The Demographic Determinants of Savings, Investment, and Foreign Capital Dependence: An Inquiry into Latin America, 1960-2000

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Abstract

Latin America has been reliant upon inflows of foreign capital to finance investment for several decades and has suffered declines in output when lenders in the developed core are unwilling or unable to finance savings shortfalls in the region. This paper argues that much of the chronic need for foreign capital can be explained by demographics – the region as a whole has been burdened by large youth cohorts relative to those of working age, which depresses national savings rates and promotes current account deficits. As the region demographically matures and dependent youths become saving workers, Latin America could shift from being chronically in need of foreign capital to consistently producing surplus financial capital.

Acknowledgements

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I. Introduction

Over the past four decades, Latin America has been dependent on foreign capital inflows to meet investment needs and to service existing debt in the absence of sufficient domestic savings. Latin America during the same period has begun to experience a shift from a population structure dominated by the dependent young to one where those of working age considerably outnumber the non-working young and elderly. Though the ratio of the dependent young relative to those of working age[1] peaked in the mid-1960s to mid-1970s, Latin America is expected to experience further dramatic declines in youth dependency over the next forty years as well. Is the presence of so many dependent young related to historical Latin American rates of saving, investment, and foreign capital dependence[2]? This work will explore the connection between demographics and savings, investment, and the current account balance in Latin America from 1960 to 2000 through regression analysis and descriptive historical narrative. Further it will demonstrate that population structure changes projected to take place over the next four decades imply that Latin America could reverse from chronic foreign capital dependence to consistent financial capital export.

In the following section, this paper will review the debate in the literature relating to dependency and financial flows and will look at demographic changes in Latin America over the past forty years as well as those projected for the future. In the third section, the focus will turn to the economic and financial history of Latin America in the

[1] Throughout, youth dependency (or D1) refers to the amount of population under the age of 15, relative to those aged 15-64, while elder dependency (or D2) refers to the amount of population aged 65 and older, relative to those aged 15-64.

[2] Foreign capital dependence is defined as persistent reliance on a current account deficit. A negative current account balance implies that investment has exceeded domestic savings, meaning that an inflow of financial capital from abroad has taken place to finance investment. A positive current account balance implies that savings has exceeded investment and an outflow of financial capital has taken place.

wider scope of the world economy with an emphasis on the post-war era to the present; and, in the fourth section, the paper will investigate the usefulness of dependency-based models as a means of describing Latin American savings and investment rates and the current account. This will then serve as a point of departure into a more in-depth investigation of the application of a model for savings and investment – developed by Jeffrey Williamson and Matthew Higgins for Asia – on Latin America from 1960 to 2000. After discussing the implications of this model, this paper will, in section five, examine counterfactual Latin American savings, investment, and current account balance rates implied by the estimators obtained by the Higgins and Williamson model, and descriptively discuss support for and arguments against their predictions, as well as offer thoughts on the future prospects for the region.

II. Demographic Change and Dependency in Latin America

The Demographic Transition

The demographic transition that Latin America is currently undergoing is part of a worldwide shift from societies characterized by high crude birth rates and correspondingly high death rates, with low population growth, to societies ultimately characterized by low birth and death rates, and, again, low population growth. It is the interim that is of interest for this inquiry, whereupon medical advances prolong life spans and reduce death rates while fertility and birth rates remain high – implying a high rate of population growth – and then eventually begin to taper off towards the death rate. The early part of this transition involves the creation of a huge youth cohort, relative to those of working age. These initially dependent youths then grow into productive workers,

reducing the societal youth burden, which has important implications for aggregate savings, investment demand, and output growth.

Latin America is at present moving from peak rates of youth dependence (seen generally in the mid-1960s to 1970s) to considerably smaller youth cohorts relative to those of working age, without in most cases a commensurate increase in the elderly burden. From their peak years to the year 2002, most Latin American countries have seen falls in youth dependency on the order of 50% of the D1 burden with only minimal increases in the D2 ratio (see Table 1). Based upon United Nations population projections released in 2000, the D1 burden for most countries is expected to fall even further in the next 35 years, with again slight, though larger, increases in the elderly burden. This maturing demographic profile, towards an age structure dominated by the working-age cohort, and its implications for savings, investment, and the current account are what motivate this inquiry.

Dependency Theory: A Review

The origins of the notion that population structure may impact aggregate savings and consumption lie in the application of 'life-cycle' microeconomic concepts onto national macroeconomic data, a technique popularized first by Franco Modigliani (1957). In this framework, consumption ('dis-saving') as a dependent youth or elder is financed by drawing down on the savings generated while working. Savings peaks in mid-life, and the graphical result is a 'hump-shaped' lifetime savings curve. Ansley Coale and Edgar Hoover (1958) argued later that a boom in the youth population share in developing Asia would as a result depress private savings rates across the region in favor of consumption. Nathaniel Leff (1969) tested this premise using aggregate national

Table 1.

