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ECONOMIC GROWTH IN ARGENTINA IN THE PERIOD 1900-30: SOME EVIDENCE FROM STOCK RETURNS

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ABSTRACT

This paper reports the first stage of a project to recover Argentine stock market data for the entire 20th century. We find that real rates of return on Argentine stocks and bonds after 1920 were above those in the Belle Époque, and that they were consistent with the view that in the postwar period Argentina remained firmly integrated with international financial markets.

ECONOMIC GROWTH IN ARGENTINA IN THE PERIOD 1900-30: SOME EVIDENCE FROM STOCK RETURNS

INTRODUCTION

This paper is a preliminary report on stock market returns to equity issues in Argentina in the period from 1900 to 1930. It is part of an ongoing project aimed at recovering aggregate financial data for Argentina for the entire 20th century. This particular part of the project is an effort to shed some light on the controversy surrounding the economic growth trends prevailing in that country at the beginning of the 20th century, especially after WWI.

In particular, Di Tella and Zymelman (1967) argued that Argentina experienced a significant slowdown in economic growth after WWI. However, in one of the most thorough studies of Argentina's economic history, Díaz Alejandro (1975) argued that that country's performance in the 1920s was one of continued strong growth. In particular, he showed that, accounting for the understandable and temporary disruptions associated with WWI, Argentina did well in this period by comparison with Australia and Canada. His work is in line with that of Prebisch (1929), who argued that real economic activity in the late 1920s had exceeded that of the prewar period. More recent work, however, has come to dispute this view. Using the performance of OECD countries after WWI as a benchmark, Alan Taylor (1992) has argued in an influential study that 1913 marks the high tide of Argentine economic performance. Recent revisions of Argentina's GDP estimates from the beginning of the 20th century by Cortés Conde (1994) point in the same direction.

The question of what marked the end of Argentina's Belle Époque -- the period of rapid

growth from the turn of the century to the eve of the First World War -- holds implications for the politically charged issue of the wisdom of government policies in response to the challenges Argentina faced in the interwar years: the exhaustion of economically useful land to continue the expansion of the primary sector and the decline of England, Argentina's chief financier. The collapse of the international gold standard hindered not only international trade but also the inflow of capital to settler economies such as Argentina, Australia, and Canada. Were these temporary factors responsible for Argentina's poor economic performance during the interwar years? Or were, as maintained by Di Tella and Zymelman, misguided policies responsible for a "Great Delay" that lasted until 1933? The answers to these questions hold the key to the critical evaluation of the inward-looking policies and import-substitution policies adopted after the Great Depression. After all, as Taylor pointedly notes, "If economic failure can be said to predate the adoption of import-substitution doctrines, the structuralist camp can evade responsibility for decline and implicate the liberal, export-oriented policy regime prevailing until 1929."

The preliminary results presented in this paper are part of a wider research project that attempts to answer the questions above and related ones with the use, to our knowledge for the first time, of a large data set that will eventually make it possible to compute rates of return to equity in Argentina from 1900 to the present.

The motivation for the part of our project presented here is that corporate equity prices and dividends tend to reflect the actual and prospective changes in the rate of expansion of the economy. Thus, stock returns may, in principle, serve as an additional indicator of contemporary sentiment on the expected return to capital during the interwar periods. This may indirectly shed light on the economic development and long-term growth prospects of the Argentine economy in

this period, as Sylla et al. (1994) have shown for the United States economy and financial markets.

Particularly important for the controversy surrounding Argentina's growth after WWI is that the pricing and other characteristics of financial assets can provide crucial information on Argentine firms' access to international capital markets. Taylor has argued that credit constraints in the international capital markets after WWI forced Argentina to slow down its domestic investment to rates sustainable with its relatively low domestic savings capacity. A break of this type in Argentina's linkage with international capital markets would be reflected, in principle, in higher ex ante real interest rates and returns to equity relative to those prevailing in international markets.

The evidence from stock returns does not point in that direction. In particular, real rates of return to equity and dividend/price ratios in Argentina were not obviously different from those prevailing, for example, in the US. The stock market data confirm, as is well known, that Argentina, along with other settler economies, did take an unusually big hit in the Great War and that economic conditions in its aftermath were perhaps not as rosy as Díaz Alejandro believed. But the financial data argue clearly that Argentina was by no means excluded from international capital markets. On the contrary, the data indicate that Argentina was better integrated into world capital markets in the last half of the 1920s than it was before the Great War.

