-0.8953 (-1.20)	-0.8759 (-1.12)	-0.7300 (-0.92)
INV8998				0.0313 (0.52)	0.0330 (0.57)	0.0310 (0.52)	0.0316 (0.53)
DENSI80							0.0031 (1.08)
Intercept9099	- 8.2728*** (-2.80)	-16.91*** (-5.77)	-4.0785 (-0.94)	-11.2308 (-1.51)	3.8959 (0.82)		2.704 (0.49)
Adj R-sq	0.1306	0.6120	0.0344	0.6076	0.2394	0.2280	0.2304
Number of observations 89-98	71	26	43	24	64	62	62

Note: ***significant at 1% ** significant at 5% * significant at 10%

Table 7.
Cross-sectional SURE estimates of regressions for each decade using the date-based openness indicator

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Growth 1970-80		Growth 1980-89		Growth 1989-98	
LRGDPCH(t)	-0.3796 (-0.57)	-0.7089 (-1.02)	-1.6462*** (-3.19)	-1.5091*** (-3.18)	-0.8843 (-1.22)	-0.8501 (-1.19)
LIBER(t)	2.9509*** (3.11)	3.2664*** (3.37)	3.1616*** (4.06)	2.8323*** (3.98)	0.4646 (0.71)	0.5594 (0.85)
SEC(t)	5.1296* (1.75)	5.6935* (1.86)	2.4577 (1.12)	-0.1572 (-0.08)	6.4807*** (2.67)	5.9443** (2.47)
PRI(t)	0.8814 (0.52)	0.7596 (0.45)	-0.2645 (-0.18)	-0.1587 (-0.12)	-0.5292 (-0.28)	-0.3139 (-0.17)
CG(t,t+10)	-0.0522* (-1.69)	-0.0486 (-1.56)	-0.0710** (-2.19)	-0.0443 (-1.50)	-0.0730 (-1.32)	-0.0224 (-0.38)
REVOLT(t,t+10)	-3.3205*** (-2.99)	-2.9740** (-2.48)	-1.5099 (-1.60)	0.1588 (0.17)	-0.9391 (-1.03)	-1.1052 (-1.21)
ASSASS(t,t+10)	0.1320 (0.41)	0.2517 (0.76)	0.5780 (1.61)	0.3594 (1.12)	0.5285 (1.65)	0.5985* (1.85)
PPIDEV(t)	0.6827 (1.18)	0.5758 (0.99)	0.5832 (1.30)	0.7724* (1.93)	-1.0258 (-1.34)	-0.7248 (-0.94)
INV(t, t+10)	0.08743* (1.85)	0.0684 (1.42)	0.1106* (1.90)	0.1409*** (2.74)	0.00716 (0.12)	-0.3139 (-0.17)
POL		-0.7127 (-1.06)		-1.7431*** (-3.21)		-0.0432 (-0.06)
DENSI(t-10)		-0.0033 (-0.88)		0.00766 (3.20		0.0046 (1.87)
Intercept	3.5151 (0.80)	6.4978 (1.36)	12.213*** (3.38)	10.9863*** (3.15)	7.361 (1.43)	5.6928 (1.11)
R-Square	0.4583	0.4780	0.5005	0.6331	0.2989	0.3414
Number of observations	59	58	59	58	59	58

Note: ***significant at 1% ** significant at 5% * significant at 10%

Table 8.
Seemingly unrelated regression estimates
with and without constraints and with iterations

Dependent Variable:	Growth 1970-80 1980-1989 and 1989-1998	
LRGDPCH(t)	-1.4292*** (-3.80)	-1.2077*** (-3.22)
LIBER(t)	1.6838*** (3.70)	1.6282*** (3.64)
SEC(t)	2.2063 (1.46)	0.9624 (0.65)
PRI(t)	1.0120 (1.06)	0.18 (0.861)
CG(t,t+10)	-0.0356 (-1.59)	-0.0467** (-2.05)
REVOLT(t,t+10)	-0.7600 (-1.26)	-0.6278 (-1.00)
ASSASS(t,t+10)	0.3269 (1.61)	0.3195 (1.52)
PPIDEV(t)	0.3644 (1.12)	0.4264 (1.30)
INV(t, t+10)	0.0993*** (2.98)	0.1241*** (3.74)
POL	-1.1059*** (-2.76)	-1.2164*** (-3.00)
DENSI(t-10)	.0059*** (3.28)	0.0058*** (3.19)
Intercept 70-80	11.144*** (4.11)	9.0934*** (3.39) (constrained)
Intercept 80-89	9.2391*** (3.43)	
Intercept 89-98	9.8139*** (.3.71)	
R-Square	0.3440 0.5537 0.1477	0.1405 0.5311 0.0950
Number of observations and Chi-square	58 105.08	58 104.77
Breusch-Pagan Test	3.329 (0.3436)	4.595 (0.2040)

Note: ***significant at 1% ** significant at 5% * significant at 10%

Table 9.
Bivariate Relationship Between Growth, TBGDP, CAGDP, Investment and Openness with Liberalisation at a Country level, 1970-1999

Country	Time period	Dependant	Number of observations	Constant	Liber	Adj R-squared
Argentina	1970-2000	GROWTH	30	0.28 (0.22)	5.23 (2.33)	0.1325
Chile	1970-2000	GROWTH	30	-1.08 (-0.42)	6.09 (2.17)	0.1130
Dominican Republic	1970-2000	GROWTH	30	4.45 (7.29)	2.90 (2.60)	0.1659
India	1970-2000	GROWTH	30	4.34 (7.44)	2.19 (1.81)	0.0729
Madagascar	1970-2000	GROWTH	30	0.88 (1.95)	2.61 (2.35)	0.1353
Argentina	1970-2000	TBGDP1	31	-0.99 (-3.83)	-1.44 (-3.17)	0.2323
Bolivia	1970-2000	TBGDP1	19	0.85 (1.37)	-2.48 (-3.17)	0.3342
Brazil	1970-2000	TBGDP1	17	0.22 (8.32)	-0.23 (-6.76)	0.7364
Dominican Republic	1970-2000	TBGDP1	30	-3.99 (-9.06)	-5.62 (-6.59)	0.5942
Gambia	1970-2000	TBGDP1	29	-7.77 (-6.28)	-5.50 (-3.09)	0.2337
Guatemala	1970-2000	TBGDP1	29	-0.88 (-2.53)	-1.99 (-3.99)	0.3475
Honduras	1970-2000	TBGDP1	20	-2.05 (-3.68)	-5.57 (-5.00)	0.5580
Jamaica	1970-2000	TBGDP1	30	-9.19 (-9.10)	-5.63 (-3.38)	0.2641
Nicaragua	1970-2000	TBGDP1	23	-2.57 (-2.99)	-7.18 (-4.92)	0.5137
Peru	1970-2000	TBGDP1	31	0.37 (1.12)	-2.72 (-4.72)	0.4149
El Salvador	1970-2000	TBGDP1	27	-0.81 (-2.58)	-6.09 (-11.71)	0.8397
Uruguay	1970-2000	TBGDP1	31	-0.47 (-1.18)	-1.71 (-2.54)	0.1535
Columbia	1970-2000	CAGDP1	31	0.58 (1.53)	-1.20 (2.23)	0.1167
Nicaragua	1970-2000	CAGDP1	24	-6.03 (-7.14)	-2.15 (-1.64)	0.0686
Uganda	1970-2000	CAGDP1	20	-0.67 (-2.15)	-1.39 (-3.47)	0.3670
Chile	1970-2000	KI	31	11.51 (5.56)	4.50 (1.95)	0.0854
Costa Rica	1970-2000	KI	31	13.99 (26.78)	2.30 (3.06)	0.2183
Gambia	1970-2000	KI	31	4.99 (8.03)	2.81 (3.24)	0.2404
Honduras	1970-2000	KI	31	10.76 (18.49)	6.05 (5.90)	0.5301

