Barry Poulson

CONVERGENT PATHS OF ECONOMIC DEVELOPMENT: ARGENTINA AND THE FRONTIER ECONOMIES IN THE 19TH AND EARLY 20TH CENTURIES

Introduction

That frontier economies followed convergent paths of economic development in the 19th and early 20th centuries is not surprising. There is a large body of literature dating back at least as early as the work of Frederick Jackson Turner, supporting the argument that frontier societies faced unique opportunities and constraints that shaped their development.(1) Recent research is beginning to provide an empirical foundation for comparing growth and the sources of growth in Argentina and the other frontier economies, Australia, Canada, and the United States. The evidence reveals convergent paths of economic development in the 19th and early 20th centuries; in contrast, the development path for Argentina diverges from that of the other frontier economies later in the 20th century. This study explores these trends in economic development in the frontier economies.

Economic Growth in Argentina and the Frontier Economies

Any study of economic growth in the 19th century is based on the limited and often fragmentary empirical evidence available for that period. Several new studies have are attemped to extend the empirical evidence for Argentina back into the 19th century; these estimates should be viewed as preliminary and subject to revision. The following table includes the evidence for the agricultural sector from 1825 to 1865, compiled by Newland and Poulson.(2) They are currently attempting to estimate output for the Argentine economy as a whole for this early period, and to link this with data for the subsequent period. The evidence for the U.S. from 1809 to 1839, and from 1839 to 1869 was compiled by Poulson, and Gallman respectively.(3) The evidence for all of the frontier economies for the period 1865 to 1914 is that compiled by Davis and Gallman.(4)

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The first point to make is that the Argentine economy was doing very well indeed in the 19th and early 20th centuries, as measured by the usual economic indicators. The evidence reveals a rate of growth of output in excess of 5% per year prior to WW I. While the evidence covers only the Argentine agricultural sector in the earlier period, given the dominant role for agriculture the economy as a whole was probably growing at this rapid pace in the midnineteenth century as well. The U.S. rate of growth of output in the midninetenth century was comparable to that of Argentina; but by the late nineteenth and early twentieth centuries the rate of growth of output for the U.S. and the other frontier economies fell two percent below that of the Argentine economy. This evidence suggests that by the latter period Argentina was not only the fastest growing frontier economy, but also the fastest growing economy in the world.

The Argentine economy was also experiencing one of the most rapid rates of population growth in the 19th and early 20th centuries. The other frontier economies registered comparable rates of population growth in the mid-nineteenth century, as revealed in the U.S. data. However, by the late nineteenth and early twentieth centuries the growth rate for the Argentine population was a full percentage point higher than that of the other frontier economy. In that sense Argentina can be considered at an earlier stage in the demographic transition, compared to the other frontier economies.

The estimates suggest that in the mid nineteenth century the rate of growth of output per capita in Argentina was comparable to that of the U.S.. However, despite the more rapid pace of population growth in Argentina in the late nineteenth and early twentieth centuries, the growth in output per capita exceeded that of the U.S. and the other frontier economies.

The rapid pace of economic growth in Argentina in the 19th and early 20th centuries is even more impressive when compared to the European economies in this period. Angus Maddison estimates that the average rate of growth of ouput per capita for eleven European industrialized countries was only 1.4% per year over this period.(5) The rate of growth of output per capita in Argentina was probably a full percentage point or more above that of these European countries.

A Three Factor N Good Model of the Frontier Economies

Each of the frontier economies began their path of economic development with an`abundance of land and other natural resources relative to labor and capital. It is this similarity in factor endowments that underlies convergent paths of economic development in these economies in the 19th and early 20th centuries. The standard neoclassical growth model, combining two factors of production capital and labor, does not provide a framework which captures the unique factor endowments of these countries. In that model capital accumulation leads to increases in real wages and to an increasingly capital intensive mix of commodities. The model does not have much explanatory power for frontier economies specializing in land and resource intensive products.

Ed Leamer has introduced a three factor, n-good model that does provide a framework for capturing the unique factor endowments and products produced in these frontier economies.This model is used to trace the path of development in these economies in the 19th and early 20th centuries.(6)

(insert figure 1)

Figure 1 represents graphically the factor endowments land and natural resources(T), labor (L), and capital (K). In the nineteenth century agriculture and natural resource industries predominated in the frontier economies. Three types of agricultural and natural resource industries are represented by points in the endowment triangle, pastoral products (P), grains (G), and mining (M). Lines drawn from the corners of the triangle through these three points represent input vectors.(7) Lines connecting the production points and the input vectors divide the endowment triangle into triangles of diversification. We identify triangles of diversification for agricultural and natural resource based industries in the above endowment triangle. Underlying these triangles of diversification are prices for each of the commodities. As the price of a commodity rises the triangle of diversification in that commodity will increase.

Early Paths of Development in the Frontier Economies

The placement of the production points in the endowment triangle permits us to link the production of goods to the factor endowments implied by the Rybczynski effects and Stolper-Samuelson effects. With an abundance of land and natural resources the frontier economies specialized in the production of products which intensively utilized these factor endowments. The specific industries varied for each of these countries, but what is common to all of them is that they began the path of development in a triangle of diversification which intensively utilized land and natural resources. Argentina began by specializing almost entirely in pastoral production reflecting the abundance of land in the Littoral. Australia began by specializing in mineral production reflecting the discovery of precious metals and other minerals in the mid nineteenth century. Canada and the United states began with a mix of agricultural and natural resource based industries reflecting the abundance of each of these resources.