The rest of the paper is organized as follows: Section I presents the relevant economic history background, Section II describes the data and methodology used to compute rates of return on stocks, Section III presents the results, and Section IV concludes.

SECTION I. The Slowdown Controversy

Between 1900 and 1930 total Argentine output grew at 4.6 percent per annum. Most of this growth can be explained by standard neoclassical growth accounting. In that period, capital grew at an annual rate of 4.8 percent and unadjusted labor input at the annual rate of 3.1 percent. Giving to the contribution of capital a weight between one-half and one-third, and to that of labor one between one-half and two-thirds, the unexplained residual would be limited to between 14 and 20 percent of the growth rate. Total factor productivity, thus crudely measured, would lie between 0.6 percent to 0.9 percent annually. This residual is not very far from the annual rate of 0.9 percent that Solow (1957) found in his original study of the United States for the period 1909 to 1929.

Di Tella and Zymelman claimed that Argentine growth slowed down significantly after WWI. They reported data from ECLA (1959), according to which the average annual growth rate in the period 1900-04/1910-14 was 6.3 percent, while only 3.5 percent in the period 1910-14/1925-29 (these are growth rates between levels of five-year averages). But Díaz Alejandro argued that the slowdown in the second period disappears if one excludes the period 1913-17, during which GDP fell almost 20 percent. The decline in this period reflected the result of unusual circumstances rather than a permanent change in the dynamic forces propelling the Argentinean economy: the European monetary tightness of the second half of 1913, which reduced capital inflows, the crop failures of 1914, and finally the outbreak of the war. Otherwise, the expansion for the period 1917-29, as reported by Díaz Alejandro, was brisk:

1918-19-20: 9.8 percent per annum

1921-22-23: 7.2 percent per annum

1924-25-26: 4.1 percent per annum

1927-28-29: 6.0 percent per annum

Although GDP growth was highest in the early recovery years, the figures above do not lend much support to the idea of a clear-cut slowdown with respect to the period 1900-14.

The "slowdown" hypothesis has resurfaced, however, after Cortés Conde (1994) re-estimated GDP for the period 1875-1935, correcting the shortcomings allegedly present in the ECLA methodology. According to his figures, real GDP grew at an average annual rate of 8.3 percent between 1900-13 and at the much slower rate of 4.3 percent in the period 1917-29. The slowdown also shows up, albeit less dramatically, in the figures for real GDP per capita: 4.3 percent annual growth in the first period against 3.3 percent in the second.

Cortés Conde's findings, however, do not necessarily lend support to Di Tella and Zymelman's hypothesis that the slowdown was the result of misguided policies. After all, as Díaz Alejandro has pointed out, if Argentina's growth slowed down after WWI, the same was true of Canada and Australia, the three countries reflecting the worldwide economic conditions of low British economic growth and low European population expansion between 1913 and 1929.

Alan Taylor (1992), however, has questioned that comparison on the grounds that it entails "mutual flattery among a group of poor performers" (p. 910) because those three countries (along with Mexico and the Philippines) were the five hardest hit by the effects of WWI. He goes on to show that the closest Argentina got to the income per capita of the OECD countries was in 1913. Taylor points out that Argentina's domestic savings rate was low even relative to Canada and Australia and attributes the ultimate decline of Argentina's growth after WWI to Argentina's dependence on foreign capital. Thus, Taylor seems to side with Di Tella and Zymelman in that a "vulnerable growth strategy," that is, excessive reliance on foreign savings

before WWI, was ultimately responsible for the slowdown of Argentina's economic growth.

From this argument, it is not clear what fraction of the common fates of Argentina, Canada, and Australia is attributable to a lower demand for capital and which part to a lower supply of it. In this regard, the decline of England as an international supplier of capital coincided with factors, such as changing patterns of world trade and the closing of the Argentine frontier, that would qualify as downward shifts in the demand for capital.

The transition from Western European capital suppliers to American ones could be easily associated with at least some form of temporary market incompleteness (Taylor's maintained hypothesis) and, therefore, with a rise in the cost of capital to Argentina above the one prevailing in the world financial markets. In particular, Argentina's financial markets after WWI should have been associated with higher required returns to capital relative to the rest of the world. We argue below that that was not the case.