(continued)

Country	Time period	Dependant	Number of observations	Constant	Liber	Adj R-squared
India	1970-2000	KI	31	11.39 (77.98)	1.60 (5.21)	0.4662
Peru	1970-2000	KI	31	15.94 (21.74)	3.37 (2.61)	0.1622
El Salvador	1970-2000	KI	31	6.46 (19.15)	1.99 (3.68)	0.2945
Uganda	1970-2000	KI	31	1.54 (10.90)	1.74 (7.99)	0.6766
Argentina	1970-2000	OPENK	31	10.17 (18.14)	10.64 (10.78)	0.7934
Bolivia	1970-2000	OPENK	30	34.45 (18.88)	8.16 (3.27)	0.2502
Chile	1970-2000	OPENK	31	26.74 (7.03)	18.04 (4.26)	0.3638
Central African Rep.	1970-2000	OPENK	31	72.08 (44.05)	9.77 (2.84)	0.1902
Cameroon	1970-2000	OPENK	31	41.92 (30.04)	5.46 (1.99)	0.0897
Costa Rica	1970-2000	OPENK	31	47.56 (12.67)	33.24 (6.16)	0.5518
India	1970-2000	OPENK	31	16.77 (46.43)	7.53 (9.91)	0.7642
Jamaica	1970-2000	OPENK	31	86.40 (40.94)	26.39 (7.78)	0.6649
Sri Lanka	1970-2000	OPENK	31	63.99 (34.92)	20.36 (6.31)	0.5643
Mexico	1970-2000	OPENK	31	23.19 (6.40)	27.08 (5.20)	0.4647
Nicaragua	1970-2000	OPENK	31	58.01 (11.74)	50.38 (5.79)	0.5202
Peru	1970-2000	OPENK	31	22.51 (40.55)	4.59 (4.69)	0.4119
Philippines	1970-2000	OPENK	31	39.46 (17.20)	32.50 (9.18)	0.7349
Paraguay	1970-2000	OPENK	31	38.45 (14.00)	43.36 (9.82)	0.7610
El Salvador	1970-2000	OPENK	31	37.37 (17.56)	15.38 (4.50)	0.3904
Tunisia	1970-2000	OPENK	31	81.48 (49.16)	9.34 (3.51)	0.2735
Uganda	1970-2000	OPENK	31	14.65 (6.19)	17.29 (4.73)	0.4159
Uruguay	1970-2000	OPENK	31	23.23 (24.89)	16.31 (10.41)	0.7817

Note: all regression coefficients with respect to liberalisation variable are significant

Table 10A.
Relationship of TBGDP1 with Liberalisation and Domestic Growth
Country Level Study: 1970-1999

Country	Constant	Liber	Growth	Adj R-squared
Argentina	1.05 (4.12)	-1.12 (-2.31)	-0.07 (-1.92)	0.3103
Bangladesh	-.033 (-2.89)	-	0.05 (2.50)	0.1678
Bolivia	0.79 (1.38)	-1.86 (-2.38)	-0.27 (-2.04)	0.4389
Brazil	0.17 (7.14)	-0.23 (-8.44)	0.01 (3.23)	0.8382
Barbados	-13.67 (-23.06)	-	0.19 (2.05)	0.0999
Chile	-2.76 (-2.50)	2.56 (1.97)	-0.09 (-1.11)	0.0655
Cote D'Ivore	4.01 (4.20)	-	-0.28 (-1.77)	0.1315
Cameroon	-1.70 (-4.38)	-	-0.003 (-0.08)	0.0621
Columbia	-1.62 (-2.97)	0.86 (1.92)	0.21 (1.98)	0.1281
Costa Rica	-3.77 (-5.64)	1.41 (1.81)	-0.10 (-0.94)	0.0627
Dominican Republic	-5.53 (-7.93)	-6.45 (-7.48)	0.32 (2.54)	0.6604
Egypt	-5.31 (-5.19)	1.58 (0.99)	-0.12 (-0.76)	-0.0142
Gambia	-8.17 (-4.59)	-5.04 (-2.64)	-0.02 (-0.09)	0.1747
Guatemala	-0.84 (-1.54)	-1.93 (-3.69)	-0.03 (-0.27)	0.3013
Honduras	-3.16 (-4.00)	-5.04 (-4.60)	0.23 (2.04)	0.6291
India	-0.31 (-2.65)	0.33 (2.23)	-0.04 (-1.99)	0.1413
Jamaica	-9.03 (-8.29)	-5.79 (-3.34)	-0.004 (-0.02)	0.2462
Jordan	-21.09 (-6.33)	-	-0.74 (-2.13)	0.1160
Kenya	-4.06 (-7.80)	1.51 (2.06)	-0.06 (-0.94)	0.1564
Mauritius	-4.56 (-8.59)	1.51 (2.50)	0.005 (0.09)	0.1288
Madagascar	-1.72 (-6.41)	-0.77 (-0.78)	0.06 (0.54)	-0.0693
Mexico	1.21 (2.41)	-1.21 (-2.36)	-0.32 (-4.33)	0.3794
Malaysia	4.60 (3.10)	-	-0.22 (-1.06)	0.0046
Nicaragua	-2.41 (-2.81)	-7.04 (-5.01)	-0.19 (-1.96)	0.5628
Pakistan	-1.23 (-2.16)	-	-0.14 (-1.47)	0.0402
Peru	0.32 (0.94)	-2.51 (-4.23)	-0.04 (-0.82)	0.4000
Philippines	-1.61 (-2.80)	-0.88 (-1.27)	-0.06 (-0.59)	-0.0006

(continued)

Country	Constant	Liber	Growth	Adj R-squared
Paraguay	-2.75 (-4.18)	-1.01 (-1.23)	0.15 (1.56)	0.0940
Sierra Leone	-0.87 (-2.59)	-5.97 (10.58)	-0.01 (-0.23)	0.8310
El Salvador	0.87 (2.59)	5.97 (10.58)	0.014 (0.23)	0.8310
Thailand	-0.62 (-1.32)	-	-0.22 -3.57	0.2887
Tunesia	-6.10 (-8.75)	0.89 (1.40)	0.13 (1.26)	0.0352
Uganda	-5.93 (-8.35)	4.91 (5.19)	-0.33 (-2.31)	0.6137
Uruguay	-0.36 (-0.87)	-1.51 (-2.20)	-0.09 (-1.46)	0.1786