In contrast to the frontier economies, the European economies had a shortage of land and natural resources relative to other factor endowments. All of the European countries had a much higher ratio of labor to land and natural resources compared to the frontier economies. The industrialized countries of Western Europe also had higher ratios of capital to land and natural resources. Over the course of the nineteenth century some European economies became increasingly specialized in the production of goods that intensively utilized labor and capital, with manufacturing accounting for a larger share of total output compared to the frontier economies.

Returns to the factors of production also reflected these differences in factor endowments between the frontier economies and the European countries. The returns to land and natural resources were much lower , while the returns to labor and capital were much higher in the frontier economies. In response to these differences in factor returns the nineteenth and early twentieth centuries witnessed the greatest international flow of factors of production in history. At the outset of the ninetenth century the supply of labor into the frontier economies was much more elastic than the supply of capital. High rates of immigration combined with high rates of natural increase resulting in very high rates of growth in population and labor force. At the outset of the 19th century these countries had not yet begun to experience the high and sustained rates of growth in output and output per capita, as they would later in the nineteenth century. Their primitive capital markets were not yet capable of attracting high rates of foreign savings and investment. With relatively low rates of domestic savings and investment, rates of capital accumulation fell below the rates of growth of the labor force. Thus for each of the frontier economies we can think of an initial period of labor accumulation characterized by a rising labor/capital ratio. For Argentina this initial period of labor accumulation extends into the second half of the nineteenth century, while for the other frontier economies it ends earlier in the nineteenth century.

With this evidence we can begin to trace the path of development for the frontier economies in the nineteenth century. In the initial period of labor accumulation we would expect these frontier economies to become increasingly specialized in the production of products that intensively utilized the most rapidly growing factor of production, labor. In Argentina the shift from cattle and horse production toward sheep production within the pastoral sector was consistent with this change in Argentina's factor endowments. In the North American frontier economies the period of labor accumulation was also reflected in changes in industrial structure. The plantation economy of the

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American south was based on the production of cotton and other crops that intensively utilized the rapidly expanding slave population. Within agriculture the early slash and burn techniques which characterized the period of land abundance and land redundancy gave way to settled agricultural production and technologies that preserved the fertility of the soil. Similar changes were evident in forestry, mining and other natural resource based industries with the growth of population and labor force relative to land and natural resources.

The frontier economies began to experience higher rates of growth in output and output per capita during this early period of labor accumulation. They were able to absorb a very rapidly growing labor force within their agricultural and natural resource based industries, and at the same time experienced improvements in productivity in these traditional industries.(8)

This initial path of economic development in the frontier economies is represented by the uppermost arrow in region of specialization 1 that includes agriculture and the natural resource based industries. The path of this arrow is toward the labor vertex indicating a shift toward production of goods that more intensively utilized labor relative to the other factor inputs. Note however, that this path of development still leaves the frontier economies in a region of specialization combining agricultural and natural resource based industries.

Paths of Development in the transition from a Frontier Economy to a Mature Economy

By the second half of the nineteenth century all of the frontier economies were experiencing the high and sustained rates of growth in output and output per capita that we associate with modern economic growth. This rapid economic growth was accompanied by higher rates of capital formation. All of the frontier economies attracted increasing foreign savings and investment, although the importance of these foreign capital flows varied among the different countries. Argentina attracted the highest rate of foreign savings and investment of all the frontier economies. Given the much lower rates of domestic savings and investment in Argentina, foreign capital accounted for a much higher share of total capital formation compared to the other frontier economies. At the other end of the spectrum the United States attracted somewhat lower rates of foreign investment, and foreign savings and investment accounted for a much lower share of total capital formation. Australia and Canada fell between these extremes in terms of the rate of growth of foreign investment and the share of foreign savings and investment in total capital formation. Despite these differences all of the frontier economies began to experience rates of total capital formation in excess of the rates of growth of the labor force.

(Insert graph 2)

Rising capital/labor ratios brought a shift in the path of development of the frontier economies in the second half of the nineteenth and early twentieth centuries. In the second graph, two manufacturing industries are represented on the horizontal axis. A labor intensive industry is represented by the intercept I1, and a capital intensive industry is represented by the intercept I2. Each of the frontier economies began to shift into regions of specialization that included some combination of manufacturing with the traditional agricultural and resource based industries. While they were at different stages of industrialization, the frontier economies were on a convergent path of development represented by the arrow extending through regions 2,3,4 and 5.

In the United States manufacturing production expanded rapidly early in the nineteenth century, and by the end of the century manufacturing production had displaced agriculture and natural resource based industries as the major source of output and employment. The United states had the highest capital/ labor ratio of all the frontier economies, and was rapidly expanding capital intensive as well as labor intensive industries. At the other extreme Argentina remained in a region of specialization dominated by agriculture and natural resource based industries; manufacturing production accounted for a relatively small share of total output and employment in Argentina by the end of the nineteenth century. The Canadian and Australian paths of development fell between that of the United States and Argentina, combining labor and capital intensive manufacturing with the traditional agricultural and natural resource based industries.

This comparison of development paths for the transition from a frontier economy to a matuer economy helps us to better understand the convergence of these economies in the 19th and early 20th centuries. The earlier era of labor accumulation gave way to the era of modern economic growth, characterized by rising capital labor ratios. The arrow representing this path of development shifts toward the capital vertex. The shift toward more capital intensive production was reflected in changes in industrial structure as well as changes in factor inputs within the different industries. Despite the fact that these countries were in quite different regions of specialization reflecting different stages of development, they were basically following a similar path of development dominated by changes in their factor endowments. In this sense we can speak of convergence of the frontier economies despite the fact that they appear to be quite disparate in terms of their level of economic development.

This convergence of the frontier economies is most evident when we compare their development path with that of the European economies in this period. The Western European countries were also quite disparate in terms of factor endowments, but their development paths would all lie below that of the frontier economies throughout this period. The greater abundance of labor, and in some cases capital, relative to land and natural resources placed the European economies in regions of specialization that more intensively utilized these inputs.