Savings and investment

According to ECLA (1959, Cuadro 85, p. 71) gross fixed capital formation represented on average 40 percent of GDP between 1900 and 1914 and about 30 percent between 1920 and 1929. Thus, it is clear that a lower equilibrium rate of investment occurred in the latter period. But it is important to identify whether this decline resulted from a fall in the supply of capital or in the demand for capital, or both.

High rates of investment associated with a rising capital/labor ratio during a growth spurt need not be sustainable in the long run. And the capital/labor ratio in 1925-29 was indeed 46 percent higher than in 1900-04 (ECLA, 1959, Table XV of Appendix II). Consistent with these figures, Taylor (op. cit., p.919) reports that capital stock per person was 36 percent higher in

1913 than in 1890. Thus, the evolution of investment rates in Argentina in the period 1900-30 is not inconsistent with the predictions of many standard models of economic growth (e.g. Koopmans, 1965). In other words, it may have been unrealistic to expect that the investment boom that characterized the years prior to the Great War would continue much longer. In this sense, the investment slowdown of the 1920s could also be regarded as the natural course of economic development and therefore does not provide any evidence that Argentina's economic policies prior to the Great Depression were misguided.

It is interesting to compare the estimates of investment rates reported above with the savings rates calculated by Taylor. He reports savings rates of about 5 percent between 1900-30, which suggests that a substantial fraction (about 85 percent) of capital accumulation after WWI was still being financed from abroad. It is hard to see how Argentina could have been credit constrained in international capital markets when it was able to finance abroad such a large proportion of domestic investment. While it is true that placing debt on European markets remained difficult, Argentine placements on domestic and the New York markets were considerable. If there was a credit constraint in the late 1920s, it was not clearly evident to at least one well-placed observer.

In the Economist of March 24, 1928, the Argentine correspondent, after noting the successful placement of US \$41 million in bonds of the Province of Buenos Aires on the New York market at an average rate of 6.5 percent (replacing loans with average interest rates of 7.9 percent), asserted that Argentine domestic investors had a lending capacity appearing to be “without a limit.... In round figures, the Argentine investor during the past ten years has absorbed at least 1,500,000,000 paper [pesos] in the form of locally issued bonds...” (Vol. 106, p. 599.)

The magnitude of this figure may be compared against that of Argentina's national debt, reported as 2.6 billion paper pesos in December of 1927 (Economist, August 4, 1928, Vol 107, p. 234), and Argentina's nominal GDP, which averaged 7.4 billion paper pesos in the decade 1918-1927. The correspondent's report suggests that domestic savings rates may not have been so low after all, perhaps more in line with Díaz Alejandro's estimate that domestic gross savings amounted to around 10 percent of GDP in most years before 1930. But even this implies that about 60 percent of postwar capital accumulation was financed abroad, still a large percentage for a country that may have been credit constrained. Unfortunately, savings rates are notoriously difficult to measure accurately, so additional evidence on domestic channels for capital is of value in this controversy. Lacking a direct resolution of this issue, we must rely on other evidence to assess whether Argentina had difficulties in accessing international capital markets after World War I.

In that respect, there is another important difference between Taylor and Díaz Alejandro. According to Díaz Alejandro, international capital markets for Argentina after WWI were free of any significant frictions. He reports that Argentina's creditworthiness, as measured by the market yield of her bonds, was not very different from that of Canada and Australia during the 1920s. As late as 1931 Argentina was able to roll over a loan at an interest rate only 90 basis points above the average rate paid by the government of the United Kingdom. Díaz Alejandro (1975) reports that, according to Wortman, in 1927 Argentina's creditworthiness was ranked by British experts as seventh among foreign countries.

By contrast, Taylor reports that according to Harold Peters (1934) and Vernon Phelps (1938), Argentina had limited success trying to raise funds from the New York money market and that prior to 1923 advances could be obtained only over the short term and at high interest

rates. In Taylor's words (p. 922), "Unsuccessful attempts to raise funds in New York for several years and the inability to attract new foreign additions to the capital stock caused Argentine accumulation to limp along, relying on low rates of domestic accumulation to drive new investment."

As emphasized earlier, the completeness of capital markets is important for the resolution of this controversy, because the "efficient markets hypothesis" underlies the arbitrage condition and similar ones typically used in models of asset pricing and analysis of financial asset returns. If markets are complete, arbitrage should result in equalization of expected rates of return across capital markets and financial instruments, and the rate of domestic investment should be unaffected by the local savings rate. On the other hand, informational or political barriers to international capital mobility could prevent full arbitrage and lead to a relative scarcity of capital in the credit-constrained economy, raising real expected returns to capital above those observed in international financial markets.