Note: choice of results is based on at least one of the coefficients being significant at 5%-level

Table 10B.
Relationship of CAGDP1 with Liberalisation and Domestic Growth
Country Level Study: 1970-1999

Country	Constant	Liber	Growth	Adj R-squared
Cote D'Ivore	-5.63 (-8.08)	4.38 (3.49)	0.25 (2.13)	0.3790
Columbia	2.12 (3.31)	-1.67 (-3.29)	-0.32 (-2.62)	0.2975
Costa Rica	-5.28 (-8.70)	2.91 (3.86)	-0.05 (-0.50)	0.3728
Dominican Republic	-1.90 (-3.39)	1.72 (2.57)	-0.10 (-0.96)	0.1386
Gambia	-8.42 (-3.26)	8.34 (3.33)	0.37 (1.03)	0.3384
Honduras	-4.38 (-11.76)	1.43 (2.82)	0.05 (0.84)	0.1889
Jamaica	-4.36 (-5.46)	1.94 (1.71)	0.15 (0.83)	0.0652
Paraguay	-3.48 (-8.60)	2.95 (6.69)	0.10 (2.04)	0.6314
Tunisia	-2.36 (-4.00)	1.56 (3.22)	-0.03 (-0.26)	0.2657
Uganda	-0.75 (-2.10)	-1.39 (-3.39)	0.012 (0.50)	0.3394

Note: choice of results is based on at least one of the coefficients being significant at 5%-level

Table 11A
Growth related to grppi liber libgrppi

country	constant	grppi	Liber	libgrppi	adj R-squared
Argentina	-0.69 (-0.88)	-0.01 (-0.29)	2.16 (1.25)	-0.01 (-0.10)	0.7953
Bolivia	-1.16 (-1.20)	0.16 (0.86)	2.76 (2.07)	-0.08 (-0.44)	0.4498
Chile	-14.32 (-2.31)	-0.16 (-1.26)	19.55 (3.17)	0.17 (1.33)	0.5446

Note: choice of results is based on R-squared being significant at 5%-level

Table 11B
Growth related to grppi liber debtsr cinterest

country	constant	grppi	Liber	debtsr	cinterest	adj R-squared
Argentina	0.09 (0.03)	0.01 (0.12)	2.35 (1.24)	-3.62 (-0.42)	-0.01 (-0.59)	0.7657
Chile	9.38 (2.87)	0.01 (0.65)	-	-3.77 (-0.24)	-0.006 (-0.32)	0.5770
Columbia	0.27 (0.09)	0.08 (0.94)	1.42 (0.53)	12.16 (1.05)	-0.01 (-0.64)	-0.4273
Costa Rica	10.26 (2.35)	0.34 (2.29)	-0.82 (-0.40)	-20.45 (-1.61)	-0.006 (-0.31)	0.4749
India	5.45 (2.53)	0.03 (0.87)	3.69 (3.21)	-7.47 (-0.68)	0.002 (0.26)	0.5437
Mexico	6.94 (2.12)	0.16 (2.50)	-2.88 (-1.32)	-20.16 (-1.53)	-0.02 (-1.33)	0.5514
Thailand	10.01 (2.89)	0.06 (3.72)	-	-38.87 (-2.12)	0.01 (0.60)	0.4657
Uganda	5.20 (1.03)	-0.27 (-1.82)	-11.17 (-3.38)	39.46 (1.08)	0.02 (0.63)	0.6051

Note: choice of results is based on R-squared being significant at 5%-level

Table 12.
Determinants of Trade Balance and Current Account Balance on Panel Data (All countries)

Dependent Variable/Model	Constant	Growth	GRPPI	LIBER	ADVGROWTH	LIBGROWTH	LIBGRPPI	DEBTSR	GLTDOL	CINTEREST	R-square/ No. of observations
TBGDP1/ FIXED	-2.7393*** (-14.80)	-0.0748** (-2.75)	0.0308*** (4.47)	-1.1699*** (-3.72)	0.0293 (1.37)	-0.0352 (0.76)	-0.0223*** (-2.82)				0.0626/ 985
TBGDP1/ FIXED	-2.7443*** (-14.84)	-0.0677** (-2.49)	0.0140*** (4.03)	-1.2001*** (-3.80)	0.0299 (1.39)	-0.0463 (-1.00)					0.0546/ 985
TBGDP1/ FIXED	-2.6988*** (-15.00)	-0.0871*** (-3.96)	0.0311*** (4.53)	-1.2918*** (-4.77)	0.0294 (1.37)		-0.0228*** (-2.90)				0.0620/ 985
CAGDP1/ FIXED	-2.4038*** (-10.41)	-0.0050 (-0.39)	0.0017** (2.14)	0.5334*** (3.20)	0.0246** (2.04)			2.3891*** (2.63)	-0.0088** (-2.42)	0.00013 (0.09)	0.0524/ 916
Africa											
TBGDP1/ FIXED	-4.0064*** (-18.54)	-0.2558 (-0.91)	0.0469*** (6.03)		0.0561* (1.85)	0.1184* (1.74)	-0.0352*** (-3.26)				0.1528/ 295
CAGDP1/ FIXED	-3.5147*** (-10.29)	0.0293 (1.24)	0.0203*** (3.76)	1.2950*** (3.99)				5.6057*** (2.90)		0.0021 (0.65)	0.1428/ 295
CAGDP1/ FIXED	-3.9137*** (-7.47)	0.0281 (1.17)	0.0042 (1.28)	1.2042*** (3.53)				6.3799*** (3.22)	-0.0105* (-1.93)	0.0023 (0.70)	0.1173/ 295
Asia											
TBGDP1/ FIXED	-1.6984* (-1.95)	-0.3302*** (-4.37)	0.0088 (1.17)	-0.4468 (-0.40)							0.0759/ 255
Latin America											
TBGDP1/ FIXED	-1.9509*** (-10.94)	-0.1025*** (-3.30)	0.0252*** (2.98)	-2.6912*** (-8.72)		0.1829*** (3.38)	-0.0163* (-1.68)				0.1861/ 435
TBGDP1/ FIXED	-1.9623*** (-10.99)	-0.0921*** (-3.02)	0.0129*** (3.04)	-2.6933*** (-8.71)		0.1668*** (3.12)					0.1805/ 435

Note: ***significant at 1% ** significant at 5% * significant at 10%

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Means and standard deviations of variables