Paths of Development in a Mature Economy

The recent empirical evidence suggests that the frontier economies were following convergent paths of economic development in the 19th and early 20th century. The controversy in economic history centers on the sustainability of economic growth in these economies in the 20th century. All of the frontier economies experienced the external shocks of war and depression in the first half of the 20th century, which caused them to diverge from their long run development paths. But in the second half of the 20th century the United States, Canada, and Australia recovered their long term rates of economic growth that extend back into the 19th cventury. These countries successfully made the transition from a frontier economy to a mature economy, and their development paths began to converge with that of other high income industrialized countries. As Ed Leamer has documented, these industrialized economies now fall into regions of specialization that are similar in terms of factor endowments and industrial structure.(9)

The controversy focuses on Argentina which has followed a divergent path of economic development in the 20th century. Whereas the other frontier economies recovered rather quickly from the external shocks of the war and depression, Argentina experienced retardation and divergence of economic growth in the post WWII period. Diaz Alejandro and other writers date the retardation in Argentine growth with the Great Depression and the dirigiste policies first introduced in that period.(10) From this perspective Argentina has lost a half century of growth due to massive government failures that have accompanied dirigiste policies since the 1930's.

That view has been challenged by other writers, most recently by Taylor who dates retardation in the Argentine economy in the decade after WWI.(11) Taylor traces the origins of retardation to the disruption of international capital markets caused by WWI, combined with low rates of savings and investment within the Argentine economy. From this perspective the high rates of growth achieved by the Argentine economy were not sustainable in the context of the new international capital market after WWI.

One of the problems in assessing this controversy is that there are only a few years after WWI before Argentina and the other frontier economies are again confronted with the external shocks of depression and war. Nonetheless the new evidence for long term economic development extending back into the 19th century provides new insights into the controversy. From this perspective there is reason to believe that Argentina's path of development would have continued to converge with that of the other frontier economies in the 20th century as it had in the 19th century. War and depression should have represented temporary shocks to the Argentine economy from which it then recovered the long term growth path extending back to the 19th century. The discontinuous change came in the dirigiste policies introduced by Argentina that launched it on a path of retarded growth that diverged from that of the other frontier economies.

The key to unlocking this controversy is an understanding of the structural changes that accompanied the transition from a frontier to a mature economy. One of these changes was the shift from land and natural resource based industries toward manufactures. While the frontier economies were at different stages in this structural change they were following convergent paths of development as discussed above.

Another structural change which accompanied the transition to a mature economy was the shift from a net debtor toward a net creditor in international capital markets. All of the frontier economies were net debtors in the 19th century. By the turn of the 20th century the United States had shifted from a net debtor to a net creditor in international capital markets. As Taylor and others emphasize, this transition was hastened by WWI during which the U.S. displaced London as the major financial center. With a substantial lag, Canada and Australia also make the transition from net debtor to net creditor status in the 20th century. In contrast, Argentina has remained a net debtor nation, and in recent years has emerged as one of the major debtor nations in the world. The divergent path of the Argentine economy from the other frontier economies in the 20th century is linked to this failure to make the transition from a net debtor to a net creditor nation.

New empirical evidence provides insights into these long run trends in net capital flows and the balance of payments of the frontier economies. In the 19th century the frontier economies incurred a current account deficit offset by a capital account surplus.The counterpart to their balance of payments was that of the European countries that incurred a current account surplus and a capital account deficit. Whether or not these net capital inflows received by the frontier economie were sustainable depends upon the equilibrium in their balance of payments.

In a neoclassical growth model a prerequisie for a country to receive a sustainable net capital inflow is that the real rate of economic growth must exceed the real rate of interest. A corollary is that the equilibrium or sustainable current account deficit is a function of the countries rate of economic growth and the ratio of the countries liabilities that foreigners wish to hold. It is of course impossible to estimate the ratio of a country's liabilities that foreigners wish to hold; but we can use hypothetical ratios for different rates of growth of GDP to estimate the equilbrium deficit in the balance of payments.(12)

(Insert graph 3)

Using this concept of equilibrium in the balance of payments, we plot the path of development of the frontier economies with respect to their balance of payments equilibrium in graph 3. Each of the frontier economies was a net debtor in the 19th century beginning their path of development in the southeast quadrant. The desired ratio of foreign liabilities was highest for Argentina, and lowest for the United States, with Canada and Australia somewhere in between. Given the high rates of economic growth registered by the frontier economies these countries were able to sustain high current account deficits offset by net capital inflows.

The transition to a mature economy is reflected in a convergent path of development in terms of equilibrium in the balance of payments. As a frontier economy matures it shifts from a net debtor to a net creditor. This is represented by the arrow from equilibrium E in the southeast quadrant to equilibrium E' in the northeast quadrant. By the turn of the century the U.S. had made the transition from a net debtor to a net creditor nation, where current account surpluses offset capital account deficits. Canada and Australia also made this transition with some lag in the 20th century. As these countries made the transition from frontier economies to mature economies they financed a greater share of total capital formation from domestic savings rather than foreign savings.

The effect of war and depression on the path of development of the frontier economies is illustrated in graph 3. To the extent that these external shocks were accompanied by lower rates of economic growth they would shift the frontier economies along a path of development with an equilibrium in their balance of payments at reduced deficits in the current account offset by net capital inflows. An externsl shock is represented by the shift of the arrow from equilibrium E in the souteast quadrant toward equilibrium E" in the north west quadrant. Recovery from the external shock is shown by the arrow sifting the development path back to th original path toward equlibrium E' in the northeast quadrant.

