Balance-of-Payments Constrained Economic Growth: The Case of Mexico *

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1. Background

From 1940 to 1981 Mexico experienced spectacular economic growth, with its gross domestic product (GDP) expanding in real terms at a speed that outpaced that of the United States of America (US), its powerful neighbour. In those four decades, in spite of its rapid demographic expansion, Mexico cut down nearly ten percentage points in the gap of its GDP per capita *vis-à-vis* the US. From being equivalent to 22% of the US average in 1939, Mexico's GDP per capita climbed to represent 30% of the US figure in 1981, measured in constant dollars (Maddison 1995).

However, the evolution of the Mexican economy since 1982 has been plagued by stagnation and instability. Upswings in economic activity, though moderate by historic standards, have been recurrently interrupted by balance-of-payments crisis. The result has been a dismal performance in terms of economic growth. Real GDP declined in 1982-87, and averaged an annual increase of just 2.4% in 1988-97, more than four points below its average in 1950-75 (see Table 1). Such sluggish behaviour pushed back its catching-up process with the US economy. By 1997, Mexican GDP per capita in constant dollars represented approximately 24% of the US, a relative gap similar to the one prevailing nearly sixty years ago.

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* The author wishes to thank Alice Amsden, John Coatsworth, Hubert Escaith, David Ibarra, Carlo Panico, Martín Puchet and Ajit Singh for comments on previous drafts of this paper; he gratefully acknowledges the financial support of Banco de México to carry out this research.

Sustaining high long-term economic growth should be a top priority in the national agenda. The economy needs to expand at least at 6% per year in real terms, just to create the jobs required by the 3.3% annual increase in its labour force.[1] Economic expansion must be even stronger in order to significantly improve the living standards of the tens of millions of Mexicans that live in extreme poverty.[2] If the economy does not soon enter a path of high and sustained growth, the nation's social fabric may be severely damaged.

In the last ten years, economic growth again became a cool topic for academic research, originating a vast literature on the, so-called, New Growth theory. This theory differs from the conventional one, based on Solow's seminal contributions, in claims regarding, *inter alia*, the convergence of levels of real income per capita and the impact of the savings rate on long-term economic growth. However, both theories identify technical progress and the supply of factors of production as main determinants of long-term economic growth.

Notwithstanding their valuable contributions, their focus on the supply side fails to recognize the influence of financial constraints and of aggregate demand on economic growth (Skott and Auerbach 1995, Taylor 1996). This neglect questions their relevance for the analysis of growth processes in developing economies, whose fixed capital formation strongly depends on imported machinery and equipment. Such dependence implies that access to foreign exchange tends to be a relevant constraint on fixed investment and, therefore, on economic growth. In fact, the experience of the Mexican economy, and many other countries in Latin America, is a dramatic proof that apparently sound economic growth trajectories can be derailed by sudden changes in the availability of foreign exchange. Shocks in the terms of trade or in the net inflow of foreign capital have radically altered the growth path of many economies in the region.

The availability of foreign exchange is recognized as a key determinant of long-term economic growth by some, non-neoclassical, analytical perspectives. The Gap Models, rooted in the work of Che-

[1] Labour force figures are taken from OECD (1996). Other estimates of the GDP growth required to absorb the labour supply can be found in Ros (1997) – around 4.5% – and Dussel (1995), who puts it close to 10%.

[2] According to official data, more than 13 million Mexicans lived in conditions of extreme poverty in 1992 (ECLAC & INEGI 1993). It is estimated that their number is today much higher.

nery, and the balance-of-payments constraint models (BPC-model hereafter), extending Harrod's work on the foreign-trade multiplier, are examples of these perspectives. Some of their tools have gained acceptance as useful instruments to analyze economic growth processes when markets do not necessarily clear (Taylor 1996).

The paper covers four Sections besides this introduction. Section 2 puts forward a revised version of the balance-of-payments constraint model to include a notion of long-term equilibrium that guarantees a positive and sustainable path of external indebtedness. Section 3 applies this version of the BPC-model to explain main turning points in Mexico's economic growth path since 1950. Section 4 summarizes the conclusions.

2. The balance-of-payments constraint: an analytical model

The work of Thirlwall has been a path-breaking contribution to highlight the role of the balance of payments as a determinant of long-term economic growth. Based on the proposition that the current account deficit cannot be indefinitely financed, Thirlwall (1979) built a parsimonious model, known as the balance-of-payments constraint model, showing that the lack of foreign exchange sets a fundamental limit to the long-run expansion of domestic income.

In 1982, with Hussain, he modified the BPC-model in order to examine the influence of foreign capital movements, and concluded that long-run economic growth has an upper ceiling given by the evolution of net foreign capital inflows, net exports and the terms of trade. Their model, however, imposed no restriction on the trajectory of foreign capital flows except for the accounting principle equating the consolidated debit and credit items in the balance of payments. Therefore, it did not ensure that the path of external indebtedness is sustainable. But, as Mexico's economic history painfully attests, external capital may be financing the foreign exchange needs of economic booms but, simultaneously, fueling an excessive accumulation of foreign debt that sooner or later will explode into a balance-of-payments crisis that plunges the economy into a recession.

