ECONOMIC OPENNESS, EXTERNAL FINANCING AND SUSTAINED GROWTH

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ABSTRACT

In this paper we make explicit the relationship that exists between a set of structural reforms –as those undertaken in Argentina at the beginnings of the nineties– and the growth process that they generate. It is argued that such reforms, and particularly those related to the external sector, improve the efficiency in resource allocation and hence bring about an increase in the marginal productivity of the existing per capita capital stock. This improvement in efficiency puts the economy on a growth path having either temporary or permanent characteristics. In this model, as in other intertemporal paradigms of open economies with optimizing agents, the country resorts to the international credit market in order to finance higher consumption and investment levels.

The paper also offers empirical evidence on a set of countries which implemented reforms deemed to be successful in terms of the evolution of the key economic variables, that is, the rate of per capita gross domestic product, the gross investment to product ratio, and the product to capital incremental ratio (as an approximation to the marginal productivity of capital). Additionally, we trace the changes in the openness coefficient as an indicator of the scope of one of the reforms that attend successful structural changes.

Based on the results obtained from the model and the international empirical evidence,it is recommended to deepen the overall policy of structural reforms –of which external openness is a part– in order to generate a sustained growth process.

SINTESIS

En este artículo se explicita la relación existente entre un conjunto de reformas estructurales, como las llevadas a cabo en Argentina a principios de la década del 90, y el proceso de crecimiento que este conjunto de medidas genera. Se argumenta que dichas reformas, y en particular las relacionadas con el sector externo, al mejorar la eficiencia en la asignación de recursos inducen un incremento en la productividad marginal del acervo de capital per cápita existente. Esta mejora en la eficiencia ubica a la economía en un sendero de crecimiento de características transitorias o permanentes, dependiendo de la intensidad de las reformas. En este modelo, como en otros paradigmas intertemporales de economías abiertas con agentes que optimizan, el

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país recurre al mercado internacional de crédito con la finalidad de financiar mayores niveles de consumo e inversión.

El artículo presenta además, evidencia empírica, para un conjunto de países que llevaron a cabo cambios de régimen considerados exitosos de acuerdo con la evolución de las variables macroeconómicas claves, esto es la tasa de crecimiento del producto bruto interno per cápita, la relación inversión bruta sobre producto, el ahorro, y la relación incremental producto sobre capital (como aproximación de la productividad marginal del capital). Adicionalmente se siguen los cambios en el coeficiente de apertura económica como indicador del alcance de una de las reformas que acompañan a los cambios de régimen exitosos.

A partir de los resultados obtenidos del modelo y de la evidencia empírica internacional se recomienda la profundización de la política integral de reformas estructurales, de la cual forma parte la apertura externa, en orden a generar un proceso de crecimiento sostenido.

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1. INTRODUCTION[1]

The economic plan implemented in Argentina since April 1991 represents a new stabilization attempt aimed at creating the bases for a sustained economic growth. The government expected to bring about a deep change in the existing regime so as to put economic agents' inflationary expectations under control through the explicit renunciation to continue collecting "seignorage rights" and inflationary taxes. This was implemented through a convertibility law which accompanied a global program of reforms consisting basically of the following elements: First, an integral reform of the State that would do away with fiscal and quasifiscal debts, through restructuring both public spending and revenues. Second, the reestablishment of the internal markets implemented primarily through privatization measures and the deregulation of the markets for goods and factors. Third, the integration to the world economy by liberalizing the trade not only of goods and services, but also of capitals.

The convertibility and its reforms restored increasing levels of confidence, both internal and external, to the economic agents. This renewed confidence reflected itself in an important inflow of capitals, as a counterpart to deficits in the balance of trade and in the current account, which allowed to finance greater investment levels. The change in the regime, in conjunction with the low levels attained by the capital stock by the end of the eighties, contributed to sharply increase the marginal productivity of capital. Both the higher investment rate as well as the improvements in productivity determined an important economic growth in the period 1991-1994. Though the panorama seems more than promising, there are, however, voices of alert as regards the sustainability of the program. The disadvantages that are most frequently stated with respect to the

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[1] We acknowledge the valuable comments to our first version of the paper made by the participants in the Conference on "Economic Development, human resources and technology" organized jointly by the Universidad de Chile and Universidad de Tucumán. Particularly those of the commentator Santiago Gastaldi.

continuity of the program can be summed up in two extreme outlooks: a) on the one hand, there are those who predict the breach of the program not only due to the inconvenience displayed by the behavior of the balance of trade and the current account, but also owing to the impossibility to maintain such imbalances over time, b) on the other hand, those who see the program coming to an end due to the insufficiency in either the amount or the depth of the measures adopted since its implementation. Accordingly, both positions propose radically opposed courses of action. While in the first case the advice is to revert the measures adopted up to the present, especially those in relation to the opening of the economy, in the second case, the prescription is to accelerate and deepen the economic reforms undertaken. In other words, among economists and laymen the following issues are raised: Is it possible to maintain trade and current account deficits of a magnitude and duration such as those which the Argentinean economy is withstanding? In the event that it is possible, is it advisable that it should occur?; on the other hand, Are the structural reforms initiated sufficient or is it important to intensify their implementation? What does the sufficiency of these reforms depend on to attain a sustained growth?

In this paper we attempt to analyze and answer these issues with some analytical rigor. To do so, we make explicit the relationship that exists between a set of structural reforms and the growth process that these policies generate. The formalization of these relationships is accomplished in a dynamic model which enables to integrate the analysis of the current account in the balance of payments with the modern saving and investment theories. The deficit in the current account represents the external saving that complements the national saving to finance investment and as such, it is the outcome of intertemporal microeconomic decisions to save and invest made by the country's residents. This approach differs drastically from the traditional partial equilibrium approach, which describes the current account as a static balance between imports and exports, having hardly as little sense as the one-period saving and investment theories. In Sachs' (1981) words, which hold fully in the discussion regarding the current Argentinean program:

> "economic and political thought is still trapped by the mercantilistic idea that deficits reflect excesses in spending and therefore require adjustments".

It is for this reason that in this paper we emphasize that the disequilibria in the current account reflect expectations regarding the future behavior of key macroeconomic variables, such as the marginal productivity of capital, which become decisive elements to determine the size and duration of such deficits. Accordingly, the responses which consumption and investment reflect today depend on the expectations regarding the future behavior of some economic variables.

In this sense, the model we use incorporates the idea that the structural reforms, by affecting the efficiency in resource allocation, increase the marginal productivity of the per capita capital stock in the economy. These reforms can originate two differentiated results: on the one hand, a temporary growth leading to a higher product level can be originated or, alternatively, the reforms may lead to a sustained growth process. The occurrence of one result or the other depends on the intensity of the reforms, in the sense that they are able to place the economy on a path of sustained endogenous growth. In both cases, the country has access to the international credit market to finance the higher investment levels, released due to a greater productivity of the country's resources, while at the same it increases the consumption level as a function of a higher permanent income accrued by the population following the reform. The increase in the capital stock and in the consumption level is financed by external funding, but after a time, the country substitutes the external saving by the national saving, generating surpluses in the trade account for real goods and services, such that their discounted value equals the value of the initial debt plus the real value of the deficits at the beginning. Following the discussion of several modifications to this central paradigm, the behavior of the model is evaluated, by performing an extensive review of the international empirical evidence that complements the results obtained analytically. In particular, it is important to emphasize that if the increase in productivity fostered by the reforms is perceived as permanent (since no reversal in the overall plan of structural reforms is expected), the increase in consumption and the deficit in the current account will be greater. This result is meaningful, given that in this case, the magnitude of the deficit can be a signal that economic agents believe in the permanence of the reforms and that, therefore, they can have access to the credit market to finance greater spending levels based on their perceived higher permanent income levels.

The main economic policy conclusions stemming from the analysis are clear, given that the possibility to attain a sustained growth only exists if the structural reforms undertaken are sufficiently fast and deep. In turn, international empirical evidence only confirms the general pattern already outlined above. After a successful change in the regime, which, among other measures, leads to an increase in the openness coefficient, the per capita product grows as a consequence of the greater rate of investment and its greater productivity. Also, in general, there takes place an immediate increase in per capita consumption, an outcome of the possibility offered by a greater permanent income and the access to the international credit market to finance it. The resulting external saving has a variable duration and magnitude; and in many cases significant and persistent surpluses may be reached, without involving, however, any danger to the consistency of the program. In particular, there arises –from the analysis made– a new argument in favor of deepening trade openness. As an important constituent in the program of structural reforms, it is expected that a fast and generalized trade openness will contribute to put a protracted period of sustained growth in operation.

2. STRUCTURAL REFORMS, INTENSITY OF THE REFORM, AND THE POSSIBILITY OF GENERATING A SUSTAINED GROWTH PROCESS

As stated earlier, the chief reforms established by the Convertibility Plan were an institutional change[2] that deeply modified the incentives for the country's different economic actors. The Plan's point of departure was the firm belief that the immediate elimination of the budget deficit, a broad process to liberate markets, the expedient privatization of State-owned enterprises and a process of financial reform and trade liberalization, would be the mainstays of a stabilization plan, which would, in addition, be attended by a process of sustained growth. In particular, the opening up of the economy was expected to be one of the main engines of the process of modernization and growth which the government attempted to set in operation.

However, the trade opening process has been traditionally defended – in economic literature – in terms purely of static efficiency. The advantages of trade integration with the world have been generally presented as the possibility that is offered to a country to specialize in its production pattern and to appropriate itself of trading gains by increasing the welfare level of its population. Additionally, international trade, by bringing about an increase in competitiveness of the markets, induces increases in productivity and permits taking advantage of economies of scale. Even though the association between the trade orientation and the growth rates faced by a country is extensively documented[3], Lucas (1988), among many others, has pointed out that trade liberalization brings about, in the neoclassical growth models in vogue until the eighties, improvements in static efficiencies, though not a higher growth rate. Since then, different approaches –that emphasize from increasing returns to scale up to the role of trade in increasing the amount or quality of the products that are available to an economy through having access to the results of spending in innovation and development– have supported the relationship between trade and growth. The model, presented in this section, represents a variation of the paradigm of an open economy with optimizing agents and increasing costs of capital installation. However, at odds with Blanchard and Fischer (1989), we assume the existence of an asymptotically linear production function, as did Jones and Manuelli (1990). Such variation, that of assuming a convex production technology, permits the introduction of endogenous growth as a response to a process of trade reform, retaining the possibility that an optimal resource allocation is attained by markets in perfect competition in a decentralized manner (with no government intervention). But the most novel element in the model is that it enables to introduce the treatment of

[2] The change in regime, owing to its institutional character, emphasizes the need that the State should foment the institutions which, through competitive incentives and a better allocation of resources, bring about endogenous growth. Cottani and Llach (1993) expand on the topic and place an emphasis on the institutional approach as an essential element in Argentina's economic reform in order to "recreate the culture of saving".

[3] Anne Krueger (1983).

the advantages and disadvantages of a gradual opening versus an abrupt and generalized liberalization.

The traditional discussion between gradualism and drastic liberalization has generally emphasized a long list of elements, most of which are in favor of a gradual opening (see Edwards, 1988). It has been argued that a gradual opening, if it attains the necessary credibility, would reduce the costs in terms of short-term unemployment in the Ricardo-Viner type models. On the other hand, gradual liberalization would reduce the level of consumption and disequilibrium in external financing at the initial stage of the Plan, as it does not involve such a marked reduction in intertemporal relative prices, thereby reducing the magnitude of the substitution between periods of consumption. Additionally, in countries with acute fiscal problems, a gradual reduction of protection would prevent the loss of government revenues, which in most of these countries are strongly concentrated in taxes to the external sector and which are difficult to replace at the beginning of a stabilization plan. All these factors, by increasing the feasibility of the reforms, may contribute indirectly –through a greater credibility– to make these policies more sustainable. A greater credibility will, in turn, bring about a faster reallocation of resources from the sectors where the relative price is reduced, thereby avoiding the postponement of investment decisions in the sectors that are benefitted and cutting down anticipated purchases of consumption goods (in the hope of a reversal in relative prices).

Contrariwise, the arguments in favor of an abrupt liberalization, have been much scarcer. In general, these arguments explain that a fast liberalization, by reducing the times for lobbying, would enable the government to overcome the resistance of the sectors that have been harmed the most, given that this would occur when the Executive Power still enjoys maximum support across the different sectors of society[4].

This paper introduces a new argument in favor of fast and generalized liberalization. If the reduction of the distortion is sufficiently intense, the productivity increase in the capital stock, that existed prior to the reform, will bring about a process of sustained growth financed by external saving. If the reform is not able to change resource allocation sufficiently, the effects of the reform will be temporary and the country, after a short period of time, will become stagnated once again, only that it will do so at higher per capita product and consumption rates. This paradigm presents an additional explanation to the fact that incomplete liberalizations have not been associated with successful growth processes and, therefore, to the fact that they were finally given up.

[4] See, for instance, Magee, Brock and Young (1989).

In what remains of this section, we develop the model, which is an extension of the growth paradigm for an open economy, with an investment function patterned after Hayashi (1982) similar to that forwarded in Blanchard and Fischer (1989). However, our model incorporates the possibility of generating endogenous growth, by assuming an asymptotically linear production function, as that resorted to by Jones and Manuelli (1990) and Rebelo (1991). Structural reforms, are modelled as a multiplicative shock (having an influence on marginal productivity of capital) and not anticipated in the production function. This shock may be of a permanent type, as is assumed in a greater part of the analysis, or temporary, in the event that after some time a reversal of those reforms were expected.

Then the optimization problem faced by a central planner[5] attempting to maximize the utility of the representative consumer may be stated in the following way:

$$\max\ U_0 = \int_0^{\infty} u\,(c_t)\ .\ e^{\delta t}\ dt$$

where u is the instantaneous utility function, which is increasing and concave, c is the per capita consumption and *delta* is the subjective discount rate, which is assumed to be positive. It is assumed, on the other hand, that U attains a limited value.

Maximization is performed subject to: given k_o, b_o, where they stand for the initial capital and external debt stocks, and subject to:

$$\frac{db}{dt} = c_t + i_t\ .\ \left[1 + T\left(\frac{i_t}{k_t}\right)\right] + \delta\ .\ b_t - f\,(k_t)$$

$$\frac{dk_t}{dt} = i_t$$

where the latter two constraints are, respectively, the budgetary constraint of an open economy (balance of payments) and the definition of the investment. In them, the change in the debt stock is defined as the difference between absorption (including consumption and investment plus their convex installation costs $T(.)$ and interest payments) and the total of what is produced $f(.)$ with the existing per capita capital stock (k).

[5] Blanchard and Fischer (1989) show the equivalence between resource allocation and the dynamic behavior attained by a decentralized economy and a centrally planned one.

On the other hand, it is necessary to fulfill an additional condition that implies assuming the non-existence of the possibility of "Ponzi game" type patterns

$$\lim_{t \to \infty} b_t \cdot e^{-\delta t} = 0$$

that is, not to permit the possibility that the debtor country may obtain more loans if its only means of repayment consists in applying indefinitely for new loans for the value of the maturity at each period. This constraint involves that the limit of the discounted value of the debt tends to zero.

In our case, in order to solve the maximization problem, we will assume a particular utility function, one of constant relative risk aversion:

$$u(c_t) = \frac{c_t^{(1-\tau)}}{1 - \tau}$$

which satisfies the requirements that the first and second derivatives have the usual signs:

$$u_c' = c_t^{-\tau} > 0$$

$$u_c'' = -\tau \cdot c_t^{-\tau-1} < 0$$

and the parameter τ (tao) represents the degree of relative risk aversion

$$\text{Relative risk aversion} = -\frac{c_t \cdot u''}{u'} = -\frac{\tau \cdot c_t^{-\tau-1} \cdot c_t}{c_t^{-\tau}} = \tau$$

where $\tau > 0$ (if it were equal to one, the utility function would then be a logarithmic).

In order to generate endogenous growth, in a context of an open economy, we assume an asymptotically linear production function, where *f(.)* is the per capita product, *k* the capital stock and *alpha* and *beta* the positive parameters, *z(.)* a productivity shock which is assumed to be inversely correlated with the level of distortions, *v*.

$$f(k_t) = z(v) \cdot \left[k_t^{\alpha} + \beta \cdot k_t\right]$$

$$\frac{\partial Z}{\partial v} < 0$$

$$0 < \alpha < 1$$

$$\beta > 0$$

$$T\left(\frac{i_t}{k_t}\right) = a \cdot \left(\frac{i_t}{k_t}\right)^2$$

with $a > 0$

The intertemporal optimization problem may then be stated as the following Hamiltonian:

$$H_t = \frac{c_t^{1-\tau}}{1-\tau} + \lambda_t \cdot \left\{ z(v) \cdot \left[k_t^{\alpha} + \beta \cdot k_t\right] - c_t - i_t \cdot \left[1 + a \cdot \left(\frac{i_t}{k_t}\right)^2\right] - \delta \cdot b_t \right\} + \lambda_t \cdot q_t \cdot i_t$$

whose first-order conditions are:

$$\frac{\partial H}{\partial c} = 0 \rightarrow c_t^{-\tau} = \lambda_t \tag{1}$$

$$\frac{\partial H}{\partial i} = 0 \rightarrow q_t = \left[1 + a \cdot \left(\frac{i_t}{k_t}\right)^2 + 2 \cdot a \cdot \left(\frac{i_t}{k_t}\right)^2\right] \tag{2}$$

$$\frac{\partial \lambda_t}{\partial t} = \delta \cdot \lambda_t - \frac{\partial H}{\partial b_t} = \delta \cdot \lambda_t - \delta \cdot \lambda_t = 0 \tag{3}$$

$$\frac{\partial \lambda_t q_t}{\partial t} = \delta \cdot \lambda_t \cdot q_t - \frac{\partial H}{\partial k_t} = \delta \cdot \lambda_t \cdot q_t - \lambda_t \left\{ z(v) \cdot \left[\alpha \cdot k_t^{\alpha-1} + \beta\right] + \frac{i_t}{k_t} \cdot 2a \cdot \left(\frac{i_t}{k_t}\right)^2 \right\} \tag{4}$$

given that $\frac{\partial \lambda_t}{\partial_t} = 0$, **then it is verified that:**

$$\frac{\partial q_t}{\partial t} = \delta \cdot q_t - \left\{ z(v) \cdot \left[\alpha \cdot k_t^{\alpha-1} + \beta\right] + 2a \cdot \left(\frac{i_t}{k_t}\right)^3 \right\}$$

and on the other hand, it is required that the transversality conditions be fulfilled for b_t and k_t, to avoid explosive solutions. Then the characteristics of the solution are the following:

$\lambda_t = \lambda_0$ is constant, meaning that

$$\frac{\partial \lambda_t}{\partial t} = - \tau \cdot \dot{c}_t \cdot c_t^{-r-1}$$

$$\frac{\dot{\lambda}_t}{\lambda_1} = - \tau \cdot \frac{\dot{c}_t}{c_t}$$

As $\dot{\lambda}_t = 0 \rightarrow \dot{c}_t = 0 \rightarrow c_t = c_0$ is constant, therefore consumption between different periods is constant.

The motion equations of the system are:

$$q_t = 1 + 3a \cdot \left(\frac{i_t}{k_t}\right)^2 \quad \text{"o"} \quad 2\sqrt{(q_1 - 1) \cdot \frac{1}{3a}} \cdot k_t = \frac{\partial k_t}{\partial t} \tag{5}$$

$$\frac{\partial q_t}{\partial_t} = \delta \cdot q_t - \left\{ z(v) \cdot \left[\alpha \cdot k_t^{\alpha-1} + \beta\right] + 2a \cdot \left(\frac{i_t}{k_t}\right)^3 \right\} \tag{6}$$

In the "steady state"

$$\frac{\partial k_t}{\partial t} = 0 \rightarrow q_t^* = 1 \tag{7}$$

$$\frac{\partial q_t}{\partial t} = 0 \rightarrow \delta \cdot q_t = z(v) \cdot \left[\alpha \cdot k_t^{\alpha-1} + \beta\right] \rightarrow \alpha - 1\sqrt{\left(\frac{\delta \cdot q_t}{z(v)} - \beta\right) \cdot \frac{1}{\alpha}} = k_t^* \tag{8}$$

For a solution to (8) with $k_t^* > 0$ it must be verified that:

$$\frac{\delta \cdot q_t}{z(v)} > \beta$$

Associated with this solution, it is possible to approximate the dynamic behavior of the system in the vicinity of the "steady state" as follows:

$$\begin{bmatrix} \frac{\partial k_t}{\partial t} \\ \frac{\partial q_t}{\partial t} \end{bmatrix} = \begin{bmatrix} 0 & k^* \cdot \psi' (1) \\ -z(v) \cdot \alpha \cdot (\alpha - 1) k_t^{*\alpha-2} & \delta \end{bmatrix} \cdot \begin{bmatrix} k - k^* \\ q - 1 \end{bmatrix}$$

$$k_t = A_0 \cdot e^{\lambda 1 t} + A_1 \cdot e^{\lambda 2 t} + k^*$$

$$q_t = B_0 \cdot e^{\lambda 1 t} + B_1 \cdot e^{\lambda 2 t} + 1$$

Given that it is verified that:

Trace $A > 0$

$|A| < 0$

Then, it can be concluded that the system has a saddle strap path solution bearing in mind that:

$$\lambda_1 \cdot \lambda_2 = |A|$$

Trace $$A = \lambda_1 + \lambda_2$$

$$\lambda_1 > 0; \ \lambda_2 < 0$$

It is verified that the roots of the system are: one of them negative and the other positive, with the following values:

$$\lambda_1 = \frac{\delta + \sqrt{\delta^2 - 4\psi' (1) \cdot k^{*\alpha-1} \cdot z(v) \cdot \alpha \cdot (\alpha - 1)}}{2}$$

$$\lambda_2 = \frac{\delta - \sqrt{\delta^2 - 4\psi' (1) \cdot k^{*\alpha-1} \cdot z (v) \cdot \alpha \cdot (\alpha - 1)}}{2}$$

Given that $A_0 = B_0 = 0$ then it is verified that:

$$k = k^* + (k_0 - k^*) \cdot e^{\lambda 2 t}$$

$$q = 1 + (q_0 - 1) \cdot e^{\lambda 2 t}$$

These two equations represent the evolution of the capital stock and its relative price along the saddle path. However, our interest is to observe the behavior of the economic system vis à vis disturbances in capital productivity, assuming that the reform processes give rise to significant improvements in the allocative efficiency of resources. Therefore, let us assume that this economy is in its stationary state until the government at time $t = t_0$ decides to undertake structural reforms –among which external openness has a salient place– which bring about an increase in capital productivity in a permanent manner, given that it is assumed that these reforms are long-lasting. Therefore

$$z_0 = z(v_0) \quad \text{if} \quad t < t_0$$

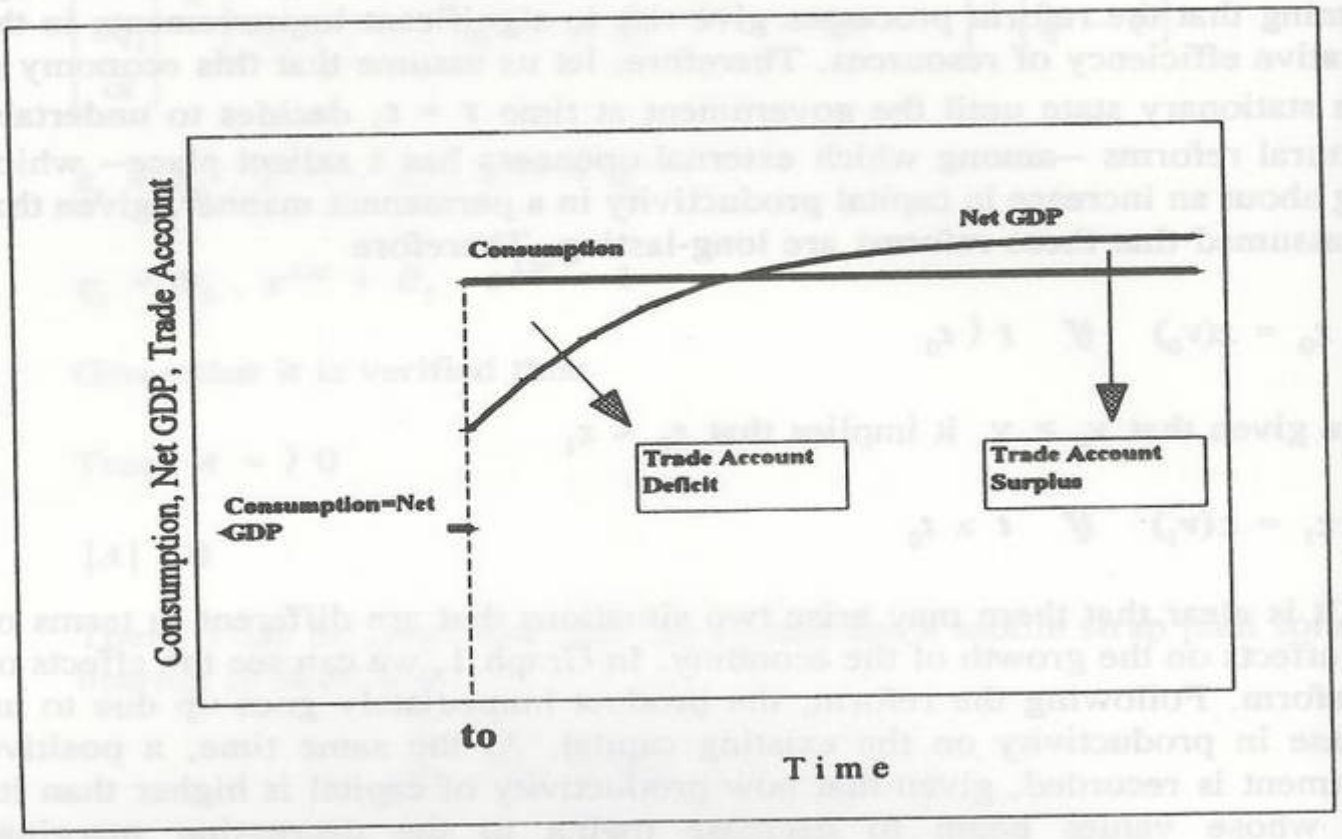
where given that $v_0 > v_1$ it implies that $z_0 < z_1$

$$z_1 = z(v_1) \quad \text{if} \quad t \geq t_0$$

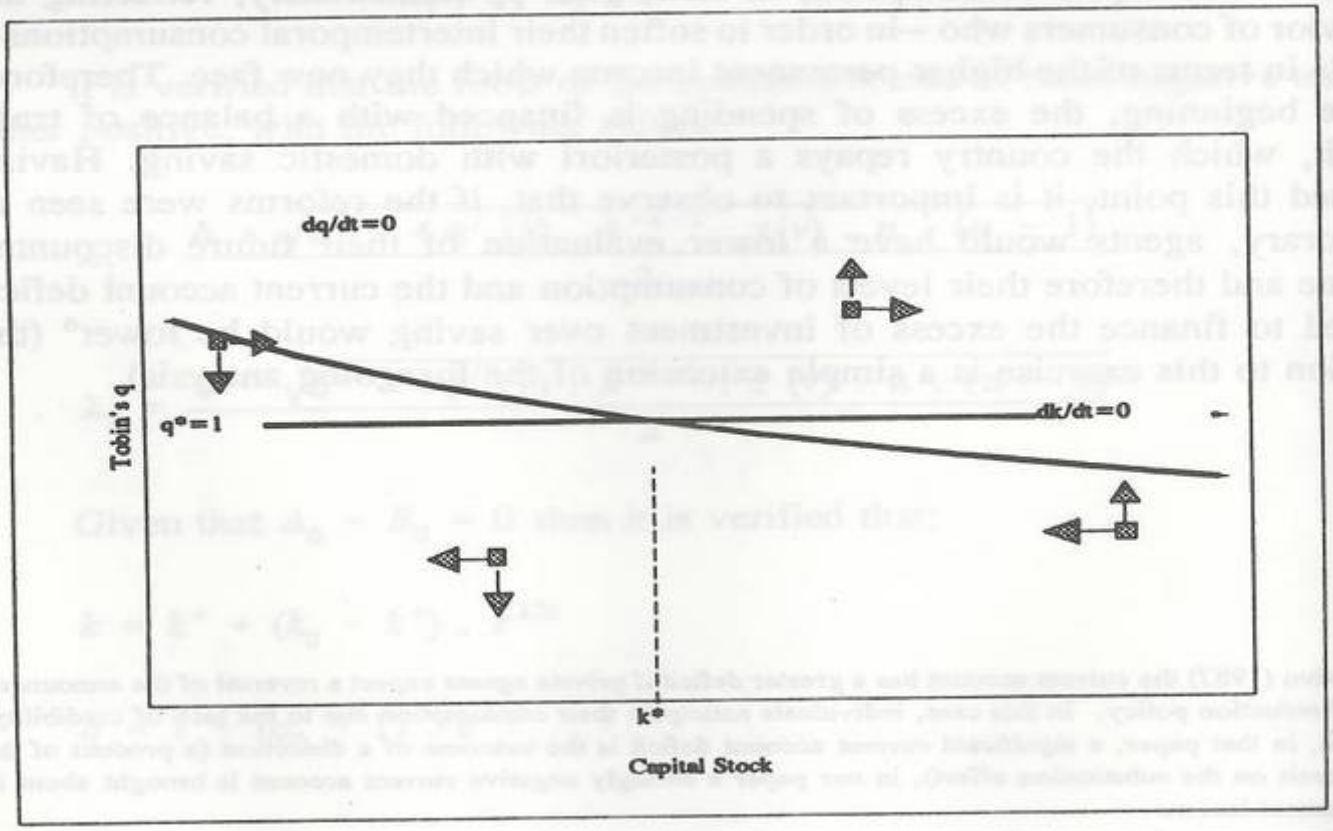
It is clear that there may arise two situations that are different in terms of their effects on the growth of the economy. In Graph 1, we can see the effects of the reform. Following the reform, the product immediately goes up due to an increase in productivity on the existing capital. At the same time, a positive investment is recorded, given that now productivity of capital is higher than its cost, whose values begin to decrease owing to the decreasing marginal productivity of capital. The net product, that is the difference between both of them, may increase or not, but for a wide set of parameters it is most likely that it grows. Per capita consumption, in turn, goes up immediately, reflecting the behavior of consumers who –in order to soften their intertemporal consumptions– decide in terms of the higher permanent income which they now face. Therefore, at the beginning, the excess of spending is financed with a balance of trade deficit, which the country repays a posteriori with domestic saving. Having reached this point, it is important to observe that, if the reforms were seen as temporary, agents would have a lower evaluation of their future discounted income and therefore their levels of consumption and the current account deficit needed to finance the excess of investment over saving would be lower[6] (the solution to this exercise is a simple extension of the foregoing analysis).