The data on stock returns used in this paper can shed some light on this controversy. In a frictionless world, the arbitrage condition implies that expected returns to equity and to other capital instruments in Argentina should have been approximately the same as in the world stock markets, especially in the stock markets of the emerging economies of the time. Substantial differences would be consistent with the existence of significant frictions in international capital markets. With that goal in mind, in the next sections we report measures of real returns to equity in Argentina in the period 1900-30 and other relevant stock market indicators.

Inflation rates and purchasing power parities

To measure real returns, we have to consider the reference market baskets of alternative

investors, as purchasing power parity cannot be relied upon. Table 1 shows consumer and wholesale prices for Argentina (columns 1 and 2), and consumer price indexes for the US and the UK (columns 3 and 4). It also shows these price indexes for the US and UK in terms of Argentine paper pesos, based on exchange rates (columns 5 and 6).

Note that the period from 1900 to 1913 is generally an inflationary one for Argentina. Using prices in the US and UK measured in pesos we see that US and UK investors lose less of their peso returns in translating them into home goods than do Argentine investors, but the trend is also generally inflationary. Thereafter, inflation in Argentina is relatively slower than abroad, while the Argentine exchange rate vis-a-vis the pound and dollar is trendless through 1929. Worldwide, the wartime inflation boom crests in early 1920. There follows a sharp decline in prices and a stabilization beginning around 1922. Broadly speaking, comparing the prewar period to the postwar period, purchasing power held its own better in the 1920s than in the earlier period.

SECTION II. Description of the Data and of the Methodology of the Study

The sources of the primary data collected were *The Review of the River Plate*, the *Boletín Oficial de la Bolsa de Comercio de Buenos Aires*, and *El Monitor de Sociedades Anónimas*. These sources contain monthly observations on transaction prices on the Argentine Bolsa, dividends paid, volumes traded, and firms' capitalization. These comprise all listed shares, including common equity and preferred shares, with dividends paid in notes convertible in gold (gold pesos) as well as in fiat money (pesos moneda nacional.)

Statistics for each stock were constructed as follows. Define:

$P(t)$ = Price at the end of the year (last transaction price reported in the year);

$D(t)$ = Dividends during year (issued before last reported transaction price).

The dividend-price ratio is $D(t)/P(t)$.

Price indexes are constructed by taking the ratio of average stock prices in year t and dividing by the average stock prices in year $t-1$. These unweighted averages give the stock a weight equal to its share price, so we call these share-price weighted indexes.

If a stock does not have a reported trade in both years (months for the eventual monthly indicator), its rate of return is not calculated. Thus, we implicitly assume that reported stocks reflect the return for stocks not reported. This assumption is not too bad inasmuch as reported stocks are likely to be those stocks that are more widely held. However, it is likely to be biased in that stocks with bad news or in bankruptcy are not included.

SECTION III. Rates of Return on Argentine Debt Issues

Table 2 shows rates of return from a long-term instrument, the 1886-87 Argentina 5 percent custom loan regularly quoted on the London stock exchange market, from 1900 to 1913 (della Paolera, 1988) and from June 1920 to June 1928 (the *Economist*, last issue in June of each year). This “custom loan” was secured by Argentine custom receipts and was the largest loan ever floated abroad by the Argentine government. The second column shows the yields on Argentine government consols on the domestic market from 1900 to 1913. The third column shows the Argentine prime rate from 1901 to 1930. Columns 4 and 5 show rates of return of British consols and on US 20-year corporate bonds.

Broadly speaking, world and Argentine interest rates were roughly the same or somewhat higher in the period after 1922 than before 1914. From 1901 to 1913, the custom loan yielded just under 5.0 percent, and from 1922 to 1928 it yielded an identical amount. Similarly, in the

earlier period the prime rate averaged 6.3 percent and in the later 6.9 percent. Over the period, the spread between the custom loan and the British consol narrowed. Thus, while it is evident that there was some upward drift in the real interest rate in Argentina, its magnitude appears small and in keeping with changes in the world marketplace, rather than suggesting an abrupt change in Buenos Aires's role therein. For example, in New York, 20-year corporate bonds yielded between 3 1/4 and 4 percent from 1901 to 1913, while they yielded between 4 and 5 percent from 1922 to 1929. Indeed, if anything, we see that the British consol rate was drifting higher with respect to long-term rates for US issues, while the Argentine custom loan and prime rate were holding their own. Thus the transition from British to US dominance of the capital markets appears to have been a relatively smooth one for Argentine borrowing.

