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A DISAGGREGATE ANALYSIS OF THE EXTERNAL CONSTRAINT TO GROWTH FOR THE MEXICAN ECONOMY 1980-2000: A POST-KEYNESIAN APPROACH

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KEY WORDS

Structural and post-Keynesian approach, External Constraint to Economic Growth (ECG), Trade deficit (endemic, structural), deficit and surplus branches, panel analysis.

ABSTRACT

We analyze the *External Constraint to Growth* (given by the trade deficit) for the Mexican Economy (1980-1999) at the level of its 59 productive tradeable branches. In agreement with the post-Keynesian approach we consider that in general terms, economic growth is constrained by its balance of payments.

A panel data model was estimated to find the determinants of trade balance. Despite that the structural reforms implemented since the early 80s have been successful in attracting Foreign Direct Investment, basically oriented to in-bond exporting plants as well as in booming the volume of international trade, there are no clear signs that the ECG has been reduced.

I. INTRODUCTION

Since A. Smith wrote his epic work *An Enquiry into the Nature and Causes of Wealth of Nations*, the study of the determinants of economic growth has extensively dominated the efforts in the profession and with an intensive innovation after the second half of the 80s.

In general terms, the neoclassical framework neglects the importance of the external balance in the matter. It considers that the main determinants of economic growth are related to the supply factors. It refers basically to a closed economy in which there is not a problem of availability of foreign currency to expand the domestic output. On the contrary, for the structuralist and post-Keynesian approach, it is in the demand side, chiefly in net exports –in dynamic terms– where the main constraints are because it considers that all the economies interact in an open context.

Therefore, the external balance of every economy –the availability of foreign currency (US dollars)– is crucial in understanding its capacity to grow. For developing economies, international (US) currency is a scarce resource; thus exports counteract that limitation since they fulfill two fundamental functions in the process of development:

a) They generate domestic demand and this enhances virtuous spillover effects on the supply side.

b) They provide resources to satisfy productive and social needs, Thirlwall [1997].

According to history, economic growth raises per capita income which in turns requires more imports to sustain the development process, Lewis [1966]. When a society is unable to generate the necessary currency to finance its domestic demand for imports (either for consumption or production), this process will unavoidable be interrupted unless other sources can be found to finance this gap.

The traditional manner for developing countries to bridge this financial gap has been through foreign debt, which later on makes matters worse because it works against growth when the time comes for the payment plus the cost of the debt servicing. Table 1 sheds some light on the matter for the Mexican economy, which enjoyed high rates of economic growth in the period 1960-1981, but was based severely on protectionism and external debt. Eventually (in 1982, just when the current account deficit as well as the foreign debt payments sky rocketed), a sharp slowdown was necessary to equilibrate the balance of payments.[2] Thus, for 1982-1988 it was imperative to devalue the exchange rate and to halt economic growth.

TABLE 1

It would then seem logical that a crucial determinant of economic growth of any society depends on its capacity to generate a permanent trade surplus or capital inflows that offset the trade deficit. If we set aside the fact that developing economies are highly in debt and, added to this, systematically transfer to the developed countries (through the factorial services of the current account) a significant quantity of their assets in foreign currency, their growth essentially depends even more in their capacity to create a net positive balance through international trade.

In this respect, foreign debt, international trade and economic growth have a close relationship which makes it essential that the latter be comprehended through the structure and behavior of the preceding two.

With the purpose of unraveling this relationship, this article concentrates on the trade balance outcome of the 59 productive tradeable branches of the Mexican economy for the 1980-1999 time period. Firstly (in Section II) we develop our theoretical framework. In Section III we present the stylized facts for the Mexican tradeable branches through a

descriptive and intuitively statistical analysis. In Section IV we do panel econometrics in order to more rigorously support our previous findings. Section V (conclusions and further comments) covers our principal findings and points out several issues to be analyzed in future works.

Probably one of the main conclusions is that despite that the structural reforms implemented since the early 1980s have been successful in attracting Foreign Direct Investment, basically oriented to in-bond exporting plants as well as in booming the volume of international trade, there are no clear signs that the External Constraint to Growth (ECG) has been significantly reduced. This argument is based on the fact that despite after 1994 the number of surplus branches increased remarkably, they were insufficient to outweigh the deficit carried over by the rest of the economy.

II. ANALYTICAL FRAMEWORK

The *classic structuralist*[3] and post-Keynesian approaches attribute the determinants and heterogeneity in the trade balance position and in economic growth to the demand factors, specifically to the asymmetries in the elasticities of international trade between developed and developing countries.

Based on the industrial backwardness of the latter, which in turn determines a very basic pattern of exports (raw materials and low value added products), these countries are doomed to have higher income elasticities to import than developed countries, and inversely: industrial countries benefit from having higher income elasticities to export.

Therefore, initially ECLAC and its associates found the main explanation of the differences in economic growth as well as in the degree of development in this fact.

In the late 70s Thirlwall[4] formalized this approach that was originally developed by Prebisch (see references) and applied it to explain the differences in growth for a number of countries. This post-Keynesian formalization of the *classic structuralism* makes possible to talk about an integrated approach, as we did above.

The *classic structuralist* approach of the early 50s emphasized that free trade, far from fulfilling the convergence properties attributed by the Hecksher-Ohlin-Samuelson theorem, would take countries exporting primary goods to an impoverished state due to the fact that the dynamics of the terms of trade would favor the industrial goods (high tech) exporting countries. Thus, it was widely accepted that the Latin American region could only come out of its backwardness if it applied a model of industrialization through import substitution (IIS) that initially required trade protectionism and high state intervention.