[6] In Calvo (1987) the current account has a greater deficit if private agents expect a reversal of the announced tariff reduction policy. In this case, individuals anticipate their consumption due to the lack of credibility. While, in that paper, a significant current account deficit is the outcome of a distortion (a product of the emphasis on the substitution effect), in our paper a strongly negative current account is brought about in permanent income.

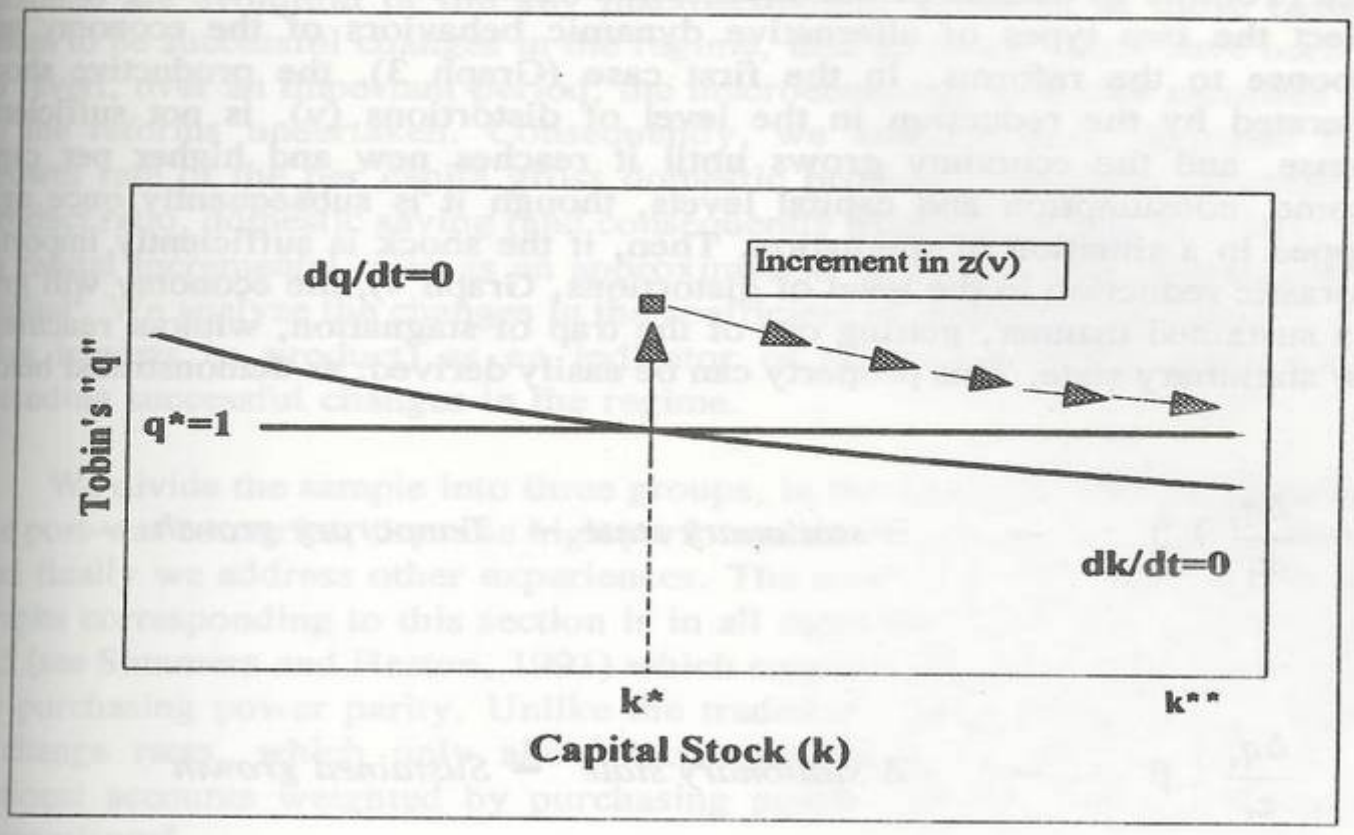
GRAPH 1
DYNAMICS OF A PRODUCTIVITY SHOCK



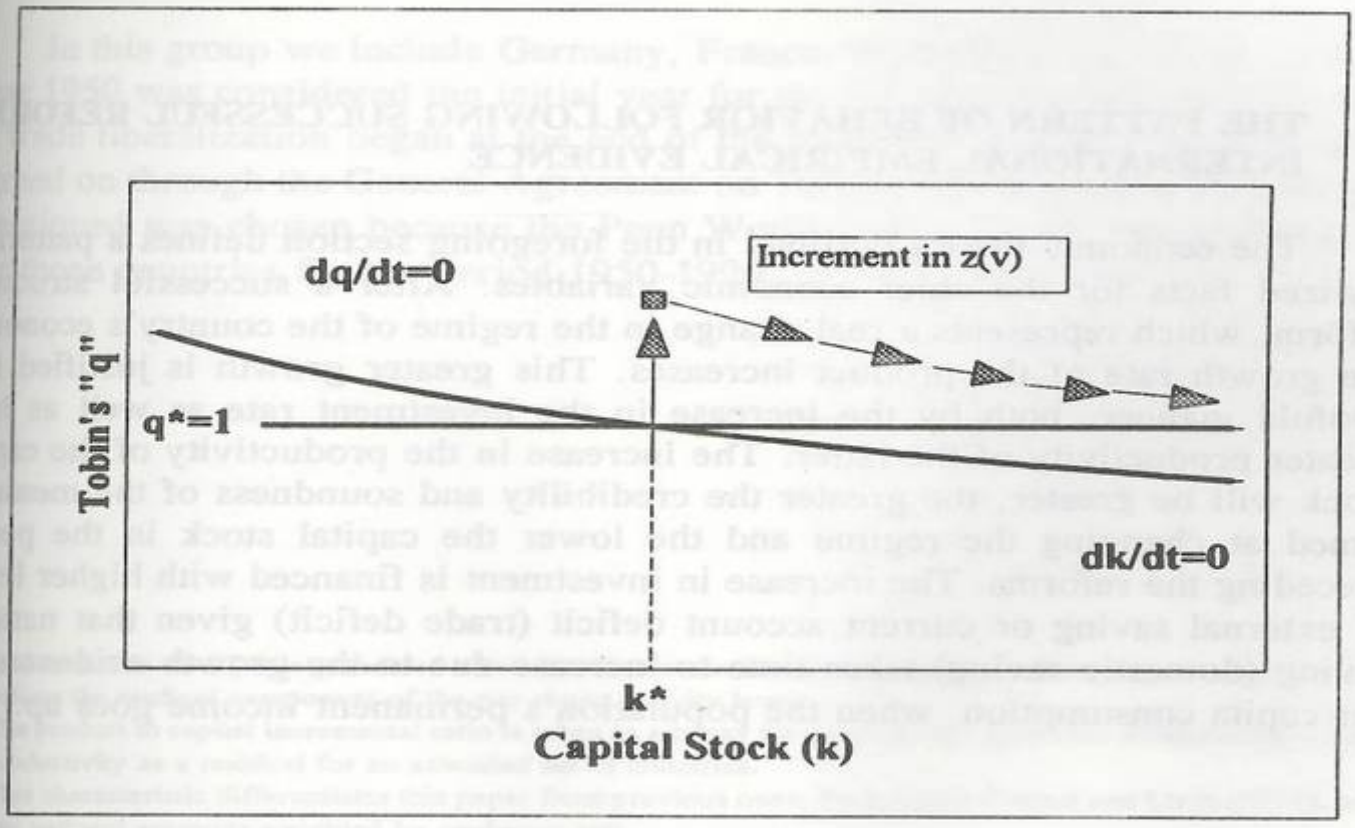
GRAPH 2
DYNAMICS: STOCK AND PRICE OF CAPITAL



GRAPH 3
TEMPORARY GROWTH



GRAPH 4
SUSTAINED GROWTH



Graph 2 is a phase diagram where the dynamics of the capital stock and its price (Tobin's q) outside of the equilibrium values can be seen. Graphs 3 and 4 reflect the two types of alternative dynamic behaviors of the economy as a response to the reforms. In the first case (Graph 3), the productive shock, generated by the reduction in the level of distortions (v), is not sufficiently intense, and the economy grows until it reaches new and higher per capita income, consumption and capital levels, though it is subsequently once again trapped in a situation of stagnation. Then, if the shock is sufficiently important (a drastic reduction in the level of distortions, Graph 4), the economy will grow in a sustained manner, getting out of the trap of stagnation, without reaching a new stationary state. This property can be easily derived, as demonstrated below:

$$\frac{\delta q_t}{z_1} > \beta \quad \rightarrow \quad \exists \textit{ stationary state} \rightarrow \textit{Temporary growth}$$

$$\frac{\delta q_t}{z_1} < \beta \quad \rightarrow \quad \nexists \textit{ stationary state} \rightarrow \textit{Sustained growth}$$

Therefore, the intensity of the reforms is what will enable the country to reach a process of sustained growth.

3. THE PATTERN OF BEHAVIOR FOLLOWING SUCCESSFUL REFORMS: INTERNATIONAL EMPIRICAL EVIDENCE

The economic theory outlined in the foregoing section defines a pattern of stylized facts for the chief economic variables. After a successful structural reform, which represents a real change in the regime of the country's economy, the growth rate of the product increases. This greater growth is justified in a twofold manner, both by the increase in the investment rate as well as by a greater productivity of the latter. The increase in the productivity of the capital stock will be greater, the greater the credibility and soundness of the measures aimed at changing the regime and the lower the capital stock in the period preceding the reforms. The increase in investment is financed with higher levels of external saving or current account deficit (trade deficit) given that national saving (domestic saving) takes time to increase due to the growth evidenced by per capita consumption when the population's permanent income goes up.

In order to corroborate the pattern that predicts this model of growth, we examine the evolution of the key macroeconomic variables in those cases we deem to be successful changes in the regime, that is, those which have been able to revert, over an important period, the macroeconomic behavior recorded prior to the reforms undertaken. Consequently, we analyze what happened to the growth rate of the per capita gross domestic product[7], the gross investment to product ratio, domestic saving (and consequently external saving) and the product to capital incremental ratio as an approximation to the marginal productivity of capital[8]. We analyze the changes in the coefficient of economic openness (exports plus imports to product) as an indicator of the scope of the main reforms attending successful changes in the regime.

We divide the sample into three groups, in the first place the teachings from the post-war countries, then the high performance economies of South East Asia, and finally we address other experiences. The source of the data to develop the graphs corresponding to this section is in all cases the Penn World Table, Mark 5.5 (see Summers and Heston, 1991) which considers national accounts weighted by purchasing power parity. Unlike the traditional national accounts, based on exchange rates, which only allow intertemporal comparisons for them, the national accounts weighted by purchasing power parity facilitate international comparisons[9].

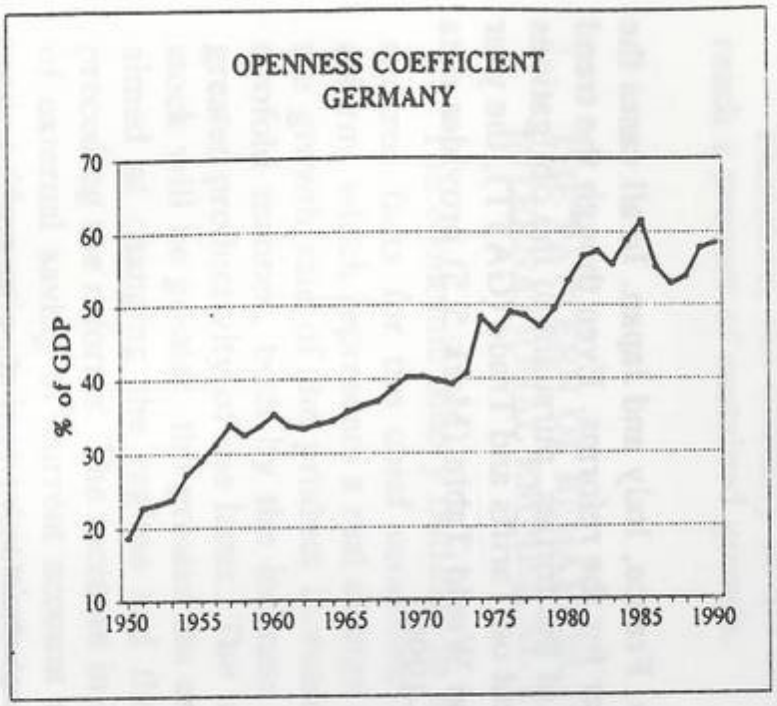
The post-war economies

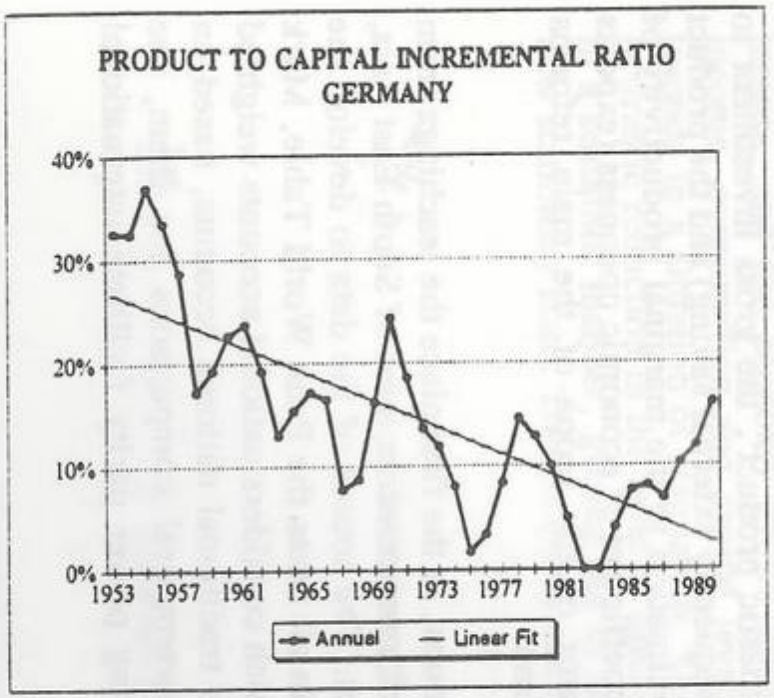
In this group we include Germany, France, Italy and Japan. In all cases the year 1950 was considered the initial year for the reforms. Even though the trend to trade liberalization began at the end of the forties, pursuant to the obligations agreed on through the General Agreement on Tariffs and Trade (GATT), the year mentioned was chosen because the Penn World Table (Mark 5.5) provides data for those countries for the period 1950-1990.

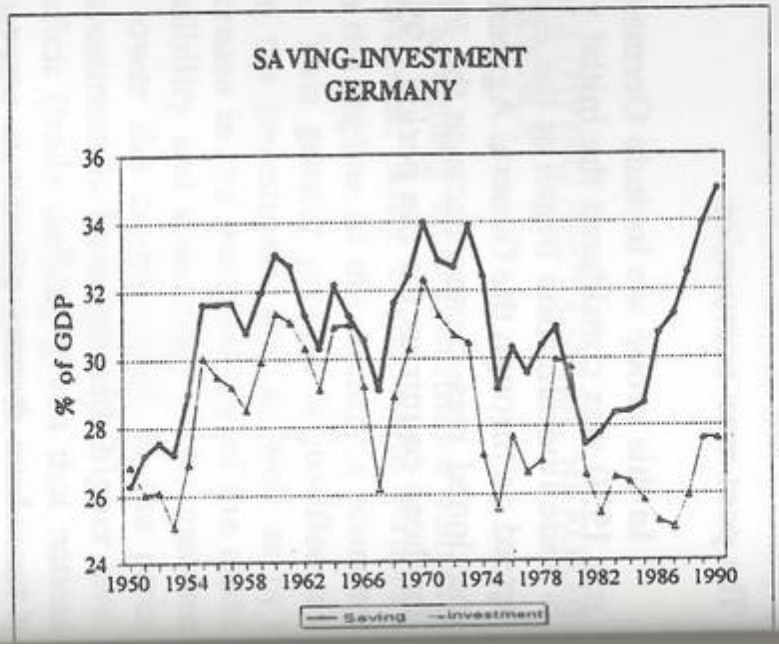
[7] The evolution of GDP is presented also with the data softened by a process of moving averages, so as to reduce the cyclical component of the per capita activity level.

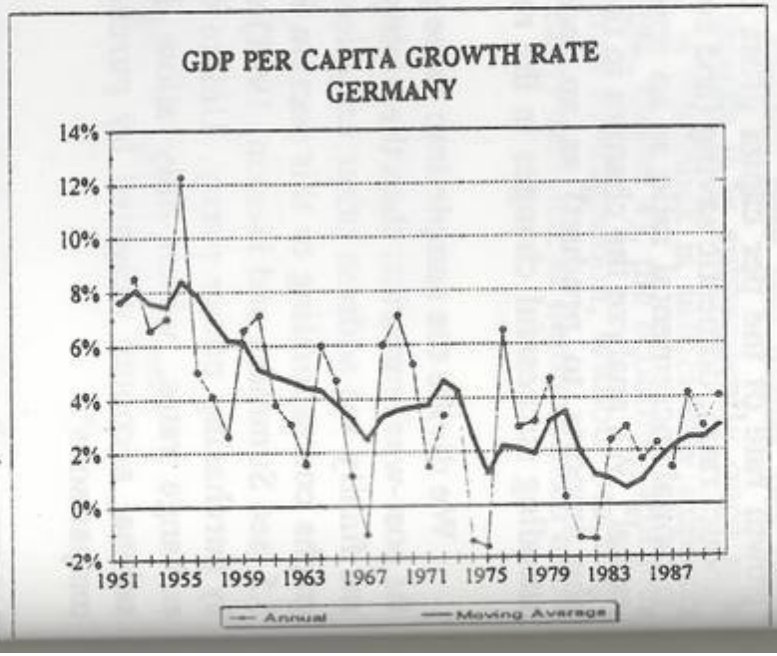
[8] The product to capital incremental ratio is taken as a proxy for productivity, given the difficulties to compute productivity as a residual for an extended set of countries.

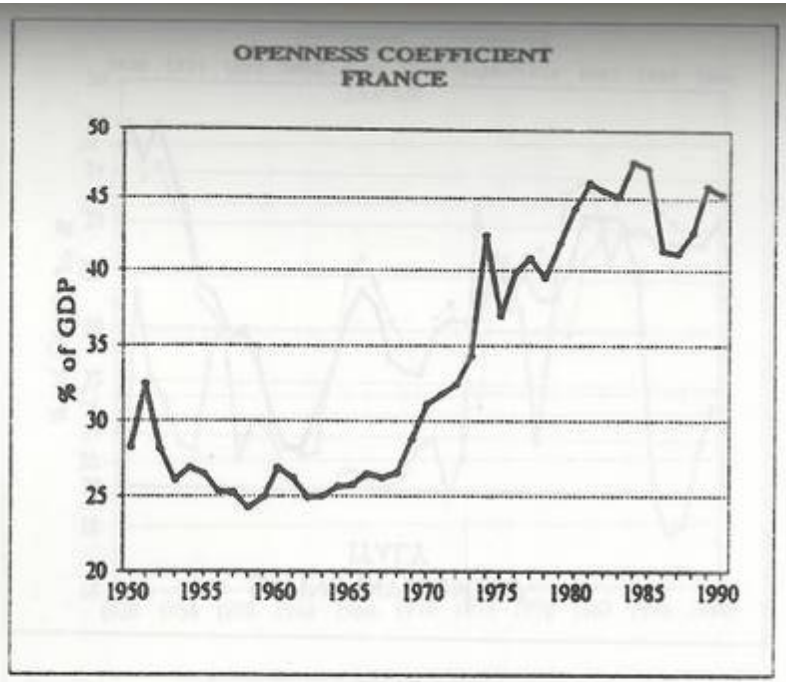
[9] This characteristic differentiates this paper from previous ones, for instance Cottani and Llach (1971), which use national accounts weighted by exchange rate.

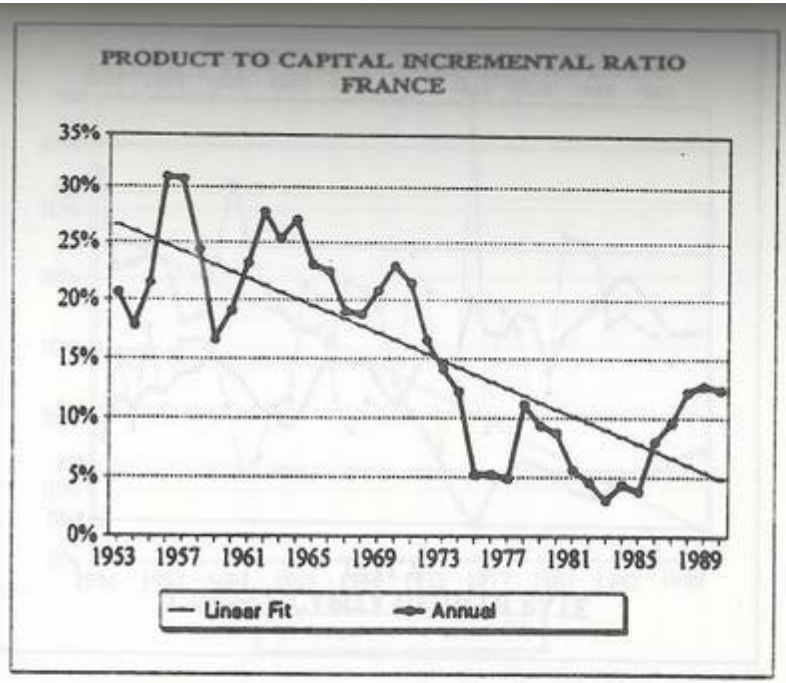

OPENNESS COEFFICIENT
GERMANY
% of GDP
70
60
50
40
30
20
10
1950 1955 1960 1965 1970 1975 1980 1985 1990

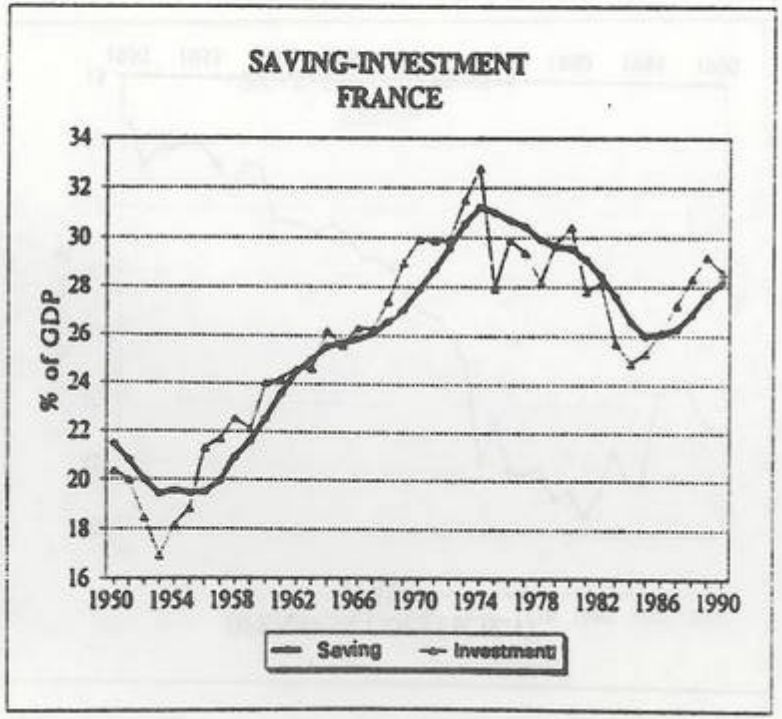

PRODUCT TO CAPITAL INCREMENTAL RATIO
GERMANY
40%
30%
20%
10%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

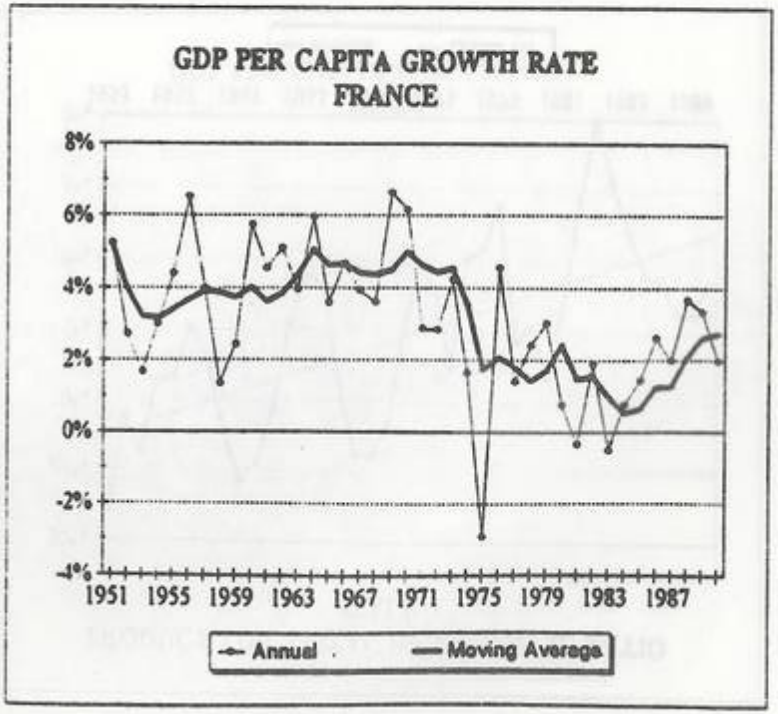

SAVING-INVESTMENT
GERMANY
% of GDP
36
34
32
30
28
26
24
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

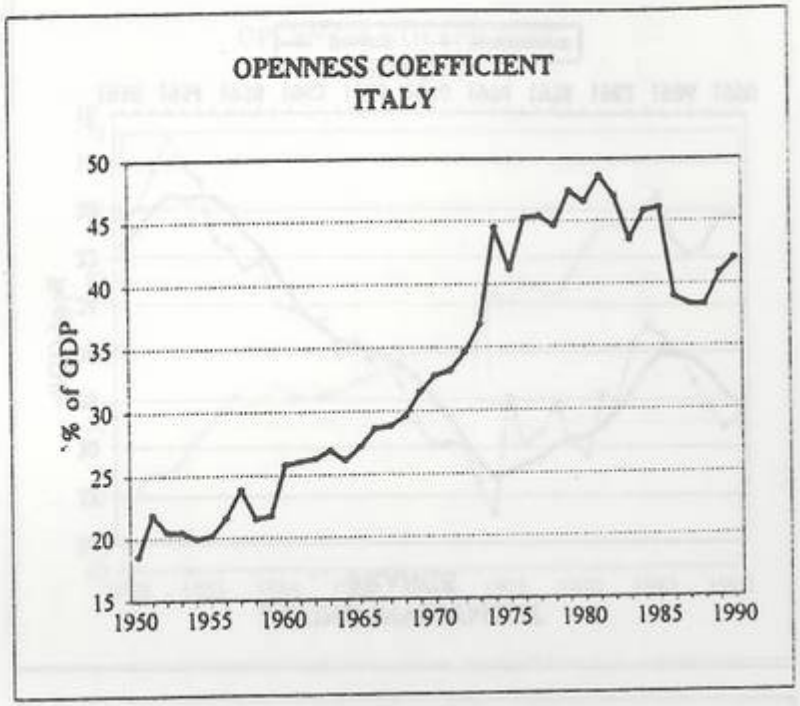

GDP PER CAPITA GROWTH RATE
GERMANY
14%
12%
10%
8%
6%
4%
2%
0%
-2%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

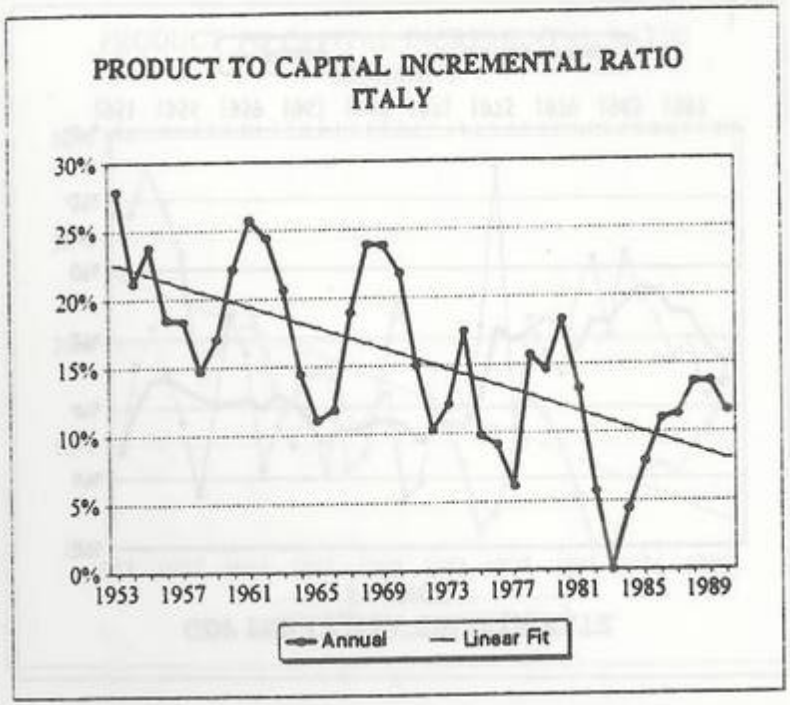

OPENNESS COEFFICIENT
FRANCE
% of GDP
50
45
40
35
30
25
20
1950 1955 1960 1965 1970 1975 1980 1985 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
FRANCE
35%
30%
25%
20%
15%
10%
5%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Linear Fit
Annual