The size of the Argentine Bolsa

The Buenos Aires Bolsa had a market capitalization of between US \$350 and \$400 million in 1929, when the GDP was roughly US \$4 billion, so that the market capitalization was roughly 10 percent of GDP. In that same year, the market capitalization of the New York Stock Exchange (NYSE) was \$65 billion, when US GNP was \$103 billion, or US market capitalization represented over 60 percent of US GDP. But the US stock market bubble in 1929 exaggerates the size of the US market capitalization with respect to the economy. For the NYSE, 1924 is perhaps more representative, and in that year, market capitalization was 32 percent of GDP. To offer another comparison, the Italian stock market in 1992 had a capitalization of less than 15 percent of Italian GDP.

Two further points should be noted. First, the Argentine stock market did not list the major railway issues -- the Southern, the Western, the Pacific, and the Central. Together, the

Argentine railway issues had a market capitalization in 1929 of 92 ½ million British pounds, or somewhat more than the market capitalization of the entire Argentine Bolsa. If we were to add these issues to the Argentine stock market, its capitalization would rise to above 20 percent of GDP. Second, we have included only ordinary stock, while the NYSE figures include preferred as well.

Table 3 offers a more formal comparison with modern emerging markets. The table gives market capitalization to GDP ratios for 18 non-OECD countries. The median ratio is 21 percent, which is similar to the capitalization of Argentina's equity issues, including the railway shares, in 1929.

In sum, the market capitalization of the Argentine stock market was reasonably substantial for an emerging market. Although it did not represent Argentina's foremost industrial concerns, the railroads, it represented a high proportion of the remaining ones and a substantial amount of asset values.

Turnover on the Argentine Bolsa

Turnover -- the extent to which outstanding shares are actively traded -- varies considerably across stock markets and within stock markets over time. Trading on the Argentine Bolsa represented some 5 percent of market capitalization during the 1920s, that is, on average only 1 share in 20 turned over in a given year. Again, this figure does not include the most heavily traded issues, the railroads. In the hectic New York market of the 1920s, trading volume sometimes more than equaled the market capitalization. However, in the 1950s and 1960s, trading volume on the NYSE was more like 15 to 20 percent of market capitalization, and today it is roughly 50 percent. In 1992, trading on the Italian stock market was 20 percent of market

capitalization. Table 3 shows that the trading turnover on modern emerging markets is about 20 to 25 percent.

Thus the Argentine Bolsa's trading rate in the 1920s was relatively slow, either by contemporary standards or past ones, but by no means trivial. While the Bolsa cannot be considered highly liquid, it would be a mistake not to take seriously this market as a channel of finance.

Table 4 shows estimates of the volume of paper peso equity transactions on the Argentine Bolsa from 1914 to 1930. In nominal terms, volume peaked in 1918. But the latter part of this period was one in which the price level was falling, so in real terms, volume was close to trendless. It should be noted that the shares of the largest firms on the exchange traded regularly, to the extent that a trade is recorded in virtually every week for which we have records. This rate of trade is certainly sufficient to provide a reasonable record of valuations.

Rates of return on equity

Dividend-price ratio. One measure of the expected return to stocks is the dividend-price ratio. If price movements are difficult to forecast, as one expects on an equity market, movements in the dividend-price ratio may reflect changing ex ante returns to the market. In this respect, there do not appear to have been enormous changes in the ex ante returns on the Argentine Bolsa. Table 5 reports dividend-price ratios for a group of common stocks with nominal capitalizations in excess of 10 million paper pesos. Generally speaking, these represent the bulk of the Bolsa's market capitalization.

Dividend-price ratios for the Argentine stocks were roughly 6 percent from 1906 to 1912, in the Belle Époque, not far above the 4.7 percent average for US stocks in the same period.

From 1926 to 1930, Argentine dividend-price ratios were roughly 5 percent, a narrower spread from the 4.4 percent average for US stocks in the same period. The Argentine dividend-price ratios in the late 1920s are also lower relative to returns on debt, both domestically and abroad than in the Belle Époque.