Aware of this problem, McCombie and Thirlwall (1997) once more modified the BPC-model by incorporating in it an additional constraint given by a long-term constant ratio of the *stock* of external debt to GDP. They only examined the case of constant terms of trade, and showed how the introduction of this constraint necessarily leads to a different expression of Thirlwall's Law. We will come back to this expression later, but it should be stressed that the present paper adopts a different approach and goes beyond the previous contributions to the BPC-literature in various ways.

First of all, it limits external indebtedness to preserve a long-term constant ratio of the *current account deficit* to nominal income or GDP. Such specification, not considered by other authors in the BPC-literature, seems to better reflect the position of international financial institutions regarding what are – and are not – sustainable paths of foreign indebtedness. Indeed, the "Washington Consensus" has recognized that one main lesson to be derived from the Mexican crisis of 1994 is that "[...] the current account is a key variable that should not get out of line" (Edwards 1995, p. 302). Moreover, current account deficits of around 5 to 8% of GDP, and certainly higher, have been singled out as matter of serious concern by senior officers of the International Monetary Fund (Fischer 1997) and the World Bank (Burki and Edwards 1995).[3]

Second, the analytical model here put forward leads to a formulation of the BPC-growth rate that: *a*) differs from the canonical expressions derived by Thirlwall and his associates for the case of unrestricted foreign capital flows, and *b*) generalizes the expression obtained by McCombie and Thirlwall (1997) for the case of constant terms of trade.

Third, the present paper carries out an empirical application of the revised BPC-model to examine the Mexican economy's growth path in 1950-97 and to offer an explanation of its slowdown since 1982.

[3] Evidently, the evolution of the current account deficit/GDP ratio affects the ratio of the *stock* of foreign debt relative to GDP. However, as mentioned above, the former ratio has been singled out as a key indicator of macroeconomic performance. One reason for this may be the availability of reliable data on the current account (*flows*), in contrast with the difficult access to data on the total *stock* of foreign debt.

2.1. *A BPC-model with a sustainable path of external indebtedness*

The rate of economic growth compatible with a constant long-term ratio of the current account deficit to nominal income is derived by the following system of equations:

$$dx/x = \eta\,(dp/p - dp^*/p^*) + \pi dw/w \quad (1)$$

$$dm/m = \phi\,(dp^*/p^* - dp/p) + \xi\, dy/y \quad (2)$$

$$\mu = p^*m\,/\,(p^*m - px) \quad (3)$$

$$0 = \mu dm/m - (\mu - 1)dx/x - \mu(dp/p - dp^*/p^*) - dy/y \quad (4)$$

The first two equations are the standard export and import demand functions with constant elasticities, but expressed in terms of their rates of change, where x stands for real exports, m for real imports, p for domestic prices, p^* for foreign prices, w for world's real income, y for real domestic income, $\eta < 0$ and $\pi > 0$ for the price and income elasticities of exports, and $\phi < 0$, $\xi > 0$ for the respective elasticities of imports. To ease the exposition, the nominal exchange rate was taken to be fixed and equal to one. We shall refer to the price ratio p/p^* as the terms of trade, and its upward (downward) movement as an improvement (deterioration). Note that this version of the BPC-model does not distinguish between the real exchange rate and the terms of trade.

The third equation is just an identity defining μ as the ratio of nominal imports to the current account deficit. The fourth equation establishes the equilibrium condition for the balance of payments in terms of a long-term constant ratio of the current account to nominal income. It is derived from the balance-of-payments identity, but written in terms of proportions of nominal income:

$$B = (p^*m - px)\,/\,py = (MX)/Y \quad (5)$$

where M and X stand for total imports and exports of goods and services (factor and non-factor ones) and B is the initial ratio of the current account deficit relative to domestic nominal income Y. Taking differentials on both sides of expression (5) and equating them to zero leads to the following expression of the long-term equilibrium condi-

tion of economic growth with a sustainable path of foreign indebtedness:

$$0 = (M/Y)dm/m - (X/Y)dx/x - [(M - X)/Y]dy/y + (M/Y)(dp^*/p^* - dp/p) \quad (6)^4$$

The BPC-growth rate of real domestic income y_{ca} in our revised model is obtained by solving the system of equations 1 to 4:

$$y_{ca} = \frac{(\mu - 1)\,\pi dw/w + [\mu(\eta + \phi + 1) - \eta]\,(dp/p - dp^*/p^*)}{\xi\,\mu - 1} \quad (7)$$

Multiplying numerator and denominator of equation 7 by $1/\mu$ and, defining θ as the export/import ratio at nominal prices[5] leads to an equivalent, but perhaps easier to interpret, expression of y_{ca}:

$$y_{ca} = \frac{\theta\,\pi dw/w + (\theta\eta + \phi + 1)\,(dp/p - dp^*/p^*)}{\xi - (1 - \theta)} \quad (8)$$

Equation 8 shows that, if foreign capital inflows expand in tandem with domestic nominal income, then the long-term growth of *real* income y_{ca} is determined by the initial export/import ratio, the income and price elasticities of exports and imports, the rate of expansion of the world economy and the evolution of the terms of trade.