Peak years for youth dependency and recent years

Country		*Youth*	*Elderly*	*ΔYouth*	*ΔElderly*
Argentina	1985	51.24	14.06	-6.23	2.06
	2002	45.01	16.12		
Bolivia	1975	80.45	6.40	-12.39	1.27
	2002	68.05	7.67		
Brazil	1965	82.69	6.60	-40.85	1.34
	2002	41.84	7.94		
Chile	1965	72.69	9.03	-30.79	2.15
	2002	41.90	11.18		
Colombia	1965	93.32	6.40	-42.84	1.13
	2002	50.48	7.53		
Costa Rica	1965	97.41	6.40	-49.60	2.62
	2002	47.81	9.02		
Dom	1965	96.01	6.05	-44.52	1.07
Republic	2002	51.49	7.12		
Ecuador	1965	87.74	8.79	-34.24	-1.01
	2002	53.50	7.78		
El Salv	1965	91.81	5.17	-33.59	3.12
	2002	58.23	8.28		
Guatemala	1985	91.38	5.86	-11.50	0.62
	2002	79.88	6.48		
Haiti	1989	84.46	7.44	-14.94	-1.31
	2002	69.52	6.13		
Honduras	1970	97.59	5.00	-23.59	1.05
	2002	74.01	6.05		
Jamaica	1970	98.99	11.72	-51.10	-0.71
	2002	47.88	11.02		
Mexico	1970	94.36	8.65	-41.25	-0.43
	2002	53.11	8.22		
Nicaragua	1965	100.30	4.88	-25.47	0.65
	2002	74.83	5.53		
Panama	1970	84.85	8.20	-37.19	0.75
	2002	47.65	8.96		
Paraguay	1965	95.74	12.62	-28.49	-6.50
	2002	67.25	6.12		
Peru	1965	84.30	6.64	-32.57	1.20
	2002	51.72	7.85		
Uruguay	1966	44.19	13.34	-5.17	6.74
	2002	39.02	20.08		
Venezuela	1965	91.08	5.25	-38.28	1.96
	2002	52.80	7.21		

Recent and projected dependency

Country		*Youth*	*Elderly*	*ΔYouth*	*ΔElderly*
Argentina	2002	45.01	16.12	-13.00	6.87
	2040	32.01	22.99		
Bolivia	2002	68.05	7.67	-33.28	5.71
	2040	34.77	13.38		
Brazil	2002	41.84	7.94	-10.20	15.01
	2040	31.64	22.95		
Chile	2002	41.90	11.18	-9.64	15.69
	2040	32.26	26.87		
Colombia	2002	50.48	7.53	-17.61	13.71
	2040	32.87	21.24		
Costa Rica	2002	47.81	9.02	-15.15	12.82
	2040	32.66	21.84		
Dom	2002	51.49	7.12	-17.74	12.59
Republic	2040	33.75	19.71		
Ecuador	2002	53.50	7.78	-21.45	11.96
	2040	32.05	19.74		
El Salv	2002	58.23	8.28	-25.15	9.27
	2040	33.08	17.55		
Guatemala	2002	79.88	6.48	-42.70	4.03
	2040	37.18	10.51		
Haiti	2002	69.52	6.13	-32.04	4.47
	2040	37.48	10.6		
Honduras	2002	74.01	6.05	-39.17	6.39
	2040	34.84	12.44		
Jamaica	2002	47.88	11.02	-16.44	11.73
	2040	31.44	22.75		
Mexico	2002	53.11	8.22	-21.37	15.31
	2040	31.74	23.53		
Nicaragua	2002	74.83	5.53	-39.54	6.52
	2040	35.29	12.05		
Panama	2002	47.65	8.96	-16.31	15.74
	2040	31.34	24.7		
Paraguay	2002	67.25	6.12	-30.19	7.34
	2040	37.06	13.46		
Peru	2002	51.72	7.85	-19.94	12.11
	2040	31.78	19.96		
Uruguay	2002	39.02	20.08	-7.18	8.00
	2040	31.84	28.08		
Venezuela	2002	52.80	7.21	-20.10	12.51
	2040	32.7	19.72		

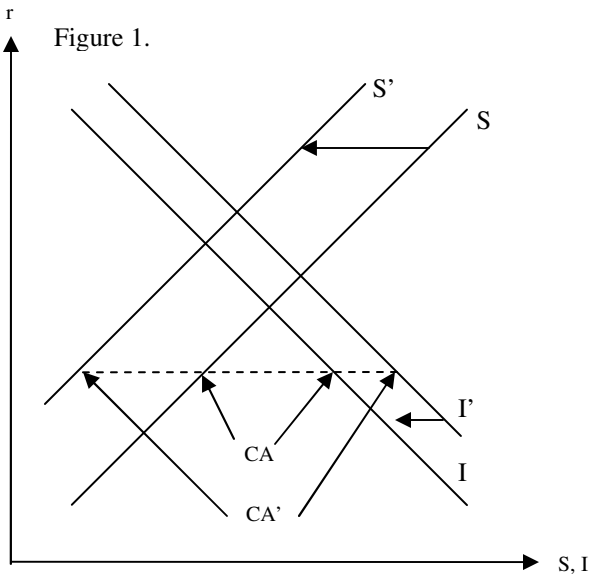
Source for projections: The UN, *World Population Prospects: The 2000 Revision, Volume II: The Sex and Age Distribution of Populations*

savings (considering both public and private savings) and D1 and D2, described above as the ratio of non-working young and elderly to the working-age cohort, hoping to demonstrate a clear inverse relationship between both dependent shares of the population structure and savings. Criticism of his model and formulations over the next decade related to the sensitivity of the model's results to the choice of country sample and the time interval involved, and a series of econometric shortcomings.