The hypothesis that economic growth is restricted by trade deficits is based on the idea that it is not possible to sustain external deficits for long periods of time, due to (with fixed exchange rates) the loss of international currency and to the ultimate necessity of devaluing and adjusting (slowing down) the rate of growth. This argument refers to the fact that given the inability of the developing countries to produce enough intermediate and capital goods, economic growth is accompanied by a high (and probably growing) marginal propensity to import.[5] This pattern of growth can only be sustained as long as there is enough capital inflow to equilibrate the balance of payments.

Figure 1 depicts the empirical evidence of this argument. It clearly shows the trade-off between economic growth and trade balance for the Mexican economy for the last 50 years. According to a simple linear regression adjustment, the rate of economic growth compatible with trade equilibrium (y^e) is roughly 4.1%.

FIGURE 1

Since the mid-70s, the neoclassical approach severely questioned the economic policy that came out from the structuralist and Keynesian approach, basically trade protectionism and huge state intervention.

A new group of economists, running the majority of countries as well as the international financial institutions, considered that a shift in the strategy was compulsory in order to overcome the main economic problems of developing countries. Therefore, and with the purpose of raising long-term economic growth, market-oriented reforms began to be decisively implemented in Mexico since the early 80s. They pursued the objective to transform the productive structure as well as that of exports in favor of higher value added industrial goods, and therefore make the Mexican economy less susceptible to the fluctuations in the terms of trade.

To this point, we could claim that the debate was not in the diagnosis but in the policies to embrace. In other words, this new group of neoclassical leaders (in politics and in academics) did not reject the fact that the Mexican economy was currency-constrained, but disputed the strategy to follow. De-regulation and trade liberalization policies have since then been mainstream. The increase in industrial productivity through international competition, and not through trade protectionism, would then be the main factor for improving the balance of payments and thereby enhancing economic growth. Accordingly, trade openness increased noticeably (from 21% in 1986 to 73% in 2001),[6] as well as non-oil exports (from 42% in 1980 to 92% in 2001) and the overall Mexican international trade skyrocketed (from 45 $bn to 327 $bn for the same period).

III. ANATOMY OF TRADE BALANCE, 1980-1999

At first glance, the analysis of the Mexican economy through the main Division (agriculture, mining and manufacturing), allows us to detect where the ECG is. Division I, agriculture (cattle raising, forestry, hunting and fishing) has maintained its deficit pattern in general with no remarkable changes in its long-term trend. Division II (mining), observes a moderate but permanent positive outcome. Finally, the great Division III, manufacturing, registered for the whole period a permanent deficit that inflated considerably every time the economy boomed (1978-1981, 1987-1994 and 1995 on), see Figure 2. Therefore, and according to our main argumentation, the ECG of the Mexican economy is undoubtedly related to the manufacturing sector. This means that the industrial sector has not been able to transfer the development to the rest of the economy through the generation of net currency, and on the contrary, it has been the rest of the economic system that has subsidized industry for at least the last two decades.

FIGURE 2

1. Surplus and deficit branches

In this section we analyze the evolution of the trade balance at the level of productive branches (two digits). In order to detect the nature of the trade balance, we divide the Mexican economy into two large groups of branches (surplus and deficit). Afterwards, the analysis will gradually become more detailed. At this point the statistical analysis is essentially intuitive and descriptive. In the next section we generalize these findings by applying econometrics.

A classification of the 59 tradeable branches according to their balance position for 1980-1999 shows that the number of deficit branches, in general, is higher than the number of surplus branches.[7] Only in those years of pronounced economic recession (1983, 1986-

1987 and 1995) the number of surplus branches have out-numbered the deficit ones (Table 2). A second point to be emphasized is that when growth has been accompanied by an exchange rate appreciation and freer trade, the outcome has been catastrophic, as can be seen in column 3. Those were the years 1980-1981 and 1988-1994.

Figures in shaded areas indicate important trade correction arising from real exchange devaluations and no economic growth.

TABLE 2

Just after the 1995 macroeconomic adjustment and the surprising recovery, the Mexican economy again returned to its historical behavior, since the number of deficit branches increased quickly and the number of surplus branches began to decline.

This stop and go process (surplus-deficit) can be considered as a very important stylized fact for the Mexican economy.

When plotting both types of branches and adjusting them linearly (Figures 3 and 3a), the gap between the surplus and deficit branches become apparent.

FIGURE 3a

But when adding up the big raw *other merchandise* –which in positive for the whole period– to the surplus branches, we have better fitness. The slope for this "corrected" variable two folds (1.065 from 0.515), as well as the global adjustment (R^2). However, the gap does not disappear.

FIGURE 3b

2. Deficit and surplus branches, permanency and structural change

Table 3 depicts the number of branches and the years with a trade deficit. In the first instance, it should be emphasized that there were 16 branches with a permanent deficit during the 20 years of study. Up to 1994 there were 23. It may be concluded that as from

1995, seven branches reversed their historical tendency; most of which presented a similar behavior in the range between 15 and 19 years of deficit and, in their majority, had one or two years of surplus between 1995 and 1996.

TABLE 3

On the other hand, there were only seven branches that have shown a positive balance throughout the whole period of analysis: *crude oil* and *natural gas*, *fruit preparation* and *vegetables*, *nixtamal milling*, *coffee*, *leather and footwear*, *beer* and *tobacco*. By 1994, there were nine branches, three of them changed between that year and 1999.

According to this outcome, it is clear that primary and traditional products, as well as low valued added products are the ones that have been permanently in surplus.