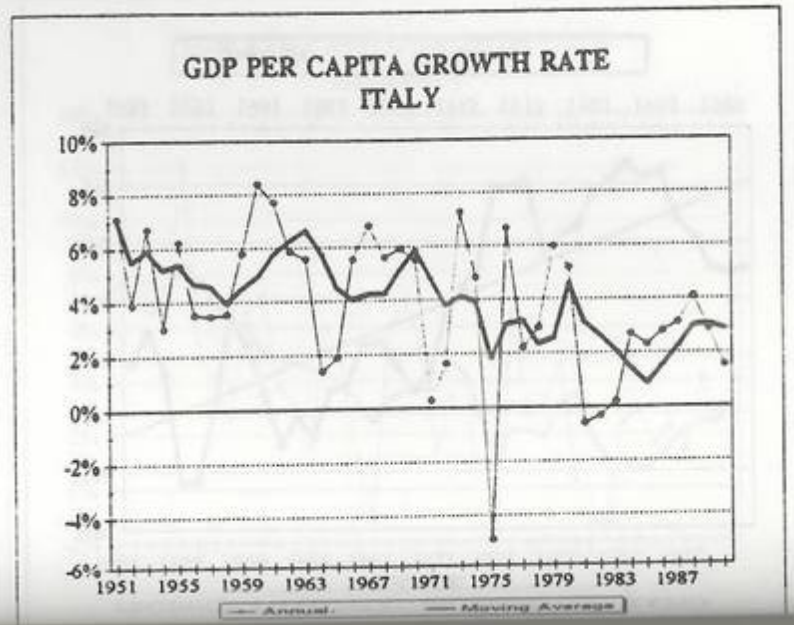

SAVING-INVESTMENT
FRANCE
% of GDP
34
32
30
28
26
24
22
20
18
16
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

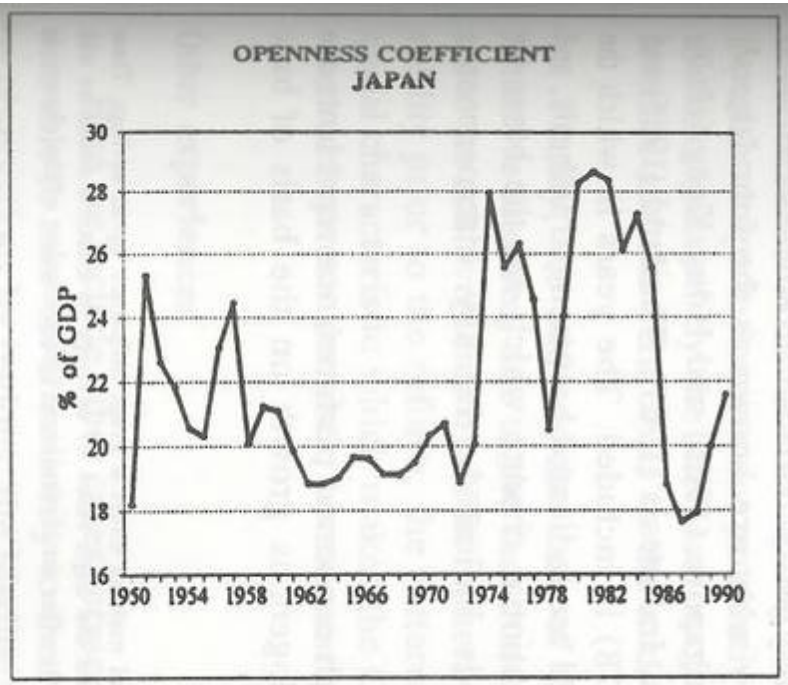

GDP PER CAPITA GROWTH RATE
FRANCE
8%
6%
4%
2%
0%
-2%
-4%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

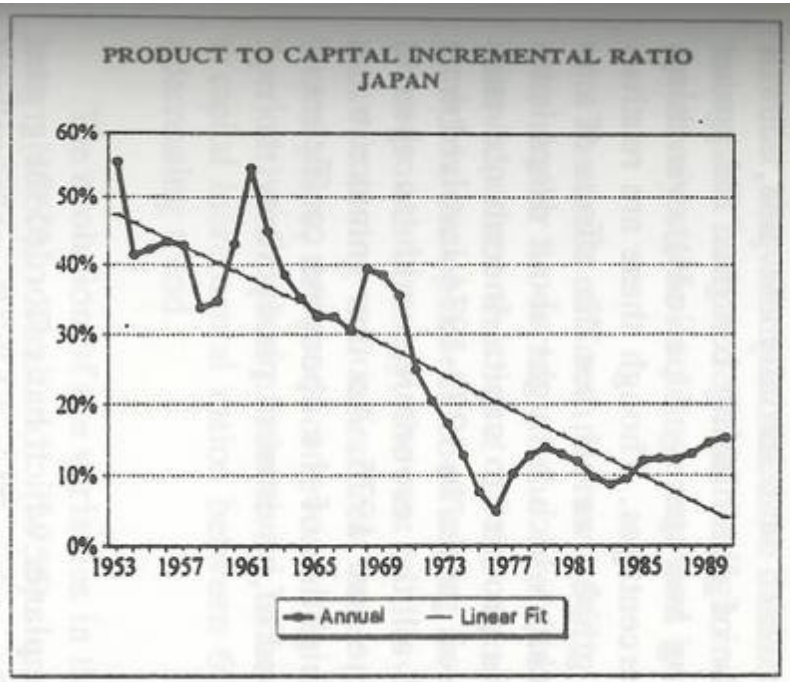

OPENNESS COEFFICIENT
ITALY
% of GDP
50
45
40
35
30
25
20
15
1950 1955 1960 1965 1970 1975 1980 1985 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
ITALY
30%
25%
20%
15%
10%
5%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

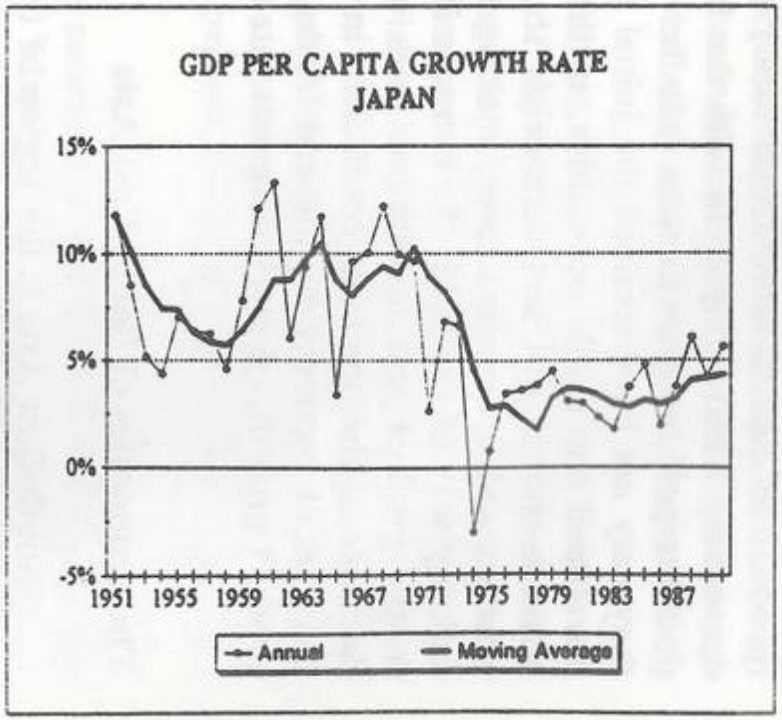

SAVING-INVESTMENT
ITALY
% of GDP
36
34
32
30
28
26
24
22
20
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990


GDP PER CAPITA GROWTH RATE
ITALY
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987


OPENNESS COEFFICIENT
JAPAN
% of GDP
30
28
26
24
22
20
18
16
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
JAPAN
60%
50%
40%
30%
20%
10%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit


SAVING-INVESTMENT
JAPAN
% of GDP
45
40
35
30
25
20
15
10
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
JAPAN
15%
10%
5%
0%
-5%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

In general, it can be stated that, in the case of the post-war economies studied, the pattern anticipated by the theory holds, with special characteristics for each country. The economies had negative domestic savings over several years, save for Japan which kept its trade account relatively balanced[10]. Investment grew in terms of the product, while the productivity of capital (product to capital incremental ratio)[11], which was initially elevated, shows a decreasing trend compatible with the law of diminishing returns. The product presents positive growth rates (see moving averages = 5 periods), even though they may not have retained the initial percentages. Though these are relatively developed and stable economies, in the graphs we can see the effects of some adverse shocks (oil and debt crisis shocks) which brought about drops in the product and investment rates, making the product to capital incremental ratios fail. By way of example, the increase in oil prices in 1973-1974 involved drops in the product and investment rates of all the economies, with an observed decrease of the openness coefficient in the year 1975. Another common trait is the overall recovery by the end of the eighties of the openness coefficient, of product growth, of the investment rate and of investment productivity.

The economies of South East Asia

South East Asia is the region of the planet which has recorded the greatest rates of economic growth over the last thirty years. This achievement is attributed in a great part to the growth attained by what are known as the four "tigers", South Korea (1961), Taiwan (1958), Singapore (1965) and Hong Kong (1960), other three new industrialized economies, Indonesia (1967), Thailand (1955) and Malaysia (1971), and finally China (1978) is included. The years in which the main reforms[12] either took place or started are indicated between parenthesis, and which, in our opinion, meant an institutional change which set the bases for sustained growth. As from the periods indicated, the key macroeconomic variables can be analyzed.

This group of economies with a high economic performance represents one of the best examples of sustained endogenous growth on the basis of basic

[10] There exists a quite generalized opinion that cultural matters exert a great influence upon savings. These cultural differences are the ones which have justified the high rates of savings in Eastern countries with respect to those in the West. Cottani and Llach (1993) offer an institutional interpretation of the changes in regime in relation to the culture of saving.

[11] In the graphs this ratio was obtained by means of the quotient between the moving averages for three years of the growth rate of gross internal product and the one corresponding to the gross rate of investment lagged by one year. In the cases where growth was negative it was considered that the ratio takes up a zero value.

[12] In the attached graphs the years when the reforms were in place and the different periods in matters of trade policy are indicated with a thick vertical line.

structural reforms. However, the experiences of South East Asia had different characteristics. We can subdivide the group into three, on the one hand, South Korea, Taiwan and Singapore which applied policies which were more interventionist in scope, on the other Malaysia, Thailand, Hong Kong and Indonesia which chose relatively more liberal policies and, finally, China. However, they all maintained the basic macroeconomic foundations under control: manageable budget deficits, foreign indebtedness which did not affect solvency, a relatively stable exchange rate and low inflation rates (see World Bank, 1993).

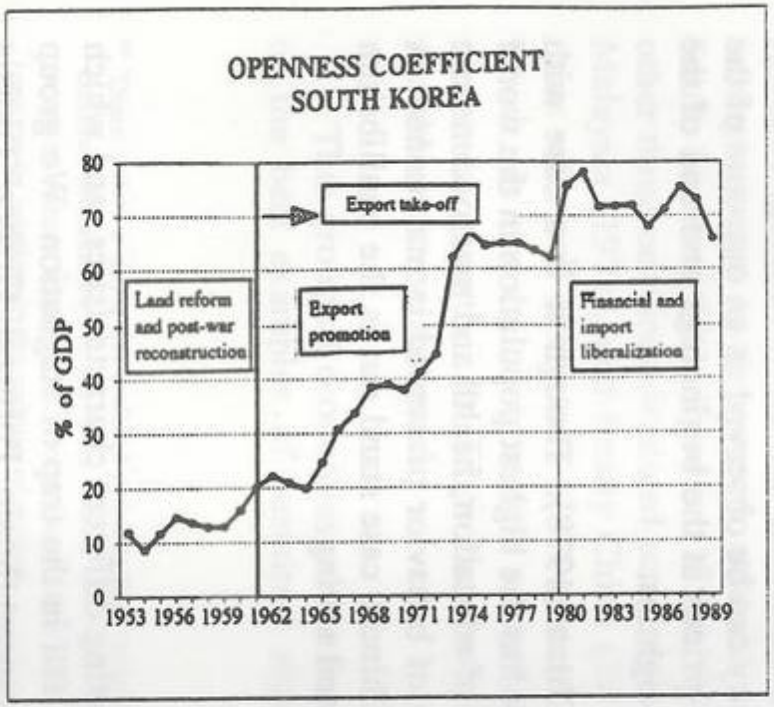
The cases of South Korea (1961), Taiwan (1958) and Singapore (1965) are quite similar in terms of the evolution of the macro variables analyzed. It is observed, since the onset of the reforms that, concurrently to the spectacular growth in the openness coefficient, an outcome of the change in the orientation of the growth strategy, the rest of the variables evolved in the expected manner: domestic saving and investment rates grew, with a negative external saving for several years, the product reverted its decreasing trend (see moving averages = 5 periods) and capital productivity, after a surprising initial jump at which product to capital incremental ratios between 60 percent and percent are attained, began a decreasing trend.

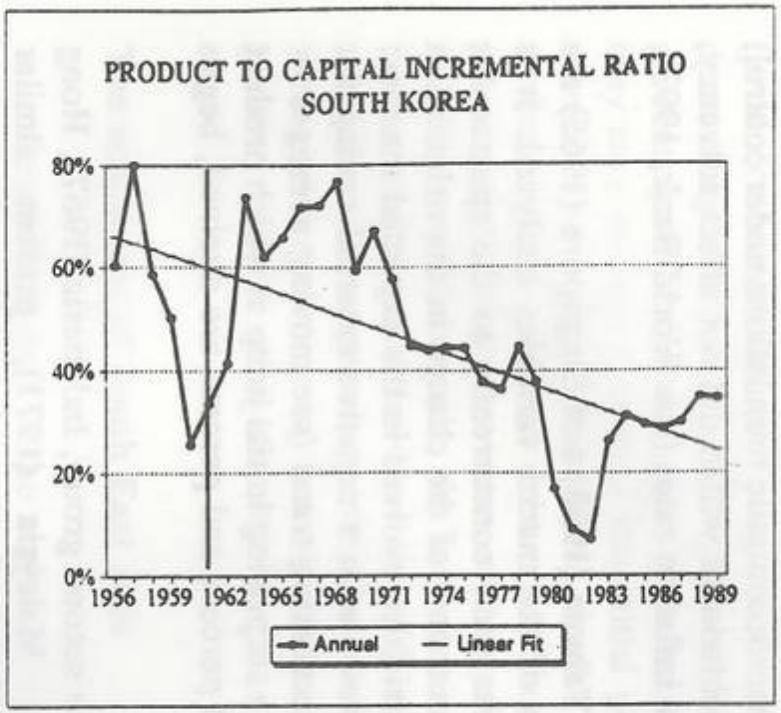
The evolution of the variables in the second group, Indonesia (1967), Hong Kong (1960), Thailand (1955) and Malaysia (1971), present similar characteristics. With the exception of Indonesia, an oil producing country, important drops in investment productivity can be observed as an outcome of the shocks originated by the increase in oil prices at the beginnings and end of the seventies and the debt crisis in the mid-eighties.

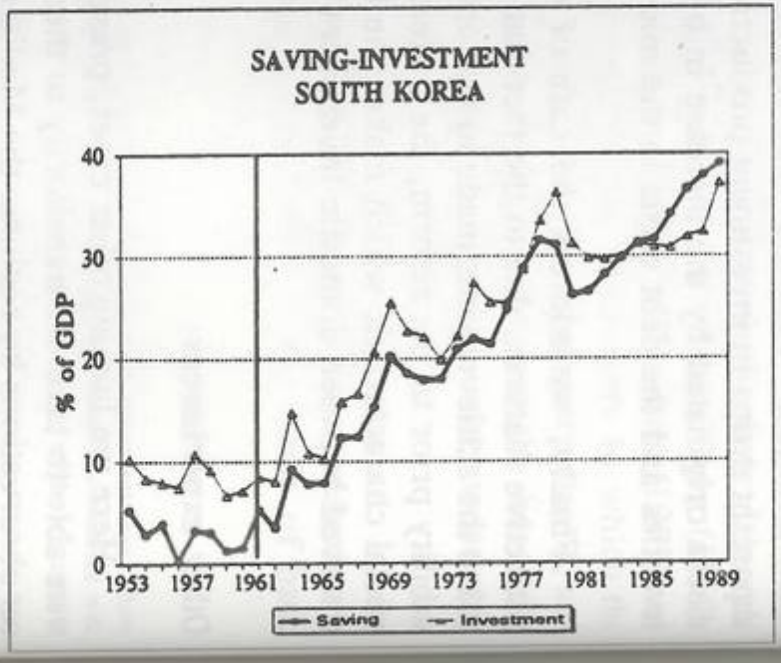
Finally, we address the case of China (1978). Though it is a case with distinctive features, due to the fact that it has the highest population in the world and to the achievements made in matters of education, health and macroeconomic stability prior to the reform, the pattern of behavior presented is maintained. A special characteristic which makes the Chinese case stand out is the equilibrium observed between domestic investment and saving.

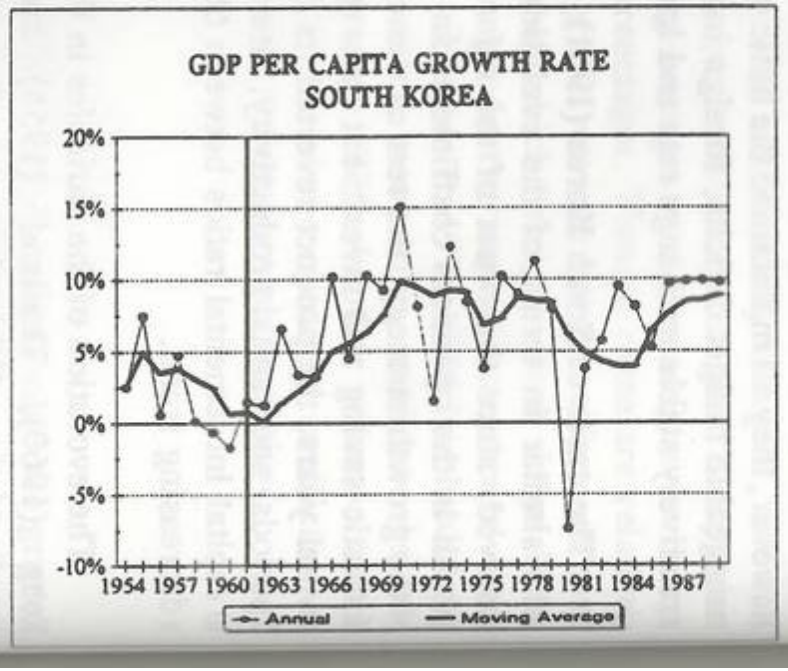
Other experiences

Here we include other cases, presenting different characteristics, and which were able to take off transitorily to then fall in the trap of stagnation. We group our observations by regions: the Mediterranean (Spain, Portugal, Greece, Tunisia and Israel), Latin America (Mexico, Colombia, Brazil and Chile), the rest of Africa (Botswana, Cameroon, Gabon and Congo), and finally two developed countries (Canada and Finland).

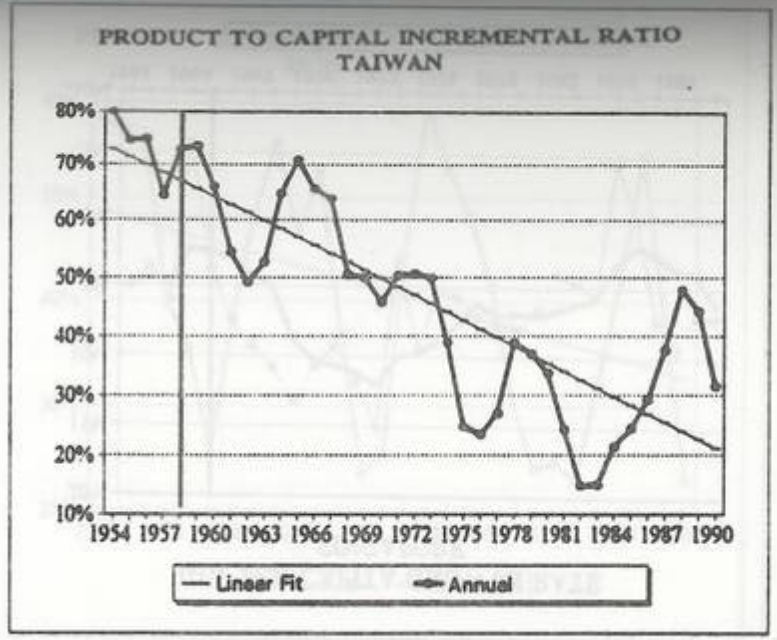

OPENNESS COEFFICIENT
SOUTH KOREA
% of GDP
Land reform and post-war reconstruction
Export promotion
Export take-off
Financial and import liberalization
0
10
20
30
40
50
60
70
80
1953 1956 1959 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989

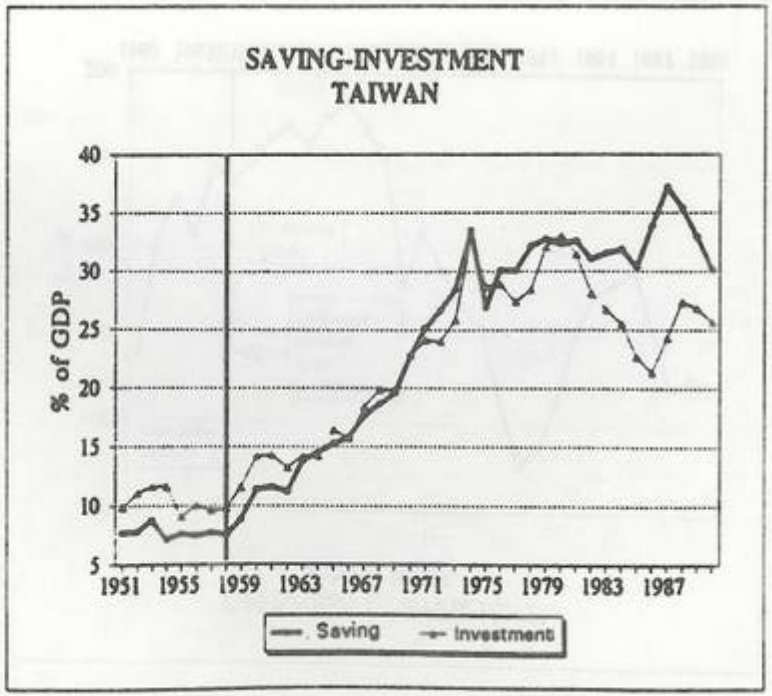

PRODUCT TO CAPITAL INCREMENTAL RATIO
SOUTH KOREA
0%
20%
40%
60%
80%
1956 1959 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
Annual
Linear Fit

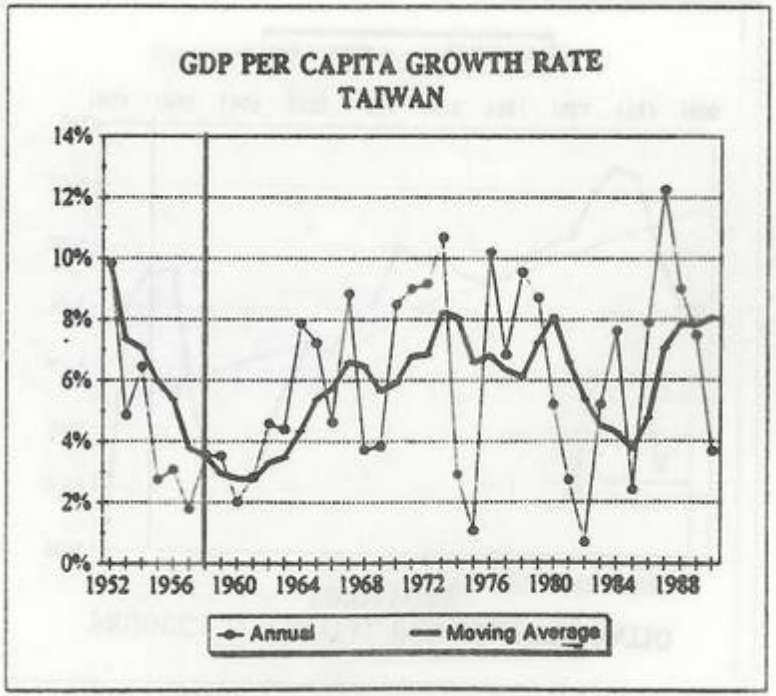

SAVING-INVESTMENT
SOUTH KOREA
% of GDP
0
10
20
30
40
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Saving
Investment


GDP PER CAPITA GROWTH RATE
SOUTH KOREA
-10%
-5%
0%
5%
10%
15%
20%
1954 1957 1960 1963 1966 1969 1972 1975 1978 1981 1984 1987
Annual
Moving Average

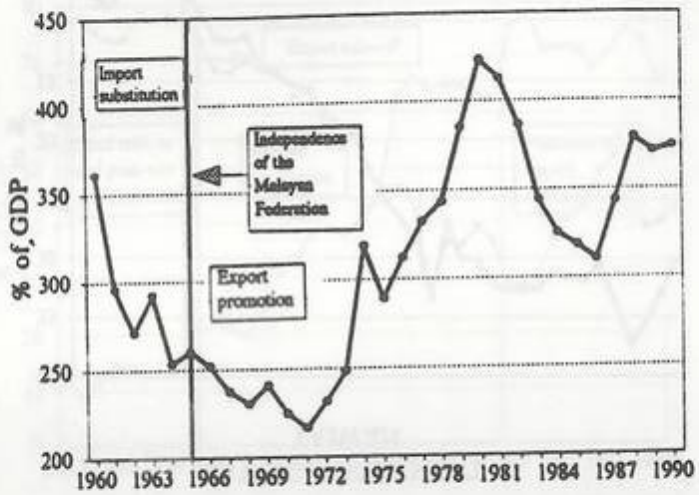

OPENNESS COEFFICIENT
TAIWAN
% of GDP
120
100
80
60
40
20
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Exchange rate unification and reduction of quotas and tariffs
Export promotion


PRODUCT TO CAPITAL INCREMENTAL RATIO
TAIWAN
80%
70%
60%
50%
40%
30%
20%
10%
1954 1957 1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Linear Fit
Annual

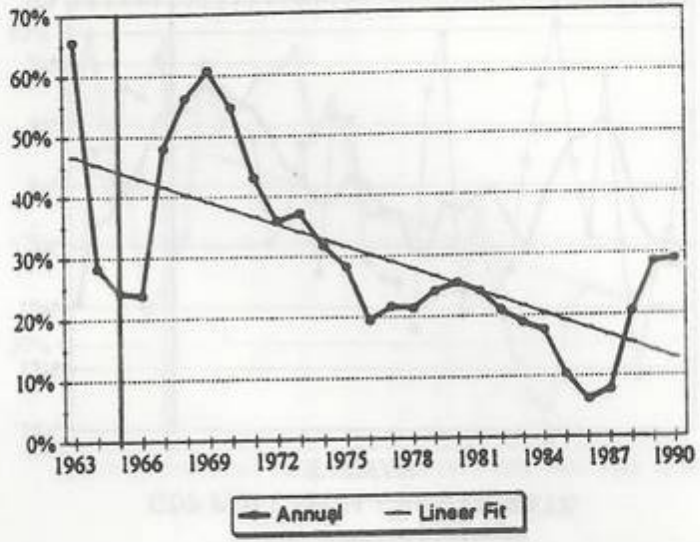

SAVING-INVESTMENT
TAIWAN
% of GDP
40
35
30
25
20
15
10
5
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Saving
Investment


GDP PER CAPITA GROWTH RATE
TAIWAN
14%
12%
10%
8%
6%
4%
2%
0%
1952 1956 1960 1964 1968 1972 1976 1980 1984 1988
Annual
Moving Average

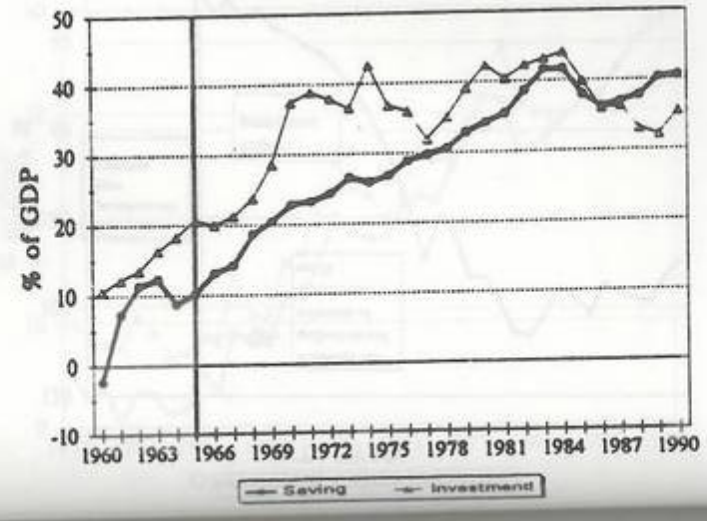
OPENNESS COEFFICIENT SINGAPORE



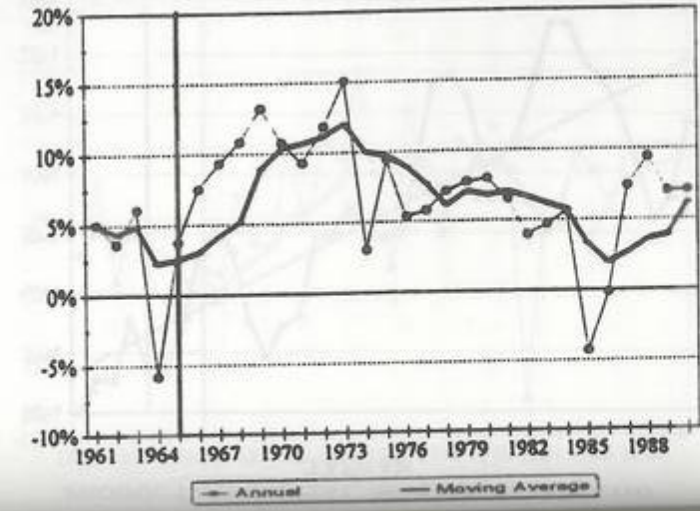
PRODUCT TO CAPITAL INCREMENTAL RATIO SINGAPORE