The dependency theory received a boon when Maxwell Fry and Andrew Mason (1982) added an additional insight from the 'life-cycle' theory to the debate. The 'life-cycle' model assumes that net lifetime savings, absent any kind of bequest motive, is zero – that is, the household either borrows against or consumes directly all of its working-years savings while young or aged, respectively. Fry and Mason show that this may hold true in a state absent of any economic growth, but in an economy that is growing rapidly younger households may in fact save *more* than older households, due to lower and later consumption relative to older households. This in turn is due to the fact that lifetime income is expected to be much higher than that of the previous generation and consumption declines as a proportion of output in favor of savings across development. The interaction term – the 'variable rate-of-growth effect' – that Fry and Mason offer to the debate, then, is one that captures the interaction of the dependent youth share with the growth rate of aggregate output. Controlling for this combinatory effect then often helps to remove the ambiguity concerning the role of youth dependency in national savings. Since the elucidation of this theoretical and empirical insight, the dependency model for aggregate savings has enjoyed something of an academic rehabilitation.

Less studied, and certainly less debated, is the role that demographics play in aggregate investment. One expects that a society with a boom in the youth cohort will witness an expansion in its needs for infrastructure – for additional hospitals, schools, housing, and eventually capital and infrastructure to equip and employ a considerably enlarged workforce (which, in turn, will require its own housing, etc.). Theory suggests that the expansion of investment demand thus occurs while children are young, and even as they enter the workforce *prior to* any significant savings (in anticipation of retirement). For this reason some commentators have described the 'center of gravity' of demographic accumulation impacts as first affecting investment, and then savings.[3] Conversely, one can expect that the elderly would not only expand both public and private investment, by requiring additional medical care and facilities, but also in a countervailing sense diminish investment demands by leaving work and no longer requiring the mass of capital needed for gainful employment.

Figure 1.



The impact of a D1 boom on the current account under perfect capital markets

In the most simple and abstract form, the implications of these demographic effects on the current account balance (implicitly in an open economy) are apparent, considering that it is defined as the difference

[3] Matthew Higgins and Jeffrey Williamson "Age Structure Dynamics in Asia and Dependence on Foreign Capital," 271

between aggregate savings supply and investment demand. The net impact, then, of a boom in youth dependency should theoretically shift the aggregate savings supply curve to the left (as children's consumption is financed at the expense of savings), and shift investment demand to the right (to shelter and eventually equip these children for work). This would imply that at a given world interest rate and all other things being equal the current account deficit of a net borrower will further deteriorate.

Life cycle theory suggests that an increase in elder dependency should lower aggregate savings for increased consumption (absent a bequest motive) while having an ambiguous or net negative effect on aggregate investment demand. However, the life-cycle assumption that the elderly 'dis-save' in a manner similar to that of dependent children might lack empirical support – the retired might have considerable income from investments and might not have to draw down on their accumulated financial assets to consume.[4] Alternatively, the 'dis-saving' associated with a higher proportion of the elderly could in fact support the notion of a sizable social bequest motive, whereupon younger households actually reduce their savings in anticipation of material wealth bequests from older generations.[5]

Nonetheless theory and some empirical studies suggest that with a demographically aging society the fall in savings exceeds that of the change in investment demand, which then causes a contraction in the amount of the current account surplus, slowing the outflow of capital. Some alarmist commentators cite this last stylized fact, concurrent with demographic aging in the developed world, for dire predictions of looming global capital scarcity and a subsequent global economic slow-

[4] Alan Taylor, "Debt, Dependence, and the Demographic Transition: Latin America into the Next Century," 870
[5] Matthew Higgins, "Demography, National Savings, and International Capital Flows," 351

down. According to Alan Taylor[6], Jeffrey Williamson, and others, however, these predictions fail to take into account that now chronic capital importers – indeed most developing countries to a certain extent – may in the future change demographic make-ups and with them foreign capital needs. The youthful net capital-importing societies of today may then age into the mature net capital-exporting economies of tomorrow.

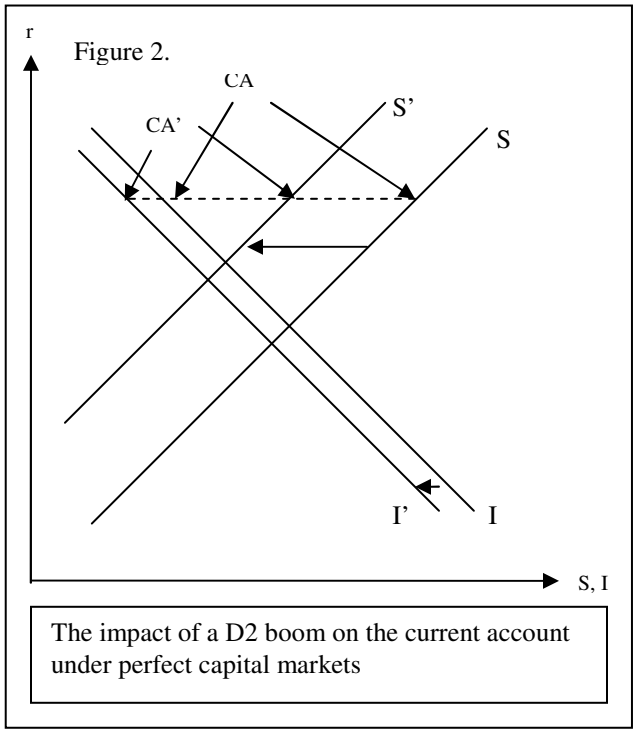


Figure 2.
The impact of a D2 boom on the current account under perfect capital markets