If the terms of trade are assumed to be constant in equation (8), then the BPC-growth rate would be given by the following expression:

$$y_{ca} = \frac{\theta\,\pi dw/w}{\xi - (1 - \theta)} \quad (9)$$

or equivalently:[6]

$$y_{ca} = \frac{\theta\,dx/x}{\xi - (1 - \theta)} \quad (10)$$

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[4] Equation (4) is immediately derived by multiplying both sides of the expression (6) by $(\mu Y)/M$, where μ was defined in equation (3) as $M/(M - X)$, assuming $M - X$ is non-zero.

[5] Note that by definition $\mu = 1/(1 - \theta)$.

[6] This expression coincides with the one derived by McCombie and Thirlwall (1997) where they introduced in the standard BPC-model the assumptions of: *a*) a given long-term ratio of the *stock* of external debt to GDP, and *b*) constant terms of trade.

If the current account is zero, then equation 10 leads to the canonical expression typically referred to as "Thirlwall's Law":

$$y_{ca} = \frac{dx/x}{\xi} \quad (11)$$

Returning to equation 8, note that the long-term income multiplier of the world economy's growth is equal to $\theta\,\pi/[\xi - (1 - \theta)]$ and, in turn, the multiplier of the terms of trade equals $(\theta\eta + \phi + 1)/[\xi - (1 - \theta)]$. The sign of the first one depends exclusively on $\xi - (1 - \theta)$ because its numerator $(\theta\,\pi)$ is always non-negative. But the sign of the second multiplier is given by $\xi - (1 - \theta)$ and also by the "weighted" Marshall-Lerner expression: $\theta\eta + \phi + 1$. Note that neither of these signs are *a priori* determined.

Whether the weighted Marshall-Lerner expression has a positive or a negative sign must be empirically determined. But, as we show below, $\xi - (1 - \theta)$ will likely be non-negative. To see this, one should examine three different positions of the current account balance: surplus, zero or deficit.

First, when the current account is in surplus – situation that applies to economies which systematically transfer capital abroad – θ is greater than one and, therefore, $\xi - (1 - \theta)$ would be positive.

Second, if the current account is zero, then $\theta = 1$, and thus $\xi - (1 - \theta)$ is reduced to ξ which, by assumption, is greater than zero. In this case, the BPC-growth y_{ca} in equation 8 is reduced to the formulation put forward by Thirlwall in 1979:

$$y_{ca} = \frac{\pi dw/w + (\eta + \phi + 1)\,(dp/p - dp^*/p^*)}{\xi} \quad (12)$$

The third, and final, case corresponds to a current account in deficit, i.e. $\theta < 1$. To determine the sign of $\xi - (1 - \theta)$, let us substitute in it the full expressions of ξ and θ, thus obtaining its equivalent formulation:

$$\xi - (1 - \theta) = (dm/m)/(dy/y) - [1 - (px / p^*m)] \quad (13)$$

Therefore $\xi < (1 - \theta)$ if, and only if:

$$\frac{dm + m - x\,(p/p^*)}{y + dy} < \frac{m - x(p/p^*)}{y} \qquad (14)$$

which, multiplying both sides by p^*/p, lead to:

$$\frac{p^*(dm + m) - px}{p\,(y + dy)} < \frac{p^*m - px}{py} \qquad (15)$$

The left hand side of (15) is the current account deficit/domestic income ratio in period $t + dt$, assuming that exports remain at the level they were in the previous period t. Its right hand side corresponds to the same ratio, but for period t. Both ratios are calculated at prices p and p^*. Thus, (15) states that if $\xi - (1 - \theta) < 0$, then an increase in domestic economic activity will bring about a *reduction* in the current account deficit as a *proportion* of domestic income. That is, higher growth of the domestic economy – even with constant exports – would tend to reduce the pressure in the current account of the balance of payments. Moreover, in this case the long-term income multiplier of external demand (dw/w) would be *negative*, implying that *ceteris paribus* an expansion of foreign demand would trigger a contraction in domestic economic activity! Such perverse dynamics question the empirical relevance of the case $\xi < 1 - \theta$ for the analysis of economic growth in developing countries.

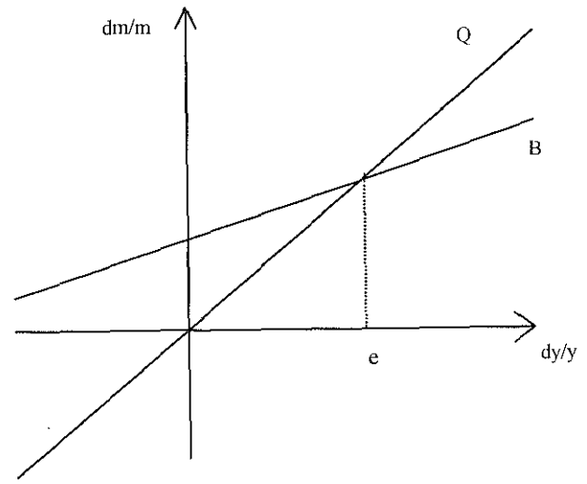
Therefore, it may be safely assumed that ξ is not smaller than $1 - \theta$. This implies that the long-term income multiplier of external demand (*dw/w*) is positive and inversely related to the magnitude of the export/import ratio θ. In other words, if two economies have the same initial level of income, identical elasticities of foreign trade and the same trajectory of the terms of trade, then the economy with a higher ratio of the current account deficit as a proportion of domestic income will have faster long-term growth.[7]

[7] I am grateful to H. Escaith for pointing out the need to stress that this conclusion does not necessarily hold if the BPC-model explicitly allows for changes in foreign interest rates.

