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ABSTRACT

Much of Argentina's decline in relative economic performance can be attributed to deleterious conditions for capital accumulation after 1913. In the first phase (pre-1913), the success of the *Belle Époque* was due to spectacular rates of accumulation. In the second phase (1913-1930s), low domestic savings rates constrained the rate of capital accumulation. In the third phase (1930s-1950s), import-substitution policies were implemented and the relative price of key imported capital goods rose sharply. Retardation ensued: at first because of insufficient saving; later because price disincentives channeled funds away from investment activities which are the precursor of growth.

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The story of Argentine economic growth in the twentieth century is one of decline unparalleled in the annals of economic history. Once one of the richest and fastest growing countries in the world, Argentina is now firmly entrenched in the ranks of less-developed countries; and the *Belle Époque*, the turn-of-the-century golden age, a time of rapid growth, high culture and dreams of continued prosperity, is but a dim and distant memory for most Argentines. For the economic historian, the development economist, and even the international economist, the case of Argentine economic failure constitutes one of most puzzling case-studies of national development, and though all agree that Argentina underwent relative economic decline, few can agree on its nature and causes. In this paper, I will try to make some sense of the long-run deterioration of Argentina's economic position over the last century. First, I will try to make clear the timing of the decline and its magnitude, a topic in itself subject to much contentious debate. Second, I will examine, on a case-by-case basis, each of the three principal phases in Argentine economic growth from 1900 to the 1970s. The central element in the analysis will be the fluctuating conditions in capital markets, which, for a country such as Argentina—so scarce in capital and so dependent on external finance—have played a crucial rôle in economic development. Third, I will draw together these observations on the timing and nature of Argentine economic decline to offer some insights into the origins of Argentine economic failure after the *Belle Époque*.

A Century of Argentine Economic Growth

The pattern of Argentine growth since the turn of the century has been one of unprecedented boom followed by persistent retardation. Yet the precise timing of the decline remains subject to a variety of interpretations, each of which may be used to support or undermine any number of social, political and historical analyses. The central question may be posed as follows: Did Argentine economic decline begin with the First World War—an early retardation hypothesis that could implicate the prevailing Liberal policy regime which adhered to openness in trade and maintained an

outward orientation from 1913 to 1929? Or, conversely, did retardation begin with the Great Depression, a late-retardation hypothesis that could implicate the inward-looking import-substitution policies of populist and nationalist governments in the thirties, forties and fifties?

Carlos Díaz-Alejandro (1988) leads the school that favors the latter interpretation. He maintains that the export-oriented Liberal policy regime was successful in steering Argentina through the difficulties of the early inter-war period, noting Argentina's respectable performance relative to Australia, her settler-economy counterpart in the southern hemisphere.[1] He optimistically dates the *Belle Époque* as persisting until 1929, and, citing the poor performance thereafter, finds grave fault with the reactive inward-looking policies that characterized Argentina and so much of Latin America in the 1930s and beyond. Another school of thought is represented by Guido Di Tella and Manuel Zymelman (1967; 1973), who consider the precipitous decline in Argentine growth rates around 1913 ample evidence of an early retardation, and find fault with misguided policies during the late teens and twenties that failed to adapt to Argentina's place as an externally dependent, export-based economy in a world no longer favorably inclined toward international trade and finance. They also allude to the constraints to expansion on the Pampas, where the exhaustion of prime agricultural land led to a "closing of the frontier" at around the same time.

Which view should we accept? The broad pattern of Argentine economic development since the turn of the century is best viewed in comparative perspective with reference to the economic growth of the other principal settler economies (Australia and Canada), and with respect to the group of developed countries that comprise the OECD. I have argued that the exact basis of comparison can reveal entirely different impressions as to the success of Argentine economic growth in different periods (Taylor 1992). A glance at table 1 will show why this is the case. The table shows that all three settler economies experience rapid growth from 1900 to 1913, the height of the *Belle Époque* in Argentina; yet, in the inter-war period, growth rates decline precipitously, from 2.47% to 0.88% in Argentina, a decline of 1.59 percentage points. The table shows similarly large rates of retardation in Australia and Canada. These rates of retardation are much larger than the average in the world economy as a whole. In particular, they reveal a much more pronounced retardation in the

settler economies than in the OECD group, where retardation was a mere 0.25 percentage points. Looking at the broader picture, Di Tella and Zymelman's thesis of a "Great Delay" experienced by Argentina between 1913 and 1929 looks solid: in comparison to the large sample of 33 countries, and compared to the OECD group of developed countries, Argentina was an outlier in terms of inter-war retardation. However, the story does not end here. As the long-run trends in GDP per capita indicate, Argentina fell further and further behind the OECD group after 1913. A continued retardation is evident after 1913, and this retardation even accelerates after 1929, and again after 1950 (figure 1). Furthermore, whereas the other settler economies staged a recovery from their poor inter-war performance, Argentina managed no such feat.[2] The story of Argentine economic decline, then, is one of continued secular retardation after 1913 relative to the club of developed countries in the OECD—the very club which Argentina aspired to join. Viewed in this light, the divergence of Argentine and OECD per capita income levels after 1913 suggests that the early retardation hypothesis must be taken seriously by scholars of Argentine economic history. Nonetheless, after 1929, and even more so after 1950, the relative retardation of the Argentine economy was even more severe, suggesting a deterioration in the pace of economic development that became increasingly pronounced over time.

With the record of economic growth in Argentina clarified by the above discussion, I now seek to identify the possible causes of these several phases of Argentine economic decline. There are two or three major turning points. The First World War was followed by sharp retardation relative to the OECD and marked the end of the *Belle Époque* in accord with the early retardation hypothesis: rates of accumulation and economic growth fell dramatically. The Great Depression saw further relative retardation and the adoption of a range of *ad hoc* inward-looking and import-substitution polices, and a general move toward autarky. The forties and fifties brought forth Peronism, and the advance of autarkic policies characteristic of the structuralist school of economic thought; such policies tended to create implicit or explicit disincentives to capital formation through price or exchange rate distortions.

The *Belle Époque*: Global Integration and Growth

Like other settler economies, Argentina became an integral part of the global economy of the late nineteenth century, an international system of trade and finance based on British leadership in banking and commerce sometimes referred to as the *Pax Brittanica* (Schedvin 1990). Well integrated into final goods markets, Argentine growth was centered on the export of a small range of primary products, a simple pattern of economic development that, it is claimed, may fall under the rubric of "staple theory," a mode of analysis originating in Canadian economic history but frequently applied elsewhere in the New World (Baldwin 1956). With steady commercial arrangements, and with an open door to British capital that flowed in freely under the stability of the Gold Standard, Argentina prospered in the decades before the First World War.[3] The favorable economic conditions that attracted foreign capital also attracted mass migration to Argentina. Some early European settlers in the Republic had diverse origins—Welsh, Russian, English, German—but the great waves of the 1890s and 1900s were essentially Mediterranean in origin, at first dominated by northern Italians and later by Spaniards. Some even migrated seasonally to work both northern and southern summers as agricultural labor, engaging in an unparalleled intercontinental transient migration and earning the epithet "birds of passage" (Bunge and Garcia Mata 1931; Cortés Conde 1979). Such massive migration, which accounted for about half of Argentine population growth from 1890 to 1913, was undoubtedly based on the high returns to resettlement: real wages in Argentina were typically two to three times the prevailing level in Spain and Italy at this time, even corrected for the cost of living (Williamson 1991; Taylor 1994 forthcoming). Thus it should come as no surprise to see a massive immigration response in Argentina, a labor-supply phenomenon of which so much has been made in the literature of Argentine economic history (Díaz-Alejandro 1970, chap. 1; Gerardi 1985).

I will argue that factor accumulation is central to our understanding of Argentine growth in this period. Like all settler economies, Argentina's initial conditions were characterized by dual scarcity of labor and capital relative to an abundant third factor, resources. Given the plentiful influx of the mobile factors, in the shape of foreign capital and large immigrations, not to mention high rates of fertility and natural increase among the native population, Argentina accumulated scarce

capital and labor very rapidly, and so was able to intensify the application of capital and labor in the exploitation of her resources (Nurkse 1954; Díaz-Alejandro 1970; McLean 1990). The broad pattern of factor accumulation in Argentina in this period may be seen in table 2. Population grew at a very fast clip, from an initial figure of 3.3 million in 1890 to a total of 7.5 million in 1913, registering an annual growth rate of 3.5%. About half of this rise was due to immigration, and half due to natural increase. However, capital accumulation was taking place at an even more remarkable speed, outpacing population growth at an annual rate of growth of 4.8%. The share of the capital stock in foreign ownership increased sharply over the period, rising from 32% in 1900 to 41% in 1909, and reaching 48% in 1913, illustrating the crucial rôle of foreign capital in the Argentine accumulation process. Thus, I will argue, the growth strategy was predicated on a continuation of favorable conditions in international markets for goods and factors, in Argentina as elsewhere in Latin America (Cortés Conde 1992).

The qualitative point to be developed here is one of external dependence.[4] Argentina was a victim of path-dependence, in that her growth strategy had encouraged rapid population expansion through mass immigration, and high rates of natural increase amongst the native born. Relatively low Argentine savings rates made the country's continued accumulation and economic growth a matter of external dependence on foreign capital, a precarious situation that may explain the onset of Argentine retardation at the time of the First World War.