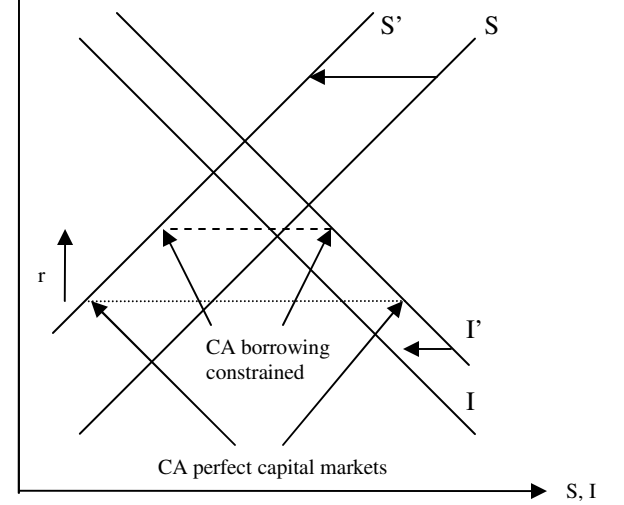
So far the working presumption for these descriptions of demographic influences on capital flows has been that economies are open to trade and factors flow freely across borders. In a closed economy the realized levels of savings and investment are the same autarkic country equilibrium level set by the domestic market-clearing real interest rate. Due to the younger 'center of gravity' for investment demand, an expansion in the youth cohort would cause first an outward shift of this curve, and thus an analysis of the data for a closed economy would demonstrate an observed *positive* (or perhaps indeterminate) correlation between youth dependency and realized savings.[7]

[6] Alan Taylor, "Debt, Dependence, and the Demographic Transition: Latin America into the Next Century," 869-70

[7] Matthew Higgins and Jeffrey Williamson, "Age Structure Dynamics in Asia and Dependence on Foreign Capital," 271

What matters to one who is seeking to elucidate demographic impacts on foreign capital dependence, according to Jeffrey Williamson[8], is whether investment in the economy is constrained by domestic savings, that is, that the economy faces an external borrowing constraint. An economy with a shortfall in national savings relative to investment demand would want a foreign capital inflow to finance accumulation and smooth consumption, but might either not be able to find sources of credit abroad or might face an increasing interest rate based upon the size of the desired inflow, known as a debt-elastic borrowing constraint[9]. The higher interest rate faced on capital inflows would lower investment demand and thus the gap between the realized levels of savings and investment would be narrower than under perfect capital markets. This assumption – qualitively similar to one in which external forces limit credit almost completely – would display features of both the open and closed economy models, and would 'mute' the impact of demographic change relative to what would be observed under perfect capital markets.

Figure 3.



The impact of a D1 boom on the current account with a borrowing constraint and under perfect capital markets

Which of these assumptions about openness and access to foreign capital is appropriate for the Latin American case during this inquiry's period of concern? This

[8] Jeffrey Williamson "Human Capital Deepening, Inequality, and Demographic Events along the Asia Pacific Rim," as quoted in Higgins and Williamson, 271
[9] Martin Uribe, class lecture

issue will be central for understanding the empirical results that follow in sections four and five, and will be tied to the historical narrative hereafter.

III. An Economic History Sketch

The Latin American experience[10] with global capital markets can be understood in terms of three major phases; an early engagement during the fin-de-siecle Golden Age; disengagement, conflict, and autarky following the Great Depression and the Second World War; and a protracted and faltering re-engagement from the late 1970s to the present. This section will review the first phase briefly prior to a more detailed inquiry into the latter two with a focus on the role or absence of foreign capital inflows, which will be applied in turn to the results of this work's empirical inquiry.

From independence in the early 19th century onward, much of Latin America dealt extensively in the free-wheeling London-based global capital market, and received considerable capital inflows to augment export-producing industries and develop infrastructure, resulting in strong though volatile output growth. Sovereign default was nonetheless shockingly common (private defaults less so) – in terms of years spent in sovereign default as a proportion of *total* years from 1820 to 1940, 'responsible' borrowers like Uruguay and Brazil tallied 12% and 17%, respectively, while Honduras and Mexico 'led' the region with 79% and 57%, respectively, with a regional average of 38%.[11] While these defaults had country-specific impacts on the availability or terms of future foreign financing, as is of course to be expected, several episodes of major debt crises during this time motivated by government opportunism (driven both by the growth

[10] This section will draw heavily on two especially helpful resources, one being Alan Taylor's "Foreign Capital in Latin America in the Nineteenth and Twentieth Centuries" and the other a text developed by Martin Uribe and Stephanie Schmitt-Grohé entitled "The Macroeconomics of External Debt" based upon course notes from an international finance class at the University of Chicago School of Business.
[11] Taylor, Alan "Foreign Capital in Latin America in the Nineteenth and Twentieth Centuries," 9

potential evident in the region and by political independence that facilitated sovereign default) "cemented in investors' minds the untrustworthiness of Latin American sovereign borrowers, a reputation that was to expand in the years ahead and which persists even to this day."[12] In a recurring theme, virtually all of foreign capital investment flowed to but a few of the regional economies, and in the Golden Age these were Argentina, Mexico, Brazil, Chile, and Uruguay. Other countries were less engaged with trade, were more chronically in default from the start of inflows, or lacked the political and institutional stability to justify much investment, and became largely excluded from the London market. For those nations that were able to garner financial flows from abroad, the Golden Age was marked by a period of substantial foreign-led investment in primary export production, infrastructure, and industry, with correspondingly high though volatile output growth rates.