3. Deficit and surplus branches and their participation in the total deficit[8]

TABLE 4

By reading Table 4 we may conclude that:

1. There was a huge dispersion over time of the deficit branches, ranging from very basic consumption goods to intermediate and capital goods; from intensive branches in natural resources (*agriculture*, *cattle derived products and agriculture industries*) to labor intensive products (*garments and clothing*) and to capital and technology intensive, such as *machinery and equipment*.
2. Up to 1994, the branch that contributed the most was number 51 (*non-electrical equipment*), which represented between a fourth and a fifth of the total deficit. However, for 1995-1999 its participation in the accumulated total deficit decreased drastically and was displaced by *autoparts* (57) as the branch with the largest deficit (16%).

3. In the 1987-1994 period, the number of branches in deficit increased considerably, and this tendency was maintained in the next period, albeit with a somewhat reduced proportional contribution to the total deficit. These figures show that the dispersion of the total deficit sharply increased since the Mexican Government initiated the trade openness process in 1986.

   We used the same four periods of analysis of Table 4 for the analysis of the surplus branches.

4. In contrast to the diversity of the deficit branches, there were only a few surplus branches for 1987-1994. Only in the 1983-1986 period of recessive adjustment was there an increase in the number of surplus branches, but this behavior was reversed immediately when the economy recovered. In contrast, for the final period (1995-1999), the number of surplus branches increased considerably but insufficient to out weight the amount of those in deficit. See Table 5.

TABLE 5

It is necessary to emphasize in the case of branch 56 (*automobiles*), which became the most important for generating foreign reserves. For the third period, it contributed with 20% of the total and with 46% in the following period. However, the conclusion that this sector has became a net generator of foreign currency is questioned when considering the branches linked to it (starting from branch 41). The fact that it was dominated by multinational corporations in which intra-company trade prevails, and due to their sending of profits out of the country, one could assume that there was a reduction of the positive effects for the rest of the economy.

Another outstanding surplus branch is that related to the *oil industry* (#6 in Table 5). It has significantly decreased its share of total surplus over time. This behavior is a clear

indication of a structural transformation in Mexican exports, in which manufacturing has displaced oil as the major contributor to exports.

IV. ECONOMETRIC ANALYSIS

1. Methodology

In order to confirm the stylized facts found in the previous section and thus go into a deeper and more general introspection, we applied econometrics for panel data, which is the most appropriate procedure to estimate the combination of cross-section (branches) and time series.

The two-variable econometric model that comes from a general specification to be estimated is:

Equation (1) $$Y_{it} = a_i + b_1 X_{it} + u_{it}$$

Y is the endogenous variable, X the exogenous variable, and u_i the error random term.

Where i = 1, 2, ..., 59 branches

t = 1980, ..., 1999

It is important to acknowledge that according to the characteristics of our information, we faced two main and different kinds of problems. On the one hand, several statistical assumptions are supposed to be violated, such as homoskedasticity and non-serial and cross-correlation since with panel data the "disturbance term is likely to consist of time-series related disturbances, cross-section disturbances, and a combination of both", Pindyck and Rubinfeld [1998:251].

On the other hand, it is almost impossible to exactly determine the true variables involved in the right hand side of the regression. Therefore, a balanced combination of economic theory, econometrics and induction (based upon the quality and availability of the data) was

required in order to obtain a good statistical approximation to the data generating process. This problem has been pointed out by Pindyck and Rubinfeld [*ibid.*] and by Escaith and Morley [2001: 474 and 478].

Accordingly, we followed the approach that emphasizes the advisability of going "from general to specific". We started by including a number of determining variables, and progressively reduced them until reaching a compact, parsimonious model able to replicate our information.

2 Estimation and results

2.1 Specification

Considering the general model in (1), we determined a specific model of the trade balance determination for an open and small economy, such as the Mexican.

The conventional theory of open economy macroeconomics [Dornbusch, 1980 and Rivera Bátiz and Rivera Bátiz, 1994] argues that the main determinants of the trade balance –in the reduced form– are:

Equation (2) $$TB = TB(\overset{+}{RER}, \overset{-}{RG}, \overset{+}{Y^{US}}, \overset{\pm}{TO})$$

Where:

TB = Trade Balance in current US dollars; RER = $E^*(P^{US}/P^{MEX})$ = Real Exchange Rate (Index, 1993 = 1); P^{US}, P^{MEX} = US and Mexican CPI; E = Nominal Exchange Rate; RG = Annual Rate of Growth of Every Branch; Y^{US} = US GDP; TO = Trade Openness (% of imports free of prior permission). Accordingly and in the limit, 1 = free trade, 0 = total protection. Data available from the author.

In general terms, the causality above mentioned of the first three variables are accepted, but regarding to Trade Openness, old controversies have always existed. Not only traditional (neoclassical) theory of international trade, but also the new theories of growth[9] have insisted that openness affects growth positively, since countries that are more open have a better chance to absorb knowledge, technological progress and thus to raise their competitiveness. In this regard, Edwards [1998] concludes that for 93 countries and using panel data for 1960-90, more open countries experienced faster productivity growth.

However, empirical finding (also panel data) by Escaith and Morley's [2001:495-496] show that specifically for Latin American countries (1970-1996), and in the absence of compensatory policies –such as exchange depreciation– trade reform has had negative impacts on per capita growth, due to: a) trade openness has had devastating effects on the import-substitution industries; b) this policy could be considered as a great external shock to domestic producers and make them unable to reallocate their resources efficiently, or to make the best decisions.

Our empirical findings are more supportive of this last position.