There are two possible interpretations. One is that ex ante required returns had fallen, if price expectations were low. Such an interpretation, of course, is inconsistent with the view that costs of capital were unusually high for Argentina with respect to world markets during this period. The alternative is that Argentina's stock prices were expected to appreciate substantially. Let us now turn to ex post returns.

Price indexes. Table 6 shows Argentine stock prices based on high market capitalization stocks. This index is constructed like the Dow Jones stock index, with the shares included weighted by their share value. From 1906 to 1912, in the Belle Époque, the real value of shares on the Argentine stock market was roughly stable. After 1912, however, the stock market dropped for two years and continued to sink until 1920. Beginning in 1920, however, the stock market stabilized and then rallied spiritedly from 1925 to 1928, and in 1930, the stock market was still well above its level in the first half of the decade.

There are thus grounds for suspecting that, although over the period as a whole stock prices trended downward, expectations of price appreciation might have become a factor in investment decisions in the latter part of the 1920s. Such expectations of rising prices, with implied increases in market valuations of firms, would not appear to be consistent with dismal economic prospects.

Table 7 shows the comparable price levels for the US stock market, as measured by the

S&P index and deflated by the US CPI. The comparison between the two series is made graphically in Figure 1. Note that the US stock market price level fell, in real terms, slightly more than the Argentine market from 1906 to 1920. Thus, the equity market slide in Argentina was mirrored in the US, yet the performance of the US economy during this period can hardly be characterized as dismal.

We have also constructed a stock price index where the large capitalization stocks are weighted by their market capitalization, as they are in the US S&P 500 index. However, the capitalization data are not reported as systematically before 1912 as they were thereafter. Moreover, a single entity, the Provincial Bank of Buenos Aires, represents most of the capitalization of the stock market reported here from 1906 to 1914. As a consequence, we view the data, reported in Table 8, as primarily confirming the trends reported in Table 6.

Real rates of return. Table 9 presents real rates of return to common stock denominated in domestic currency. The figures reveal that, on average, real rates of return were substantially higher in the 1920s than in the period 1906-13. However, far from suggesting isolation of Argentina from international capital markets in the 1920s, these figures are consistent with Díaz Alejandro's view that, in the late 1920s, Argentina was as firmly integrated with international capital markets as ever: the increase in real rates of return to equity paralleled the one experienced by the United States, as evidenced by the decade averages reported from Sylla et al. (1994) reproduced in Table 9.

British-owned Argentine railways. In 1929, on the eve of the collapse of the international commodity prices, the Argentine railways continued to trade at or above par on the London market, having, if anything, risen in price over the past several years (Lewis, 1974, 1983.) Thus

Argentine equity issues appeared remarkably robust well after the end of Britain's role as the main supplier of capital and despite the rising pressure of increased real rates of interest on world capital markets in the 1920s.

SECTION IV. Conclusion

A preliminary analysis of returns to common stock in the Argentine Bolsa in the period from 1900 to 1930 suggests that that rates of return to capital, be they in nominal or real terms, reflected worldwide capital market conditions. Real rates of return in the period 1920-30 were above those of the Belle Époque (1906-1912), but the implied increase in the cost of capital was not out of sync with international capital markets. That is, stock yields right before the Great Depression suggest that returns to capital investment in Argentina were not far from those that investors would have obtained in world capital markets. This finding is consistent with Díaz Alejandro's view that WWI left Argentina convalescent but firmly integrated in world financial markets and ready to grow at a healthy pace without any need of drastic changes in the outward-oriented, foreign-capital-friendly policies pursued until the Great Depression.

It is our hope that the research agenda initiated with this paper will shed some light not only on a particular period of Argentina's economic growth but also on the sources of growth in general, as well as make a contribution to the better understanding of the so-called "emerging economies" and their often puzzling capital markets.

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Table 1. Price indexes						
Year	Argen WPI	Argen CPI	UK CPI	US CPI	UK PPP	US PPP
1900	100		100	100	100	100
1901	88		99	100	99	100
1902	96		99	104	100	105
1903	91		100	108	98	106
1904	93		101	108	99	106
1905	101		101	108	99	106
1906	107		102	108	100	106
1907	110		104	112	103	110
1908	106		102	108	100	106
1909	116		103	108	102	106
1910	125		106	112	104	110
1911	124		107	112	105	110
1912	127		110	116	108	114
1913	127	100	112	119	110	117
1914	128	100	113	120	112	121
1915	137	107	136	122	132	120
1916	156	115	161	131	154	127
1917	194	135	194	154	179	145
1918	212	170	224	180	203	168
1919	219	160	237	207	205	198
1920	229	187	274	240	215	253
1921	182	167	249	214	255	278
1922	165	140	201	201	210	230
1923	172	137	192	204	216	246
1924	184	140	193	205	211	247
1925	187	136	194	210	198	216
1926	168	132	190	212	193	216
1927	165	131	184	208	179	203
1928	166	132	183	205	178	200
1929	161	131	181	205	178	202
1930	154	132	174	200	196	226