2.2. *A graphical representation of the BPC model*

The BPC-model, here introduced as the set of equations 1 to 4, may be diagrammatically represented in the space of combinations of the growth rates of real domestic income (*dy/y*) and imports (*dm/m*):

FIGURE 1



Line B is given by the solution of equations 1 and 4, and thus depicts the set of combinations of growth rates of income and imports consistent with keeping constant the current account deficit as a proportion of domestic nominal income:

$$B = \{(dy/y, dm/m) \mid 0 = dm/m - \theta\pi dw/w - (\eta\theta + 1)\,(dp/p - dp^*/p^*) - (1 - \theta)\,dy/y\}$$

Its slope in the (*dy/y*, *dm/m*) space is equal to $1 - \theta$, *ergo* not greater than one but may be negative if the current account is in surplus. Figure 1 pictures it with a positive intercept, which may correspond to the case of constant terms of trade and an expanding world economy. Points below (above) B have a decreasing (increasing) ratio of the current account deficit relative to income.

Line Q is the graph of the import demand function given by equation 2:

$$Q = \{(dy/y, dm/m) \mid 0 = dm/m - \phi\,(dp^*/p^* - dp/p) - \xi\, dy/y\}$$

Its slope is positive and is equal to the income elasticity of imports ξ. Its intercept at the origin (0,0) mirrors the assumption of constant terms of trade. To the right (left) of Q the growth path of real income is associated with a decreasing (increasing) import-income ratio. Following the argument of the previous Section, it is assumed that $\xi > 1 - \theta$ and, thus, line Q is depicted as steeper than line B. The intersection of lines B and Q determines the equilibrium growth rate of real income y_{ca}, and of real imports, consistent with a long-term constant ratio of the current account deficit relative to income.

In Figure 1, an increase in the income elasticity of imports will be represented as a counterclockwise rotation in line Q. A slowdown in the world's economic growth will be captured as a downward shift of line B. Persistent improvements in the terms of trade would be mirrored as upward displacements of both lines B and Q. An increase in the long-term ratio of the current account deficit relative to nominal income – i.e. in the ratio that is *a priori* considered adequate by the international financial community – would displace line B, making its upward trend steeper and, at the same time, reducing its vertical intercept.[8]

3. Balance-of-payments constrained growth in Mexico

The BPC-model summarized by equations 1 to 4 above, and illustrated by Figure 1, helps to understand the role played by the availability of foreign exchange in shaping main turning points in the Mexican economy's growth path. For this purpose, it is convenient to divide the evolution of Mexico's growth trajectory since 1950 in four periods: import substitution 1950-76; oil boom 1977-1982; international debt crisis 1982-87; trade liberalization and structural reform from 1988 onwards.

[8] An analysis of the dynamic properties and stability conditions of the BPC-model may be found in Moreno-Brid (1998b) or, within a framework that explicitly includes the labour market, in Pugno (1998). It may be mentioned that the former was written without being aware of the results of McCombie and Thirlwall (1997).

Table 1 shows selected indicators of Mexican macroeconomic performance during these four periods.[9] Its first three rows report average rates of growth of real GDP, exports and imports. Row 4 shows the implicit income-elasticity of imports as given by the ratio of the rates of growth of real imports and GDP. This figure is merely a crude estimate of the true income elasticity, but serves here for illustrative purposes.

Row 5 applies equation 11 to obtain the BPC-growth rate of GDP as given by Thirlwall's Law, i.e. as the ratio of the growth of exports (row 2) and the implicit income-elasticity of imports (row 4). Notice that this calculation gives the rate of growth of GDP consistent with equilibrium in the balance-of-payments, assuming away the influence of changes in foreign capital inflows or in the terms of trade. Row 6 registers the difference between the actual growth of GDP (row 1) and the BPC-estimated one (row 5). The last rows, 7 and 8, report the evolution of the terms of trade and the current account/GDP ratio.

The slowdown in Mexico's economic growth since 1982 is evident. In 1950-75, real GDP expanded at an average rate of 6.6% at constant pesos. In 1976-81, its expansion was faster, driven by an ambitious industrialization programme financed by oil exports and foreign loans. The era of high growth ended in 1982 with the collapse of oil revenues and the drastic exclusion of Mexico from the international financial markets. Since then the economy has been, on average, rather stagnant. In 1982-87 Mexico's GDP declined in real terms. It grew again in 1988-94, but at a slow pace, both in terms of its historical standards as well as in relation to demographic expansion.