Country	Variables (%)		1970-2000	1970-1979	1980-1989	1990-1999
Argentina	TBGDP2	Mean/SD	0.53 (1.35)	0.56 (0.87)	1.11 (1.24)	0.77 (1.74)
(10)	CAGDP2	Mean/SD	0.21 (0.17)	0.06 (0.38)	0.50 (0.15)	0.30 (0.08)
	GROWTH	Mean/SD	2,02 (6,22)	2,86 (4,38)	1,53 (6,02)	5,06 (6,78)
Antigua	TBGDP2	Mean/SD	28,98 (8,42)	12, 36 (1,82)	29,97 (7,33)	32,89 (2.99)
(11)	CAGDP2	Mean/SD	6,34 (5,99)	4,51 (3,39)	9,88 (7,37)	3,33 (3,08)
	GROWTH	Mean/SD	4,10 (5,47)	1,52 (3,42)	5,58 (5,56)	2,79 (5,81)
Burundi	TBGDP2	Mean/SD	2,31 (1,57)	0,84 (1,16)	3,50 (1,33)	2,61 (1,05)
(12)	CAGDP2	Mean/SD	1,03 (0,80)	-	1,55 (1,01)	0,76 (0,63)
	GROWTH	Mean/SD	0,59 (8,47)	1,20 (6,40)	2,74 (7,96)	0,83 (7,54)
Benin	TBGDP2	Mean/SD	8.96 (3.87)	9.61 (4.76)	-	8.61 (-)
(13)	CAGDP2	Mean/SD	3.17 (2.72)	4.02 (1.36)	3.45 (4.00)	2.38 (1.51)
	GROWTH	Mean/SD	3.20 (3.91)	1.53 (3.49)	3.38 (5.28)	4.30 (2.42)
Burkina-Faso	TBGDP2	Mean/SD	2.95 (0.30)	2.95 (0.37)	-	-
(14)	CAGDP2	Mean/SD	1.40 (1.05)	2.36 (1.23)	1.18 (0.67)	0.66 (0.60)
	GROWTH	Mean/SD	3.50 (3.58)	4.01 (3.38)	3.19 (4.84)	3.56 (2.63)
Bangladesh	TBGDP2	Mean/SD	0.10 (0.39)	0.27 (0.56)	0.12 (0.31)	0.03 (0.28)
(15)	CAGDP2	Mean/SD	0.51 (0.53)	0.94 (0.79)	0.78 (0.56)	0.11 (0.26)
	GROWTH	Mean/SD	3.66 (4.40)	1.79 (7.03)	4.14 (3.42)	4.68 (1.23)
Bolivia	TBGDP2	Mean/SD	0.71 (2.02)	1.55 (0.53)	-0.63 (1.60)	1.96 (1.87)
(17)	CAGDP2	Mean/SD	2.33 (1.21)	2.90 (1.93)	2.34 (1.28)	2.14 (0.90)
	GROWTH	Mean/SD	2.56 (3.05)	4.97 (1.74)	-0.58 (2.96)	3.55 (0.85)
Brasilia	TBGDP2	Mean/SD	-0.08 (0.13)	-	-0.25 (0.05)	0.012 (0.004)
(18)	CAGDP2	Mean/SD	0.002 (0.008)	0.002 (0.0005)	0.004 (0.013)	0.0009 (0.001)
	GROWTH	Mean/SD	4.20 (4.37)	8.01 (3.33)	2.93 (4.24)	1.90 (3.37)
Barbados	TBGDP2	Mean/SD	12.92 (2.76)	11.66 (1.64)	11.71 (2.05)	14.80 (2.71)
(19)	CAGDP2	Mean/SD	1.42 (2.79)	4.15 (1.42)	0.53 (1.94)	-0.60 (2.46)
	GROWTH	Mean/SD	3.70 (5.24)	5.39 (4.86)	4.45 (6.75)	1.28 (3.41)
Botswana	TBGDP2	Mean/SD	1.99 (8.75)	8.93 (3.50)	1.56 (11.34)	-1.82 (4.13)
(20)	CAGDP2	Mean/SD	-0.30 (6.58)	5.00 (3.19)	0.55 (8.69)	-3.81 (2.27)
	GROWTH	Mean/SD	9.51 (6.09)	14.30 (7.82)	8.45 (4.08)	6.26 (2.91)
Central African	TBGDP2	Mean/SD	0.32 (0.26)	0.18 (0.17)	0.60 (-)	-
Rep. (21)	CAGDP2	Mean/SD	1.40 (0.74)	0.95 (0.19)	1.47 (0.75)	1.50 (0.92)
	GROWTH	Mean/SD	-0.52 (7.19)	0.63 (3.23)	-0.57 (5.73)	-1.63 (11.13)
Chile	TBGDP2	Mean/SD	0.91 (2.53)	2.08 (2.12)	0.17 (3.55)	0.61 (1.36)
(22)	CAGDP2	Mean/SD	2.68 (2.59)	2.57 (2.01)	4.07 (3.41)	1.54 (1.09)
	GROWTH	Mean/SD	4.00 (6.10)	2.58 (8.24)	3.08 (6.30)	6.09 (3.44)
Cote d'Ivoire	TBGDP2	Mean/SD	-2.59 (2.30)	-1.74 (1.27)	-4.00 (3.02)	-
(24)	CAGDP2	Mean/SD	3.89 (3.59)	4.72 (3.08)	5.40 (4.42)	2.35 (2.22)
	GROWTH	Mean/SD	2.73 (4.83)	6.67 (3.55)	0.34 (5.56)	1.97 (3.01)
Cameroon	TBGDP2	Mean/SD	1.65 (1.25)	1.20 (1.29)	2.17 (1.04)	-
(25)	CAGDP2	Mean/SD	2.01 (1.17)	1.60 (0.50)	2.49 (1.14)	1.41 (1.24)
	GROWTH	Mean/SD	3.55 (6.61)	6.90 (6.96)	3.42 (7.73)	0.41 (3.90)
Colombia	TBGDP2	Mean/SD	0.43 (1.19)	0.007 (0.59)	0.92 (1.45)	0.47 (1.32)
(27)	CAGDP2	Mean/SD	0.006 (1.60)	0.35 (0.95)	-1.30 (1.53)	0.99 (1.47)
	GROWTH	Mean/SD	3.87 (2.09)	5.60 (1.73)	3.37 (1.50)	3.01 (2.18)
Cape Verde	TBGDP2	Mean/SD	20.82 (4.03)	22.96 (3.55)	17.28 (1.18)	-
(29)	CAGDP2	Mean/SD	3.75 (9.16)	0.41 (3.79)	1.48 (2.00)	7.39 (13.66)
	GROWTH	Mean/SD	5.23 (7.69)	0.98 (7.99)	8.79 (8.95)	4.74 (3.89)