Why Did the Argentina Diverge from the Other Frontier Economies in the 20th Century?

The evidence reveals that in the 19th century Argentina was on a convergent path of development with other frontier economies in terms of its balance of payments. Large net capital inflows financed the highest current account deficit of any frontier economy; nonetheless, this current account deficit was sustainable because Argentina achieved such a high rate of economic growth, and because foreigners were willing to hold a high ratio of Argentinas liabilities. Indeed, we can think of Argentina as the premier frontier economy in this regard because it achieved the highest rate of economic growth in the 19th century. The question then is why Argentina diverged from that of the other frontier economies in the 20th century.

There is no question that in the early 20th century war and depression exposed Argentina to external shocks that significantly impacted the balance of payments and economic growth . But the 19th century was also turbulent periods in Argentina's history, including the internal shocks of civil insurrection, and the external shocks of war and blockade. If Argentina was able to sustain its convergent path of development with other frontier economies in the 19th century it is not clear why external shocks per se would cause divergence in the early 20th century. It is also not clear why the other frontier economies were able to recover from these shocks, while Argentina entered a period of retardation in economic growth.

Ultimately the explanation for retardation of the Argentine economy must be found not in external shocks but rather in the domestic economy. Taylor argues that the fatal flaw in the Argentine economy was a low rate of domestic savings. Low savings rates in turn reflected an unusually high dependency rate in the Argentine population in the early 20th century. With the disruption of international capital markets during WWI Argentina was forced to finance its capital formation from the meager rates of domestic savings, resulting in lower rates of capital formation and economic growth.

The Gallman/David study provides us with a somewhat different perspective on capital formation in Argentina in the 19th and early 20th centuries. Argentina had the least developed financial markets of any of the frontier economies. Private and public mortgage banks mobilized a significant amount of mortgage credit; and commercial banks financed a growing volume of commercial credit. However, for long term financing needs commercial and industrial companies relied almost entirely on self finance from retained earlnings and the informal financial market. The Argentine government played a minor role as a financial intermediary in this period. The Argentine capital market was least successful in mobilizing domestic savings to finance capital formation, and more than any other frontier economy Argentina was dependent on foreign savings to finance a significant share of total capital formation.

Like the other frontier economies Argentina experienced acceleration in rates of capital formation in the 19th century linked to the construction of railways and other capital intensive infrastructure investments. The period also witnessed rising capital output ratios across a broad industrial spectrum in these countries. Given the primitive nature of the domestic capital markets in frontier economies, and especially in Argentina, foreign investors found profitable opportunities investing in these countries. The major source of foreign investment in Argentina was the British capital market. There were several surges in British capital flows to Argentina, with peak flows occurring about the turn of the century. Most of the British capital was invested in Argentine railways, that also peaked about the turn of the century. The Argentine government financed and operated much of the early railway network. In the 1880's the Argentine government floated a significant amount of loans in the British market to finance this railway construction. Over the following years the Argentine government shifted toward private ownership and operation of the railways. Not surprisingly the British investors financed and owned a large share of the private railways constructed in Argentina. The Gallman David study concludes that the British capital flows into

Argentina and the other frontier economies were determined primarily by investment demand. There is no evidence of an excess supply of loanable funds in the British capital market..

The Gallman David study suggests a different explanation for lower rates of foreign investment in the Argentine economy in the early 20th century. There are several reasons to expect that foreigners willingness to hold the liabilities of frontier economies would tend to fall in the early 20th century. As these countries made the transition from frontier economies to mature economies, changes in industrial structure would tend to result in lower capital output ratios and lower demand for foreign investment. Less capital intensive industries, such as manufacturing, accounted for a larger share of total output, and lower capital output ratios were evident across the industrial spectrum. While Argentina and the frontier economies continued to demand foreign capital in the 20th century, they did not present opportunities for profitable investment comparable to the 19th century. Thus the decline in the rate of net capital flows to the frontier economies in the 20th century, like the rise in the 19th century, is explained primarily by shifts in investment demand.

The disruption in international capital markets caused by WWI changed the source of capital flows to the frontier economies, but it is not clear why this external shock should decrease the rate of long term capital flows to Argentina. Taylor argues that American investors were myopic in failing to recognize profitable investment opportunites in Argentina, compared to their British counterparts in the Pre WWI period. Given the recovery and growth in net capital flows to other frontier economies after WWI, much of it financed by U.S. investors, it is difficult to argue that these investors were myopic regarding investment opportunities in Argentina. Even if American investors were myopic regarding profitable investment opportunities in argentina we would expect that investors from other industrialized countries would step in and fill the void.

The Gallman/Davis study supports the argument that low rates of savings constrained the rate of capital formation within the Argentine economy. Domestic savings rates in Argentina at about 5% of GDP were the lowest found in any of the frontier economies. Certainly one of the factors contributing to the low savings rate was the high dependencey rate of the Argentine population. A significant negative relationship between domestic savings and the dependency rate has been found in empirical studies for a number of developing countries, including Argentina. As Argentina began to experience the demographic transition in the 20th century, declining dependency rates were accompanied by rising savings rates. But these demographic trends occured over the course of the 20th century; in the early 20th century the age composition of the Argentine population contributed to lower savings rates.