Moreover, in 1994, external factors plus domestic political instability and inadequate monetary policies resulted in a massive loss of foreign exchange reserves that detonated a severe balance of payments crisis in December, pushing the economy into an acute contraction. GDP fell 7% in real terms in 1995, its sharpest collapse in more than

[9] For in-depth characterizations of Mexico's economic development in some of these periods see, *inter alia*, Aspe (1993), Bazdresch and Levy (1991), Buffie and Sanginés (1989), Lustig (1992), Moreno-Brid and Ros (1994), Ramírez (1988) and Solis (1981).

fifty years. However, assisted by a financial package put together by the International Monetary Fund and the United States Treasury, Mexico's economic activity strongly rebounded in 1996 and 1997, and real GDP per capita managed to surpass by 0.6% its 1994 level (ECLAC 1998). It would be desirable that such recovery heralds the beginning of a new era of sustained and high economic growth, and is not just one more episode in its, by now traditional, stop-go performance.

TABLE 1

MEXICO: REAL GDP, EXPORTS AND IMPORTS: 1950-97[a]
(average annual rates of growth, %)

	1950-75	1976-81	1982-87	1988-94	1988-97[b]
1. GDP ($\hat{y}$)	6.56	7.03	–0.13	2.79	2.41
2. Exports ($\hat{x}$)	4.16	12.06	8.32	4.12	8.61
3. Imports ($\hat{m}$)	6.24	14.29	–10.25	17.67	13.48
4. Income elasticity of imports (implicit value of ξ = 3/1)	0.95	2.03	77.15[c]	6.34	5.59
5. Balance-of-payments constrained growth of GDP ($\hat{y}_{ca}$ = 2 /4)	4.37	5.94	0.11	0.65	1.54
6. Growth gap, (1 – 5) ($\hat{y}$ – $\hat{y}_b$)	2.19	1.09	–0.24	2.14	0.87
7. Terms of trade (p_x/p_m).					
Average (1975 = 100)	93.8	109.0	90.1	81.1	80.5
Average annual change	0.4	4.0	–8.5	2.1	1.8
8. Current account balance, % nominal GDP [c]	–2.30	–3.98	0.91	–4.87	–3.72

[a] Figures in real terms at 1980 Mexican pesos were calculated by the author based on data from INEGI, Banco de México and ECLAC (1998).
[b] Preliminary.
[c] Negative figures stand for current account deficits.

Table 1 suggests that the engine of growth of the Mexican economy in 1950-75 was located in the internal market, as exports grew at a slower pace than GDP. The oil boom changed this pattern, and exports augmented at a much faster pace than domestic demand. Exports' strong dynamism continued even after the collapse of the oil market in 1982. In 1982-87, they expanded at an annual average rate

of 8.3% driven by the external sales of non-oil products as Mexican firms entered foreign markets to try to compensate for the collapse in domestic demand. In the following years exports have kept growing at a faster pace than GDP, becoming one of the most dynamic elements of demand.

The trajectory of imports followed that of GDP, but with sharper fluctuations. Table 1 suggests that the implicit income elasticity of imports increased in the second half of the 1970s. Comparing periods of high economic activity, it is seen that the income-elasticity of imports in 1950-76 was half of its value in 1976-81, and one sixth of its value in 1988-94. The increased penetration of imports during the oil boom was caused by the lack of spare capacity brought about by the accelerated expansion of the domestic economic, the appreciation of the real exchange rate and, also, by the elimination of some of the trade restrictions in Mexico's domestic market (Bazdresch and Levy 1991).

The high income-elasticity of imports in 1988-94 was the result of the drastic trade liberalization strategy implemented by Mexico, the pent-up demand for imports in the previous five years of economic stagnation, and the real exchange rate appreciation. But the extraordinarily high magnitude of the implicit income-elasticity merits deeper analysis. First of all, it must be stressed that it has been derived just as a quotient of the observed rates of growth of GDP and imports; procedure that fails to capture the effect of changes in the price elasticity.[10]

Second, to a certain extent, a temporary but strong surge in imports could be expected with the drastic trade liberalization strategy implemented in Mexico in 1985. After decades of severely restricted access to imports, Mexican consumers had a significant pent-up demand for foreign goods. And it may also reflect a certain breakdown of internal linkages in domestic production, with domestic producers being forced out of business by the competition of imports.

In any case, the BPC-model shows that a high income-elasticity of imports puts pressure on the export sector to generate more fo-

[10] Moreno-Brid (1998a) finds econometric evidence that suggests that trade liberalization caused a lasting rise in the income elasticity and a decline in the price elasticity of Mexico's demand for imports.

reign exchange to avoid excessive foreign indebtedness. Persistent weakening of the internal linkages in the domestic productive structure may accentuate the pattern of recurrent balance-of-payments crisis. Moreover, if the export sector fails to generate sufficient foreign exchange, and access to foreign capital is restricted, the economy may end up stuck in a long-term platform of slow growth. Clearly, the deterioration in the terms of trade could further hinder the prospects of sustaining high rates of economic growth.

The BPC-model suggests that the grip of the balance of payments on Mexico's economic growth tightened after 1982. As the estimates shown in Table 1 indicate, during 1950-75 and 1976-81 the Mexican economy could grow at annual rates of 4.4% and 5.9% respectively without *a fortiori* incurring in excessive foreign indebtedness (assuming away changes in the capital account or in the terms of trade). In contrast, they indicate that, on average, from 1982 onwards a persistent expansion of GDP above 2% pressures the balance-of-payments, notwithstanding the dynamic growth of exports.