Country	Variables (%)		1970-2000	1970-1979	1980-1989	1990-1999
Costa Rica	TBGDP2	Mean/SD	3.46 (2.17)	5.08 (1.76)	2.15 (1.95)	3.25 (1.93)
(30)	CAGDP2	Mean/SD	3.66 (2.16)	6.44 (2.22)	4.09 (2.17)	2.40 (1.03)
	GROWTH	Mean/SD	3.75 (3.65)	5.85 (1.73)	1.52 (4.33)	4.24 (3.33)
Dominican Rep	TBGDP2	Mean/SD	5.49 (3.24)	2.28 (1.41)	5.09 (1.03)	8.60 (1.63)
(32)	CAGDP2	Mean/SD	1.95 (1.62)	2.76 (1.25)	2.24 (1.79)	1.26 (0.83)
	GROWTH	Mean/SD	5.32 (3.07)	6.29 (2.60)	3.85 (1.99)	5.69 (4.02)
Ecuador	TBGDP2	Mean/SD	-0.92 (1.60)	0.005 (1.29)	-1.67 (1.39)	-0.95 (1.75)
(34)	CAGDP2	Mean/SD	1.85 (1.91)	2.60 (1.88)	2.39 (1.66)	1.39 (1.84)
	GROWTH	Mean/SD	3.88 (5.39)	9.42 (4.67)	1.69 (4.22)	1.28 (3.53)
Egypt	TBGDP2	Mean/SD	5.37 (3.54)	3.96 (4.09)	8.07 (3.22)	4.27 (1.62)
(35)	CAGDP2	Mean/SD	0.86 (1.31)	2.85 (0.08)	1.38 (0.88)	-0.19 (0.86)
	GROWTH	Mean/SD	4.71 (4.20)	3.27 (7.07)	6.03 (2.60)	4.70 (1.22)
Ethiopia	TBGDP2	Mean/SD	1.70 (1.14)	0.64 (0.55)	2.80 (0.70)	2.06 (0.56)
(36)	CAGDP2	Mean/SD	0.62 (0.67)	0.86 (0.14)	0.96 (0.70)	0.26 (0.58)
	GROWTH	Mean/SD	2.80 (6.24)	3.14 (1.55)	1.79 (8.32)	2.74 (6.80)
Fiji	TBGDP2	Mean/SD	6.81 (3.41)	10.36 (2.90)	5.73 (3.76)	5.83 (0.72)
(37)	CAGDP2	Mean/SD	1.67 (2.64)	3.92 (-)	1.25 (3.54)	1.87 (1.47)
	GROWTH	Mean/SD	3.08 (4.91)	5.66 (3.82)	1.46 (6.26)	2.37 (3.57)
Gabon	TBGDP2	Mean/SD	-5.72 (2.48)	-5.72 (2.48)	-	
(38)	CAGDP2	Mean/SD	-0.20 (6.99)	-4.02 (2.86)	2.45 (8.86)	-2.09 (4.43)
	GROWTH	Mean/SD	3.65 (9.63)	6.66 (11.09)	2.73 (12.96)	2.06 (2.89)
Ghana	TBGDP2	Mean/SD	-0.15 (1.51)	-0.35 (1.91)	0.06 (1.04)	-
(39)	CAGDP2	Mean/SD	1.26 (1.20)	0.24 (1.15)	1.10 (1.24)	1.91 (0.87)
	GROWTH	Mean/SD	2.86 (5.77)	1.97 (9.38)	2.59 (4.16)	3.21 (2.23)
Guinea	TBGDP2	Mean/SD	0.55 (1.11)	0.77 (1.22)	0.03 (0.86)	0.20 (-)
(40)	CAGDP2	Mean/SD	1.08 (0.76)	-	1.26 (0.67)	1.01 (0.81)
	GROWTH	Mean/SD	2.86 (3.54)	2.16 (4.82)	2.21 (3.97)	4.23 (0.96)
Gambia, The	TBGDP2	Mean/SD	10.42 (5.48)	6.04 (5.25)	10.45 (3.98)	15.26 (2.42)
(41)	CAGDP2	Mean/SD	1.90 (5.63)	16.45 (1.90)	0.56 (3.13)	-0.06 (2.31)
	GROWTH	Mean/SD	3.74 (3.89)	4.11 (3.66)	4.01 (3.55)	2.61 (4.42)
Guinea-Bissau	TBGDP2	Mean/SD	10.62 (4.78)	13.86 (2.85)	11.79 (3.88)	4.87 (1.18)
(42)	CAGDP2	Mean/SD	11.97 (4.96)	-	15.17 (2.75)	8.78 (4.67)
	GROWTH	Mean/SD	5.18 (15.54)	9.85 (15.01)	1.66 (12.83)	4.71 (19.43)
Grenada	TBGDP2	Mean/SD	17.71 (3.00)	14.78 (1.06)	19.91 (1.47)	-
(44)	CAGDP2	Mean/SD	6.04 (6.66)	-0.39 (1.04)	2.82 (7.23)	10.54 (2.86)
	GROWTH	Mean/SD	3.86 (3.86)	4.21 (6.30)	4.61 (4.23)	2.86 (3.44)
Guatemala	TBGDP2	Mean/SD	1.84 (1.66)	0.81 (0.83)	0.92 (1.46)	3.32 (0.99)
(45)	CAGDP2	Mean/SD	1.63 (0.73)	1.33 (0.95)	1.64 (0.86)	1.65 (0.62)
	GROWTH	Mean/SD	3.48 (2.36)	5.63 (1.88)	1.61 (2.29)	3.37 (1.04)
Guyana	TBGDP2	Mean/SD	1.63 (3.04)	1.40 (3.33)	2.65 (0.84)	-
(46)	CAGDP2	Mean/SD	8.23 (2.74)	5.82 (2.98)	10.17 (2.15)	7.13 (1.18)
	GROWTH	Mean/SD	1.59 (7.91)	2.29 (6.90)	-2.39 (7.52)	4.94 (8.08)
Honduras	TBGDP2	Mean/SD	3.44 (3.24)	2.04 (1.80)	2.06 (1.65)	6.73 (3.05)
(48)	CAGDP2	Mean/SD	3.70 (1.39)	4.43 (0.66)	4.27 (1.70)	2.69 (0.75)
	GROWTH	Mean/SD	3.34 (4.14)	5.68 (5.16)	3.08 (2.60)	1.50 (3.94)
Haiti	TBGDP2	Mean/SD	3.28 (1.18)	2.56 (1.06)	4.03 (0.81)	3.85 (1.01)
(49)	CAGDP2	Mean/SD	1.09 (1.25)	0.82 (0.95)	2.15 (1.13)	0.18 (0.74)
	GROWTH	Mean/SD	5.19 (10.05)	2.91 (4.24)	-0.13 (3.55)	13.37 (13.86)
Indonesia	TBGDP2	Mean/SD	-2.52 (1.91)	-3.43 (2.52)	-2.73 (1.69)	-1.41 (0.83)
(50)	CAGDP2	Mean/SD	0.01 (0.06)	-	0.03 (0.09)	0.0004 (.0005)
	GROWTH	Mean/SD	5.97 (3.77)	7.76 (1.65)	6.03 (2.30)	4.42 (5.67)