The Early Inter-war Years: Enforced Autarky and Retardation

The great boom of the *Belle Époque* was brought to an end by the severe dislocations in international economic relations generated by the First World War and its aftermath. The immediate effect of the war in international markets was a sudden decline in foreign trade volumes and an equally pronounced downturn in the terms-of-trade, due in large part to the virtual shutdown of shipping in the Atlantic. The Argentine terms-of-trade fell about 50% from 1912 to 1921 (Di Tella and Zymelman 1967; Díaz-Alejandro 1970).[5]

The disruption was also evident in international factor markets. Perhaps the most dramatic change was in the operation of international capital markets. With the outbreak of hostilities, Britain suspended the operation of the Gold Standard, and it was ten years before she was able to reinstate it. Thus ended the age of high imperialism, when British capital, acting from its power base in London capital markets, was able to spread its influence all around the globe (Edelstein 1981; Edelstein 1982). Britain's hegemonic power in capital markets was effectively broken by enormous war debts, and the new "bankers to the world" were the Americans, emerging into net creditor status; yet the Americans were less than enthusiastic about assuming this new responsibility as an international center for finance, and the rise of New York as a truly international capital market was somewhat slow and reluctant (Kindleberger 1986). This was certainly the case from the Argentine perspective, and accounts of contemporary observers confirm the difficulties faced by Argentina in trying to raise capital abroad after the onset of war, and adjusting to the shift from an established link with experienced lenders in London to forging new borrowing relationships with the bankers in New York.[6] Peters (1934) and Phelps (1938) both record the restricted access to foreign capital experienced by Argentina after 1913. Before the mid-twenties practically no new capital emerged from war-torn Europe, and such loans as were forthcoming in New York took long negotiation, were limited in quantity, of short-term duration, and at much higher interest rates than formerly prevailed.

Quantitative evidence supports the view, and although based on the rather fragile historical records, independent sources confirm the characterization of Argentina as facing increased capital scarcity in the inter-war period. For example, foreign investment virtually dried up after 1914, and from then until the mid-1920s net real additions to the capital stock were financed by domestic savings (figure 3). When new borrowing was eventually secured, the inflows came principally from an expanding U.S. share of the Argentine capital base, with little contribution from the previous big lenders in Europe. Furthermore, the capital scarcity characterization holds as much for price as for quantity criteria. Examination of the real interest rate trends for Argentine bonds floated overseas after 1900 reveals a pronounced jump in the real cost of borrowing during World War One, with

real rates rising from about 3.6% on average 1900–1913, to about 5.7% on average 1914–1929 (figure 4). Thus, when foreign lending collapsed, Argentina faced supply constraints to capital accumulation, increasing her reliance on a relatively low domestic saving capacity to finance investment.[7]

The new order in capital markets left Argentina largely savings-constrained in terms of her accumulation—but her capacity to save was remarkably low, if the retardation in accumulation rates is to be believed. The Argentine capital-stock growth-rate fell from 4.8% per annum in the period 1890–1913, to only 2.2% per annum in the period 1913–1929 (table 2). This regime switch is also revealed in the rates of growth of GDP per capita, which retarded from 2.47% per annum in 1900–13 to 0.88% per annum in 1913–29 (table 1). Notwithstanding the severe crisis in capital markets and the retardation in the economy, after the war ended immigration resumed and was still a contributor to population growth.[8] Thus, although Argentine immigration had slowed considerably from the great waves of the *Belle Époque*, it nonetheless was a continuing force. Whilst capital markets underwent wholesale reorganization and foreign lending to Argentina dwindled to a mere trickle, international labor markets picked up somewhat after the war. The "birds of passage" were a thing of the past, but Argentine population growth in the inter-war period was to remain fairly rapid, growing at a rate of 2.37% per annum in the period 1919–1929, due partly to continued immigration (Taylor 1992).

Thus low saving capacity could be to blame for low rates of Argentine accumulation, capital deepening and economic growth. A natural question arises: what was the origin of this low savings capacity? A full explanation is beyond the scope of this paper, but I have shown elsewhere (Taylor 1992) that Argentine savings were low in the early part of this century, at least when compared with savings rates in Australia and Canada. Whereas both Australia and Canada saved around 15% of GDP between 1900 and 1929, Argentina only saved around 5%. I argued that much of this relatively low saving capacity could be ascribed to the peculiar demographic structure in Argentina: econometric evidence suggests that a strong and significant link existed between dependency rates and savings rates, and Argentina had a dependency rate a few points higher than Australia and

Canada, a characteristic that was to persist long into the twentieth century.[9] Under more favorable demographic conditions—a counterfactual Australian or Canadian age distribution—Argentine saving rates and growth rates would have almost doubled in the inter-war period, and retardation relative to the OECD would have been greatly reduced.[10] Such a counterfactual experiment is certainly consistent with the more general point advanced in this paper—that a proximate cause of Argentine retardation around the First World War was sudden isolation from the steady stream of British external finance that had underwritten the massive capital accumulations of the *Belle Époque*.

Peronism and the Legacy of the Great Depression: Reactive Policy, Codification and Distortions

In 1929, the perils of external dependence again rebounded on the Argentine economy, but this time with far more lasting effect. The liberal order had survived the pressures of wartime and maintained the commercial and financial *status quo* in Argentina through World War One and into the 1920s, continuing to emphasize external trade and links to the international economy. However, as the Depression bit, Argentina endured the retreat of American capital and exclusion from Imperial trade preferences, and political events took their own turn.[11] Argentina started down a road toward a blend of nationalism and economic protectionism that was to spawn an entire economic philosophy, and provide the setting for the emergence of Argentina's best known political couple.[12]

In very general economic terms, widespread intervention transformed the economy from outward orientation as a small, open economy, to an infant industrializer, seeking to escape its dependence on the vicissitudes of world trade. The aim here was self-sufficiency in manufacturing and industrial sectors under the protection of an inward-looking import-substitution strategy. Furthermore, a thorough de-linking from the world economy was achieved by the abandonment of the strictures of the newly reëstablished Gold Standard. This brought the freedom to pursue ambitious Keynesian policies, both fiscal and monetary, in an attempt to bolster the economy in the depths of the Depression. There was nothing extraordinary about this dramatic shift in Argentine policy direction: such political and economic moves were the rule, rather than the exception, throughout Latin America.[13]

World War Two followed on the heels of the Depression and served only to heighten the isolationist position of Argentina in the world economy. Trade volumes, already shrunk by Depression, practically disappeared with the return of shipping blockades. The return to autarky, however, meshed with the new Argentine economic strategy perfectly—with more scope for inward orientation, protection from overseas competition and the chance to advance industrial development yet further. By the early fifties, Argentina had seen almost twenty years of inward-looking development, and there stood in place a vast array of tariffs, protections and other elements of government intervention in the economy (Díaz-Alejandro 1984a). However, the new twist to the political and economic balance was the arrival at center stage of Juan and Eva Perón. The Peronist program, resisted by the prevailing government, was to carry government intervention to a higher plane, and set as its goal the advancement of the working class. The new regime increased the rôle of the state in the economy: more nationalization schemes for utilities, steel and banks; an expansion of marketing boards and other regulatory agencies; a determined effort to raise real wages; an extension of social welfare programs, including pension schemes. These measures were a radical departure for most Argentines, and they did not endure without a cost.[14]

Investment and Economic Growth: Some Quantitative Perspectives

The implications for capital accumulation of this twenty-five year slide into greater economic isolation are profound and worthy of a detailed analysis in their own right. In the context of earlier difficulties in capital accumulation, the transition to reactive policies and the commitment to state intervention that was the legacy of the Great Depression is suggestive of continuing obstacles to Argentine investment, capital deepening and economic growth—a linkage highlighted for Argentina most eloquently by Díaz-Alejandro (1970), and a diagnosis offered elsewhere in Latin America over the postwar period (Cardoso and Fishlow 1992). In what follows I aim to systematize, develop and quantify the Díaz-Alejandro thesis by applying an econometric accounting to explain the relatively low rates of capital formation in Argentina in the 1950s and 1960s. The model hinges on an

investment-demand analysis for a large cross-section of countries, where interventionist regimes are identified by a high relative-price of capital induced by rationing, controls or other distortions.