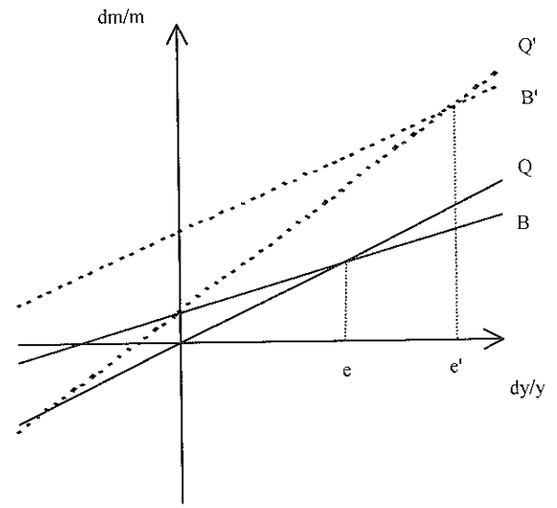
According to the data in Table 1, the ceiling set by the simple BPC-model on the rate of growth of GDP was not always fully binding. Row 6 shows that in the three subperiods where the Mexican did grow, foreign capital flows helped to finance the actual expansion of GDP over and above the limit set by the simple BPC-model.

In 1950-75 and 1976-81, international capital flows were a major source of foreign exchange to Mexico, providing external resources equivalent to 2.3% and 4% of GDP. In contrast, in 1982-87 the repayment of foreign debt obligations – and perhaps capital flight too – were a heavy burden on Mexico's growth prospects. The amortization of international debt plus the lack of fresh external finance resulted in an average net transfer of capital abroad of approximately 1% of GDP. In addition, on average, in these five years the terms of trade suffered a substantial fall.

There is consensus that the external debt rescheduling in the late 1980s, by actively reinserting Mexico country in the international capital market, was a key factor for the resumption of its economic growth (van Wijnbergen 1991, Armendáriz and Armendáriz 1995). Table 1 shows that in 1998-94 foreign capital inflows represented, on average, close to 5% of GDP.

The role played by the availability of foreign exchange, in shaping key turning points in Mexico's economic growth, may be illustrated with the diagram above introduced of the revised BPC-model.

FIGURE 2



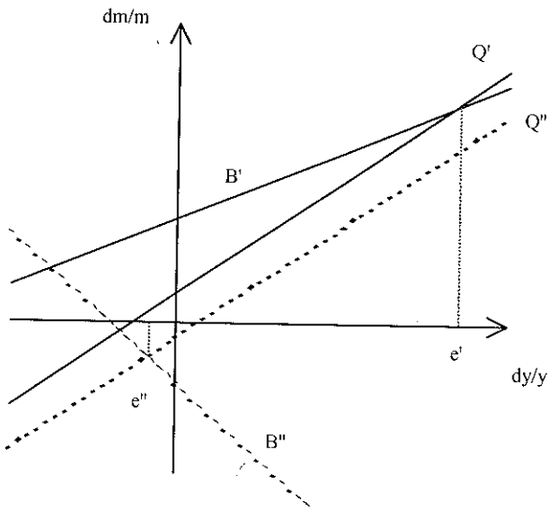
In Figure 2 the growth path of the Mexican economy during 1950-75 is represented by the solid lines B and Q, and the effect of the oil boom in 1976-82 is seen as shifting them to lines B' and Q'. The position of these pairs of lines (B, Q and B', Q') is not based on econometric specifications, but is only drafted to reflect the stylized facts of the changing influence of the balance-of-payments constraint on Mexico's economic growth.

The upward movement in line B to B' reflects the faster expansion of exports in 1976-82 than in the previous subperiod. Its counterclockwise rotation mirrors the willingness of the international capital markets to invest more heavily in Mexico and, thus, to finance a higher current account deficit as a proportion of domestic income. In turn, the counterclockwise drift in line Q to Q' reflects an increase in the income elasticity of imports, and its upward shift captures the effect of the terms of trade improvement (or real exchange rate appreciation, in this model).

As Figure 2 shows, the combined outcome of the changes brought about by the oil boom and the massive inflow of foreign capital in 1976-82 was faster long-term economic growth in Mexico (from e to e').

But when the oil boom and the inflow of international capital proved to be short-lived, Mexico's high economic growth became unsustainable. The massive net transfer of capital abroad and the deterioration of the terms of trade that Mexico suffered in 1982-87 are captured in Figure 3 as displacing lines B' and Q', to B" and Q".