One of the most important discussions in panel regressions is whether we should estimate the model considering common constant, dummy variables for fixed effects or alternately random effects.

On one hand, we can hardly accept that a panel –that usually is very heterogeneous– presents a constant intercept over time an over-cross section units.

On the other hand, Pindyck and Rubinfeld [*op. cit.*:255-256] consider that the fixed-effects model has an important advantage over the random-effects model, since "it does not require the assumption that the individual effects that are incorporated into the error term are

uncorrelated with the explanatory variables in the model, an assumption that may not be valid and may therefore cause parameter estimates to be inconsistent".

In Table 6 we present the regression output resulting out from the three estimation techniques. All of them are white heteroskedasticity consistent standard errors.

TABLE 6

We performed an F test [F(58,1058)=12.2043] that rejects at 99% of confidence that the effects of all the 59 branches are the same. Additionally, the random-effects model does not presents statistical significance for the individual parameters, with the only exception of RER.

All this supports the conclusion that, out of these three models, the fixed-effects model most accurately represents the determinants of the trade balance.

Regarding the regression output, it follows that RER and Y^{US} have corrective effects over TB, while RG and TO the opposite. Thus, a very important rule of thumb for the Mexican economy arises:[10] the combination of real exchange appreciation and trade openness[11] turns out to be disastrous for the trade position of the overall economy and therefore, deterrent for economic growth in the medium and long-term. Unfortunately, this has been the case for the Mexican economy, at least for 1988-1994 and for 1996 on.

V. CONCLUSIONS AND FURTHER COMMENTS

1) The ECG resides centrally in the manufacturing sector. While the row *other merchandise* has counteracted it basically after the *tequila* crisis.
2) We studied the evolution of the trade balance of the 59 tradeable branches of the Mexican economy initially by splitting them into those in deficit and those in surplus. In order to have a more accurate picture, we also divided the whole sample into 4

different periods of time. At this point the analysis was descriptive-intuitively oriented. Later on, we applied econometrics of data panel in order to obtain more rigorous, as well as, systematic introspection.

3) Trade openness, as well as manufacturing exports, have increased notably (both in value as in the number of branches). According to the conventional theory of international trade, this outcome could be considered positive since it is economic growth enhancing.[12] Nevertheless, the annual rate of growth of Mexican GDP for 1989-2000 was 3.6% and the trade deficit as proportion of GDP of -1.2%. These figures are disappointing when compared to those for 1970-1981 of 6.8% and -1.49% respectively. It could be argued that the former corresponds to another domestic and international economic context, and therefore, should not be directly compared. However, they depict the main hypothesis of this work.

   In this regard, we should say that the balance of the deficit branches have raised relatively to the balance of surplus branches. In effect, comparing the two balances for 1987-1994 and 1995-1999, the latter increased 2.65 times (from -21.599 billion dollars to -57.334 bd) while the former in 2.14 times (from 12.252 bd to 26.335 bd).

4) Our empirical findings point out that trade openness as well as the real exchange rate are very important in determining the trade balance of the overall economy. Since the economic authorities systematically have followed a real exchange rate appreciation in order to anchor inflation, both facts have played a key role to explain the external restriction to growth.

5) We acknowledge that the inward strategy had been exhausted since the middle 70s and thus a change of economic model was compulsory. It is yet to be seen whether structural reforms –trade reform included– will enhance the rate of growth through a

better allocation of resources, spillover effects and the technical progress diffusion to the rest of the industry.

6) Intuitively, we can argue that the spillover effects have been poor in the way that they have not clearly enlarged the capacity to growth, because manufacturing is still the main contributor to the trade deficit. This is an indirect way to measure the degree of backward and forward linkages.

7) Although some branches have had a remarkable exporting performance, they have also increased their imports. A prime example of this is the *automobile sector* that has substantially increased its imports. This means a segmentation of the domestic productive system at a sector and geographical level, and therefore, the virtuous cumulative effects within the sector and to the rest of the economy, in the terms expressed by Kaldor [1989] and Thirlwall [1997] are still weak.

TABLE 1
MEXICO: CURRENT ACCOUNT, EXTERNAL DEBT SERVICING AND GROWTH, 1970-2000

YEARS	Current Account % of GDP	External debt servicing		GDP annual rate of growth
		% of total exports	% of GDP	
1970	-3.56	43.33	1.87	
1971	-2.97	44.87	1.87	
1972	-2.84	40.94	1.88	
1973	-3.06	35.56	1.74	
1974	-4.57	36.80	1.97	
1975	-4.86	49.38	2.27	6.8
1976	-3.93	49.00	2.61	
1977	-2.31	40.88	2.85	
1978	-2.92	42.20	3.10	
1979	-3.33	41.49	3.39	
1980	-5.06	43.37	3.79	
1981	-6.15	51.03	4.50	
1982	-3.26	58.17	7.75	
1983	3.69	41.70	6.82	
1984	2.24	43.29	6.74	0.3
1985	0.41	42.19	5.77	
1986	-0.99	43.49	6.86	
1987	2.81	33.40	6.11	
1988	-1.28	33.59	5.57	
1989	-2.60	32.65	5.13	
1990	-2.83	29.41	4.55	
1991	-4.65	28.60	3.87	
1992	-6.72	27.00	3.43	
1993	-5.80	27.40	3.53	3.6
1994	-7.05	26.90	3.89	
1995	-0.55	21.52	5.98	
1996	-0.70	18.85	5.44	
1997	-1.86	15.71	4.33	
1998	-3.82	15.61	4.35	
1999	-2.95	13.03	3.71	
2000	-3.08	12.08	3.50	

Source: Own calculations based on figures from the Bank of Mexico [several years].