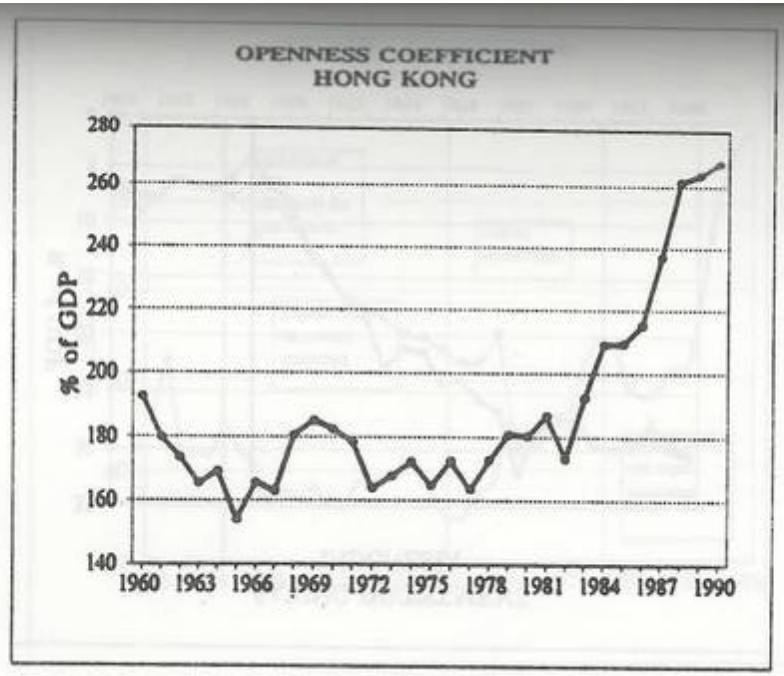


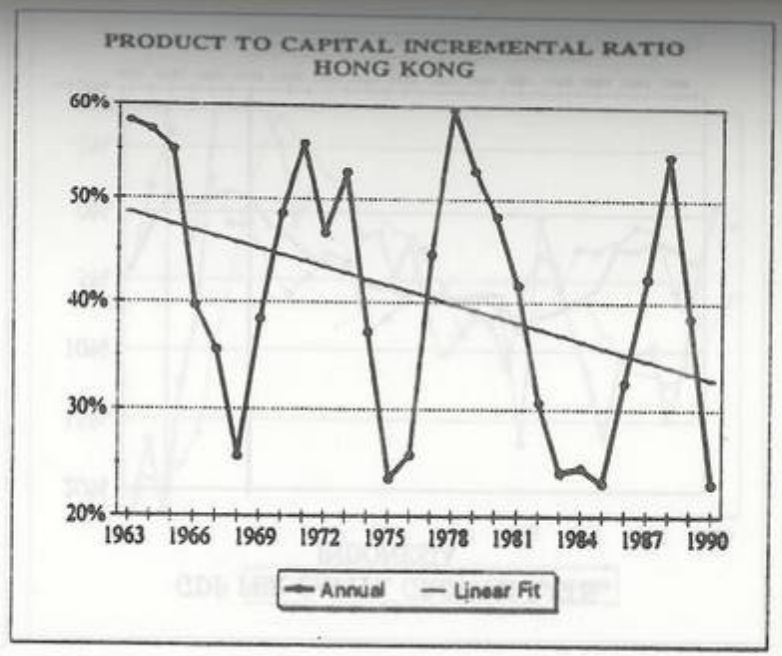
SAVING-INVESTMENT SINGAPORE

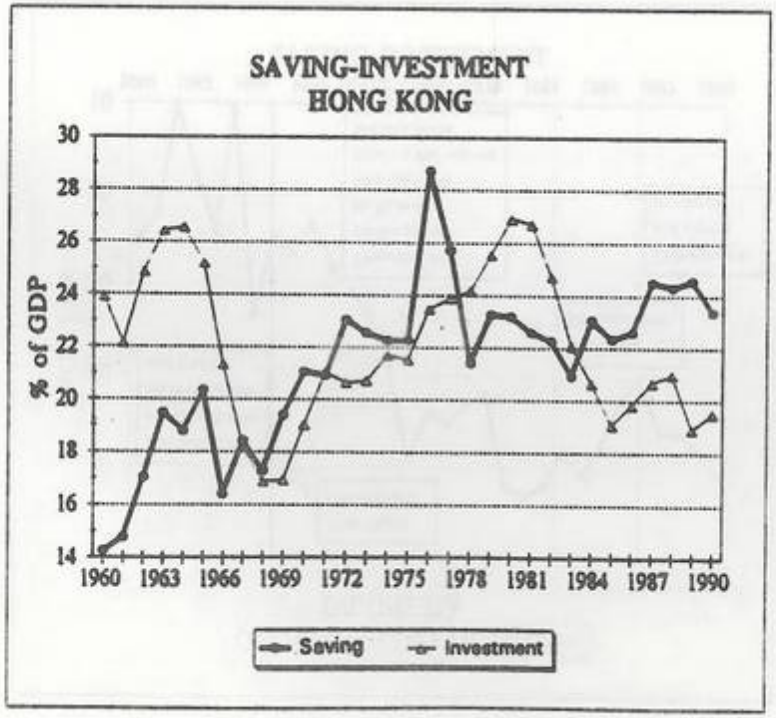


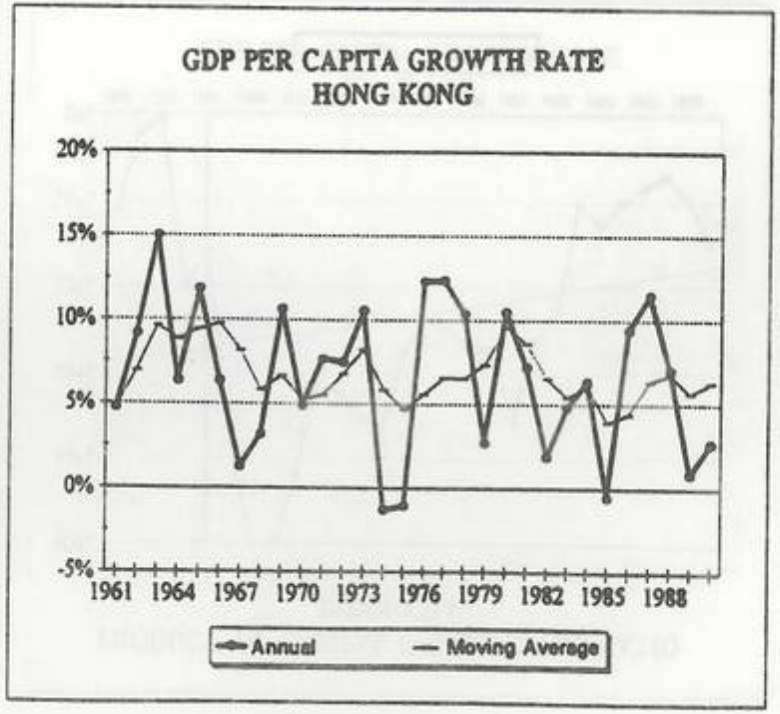
GDP PER CAPITA GROWTH RATE SINGAPORE



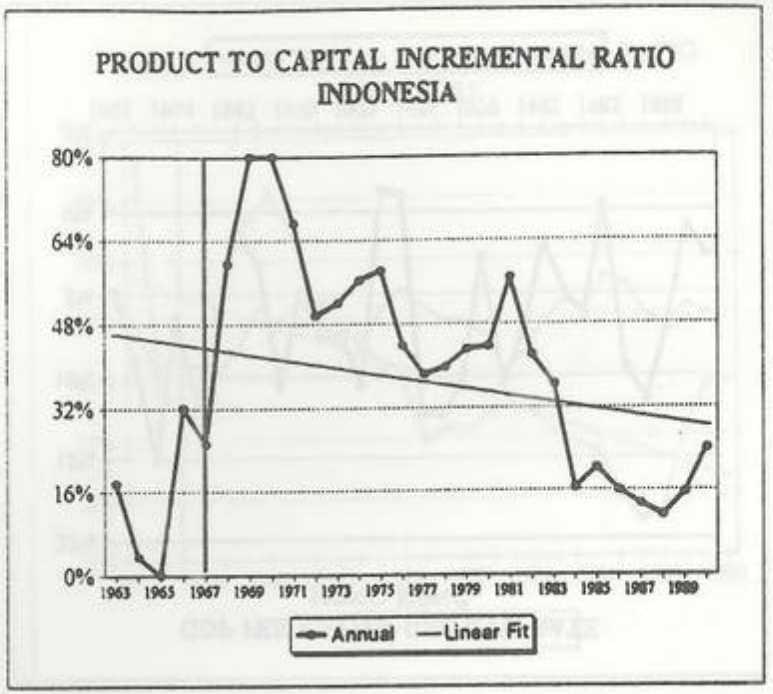

OPENNESS COEFFICIENT
HONG KONG
% of GDP
280
260
240
220
200
180
160
140
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990

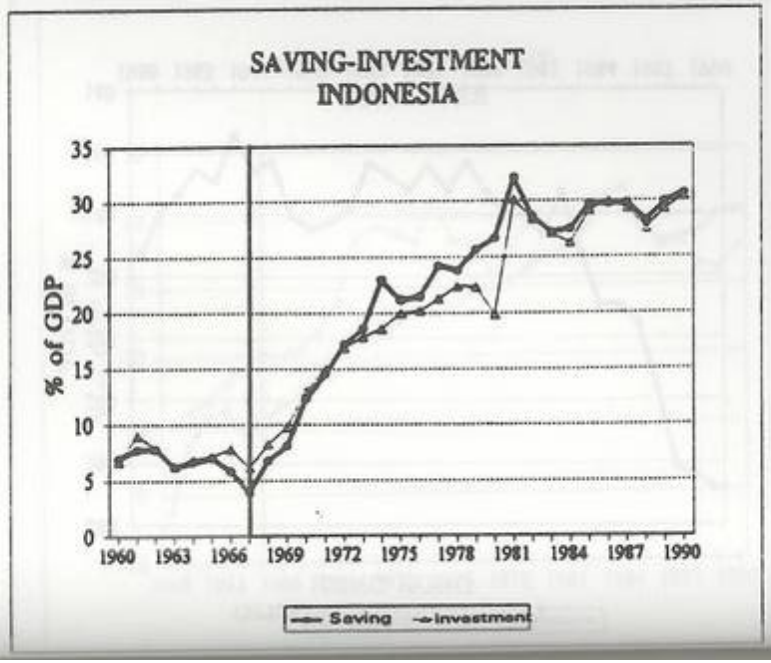

PRODUCT TO CAPITAL INCREMENTAL RATIO
HONG KONG
60%
50%
40%
30%
20%
1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Annual
Linear Fit

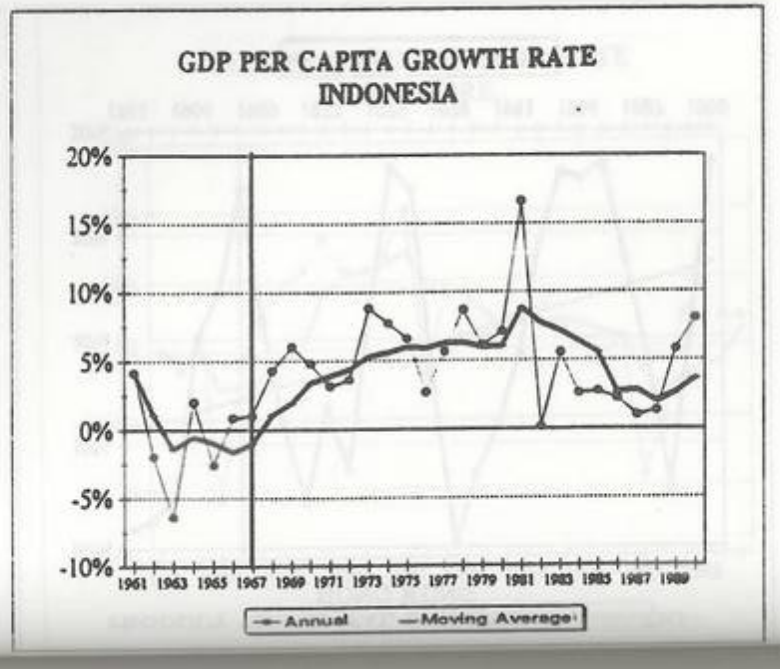

SAVING-INVESTMENT
HONG KONG
% of GDP
30
28
26
24
22
20
18
16
14
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment

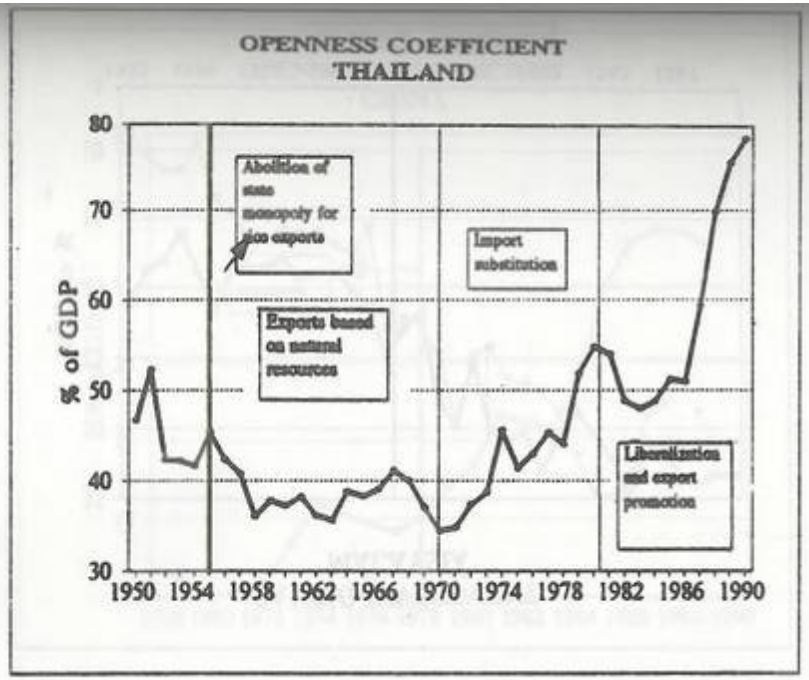

GDP PER CAPITA GROWTH RATE
HONG KONG
20%
15%
10%
5%
0%
-5%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

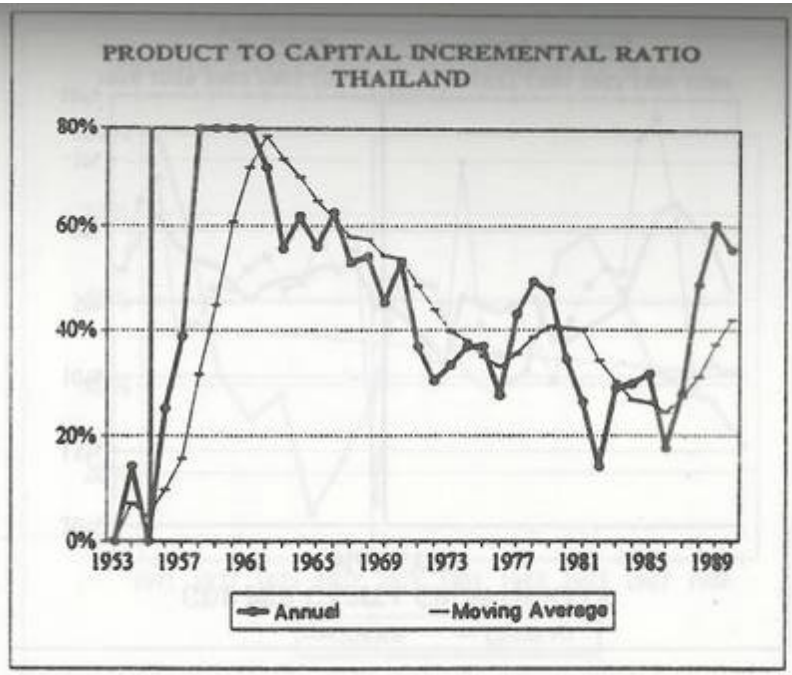

OPENNESS COEFFICIENT
INDONESIA
% of GDP
60
50
40
30
20
10
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
New Order Government
Nationalism, direct controls on production and trade
Increasing protectionism
Privatizations, exchange rate unification, exchange rate controls and import licenses lifted
Deregulation and export promotion

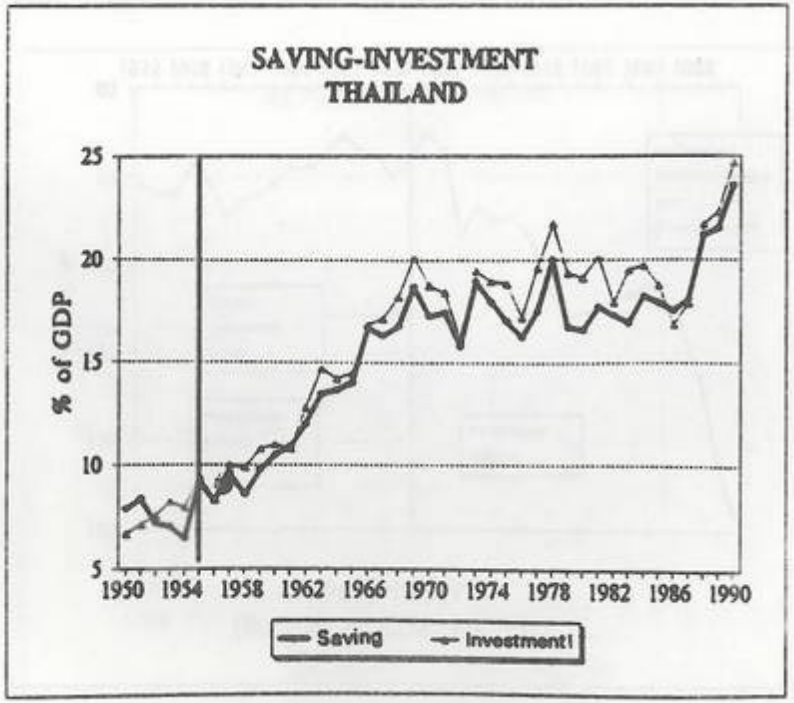

PRODUCT TO CAPITAL INCREMENTAL RATIO
INDONESIA
80%
64%
48%
32%
16%
0%
1963 1965 1967 1969 1971 1973 1975 1977 1979 1981 1983 1985 1987 1989
Annual
Linear Fit

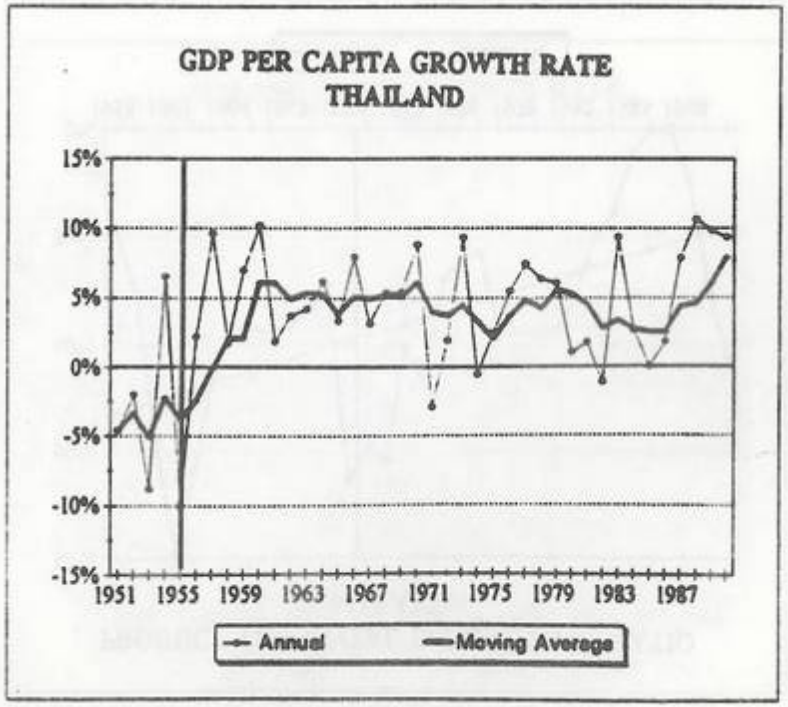

SAVING-INVESTMENT
INDONESIA
% of GDP
35
30
25
20
15
10
5
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment

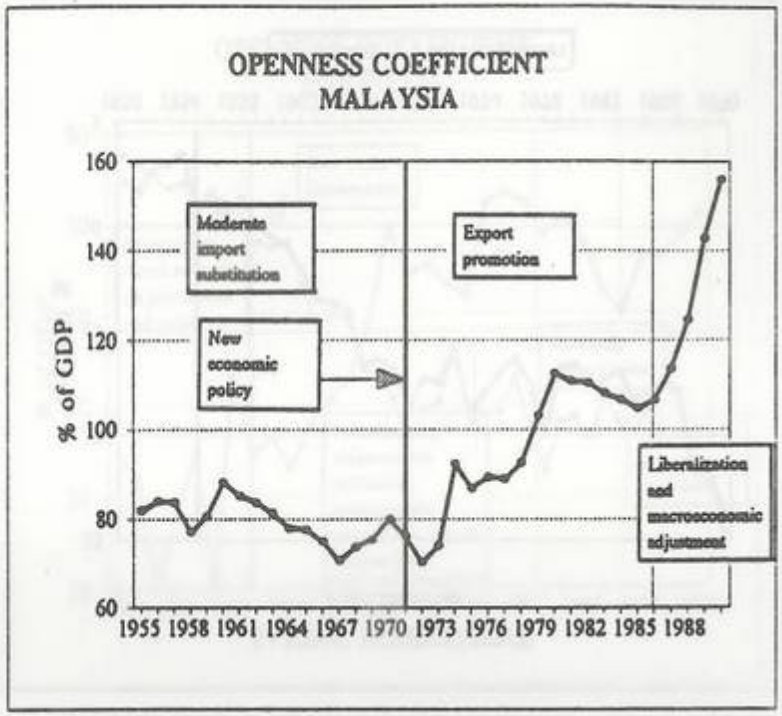

GDP PER CAPITA GROWTH RATE
INDONESIA
20%
15%
10%
5%
0%
-5%
-10%
1961 1963 1965 1967 1969 1971 1973 1975 1977 1979 1981 1983 1985 1987 1989
Annual
Moving Average

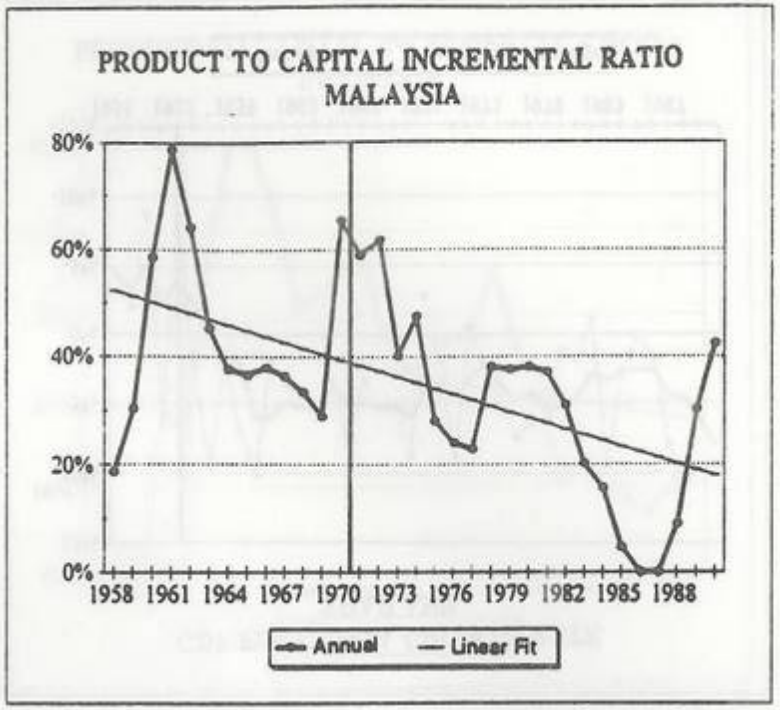

OPENNESS COEFFICIENT
THAILAND
% of GDP
80
70
60
50
40
30
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Abolition of state monopoly for rice exports
Exports based on natural resources
Import substitution
Liberalization and export promotion

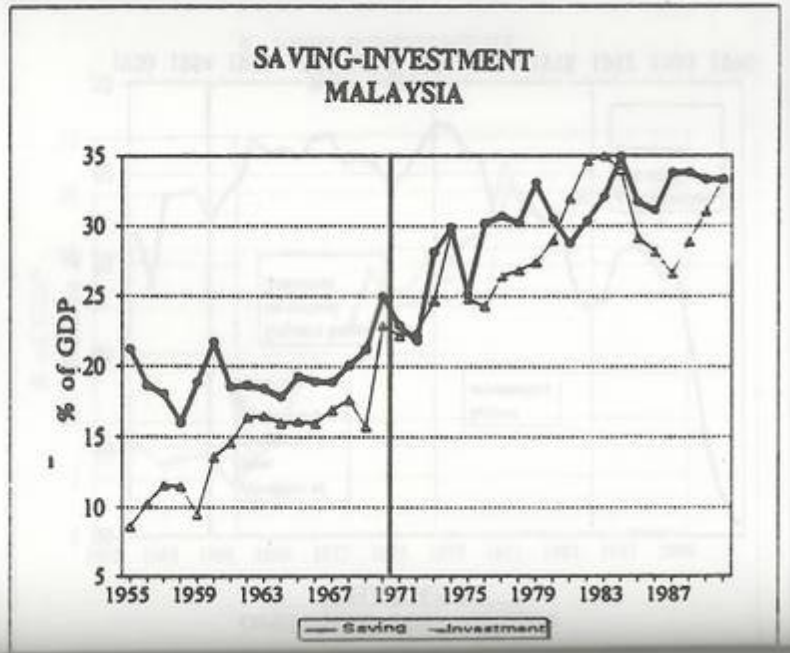

PRODUCT TO CAPITAL INCREMENTAL RATIO
THAILAND
80%
60%
40%
20%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Moving Average

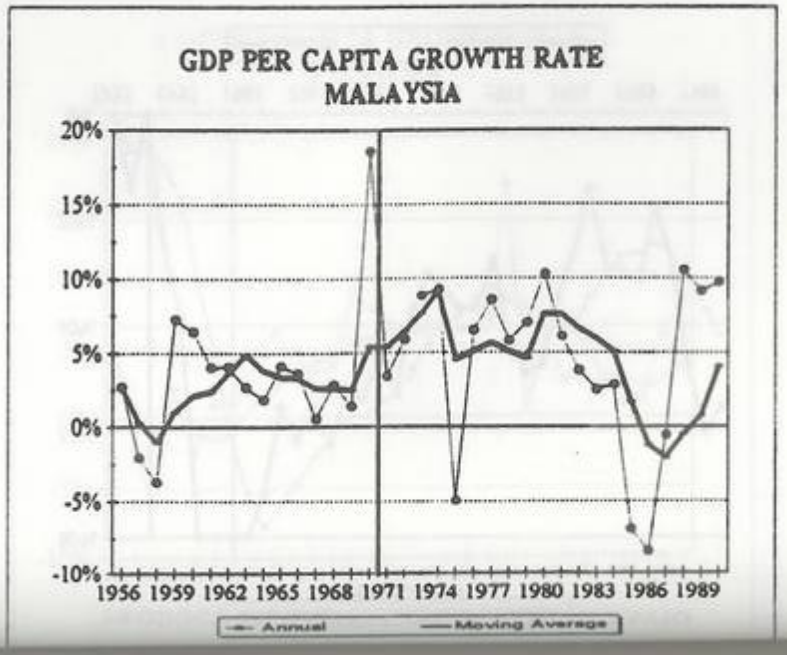

SAVING-INVESTMENT
THAILAND
% of GDP
25
20
15
10
5
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

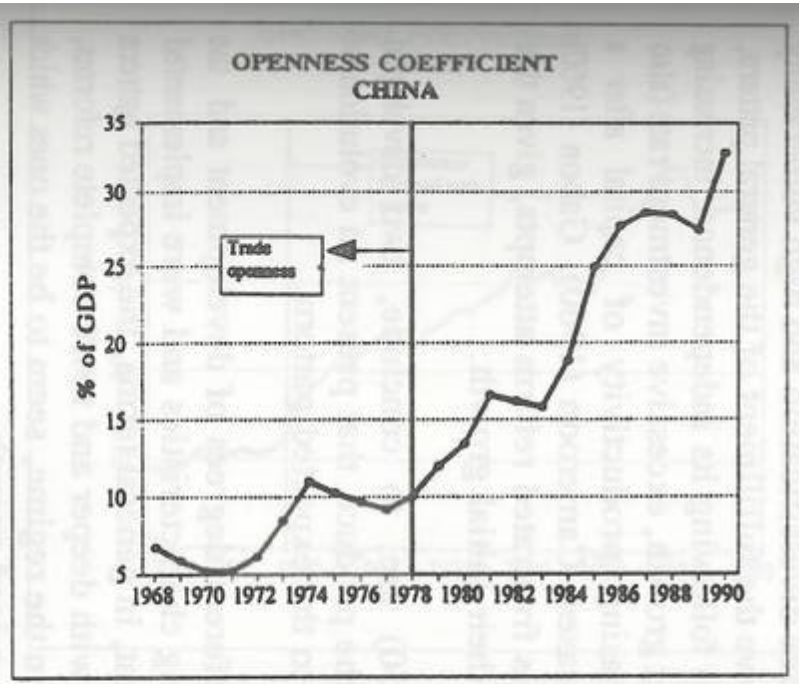

GDP PER CAPITA GROWTH RATE
THAILAND
15%
10%
5%
0%
-5%
-10%
-15%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