FIGURE 3

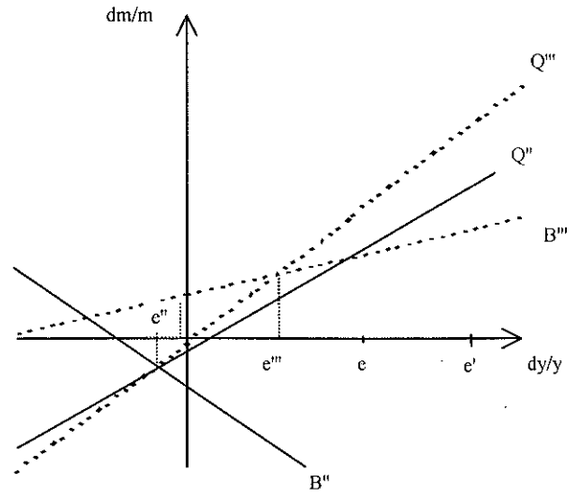


Mexico's new role as a source of net transfers of capital abroad is captured by the radical shift in line B' to B", from being upward sloping to downward sloping. In turn, the downward shift in line Q' to Q" reflects the lower terms of trade (here equivalent to a depreciation of the real exchange rate).

The outcome, as Figure 3 illustrates, was a drastic halt in economic growth – from e' to e" – in order to generate the necessary foreign exchange outflows to meet foreign debt obligations. As depicted in the Figure, the shift in the import function was insufficient to impede a decline in economic activity (e" < 0).

The change in the balance-of-payments constraint on the Mexican economy from 1982-87 to 1988-94 is captured in Figure 4.

FIGURE 4



The shift in line B' to B'''. illustrates the favourable reinsertion of the Mexican economy in the international capital markets, bringing about a massive net inflow of foreign capital. The clockwise movement and upward displacement in line Q" to Q''' mirror, respectively, an increase in the income elasticity of imports and an improvement in the terms of trade (appreciation of the real exchange rate). The combined impact of these phenomena was a resumption of long-term economic growth at a rate e" which, however, was far lower than the average rates of expansion registered by the Mexican economy during 1950-75 and 1976-81.

4. Conclusions

The analytical model put forward in this paper showed that, adopting a long-term constant ratio of the current account to nominal GDP,

led to a modification of the long-term income multipliers – of external economic activity and of the terms of trade – of the BPC model. Using this revised model to examine the stylized facts of Mexico's growth path in 1950-97, it was seen that the slowdown in its economic growth seems to be, ultimately, traced to the inability to generate sufficient foreign exchange to finance a robust and persistent growth of real domestic output.

During the second half of the 1970s, and up to most of 1982, Mexico's economic strategy was based on the assumption that oil exports would provide sufficient foreign exchange to build a platform of high and sustained economic expansion. The economy grew spectacularly for some years, but the current account deficit soared and eventually exploded in a balance-of-payment crisis and stagnation.

In the mid-Eighties, the Mexican government launched a macroeconomic reform that, allegedly, would ensure strong and persistent economic growth. A key assumption was then that massive foreign capital inflows, induced by the North American Free Trade Agreement (NAFTA), would bring in sufficient foreign capital to transform Mexico's productive structure in order to place exports as its engine of growth. Exports indeed expanded, but not enough to pull the rest of the economy into a path of high and sustained growth. On average, the response of Mexico's GDP since the radical macroeconomic reform began to be implemented in the mid-1980s has been far from dynamic. In general, domestic sales have shown a weak response, affected by the intense penetration of imports. Moreover, the moderate rate of expansion of the domestic economy in 1988-94 has been associated with marked deterioration in the current account of the balance of payments, which ended up in a severe foreign exchange crisis in December 1994 that pushed the Mexican economy to its worst fall in more than fifty years.

There are no guaranteed recipes to remove the balance-of-payments constraint on Mexico's economic growth. The option, apparently favoured by the administration of President Zedillo (1995-2000), is to try to reduce the economy's high dependence on foreign savings by directly promoting domestic savings, mainly by reforming the pension system. Other views, not so optimistic about the existence of a strong causal relation going from domestic savings to aggregate economic growth, are more inclined to try to build institutional arrangements and to implement policies that help to boost the productivity and competitiveness of Mexico's business sector both in the international as well as in the domestic market. Both views may supplement each other, helping to remove different obstacles on Mexico's road to economic development. In any case, the evaluation of the relative benefits, costs and limitations of alternative policies to promote Mexico's economic growth goes way beyond the objectives of this paper.

REFERENCES

ARMENDÁRIZ, B. and P. ARMENDÁRIZ (1995), "Debt relief, growth and price stability in Mexico", *Journal of Development Economics*, vol. 48, pp. 135-49.

ASPE, P. (1993), *The Economic Transformation: The Mexican Way*, MIT Press, Cambridge, Mass.

BANCO DE MÉXICO (1997), *The Mexican Economy*, Mexico.

BANCO DE MÉXICO, *Carpeta de Indicadores Económicos*, various issues, Mexico.

BAZDRESCH, C. and S. LEVY (1991), "Populism and economic policy in Mexico: 1970-82", in R. Dornbusch and S. Edwards eds, *The Macroeconomics of Populism in Latin America*, University of Chicago Press, Chicago.

BUFFIE, E.F. and A. SANGINÉS (1989), "Mexico 1958-86: from stabilizing development to the debt crisis", in J.D.Sachs ed., *Developing Country Debt and the World Economy*, The University of Chicago Press, Chicago.

BURKI, S.J. and S. EDWARDS (1995), *Latin America After Mexico: Quickening the Pace*, The World Bank, Washington.