However, empirical studies also reveal that a number of factors other than the dependency rate have significantly influenced savings rates in Argentina as well as other Latin American countries (13). As Gallman and Davis argue, a major factor was the development of modern capital market institutions capable of efficiently performing the function of financial intermediation. The frontier economies introduced a wide range of financial intermediaries that were better able to finance long term investment needs as well as short term financing. Improved financial intermediation had a significant positive impact on domestic rates of savings in these countries. As they were better able to finance their own capital needs they became less dependent on foreign capital, ultimately shifting from net debtor to net creditor status. Without question Argentina lagged in this evolution of modern financial market institutions, nonetheless, Gallman and Davis find that over the course of the 19th and early 20th centuries financial innovations were beginning to transform the Argentine capital markets as they did in other frontier economies. Like the other frontier economies in the 20th century Argentina introduced a wide rage of financial intermediaries that we associate with a modern financial market, including investment banks, insurance companies, and securities markets.

Recent empirical studies are providing better insights into this linkage between financial intermediation and modern economic growth.(14) There are two major channels through which improvements in financial intermediation can affect the rate of economic growth: increases in rates of savings, investment, and capital formation; and increases in the marginal productivity of the capital stock. Improvements in financial intermediation contribute to higher rates of growth primarily through the latter, i.e. increasing the efficiency of capital. This distinction is important in sorting out the controversy over retardation in Argentine growth in the 20th century. The economic history literature has focused on the primitive nature of the Argentine capital market and the low rates of domestic savings in the early 20th century. However, improvements in financial intermediation were contributing to higher rates of economic growth primarily through increases in the productivity of capital, and to a lesser extent through higher rates of domestic savings, investment, and capital formation. Financial intermediaries were beginning to provide the information flows needed to allocate financial resources more efficiently among alternative investments. Private financial markets were also performing the important function of signalling the success and failure of investment options, and allocating loanable funds to more profitable industries and sectors of the economy. New investors were finding it easier to obtain loanable funds within the domestic capital market to finance long term investment projects. Even the enterprises that continued to self finance were finding it easier to accumulate the savings necessary to fund their projects in the more efficient financial institutions emerging in the early 20th century. In the evolution of modern financial markets Argentina lagged the other frontier economies, but there is no reason to expect that Argentina would not have continued to improve the efficiency of financial intermediation in the 20th century. The evolution of a modern capital market eased the constraints on domestic savings and investment, and reduced dependency on foreign investment. We would expect the development path of Argentina to continue to converge with the other frontier economies in the 20th century and ultimately to make the transition from net debtor to net creditor.

Empirical studies also reveal a positive relationship between the growth of income per capita and the domestic savings rate. In other words there is a two way causation from higher savings rates to higher rates of growth in income per capita, and from higher income per captia to higher savings rates.The empirical evidence makes it abundantly clear that the development path of these countries was anything but a stable rate of growth. The early growth of these countries and their transition from frontier economies to a mature economy in the 20th century was marked by long periods of more rapid growth followed by periods of slower growth. There is an extensive literature on long swings and climacterics that explores these characteristics of growth in the industrialized countries. At this point the empirical evidence for Argentina does not permit us to identify long swings or other systematic patterns of long term economic growth; however, the indirect evidence is strongly supportive of this hypothesis. The Newland/Poulson study identifies several periods of more rapid growth in agricultural output and exports in the midnineteenth century. Gallman and Davis identify several episodes of more rapid growth in foreign investment in the late 19th and early 20th century.

From this historical perspective it is not clear that Argentina entered into a period of long run retardation in economic growth in the early 20th century. The somewhat slower pace of economic growth that Taylor and others identify after WWI may simply represent one in a series of more and less rapid growth, but not necessarily a deviation from the long term trend of growth extending back to the mid nineteenth century. Such episodes of slower growth in output and output per capita would have been accompanied by lower rates of domestic savings, investment, and capital formation, in contrast to the higher rates observed at the turn of the century.

A period of slower growth would result in an equilibrium in the balance of payments with a lower current account deficit offset by net capital inflows. A recovery in the trend rate of growth would result in an equilibrium in the balance of payments with higher current account deficits offset by net capital inflows. If slowerArgentine growth in the early 20th century reflected such long swings in growth we would expect a deviation in the long path of development followed by convergence toward that long run path, not long run retardation.

More empirical work needs to be done before we can distinguish long swings or systematic variations from long term trends in Argentine growth. What is clear is that beginning in the 1930's and extending to the present Argentina experienced a retardation in long term growth, that is in contrast to the long term of growth observed in the 19th and early 20th centuries. In recent decades this divergent path of development has shifted Argentina toward a net creditor nation, but not in the same sense as the other frontier economies. In the decade after the debt crises, as Argentina experienced economic stagnation, foreigners were not only unwilling to hold Argentine liabilities, they required Argentina to service the interest and principle payments on outstanding liabilities. Argentina has generated the current account surplusses required to finance this capital account deficit, but only at the cost of negative growth. This is illustrated in graph 3 by the shift toward equilibrium E" in the northwest quadrant of the graph.

The difference between the Argentine economy in the twentieth century and its earlier growth experience is the existence of ubiquitous dirigiste policies that have reduced rates of savings, investment and capital formation, limited productivity advance, and constrained the rate of growth of output far below the long term trend of growth. It is in this period that Argentina experiences retardation and divergence from the path of development of the other frontier economies.

FOOTNOTES

1. Frederick Jackson Turner, "The Significance of the Frontier in American History,"

2. Carlos Newland and Barry W. Poulson, " Purel;y Animal, Pastoral Production and Early Argentine Economic Growth, 1825-1865," mimeo, 1996

3. Barry W. Poulson, Value Added in Manufafcturing Mining and Agriculture in the American Economy From 1809 to 1839, Arno Press, 1975: Robert E. Gallman, "Commodity Output, 1839-1899," in Trends in the American Economy in the Nineteenth Century, Princton Universiy Press, 1960.

4. Lance E. Davis and Robert E. Gallman, "Institutional Invention and Innovation : Foreign Capital Transfers and the Evolution of the domesic Capital Markets in Four Frontier Countries: Argentina, Australia, Canada, and the United States of America, 1865-1914, mimeo. August 9, 1994.