Interventions in the capital market pose a grave threat to efficient accumulation and continued economic growth. Measures such as the rationing of foreign exchange tend to have deleterious effects in this regard. High priorities, and hence plentiful foreign exchange, are typically allocated to imported consumption goods and imported raw materials—the former because bread-and-circuses must be maintained to assure popular support, the latter because without vital inputs production in many industries would have to cease. In this way dynamic efficiency is sacrificed to perpetuate an inefficient static allocation: the rationing of the remaining foreign exchange, used for imported capital goods, leads to a disadvantageous exchange rate for goods in these categories. Thus, a rise in the relative price of capital goods is a common corollary of a multiple exchange-rate scheme. The impact of such a price distortion is entirely predictable: costlier machinery and equipment prompts a decline in capital formation in these goods. The environment just described fits post-World War Two Argentina almost perfectly. Díaz-Alejandro provides a lengthy account of the dramatic rise in the price of capital goods after 1935 and through the 1960s (Díaz-Alejandro 1970, chap. 6).[15] The main categories of absorption exhibited very different price trends over the period: consumption goods prices fell by about 10% relative to the GNP deflator after the war, but capital goods prices typically rose by 40%–60%. Producers' durable equipment was one of the components of investment that had a higher than average relative price rise, rising 60%–100% more than the GNP deflator (table 3). What was true for price *trends* over time within Argentina was also true for price *levels* across countries compared with Argentina. The Economic Commission for Latin America (ECLA) collected data on price structures for 1962, and found that the relative price of new machinery and equipment was between 2.5 and 3.3 times higher in Buenos Aires than in two major U.S. cities (Díaz-Alejandro 1970, 318).[16]

Import restrictions were to blame for much of the relative-price rise of capital goods. In 1959 average import duties were between 78% and 130% *ad valorem*, compared with 1935–38 duty levels of about 30%. A crude accounting suggests that an index of capital-goods prices with 1935–38 equal

to 100 would rise to about 150 by 1959 as a result of these duties alone.[17] Although ambiguity surrounded the exact incidence of tariffs during this period, it is certain that a large part of the postwar increase in the relative price of tradable capital goods followed directly from an expansion of import restrictions of one type or another (Díaz-Alejandro 1970, 327). At the same time, labor productivity declines, and consequent relative price increases, afflicted the production of non-tradable capital goods like structures. Díaz-Alejandro concluded that

> [a]lthough data leave much to be desired, there is little doubt that capital goods prices rose substantially relative to the GNP deflator after 1935–38. They also rose relative to prices for other nonrural commodities. Prices for durable producers' equipment were at the forefront of the rise. As a result, Argentine capital goods prices have reached levels much higher than those of most other countries. Although no single cause explains these price trends, the foreign exchange shortage and declines in labor productivity in construction together provide a satisfactory explanation. (Díaz-Alejandro 1970, 310)

The significance of the relative price of capital goods in determining rates of capital formation and economic growth is well-founded both in historical and contemporary studies of development. Williamson and Lindert's work on savings and investment in the nineteenth-century United States suggests a central rôle for the declining relative price of capital goods in the spectacular rise in capital formation rates (Williamson 1979; Williamson and Lindert 1980, chap. 12). The concept is clear enough: cheaper investment goods relative to national product implies that the same rates of saving can generate that much more physical capital accumulation. The same intuition underlies the recent work of J. Bradford De Long and Lawrence Summers (1991) which examines late twentieth-century economic growth using the common method of cross-section macroeconometric analysis, an approach central to the current debate over long-run growth and convergence in the world economy. Summers and De Long identify machinery and equipment as a category of capital formation with particularly powerful linkages to economic growth. This observation reinforces our argument, since the distortions in the Argentine economy were particularly acute for producers' durable goods.[18]

Seeking the underlying relationship between price structure, investment and growth, I examine the links between capital goods prices and capital formation in the world economy over the period 1960–1985. Econometric evidence for a large sample of countries for the pooled cross-section suggests that high relative prices of capital goods (RPK) are strongly associated with low investment

shares of GDP (CI). Table 4 presents regressions estimating the relationship between CI and RPK controlling for the level of income per capita (YREL), the openness of the economy (OPEN) and era effects (a dummy variable for each five-year period).[19] The sample chosen consists of five-year-period averages from 1960 to 1984, excluding those countries with income per capita levels less than 25% of the U.S. level.[20] The estimated relationship is essentially an investment-demand function, relating investment shares of GDP to the relative price of capital and other correlates. It may be thought of as the intermediary (structural) step behind a De Long-Summers (reduced form) analysis, since it focuses on the nexus of the price of capital and investment activity; in contrast, De Long and Summers concentrate on the final impact of investment rates and the price of capital (separately) on the economy-wide growth rates.[21] The estimations are fairly robust: in all cases the coefficient on RPK is negative, around minus 15, and highly significant. This can be roughly interpreted as follows: a country with a relative price of capital 10% above US levels (RPK equals 1.1 versus 1.0) would be expected to have an investment share of GDP (CI) 1.5 percentage points lower, *ceteris paribus.* In accord with conventional growth theory, the coefficient on YREL is negative and significant; I interpret this to mean that more developed countries with higher capital-labor ratios have lower marginal products of capital and, hence, less incentive to invest. Henceforth, attention is focused on the final regression shown in column 4, where all explanatory variables are used, including era dummies.[22]

The relative price of capital appears to have had a significant influence on investment demand over the last thirty or so years. Yet the question remains, how large were such effects, and how effectively could they explain the slow growth and low rates of capital formation seen in Argentina after the Perón years? Quantitative evidence from the latest Penn World Table (Summers and Heston 1991) confirms the pattern of price twists in the Argentine capital market during the sixties, persisting even into the seventies. In support of Díaz-Alejandro's (1970) estimates cited above, the data suggest that, even controlling for openness, income per capita, and era effects, the Argentine relative price of capital (RPKRES) and investment share of GDP (CIRES) were, respectively, more than two-and-a-half standard deviations above and below the world average (table

5(a)).[23] Figure 5 makes the picture even clearer. The horizontal axis measures the relative price of capital and the vertical axis the investment share of GDP (in each case controlling for the other variables). The scatter-plot is a partial correlation of RPK and CI controlling for openness, income per capita and era effects. As is clear, the Argentine observations cluster well to the bottom right and close to the regression line, suggesting that the correlation of high RPK and low CI might adequately explain Argentina's extreme position on the chart.

Can Argentina's unusual price structure explain her low rates of capital formation? Table 5(b), panel B, indicates that most of the CI gap between Argentina and other countries is explained by the RPK gap.[24] In this fashion the entire difference between Argentina's investment share and those elsewhere is more than accounted for by the relative price structure. The price structure itself was a direct outcome of public-policy priorities in an interventionist regime, and its consequences for economic growth were disastrous:

> The approach that has been presented suggests the following summary view of Peronist growth policies. From about 1943 until 1953 few efforts were made to expand exports, while the domestic machinery and equipment industry was not given special attention....Capital formation in [machinery and equipment] fell as a percentage of GNP, and their relative prices increased. Economic growth suffered, as a result of both meager increases in physical capital and a slower rate of absorption of the technological change embodied in new machinery and equipment....To maintain existing capacity in consumer goods industries in full operation, imports of new machinery were squeezed out by public policy....and in effect investment and growth targets were sacrificed for the sake of (short-run) employment and consumption goals. (Díaz-Alejandro 1970, 347)

The implications for economic growth of such a distorted price structure can only be approximated, but figure 6 suggests that the costs of scarce capital goods under import-substitution were not negligible. In this figure I have estimated the deviation of the price of capital in Argentina from the price level of GDP, and have then used the gap to estimate the impact on investment rates and growth. As we know, for most of the period after World War Two, Argentina's price of capital stood at 50%–100% above the GDP price level. This price gap translates into a roughly 7%–15% gap in investment shares of GDP (based on table 4, column 4). Dowrick and Nguyen (1989, 1018, table 3, column 2) estimate a 0.064 coefficient on the investment share in their growth regression for the OECD sample, that is, a rate-of-return of 6.4%, adequately conservative for my purposes.[25] In the Argentine case, then, we would guess that 7%–15% shifts in the investment share of GDP would

generate 0.5%–1.0% shifts in the growth rate of the economy. Such shifts are large: as figure 6 indicates, they are of a magnitude sufficient to account for roughly one-half of Argentina's slow growth of per capita GDP relative to the OECD.[26] With this quantitative support, the argument that Argentina's retreat into import-substitution policies cost her dearly in terms of slow growth remains as cogent as ever. If, in addition, distortions *within* the investment goods category were explored, the adverse impact of price distortions on growth might be found to have been even more dramatic, suggesting the need for further research on whether investments were made in the "wrong" projects and, if so, at what cost.

Conclusions

Before concluding, some qualifications are in order. Research on quantitative Argentine economic history is still limited and constrained by scant, fragile data; quantitative explanations must complement and keep in perspective the rich analyses of social, political and institutional historians. In this paper the data problem has not been solved, but rather confronted with an array of information from a variety of corroborating sources—for example, interest rate versus quantity information on inter-war capital markets; Díaz-Alejandro's post-World War Two price data versus Summers-Heston estimates of the same distortions. Refinements and extensions of the primary data are certainly to be welcomed, but the extant data is in broad agreement and paints a still clearer picture of Argentine economic performance, one that I have sought to better document and formalize.

As already acknowledged, this modest work seeks to follow in the Díaz-Alejandro tradition, and, indeed, builds on his very substantial foundation in the study of Argentine economic history. While expanding on his thesis of an economy hobbled by intervention and inward-looking strategies after 1929, I have sought to show how Argentina was in trouble even from the First World War, and that retardation has been with Argentina for the greater part of this century. The story I offer is *not* a mono-causal explanation of Argentine failure: indeed, no such explanation exists (it is, thus, a *partial* explanation, and nothing more than that is claimed). However, it seeks to identify one central

element: capital accumulation. To recapitulate, it only need be recalled how very differently the capital market in Argentina fared from 1900 to the 1970s, whereby a flourishing capital market generously supplied by external finance gave way to two successive regimes, each with crippling obstacles to capital accumulation: the first constrained by low savings capacity in an environment of disintegrating world capital markets; the second constrained by expensive machinery in an environment of policy intervention.