Country	Variables (%)		1970-2000	1970-1979	1980-1989	1990-1999
India	TBGDP2	Mean/SD	0.44 (0.35)	0.25 (0.27)	0.82 (0.32)	0.26 (0.12)
(51)	CAGDP2	Mean/SD	-0.005 (0.038)	-0.03 (0.09)	0.0004	0.0002
					(0.0001)	(0.0001)
	GROWTH	Mean/SD	4.85 (2.90)	2.62 (3.93)	6.03 (1.10)	5.71 (2.20)
Jamaica	TBGDP2	Mean/SD	11.25 (5.13)	8.18 (3.75)	10.49 (3.93)	14.44 (5.13)
(53)	CAGDP2	Mean/SD	3.31 (2.93)	3.21 (3.92)	4.63 (3.34)	2.06 (1.73)
	GROWTH	Mean/SD	0.99 (4.34)	0.75 (6.51)	1.73 (3.81)	0.46 (2.74)
Jordan	TBGDP2	Mean/SD	25.50 (13.87)	33.93 (13.61)	29.85 (12.55)	13.20 (2.49)
(54)	CAGDP2	Mean/SD	1.96 (3.44)	0.55 (4.25)	3.04 (3.50)	2.02 (2.49)
	GROWTH	Mean/SD	5.78 (7.29)	9.50 (9.87)	3.55 (7.08)	5.05 (3.59)
Kenya	TBGDP2	Mean/SD	3.94 (1.78)	4.62 (2.08)	4.35 (1.72)	2.77 (0.96)
(55)	CAGDP2	Mean/SD	1.87 (2.15)	3.40 (2.94)	2.40 (2.28)	0.72 (0.76)
	GROWTH	Mean/SD	4.59 (5.17)	8.30 (7.68)	4.07 (2.91)	2.02 (1.77)
Korea	TBGDP2	Mean/SD	1.37 (2.75)	3.55 (1.59)	0.63 (2.48)	0.25 (2.86)
(57)	CAGDP2	Mean/SD	0.04 (0.13)	0.12 (0.25)	0.04 (0.13)	0.02 (0.06)
	GROWTH	Mean/SD	7.16 (4.22)	8.55 (2.59)	7.25 (4.20)	5.76 (5.45)
Sri Lanka	TBGDP2	Mean/SD	2.14 (1.43)	1.11 (1.35)	3.08 (1.60)	2.30 (0.38)
(59)	CAGDP2	Mean/SD	1.32 (0.90)	0.97 (0.66)	1.80 (1.21)	1.01 (0.38)
	GROWTH	Mean/SD	3.96 (2.52)	3.03 (1.76)	4.59 (2.43)	3.93 (3.16)
Morocco	TBGDP2	Mean/SD	3.63 (1.74)	4.05 (2.68)	3.83 (1.39)	3.05 (0.61)
(62)	CAGDP2	Mean/SD	0.51 (0.85)	0.56 (1.25)	0.68 (1.09)	0.32 (0.27)
	GROWTH	Mean/SD	3.75 (4.91)	5.39 (2.02)	3.79 (4.68)	2.61 (6.82)
Madagascar	TBGDP2	Mean/SD	1.70 (1.13)	1.32 (1.31)	1.87 (1.20)	2.14 (0.46)
(63)	CAGDP2	Mean/SD	2.76 (2.02)	2.13 (2.82)	3.46 (2.51)	2.49 (0.31)
	GROWTH	Mean/SD	1.32 (2.43)	0.85 (2.85)	1.23 (2.31)	1.65 (2.42)
Mexico	TBGDP2	Mean/SD	0.64 (1.66)	1.40 (0.56)	-0.98 (1.65)	1.40 (1.35)
(64)	CAGDP2	Mean/SD	-0.006 (0.04)	0.002 (-)	-0.02 (0.06)	0.002 (0.001)
	GROWTH	Mean/SD	3.85 (3.55)	6.22 (1.91)	1.98 (4.02)	3.09 (2.88)
Mali	TBGDP2	Mean/SD	3.54 (2.15)	3.54 (2.15)	-	-
(65)	CAGDP2	Mean/SD	3.34 (1.28)	2.74 (2.10)	3.88 (1.06)	3.04 (0.64)
	GROWTH	Mean/SD	3.07 (5.64)	4.90 (5.20)	0.31 (6.22)	4.18 (5.15)
Mozambique	TBGDP2	Mean/SD	3.75 (0.73)	-	-	3.75 (0.73)
(66)	CAGDP2	Mean/SD	3.51 (0.71)	-	3.77 (0.43)	3.21 (0.86)
	GROWTH	Mean/SD	0.72 (8.32)	0.69 (10.44)	-1.84 (8.85)	2.67 (5.62)
Mauritania	TBGDP2	Mean/SD	0.09 (5.31)	3.84 (3.32)	-2.05 (5.17)	-
(67)	CAGDP2	Mean/SD	5.19 (4.78)	7.04 (1.37)	8.19 (4.19)	0.81 (3.17)
	GROWTH	Mean/SD	1.34 (7.67)	2.94 (8.11)	-1.07 (6.46)	2.32 (8.52)
Mauritius	TBGDP2	Mean/SD	2.94 (2.15)	2.96 (2.29)	2.92 (2.13)	-
(68)	CAGDP2	Mean/SD	1.22 (1.63)	3.35 (1.43)	1.10 (1.82)	0.58 (0.72)
	GROWTH	Mean/SD	5.36 (4.15)	6.31 (6.17)	4.43 (4.10)	5.18 (1.49)
Malawi	TBGDP2	Mean/SD	3.42 (2.20)	4.72 (2.01)	2.23 (2.22)	3.51 (1.74)
(69)	CAGDP2	Mean/SD	4.63 (3.29)	7.70 (4.25)	3.54 (2.74)	4.95 (3.17)
	GROWTH	Mean/SD	4.56 (7.77)	7.75 (6.53)	2.01 (2.55)	4.70 (11.41)
Malaysia	TBGDP2	Mean/SD	-3.15 (3.23)	-4.20 (2.92)	-3.66 (2.60)	-1.18 (3.43)
(70)	CAGDP2	Mean/SD	0.03 (1.27)	-0.26 (2.81)	0.14 (0.38)	0.09 (0.28)
	GROWTH	Mean/SD	6.66 (2.99)	7.53 (2.90)	5.62 (3.38)	6.83 (2.80)
Niger	TBGDP2	Mean/SD	1.07 (0.83)	1.07 (0.83)	-	-
(71)	CAGDP2	Mean/SD	3.24 (1.91)	3.80 (2.35)	3.45 (2.06)	2.34 (0.82)
	GROWTH	Mean/SD	1.35 (7.17)	1.10 (10.30)	0.45 (7.61)	1.92 (2.95)
Nigeria	TBGDP2	Mean/SD	-4.63 (6.11)	-6.47 (8.28)	-2.83 (5.77)	-4.58 (2.78)
(72)	CAGDP2	Mean/SD	-	-	-	-
	GROWTH	Mean/SD	1.38 (8.95)	3.85 (10.07)	1.63 (7.48)	1.04 (7.43)

