

ACCOUNTING FOR GROWTH: ARGENTINA 1947-1994

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"If someone in 1945 had asked: 'What part of the world do you expect to experience the most dramatic take-off in the next three decades?', probably I would have given an answer like the following: 'Argentina is the wave to the future. It has a temperate climate. Its density of population provides a favorable natural resource endowment per employee. By historical accident its present population is the fairly homogeneous progeny of Western European nations. And Argentina is in 1945 at that intermediate stage of development from which rapid growth is most easily expected.' How wrong I would have been." (Paul Samuelson, presidential address to the International Economic Association, Mexico, 1980¹).

1. Introduction

This essay is an exercise in growth accounting for the Argentine economy during the period 1947-1994. The goal of the exercise is to identify the sources of growth and estimate the change in Total Factor Productivity (TFP) during this period. I think that this exercise is worth pursuing for several reasons. First, Argentina is a well-known case in failed development, as Samuelson's words suggest. A number of arguments have been advanced to explain the Argentine failure, including inward orientation, high inflation, volatile relative prices, heavy state intervention in the pricing mechanism, and a bloated state-owned corporate sector.

The inward-oriented trade policies prevalent in Argentina during most of this period might have caused slow growth through two different channels. Presumably, high protection affected the overall efficiency in the economy, which in turn should have been reflected in a relatively low rate of TFP growth. Of course, this is the reverse side of the popular story of East Asian success, where outward orientation, it has been argued, led to fast TFP growth.² On the other hand, Díaz Alejandro (1970, chapter 6) has argued that after World War II, the high relative price of capital goods caused by Argentine trade policies had a serious negative impact on the real rates of capital accumulation. Taylor (1994) provides econometric support for Díaz Alejandro's claim that capital accumulation is inversely related to the relative price of capital goods, and suggests that the high price of capital goods explains roughly half of Argentina's slow growth of per capita GDP relative to the OECD (pp. 14-15).

Furthermore, a slow rate of capital accumulation or low TFP growth might have been caused by other factors. Financial disruption caused by high inflation and relative price volatility, and financial repression induced by distortive policies, might have limited the

¹ The paragraph is quoted by Di Tella and Platt (1986), pp. 201.

² See, for instance, World Bank (1991), chapter 5.

amount of resources channeled to investment. Volatile relative prices were also likely to have caused too much back and forth intersectoral factor shift (particularly, between tradables and nontradables as a result of real exchange instability), compromising overall economic efficiency. Besides, increased uncertainty due to relative price instability probably prevented the consummation of otherwise socially efficient investment projects.

The efficient allocation of resources was also impaired by distortive taxes and subsidies, and at times, protracted price controls. Besides, the rationed supply by ill-managed state-owned public utilities in such areas as energy, telecommunications and public transportation also took its toll on the economy.

The availability of estimates of the contributions to growth made by TFP and factor accumulation are a necessary first step for a deeper analysis aimed at identifying the main causes of slow growth in the Argentine economy.

Furthermore, the succession of very different policy regimes during the last fifty years, provides a basis for a *prima facie* evaluation of their supply-side effects. Low inflation in the late forties and in the fifties was followed by moderate inflation in the sixties, high inflation in the seventies and hyperinflation in the eighties. Trade and foreign investment policies also recorded wide oscillations. While policies in the late forties and the fifties were extremely inward oriented, a gradual opening up took place in the sixties, late seventies and late eighties, with temporary setbacks in the early seventies and early eighties. The movement toward an open economy seemed much more vigorous in the early nineties. Sectoral relative prices, in turn, have fluctuated wildly, sometimes as a result of populist policies aimed at redistributing income (50s and early seventies) and at times when pegging the exchange rate was used to fight inflation (late seventies, early nineties).³ Therefore, breaking down the 1947-1994 period in subperiods associated with different policy regimes could shed some light on their impact in terms of growth.

The second reason to pursue the growth accounting exercise has to do with the recent research done on this area by Alwyn Young (1992, 1994, 1995). His claim that East Asian success is mainly due to factor accumulation and not to extraordinary TFP growth associated with outward orientation (Young, 1994 and 1995) is as much striking as challenging. Young justifies this assertion on the basis that TFP rates of growth in East Asia were not substantial outliers when compared to other countries', either in a econometric cross-section study for 66 countries based in the Penn World Table for the period 1970-85 (Young, 1994) or in a growth accounting exercise for Hong Kong, Korea, Singapore and Taiwan for the period 1966-1990 (Young, 1995).