In the first phase (pre-1913), the flourishing success of the Argentine *Belle Époque* was in no small part due to the spectacular rates of capital formation, which, in turn, were a facet of the massive capital export from Britain. In the second phase (1913 to the 1930s), a decline in foreign lending meant that low domestic savings rates effectively constrained the attainable rate of capital accumulation, and slow-growth Argentina was one of the worst performers in the transition to the inter-war period. In the third phase (the 1930s to the 1950s) savings constraints abated whilst Argentina retreated into inward-looking import-substitution. As a consequence the relative price of key imported capital goods, especially equipment and machinery, rose sharply enough to deter capital accumulation. Investment was depressed now not so much by a quantity constraint (on the savings-supply side) as by a price twist (on the capital-goods-supply side). Rough calculations of counterfactual Argentine GDP with an undistorted price of capital suggest that at least one-half of her retardation relative to the OECD could be due to such price twists over the period 1950–73.

I surmise, therefore, that much of Argentina's precipitous decline in relative economic performance can be attributed to deleterious conditions for capital accumulation after 1913. The *Belle Époque*, although it was the handiwork of Italian and Spanish migrants to the River Plate, was underwritten by abundant flows of British finance; but when this tap was turned off the Argentines could not sustain the heady pace of development seen at the turn of the century: firstly, because they couldn't save enough; secondly, because, even when they could, price disincentives channeled funds away from, rather than toward, those investment activities that are the precursors of growth.

Notes

[1] The present essay follows a rich tradition in the literature that has pursued comparative analysis of the regions of recent settlement, or settler economies—particularly, but not exclusively, Argentina, Australia and Canada (Fogarty, Gallo and Diéguez 1977; Denoon 1983; Duncan and Fogarty 1984; Di Tella and Platt 1985; Díaz-Alejandro 1985; Gerardi 1985; Schedvin 1990; McLean 1991). For a survey, see Korol (1991).

[2] In this sense, Díaz-Alejandro is right to criticize the country's poor performance after 1929, and it is this observation that lends credence to his critique of the inward-looking policies adapted after the Great Depression in 1929, policies strengthened and codified during the Perón years.

[3] A moderate brake was applied in the wake of the Baring Crisis of 1890, but British investors were soon ready to take the plunge and lend again after just a few years. As the scant records on capital accumulation, foreign borrowing, trade and national income seem to indicate, the early 1890s were a mere blip in the trend of rapid growth that made *Belle Époque* Argentina one of the fastest growing economies in the world.

[4] The external dependence argument has been pursued in more detail elsewhere (Taylor 1992), and is summarized here to place it in the context of an account of Argentine economic decline in the very long run. The argument follows a long tradition of exploring demographic determinants of domestic savings and international capital flows in the settler economies, notably Australia (Butlin 1962; Hall 1968; Edelstein 1982; McLean 1991). Its application to Argentina in a quantitative form is novel.

[5] In Australia the terms-of-trade fell by about 35% over the same period (Bambrick 1970).

[6] The Argentine experience is in marked contrast to that of Brazil, where there was no retardation in the transition to the inter-war period (figure 2). The ease with which Brazil was able to develop long-standing trading relations with the United States and secure loans through expanding financial relations may be a factor here. The historical reliance on British funds was Argentina's handicap, and had much to with trade patterns. Brazil had long exported coffee to the United States, developing commercial links; Argentina's prime exports, beef and wheat, were U.S. exports also, and so her trading links were directed toward Old World importers of meat and grains, especially Britain. Abreu provides a thorough analysis of the differential impact of British and American policies vis-à-vis Argentina and Brazil, noting the extent to which Brazil also benefited from America's willingness not to extract maximum bargaining advantage in the bilateral relationship, a sharp contrast to Anglo-Argentine commercial relations at the time (Abreu 1984).

[7] An identification problem arises: did Argentine investment decline because of saving supply shocks, or because of a sudden decline in the profitability of investment? We may infer that retardation was largely due to capital (saving) supply shocks, rather than investment demand shocks, since the real cost of borrowing (the price) rises after the shock. The price evidence thus helps identify the source of the shock as revealed by the quantity changes.

[8] Between 1919 and 1939 Argentina had a net immigration rate of 3.9‰ accounting for 17% of population growth; in the years 1920 to 1939 Australia had a net immigration rate of 3.1‰ accounting for 22% of population growth.

[9] Dependency rates were as high as 40.1% in Argentina in 1895, 37.1% in Australia in 1891 and 36.4% in Canada in 1891. The causes of this dependency-rate lag could be manifold. Higher rates of fertility in Latin America tended to produce higher rates of natural increase and typically larger families: fertility rates in Argentina and her main sending regions of Italy and Spain were typically in the thirties per thousand; in Australia, like England and Wales, they were in the twenties per thousand. The rates (per thousand) in the

period 1910–14 were: Argentina 37.9, Italy 32.0, Spain 31.3, Australia 27.8, England & Wales 24.2 (Mitchell 1980; Mitchell 1983).

[10] The "demographic burden" played a much greater rôle in pulling foreign capital into Argentina than in either Australia or Canada (Taylor and Williamson 1994).

[11] In many ways, Argentina was an outlier in terms of economic recovery after 1929 in Latin America. Not only were her reactive policies relatively mild, but, again, Argentina paid a high price for an export and lending package still heavily biased toward British goods and capital markets (Thorp 1992). Once more, we are reminded of Abreu's important insight concerning Argentina's weak bargaining position with an overseas trade and investment orientation dominated by Britain (Abreu 1984).

[12] Since the late nineteenth century the Argentines had witnessed a succession of peaceful transitions from one civilian government to the next, each one committed more or less to preserving Argentina's economic position as a peripheral primary-exporter intimately linked to world markets. The military regimes that followed the overthrow of the Radical government of Hipólito Yrigoyen in 1930 determined to take Argentina on a different course, politically and economically. The new order they established placed nationalistic and military interests in the forefront of political discussion, where they were to stay, even to this day.

[13] The striving for self-sufficiency was, arguably, a success for the countries of the region. Their economies suffered relatively mild shocks during the Depression, and it is often thought that this escape from the grave hardships seen in North America and Europe was precisely because of the de-linking policies adopted (Díaz-Alejandro 1970; Díaz-Alejandro 1984b; Duncan and Fogarty 1984; Maddison 1985). Still, the measurable contribution of import substitution to recovery in 1930s Latin America seems minor and export recovery played a key rôle, boosted by widespread devaluation (Campa 1990; Thorp 1992; Bulmer-Thomas 1994 forthcoming).

[14] The short-term costs were readily apparent. Soon government deficits were mounting, the pressure to borrow had drained reserves of foreign exchange, and the recourse to money printing had cranked up the rate of inflation. The pressure was too much to bear, and by 1952 Perón was in trouble. Populist support among the working class waned as a wage freeze eroded their former gains, and exchange controls tightened to stem the loss of reserves. Perón's last years in office, before his overthrow in the coup of late 1955, saw a retreat from anti-imperialist dogma, an appeal for foreign investment, and a negation of former populist promises (Díaz-Alejandro 1970; Duncan and Fogarty 1984, 53–55; Prebisch 1984; Prebisch 1986).

[15] The distortions were so great that the relative price effects greatly distorted Argentine national accounts for the period 1944–65: for example, measured at 1935–38 prices, the investment share in GNP is only 13%, not unlike the 12% figure seen in 1935–41; at current prices the figure was around 20% (Díaz-Alejandro 1970, 309).

[16] This finding is consistent with different relative price trends over the period 1935–62 in each country; taking crude back projections Díaz-Alejandro estimates that the relative price of new machinery in equipment in Buenos Aires was 176 in 1935–38 and 254 in 1962, where Houston and Los Angeles equal 100 in 1962 (Díaz-Alejandro 1970, 525).

[17] Consider a rise in an *ad valorem* duty from 30% to 100% on producers' durable goods with a price of 100. The retail price would rise from 130 to 200, an increase of 54%, *ceteris paribus*. In fact, producers' durable equipment rose in price by 96% over the period 1953–38 to 1959–61 (table 4). Thus, import duties alone explain more than half the rise in the relative price of such goods. For some reason, this figure is exaggerated

by Díaz-Alejandro to suggest that the duty increase might account for a 150% price increase (Díaz-Alejandro 1970, 327).

[18] See also Dowrick and Nguyen (1989). The most recent work of De Long (1992) has integrated Argentina into a very long-run look at patterns of investment and economic growth over the whole twentieth century, and there is tentative evidence to suggest that Argentina's growth accords with this theory.

[19] In independent research carried out contemporaneously, Charles Jones (1992) identified similar relationships to those examined here. His case study was India, mine Argentina, both countries being notorious for their interventionist policies and distorted price structures. My work is distinguished by a panel-data approach that allows us to account for the evolution of price structures over several decades without discarding data through long-term averaging, since individual country price structures and aggregate demand varied a great deal over time. The problem of not throwing too much data away whilst not trying to extract too much information from time-series often built from underlying infrequent benchmarks is a delicate one. Few censuses occur more than once a decade, likewise ICP benchmarks, so that using an annual frequency is perhaps too optimistic. I opt for five-year averaging, a choice also made by Brander and Dowrick (1993) in their research on fertility and economic growth, another piece of work that again confirms the relative price effect discussed here. Cardoso and Fishlow (1992) also prefer five-year averaging in their investigation of postwar sources of growth in Latin America.