Country	Variables (%)		1970-2000	1970-1979	1980-1989	1990-1999
Nicaragua	TBGDP2	Mean/SD	5.07 (4.78)	0.75 (2.45)	6.20 (1.52)	9.47 (3.32)
(73)	CAGDP2	Mean/SD	6.93 (3.28)	0.02 (3.28)	7.90 (1.48)	8.21 (1.92)
	GROWTH	Mean/SD	0.20 (7.27)	0.85 (10.46)	-0.95 (7.07)	-0.31 (2.92)
Nepal	TBGDP2	Mean/SD	2.69 (0.77)	1.73 (0.37)	2.95 (0.49)	2.96 (0.80)
(74)	CAGDP2	Mean/SD	0.89 (0.55)	0.06 (0.33)	1.00 (0.46)	1.13 (0.43)
	GROWTH	Mean/SD	4.31 (3.19)	4.00 (2.98)	4.14 (4.59)	4.63 (1.84)
Pakistan	TBGDP2	Mean/SD	1.97 (1.30)	2.15 (1.50)	2.75 (1.17)	1.06 (0.35)
(75)	CAGDP2	Mean/SD	0.43 (0.69)	1.39 (0.96)	0.48 (0.60)	0.03 (0.10)
	GROWTH	Mean/SD	5.26 (2.50)	4.58 (2.91)	7.47 (1.43)	3.73 (1.42)
Panama	TBGDP2	Mean/SD	14.19 (3.83)	17.04 (3.18)	12.45 (4.67)	13.06 (1.34)
(76)	CAGDP2	Mean/SD	2.20 (3.96)	5.56 (1.32)	0.66 (4.88)	2.47 (2.92)
	GROWTH	Mean/SD	3.67 (4.82)	4.51 (2.25)	2.78 (7.94)	3.81 (2.41)
Peru	TBGDP2	Mean/SD	0.51 (1.96)	-0.30 (2.15)	-0.51 (1.29)	2.24 (1.10)
(77)	CAGDP2	Mean/SD	0.18 (0.71)	0.48 (2.05)	0.28 (0.52)	0.002 (0.0006)
	GROWTH	Mean/SD	2.15 (6.34)	3.08 (3.79)	-0.07 (9.18)	3.41 (4.92)
Philippine	TBGDP2	Mean/SD	2.15 (1.87)	1.65 (1.06)	1.84 (0.98)	3.36 (2.37)
(78)	CAGDP2	Mean/SD	0.04 (0.32)	0.41 (0.71)	-0.01 (0.31)	0.0007 (0.001)
	GROWTH	Mean/SD	3.52 (3.46)	5.74 (1.31)	1.90 (4.58)	3.04 (2.82)
Papua New	TBGDP2	Mean/SD	-0.10 (4.15)	0.94 (3.92)	2.51 (2.43)	-3.65 (3.37)
Guinea (79)	CAGDP2	Mean/SD	1.48 (2.95)	-1.09 (1.22)	3.82 (2.14)	0.03 (2.37)
	GROWTH	Mean/SD	2.57 (6.47)	4.10 (6.81)	1.25 (3.68)	2.52 (8.45)
Paraguay	TBGDP2	Mean/SD	2.17 (1.81)	1.14 (1.17)	2.25 (1.75)	4.06 (1.58)
(80)	CAGDP2	Mean/SD	1.66 (1.75)	2.24 (0.87)	2.75 (1.78)	0.38 (1.24)
	GROWTH	Mean/SD	4.46 (4.12)	7.46 (3.66)	4.10 (3.98)	2.82 (3.05)
Rwanda	TBGDP2	Mean/SD	2.80 (1.46)	1.04 (0.58)	4.30 (0.63)	2.98 (0.44)
(81)	CAGDP2	Mean/SD	1.01 (1.23)	-0.44 (1.74)	1.84 (0.63)	0.85 (0.89)
	GROWTH	Mean/SD	2.78 (16.06)	5.30 (5.43)	3.33 (5.13)	-0.23 (27.59)
Senegal	TBGDP2	Mean/SD	4.72 (1.73)	4.72 (1.73)	-	-
(82)	CAGDP2	Mean/SD	3.83 (1.95)	3.53 (1.84)	5.30 (1.81)	2.53 (1.03)
	GROWTH	Mean/SD	2.75 (5.08)	2.41 (6.31)	2.46 (6.40)	3.09 (2.38)
Sierra Leone	TBGDP2	Mean/SD	2.54 (2.39)	3.23 (2.05)	2.64 (3.09)	1.25 (1.47)
(84)	CAGDP2	Mean/SD	2.16 (3.13)	5.96 (2.85)	1.52 (3.33)	1.33 (1.29)
	GROWTH	Mean/SD	0.27 (6.49)	-1.13 (7.02)	3.46 (5.08)	-2.48 (6.50)
Salvador, El	TBGDP2	Mean/SD	3.07 (3.26)	0.29 (1.04)	1.56 (0.81)	6.73 (1.55)
(85)	CAGDP2	Mean/SD	0.95 (0.89)	0.44 (1.49)	1.23 (0.95)	0.84 (0.50)
	GROWTH	Mean/SD	2.08 (4.44)	3.98 (3.05)	-1.77 (5.15)	4.22 (1.91)
Seychelles	TBGDP2	Mean/SD	27.22 (4.99)	31.36 (-)	27.74 (5.45)	27.53 (2.13)
(87)	CAGDP2	Mean/SD	6.62 (3.68)	3.21 (1.94)	8.13 (3.01)	6.47 (4.07)
	GROWTH	Mean/SD	4.44 (7.23)	9.04 (6.28)	1.43 (9.31)	3.53 (3.71)
Syria	TBGDP2	Mean/SD	4.41 (4.53)	7.04 (3.16)	6.52 (4.13)	0.67 (2.47)
(88)	CAGDP2	Mean/SD	0.33 (1.67)	-1.10 (3.40)	1.27 (1.35)	-0.15 (0.88)
	GROWTH	Mean/SD	6.21 (10.21)	8.81 (15.95)	4.11 (9.29)	6.15 (3.34)
Chad	TBGDP2	Mean/SD	2.46 (0.69)	2.46 (0.69)	-	-
(89)	CAGDP2	Mean/SD	0.63 (1.01)	1.14 (0.87)	0.17 (1.04)	1.24 (0.55)
	GROWTH	Mean/SD	1.61 (14.40)	6.74 (17.47)	-2.52 (15.60)	1.37 (10.38)
Togo	TBGDP2	Mean/SD	5.42 (5.48)	4.90 (6.92)	9.33 (1.01)	4.47 (1.53)
(90)	CAGDP2	Mean/SD	3.50 (3.55)	6.86 (6.33)	2.01 (1.35)	2.97 (0.71)
	GROWTH	Mean/SD	1.11 (8.75)	0.15 (11.30)	4.25 (7.91)	-0.83 (7.30)
Thailand	TBGDP2	Mean/SD	2.02 (1.71)	2.16 (0.51)	2.28 (1.15)	1.99 (2.54)
(91)	CAGDP2	Mean/SD	0.10 (0.37)	0.53 (0.75)	0.007 (0.10)	0.001 (0.002)
	GROWTH	Mean/SD	6.18 (4.35)	6.94 (2.98)	6.80 (2.85)	4.91 (6.50)