Young might be right in saying that East Asian TFP growth is not exceptional when compared, for instance, with the OECD, but it does look remarkable when compared with Latin America. Young's cross-section regression (1994) showed that, except Ecuador (a member of OPEC), the other Latin American countries included in his cross-

³ Populist policies are discussed in Canitrot (1975), Diaz Alejandro (1970) and Sachs (1989). The experience of pegging exchange rates under high inflation are discussed by Canitrot (1981), Damill and Keifman (1993), and Nogues (1983).

section study (Brazil, Colombia, Honduras, Panama and Paraguay) had annual rates of TFP growth lower than the sample mean.⁴ Given the important differences in economic policies and saving rates between Latin America and East Asia, it would be worthwhile to quantify the sources of the divergence in their growth performance. A growth accounting exercise for Latin American countries done with a methodology comparable to Young's -who in turn followed mainstream studies such as Jorgenson, Gollop and Fraumeni (1987)- would provide a more solid base for the comparison with East Asia and the discussion of the effects of different policy regimes and rates of factor accumulation. Thus, this essay on Argentine growth intends to be a contribution to that comparison.

Elias (1992) is an exception as probably the only recent attempt to estimate the sources of growth for Argentina and other Latin America countries⁵ during the period 1940-85. His lonely effort is impressive in a field that is almost virgin in Latin America. However, I think that a new exercise in growth accounting is justified for a number of reasons. Some of Elias's estimates are clearly disputable.⁶ In several occasions he did not use the primary sources of information⁷ such as Population Censuses. Thus, in his attempt to cover seven countries, he probably sacrificed scope for precision.

In addition, new information has been produced since Elias' study was done, which if used in a sources-of-growth exercise could yield different results. Recently, an important review of Argentine National Accounts has been conducted with the technical assistance of the Economic Commission for Latin America and the Caribbean (ECLAC). The 1985 Economic Census provided the basis for new estimates of National Income and Product Accounts, now based in the year 1986, either in real and nominal terms. On the other hand, as part of the background information for the 1986-based new estimates, ECLAC computed the functional distribution of income for 1980-1987, which had not been previously available. Furthermore, a new Population Census was conducted in 1991, which provide updated data on the educational attainment of the population. The use of all this new information is likely to have an important impact in the estimate of the sources of growth.

Besides, since Elias study was done independently of Young's work, he followed different criteria at several points, impairing the comparability of their estimates. For instance, Elias included the labor income earned by independent and unpaid workers, and employers in the capital share of income (as reported in Argentinean national

⁴ The average annual rate of TFP for Brazil, Colombia, Honduras, Panama and Paraguay, was 0.76 per cent, while the sample mean was 1.3 per cent.

⁵ Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

⁶ Elias (1992, pp. 50-52) estimated average annual rates of TFP growth for Argentina that fluctuate between 3.1 per cent (1940-1950) and -2.9% (1980-85). The fact that the forties were years of high expansion in domestic demand (first Peron Administration), while the early eighties were characterized by an important contraction in domestic demand (adjustment to the foreign debt crisis), suggests that those estimates are driven by cyclical factors rather than long-run forces.

⁷ For instance, labor force participation rates and employment rates were drawn from secondary sources, Programa Regional de Empleo de America Latina y el Caribe (1982) and Ceballos (1985/1986), respectively .

accounting), while Young took special care in estimating the labor income earned by those groups in order to add it to wage labor income, obtaining therefore a more precise measure of capital earnings (Elias, 1992, pp. 62-63; Young, 1994, pp. 13). Elias used less disaggregated data regarding the computation of capital stocks (housing and nonhousing). He did not use Argentine data in order to weight different kinds of labor input.

2. Methodology

I follow the methods used by Jorgenson *et al* (1987) and Young (1994, 1995) as much as information availability makes it possible. Therefore, the computation of the sources of growth of the Argentine nonagricultural sector of the economy is based on the assumption of an aggregate translogarithmic value added production function:

$$Q = \exp[\alpha_0 + \alpha_K \ln K + \alpha_L \ln L + \alpha_t t + (1/2) B_{KK}(\ln K)^2 + B_{KL}(\ln K)(\ln L) + B_{Kt}(\ln K)t + (1/2) B_{LL}(\ln L)^2 + B_{Lt}(\ln L)t + (1/2) B_{tt}t^2] \quad (1)$$

where K, L and t represent capital input, labor input and time. Constant returns to scale require:

$$\alpha_K + \alpha_L = 1, B_{KK} + B_{KL} = B_{LL} + B_{KL} = B_{Kt} + B_{Lt} = 0 \quad (2)$$

The first difference of the natural logarithm of the production function provides a measure of the sources of growth over time:

$$\ln [Q(T)/Q(T-1)] = \ln [(K(T)/K(T-1))] + \Theta_{L,T,T-1} \ln [L(T)/L(T-1)] + TFP_{T,T-1} \quad (3)$$

where:

$$\Theta_{i,T,T-1} = [\Theta_i(T) + \Theta_i(T-1)]/2 ; i = K, L \quad (4)$$

and $\Theta_i(T)$ the income share of factor i , at time T . $TFP_{T,T-1}$ denotes the translog index of TFP growth between period $T-1$ and T . Assuming constant returns to scale, the sum of the yearly factor shares equals one. Thus, TFP growth is that part of GDP growth not explained by the contribution made by the (log) increase in aggregate factor supplies weighted by their average income shares. In turn, (log) increases in aggregate factor supplies are computed by weighting the (log) growth of each component (different types

of capital and labor inputs) by its average share in the aggregate factor income, as shown in (5) and (6).