Sources: Argentina: before 1914, della Paolera; thereafter, Domenech. UK: Feinstein. US: Census Bureau

Table 2. Interest rates on Argentine, UK, and US debt issues					
Year	Prime rate	Custom loan	Domestic bonds	UK consols	US 20 Yr Corporate
1900	6.3	5.4	8.0	2.8	3.30
1901	7.1	5.2	7.8	2.9	3.25
1902	6.7	5.2	7.7	2.9	3.3
1903	5.3	5.0	6.4	2.8	3.45
1904	4.3	4.9	6.0	2.8	3.6
1905	4.7	4.9	5.9	2.8	3.5
1906	5.5	4.9	5.3	2.8	3.55
1907	6.5	4.9	5.6	3.0	3.8
1908	6.8	4.8	5.7	2.9	3.95
1909	6.3	4.8	5.4	3.0	3.82
1910	6.4	4.8	5.1	3.1	3.87
1911	7	4.8	5.2	3.2	3.94
1912	7.6	4.8	5.4	3.3	3.91
1913	7.7	4.9	5.4	3.4	4.02
1914	7.9	4.9		3.3	4.16
1915	7.6			3.8	4.2
1916	7.1			4.3	4.05
1917	6.8			4.6	4.05
1918	6.3			4.4	4.82
1919	7.2			4.6	4.81
1920	7.8	5.6		5.3	5.17
1921	7.7	5.4		5.2	5.31
1922	6.5	5.0		4.4	4.85
1923	6.5	5.0		4.3	4.68
1924	7.4	5.0		4.4	4.69
1925	6.9	5.0		4.4	4.5
1926	6.9	5.0		4.6	4.4
1927	6.3	4.9		4.6	4.3
1928	6.9	4.9		4.5	4.05
1929	6.9			4.6	4.45
1930	6.9			4.5	

Sources: Argentina: Before 1914, de Paolera. After, Boletín de Bolsa de Comercio de Buenos Aires for prime rate and the Economist for custom loan. UK Consols: Mitchell and Deane. US Corporates: Bureau of the Census.

Table 3. Modern Non-OECD Country Stock Market Indicators, 1986-93		
Country	Market Capitalization to GDP	Turnover
Argentina	.06	.34
Brazil	.11	.48
Chile	.52	.08
Colombia	.07	.07
Hong Kong	1.36	.44
India	0.16	.50
Indonesia	.06	.23
Israel	.21	.72
Jordan	.57	.22
Korea, Rep. Of	.40	.93
Malaysia	1.28	.24
Nigeria	.04	.01
Pakistan	.11	.08
Philippines	.24	.23
Singapore	1.04	.34
South Africa	1.54	.05
Thailand	.36	.7
Venezuela	.10	.15
Zimbabwe	.18	.03
Median, Non-OECD	.21	.235
Median, 23 OECD	.24	.31

Source: Demirguc-Kunt and Levine (1996)

Table 4. Trading volume on the Buenos Aires Bolsa		
Year	Annual transactions volume (million paper peso)	Real transactions volume (1914=100)
1914	7.35	100
1915	5.44	69
1916	7.41	87
1917	19.02	191
1918	40.04	323
1919	27.48	233
1920	20.81	150
1921	31.05	253
1922	32.50	314
1923	30.04	296
1924	16.019	157
1925	12.39	123
1926	21.80	223
1927	27.83	288
1928	27.30	280
1929	22.29	231
1930	11.65	119

Source: Boletín de Bolsa de Comercio de Buenos Aires

Table 5. Dividend-Price Ratios for Large Capitalization Argentine Stocks and US Stocks

Year	Argentine Large Cap Stocks		US Common Stock
	Mean	No. Of Stocks	Cowles Commission
1906	.03	7	.040
1907	.09	7	.054
1908	.08	7	.049
1909	.06	7	.043
1910	.05	7	.048
1911	.06	7	.049
1912	.06	7	.049
1913	.08	7	.054
1914	.07	16	.050
1915	.08	16	.050
1916	.06	16	.056
1917	.12	16	.078
1918	.09	16	.072
1919	.09	16	.058
1920	.12	27	.061
1921	.07	27	.065
1922	.08	27	.058
1923	.06	27	.059
1924	.07	27	.059
1925	.06	27	.052
1926	.05	27	.053
1927	.04	27	.048
1928	.05	27	.040
1929	.05	27	.035
1930	.05	27	.043

Sources: Argentina: Authors' calculations and US: Bureau of the Census.