TABLE 2
NUMBER OF BRANCHES ACCORDING TO THEIR TRADE POSITION AND MACROECONOMIC PERFORMANCE, 1988-1999

Year	Deficit (1)	Surplus (2)	(3) = (1)/(2)	RER*	Macro-economic Performance
1980	41	18	2.28	0.99	Growth
1981	42	17	2.47	0.92	
1982	38	21	1.81	1.42	Recession
1983	29	30	0.97	1.52	
1984	32	27	1.18	1.34	
1985	32	27	1.18	1.34	
1986	29	30	0.97	1.75	
1987	28	31	0.90	1.75	
1988	30	29	1.03	1.40	Growth
1989	35	24	1.46	1.33	
1990	38	21	1.81	1.27	
1991	39	20	1.95	1.16	
1992	41	18	2.28	1.06	
1993	43	16	2.69	1.00	
1994	41	18	2.28	1.04	
1995	26	33	0.79	1.51	Depression
1996	27	32	0.84	1.36	Growth
1997	32	27	1.18	1.25	
1998	35	24	1.46	1.24	
1999	35	24	1.46	1.18	

Notes: *RER= Real Exchange Rate; index, 1993 = 1.0. RER = E * (P^{US}/P^{MEX}), where E = Nominal Exchange Rate, Annual Average; P^{US} and P^{MEX} = US and Mexican CPI, December-December.

TABLE 3
TOTAL OF BRANCHES AND YEARS WITH TRADE DEFICIT, 1980-1999

	Number of years with trade deficit					
	20	**15-19**	**10-14**	**5-9**	**1-4**	**0**
Num. of branches	16	10	8	9	10	6

TABLE 4
TRADE DEFICIT (ANNUAL AVERAGES) OF THE DEFICIT BRANCHES AND THEIR CONTRIBUTION TO THE TOTAL DEFICIT
(thousands of dollars)

Branches	1980-1982		1983-1986		1987-1994		1995-1999	
	Dollars	**%***	**Dollars**	**%***	**Dollars**	**%***	**Dollars**	**%***
01. Agriculture	-1,001.3	6.2	-934.4	14.2	-592.4	2.7	-1,028.7	1.8
03. Forestry	-44.93	0.3	-38.55	0.6	-40.19	0.2	-40.6	0.1
05. Coal and graphite	-55.2	0.3	-28.28	0.4	-40.59	0.2	-162.8	0.3
07. Iron mineral	-21.97	0.1	-7.9	0.1	-25.98	0.1	-165.1	0.3
10. Other metallic minerals	NR	NR	NR	NR	NR	NR	-60.6	0.1
11. Meat and dairy products	-417.7	2.6	-335.6	5.1	-1,202.2	5.6	-1,628.0	2.8
16. Sugar	-329.2	2.1	NR	NR	-146.4	0.7	NR	NR
17. Oil and fats	-39.05	0.2	-69.84	1.1	-289.4	1.3	-300.6	0.5
18. Animal feed	-46.4	0.3	-16.78	0.3	-102.55	0.5	-70.8	0.1
19. Other foods	NR	NR	NR	NR	NR	NR	-25.4	0.0
24. Soft fibers	NR	NR	NR	NR	-254.0	1.2	-181.2	0.3
26. Other textile products	-29.66	0.2	NR	NR	NR	NR	-195.7	0.3
27. Clothing	-149.23	0.9	NR	NR	-360.8	1.7	NR	NR
31. Paper	-459.5	2.9	-250.92	3.8	-889.8	4.1	-1,480.9	2.6
32. Printings	-59.83	0.4	NR	NR	-150.2	0.7	-204.5	0.4
33. Petroleum and derivatives	NR	NR	NR	NR	-568.7	2.6	-1,711.5	3.0
34. Basic petrochemicals	-451.2	2.8	-385.5	5.8	-324.8	1.5	-1,022.2	1.8
35. Basic chemicals	-268.2	1.7	-132.05	2.0	-384.4	1.8	-938.5	1.6
36. Fertilizers	-122.53	0.8	-78.67	1.2	NR	NR	-45.2	0.1
37. Resins	-223.97	1.4	-96	1.5	-258.7	1.2	-712.8	1.2
38. Pharmaceutical products	-143.63	0.9	-151.05	2.3	-393.9	1.8	-116.0	0.2
39. Soap and cosmetics	-105.83	0.7	-43.3	0.7	-195.65	0.9	-480.8	0.8
40. Chemical products	-189.9	1.2	NR	NR	-497.6	2.3	-618.9	1.1
41. Rubber	-197.5	1.2	-76.02	1.2	-468.0	2.2	-833.2	1.5
42. Plastics	-80.4	0.5	-54.43	0.8	-767.0	3.6	-1,579.3	2.8
46. Iron and steel	-1,115.0	7.0	-190.8	2.9	-640.9	3.0	NR	NR
48. Metallic minerals	-33.93	0.2	-8.28	0.1	-100.75	0.5	-356.4	0.6
49. Structural met. Prod.	-141.9	0.9	-53.2	0.8	-56.24	0.3	-23.6	0.0
50. Metallic products	-739.6	4.6	-247.9	3.8	-750.7	3.5	-1,259.6	2.2
51. Non-electrical equip	-3,996.9	24.9	-1,532.0	23.2	-4,535.1	21.0	-5,785.9	10.1
52. Electric machinery	-633.1	3.9	-380.5	5.8	-1,010.6	4.7	-1,984.3	3.5
53. Electro domestic appliances	-61.10	0.4	-52.15	0.8	-130.08	0.6	-12.4	0.0
54. Electronic equipment	-398.4	2.5	-230.9	3.5	-1,793.4	8.3	-5,238.8	9.1
55. Electrical equipment	-288.7	1.8	-174.28	2.6	NR	NR	NR	NR
56. Automobiles	-492.1	3.1	NR	NR	NR	NR	NR	NR
57. Autoparts	-1,827.2	11.4	-273.8	4.2	-3,585.1	16.6	-6,328.3	11.0
58. Transportation equip.	-868.7	5.4	-495.7	7.5	-858.3	4.0	-294.9	0.5
59. Other manufactures	-779.8	4.9	-356.3	5.4	-1,272.7	5.9	-2,434.9	4.2
SUBTOTAL	**-14,066.6**	**87.7**	**-4,834.2**	**73.3**	**-19,997.1**	**92.6**	**-37,322.1**	**65.1**
TOTAL	**-16,034.2**	**100.0**	**-6,597.2**	**100.0**	**-21,599.8**	**100.0**	**-57,334.4**	**100.0**