$$\ln[K(T)/K(T-1)] = \sum_i \Theta_{K_i} \ln[K_i(T)/K_i(T-1)] \quad (5)$$

$$\ln[L(T)/L(T-1)] = \sum_j \Theta_{L_j} \ln[L_j(T)/L_j(T-1)]$$

$$\theta_h = [\theta_h(T) + \theta_h(T-1)]/2 ; h = K_i, L_j \quad (6)$$

Labor is classified according to sex, age (seven groups)⁸ and education (four groups).⁹ The right measure of labor input services requires total hours of work. Unfortunately, since this information is not available, I implicitly assumed that hours per worker did not change over time.¹⁰

Not all cross-classifications of the labor force by sex, age and education are available. Population Censuses usually provide data on row and column sums in lower dimensions. Assuming no interactions across attributes other than those present in the available sub-dimensional tables, I derived when possible an approximation of the maximum likelihood estimate of each cell using the iterative proportional fitting technique suggested by Bishop, Fienberg and Holland (1975) and applied by Young (1992, 1995). When this is not possible I use the biproportional matrix model (Bacharach, 1965) to estimate census information using information from Households Surveys or data from another census. Usually, INDEC (a Spanish acronym for National Bureau of Statistics and the Census) runs a Population Census every ten years and Household Surveys in urban areas twice a year.

Information on labor incomes cross-tabulated by sex, age and education was drawn from Household Surveys for the Greater Buenos Aires Area, which includes more than one third of the national labor force. This information was then used to compute the implicit labor income of employers, the self-employed and unpaid relatives, according to the attributes (sex, education and age) of these workers. Argentine national accounting always pools together the labor incomes of those groups with property compensation.

⁸ The groups are as follows: 14 to 19 years old, 20 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 or older.

⁹ The four groups are: no education or primary incomplete; primary complete or secondary incomplete; secondary complete or superior or university incomplete; and superior or university complete. Primary school in Argentina includes the equivalent to America's grades K to seven; secondary school is equivalent to America's grades eight to twelve; superior is usually a four-year degree, while university is usually a five-year degree or longer.

¹⁰ Elías reports the weekly average number of hours worked in Argentina for 1964 and 1980 (1992, Table 12, p. 88). These figures indicate no trend. It is important to remember that the most important innovations in labor legislation regarding hours worked and other conditions in the workplace, were introduced in the mid forties during the first Peron's Administration.

Thus, the labor share of the nonagricultural economy as reported in Argentine national accounts is adjusted to include implicit labor incomes.

Capital is divided into four kinds of inputs: transport equipment, machinery, residential construction and nonresidential construction. Land is not included in the analysis due to lack of data in the nonagricultural sector of the economy. The stocks of capital inputs are computed by the perpetual inventory method with geometric depreciation:

$$K_i(T) = I_i(T) + (1 - \delta_i)K_i(T-1) \quad (7)$$

so that, the stock of each kind of capital in the current period equals the stock in the previous period, plus the investment flow ($I_i(T)$) minus the depreciation in the current period. The time-invariant depreciation rate of each kind of capital asset is represented by δ_i . The depreciation rates used in this essay for each kind of capital input are the unweighted averages of the Hulten-Wyckoff depreciation rates of the detailed capital input types as reported by Jorgenson and Sullivan (1981, p. 179) that are likely to be found in the nonagricultural economy.

The lack of data on capacity utilization was a limitation in the computation of the stocks of capital inputs. I suspect, however, that this problem only becomes serious after 1980 when the continued rise in labor unemployment rates along with output stagnation suggests the existence of significant capital slackness.

Capital income is computed as income minus the estimated income of labor (adjusted for the implicit labor income of employers, the self-employed and unpaid relatives). To allocate capital income among different types of capital assets we have to compute, first, the nominal rate of return and then the rental prices of capital. Under perfect competition all capital asset types have the same nominal rate of return $r(T)$, which is computed (disregarding taxes) as total capital income plus total capital gains minus total depreciation, all divided by the value of total capital in the previous period. More formally:

$$r(T) = \{cinc(T) + \sum_i [(p_i(T) - p_i(T-1)) - \delta_i p_i(T)] K_i(T-1)\} / \sum_i p_i(T-1) K_i(T-1) \quad (8)$$

where *cinc* is capital income and p_i is the price of capital input i . Once $r(T)$ is known, and assuming geometric depreciation and perfect foresight, we can compute R_i , the rental price of capital input i as:

$$R_i(T) = p_i(T-1)r(T) + \delta_i p_i(T) - [p_i(T) - p_i(T-1)] \quad (9)$$

Now, we obtain the share of capital input i , θ_i , used to calculate the weighted change in capital:

$$\theta_i(T) = R_i(T) K_i(T-1) / \text{cinc}(T) \quad \mathbf{(10)}$$

3. Analysis of the Results

The results of the growth accounting exercise are found in Table 1. Argentina seems to have had very serious problems in two of the main sources of growth: capital accumulation and technical progress. Note that the yearly rate of raw capital accumulation per worker has been a meager 0.91 percent, while annual TFP growth has been close to zero, 0.32 percent, in 1947-1994. This compares very unfavorably with annual average rates of (raw) capital accumulation per worker of 6.5 percent, and annual average TFP growth of 1.4 percent in 1966-1990, for the four East Asian economies studied by Young (1995). There is however a tiny bright side in the Argentine story: the contribution to growth made by improvements in the quality of the labor force since 1970. Quality improvements mainly due to higher schooling have added 1 percentage point to the yearly rate of growth of the labor force in 1970-1994¹¹, and almost a half percentage point (0.47) to the annual rate of output growth in the same period (see Table 2 for a comparison of inputs contributions to growth in Argentina and East Asia).

The obvious question is why capital accumulation and TFP growth have been so low. The low rates of capital accumulation might seem puzzling at first when we recall that Argentine saving rates have not been very low during most of 1947-1994, fluctuating around 20 percent of GDP. However, a simple accounting identity shown in (11) takes us back to Díaz-Alejandro hypothesis: the high relative price of capital goods might be the culprit.

$$I(T)/K(T-1)=[I(T)/Y(T)]/[K(T-1)/Y(T)] \quad (11)$$

A high relative price of capital goods implies a high measure of the capital to output ratio. Therefore, if the (gross) investment to output ratio is given, the real rate of capital accumulation will be lower than otherwise. My capital stock estimates are consistent with this hypothesis, since they imply that the average capital to output ratio has been 3.4 during 1947-1994 while the incremental capital-output ratio has been 3.0 during the same period (see Table 3), too high for a developing country. Using a sample drawn from the Penn World Table Mark 5, Taylor (1994, Table 5) found that the relative price of capital goods in Argentina was on average 91 percent higher than the sample mean in 1960-1979 and still 34 percent higher in 1980-1984. Díaz Alejandro (1970, chapter 6) had already shown that capital goods became increasingly more expensive since World War II.

The low rate of technical progress should not be surprising given both the distortive trade and exchange rate policies and the highly unstable macroeconomic environment prevalent in 1947-1994. The former sent the wrong signals to economic agents by inducing them to misallocate resources between sectors, while the latter introduced a

¹¹ Comparable to 0.73 in Hong Kong, 1.05 in Korea and 0.65 in Taiwan, during 1979-1990. Singapore, however, recorded a 1.9 percent annual rate of growth in labor force due to quality improvements in the same period.

level of noise which presumably weakened the overall efficiency of the price system. I have selected four indicators of macropolicies which are presented in Table 4 and Graphs II.1 to II.4: the public sector budget deficit (as a percentage of GDP), the inflation rate (log changes of the GDP deflator), the ratio of domestic to external terms of trade and the real exchange rate. The ratio of domestic to external terms of trade used here is a measure of the anti-trade bias induced by protection previously used by Díaz-Alejandro (1970, pp. 90-91).¹² The real exchange rate is defined as an average nominal exchange rate corrected by Argentine and U.S. wholesale prices; a fall in the real exchange rate is a real appreciation, a rise is a real depreciation.

A quick look at these indicators reveals the extent of relative price (real exchange rate) and absolute price (inflation) instability. In turn, public sector budget deficits seem to have been related to bursts in inflation and episodes of real appreciation. The ratio of domestic to external terms of trade, although far from being stable, shows a long run rising trend indicative of less anti-export bias over time. However, this variable does not account for changes in the relative price of capital goods, which has been another source of distortion.

A more detailed analysis of the results and an account of the policies followed in different subperiods may help explain the links between them.

The main criterion for dividing by subperiods was the availability of Census information on the labor force, as the systematic collection of information from Household Surveys only began in the seventies. Population Censuses were run in 1947, 1960, 1970, 1980 and 1991. The subperiods chosen are: 1947-1960, 1960-1970, 1970-1980, 1980-1994. Thus, the last subperiod is an exception to the Census-year rule. There are several problems with the 1991 Census. First, there is a strong presumption that the capacity utilization levels of capital inputs were abnormally low.¹³

Secondly, the questionnaire regarding labor force participation was modified, so that the 1991 Census figures are not comparable to previous Census data.¹⁴ Very likely, capacity utilization in 1994 was at a peak since 1980, but I am not sure how the 1994 level compares in this regard to previous Census years.¹⁵ Besides, my labor force data for 1994 was based on Household Surveys, which are subject to much larger measurement errors than Census figures. Therefore, the results for 1980-1994 are more shaky than the ones for previous subperiods.