Country	Variables (%)		1970-2000	1970-1979	1980-1989	1990-1999
Trinidad & Tobago (92)	TBGDP2	Mean/SD	-2.13 (5.53)	-0.82 (7.46)	-3.06 (4.42)	-1.90 (4.47)
	CAGDP2	Mean/SD	-0.0001 (4.69)	-4.20 (4.04)	2.09 (4.83)	0.004 (3.53)
	GROWTH	Mean/SD	2.74 (8.17)	4.93 (6.41)	1.07 (6.61)	2.32 (11.26)
Tunisia (93)	TBGDP2	Mean/SD	5.00 (1.68)	5.33 (2.56)	5.04 (1.28)	4.73 (0.77)
	CAGDP2	Mean/SD	1.73 (1.40)	3.83 (1.35)	1.77 (1.27)	0.91 (0.54)
	GROWTH	Mean/SD	5.31 (3.18)	7.37 (3.61)	3.88 (3.43)	5.00 (1.57)
Turkey (94)	TBGDP2	Mean/SD	2.89 (1.32)	2.71 (1.44)	2.25 (0.98)	3.45 (1.13)
	CAGDP2	Mean/SD	0.07 (0.25)	0.16 (0.38)	0.06 (0.27)	0.02 (0.10)
	GROWTH	Mean/SD	4.22 (4.00)	4.74 (3.49)	4.05 (3.94)	3.69 (4.90)
Tanzania (96)	TBGDP2	Mean/SD	5.76 (2.04)	5.08 (2.65)	6.55 (1.92)	5.75 (1.22)
	CAGDP2	Mean/SD	4.57 (1.92)	3.41 (3.12)	4.10 (1.44)	5.67 (1.43)
	GROWTH	Mean/SD	2.47 (10.47)	4.68 (4.09)	0.29 (16.74)	2.48 (6.92)
Uganda (97)	TBGDP2	Mean/SD	4.81 (2.63)	6.97 (2.03)	-	3.00 (1.63)
	CAGDP2	Mean/SD	1.51 (1.11)	-	1.07 (1.36)	1.95 (0.56)
	GROWTH	Mean/SD	4.18 (8.43)	-0.59 (8.32)	5.99 (11.45)	6.73 (1.68)
Uruguay (98)	TBGDP2	Mean/SD	1.08 (1.95)	0.99 (1.22)	-0.04 (2.31)	2.06 (1.67)
	CAGDP2	Mean/SD	0.98 (1.50)	2.25 (1.32)	1.23 (1.86)	0.40 (0.99)
	GROWTH	Mean/SD	2.08 (5.17)	2.81 (3.23)	0.17 (7.37)	3.68 (3.69)
Zambia (102)	TBGDP2	Mean/SD	-5.69 (6.03)	-9.51 (6.28)	-2.26 (2.31)	-0.29 (1.18)
	CAGDP2	Mean/SD	3.14 (4.38)	-0.07 (1.28)	3.35 (5.25)	4.63 (2.88)
	GROWTH	Mean/SD	1.58 (4.00)	2.27 (4.98)	1.33 (3.51)	0.98 (3.96)
Zimbabwe (103)	TBGDP2	Mean/SD	1.07 (1.35)	-1.43 (-)	0.88 (1.45)	1.68 (0.70)
	CAGDP2	Mean/SD	2.32 (1.83)	1.35 (3.19)	2.62 (1.81)	1.77 (0.90)
	GROWTH	Mean/SD	3.40 (5.67)	3.93 (6.57)	5.00 (4.85)	2.07 (5.51)
World	TBGDP2	Mean/SD	3.77 (1.17)	3.22 (6.97)	3.76 (7.25)	4.10(3.76)
	CAGDP2	Mean/SD	2.101(0.75)	2.15 (3.23)	2.02 (3.44)	1.59 (2.02)
	GROWTH	Mean/SD	3.50(1.27)	4.61(6.82)	3.49 (6.61)	3.30 (3.49)

Names and Sources of Variables

Sources and Descriptions of the Variables Used in the Regression

GROWTH	Real per capita growth rate of GDP per year for example G7089=(log(GDP89) –log(GDP70))/19; Periods 1970-89, 1980-89,1989-98. Summers, Heston and Aten (2002)
LRGDPCH	Real GDP per capita in (1996 international prices) Source: Heston, Summers and Aten (2002)
LIBER_SW_1970-89	Openness indicator for 1970-89.
LIBER_SW_xx	Cross-sectional openness indicator constructed from Sachs and Warner's liberalisation dates fro xx=1070,1980, 1989
LIBER_WW_1990-99	Openness Indicator for 1990-99, constructed by Wacziarg and Welch
POL	Composite dummy variables indicating extreme political repression and unrest: Sachs and Warner (1995)
SEC	Secondary School enrolment rate, 1970,1980, 1985. Source: Barro and Lee (1994)
PRI	Primary School Enrolment rate, 1970, 1980, 1985. Source: Barro and Lee(1994)
GVXDXE	Ratio of government consumption spending net of spending on the military and education to real GDP, averaged 1970-84, Source: Barro and Lee (1994)
CG	Ratio of Real Government Consumption expenditure to real GDP for periods 1970-80, 1980-89 and 1989-98. Source: Heston, Summers and Aten (2002)
REVCOUP	Number of revolutions and coups per year, averaged over period 1970-85, Source: Barro and Lee (1994)
REVOL	Number of revolutions per year, averaged over periods 1970-80, 1980-89 and 1990-98. Source: Banks (2001)
ASSASS	Number of assassinations per million population per year, averaged over the relevant period, 1970-85, 1970-80, 1980-1989 and 1989-1998. Source: Banks(2001)
PPIDEV	The deviation of the log of the price level of investment (PPP investment divided by exchange rate relative to the United States) from the cross-country sample mean in 1970. Source: Heston, Summers and Aten (2002)
INV	Ratio of real gross domestic investment (public and private) to real GDP, averaged over the period 1970-89. Source: Barro and Lee (1994)
DENSI	Population (in thousands) divided by land area (in square meters), 1960,1970, 1980. Source: Heston, Summers and Aten (2002)(population data) and CIA World Factbook (land area)
	FIXED and Random Effects Models
GROWTH	Real per capita growth rate of GDP per year (annual data). Source: Heston, Summers and Aten (2002)
INVESTMENT	Investment rate. Source: Heston, Summers and Aten (2002)
OPENNESS	Ratio of imports plus exports to GDP. Source: Summers, Heston and Aten (2002)

Variables

ADVGR	Growth rate in developed countries (%)
CA	Current account
CAGDP	Current account balance to GDP
CAGDP1	Current account balance to GDP (%)
CAGDP2	CAGDP*(-1) = current account deficits to GDP % (+ve)
CG	Government share of CGDP
CGDP	Real Gross Domestic Product per Capita (current prices)
CI	Investment share of CGDP
CINTEREST	Annual percentage change in world interest rate (%)
DEBRSIMP	Debt service as a percentage of total imports (%)
DEBT	Long term outstanding debt (US$ mil.)
GDEBTSIMP	Percentage change in debt service in total imports of goods and services (%)
GROIL	Annual percentage change in oil price (%)
GROWTH	Annual percentage change in real GDP using Heston, Summer and Aten's Purchasing Power Parity Real GDP
INTEREST	World interest rate
KI	Investment share of RGDPL
LIBADVGR	Liberalisation dummy interacting with developed countries growth rates (%)
LIBER	Liberalisation dummy taking the value 1 when the country was liberalised
LIBERTM	Time period elapsed from date of liberalisation
LIBGROWTH	Liberalisation dummy interacting with growth in country under consideration
LIBPPI	Liberalisation dummy interacting with income terms of trade (index)
OIL	Crude oil price
OPENK	Openness as a percentage to constant price GDP (%)
OPENNESS	Exports plus imports as a share of GDP (%)
PPI	Income terms of trade = (value of exports / unit value of imports) * 100
RERI	Real Exchange rate
TB	Trade balance
TBGDP	Trade balance to GDP
TBGDP1	Trade balance to GDP (%)
TBGDP2	TBGDP * (-1) = trade deficits to GDP % (+ve)