5. Angus Maddison, Phases of Capitalis development, pp. 44-45.

6. Edward Leamer, "Paths of Economic Development in the Three-Factor, n-Good Genreal Equilibrium Model," Journal of Political Economy, 1987, 961-999.

7. The intercepts of the input vectors on the sides of the triangle illustrate the ratio of the factor inputs into each of these industries.

8. Barry W. Poulson, "Economic History and Economic Development: An American Perspective," in Thomas Weiss and Donald Schaefer, eds. Economic Development in Historical Perspective, Stanford University Press, 1993

9. Op. Cit Leamer 1987.

10. C. Diaz Alejandro, Essays on the Economic History of the Argentine Republic, New Haven, Yale University Press, 1970.

11. Allen Taylor, "Tres Fases Del Crecimiento Economico Argentino," Revista de Historia Economica XII, 649-683.

12. See Appendix I

13 For a discussion of this literature see Sebastian Edwards, Crises and reform in Latin America: From Despair to Hope, Oxford University Press, 1995, pp.200-249.

14 For a discusion of this literature see Sebastian Edwrds, Op. Cit. "Crises"; and Ronald Mckinnon, The Order of Liberalization : Financial Control in the transition to a Market Economy, Baltimore Maryland, Johns Hopkins University Press, 1991.

TABLE I

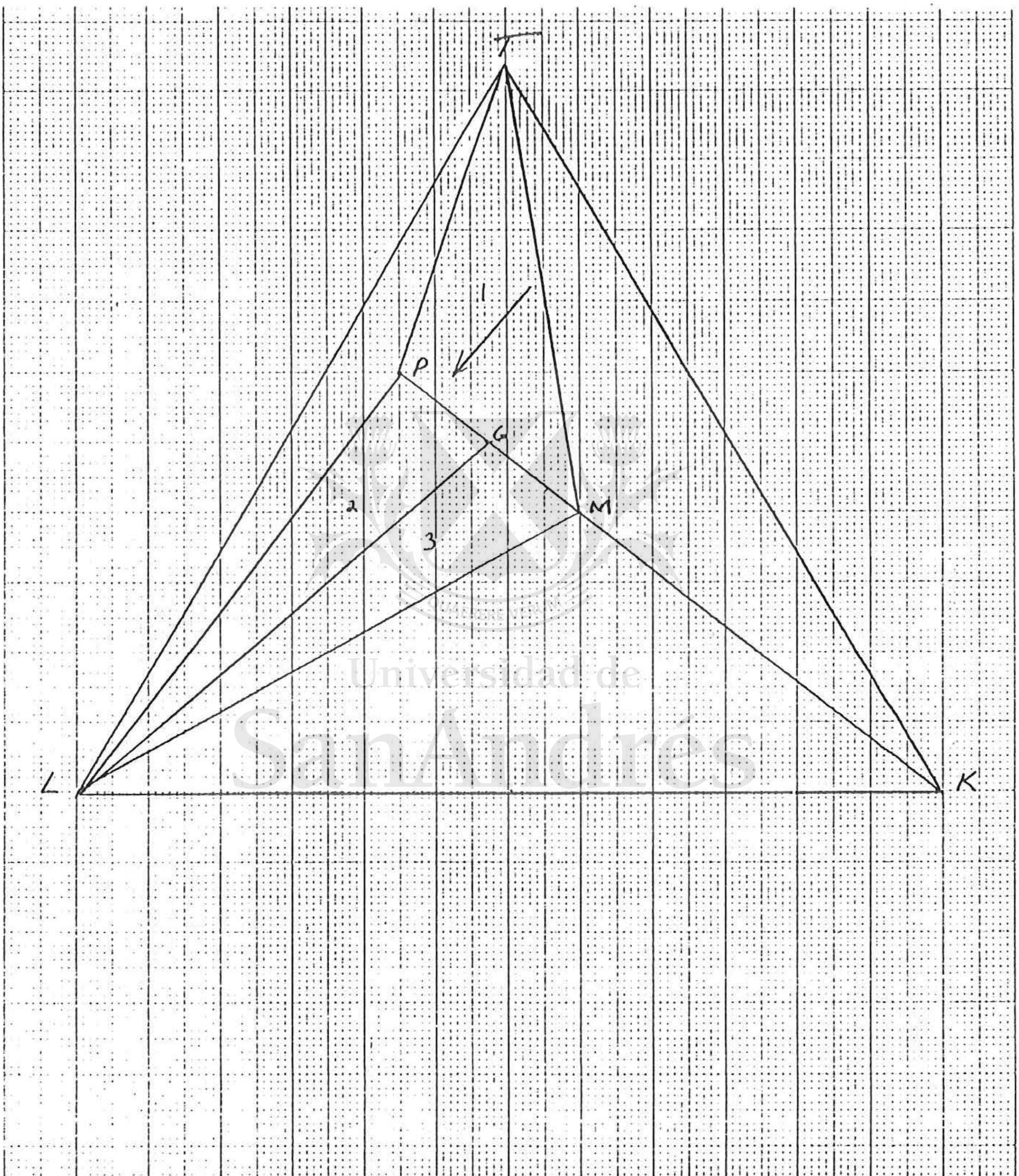
A COMPARISON OF GROWTH IN THE FRONTIER ECONOMIES
(Percent Per Year)