Finally, since the subperiodization was based on information availability, policies and macroeconomic developments are not always homogeneous.

¹² Domestic terms of trade are measured as the ratio of wholesale agricultural prices to wholesale nonagricultural prices, since the bulk of Argentine exports is still agricultural, while the bulk of imports is made up of manufactures and minerals.

¹³ According to FIEL (1991), capacity utilization in manufacturing was 60 percent in April, the month of the Population Census.

¹⁴ See Wainerman and Giusti (1994).

¹⁵ The publication quoted before on capacity utilization was discontinued in 1992.

a) 1947-1960

The subperiod was dominated by the highly distortive economic policies implemented by the Peronist Administration (1946-1955). Trade policy was characterized by strong discrimination against exports, heavy protection of existing activities (favoring imports of raw materials and intermediate goods and discouraging imports of capital goods). In turn, strong nationalistic feeling sustained a very hostile attitude toward foreign investment. Expansion of public sector employment and ambitious social programs increased budgetary deficits compromising price stability. Foreign exchange rationing and rising domestic prices led to a real appreciation of the currency. Besides, this "macro" inefficiencies were compounded by unprecedented widespread "micro" interventions in individual markets such as price controls, selective credit, multiple exchange rates, import prohibitions, and so forth. Rising inflation and serious foreign exchange bottlenecks led Perón to take some steps to reverse part of his policies' biases against export and foreign investment since 1953 (see Díaz-Alejandro, 1970, pp. 93 and 106-126). These changes were pushed farther by Perón's successors who in addition lifted price controls and devalued the currency, corrections that raised inflation in the short run. The poor quality of public investment during Peron's term also affected overall productivity, by neglecting the provision of public utilities such as energy and transportation infrastructure.¹⁶ Post-Perón administrations paid more attention to public infrastructure.¹⁷

Given the policies prevalent in 1947-1960, the low rate of TFP growth in the period (0.19 per annum) is hardly surprising.

b) 1960-1970

Although during this period the economy was far from becoming free of distortions, genuine progress towards higher levels of efficiency was achieved. Perhaps the most dramatic changes were the opening up of the economy to flows of foreign investment and imports of capital goods, started by Frondizi's Administration by the end of the fifties. Frondizi granted foreign investors the rights enjoyed by domestic investors and allowed them to freely remit profits abroad. He also lifted quantitative trade restrictions, drastically reduced or eliminated tariffs on capital goods and granted an up to 100 percent tax credit on imports of new machinery and transport equipment. The first steps to implement measures to promote nontraditional exports were also taken. By granting refunds of duties paid on imported inputs or domestic taxes, an effort was made to reduce the anti-export bias of the tariff system. Nontraditional exports reacted favorably to these incentives (see Mallon and Sourrouille, 1975, pp. 19-25, 68-81).

However, traditional exports were still biased against, although less than before, while a serious rationalization of the tariff structure would have to wait until the late sixties. The foreign exchange market, in turn, operated with few or no restrictions regarding current

¹⁶ See Ganz(1959, pp. 236-240).

¹⁷ See Díaz-Alejandro (1970, p. 137).

account transactions, and foreign exchange policies succeeded in keeping the exchange rate up with inflation.

Public sector budget deficits were substantially reduced in this decade. Inflation was subdued. Price controls were rare.

It has been said that the structural transformations undergone in the sixties marked a technological divide. However, the remaining distortions caused by highly protective tariffs were even then apparent. The emergence of oligopolistic markets characterized by modern firms operating with excess capacity became typical (see Mallon and Sourrouille, 1975, pp.83-85).

It is also worth noting that investment in machinery and equipment reached a peak 7 percent annual rate of growth in this subperiod. This might lend some support to De Long-Summers hypothesis¹⁸ that there are externalities associated to this kind of investment. However, machinery and equipment grew at the same rate in 1947-1960, with more disappointing results. It is true that the set of distortions prevalent in 1947-1990 might account for low technical progress, but since some of these distortions persisted for most of 1947-1994 I would say that the Argentine empirical evidence is inconclusive in this respect.

In summary, the more stable macroeconomic environment coupled with apparently important transfers of technology via foreign investment and imports of capital goods, seems consistent with a higher rate of TFP growth (1.3 per annum), actually the highest in 1947-1994.

c) 1970-1980

This decade probably witnessed the most dramatic changes in the macroeconomic environment. Budget deficits exploded with the return of Peronism to power (1973-1976) but were not substantially reversed by the subsequent military dictatorship. As a result, the yearly inflation rate jumped to three digit levels from 1975 on. The real exchange rate experienced unprecedented fluctuations. The currency strongly appreciated in real terms during the Peronist Administration, underwent a real depreciation in the first years of the military regime (1976-1977) and experienced an even stronger real appreciation during 1978-1980.