[20] De Long and Summers (1991) omit such less-developed countries from their analysis, since those observations seem to have the highest variance, suggesting noise or measurement error. They further argue:

> We are thus skeptical of what can be learned by combining in one regression very poor countries, which appear to have productivity levels less than those enjoyed in the United States before the industrial revolution, with technologically sophisticated developed countries. We therefore focus heavily on a sample of countries with relatively high productivity levels: those countries with GDP per worker levels greater than 25 percent of the U.S. level in 1960. (De Long and Summers 1991, 451)

De Long and Summers include 1960–85 as one period in their analysis. Since I use a panel with five-year-period averages, I apply the same criterion in each period. Thus, my NOTPOOR sample includes a country in a given period only if YREL exceeds 25.

[21] My equation is an aggregate macroeconomic relationship and does not tell us anything about firm-specific behavior at the microeconomic level. The savings-supply side is also treated as exogenous, and the price of financial capital—say, an interest rate—is therefore omitted. These omissions are not problematic if savings-side effects are uncorrelated with our other right-hand-side variables, a not unreasonable assumption for a sample consisting largely of small, open economies. A similar exogeneity of the savings side is assumed by Cavallo and Mundlak in their comprehensive time-series econometric study of Argentine economic growth. Curiously, however, they omit the relative price of capital from the right-hand side of investment demand equations (Cavallo and Mundlak 1982, especially chap. 8).

[22] Note also that the openness effects appear to have the wrong sign: more open economies invest less according to table 4. In addition, openness, as well as being fairly insignificant in the regressions, contributes little to the explanation of differences in investment shares across countries. This is consistent with openness being only a second-best proxy for a distorted price structure with import restrictions, with an actual price-distortion variable such as RPK able to perform much better.

[23] The same observation holds even comparing Argentina with various sub-samples of the world economy, and for one period of particular interest, the years 1960–64—the closest period in our sample to the Perón administration (table 5, panel B). The sub-samples include North and Central America (NCAM), South

America (SOAM), Asia, Europe (EURO), Oceania (OCEA) and the OECD. The typical value of RPK in Argentina was then 2.2, almost double the world level (1.2) and higher than sub-sample means everywhere. Only South America (including Argentina) comes close, with a value of 1.7. Looking now at the investment shares, we see that Argentina had a level of CI at 13.9, far below the world average level of 25.1. All sub-samples had CI levels over 20 except South America (16.7). The same pattern is again confirmed: unusually high relative prices of capital goods and unusually low rates of investment in Argentina.

[24] For example, Argentina had an investment share of 13.9, and the full-sample an investment share of 25.1—a CI gap of 11.3 percentage points. However, the relatively high price of capital in Argentina—an RPK gap of 1.0 (2.2 minus a world average of 1.2) times a coefficient of roughly 14—would lead us to predict a 14.0 percentage-point CI gap, more than 120% of the actual gap observed.

[25] Dowrick and Nguyen estimate only a 3.8% rate-of-return for the OECD sample minus Japan (Dowrick and Nguyen 1989, 1018, table 3, column 2), but their estimates for almost any other sample are much higher: using Penn World Table data which includes less-developed countries, their rate-of-return estimates fall in the range 11%–14% (table 4). Dowrick's subsequent work with Brander finds rates of return around 9%–11% for a 107-country sample from the Penn World Table, with estimates around 6%–7% for a less-developed 31-country subset, and 8%–9% for a more-developed 76-country subset (Brander and Dowrick 1993, tables 5–7). De Long and Summers' results for a high productivity post-war sample (25 countries) suggest that the returns to investment are concentrated in machinery and equipment categories and that such rates of return might be incredibly high. Their estimates indicate at least a 30% return on such categories of investment, and insignificant returns on other categories (De Long and Summers 1991, 458, top panel). De Long has extended the analysis to the whole twentieth century for a smaller group of countries and finds similar effects: about a 60% return on machinery and equipment, and insignificant returns of around 15% on other categories of investment (De Long 1992, 312). Cardoso and Fishlow (1992, 203–5) find rates of return in postwar Latin America average 7%–11% over the period 1950–80 as a whole. Although declining over time, they are about 6% for 1965–1975 and around 20% for 1950–65. All of these results persuade me that my use of Dowrick and Nguyen's 6.4% rate-of-return is suitably conservative for the present purpose.

[26] In the figure, the lower area depicts Argentine average per-capita-income growth, and the upper area OECD per-capita-income growth. The black-shaded area (growth-loss wedge) in between estimates the cost, in growth terms, of Argentina's relatively high price of capital, calculated as just described.

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TABLE 1
COMPARATIVE ECONOMIC GROWTH:
THE SETTLER ECONOMIES, 1900–87

A. GDP per capita (international dollars, 1980 prices)

	1900	1913	1929	1950	1973	1987
Argentina	1,284	1,770	2,036	2,324	3,713	3,302
Australia	2,923	3,390	3,146	4,389	7,696	9,533
Canada	1,808	2,773	3,286	4,822	9,350	12,702
OECD	1,817	2,224	2,727	3,553	7,852	10,205

B. GDP per capita (relative to OECD = 1.00)

	1900	1913	1929	1950	1973	1987
Argentina	0.71	0.80	0.75	0.65	0.47	0.32
Australia	1.61	1.52	1.15	1.24	0.98	0.93
Canada	1.00	1.25	1.20	1.36	1.19	1.24

C. Growth Rates of GDP per capita (%)

	1900–1913 (1)	1913–1929 (2)	Retardation (1) – (2)
Argentina	2.47	0.88	1.59
Australia	1.14	–0.47	1.61
Canada	3.29	1.06	2.23
OECD sample	1.55	1.27	0.25 [0.95] [a]
28-country sample	1.34	1.02	0.33 [0.98] [a]

[a] denotes a sample average, with standard deviation shown in brackets.
Notes: Panel B is derived from panel A.
Sources: Maddison (1989, 19).

TABLE 2
FACTOR ACCUMULATION:
ARGENTINA AND AUSTRALIA, 1890–1939

A. Population

	Initial Population	Population Growth Rate	Net Immigration	Natural Increase	Share due to Immigration
Argentina					
1890–1913	3.377	3.5%	1.922	2.183	47%
1913–1929	7.482	2.8%	0.630	3.633	15%
1929–1939	11.745	1.8%	0.014	2.295	0.6%
Australia					
1890–1913	3.107	1.9%	0.319	1.395	19%
1913–1929	4.821	1.8%	0.282	1.293	18%
1929–1939	6.396	0.9%	0.001	0.574	0.2%

B. Capital

	Initial Capital Stock	Capital Stock Growth Rate	Initial Foreign-Owned Capital	Initial Share Foreign-Owned
Argentina				
1890–1913	478	4.8%	—	—
1913–1929	1,450	2.2%	704	48%
1929–1939	2,059	1.1%	659	32%
Australia				
1890–1913	1,099	1.9%	—	—
1913–1929	1,713	2.3%	344	20%
1929–1939	2,470	1.2%	545	22%

Notes: Population in millions. Capital in £ million, 1910 prices. Growth rates are derived from stocks. Natural increase of population is population increase minus net immigration. Share due to immigration is net immigration divided by population increase. Foreign-owned capital stock derived from share foreign-owned using total stock, or vice versa.
Source: Taylor (1992).

TABLE 3
INDICES OF IMPLICIT PRICES RELATIVE TO GNP:
ARGENTINA, 1935–64

A. Major Expenditure Categories (GNP price level = 100)	1935–38	1939–45	1946–48	1949–51	1952–55	1956–58	1959–61	1962–64
Private Consumption	100	93	93	87	89	89	90	89
Public Consumption	100	96	90	91	95	90	89	107
Total Gross Domestic Investment	100	130	156	175	148	158	145	140

B. Major Components of Gross Investment (GNP price level = 100)	1935–38	1939–45	1946–48	1949–51	1952–55	1956–58	1959–61	1962–64
Construction	100	127	172	197	181	172	154	159
Durable Producers' Equipment	100	160	149	180	161	187	196	172
Transport Equipment	100	220	197	369	437	678	605	511
Machinery and Other	100	162	159	150	125	141	160	141
Repairs	100	112	126	147	147	135	127	128

Source: Díaz-Alejandro (1970, 312).