The external shocks to the small, open economies brought about by the decline of the core economies into the First World War, and shortly thereafter the Great Depression, provoked not only a dramatic collapse in terms of trade (of more than 50% for some nations), trade volumes, foreign investment, and output but also motivated important policy changes in Latin America that would influence engagement with the global capital market for much of the period with which this empirical inquiry is concerned. The suspension of the gold standard during the First World War, a cessation of virtually all foreign lending, and a corresponding fall in European demand for Latin American exports led to sharp output declines during the period following 1914, until renewed and often speculative inflows returned in the 1920s with a temporary reformation of the global capital market. The economic declines of 1929 shut off even this valve as

[12] Ibid 8

temporary tariffs and trade restrictions enacted the world over became entrenched into a system of global financial autarky, further codified in the restrictions on financial capital in the Bretton Woods system following the Second World War. To Latin American nations this second wave of crises motivated important changes in the way engagement with a larger global market, in either trade or finance, was viewed, as the declines in output were largely attributable to relations with lenders and trading partners in the economic core. The Argentine economist Carlos Diaz Alejandro wrote of this shift in perceptions that "… memories of the 1930s have profoundly influenced the region's attitude toward international trade and finance" until the present day.[13]

The 'reactive' policy changes undertaken in the 1930s were marked by a considerable expansion of the government intervention in economic life, a shift towards import substituting industrialization (ISI) with corresponding restrictions on trade and the foreign exchange, and ubiquitous capital controls. The degree to which these public policy measures were employed, accepted, and deemed successful varied across countries (these were more actively pursued by larger economies or those with stronger governments like Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay, while the Caribbean and poorer, previously capital-market-excluded countries engaged in only relatively limited protectionist measures).[14] These unorthodox 'inward-looking' policies offered a modicum of success (insofar as growth was achieved anew during the late 1930s and 1940s) and were then in the 1950s and 1960s linked to the newly in vogue structuralist theory. Structuralism held that poor peripheral countries would continually face declining terms of trade with respect to the industrialized core due to the primary

[13] As quoted in Alan Taylor, "On the Costs of Inward-Looking Development …" 4
[14] Ibid, 6

nature of their exports and thus continually falter in growth relative to these core nations, a message that resonated with Latin American policymakers and publics following the external shocks and volatility of previous decades.

The application of this sort of interventionist policy in Latin America should not be viewed as fundamentally divergent from the global norm during the postwar period. Despite the intentions of Bretton Woods planners to liberalize global trade while restraining what were of perceived as deleterious financial flows, most nations including those with the most developed economies did not liberalize their current and capital accounts until the 1970s. The qualitative difference between Latin America and the rest of the world is substantially one of the degree and persistence of these inwardly-oriented policies - or as Taylor writes, on the continent "the retreat was sharper and the resurgence slower."[15] The contrast became more apparent in the 1970s and 1980s as the increasingly outwardly-oriented development policies of East Asian countries appeared to be correlated with the impressive rates of growth the region was undergoing, in stark contrast to then still largely autarkic and stagnant Latin America.

Though many restrictive trade and capital controls remained in place until the early 1990s throughout Latin America, the first primary postwar re-engagement between the region and nascent global capital markets took place in the late 1970s (see Table 2). Sovereigns began borrowing anew in roughly 1978 from Western commercial banks looking for higher returns away from the (inflation-prone and Regulation Q deposit interest rate-capped) United States for the influx of petrodollars from clients in the Middle East. The lending boom faltered and then all but ceased completely in 1982 with the Volcker Disinflation in the United States, which drove up interest rates worldwide,

[15] Ibid, 28

Table 2.

Capital Inflows to Latin America by Type, 1978-1995

Billions of U.S. dollars

	Foreign direct investment			*Portfolio investment*			*Loans*			*Total*		
Country	1978-81	1982-89	1990-95	1978-81	1982-89	1990-95	1978-81	1982-89	1990-95	1978-81	1982-89	1990-95
Latin America	5.2	5.4	16.3	1.5	-0.5	35.6	28.3	-11.2	-6.6	35.0	-6.3	45.3
Argentina	0.5	0.5	3.2	0.4	-0.3	8.0	1.4	-1.5	-4.2	2.3	-1.3	7.0
Brazil	2.2	1.6	2.2	0.3	-0.3	13.8	8.4	-6.4	-5.2	10.9	-5.1	10.8
Chile	0.3	0.5	1.5	0.0	0.0	0.5	2.8	-1.5	1.2	3.1	-1.0	3.2
Colombia	0.2	0.5	1.1	0.0	0.0	0.2	1.0	0.9	0.9	1.2	1.4	2.2
Ecuador	0.1	0.1	0.3	0.0	0.0	0.0	0.9	-1.0	-0.4	1.0	-0.9	-0.1
Mexico	1.8	2.0	6.1	0.4	-0.1	10.3	11.4	-0.6	3.7	13.6	1.3	20.1
Peru	0.1	0.0	1.0	0.0	0.0	0.2	-0.1	-0.5	-0.4	0.0	-0.5	0.8
Venezuela	0.1	0.1	0.9	0.5	0.2	2.7	2.4	-0.6	-2.3	3.0	-0.3	1.3
DC Total	9	13	54	2	2	52	57	9	29	68	24	135