Trade and payments policies of the second Peronist Administration were a remake of the first's. Tariffs were increased, quantitative restrictions and multiple exchange rates were reimposed, foreign exchange was rationed, some imports were banned. The parallel market exchange rate skyrocketed, leading to a collapse of the measured current account (see Bouzas and Keifman, 1987; Nogués, 1986, pp. 4-8). The military took over amidst the discontent created by accelerating inflation and a balance of payments crisis.

¹⁸ De Long and Summers (1991).

The military junta took some steps to rationalize the structure of protection, although they were very mild and sometimes inconsistent. Initially (1976, 1978), tariffs reductions mainly eliminated redundant protection. In 1979 a new anti-inflation program based on preannounced exchange rate changes and tariff reductions was launched. However, the main thrust of the program was price stabilization rather than efficiency improvements. This is revealed by the survival of high protection (even import licenses) in sectors producing basic inputs such as steel, steel products, petrochemicals, and so forth, that were directly controlled by the military or their private-sector partners (see Nogués, 1986). As a result, the ratio of domestic to external terms of trade worsened (see Graph II.3) and the relative price of capital goods (strong users of some of these basic inputs) rose again (Taylor, 1994, Table 5).

Thus, the higher rate of capital accumulation reached in the subperiod was not translated into higher rates of productivity per worker since the inefficiencies described compromised the rate of growth of TFP which was -0.7 percent per year! It is interesting to note that income shares suffer a strong shift from labor to capital (employees share falls from 49 percent in 1971-1975 to 36 percent in 1976-1980). Indeed, this is consistent with a Stolper-Samuelson result in a model where capital-intensive activities benefit from higher protection and subsidies. So that, ill designed protection leads not only to slower growth but also to a more regressive pattern of income distribution.

d) 1980-1994

This subperiod is first dominated by the strong external adjustment of the economy to the several international shocks that also affected other Latin American countries in the early eighties: drying up of the sources of international borrowing, much higher interest rates, and collapse in the terms of trade. These difficulties were compounded by the international overborrowing carried out by the military experiment of stabilization via exchange rate pegging with disregard for budgetary deficits. So the democratic Administration inaugurated in 1984 was faced with the need to adjust (raise) the real exchange rate and curtail the peak budget deficits left by the military, after a decade of slow growth. As a result, real depreciation was easier to achieve than fiscal balance (although some progress was also made in this regard), which resulted in burgeoning inflation and eventually hyperinflation (1989-1990). Fiscal attempts made by the second democratic Administration (inaugurated in 1989) were more successful (see Graph II.1) leaving the ground for sustained price stability (see Graph II.2). Especially noteworthy in this sense is the massive sale of state-owned corporations. Gains in efficiency and even capital accumulation (a financially strapped public sector was unable to invest in these enterprises) are also expected as a result of privatizations.

Trade policies experienced remarkable changes. After an initial closing-up of the economy in the early eighties, trade liberalization has been carried out more extensively

than ever before, in 1988-1991, although there still remain some isles of protection (automobiles, electronics).¹⁹

Price stabilization was aided by exchange rate pegging although this time in a much sounder fiscal environment. As a result, the real exchange rate fell in the nineties (see Graph II.4). Whether this is a serious problem or not will depend on the continuity of the financial flows that revived in the nineties.

As a result of the drastic adjustment and sky-rocketing inflation of the eighties, capital accumulation was seriously injured. However, the more favorable conditions prevalent since 1991 have brought about a recovery of investment which grew 134 percent in 1991-1994 (which is not reflected in the subperiod average). Nevertheless, is still early, to assess the effects of the nineties policies on capital accumulation and technical progress. A serious limitation for any calculation is the low level of capacity utilization prevalent in 1990-1991. Nevertheless, the modest but positive rate of TFP could be an auspicious indicator, because it is probably an underestimate since I strongly suspect that there still was a lower than "normal" rate of capacity utilization in 1994.

4. Conclusions

Argentine slow growth in the last half century was due to very low rates of both, physical capital accumulation and TFP growth. It is hard to deny that these results have much to do with the poor economic policies prevalent in most of the period, although it is not easy to assess quantitatively the contribution of each particular policy to the results found in this paper. Nevertheless, my interpretation of the findings is that economic policy matters. More specifically, macro instability and distortive trade policies seem to have impaired the ability to grow of the Argentine economy. This view stands in stark contrast with Young's claim that "... the rapid growth of the East Asian NICs should not be viewed as evidence of the potential dynamic gains from outward-oriented policies" (1994, p. 965). He supports this contention on the grounds that TFP growth in East Asia is not exceptional when compared to either developed or developing countries, according to Table XIII and Table XIV of his 1995 article, which I reproduce here as Tables II.5 and II.6, respectively. However, I think that there some problems with his argument.