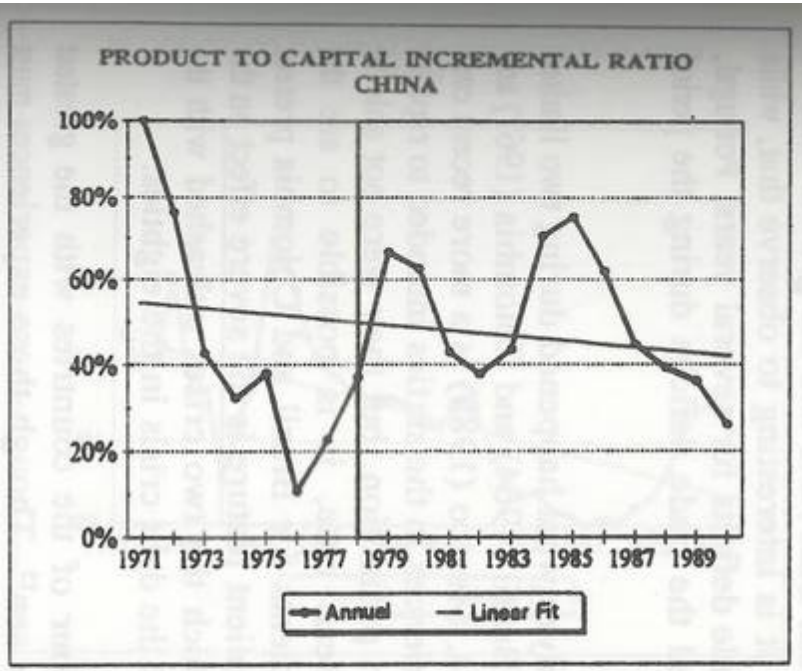

OPENNESS COEFFICIENT
MALAYSIA
% of GDP
160
140
120
100
80
60
Moderate import substitution
Export promotion
New economic policy
Liberalization and macroeconomic adjustment
1955 1958 1961 1964 1967 1970 1973 1976 1979 1982 1985 1988

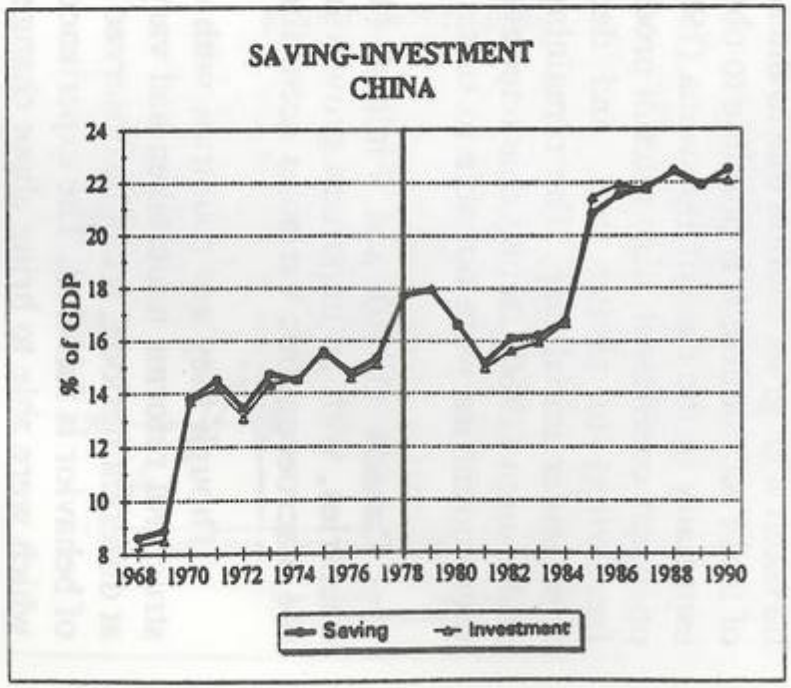

PRODUCT TO CAPITAL INCREMENTAL RATIO
MALAYSIA
80%
60%
40%
20%
0%
1958 1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Linear Fit

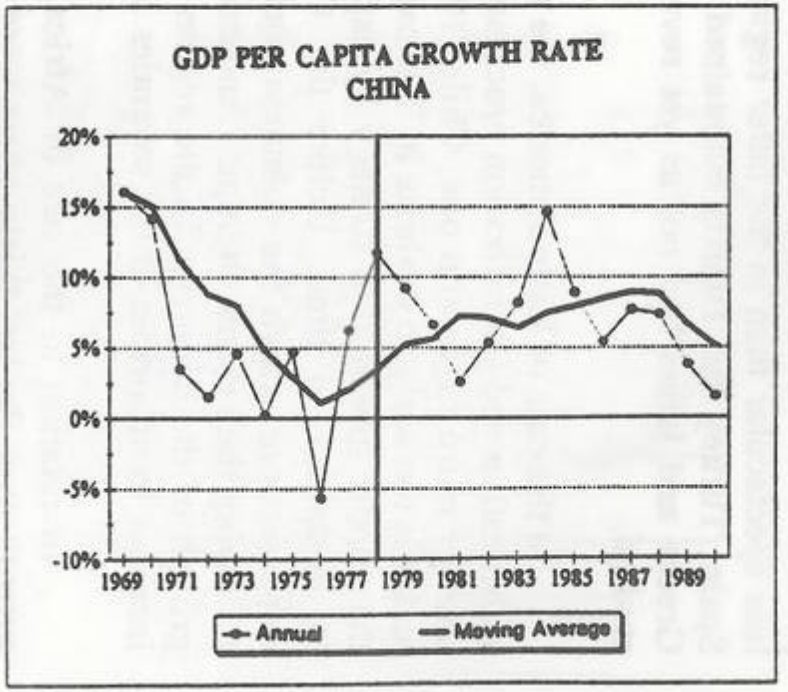

SAVING-INVESTMENT
MALAYSIA
% of GDP
35
30
25
20
15
10
5
1955 1959 1963 1967 1971 1975 1979 1983 1987
Saving
Investment


GDP PER CAPITA GROWTH RATE
MALAYSIA
20%
15%
10%
5%
0%
-5%
-10%
1956 1959 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
Annual
Moving Average


OPENNESS COEFFICIENT
CHINA
% of GDP
Trade openness
35
30
25
20
15
10
5
1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
CHINA
100%
80%
60%
40%
20%
0%
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989
Annual
Linear Fit


SAVING-INVESTMENT
CHINA
% of GDP
24
22
20
18
16
14
12
10
8
1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
CHINA
20%
15%
10%
5%
0%
-5%
-10%
1969 1971 1973 1975 1977 1979 1981 1983 1985 1987 1989
Annual
Moving Average

The trade reforms in the Mediterranean region, (Spain (1959), Portugal (1953), Greece (1953), Israel (1966) Turkey (1980) and Tunisia (1986), began with macroeconomic stabilization plans, which in some cases had to be repeated. The reforms are followed by the processes described, though the growth processes are not as linear as those in South East Asia and the growth rates are less spectacular than in the latter region. It is interesting to observe that, while Spain, Turkey and Tunisia maintained trade deficits for several years, Portugal, Greece and Israel had not as yet reverted the trade deficits during the period studied.

In the case of Latin America, we analyze what happened during two limited stabilization and liberalization processes, Brazil (1964) and Colombia (1967) and another more successful one, Chile (1974). Mexico (1988) is a more recent case and it is too early to evaluate it. The experiences in the sixties intended to replace the import substitution strategy by export promotion, but they were not able to be sustained in time. Unlike the Chilean case, it is possible to see the imperfections which the openness coefficients for Brazil and Colombia present following the reform attempts. Another salient feature is the severe effect on the growth of the countries in the region which the two crises unleashed with the increase in oil prices in the seventies and the debt crisis in the eighties.

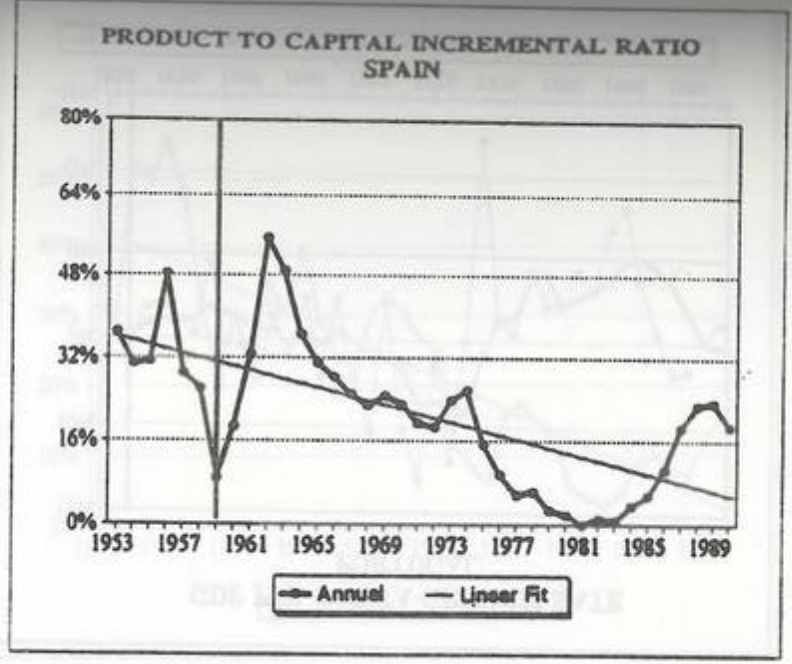
In relation to the rest of Africa, four of the countries with the greatest growth over the last thirty years were chosen[13]. Though these experiences must be taken with great caution due to the scarce diversification and high vulnerability of these economies, it is possible to observe the fulfillment of the general pattern, especially in the case of Botswana (1966) following its independence: increasing openness coefficient, high rates of product growth, excessive investment rate (also increasing) to saving rate, and decreasing productivity of capital after a spectacular initial leap. The remaining cases, Cameroon (1960), Gabon (1960) and Congo (1960) can be characterized as frustrated reform attempts, given that these countries were not able to sustain their initial growth.

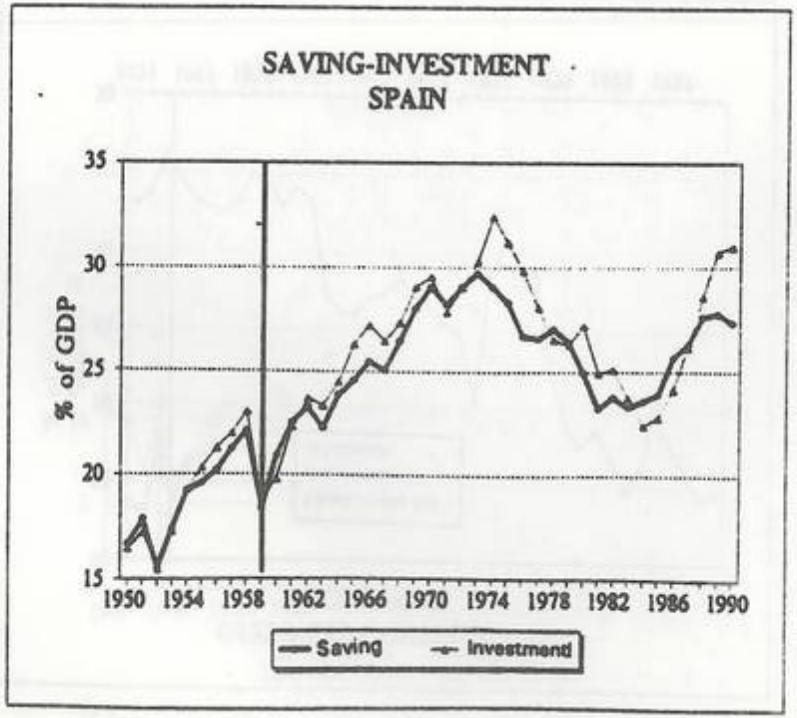
Canada (1950) and Finland (1950) are, to conclude, two developed countries, with an important growth in the product, that present an evolution of the macroeconomic variables according to the expected pattern.

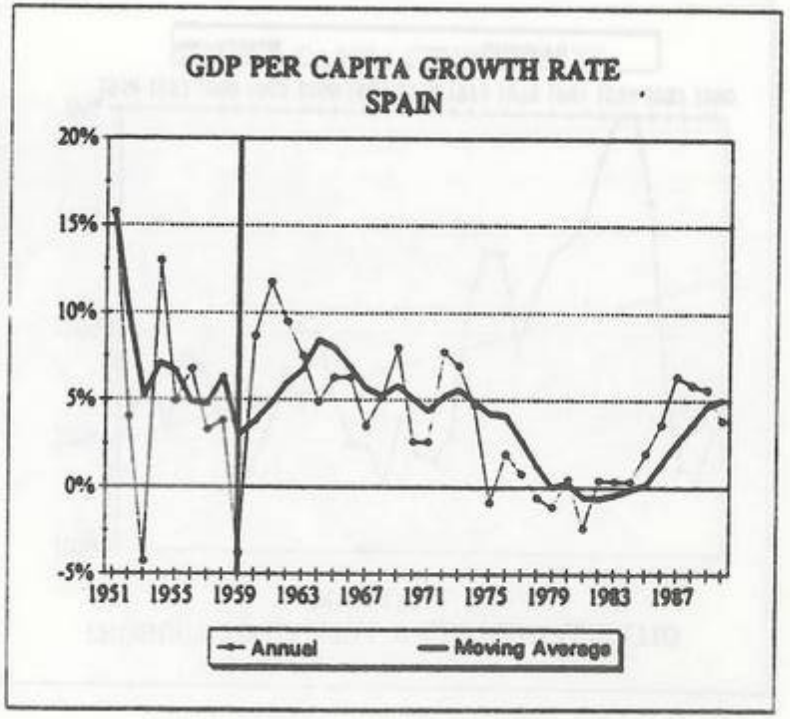
Though they are countries with different degrees of development and the structural reforms undertaken had varying characteristics and were implemented at different periods, it can be observed that, in general terms, the expected pattern of behavior is fulfilled. The experiences with deeper and more complete reforms, which were able to bring about changes in the regime, seem to be the ones which attained a greater success in terms of sustained growth.

[13] See, for instance, Barro (1993).

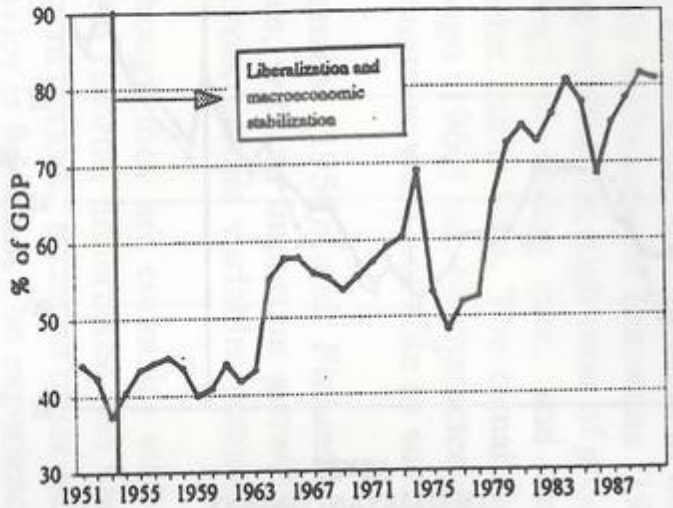

OPENNESS COEFFICIENT
SPAIN
% of GDP
50
40
30
20
10
0
1950 1955 1960 1965 1970 1975 1980 1985 1990
Stabilization plan and trade reform


PRODUCT TO CAPITAL INCREMENTAL RATIO
SPAIN
80%
64%
48%
32%
16%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

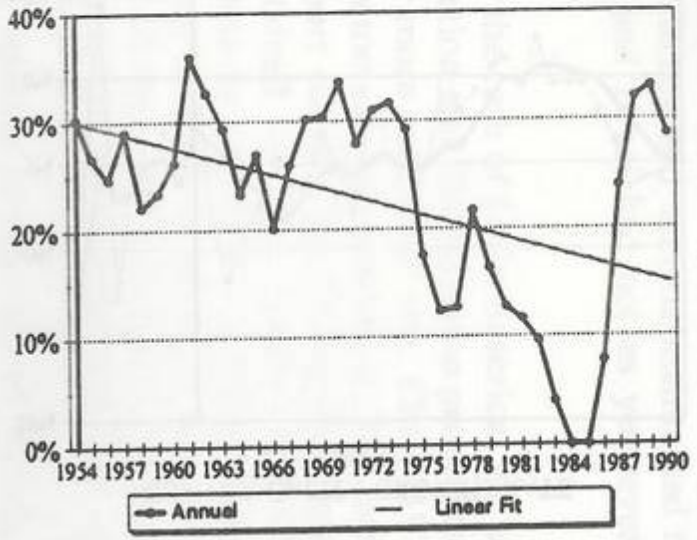

SAVING-INVESTMENT
SPAIN
% of GDP
35
30
25
20
15
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
SPAIN
20%
15%
10%
5%
0%
-5%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

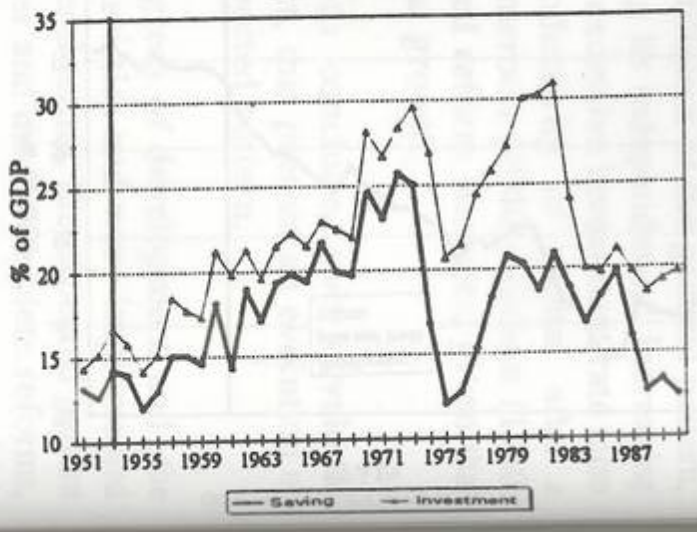
OPENNESS COEFFICIENT PORTUGAL



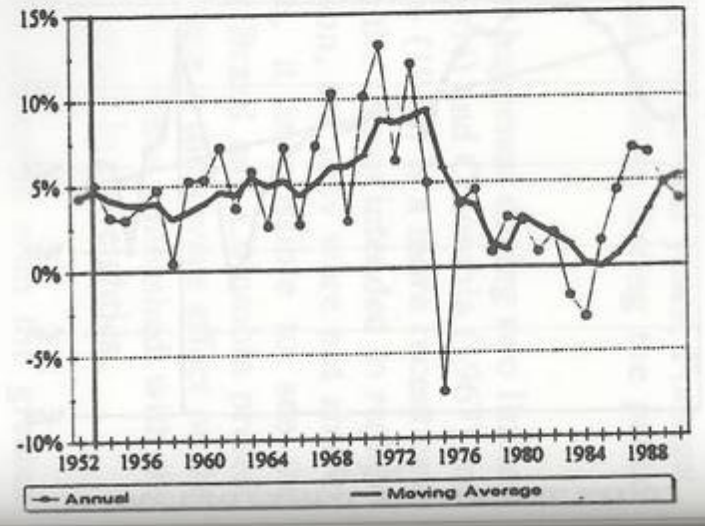
PRODUCT TO CAPITAL INCREMENTAL RATIO PORTUGAL



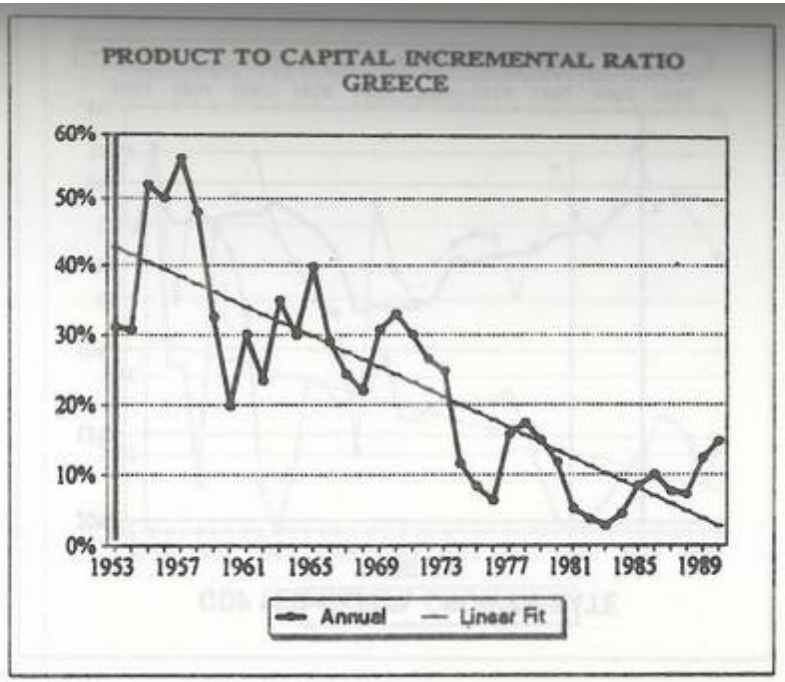
SAVING-INVESTMENT PORTUGAL

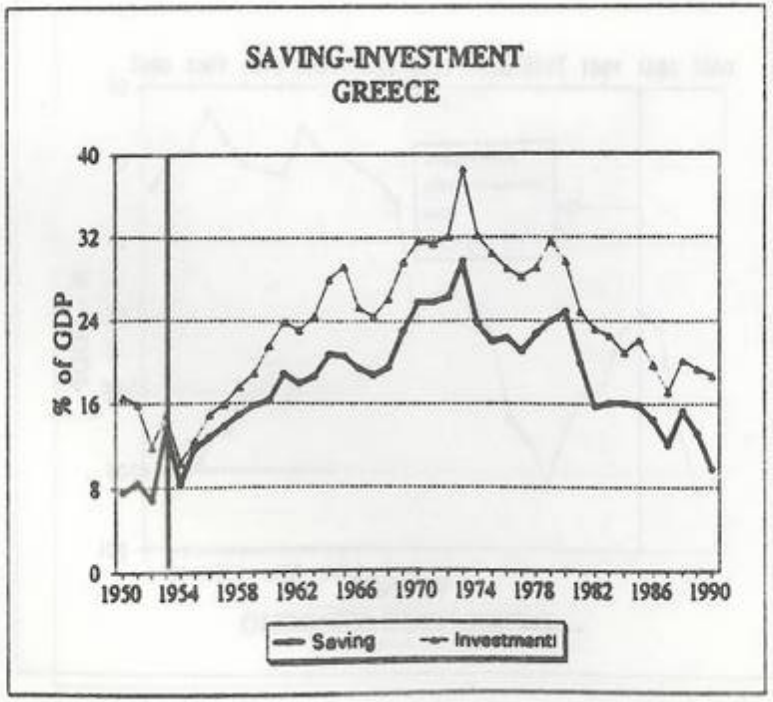


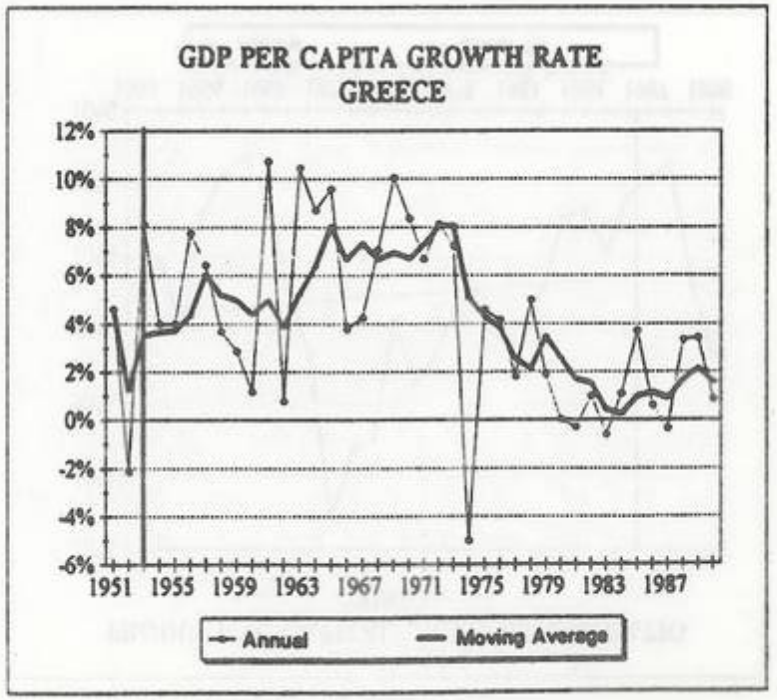
GDP PER CAPITA GROWTH RATE PORTUGAL

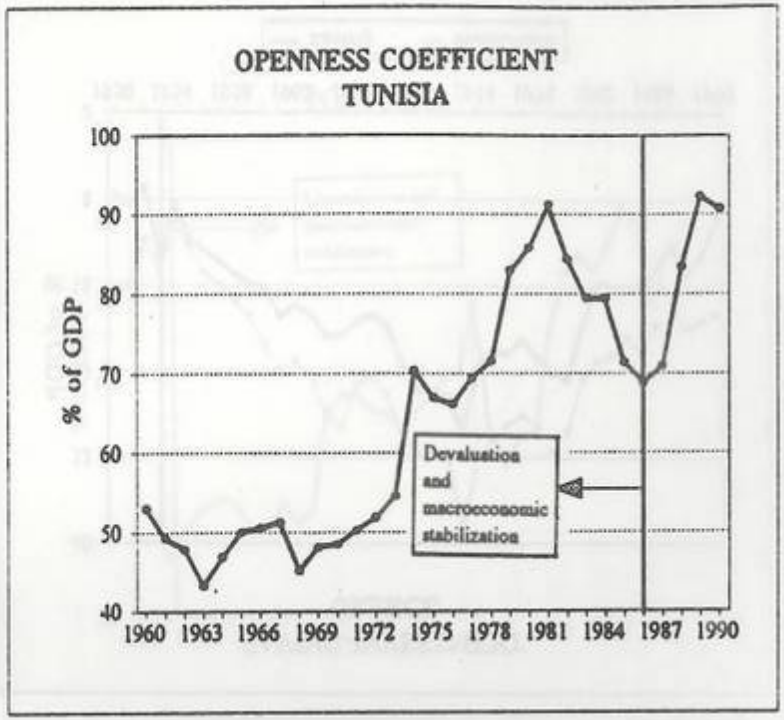


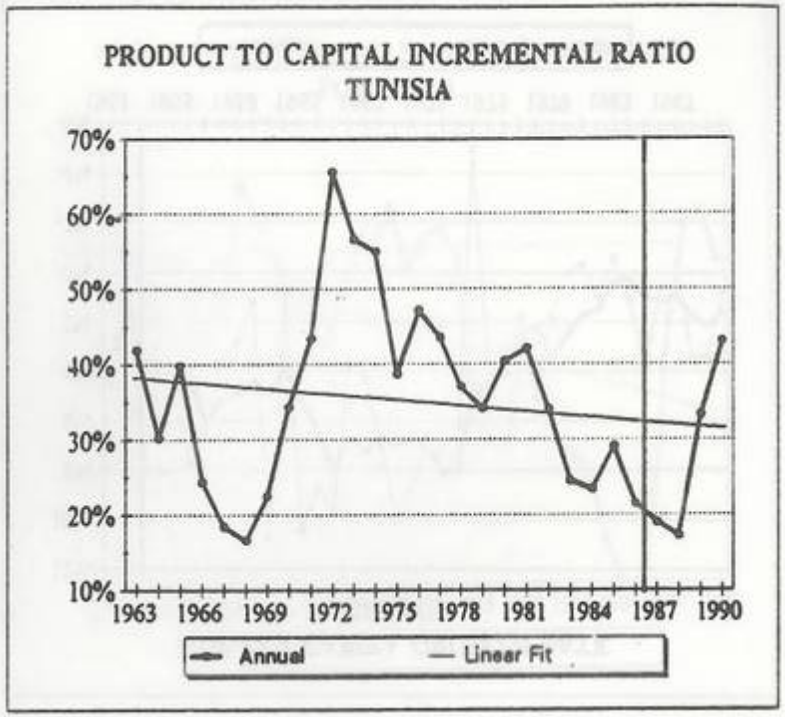

OPENNESS COEFFICIENT
GREECE
% of GDP
60
50
40
30
20
10
1950
1955
1960
1965
1970
1975
1980
1985
1990
Devaluation and elimination of import controls

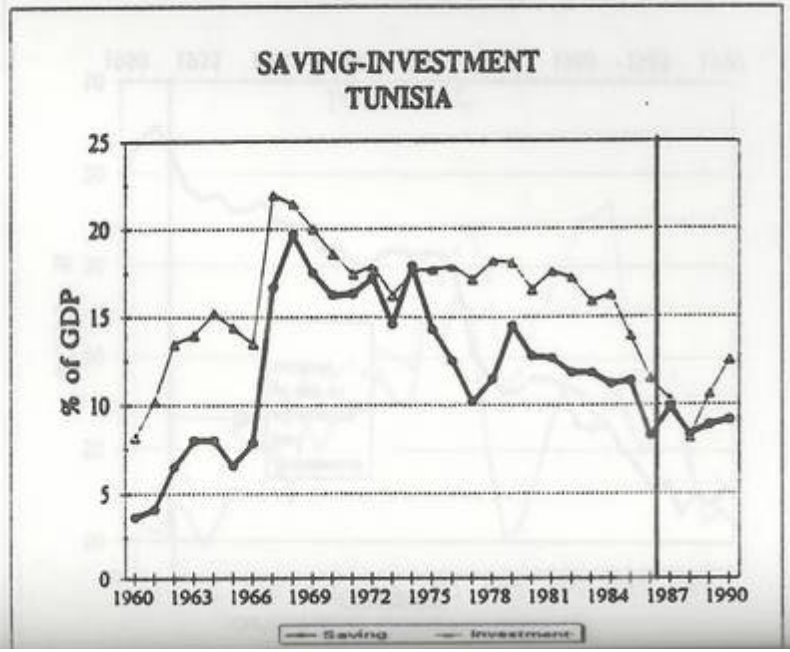

PRODUCT TO CAPITAL INCREMENTAL RATIO
GREECE
60%
50%
40%
30%
20%
10%
0%
1953
1957
1961
1965
1969
1973
1977
1981
1985
1989
Annual
Linear Fit