* Percentage contribution to the deficit of the branch in the total of the branches that had such trade position.
NR = Non Registered since either shifted their trade position or they were already in surplus.

TABLE 5
TRADE SURPLUS (ANNUAL AVERAGE) OF THE SURPLUS BRANCHES AND THEIR CONTRIBUTION TO THE TOTAL
(thousands of dollars)

Branches	1980-1982		1983-1986		1987-1994		1995-1999	
	Dollars	**%**	**Dollars**	**%**	**Dollars**	**%**	**Dollars**	**%**
2. Cattle	NR	NR	123.25	0.8	144.7	1.2	134.6	0.5
4. Hunting and fishing	NR	NR	6.25	0.0	40.4	0.3	106.0	0.4
6. Crude oil and natural gas	13,269.6	87.3	12,302.8	78.6	7,158.6	58.4	6,080.8	23.1
8. Non-ferrous minerals	252.7	1.7	202.18	1.3	NR	NR	102.6	0.4
9. Quarries and sand	NR	NR	38.22	0.2	34.72	0.3	22.5	0.1
12. Fruit preparation and vegetables	100.31	0.7	129.4	0.8	169.28	1.4	337.6	1.3
13. Wheat mill	1.75	0.0	4.62	0.0	NR	NR	9.0	0.0
14. Nixtamal mill	0.20	0.0	0.3	0.0	1.075	0.0	4.1	0.0
15. Coffee	390.2	2.6	582.5	3.7	418.8	3.4	796.8	3.0
16. Sugar	NR	NR	NR	NR	NR	NR	79.4	0.3
19. Other foods	339.0	2.2	368.9	2.4	142.7	1.2		
20. Alcoholic beverages	NR	NR	48.97	0.3	NR	NR	194.9	0.7
21. Beer and malt	24.56	0.2	60.08	0.4	161.62	1.3	513.0	1.9
22. Water and carbonated beverages	2.70	0.0	5.2	0.0	NR	NR	31.5	0.1
23. Tobacco	52.19	0.3	31.64	0.2	47.88	0.4	118.2	0.4
24. Soft fibers	188.77	1.6	207.1	1.3	NR	NR	NR	NR
25. Garment and hard fibers	25.85	0.2	27.71	0.2	23.68	0.2	41.1	0.2
27. Clothing	NR	NR	NR	NR	NR	NR	731.3	2.8
28. Leather and footwear	23.2	0.2	31.8	0.2	72.68	0.6	678.6	2.6
29. Triplay and boards	NR	NR	NR	NR	NR	NR	43.6	0.2
30. Wooden products and cork	7.6	0.0	26.10	0.2	NR	NR	138.2	0.5
33. Petroleum and derivatives	NR	NR	549.5	3.5	NR	NR	NR	NR
43. Glass products	NR	NR	113.6	0.7	195.09	1.6	277.6	1.1
44. Cement	NR	NR	76.68	0.5	75.99	0.6	119.3	0.5
45. Other non-metallic mineral products	NR	NR	25.83	0.2	NR	NR	259.3	1.0
46. Iron and steel	NR	NR	NR	NR	NR	NR	108.3	0.4
47. Ind. of non-ferrous metals	182.67	1.2	297.0	1.9	373.7	3.1	367.8	1.4
55. Electric equipment	NR	NR	NR	NR	NR	NR	110.5	0.4
56. Automobiles	NR	NR	130.3	0.8	2,494.9	20.4	12,199.0	46.3
SUBTOTAL	**10,633.3**	**93.7**	**14,438.3**	**92.3**	**10,588.9**	**86.4**	**23,605.5**	**89.6**
TOTAL	**15,205.7**	**100.0**	**15,643.1**	**100.0**	**12,252.4**	**100.0**	**26,335.1**	**100.0**

Note: NR = Non Registered since either shifted their trade position or they were already in deficit.