First, the source of TFP growth for developing countries in Table 6 is Elías (1992) whose results are not strictly comparable to Young's (1995). Elías' estimates reported in Table 6 refer to total output while Young's findings reported in Table 5 refer to nonagricultural output (Hong Kong and Singapore do not have sizable agricultural sectors). When output per worker is lower in agriculture than in the rest of the economy, the transfer of labor from the former to the latter increases the measure of TFP growth. In fact, Young (1995) excludes agriculture in his estimates of TFP for exactly this reason.²⁰

¹⁹ See Canitrot and Junco (1993).

²⁰ He claims that excluding agriculture "lowers the growth rate of output per worker in Taiwan and South Korea by 0.6 and 0.7 percent per annum" (1995, pp. 644).

Secondly, Elías' estimates of TFP growth for total output do not adjust for changes in the quality of capital or labor inputs since 1970 for any country, and do not adjust for quality changes in capital inputs in 1940-1960 for Chile or Mexico, either. Note, for instance, that quality changes in inputs contributed 0.7 and 0.4 percent per annum to output growth during 1960-1970, for Brazil and Mexico, respectively (Elías, 1992, Table 2, pp. 52). Furthermore, Elías' estimates of manufacturing TFP growth do not adjust for quality changes in inputs in any period (1992, Table 37, pp. 128).

Thirdly, Table 6 only reports Elías' highest estimates of TFP growth. Missing are the yearly 1940-1985 estimates for Argentina (0.5 percent), Colombia (0.6 percent), Peru (-0.7 percent) and the annual 1950-1985 estimate for Venezuela (0.1 percent).

My bottom line on Young's contention is this: Hong Kong, South Korea and Taiwan²¹ have achieved rates of growth of TFP that are probably not exceptional when compared to the ones reached by some OECD economies. However, given the shaky nature of the available estimates of TFP growth in developing countries, I think it is too early to reject the hypothesis that the East Asian record is, at least in part, a story of successful productivity growth due to outward orientation. We clearly need more studies of TFP growth in developing countries before we reach a definitive conclusion.

Another way to learn more about the effects of trade policies on productivity growth would be to compute rates of TFP growth at a more disaggregated level and check their correlation with the rates of sectoral effective protection. Given the important changes in these rates over time and their significant variation across sectors in Argentina, I think that such an exercise would be a natural continuation of this paper if the required information were available.

A second reflection motivated by the findings in this paper is to what extent the low rate of TFP growth experienced by Argentina in the last half century could be considered a "level effect" of distortive policies in a Solovian framework as opposed to a "growth effect" more typical of the new theories of growth which emphasize a positive link between openness and growth (Rivera-Batiz and Romer, 1999). The persistence of low productivity growth in Argentina seems at odds with the idea of exogenous technological change and technology as a free public good that characterize Solow's theory of growth.

Note that if economic policies affect not only the level of measured TFP but also its rate of growth, the case for the importance of economic policies becomes even stronger underscoring the need to understand the effects of outward orientation. If developing countries could only replicate the rate of TFP growth of OECD countries when they followed the right policies, maybe we should conclude that the East Asian record is truly remarkable.

²¹ Obviously, Singapore is the exception in this group of countries. I would not conclude, however, that the poor productivity performance of Singapore belies the presumed benefits of outward orientation. Young (1992) explained that although Singapore pursued a strong export-oriented growth strategy, the government followed very peculiar industrial policies intended to encourage investment in capital-intensive sectors that most likely compromised the growth of TFP (see also, World Bank, 1993, p. 334).

TABLE 1
ARGENTINA 1947-1994
SOURCES OF GROWTH OF NONAGRICULTURAL OUTPUT
(Annual percentage rates of growth)

Period	Output	Raw Capital	Weighted Capital	Raw Labor	Weighted Labor	TFP	Capital Share
1947-1960	3.09	3.42	3.87	1.90	2.16	0.19	43.2
1960-1970	4.57	3.31	4.27	2.21	2.53	1.34	40.4
1970-1980	2.59	4.17	4.40	1.53	2.46	-0.70	42.9
1980-1994	1.57	0.39	0.24	1.40	2.47	0.44	60.1
1947-1994	2.85	2.65	2.99	1.74	2.39	0.32	47.6

TABLE 2
ARGENTINA AND THE EAST ASIA: INPUTS CONTRIBUTIONS TO GROWTH

Country	Output Growth	Contributions to Output Growth					
		Absolute			Relative		
		Capital	Labor	TFP	Capital	Labor	TFP
ARGENTINA	2.85	1.27	1.25	0.32	44.7	44.0	11.2
HONG KONG	7.29	2.98	2.01	2.30	40.8	27.6	31.6
SINGAPORE	8.47	6.10	2.68	-0.30	71.9	31.6	-3.5
SOUTH KOREA	10.34	4.38	4.35	1.60	42.4	42.1	15.5
TAIWAN	10.17	4.16	3.87	2.14	40.9	38.1	21.0

Source: East Asian countries from Young (1995). Periods: Argentina, 1947-1994; Hong Kong, 1966-1991; Singapore, South Korea and Taiwan, 1966-1990.