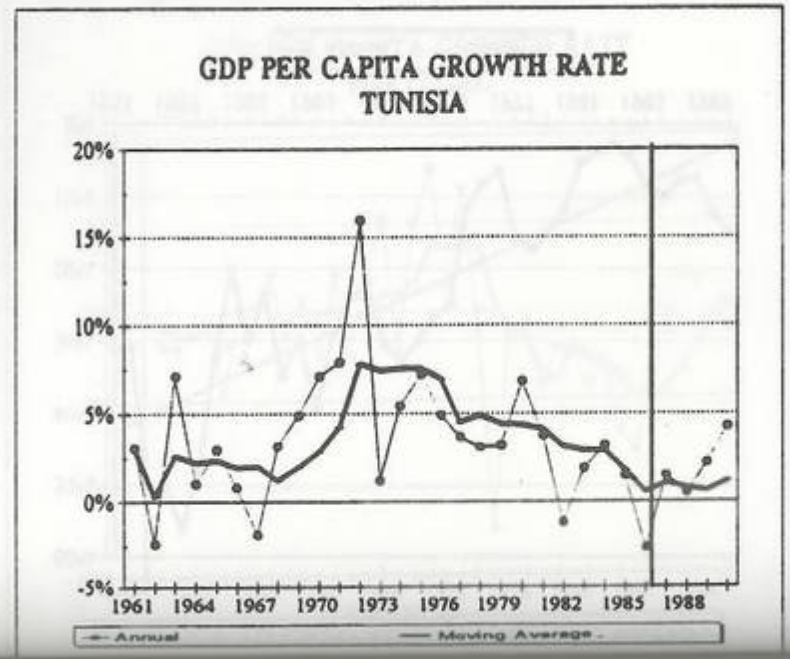

SAVING-INVESTMENT
GREECE
% of GDP
40
32
24
16
8
0
1950
1954
1958
1962
1966
1970
1974
1978
1982
1986
1990
Saving
Investmanti

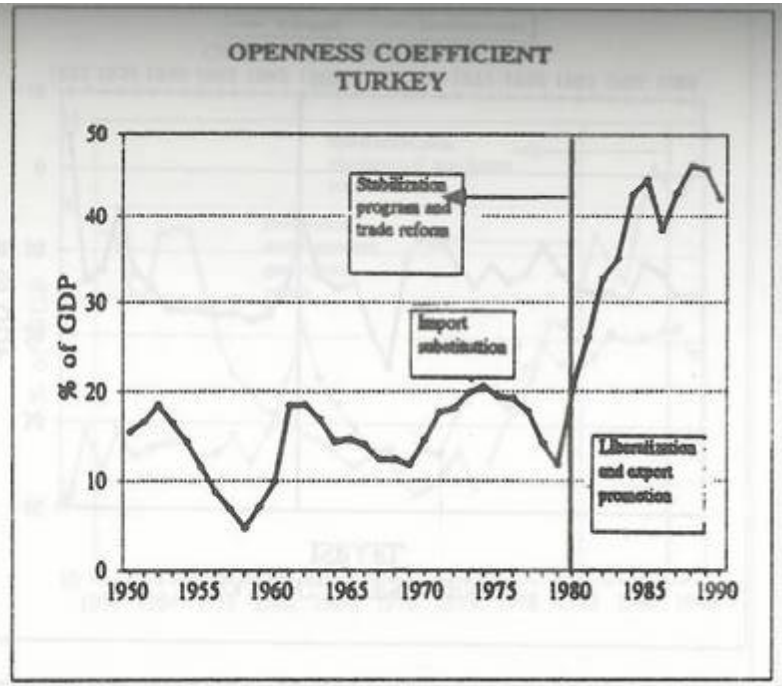

GDP PER CAPITA GROWTH RATE
GREECE
12%
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
1951
1955
1959
1963
1967
1971
1975
1979
1983
1987
Annual
Moving Average

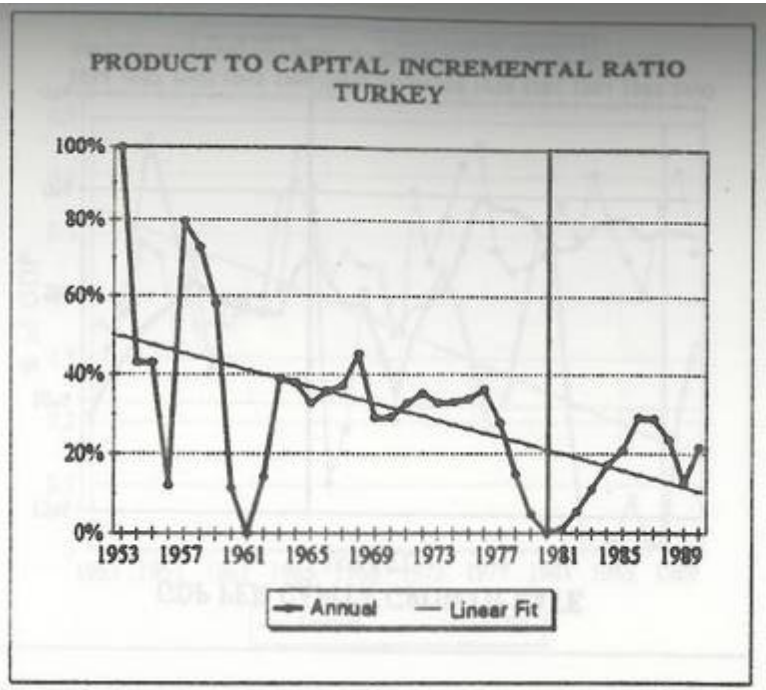

OPENNESS COEFFICIENT
TUNISIA
% of GDP
100
90
80
70
60
50
40
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Devaluation and macroeconomic stabilization

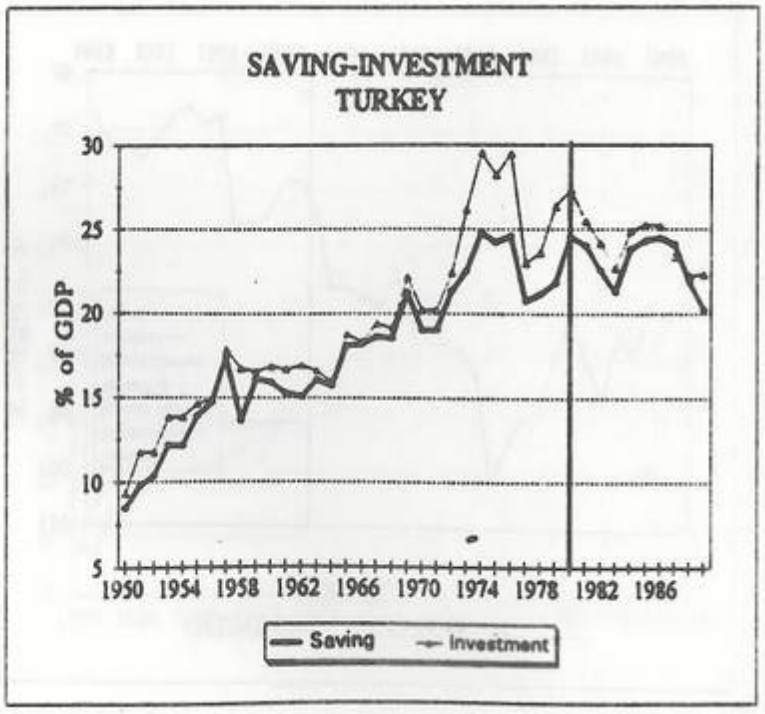

PRODUCT TO CAPITAL INCREMENTAL RATIO
TUNISIA
70%
60%
50%
40%
30%
20%
10%
1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Annual
Linear Fit

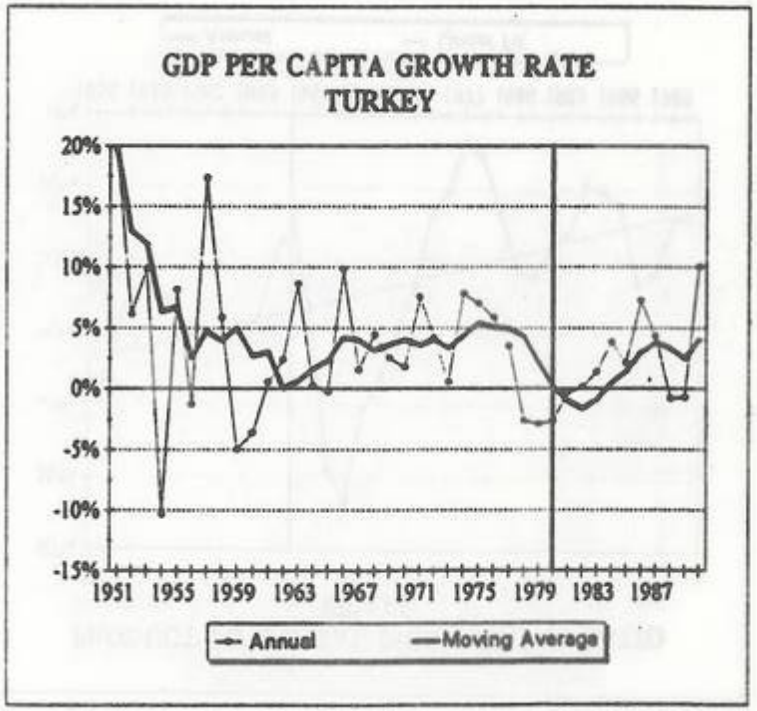

SAVING-INVESTMENT
TUNISIA
% of GDP
25
20
15
10
5
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
TUNISIA
20%
15%
10%
5%
0%
-5%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

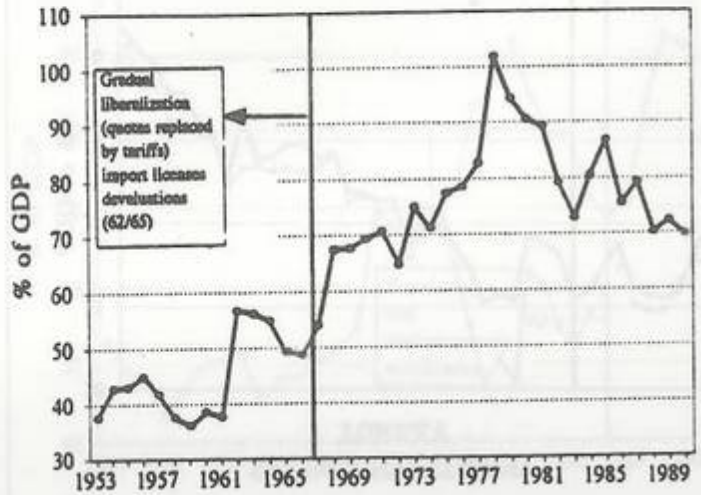

OPENNESS COEFFICIENT
TURKEY
% of GDP
50
40
30
20
10
0
1950 1955 1960 1965 1970 1975 1980 1985 1990
Stabilization program and trade reform
Import substitution
Liberalization and export promotion


PRODUCT TO CAPITAL INCREMENTAL RATIO
TURKEY
100%
80%
60%
40%
20%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

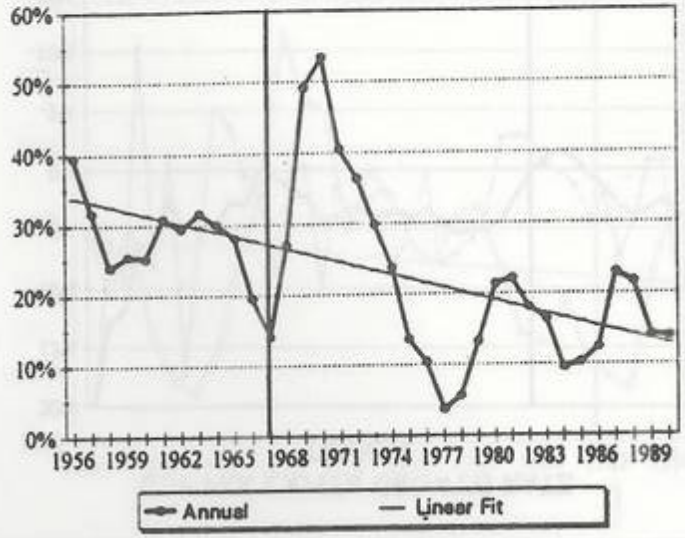

SAVING-INVESTMENT
TURKEY
% of GDP
30
25
20
15
10
5
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986
Saving
Investment


GDP PER CAPITA GROWTH RATE
TURKEY
20%
15%
10%
5%
0%
-5%
-10%
-15%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

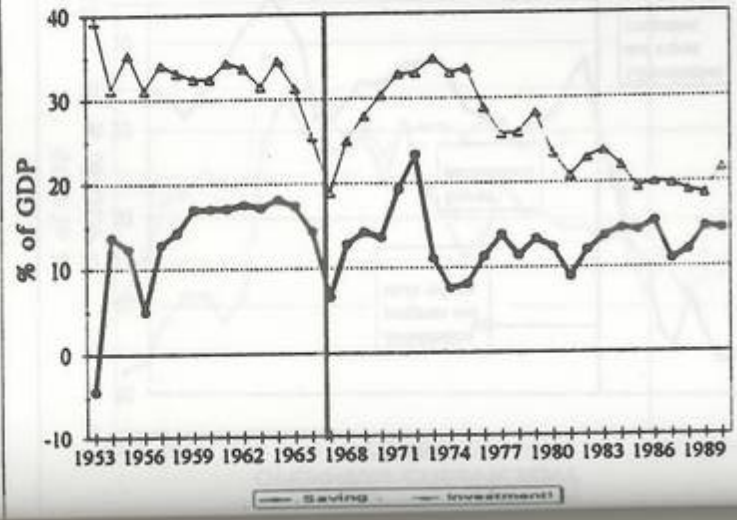
OPENNESS COEFFICIENT
ISRAEL



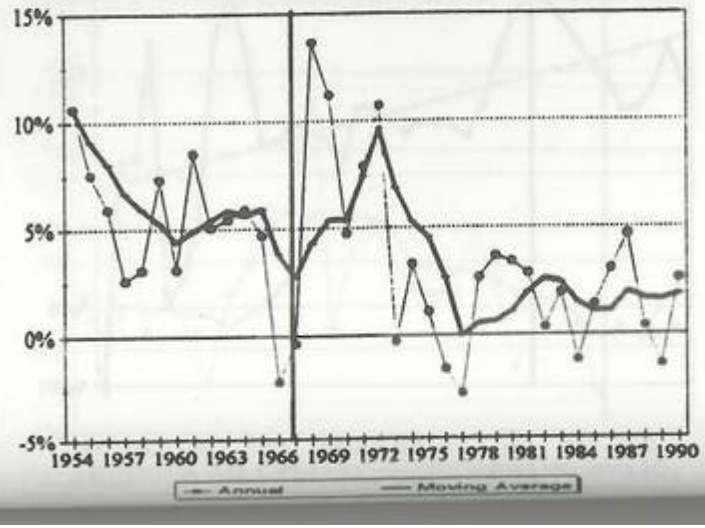
PRODUCT TO CAPITAL INCREMENTAL RATIO
ISRAEL

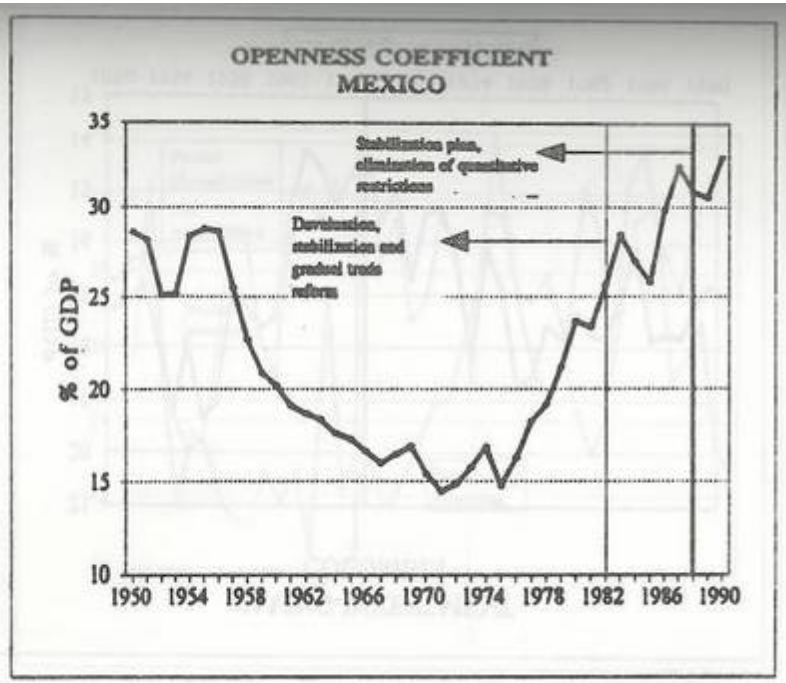


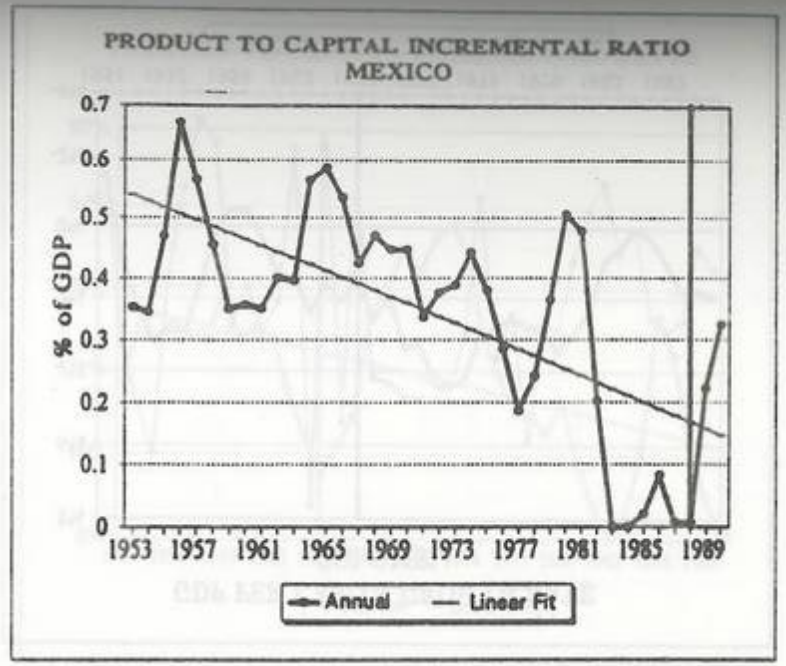
SAVING-INVESTMENT
ISRAEL

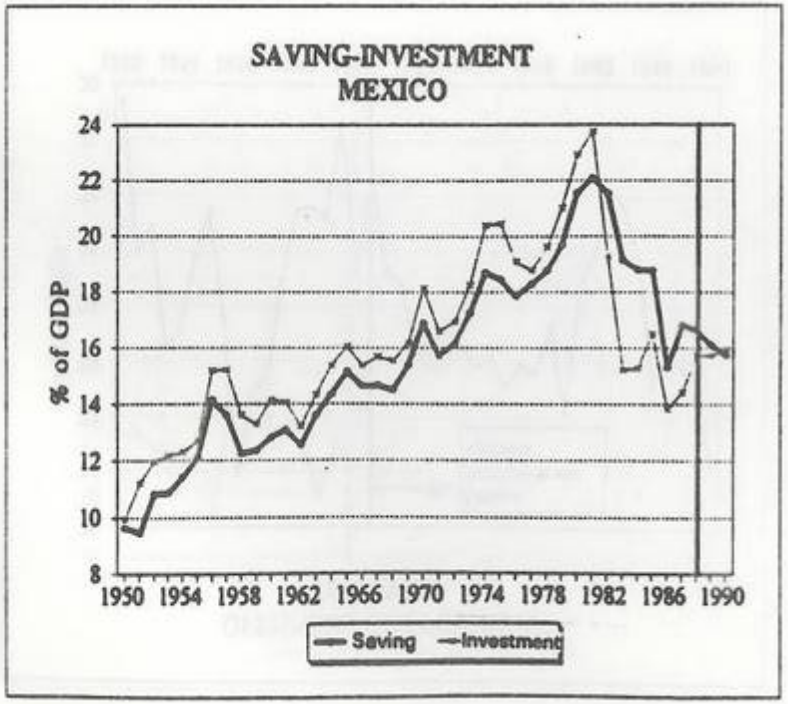


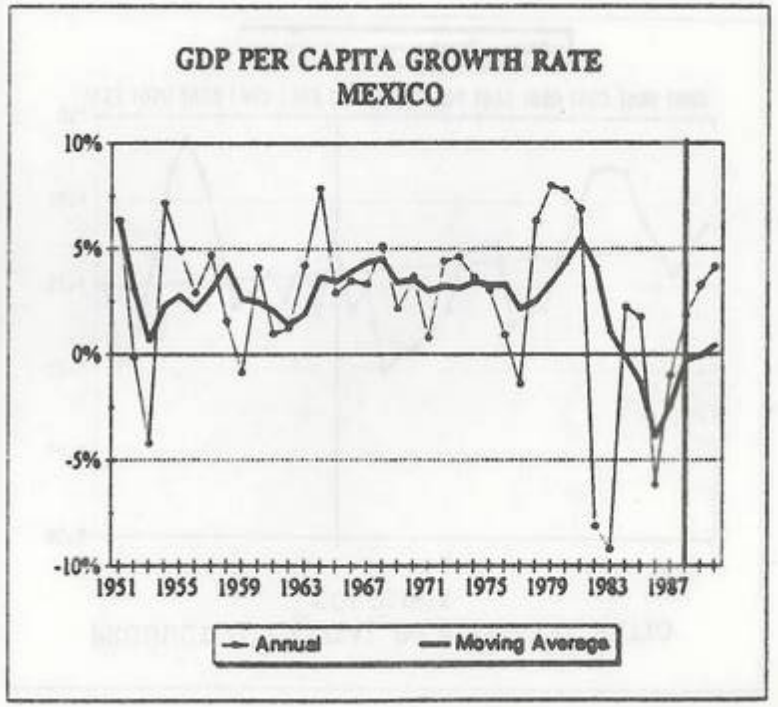
GDP PER CAPITA GROWTH RATE
ISRAEL

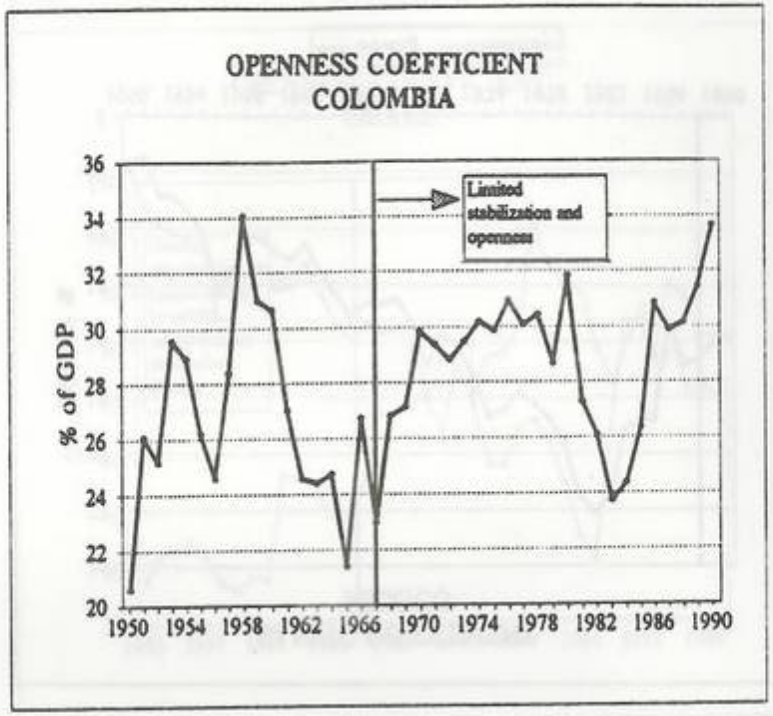


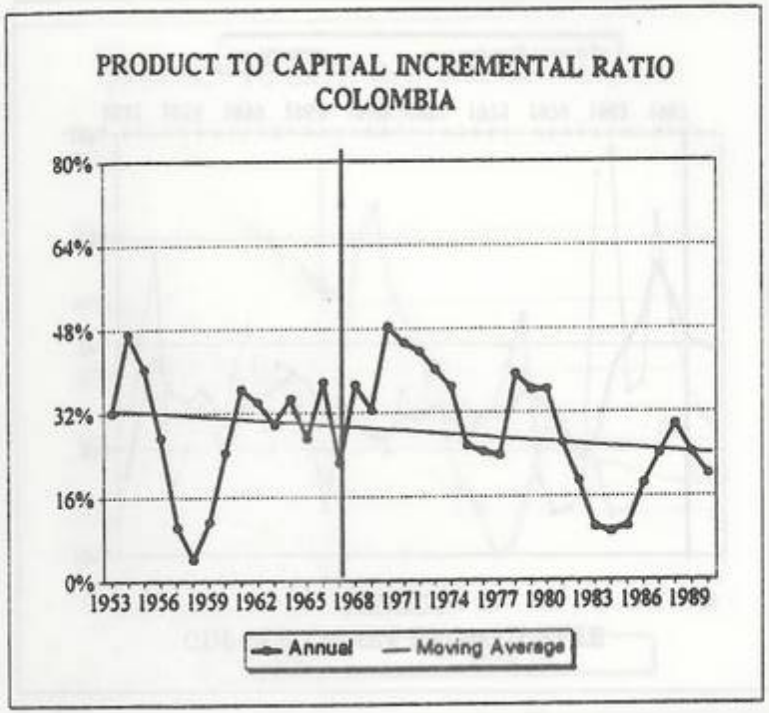

OPENNESS COEFFICIENT
MEXICO
% of GDP
35
30
25
20
15
10
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Stabilization plan, elimination of quantitative restrictions
Devaluation, stabilization and gradual trade reform

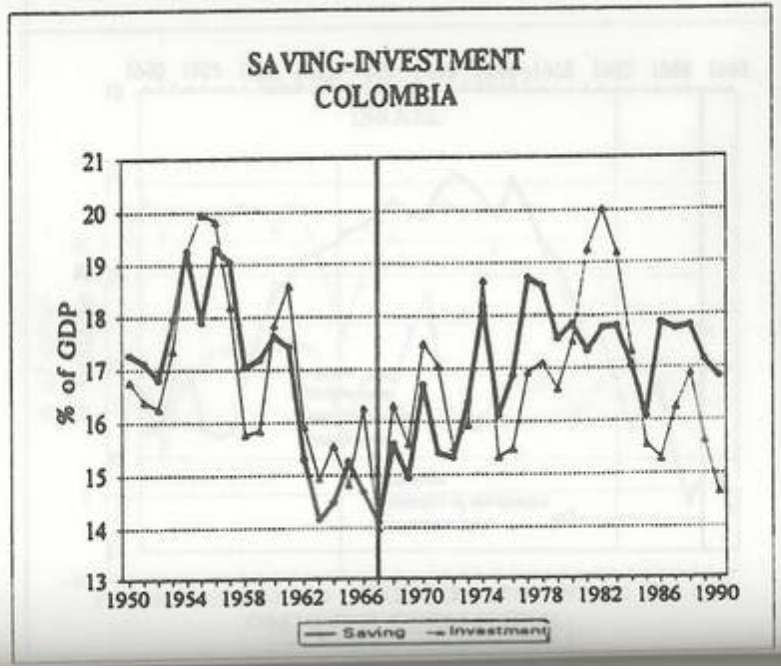

PRODUCT TO CAPITAL INCREMENTAL RATIO
MEXICO
% of GDP
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

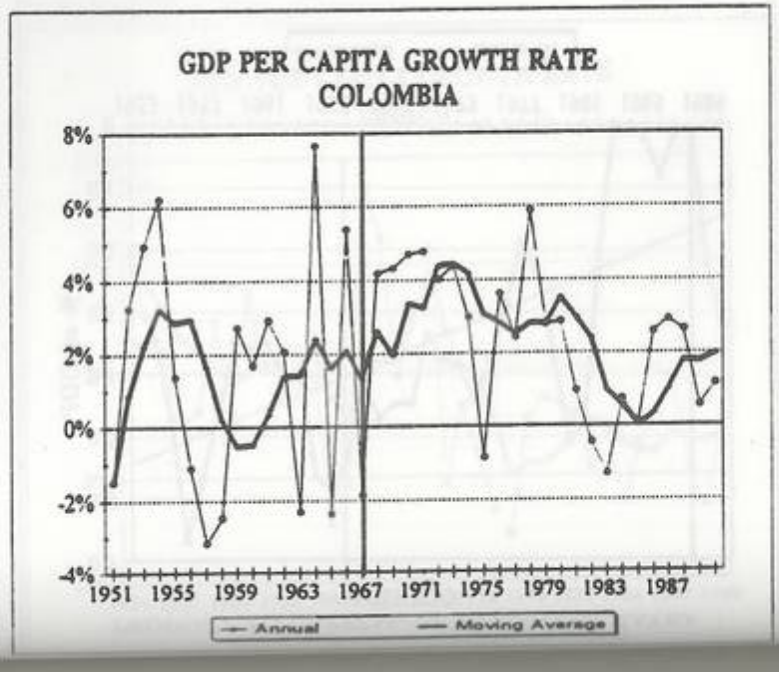

SAVING-INVESTMENT
MEXICO
% of GDP
24
22
20
18
16
14
12
10
8
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