From Bosworth and Collins (1999) p. 167-68

effectively expanding the debt burden on Latin American sovereigns that had placed most of their obligations at a floating rate – a regional average of 65% of total debt. Combined with weaker export prices and a lack of productive investment for much of the inflow (associated with government loan guarantees' giving local bankers the incentive to borrow more from abroad and invest in riskier projects), the subsequent struggles to service the debt or the choice to default effectively eliminated borrowing from abroad anew. Cuts in consumption and investment made in order to generate current account surpluses choked output growth and further domestic macroeconomic mismanagement provoked an upsurge in inflation – averaging more than 130% per annum regionally throughout the 1980s – and political and social turmoil. In sum, these are reasons why the 1980s are convincingly referred to in Latin America as "the lost decade."[16]

A recession in much of the developed world and low U.S. interest rates in the early 1990s led bankers and portfolio investors (with changes in United States law and financial regulation, including Regulation S and Rule 144A, which allowed developing countries to borrow more easily from the United States) to seek higher yields in Latin America, with private and sovereign bonds' replacing bank loans as the preferred manner of capitalization (see Table 3). These renewed and expanded inflows reflected in part the improvement in the fundamentals of the region (for example, lower U.S. interest rates lowered the debt burden of Latin American debtors since most of the overhang was still held at a floating rate) and some regional reforms in trade, fiscal, tax, and financial policy that several (though not all) countries implemented more or less concurrently. This inflow was an example of a positive contagion effect: the reforms embarked upon by Argentina and privatizations undertaken across the formerly ISI-pursuing nations led

[16] Ibid 30; Martin Uribe, class lecture

Table 3.

Net Capital Inflows to Latin America by Type, 1985-1999

Percent of GDP

			Foreign direct investment				
Country	1985-89	1990-94	1995	1996	1997	1998	1999
Argentina	0.76	1.18	1.59	1.96	1.88	1.66	8.09
Brazil	3.10	2.02	3.40	5.06	4.46	2.52	6.45
Colombia	1.47	1.37	0.77	2.87	4.53	2.46	1.17
Mexico	1.20	1.53	3.33	2.76	3.20	2.69	2.46
Peru	0.08	1.79	3.89	5.82	2.88	3.30	3.79
			Portfolio investment				
	1985-89	1990-94	1995	1996	1997	1998	1999
Argentina	-0.74	3.70	0.72	3.61	3.52	2.94	-2.28
Brazil	-0.04	1.25	0.05	1.60	3.15	-1.13	0.19
Colombia	0.13	0.32	1.55	1.71	0.85	1.83	-0.89
Mexico	-0.45	3.42	-3.63	4.20	1.08	-0.32	2.07
Peru	0.00	0.33	0.30	0.32	0.26	-0.61	-0.72
			Loans				
	1985-89	1990-94	1995	1996	1997	1998	1999
Argentina	-1.83	-2.47	-0.54	-1.40	0.30	1.74	-0.36
Brazil	-7.82	4.10	0.24	3.06	2.17	2.97	-7.87
Colombia	1.06	-0.06	2.52	1.99	1.20	0.02	-0.39
Mexico	-1.41	1.50	-3.37	-5.12	0.52	2.04	-0.82
Peru	-3.74	-1.34	1.48	-0.07	6.21	0.14	-1.87
			Total				
	1985-89	1990-94	1995	1996	1997	1998	1999
Argentina	-1.81	2.41	1.77	4.17	5.70	6.34	5.45
Brazil	-4.76	7.37	3.69	9.72	9.78	4.36	-1.23
Colombia	2.66	1.63	4.84	6.57	6.58	4.31	-0.11
Mexico	-0.66	6.45	-3.67	1.84	4.80	4.41	3.71
Peru	-3.66	0.78	5.67	6.07	9.35	2.83	1.20

From Athukorala and Rajapatirana (2003) p. 618

Columns 1985-89 and 1990-94 are annual averages

Includes errors and omissions

interested investors to seek growth in previously ignored, smaller economies. Currency pegs into which the newly liberalized economies entered to assuage inflation were problematic insofar as they created room for speculative attack on the exchange rate, and, as in Tequila crisis in Mexico in 1994, these countries found themselves long on dollar-denominated liabilities, short on reserves, and with few sources of outside financing at even the suggestion of a crisis. A turning point in the region was another virtual cessation of new inflows following the Russian default of 1998, which became, like the Volcker Disinflation, an example of an externally motivated 'sudden stop' of inflows, and over the next three years output and investment rates fell or stagnated to service newly accumulated debt. The Argentine debt crisis and sovereign default of 2001 marked another watershed occasion, whereupon the lack of prudent regulatory supervision and complicity of private and public sector figures in violating creditors' and depositors' property rights underscored the continued risk of investing in the region, as in the last era of significant capital movements.

IV. Modeling Latin American Capital Flows using Demographics

In their study on age structure dynamics and foreign capital dependency, Matthew Higgins and Jeffrey Williamson found that a model of savings and investment rates based on demographics could explain in part the accumulation, foreign capital dependency, and eventual capital export of most Asian countries from 1950 until the early 1990s where substantial early youth burdens became enlarged working and saving cohorts. This section will examine briefly the results obtained by Higgins and Williamson for developing Asia and then more closely analyze those from a structurally slightly variant model applied to Latin America over a similar timeframe.