TABLE 6
TRADE BALANCE REGRESSIONS (GLS)
(Standard error in parentheses)

	Common Effects	**Fixed Effects**	**Random Effects**
C	-9.446 (0.0026)	__	-197.7266 (424.624)
RER	0.3861 (0.0006)	0.4229 (0.001)	506.0926 (160.3339)
RG	-5.51E-05 (2.5E-05)	-0.00044 (3.84E-05)	0.3754 (0.7427)
Y^{US}	0.0034 (8.0E-07)	0.0034 (1.23E-06)	-0.1210 (0.0960)
TO	2.3847 (0.0013)	-2.4029 (0.002)	-168.084 (177.3842)
$\bar{R}^2$	0.5550	0.7345	0.6180

C = Constant
N=59, T=19
Total panel balanced observations = 1121

FIGURE 1
GDP GROWTH AND TRADE BALANCE. LINEAR ADJUSTMENT
1950-2000

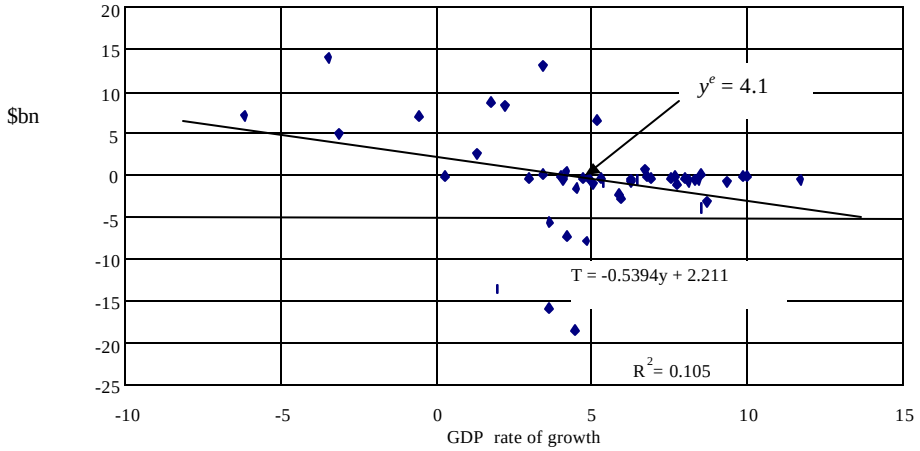
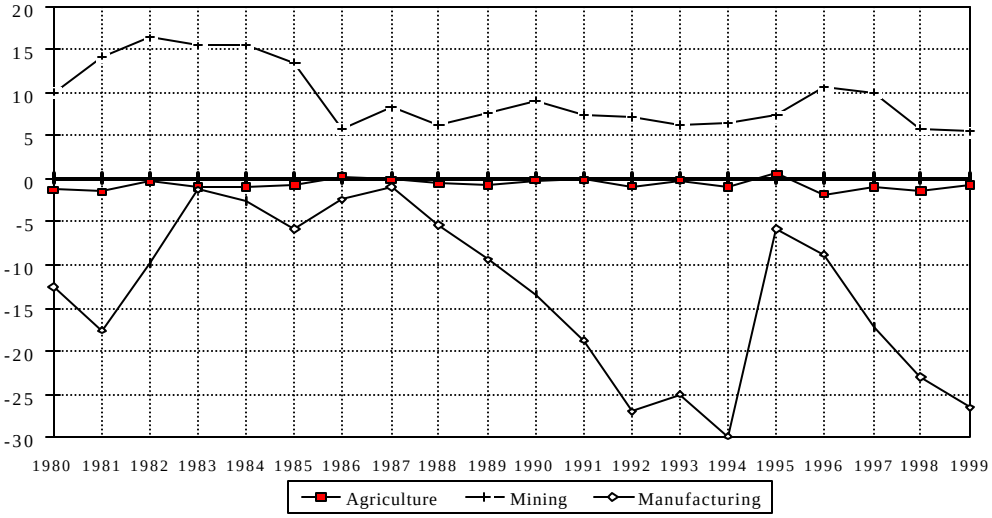
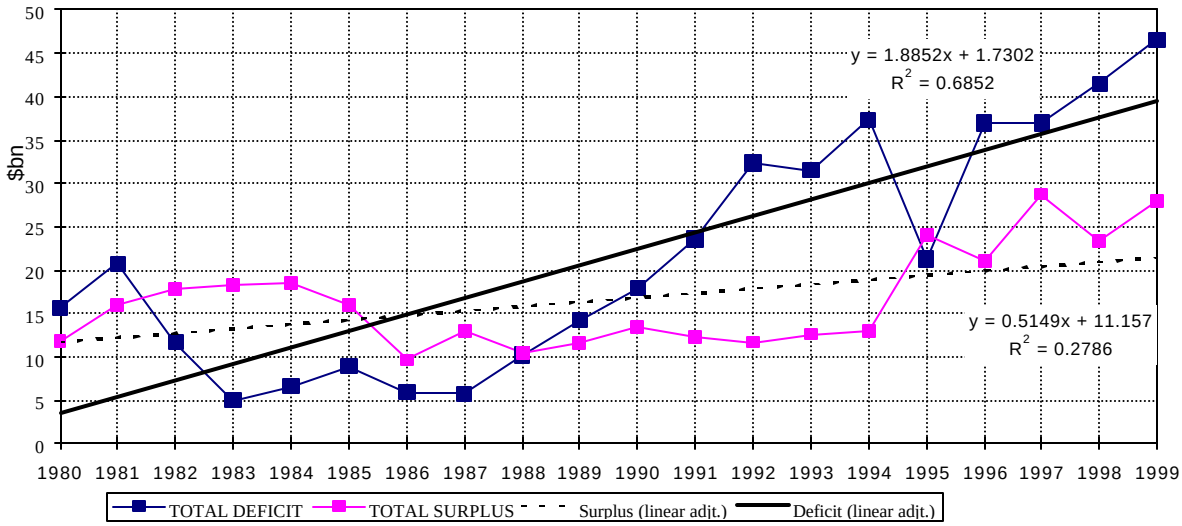