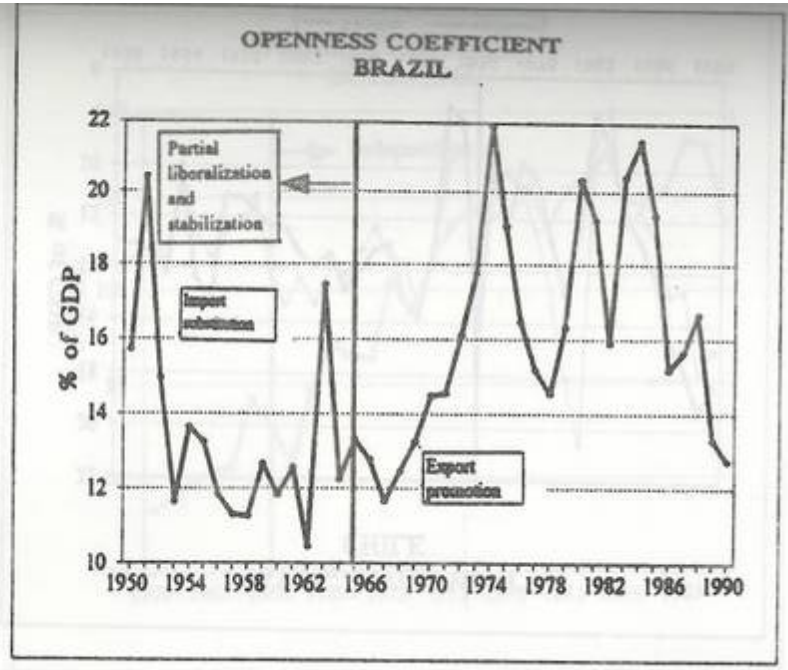

GDP PER CAPITA GROWTH RATE
MEXICO
10%
5%
0%
-5%
-10%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

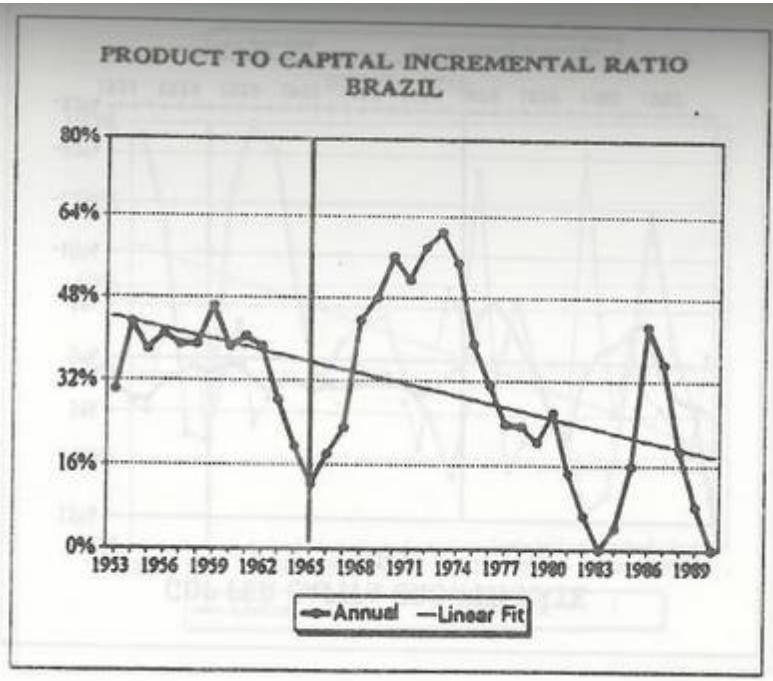

OPENNESS COEFFICIENT
COLOMBIA
% of GDP
Limited stabilization and openness
36
34
32
30
28
26
24
22
20
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990

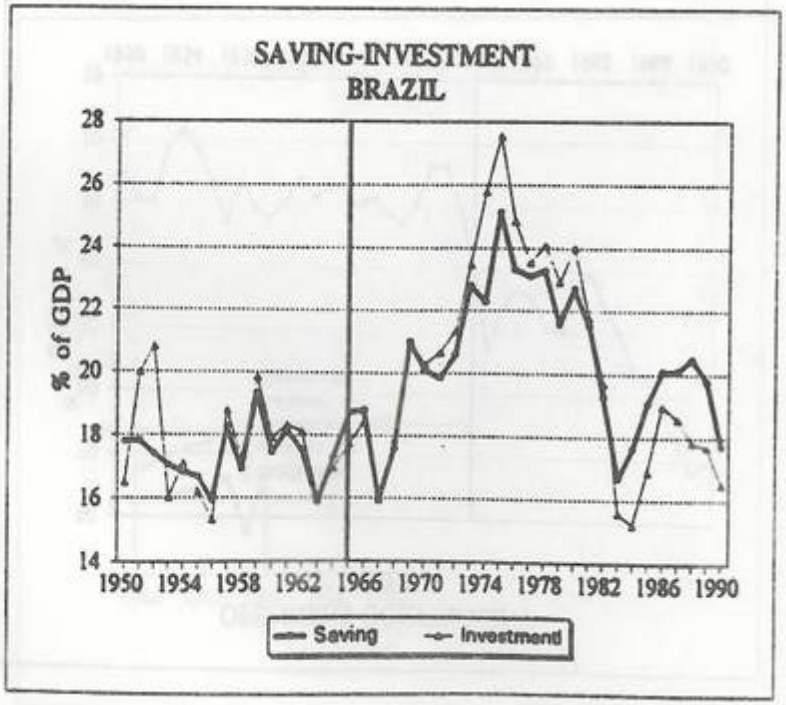

PRODUCT TO CAPITAL INCREMENTAL RATIO
COLOMBIA
80%
64%
48%
32%
16%
0%
1953 1956 1959 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
Annual
Moving Average

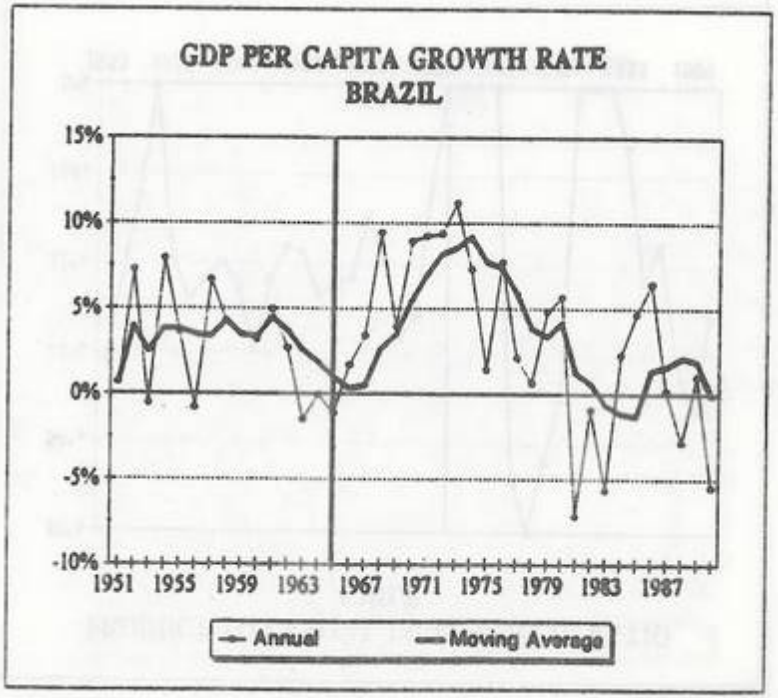

SAVING-INVESTMENT
COLOMBIA
% of GDP
21
20
19
18
17
16
15
14
13
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

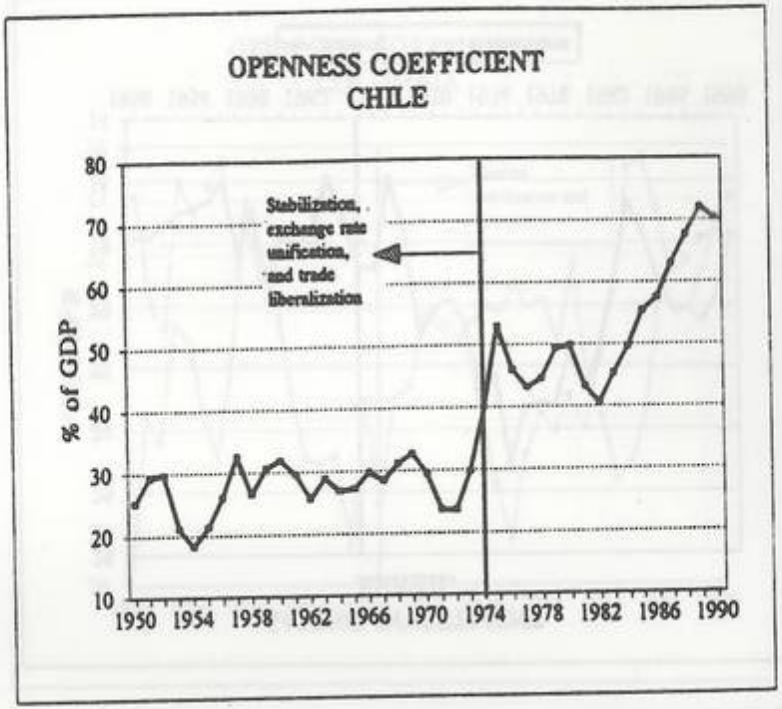

GDP PER CAPITA GROWTH RATE
COLOMBIA
8%
6%
4%
2%
0%
-2%
-4%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

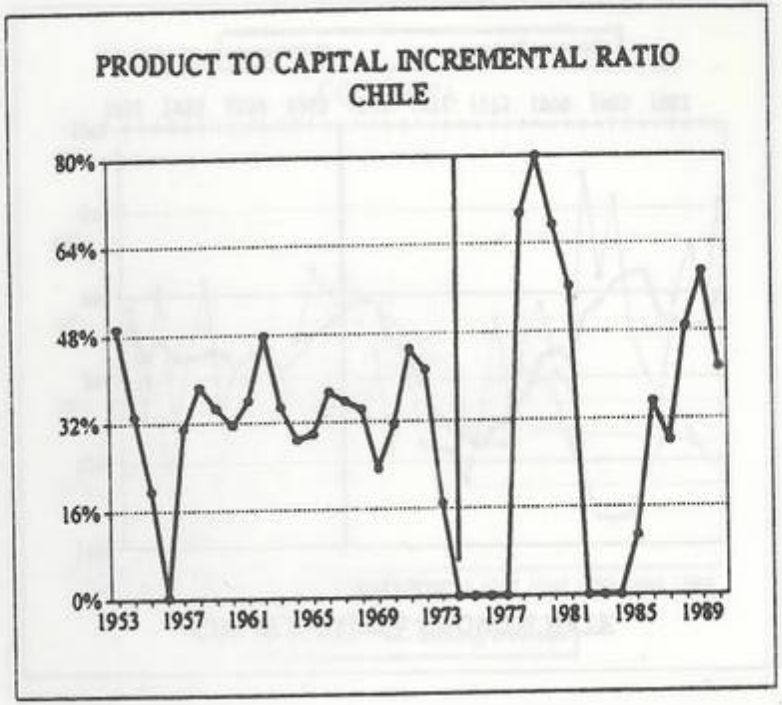

OPENNESS COEFFICIENT
BRAZIL
% of GDP
Partial liberalization and stabilization
Import substitution
Export promotion
22
20
18
16
14
12
10
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990

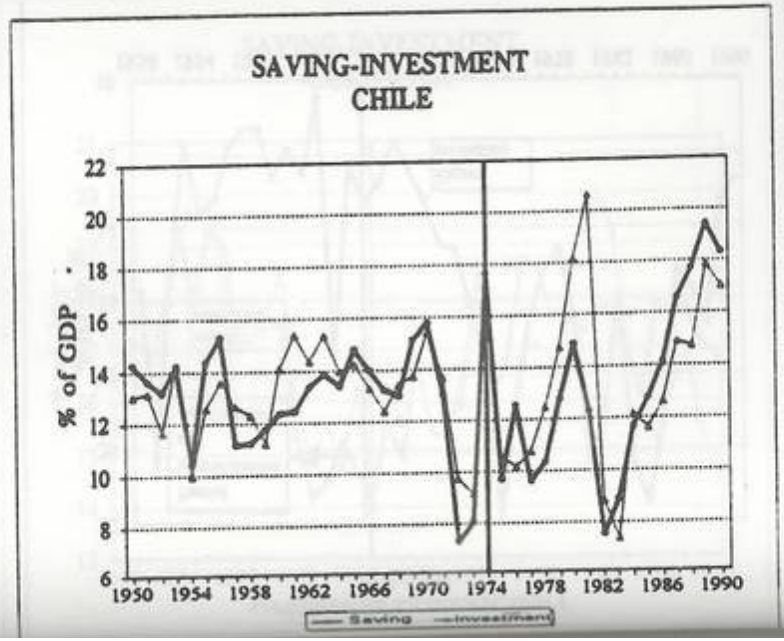

PRODUCT TO CAPITAL INCREMENTAL RATIO
BRAZIL
80%
64%
48%
32%
16%
0%
1953 1956 1959 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
Annual
Linear Fit

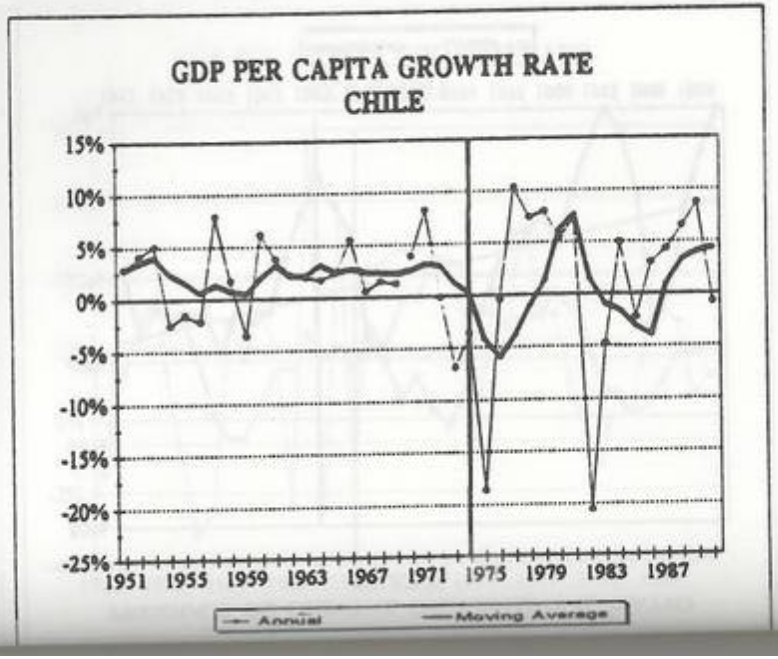

SAVING-INVESTMENT
BRAZIL
% of GDP
28
26
24
22
20
18
16
14
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

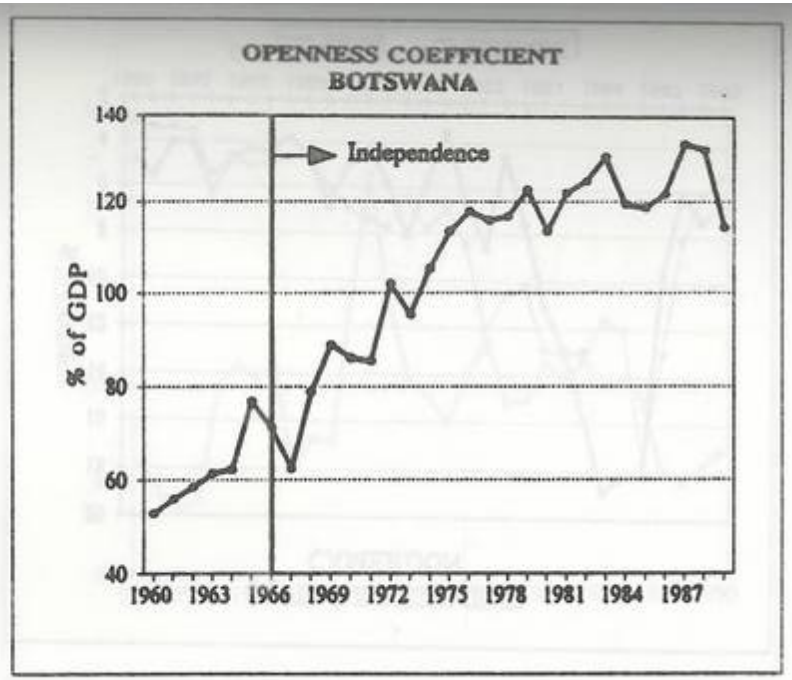

GDP PER CAPITA GROWTH RATE
BRAZIL
15%
10%
5%
0%
-5%
-10%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

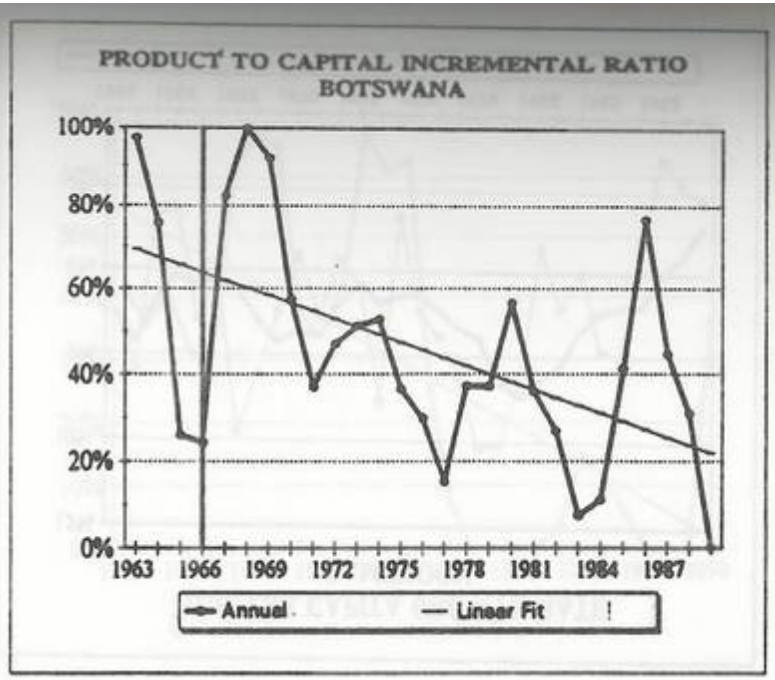

OPENNESS COEFFICIENT
CHILE
% of GDP
Stabilization, exchange rate unification, and trade liberalization
80
70
60
50
40
30
20
10
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990

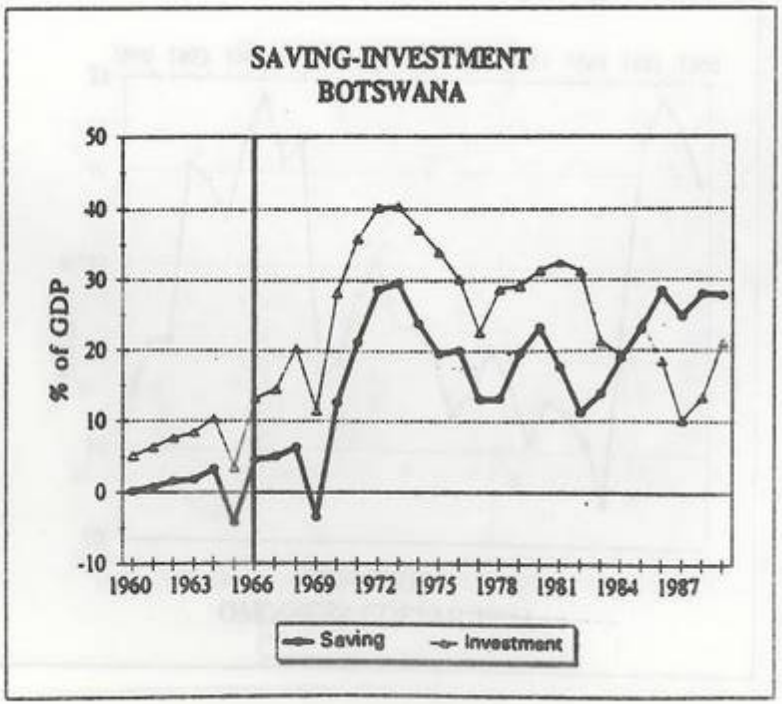

PRODUCT TO CAPITAL INCREMENTAL RATIO
CHILE
80%
64%
48%
32%
16%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989

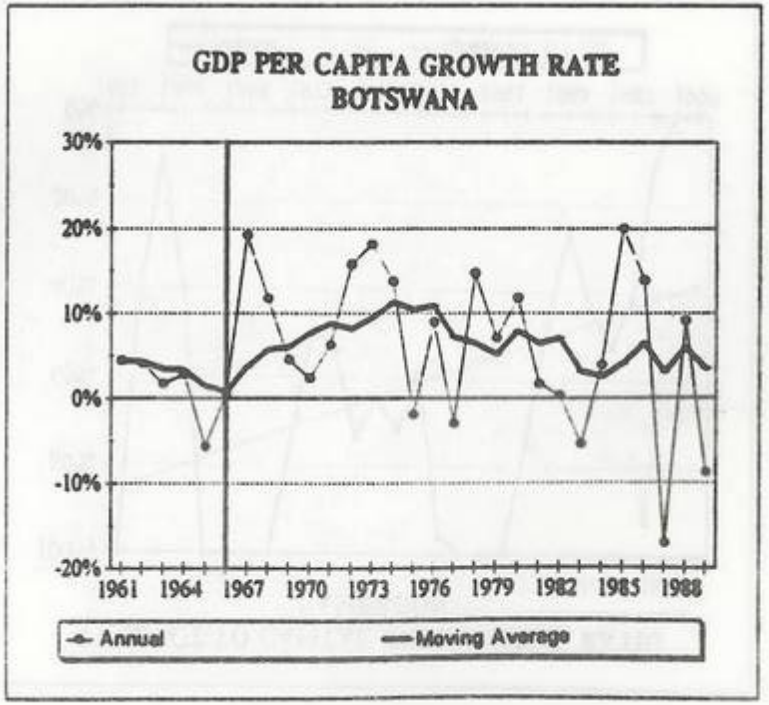

SAVING-INVESTMENT
CHILE
% of GDP
22
20
18
16
14
12
10
8
6
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment

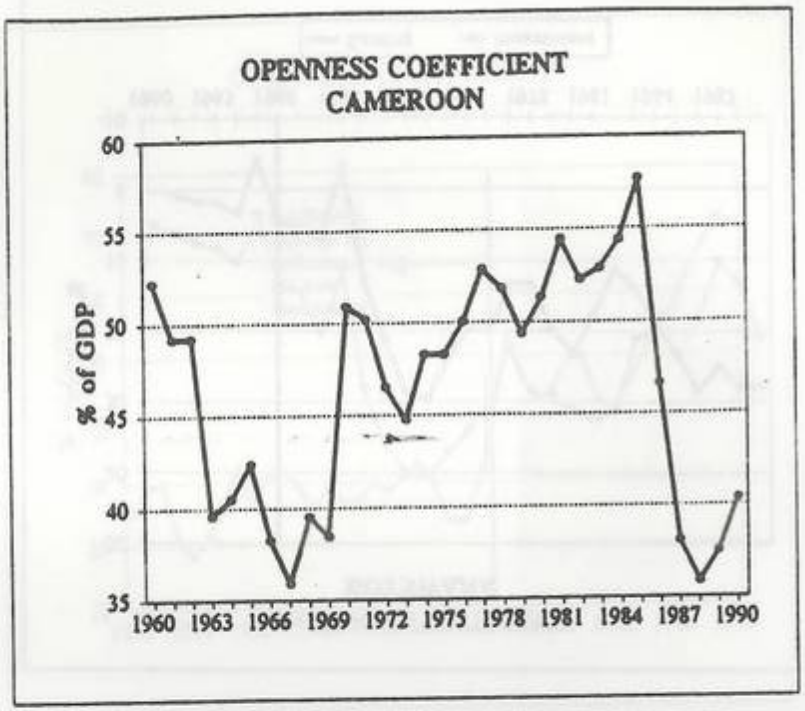

GDP PER CAPITA GROWTH RATE
CHILE
15%
10%
5%
0%
-5%
-10%
-15%
-20%
-25%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

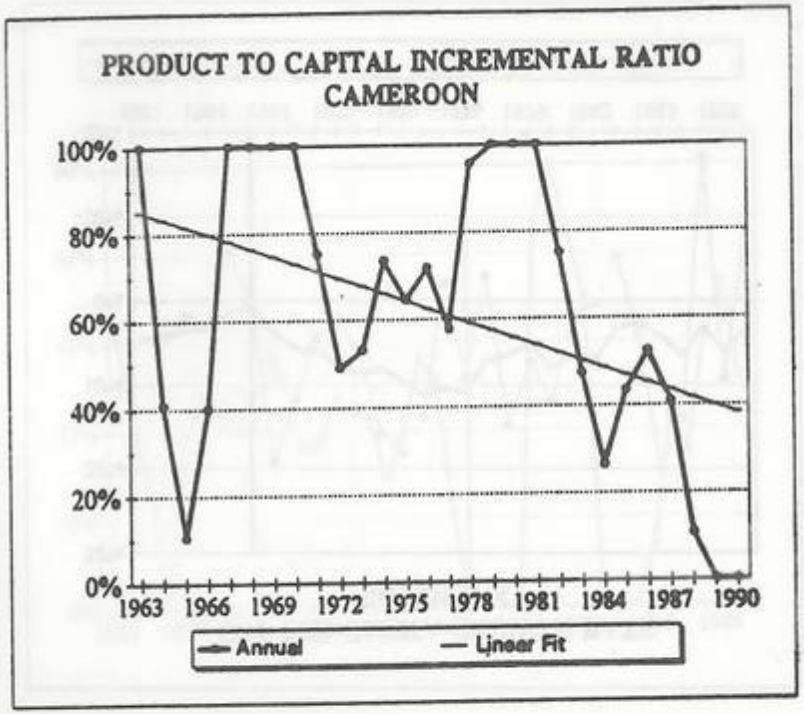

OPENNESS COEFFICIENT
BOTSWANA
% of GDP
Independence
140
120
100
80
60
40
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987

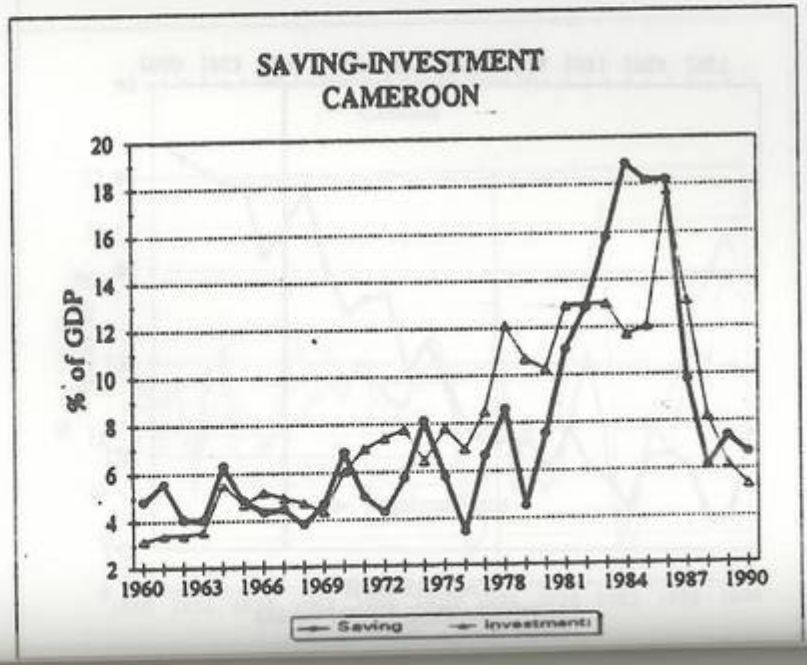

PRODUCT TO CAPITAL INCREMENTAL RATIO
BOTSWANA
100%
80%
60%
40%
20%
0%
1963 1966 1969 1972 1975 1978 1981 1984 1987
Annual
Linear Fit

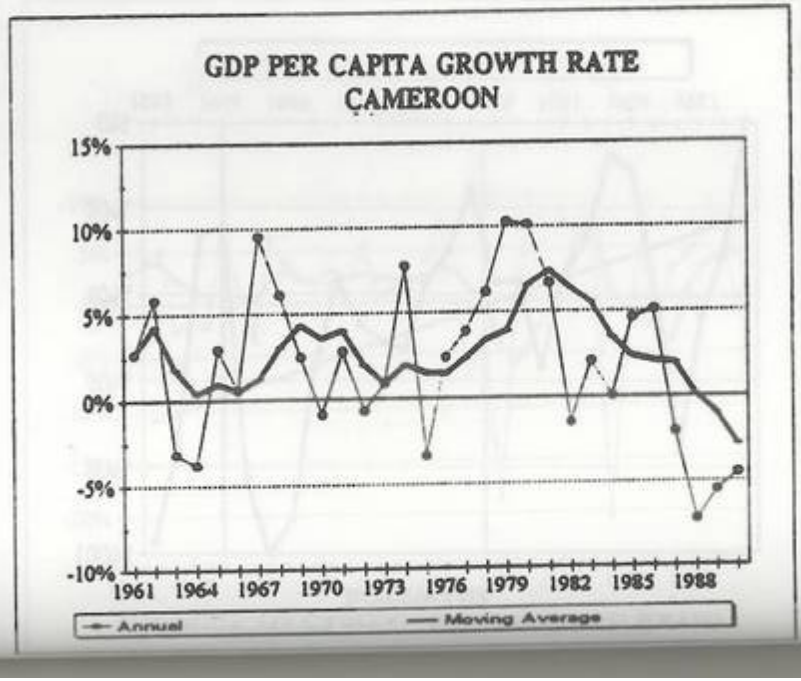

SAVING-INVESTMENT
BOTSWANA
% of GDP
50
40
30
20
10
0
-10
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987
Saving
Investment