The Higgins and Williamson model employs a lagged dependent variable term (to control for possible intertemporal persistence in both rates of saving and investment, defined in their model as the prior year's saving or investment rate, denoted LDV) and two variables, Z1 and Z2, that, through a quadratic formulation, describe the entire age distribution, split into four year age-shares. The remainder consists of the canonical variables of aggregate output growth, a Mason-Fry variable rate-of-growth interaction term, and a measure of the relative price of investment (defined in their paper, following Taylor[17], as a purchasing power parity ratio of the price of a bundle of investment goods relative to the price of output[18]).

The model developed herein for Latin America substitutes D1 and D2 for Z1 and Z2 in the interest of ease of obtaining and formulating data both for the past and for future projections, and to be consistent with the bulk of the 'dependency debate' literature. Otherwise, the only other variable modification is to include a per capita output term (constant 1996 PPP dollars), to control for differences in savings behavior to be expected across the development spectrum – a perhaps not unreasonable variable for which to control given the discrepancy in levels of income across Latin American nations. Represented as an equation, the model takes the following form:

$$\ln(S, I / Y) = \beta_0 + \beta_1 LDV + \beta_2 D1 + \beta_3 D2 + \beta_4 Growth + \beta_5 D1 * Growth + \beta_6 GDPpercap + \beta_7 RPI$$

One final procedural difference: Higgins and Williamson use a 'fixed-effects' estimation procedure, allowing for country-specific constant terms while regressing for group-wide estimators using pooled data, while this approach was eschewed due primarily to the limitations of the statistical software (Microsoft Excel) employed for this

[17] Alan Taylor "On the Costs of Inward-Looking Development …" 29
[18] Data from Penn World Tables

paper. The coefficients derived by the Higgins and Williamson model for Asia are shown below:

Figure 4.
Higgins and Williamson (1994)

	Dependent Variable	
Explanatory Variable	S/Y	I/Y
Constant	Allowed to vary across countries	
LDV	0.809**	0.809**
	(40.34)	(40.34)
Z1	.703**	.566**
	(3.40)	(2.77)
Z2	-.046**	-.004*
	(2.87)	(2.52)
GROWTH	-0.04	.238**
	(4.19)	(3.10)
Z1*GROWTH	Not explicitly stated	
RPI	0.005**	0.001
	(2.68)	(0.89)
System-Weighted R^2	0.92	
F-Statistic of Z1, Z2	22.55	9.66
916 observations for S/Y, I/Y		

** = significant at a 1% level, * = significant at a 10% level
Absolute T-Statistics appear in parentheses

While the Z1 and Z2 coefficients are not readily interpretable in the D1/D2 framework, the results do show a statistically significant correlation between the age distribution and both savings and investment rates. Growth appears to correlate closely with investment levels but not with savings rates, and the relative price of investment does not bear relation to the investment rate, which is not consistent with the fairly unproblematic assumption that investment demand curves are downward sloping (or perhaps is an indication that this measure might be problematic when determining investment patterns in developing countries). The coefficients estimated for the Mason-Fry term are not given, which most likely can be explained by the fact that the only coefficient terms relevant for the counterfactual exercises that Higgins and Williamson

subsequently undertook (and which this inquiry will mimic in a sense) are those for the age distribution, Z1 and Z2, and the lagged dependent variable term.

Of note is that Higgins and Williamson inferred from the difference in the values of the coefficients for the Z1 and Z2 terms in the savings and investment regressions that foreign capital imports and exports were, in the Asian case, affected by demographics. Differences in population age structure, they then argue, 'push' and 'pull' capital in Asian economies, with international capital markets' effectively transferring capital intergenerationally, a finding consistent with Taylor and Williamson's historical analysis of capital flows in the 19th century from an aged Europe into the youthful New World economies.[19] Higgins and Williamson do not seek to estimate the demographic impact on the current account balance itself *directly* but rather the impact evident through counterfactual experimentation with changing levels of savings and investment.

As described above, the model employed herein is firmly based on Higgins and Williamson's study, with a few variable and methodological modifications. The initial estimators calculated were those for the complete pooled Latin America and the Caribbean data sample, which consists of twenty countries with annual temporal observations from 1961 (due to the role of the lagged dependent variable) to 2000 (the last available year with Penn World Table data on the relative price of investment).[20] The results for savings and investment share based upon this complete set are below:

Figure 5.
Poliner (2005)

	Dependent Variable	
Explanatory Variable	S/Y	I/Y
Constant	3.442*	1.242
	(2.237)	(0.809)
LDV	0.831**	0.803**

[19] Alan Taylor and Jeffrey Williamson "Capital Flows to the New World as an Intergenerational Transfer,"
[20] See appendix for a full record of observations

	(41.057)	(37.057)
GDPpercap	0.000379**	0.000206**
	(4.307)	(2.669)
D1	-0.0288*	0.013
	(2.255)	(1.056)
D2	-0.114*	-0.067
	(2.055)	(1.267)
GROWTH	-0.313**	0.430**
	(2.605)	(3.731)
D1*GROWTH	0.006**	-0.004*
	(3.629)	(2.404)
RPI	0.160	0.582*
	(0.598)	(2.333)
Adjusted R^2	0.809	0.684
F-Statistic	467.473	237.962

767 observations for S/Y, I/Y

** = significant at a 1% level, * = significant at a 10% level
Absolute T-Statistics appear in parentheses

The results indicate, at best, some correlation between demographics and savings shares, while the link appears to be weaker and not significant above the 90% level for realized investment. While the models appear to explain a good deal of the variance in results, encapsulated in the observed R^2s, it appears that much of this is due to the lagged dependent variable, the growth rate of aggregate output, and the per capita level of income terms. This estimate is confirmed by the associated Beta-weight coefficients in Figure 6, whereby the 'relative importance' of independent variables on the dependent variable is assessed in terms of standard deviations (i.e. a one standard deviation increase in the value of the independent variable increases the value of the dependent variable by the amount of the Beta coefficient in standard deviation terms).