FIGURE 2
TRADE BALANCE BY LARGE DIVISION, 1980-1999
(Billions of dollars)



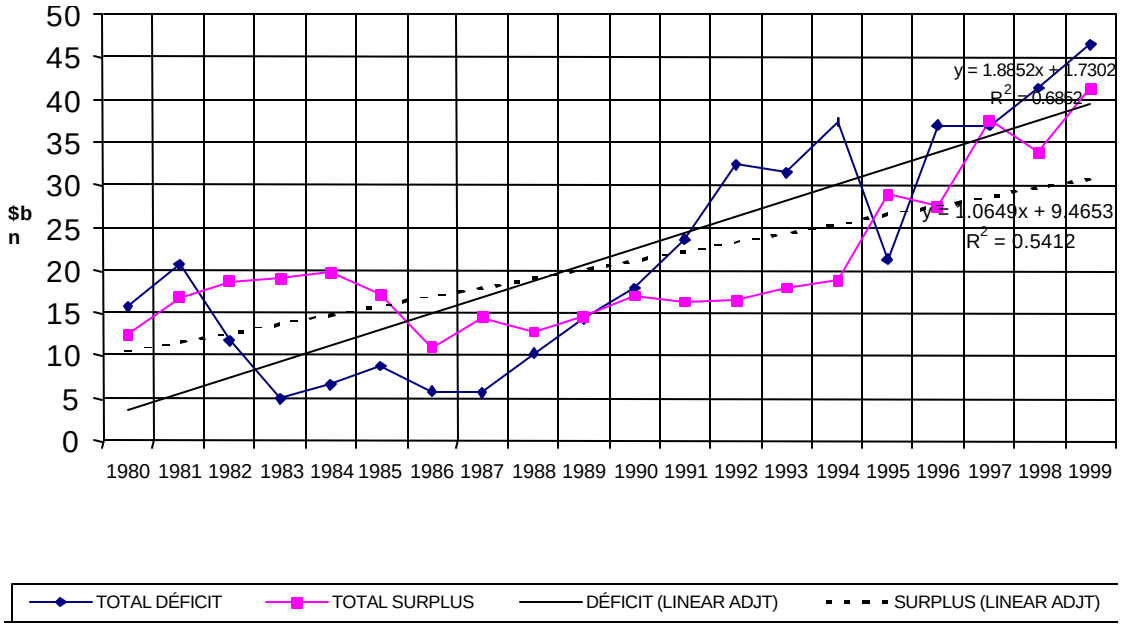
Source: These and the following figures and tables are own calculations based on information provided by CAPEM.

FIGURE 3a
TOTAL DEFICIT AND SURPLUS OF ECONOMIC BRANCHES.
LINEAR ADJUSTMENTS



Where: y = trade balance (absolute values); x = time

FIGURE 3b
TOTAL DEFICIT AND SURPLUS OF ECONOMIC BRANCHES, INCLUDING OTHER MERCHANDISE



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NOTES

1. School of Economics, UNAM. I thank the helpful comments from Enrique Dussel, Benjamin García, Hugo Sandoval and Cesar Castro, as well as the technical collaboration from Leobardo de Jesús, Luis Brito and Roberto Chico. This article is part of the research project *Eudoxio: Macroeconometric Model of the Mexican Economy. Prospective Scenarios, 1999-2030*. PAPIIT No. IN301700, DGAPA, UNAM. The usual disclaims applies.

2. The World Debt Crisis started in 1982 when Mexico declared that it was unable to pay its debt service. Economic growth did not restart in the whole region (Latin America) until a world debt agreement was reached at the end of the 80s.

3. For *classic structuralist* we identify the approach that was initially headed by ECLAC (Economic Commission for Latin America and the Caribbean) and its associates since the late 40s, such as Prebisch, Pinto, Myrdal and Noyola. See references in Bibliography. According to Gurrieri [1982], the three seminal works by Prebisch (indicated in the Bibliography) were basic for constructing the whole intellectual paradigm as well as the economic policy for the region for 1950s-1970s.

4. In a very famous article: "The balance of payments constraint as an explanation of international growth rate differences", *Banca Nationale del Lavoro, Quarterly Review*, 1979. Further applications were compiled in Thirlwall 1995 and 1997.

5. Loría [2001] demonstrates that for the Mexican economy, as a whole and for the last 30 years, this propensity has been higher than the marginal propensity to export. Therefore, this country has been doomed to a perpetual foreign deficit in dynamic terms.

6. Own calculations, based upon INEGI, several years. Trade Openness = (exports + imports)/GDP. At this point we measure trade openness in this macroeconomic sense. Later on, in the regressions (section IV), we use another variable which is basically microeconomic.

7. We are only considering 59 branches, out of 73 (the total). The 14 excluded branches were grouped as *other merchandise* that refer to those non-direct tradeable branches, such as: *construction (60), electricity, gas and water (61), commerce, hotels and restaurants (62-63), and the rest of services (64-73)*.

8. In this table and in the following, the subtotal does not coincide with the total. That is, it does not make the hundred percent of the surplus or deficit due to the fact that *other merchandise* are not considered.

9. Pioneered –among others– by Romer [1986 and 1990]; Lucas [1988]; Barro and Sala-i-Martin [1995].

10. This conclusion has also been pointed out in other studies and by applying other econometric techniques and methodologies. See Villarreal [2000], Galindo and Guerrero [2001] and Loría [several works].

11. It must be stressed that TO reached its peak at the middle of the 90s. Afterwards it has been marginally increased.

12. It has to be emphasized that manufacturing exports increased more than a fourfold between 1989 and 1998.