TABLE 4
INVESTMENT AND THE RELATIVE PRICE OF CAPITAL GOODS:
REGRESSION RESULTS, 1960–84

Dependent Variable CI. Sample NOTPOOR.				
	(1)	(2)	(3)	(4)
Coefficient (*t*-statistic)				
CONSTANT	46.5 (19.31)	46.9 (19.32)	—	—
RPK	–14.8 (9.31)	–14.7 (9.27)	–14.7 (9.15)	–14.6 (9.05)
YREL	–0.0530 (3.40)	–0.0487 (3.03)	–0.0527 (3.35)	–0.0477 (2.94)
OPEN	—	–0.0127 (1.14)	—	–0.0147 (1.26)
Era dummies significant?	Omitted	Omitted	Yes $F(5,201)=73.7$	Yes $F(5,200)=73.9$
Degrees of freedom	205	204	201	200
R^2	.298	.302	.302	.307
SEE	6.65	6.64	6.69	6.68
Mean of dependent variable	25.15	25.15	25.15	25.15

Notes and Sources: The data are taken from the Penn World Table Mark 5 (Summers and Heston 1991). Five-year averages are used for the periods 1960–64, 1965–69, 1970–74, 1975–79, 1980–84. CI is the investment share of GDP at current international prices (%). RPK is the relative price of capital defined as PI/P, where PI is the price level of investment and P is the price level of GDP (both PI and P are relative to the U.S.=100). YREL is the level of real GDP per capita (relative to U.S.=100). OPEN is a measure of openness, defined as the ratio of exports plus imports to GDP at current international prices. The NOTPOOR sample comprises only those observations for which YREL > 25.

TABLE 5

(A) INVESTMENT AND THE RELATIVE PRICE OF CAPITAL GOODS: SAMPLE STATISTICS, 1960–84

A. NOTPOOR Sample Statistics controlling for openness, income per capita, and era effects.	RPKRES	CIRES
Mean	0.000	0.000
Standard Deviation	0.287	4.195
Mean + 2.5 × Standard Deviation	0.719	10.488
Mean – 2.5 × Standard Deviation	–0.719	–10.488

B. Argentine observations.	RPKRES	CIRES
Argentina 1960–64	0.904	–11.947
Argentina 1965–69	1.050	–14.953
Argentina 1970–74	0.751	–12.310
Argentina 1975–79	0.934	–13.180
Argentina 1980–84	0.335	–11.856

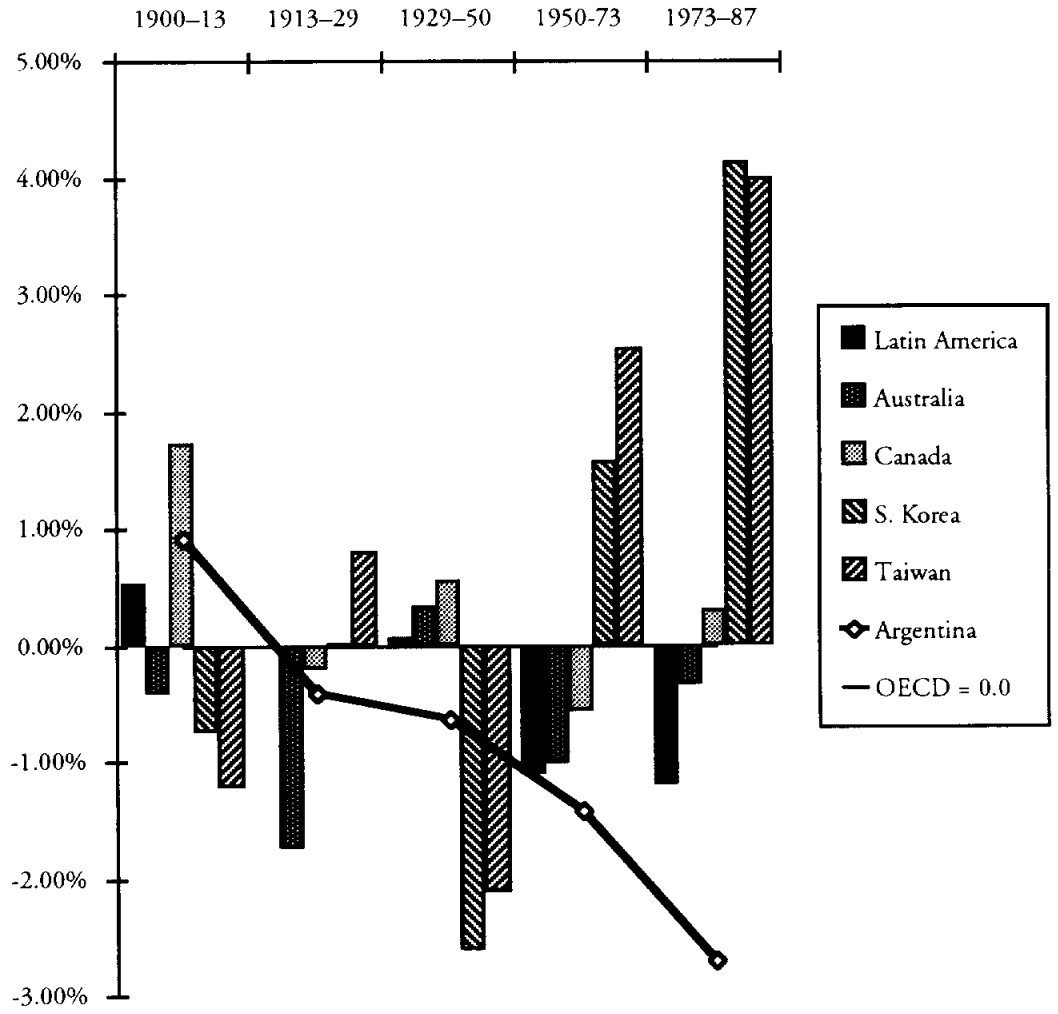
(B) INVESTMENT AND THE RELATIVE PRICE OF CAPITAL GOODS: ARGENTINA AND THE REST OF THE WORLD, 1960–64

A. Sub-Sample Statistics for the NOTPOOR sample, 1960–64.	ARG	ALL	NCAM	SOAM	ASIA	EURO	OCEA	OECD
OPEN	10.9	39.6	32.7	22.2	57.9	43.9	27.2	38.8
RPK	2.2	1.2	1.3	1.7	1.4	1.1	1.1	1.1
CI	13.9	25.1	22.0	16.7	20.6	29.1	27.6	28.0

B. Argentina versus the Sub-Sample: Explaining the Gap	ARG	All	NCAM	SOAM	ASIA	EURO	OCEA	OECD
Actual CI gap	—	11.3	8.1	2.9	6.7	15.3	13.8	14.1
Due to OPEN gap	—	–0.4	–0.3	–0.2	–0.7	–0.5	–0.2	–0.4
Due to RPK gap	—	14.0	13.0	7.1	11.7	16.5	15.6	16.0
GAP explained	—	13.6	12.7	7.0	11.0	16.0	15.4	15.6
% explained	—	121%	156%	242%	164%	105%	112%	110%

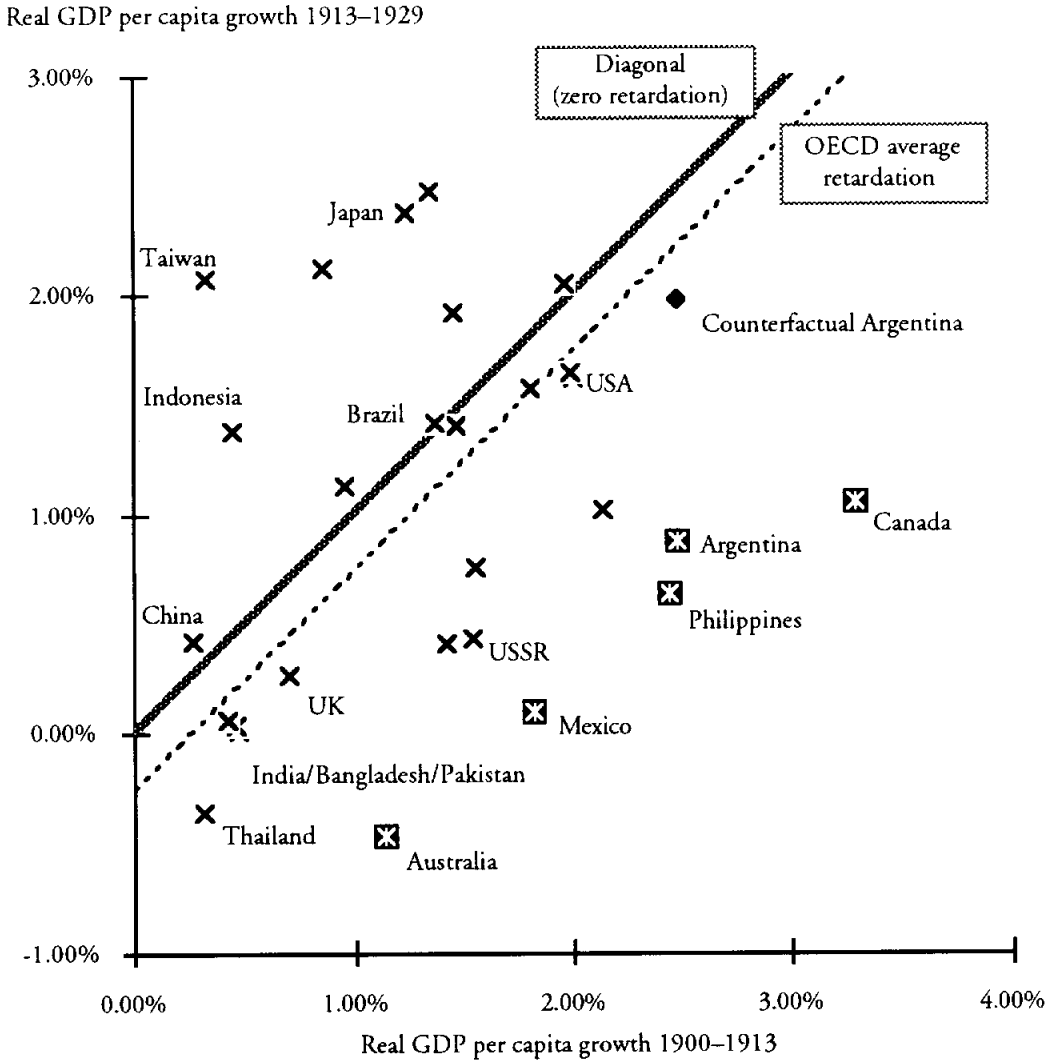
Notes and Sources: For sources and definitions, see table 8. RPKRES and CIRES are the residuals of the projections of RPK and CI on the set of variables comprised of OPEN, YREL and the era dummies. The regression of RPKRES on CIRES yields the fitted values in figure 4, and the corresponding coefficients and summary statistics in table 5, Column 4 when corrected for degrees of freedom lost.. CI gap is CI for the sub-sample minus CI in Argentina. That due to OPEN gap is the OPEN coefficient in table 5, column 4, times the OPEN gap (OPEN in sub-sample minus OPEN in Argentina). Similarly for the RPK gap. The subsamples are North and Central America (NCAM), South America (SOAM), Asia, Europe (EURO), Oceania (OCEA) and the OECD.