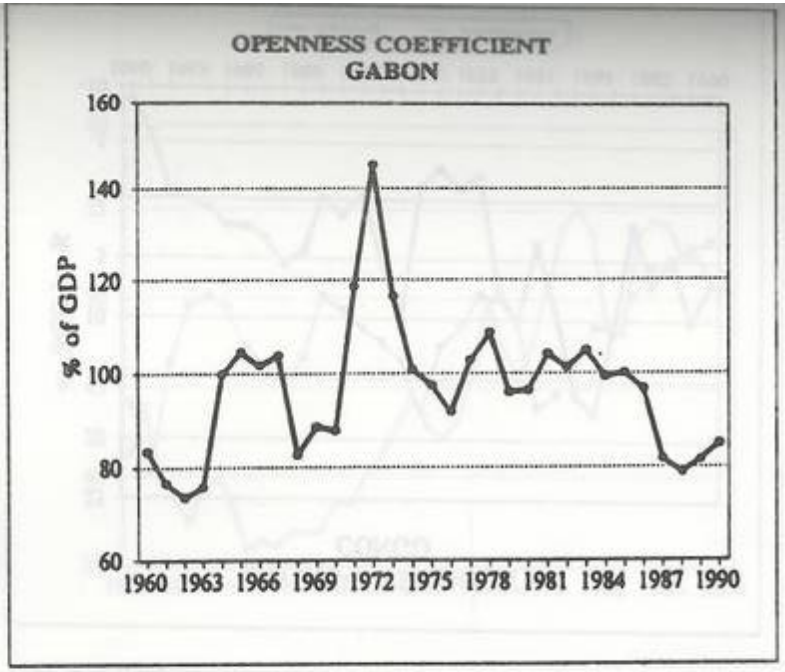

GDP PER CAPITA GROWTH RATE
BOTSWANA
30%
20%
10%
0%
-10%
-20%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

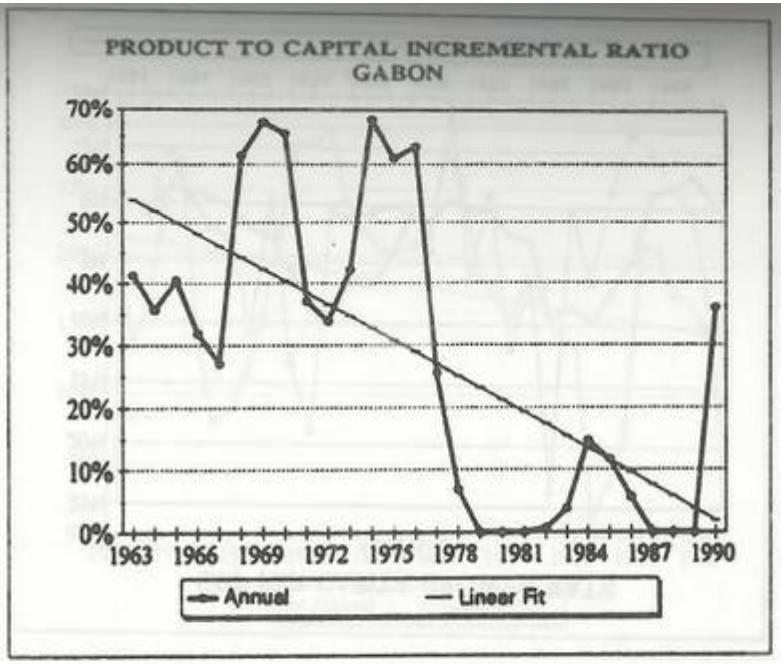

OPENNESS COEFFICIENT
CAMEROON
% of GDP
60
55
50
45
40
35
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990

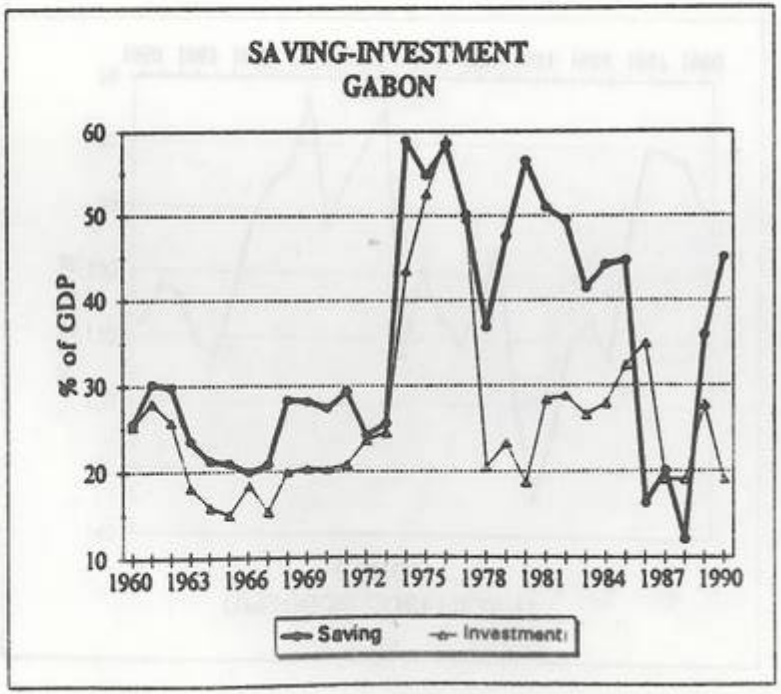

PRODUCT TO CAPITAL INCREMENTAL RATIO
CAMEROON
100%
80%
60%
40%
20%
0%
1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Annual
Linear Fit

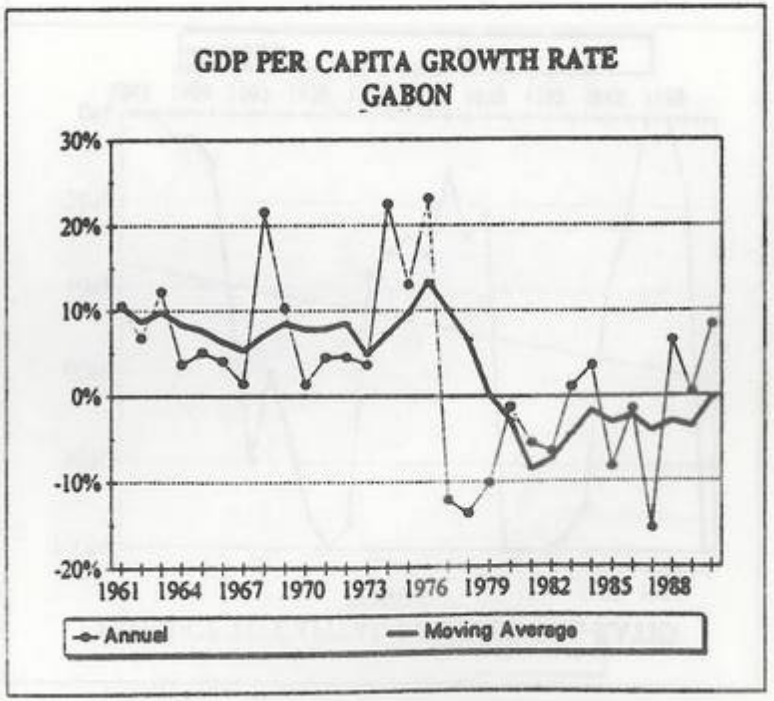

SAVING-INVESTMENT
CAMEROON
% of GDP
20
18
16
14
12
10
8
6
4
2
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment

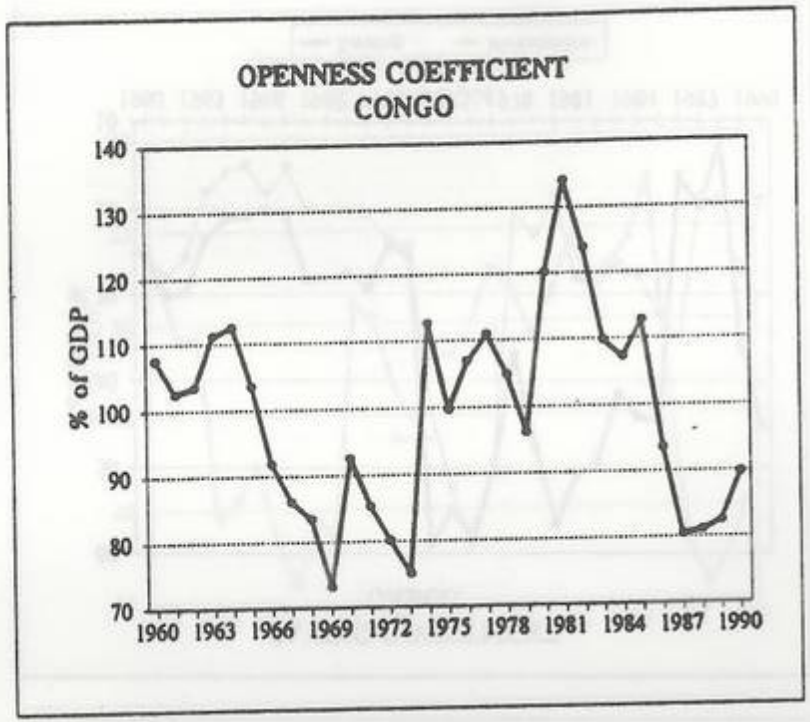

GDP PER CAPITA GROWTH RATE
CAMEROON
15%
10%
5%
0%
-5%
-10%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

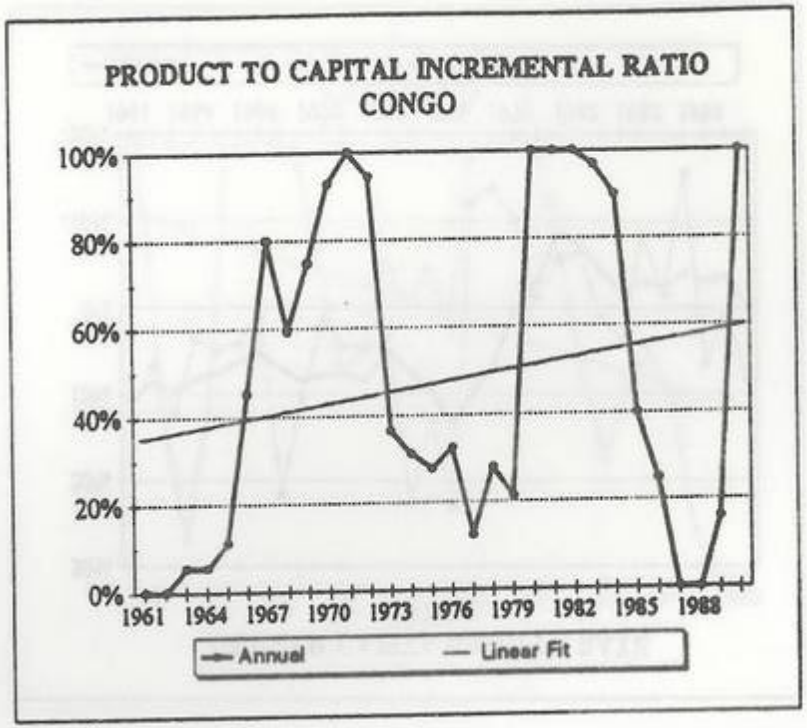

OPENNESS COEFFICIENT
GABON
% of GDP
160
140
120
100
80
60
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990

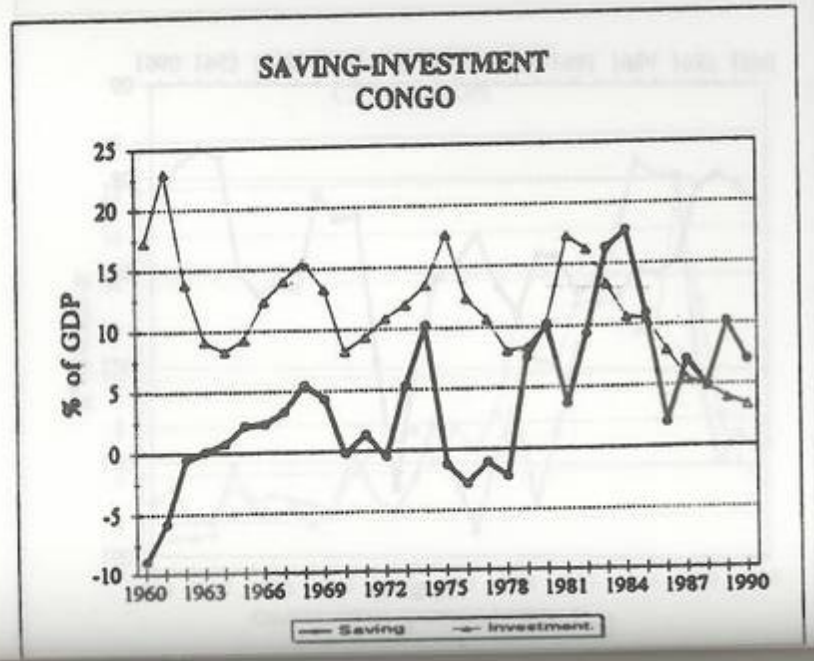

PRODUCT TO CAPITAL INCREMENTAL RATIO
GABON
70%
60%
50%
40%
30%
20%
10%
0%
1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Annual
Linear Fit

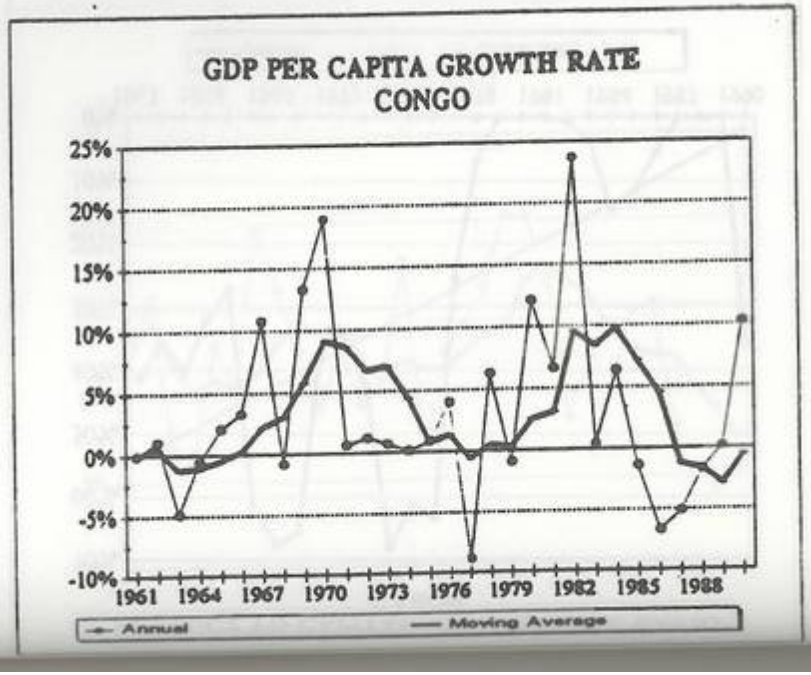

SAVING-INVESTMENT
GABON
% of GDP
60
50
40
30
20
10
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment

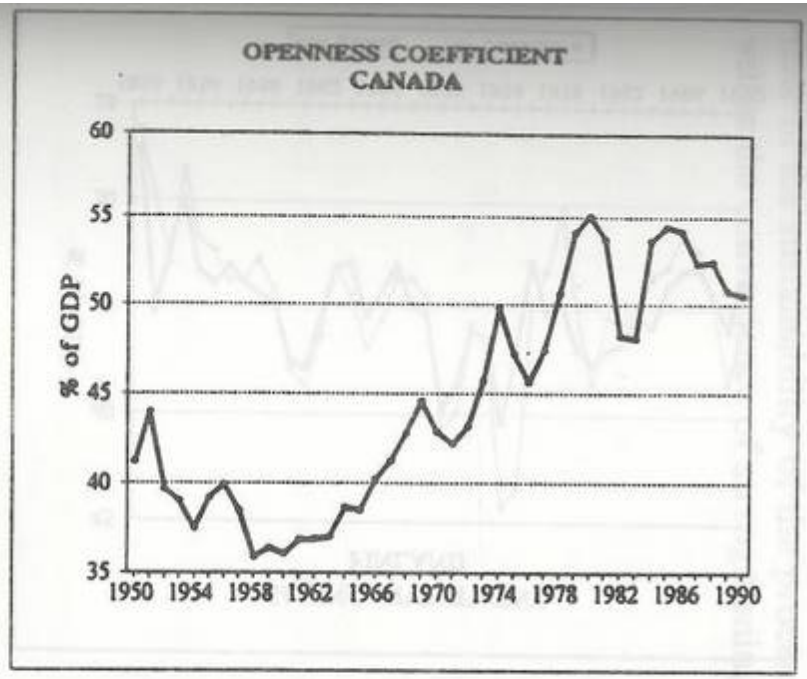

GDP PER CAPITA GROWTH RATE
GABON
30%
20%
10%
0%
-10%
-20%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

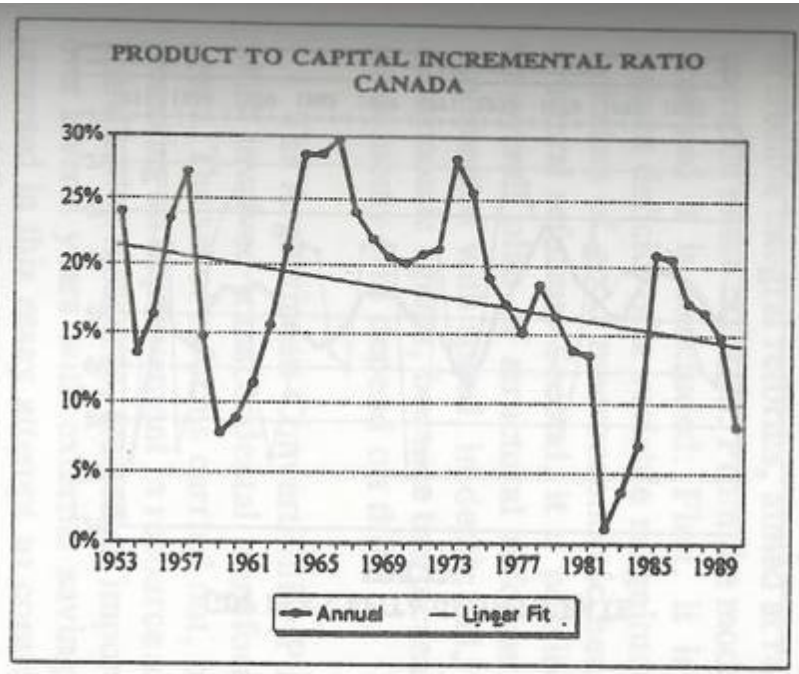

OPENNESS COEFFICIENT
CONGO
% of GDP
140
130
120
110
100
90
80
70
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990

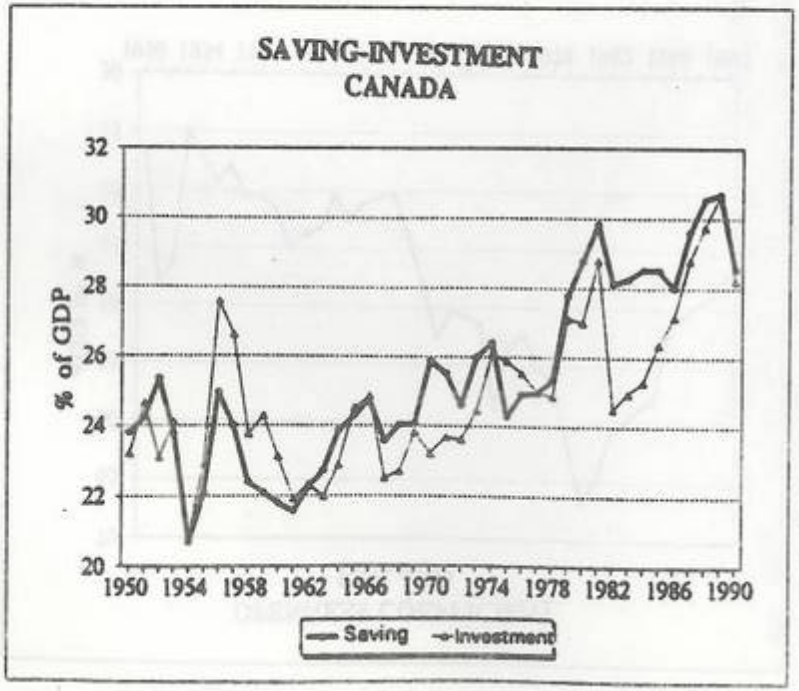

PRODUCT TO CAPITAL INCREMENTAL RATIO
CONGO
100%
80%
60%
40%
20%
0%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Linear Fit

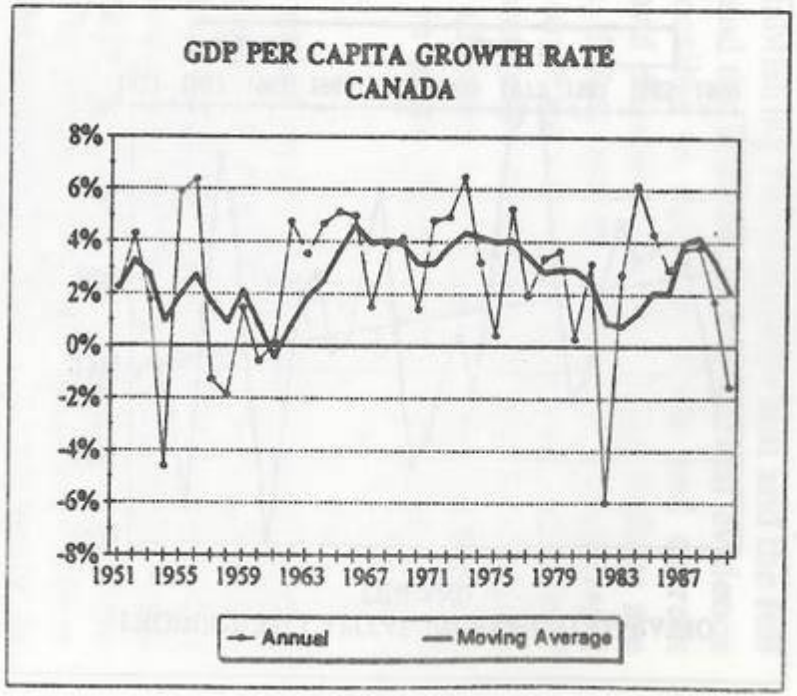

SAVING-INVESTMENT
CONGO
% of GDP
25
20
15
10
5
0
-5
-10
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
Saving
Investment

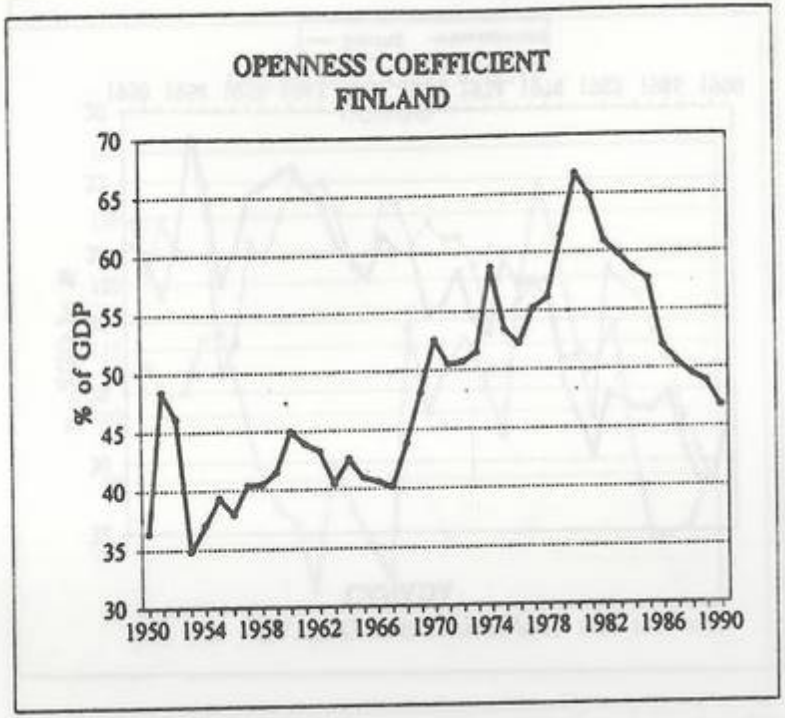

GDP PER CAPITA GROWTH RATE
CONGO
25%
20%
15%
10%
5%
0%
-5%
-10%
1961 1964 1967 1970 1973 1976 1979 1982 1985 1988
Annual
Moving Average

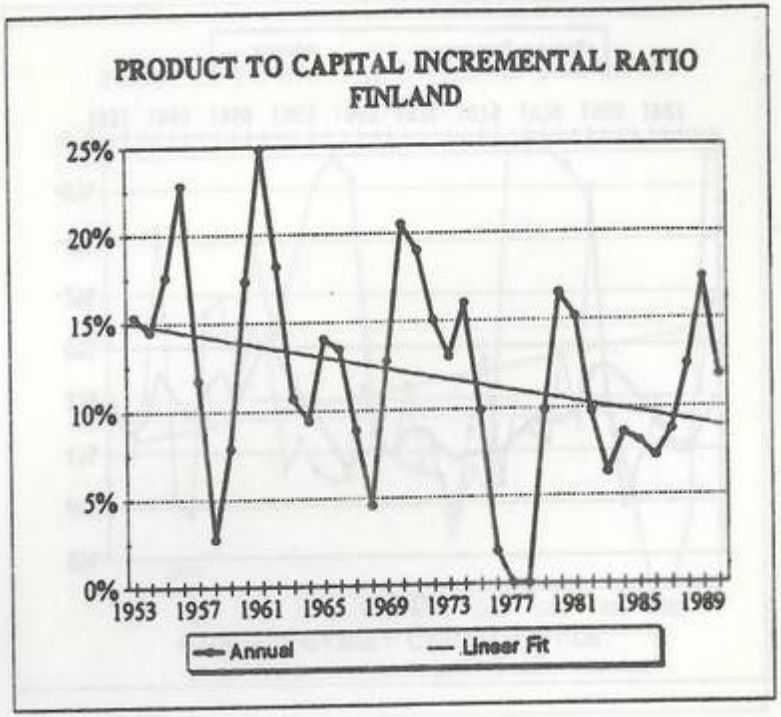

OPENNESS COEFFICIENT
CANADA
% of GDP
60
55
50
45
40
35
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
CANADA
30%
25%
20%
15%
10%
5%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit

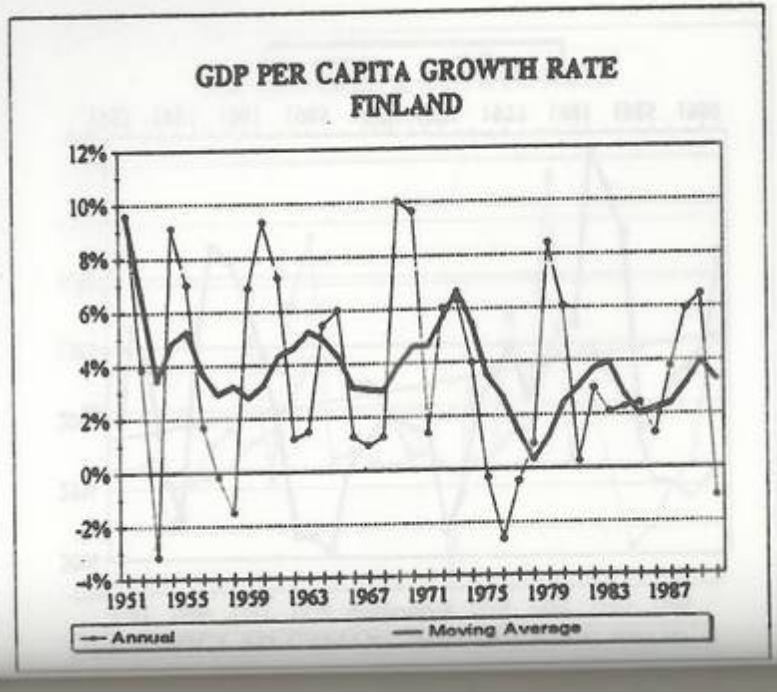

SAVING-INVESTMENT
CANADA
% of GDP
32
30
28
26
24
22
20
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
CANADA
8%
6%
4%
2%
0%
-2%
-4%
-6%
-8%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average


OPENNESS COEFFICIENT
FINLAND
% of GDP
70
65
60
55
50
45
40
35
30
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990


PRODUCT TO CAPITAL INCREMENTAL RATIO
FINLAND
25%
20%
15%
10%
5%
0%
1953 1957 1961 1965 1969 1973 1977 1981 1985 1989
Annual
Linear Fit


SAVING-INVESTMENT
FINLAND
% of GDP
45
40
35
30
25
1950 1954 1958 1962 1966 1970 1974 1978 1982 1986 1990
Saving
Investment


GDP PER CAPITA GROWTH RATE
FINLAND
12%
10%
8%
6%
4%
2%
0%
-2%
-4%
1951 1955 1959 1963 1967 1971 1975 1979 1983 1987
Annual
Moving Average

CONCLUSIONS

The existence of trade and current account deficits should not be necessarily perceived as negative indicators of a country's macroeconomic situation, and it is feasible that they mean exactly the opposite, if they are the result of a process of credible integral reforms, aimed at reestablishing fiscal equilibrium and the full operation of the markets. From the model and the international empirical evidence presented it is concluded: First, it is possible to maintain trade and current account deficits of a variable magnitude and duration and that these deficits are indicators of good macroeconomic health if they are the outcome of successful structural reforms. Second, it is possible to attain sustained economic growth if the overall plan of structural reforms (economic openness is one of them) is implemented with speed, in depth and, in addition, is perceived as permanent by the economic agents, because the increase in factor productivity to be attained by the economy will depend on this.

The Argentinean Convertibility Plan meant an in-depth institutional change which involved transcendental transformations in the behavior of the economic agents. The set of reforms carried out, by recovering macroeconomic control and promoting an improvement in resource allocation through market deregulation and liberalization measures, started an important process of economic growth financed over several years with external saving. The model and the empirical evidence presented in this essay attempt to contribute sufficient elements of judgement in favor of the sustainability of the process started with the convertibility plan, as well as the convenience of strengthening such a process of reforms.

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