	REAL GROSS OUTPUT	POPULATION	REAL OUTPUT PER CAPITA
ARGENTINA AND THE UNITED STATES IN THE MIDNINETEENTH CENTURY			
ARGENTINA* 1825-1865	5.1	3.1	ND
UNITED STATES 1809-1839	3.9	3.4	.4
1839-1869	4.9	3.3	1.1
ARGENTINA, AUSTRALIA, CANADA, AND THE UNITED STATES: 1870-1914			
ARGENTINA	5.75 ND	3.41 3.81	2.27 3.40
AUSTRALIA	3.19 3.24	2.48 2.55	0.69 0.48
CANADA	3.71 4.64	1.78 1.67	1.90 2.59
UNITED STATES	3.70 4.61	2.09 2.17	1.58 1.90

*Data for Argentina for 1825 to 1865 refers only to agricultural output, no data is available for output per capita

Sources:
United States 1809 to 1839 data from Barry Warren Poulson, Value Added in Manufacturing, Mining, and Agriculture in the American Economy From 1809 to 1839, Arno Press, 1975; 1839 to 1869 data is from Robert E. Gallman, "Commodity Output, 1839-1899," Trends in the American Economy in the Nineteenth Century, Princeton University Press, 1960.
Argentine data for 1925 to 1865 is from Carlos Newland and Barry Poulson, "Purely Animal, Pastoral Production and Early Argentine Growth 1825 -1865, mimeo, 1996.
Data for all the frontier economies from 1870 to 1914 is from Lance E. Davis and Robert E. Gallman, "Institutional Invention and Innovation: Foreign Capital transfers and the Evolution of the Domestic Capital Markets in Four Frontier Countries: Argentina, Australia, Canada, and the United States of America, 1865-1914, mimeo, August 9, 1994.

FIGURE I THE ENDOWMENT TRIANGLE FOR EARLY FRONTIER GROWTH



20 Squares to the Inch

FIGURE II THE ENDOWMENT TRIANGLE FOR THE TRANSITION FROM A FRONTIER ECONOMY TO A MATURE ECONOMY

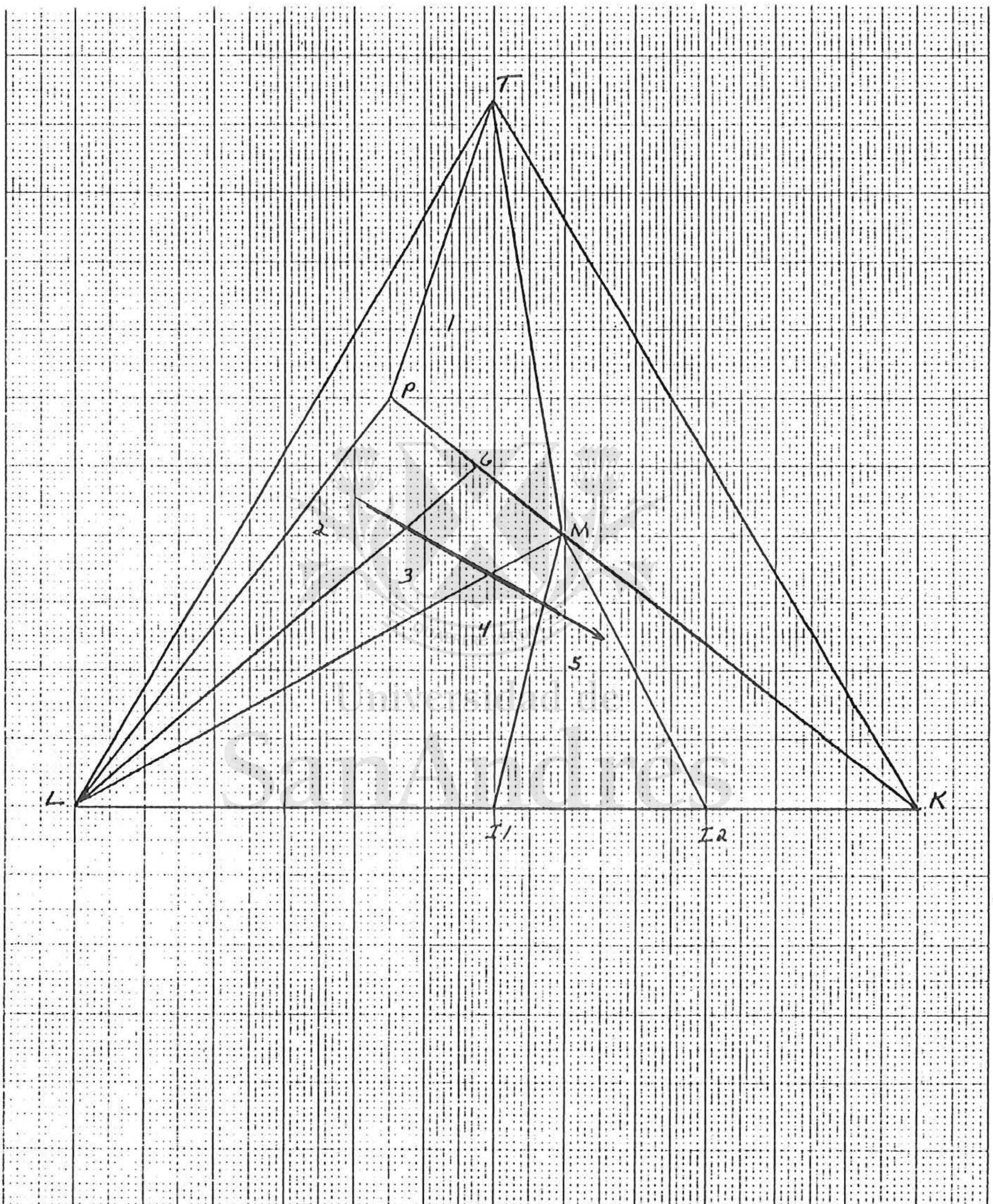
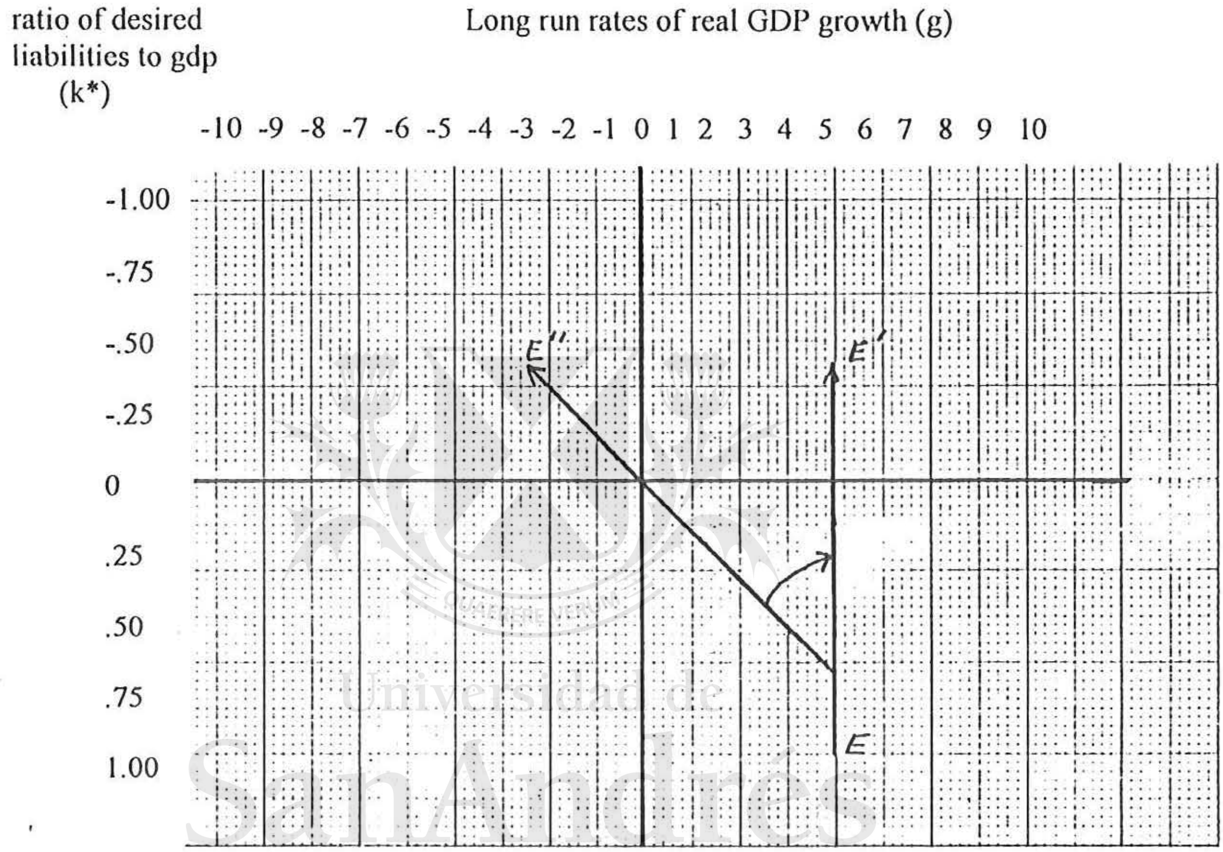