FIGURE 1
ARGENTINE COMPARATIVE ECONOMIC GROWTH:
ANNUAL GROWTH RATE OF GDP PER CAPITA RELATIVE TO THE OECD, 1900–87



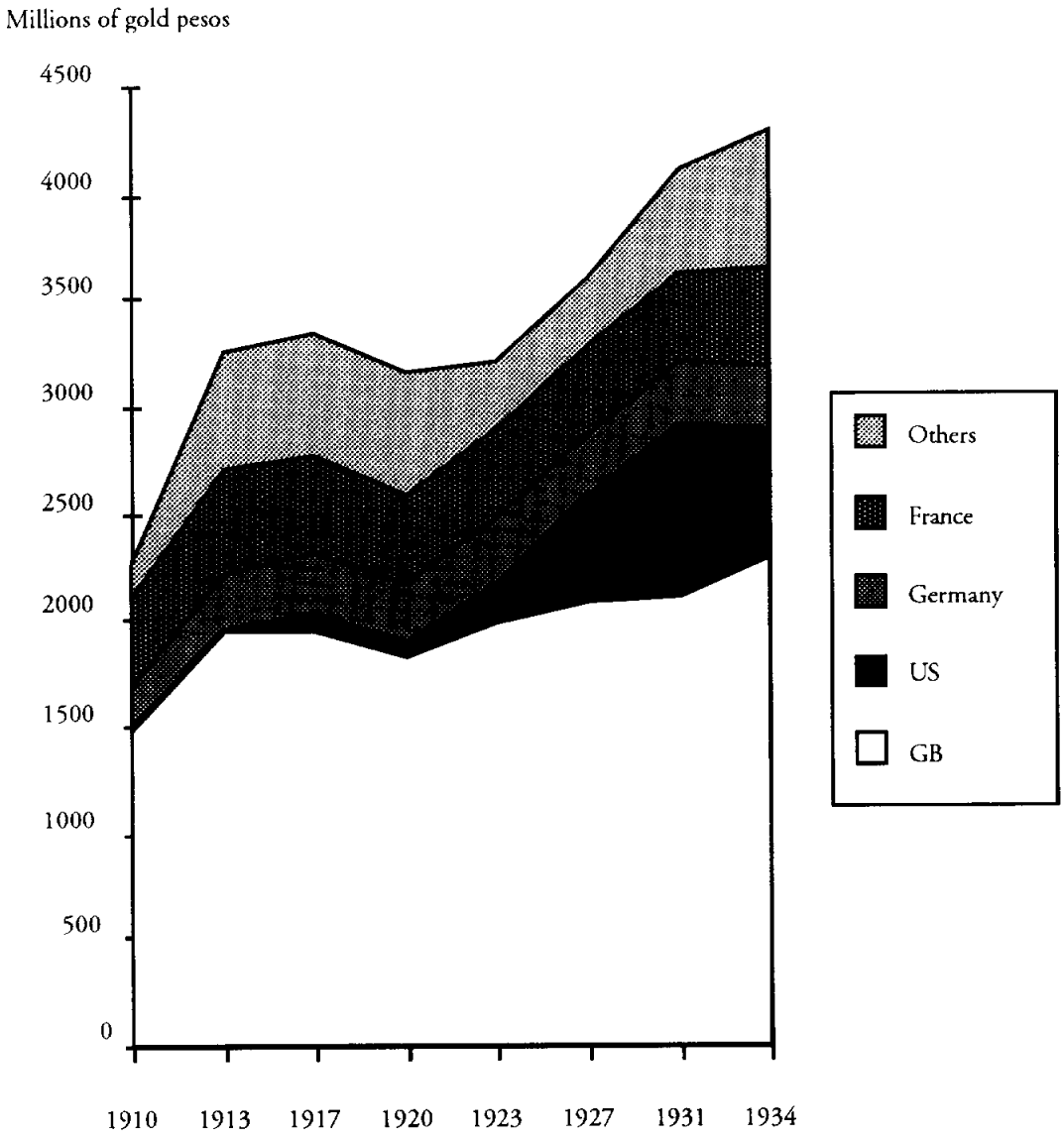
Source: Maddison (1989, 19).

FIGURE 2
INTER-WAR RETARDATION IN THE WORLD ECONOMY



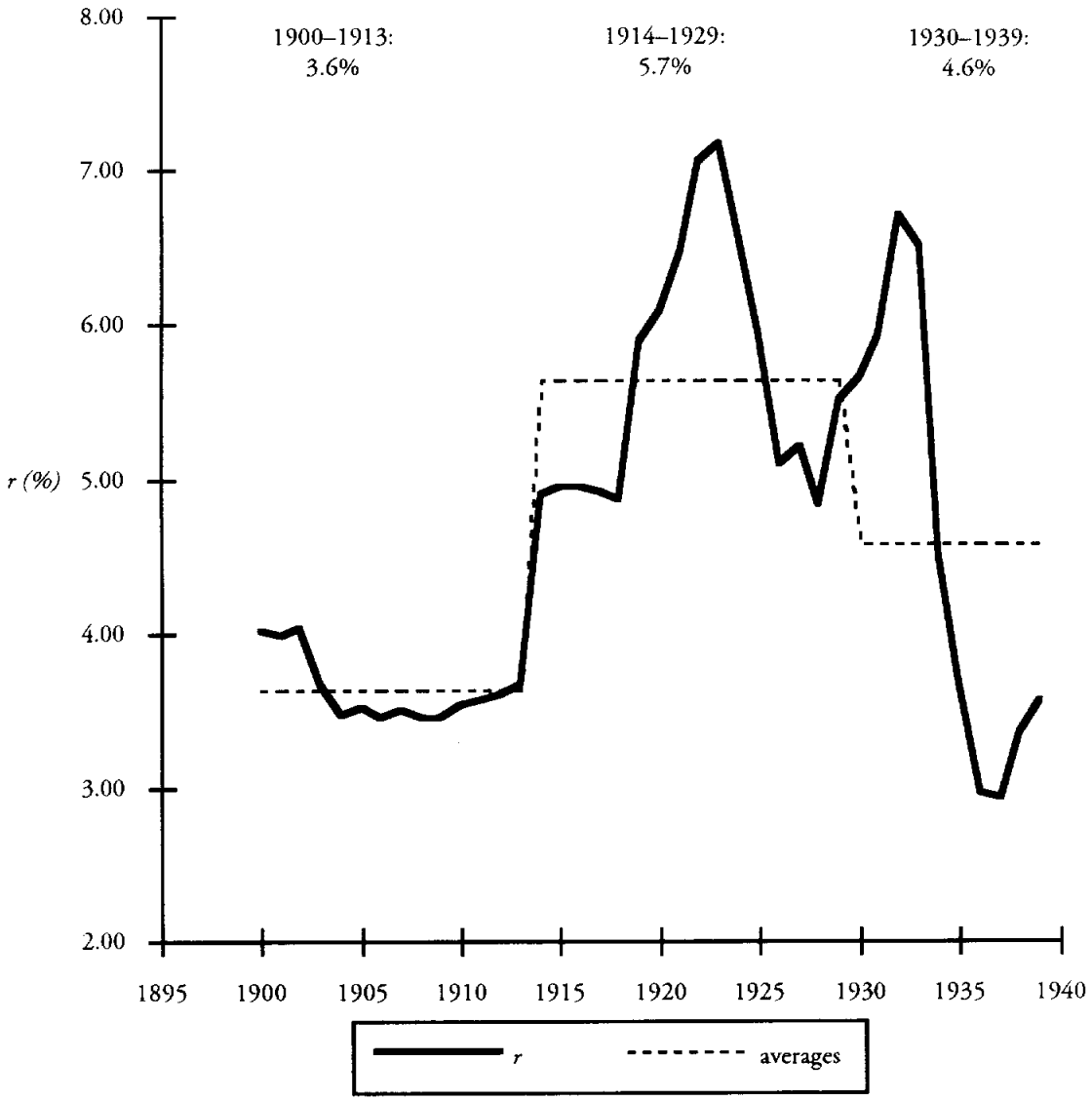
Notes: For clarity, the countries of continental Europe are not marked.
Source: Maddison (1989, 19).