CHENERY, H. and A. STROUT (1966), "Foreign assistance and economic development", *American Economic Review*, vol. 56, pp. 679-733.

CORDEN, M.W. (1994), *Economic Policy, Exchange Rates, and the International System*, Oxford University Press, Oxford.

DORNBUSCH, R. and A. WERNER (1994), "Mexico: stabilization, reform, and no growth", *Brookings Papers on Economic Activity*, pp. 253-315.

DUSSEL P.E. (1995), "Recent developments in Mexican employment and the impact of NAFTA", *International Labor Studies*, vol. 5, pp. 45-69.

ECLAC-INEGI – ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN & INSTITUTO NACIONAL DE ESTADÍSTICA, GEOGRAFÍA E INFORMÁTICA (1993), *Magnitud y Evolución de la Pobreza en México: 1984-1992*, INEGI, Mexico.

ECLAC – ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN (1998), *La evolución de la economía de México en 1997*, Mexico.

EDWARDS, S. (1995), *Crisis and Reform in Latin America: from Despair to Hope*, Oxford University Press, New York.

FISCHER, S. (1997), *Capital Account Liberalization and the Role of the IMF*, IMF, Washington.

HARROD, R. (1933), *International Economics*, Cambridge University Press, Cambridge.

HIRSCH, M.W. and S. SMALE (1974), *Differential Equations, Dynamical Systems and Linear Algebra*, Academic Press, San Diego.

INEGI – INSTITUTO NACIONAL DU ESTADÍSTICA, GEOGRAFÍA E INFORMÁTICA, *Sistema de Cuentas Nacionales*, Mexico, various issues.

KRUGMAN P. (1993), "International finance and economic development", in A. Giovannini ed., *Finance and Development: Issues and Experience*, Cambridge University Press, Cambridge.

LUSTIG, N. (1992), *Mexico: The Remaking of an Economy*, Brookings Institution, Washington.

MADDISON, A. (1995), *Monitoring the World Economy: 1820-1992*, OECD, Paris.

MCCOMBIE, J.S.L. and A.P. THIRLWALL (1994), *Economic Growth and the Balance of Payments Constraint*, St Martin's Press, New York.

MCCOMBIE, J.S.L. and A.P. THIRLWALL (1997), "Economic growth and the balance-of-payments constraint revisited", in Arestis, P. *et al.* eds, *Markets, Unemployment and Economic Policy*, Routledge, New York.

MORENO-BRID, J.C. (1998a), "Trade liberalization and import demand in Mexico", unpublished manuscript, Cambridge, Mass.

MORENO-BRID, J.C. (1998b), "On capital flows and the balance-of-payments constrained growth model", *Journal of Post Keynesian Economics*, vol. 21, no. 2, pp. 283-89.

MORENO-BRID, J.C. and J. ROS (1994), "Market reform and the changing role of the state in Mexico: a historical perspective", in A.K. Dutt *et al.* eds, *The State, Markets and Development*, Edward Elgar, Aldershot.

OECD – ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (1996), *Mexico 1997*, Paris.

PUGNO, M. (1998), "The stability of Thirlwall's model of economic growth and the balance-of-payments constraint", *Journal of Post Keynesian Economics*, vol. 20, no. 4, pp. 559-81.

RAMÍREZ, M. (1988), *Mexico's Economic Crisis: Its Origins and Consequences*, Praeger, New York.

ROS, J. (1997), "Employment, structural adjustment and sustainable growth in Mexico", *Employment and Training Papers*, no. 6, International Labor Office, Geneva.

SKOTT, P. and P. AUERBACH (1995), "Cumulative causation and the"new" theories of economic growth", *Journal of Post Keynesian Economics*, vol. 17, no. 3, pp. 381- 402.

SOLÍS, L. (1981), *Economic Policy Reform in Mexico: A Case Study for Developing Countries*, Pergamon Press, New York.

SOLOW, R. (1956), "A contribution to the theory of economic growth", *Quarterly Journal of Economics*, vol. 70, pp. 65-94.

SRINIVASAN, T.N. (1995), "Long-run growth theories and empirics: anything new?", in T. Ito and A. Krueger eds, *Growth Theories in Light of the East Asian Experience*, The University of Chicago Press, Chicago.

TAYLOR, L. (1996), "Growth, the state and development theory", in A. Solimano ed., *Road Maps to Prosperity: Essays on Growth and Development*, The University of Michigan Press, Ann Arbor.

THIRLWALL, A.P. (1979), "The balance of payments constraint as an explanation of international growth rates differences", *Banca Nazionale del Lavoro Quarterly Review*, vol. XXXII, no. 128, pp. 45-53.

THIRLWALL, A.P. and M.N. HUSSAIN (1982), "The balance of payments constraint, capital flows and growth rates differences between developing countries", *Oxford Economic Papers*, vol. 10, pp. 498-509.

VAN WIJNBERGEN, S. (1990), "Growth, external debt and the real exchange rate in Mexico", in D.S. Brothers and A.E. Wick eds, *Mexico's Search for a New Development Strategy*, Westview Press, Boulder.

VAN WIJNBERGEN, S. (1991), "The Mexican debt deal", *Economic Policy*, April, pp. 13-43.