FIGURE III EQUILIBRIUM IN THE BALANCE OF PAYMENTS



APPENDIX

Sebastian Edwards provides the following simple model of balance of payments equilibrium for a frontier economy:

1. $k^* = L/GDP$

where k^* is the equilibrium level of a countries liabilities that foreigners are willing to hold relative to GDP

2. $\Delta L = gL$

where ΔL is the countries capital account surplus, and
g is the long run rate of growth of GDP

3. $\Delta L = \Delta R + C$

where ΔR is the change in reserves and
C is the current account deficit

4. $C = T + rL$

where C the current acount is equal to the trade account deficit T,
Plus the service account which is approximated by the product of the rate of return on liabilities times the stock of liabilities rL

5. $T = (M-X)$

where the trade account deficit Tis equal to total imports M minus total exports X

6. Assume that $\Delta R = 0$
then from 3. $\Delta L = C$
from 2. $\Delta L = gL$
dividing by GDP $\frac{L}{GDP} = \frac{gL}{GDP}$
from 1. $k^* = \frac{L}{GDP}$

7. Therefore substituting $\frac{C}{GDP} = gk^*$

this says that the sustainable current account deficit as a ratio of GDP is equal to desired liabilities to GDP ratio k* times long run GDP growth

8. $\frac{T}{GDP} = (g-r)k^*$

In equilibrium the trade deficit as a ratio of GDP can at most equal the difference between the real rate of growth of GDP minus the real rate of return on the countries liabilities times the desired liabilities to GDP ratio. This estabishes upper limits for the current account and trade account balance in the steady state. Since it is difficult to estimate the desired ratio of liabilities to GDP, the following hypothetical ratios are combined with different rates of growth of GDP:

Ratio of Liabilities to GDP' (In percent)	Long Run Rate of Real GDP Growth (in percent)				
	2	4	5	6	7
0.25	0.005	0.010	0.0125	0.015	0.0175
0.40	0.008	0.016	0.020	0.024	0.028
0.50	0.010	0.020	0.025	0.030	0.035
0.75	0.015	0.030	0.0375	0.045	0.0525
1.00	0.020	0.040	0.050	0.060	0.070

Source: Sebastian Edwards, Crises and Reform in Latin America: From Despair to Hope, Oxford University Press, 1995. Appendix 9-1.