FIGURE 3
FOREIGN CAPITAL IN ARGENTINA, 1910–34



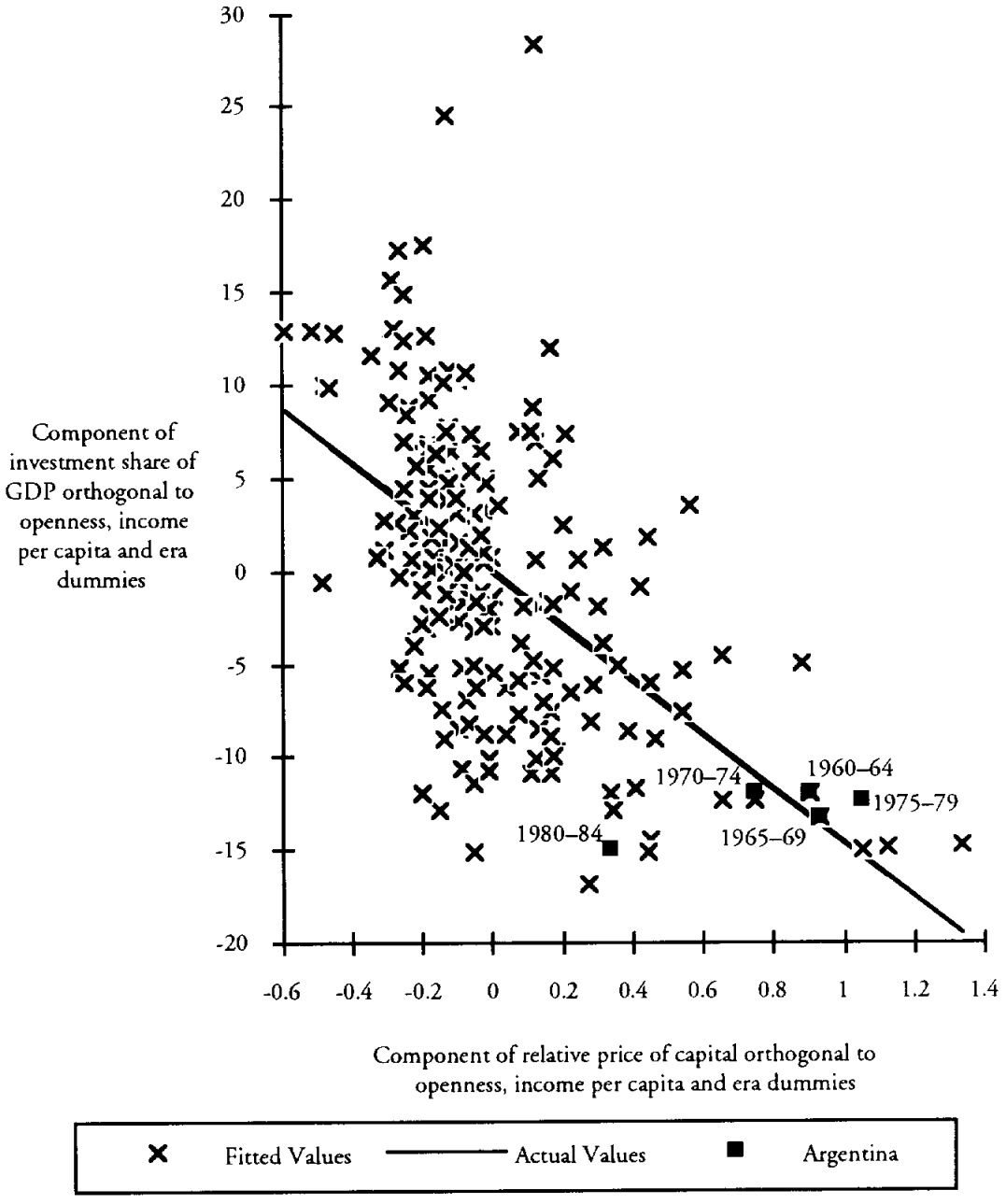
Source: Gerardi (1985, 46).

FIGURE 4
REAL INTEREST RATES:
ARGENTINA, 1900–39



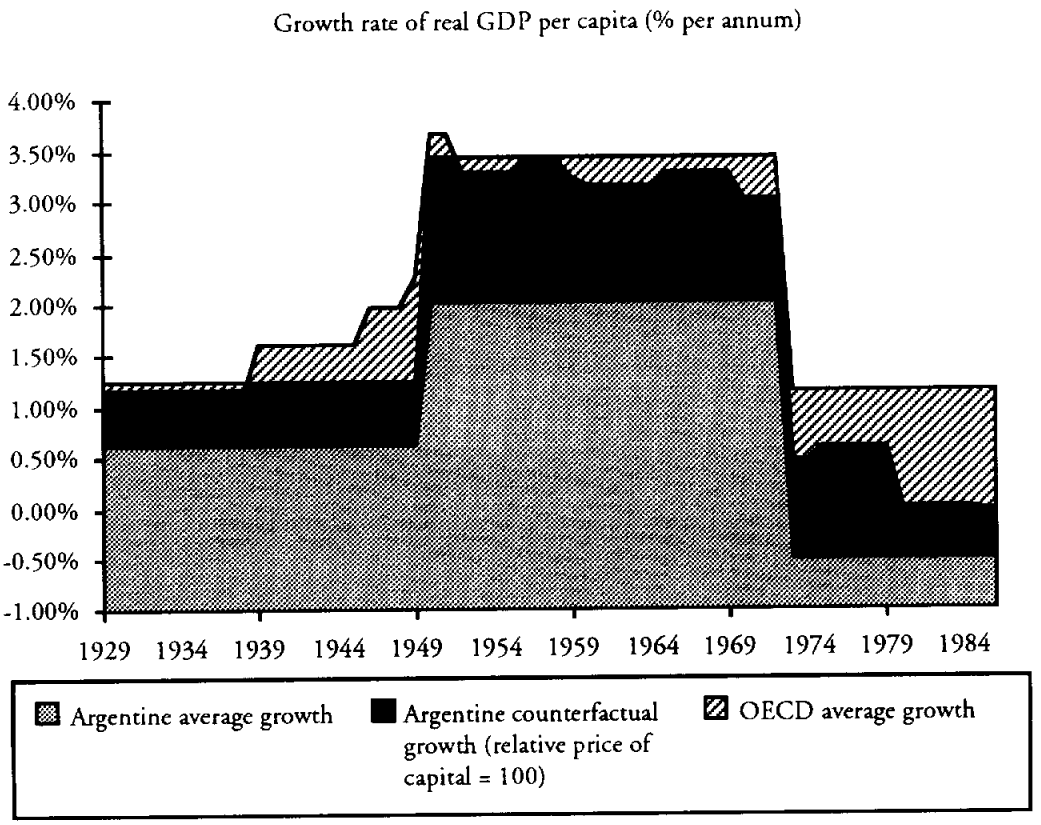
Notes: The variable r, the expected Argentine real interest rate (*ex ante*), is calculated on bonds floated overseas according to the formula $r = i - \pi^e + de/dt^e$, where i is the nominal interest rate on the bond, π^e is the expected Argentine inflation rate (5-year lagged moving average), and de/dt^e is the expected rate of depreciation (5-year lagged moving average). Before 1913 most bonds are floated in London and $de/dt^e = 0$, since peso and pound have fixed parities under the gold standard. After 1913, most bonds are floated in New York and de/dt^e reflects peso-dollar exchange-rate movements. Period averages shown by broken lines, and displayed at top of figure.
Sources: Nominal interest rates on overseas bonds from Homer and Sylla (1991) and Peters (1934). Inflation rate based on price level of output from IEERAL (1986) and Della Paolera (1988). Exchange rates from IEERAL (1986) and Tornquist (1919).

FIGURE 5
INVESTMENT AND THE RELATIVE PRICE OF CAPITAL GOODS:
PARTIAL CORRELATION, 1960–1984



Notes: See text. Data points are for five-year period averages.
Source: Table 5, column 4.

FIGURE 6
ARGENTINE AND OECD GROWTH 1929–1987:
THE IMPACT OF HIGH CAPITAL GOODS PRICES



Notes: See text. The black shaded area represents the cost (growth lost, % per annum) due to a distorted price of capital. Argentine counterfactual growth derived from (a) the relative price of capital; (b) the price-of-capital-to-investment-share coefficient; and (c) the investment-share-to-growth-rate coefficient.
Sources: OECD and Argentine average growth 1929–50, 1950–73, and 1973–87 from Maddison (1989, 19).(a) a linked index—from table 4, row 3 before 1960, or, thereafter, from the Penn World Table (Summers and Heston 1991); (b) –14.6, from table 5, column 4; (c) 6.4%, from Dowrick and Nguyen (1989, 1018, table 3, column 2).