Table 6. Argentine Stock Market: 1906-1930

Share-weighted Stock Indexes			
	Price Index, Nominal	Price Index, Real	No. of Companies
1906	100	100	7
1907	94	92	7
1908	100	101	7
1909	117	108	7
1910	123	105	7
1911	119	102	7
1912	123	103	7
1913	104	87	7
1914	83	70	7
1915	81	63	16
1916	82	56	16
1917	92	51	16
1918	117	59	16
1919	109	53	16
1920	86	40	16
1921	64	38	27
1922	63	41	27
1923	66	41	27
1924	65	38	27
1925	67	39	27
1926	73	47	27
1927	79	51	27
1928	87	56	27
1929	81	54	27
1930	67	47	27

Source: Authors' calculations, real prices deflated by PPI.

Table 7. US Stock Prices, S&P 500		
	Nominal	Real
1899	65.25	70.47
1900	63.80	68.90
1901	81.33	87.83
1902	87.34	90.70
1903	74.79	74.79
1904	73.13	73.13
1905	93.26	93.26
1906	100.00	100.00
1907	81.33	78.42
1908	80.71	80.71
1909	100.73	100.73
1910	96.99	93.53
1911	95.85	92.43
1912	98.86	92.04
1913	88.28	80.12
1914	83.82	75.44
1915	86.20	76.31
1916	98.24	80.99
1917	88.17	61.84
1918	78.22	46.93
1919	91.08	47.52
1920	82.78	37.25
1921	71.16	35.91
1922	87.24	46.88
1923	88.90	47.06
1924	93.88	49.46
1925	115.66	59.48
1926	130.60	66.53
1927	159.13	82.62
1928	206.95	109.03
1929	269.92	142.20
1930	218.15	117.80

Source: Bureau of the Census

Table 8. Argentine Stock Prices: Major Companies Weighted by Market Capitalization			
	Nominal	Real (1906=100)	No. of Companies
1899	56.65	68.10	6
1900	61.70	66.02	6
1901	56.87	69.15	6
1902	57.00	63.53	6
1903	71.33	83.87	6
1904	80.99	93.19	6
1905	105.57	111.84	6
1906	100.00	100.00	6
1907	115.01	111.87	9
1908	131.47	132.71	9
1909	145.82	134.51	9
1910	176.78	151.32	9
1911	172.91	149.21	9
1912	162.74	137.12	12
1913	140.87	118.68	12
1914	123.95	103.62	12
1915	98.89	77.24	12
1916	99.33	68.13	12
1917	108.28	59.72	13
1918	127.94	64.57	13
1919	118.36	57.83	13
1920	102.78	48.02	16
1921	100.18	58.90	16
1922	107.35	69.61	16
1923	107.27	66.73	16
1924	111.14	64.63	16
1925	114.64	65.59	20
1926	121.88	77.63	20
1927	130.62	84.71	22
1928	146.77	94.60	24
1929	145.19	96.49	24
1930	127.92	88.88	24

Table 9. Average Annual Rates of Return to Argentine Stocks			
Year	Real return (Percent)	Prior decade average Argentina	Prior decade average US
1907	-0.3		
1908	19.6		
1909	13.1		
1910	3.1		
1911	2.7		
1912	7.0		
1913	-9.1		
1914	-14.8		
1915	-2.1	1.7	3.4
1916	-5.3		
1917	0.1		
1918	27.6		
1919	-2.0		
1920	-14.7	-1.7	-4.0
1921	0.5		
1922	15.4		
1923	7.0		
1924	-1.1		
1925	7.8	2.9	3.7
1926	26.7		
1927	14.6		
1928	14.1		
1929	1.8		
1930	-9.9	7.3	14.2

Sources: Argentina: Authors' calculations US: Sylla et al (1994)

Figure 1. Real Stock Price Indexes
Argentina and United States 1906 =100