TABLE 3
ARGENTINA: CAPITAL-OUTPUT RATIOS

Period	Level Ratio	Incremental Ratio
1947-1960	3.3	3.5
1960-1970	3.1	2.2
1970-1980	3.1	5.0
1980-1994	3.8	1.0
1947-1994	3.4	3.0

TABLE 4
INDICATORS OF MACROECONOMIC POLICIES: 1948-1994

Period	Budget Deficit (% of GDP)		Inflation (% of log changes)		Domestic/External Terms of Trade (1960=100)		Real Exchange Rate (1960=100)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
1948-60	7.6	3.5	22.5	15.5	85.0	18.0	74.7	19.6
1961-70	3.0	1.2	17.9	6.9	99.9	9.0	89.1	9.6
1971-80	8.8	3.7	78.4	40.3	102.8	11.6	74.3	11.9
1981-94	7.7	5.2	127.9	101.8	112.8	17.3	114.2	22.6

SOURCES: Comisión Económica de América Latina y el Caribe Oficina Buenos Aires several issues), Instituto de Estudios Económicos sobre la Realidad Argentina y Latinoamericana (1986, pp. 124-125, 150-153), Ministerio de Economía (several issues), World Bank (1987, p. 97; 1993, p.7).

TABLE 5
**YOUNG'S AVERAGE TOTAL FACTOR PRODUCTIVITY GROWTH
(PERCENT PER ANNUM)**

Sector	Hong Kong (1966-1991)	Singapore (1966-1990)	South Korea (1966-1990)	Taiwan (1966-1990)
Economy*	2.3	0.2	1.7	2.1
Manufacturing#	NA	-1.0	3.0	1.7
Other Industry	NA	NA	1.9	1.4
Services	NA	NA	1.7	2.6
Private Sector	NA	NA	NA	2.3

NA-not available. *In the case of Korea and Taiwan, agriculture is excluded. #In the case of Singapore, the years are 1970-1990.

TABLE 6
**YOUNG'S COMPARATIVE TOTAL FACTOR PRODUCTIVITY GROWTH
(PERCENT PER ANNUM)**

Country	Period	Growth	Country	Period	Growth
Canada	1960-1989	0.5	Brazil	1950-1985	1.6
France	1960-1989	1.5	Chile	1940-1985	0.8
Germany	1960-1989	1.6	Mexico	1940-1985	1.2
Italy	1960-1989	2.0	Brazil (M)	1960-1980	1.0
Japan	1960-1989	2.0	Chile (M)	1960-1980	0.7
United Kingdom	1960-1989	1.3	Mexico (M)	1940-1970	1.3
United States	1960-1989	0.4	Venezuela (M)	1950-1970	2.6

M-manufacturing alone; developed economies are from Dougherty (1991); less developed countries from Elías (1992)

Appendix: Sources

Estimates of nominal and real nonagricultural output, income distribution, and nominal and real investment flows are found in Banco Central de la República Argentina (1976), (1982) and (1993); Comisión Económica Para América Latina y el Caribe (1991); Ministerio de Economía (1992 to 1994); and United Nations (1986). Estimates of real nonagricultural output and real investment flows are also found in Banco Central de la República Argentina (1980) and (1987 and 1991). The information on real investment flows was supplemented with Balboa and Fracchia (1959) and unpublished tables kindly provided by Beatriz Ianchilovici.²²

Estimates of the labor force cross-tabulated by sex, age and education, were derived from Population Censuses run in 1947, 1960, 1980 and 1991-Dirección General del Servicio Estadístico Nacional (1951), Dirección Nacional de Estadística y Censos (no date), Instituto Nacional de Estadísticas y Censos (1973), (1979), (1983) and (1994) and Organisation for Economic Cooperation and Development (1967). Unpublished databases from Household Surveys of the Greater Buenos Aires provided by Clide Trabucchi at the Instituto Nacional de Estadísticas y Censos, were used to estimate cross-tabulations not reported in the Censuses. As the 1947 Population Census did not include information on the educational attainment of the population, this was estimated with data on graduates from all areas and levels of formal education drawn from Almada *et al* (1965), Dirección Nacional de Estadística y Censos (1958), and Organisation for Economic Cooperation and Development (1967).

²² Ianchilovici, an economist at the National Accounts Division, Ministry of the Economy, coauthored two recent studies on the Argentine capital stock, assuming the "one-hoss-shay" pattern of depreciation. See Goldberg and Ianchilovici (1988) and Secretaria de Planificación (1991).

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