Figure 6.
Poliner (2005)

	Dependent Variable	
Explanatory Variable	S/Y	I/Y
Constant	*3.442**	*1.242*
	--	--
LDV	*0.831***	*0.803***
	0.836	**0.811**
GDPpercap	*0.000379***	*0.000206***
	0.106	**0.078**

D1	*-0.0288**	*0.013*
	-0.06	**0.036**
D2	*-0.114**	*-0.067*
	-.043	**-0.034**
GROWTH	*-0.313***	*0.430***
	-0.199	**0.367**
D1*GROWTH	*0.006***	*-0.004**
	0.300	**-0.270**
RPI	*0.160*	*0.582**
	0.011	**0.054**
Adjusted R^2	0.809	0.684

OLS Coefficients Appear in Italics
Beta Weight Coefficients Appear in Bold
** = significant at a 1% level, * = signficiant at a 10% level

These results for the complete pooled sample might seem to indicate that at least for the period with which this inquiry is concerned that demographic variables 'did not matter' significantly in determining savings and investment rates relative to economic or exogenous financial shocks. Though there are compelling descriptive justifications for these results – such as the aforementioned extensive capital controls, restrictions on trade, investment price distortions, externally imposed borrowing constraints due to risk of default, and even essentially autarky – some demographic impacts might be obscured by this temporally agglomerative approach and the focus on the modeling the savings and investment shares individually.

One change of scope from the Higgins and Williamson inquiry[21] that this work undertook was to regress *directly* on the current account balance (also as a share of output) using the same model. While the use of the current account balance share as a dependent variable might be problematic (due to the fact that it abstracts from realized national levels of savings and investment without consideration for the levels of these)

[21] Motivated in part by a similar regression analysis in Matthew Higgins' "Demography, National Savings, and International Capital Flows"

the results should more clearly demonstrate what impact demographics had on foreign capital dependency in Latin America. The results follow in Figure 7:

Figure 7.
Poliner (2005)

	Dependent Variable
Explanatory Variable	CAB/Y
Constant	2.390
	(1.351)
LDV	0.759**
	(31.526)
GDPpercap	0.000281**
	(2.888)
D1	-0.041**
	(2.717)
D2	-0.062
	(0.971)
GROWTH	-0.747**
	(5.272)
D1*GROWTH	0.009**
	(5.068)
RPI	-0.604*
	(1.960)
Adjusted R^2	0.658
F-Statistic	211.820

767 observations for CAB/Y

** = significant at a 1% level, * = significant at a 10% level
Absolute T-Statistics appear in parentheses

These estimators and their associated Beta-weights indicate that this model has only a marginally lower R^2 than those obtained for savings and investment rates and that the lagged dependent variable remains quite important in explaining the variance of the results. This might serve as evidence that for Latin America during this time the current account was not free to adjust year-on-year, consistent with the historical stylized facts elaborated above.

What is most remarkable though is that one now observes a markedly significant correlation between the youth dependency burden and capital inflows, which is consistent with the observation in the literature and in Higgins and Williamson that 'younger'

economies will be net capital importers if global capital markets allow it. The results also do not imply a significant relationship between elder dependency ratios and foreign capital needs, which could be due at least in part to a lack of a significant elder dependency burden across the region in the data. The estimators indicate a significant correlation between the current account and the economic stalwart variables of growth (positively correlated with a current account deficit), output level, and the Mason-Fry variable rate-of-growth term (interpreted in terms of sign here as a tendency for the current account balance to increase in the presence of a large youth cohort and high growth, which is consistent with the effect one expects on savings). One observes further that the 'relative price of investment' term is negative, leading to an association with current account deficits, which would imply that the countries with the more expensive investment bundles have tendencies toward larger capital inflows. This might in turn imply that these nations need considerably more foreign capital inflow to achieve the same level of real capital goods, due precisely to the fact that these are nominally much more expensive, which might be consistent with decades of capital import restrictions and other trade distortions. A review of the Beta-weight coefficient values further clarifies the explanatory picture:

Figure 8.
Poliner (2005)

Explanatory Variable	Dependent Variable CAB/Y
Constant	*2.390* --
LDV	*0.759*** **0.746**
GDPpercap	*0.000281*** **0.090**
D1	*-0.041*** **-0.096**
D2	*-0.062* **-0.027**

GROWTH	*-0.747***
	-0.539
D1*GROWTH	*0.009***
	0.512
RPI	*-0.604**
	-0.048
Adjusted R^2	0.658

OLS Coefficients Appear in Italics
Beta Weight Coefficients Appear in Bold
** = significant at a 1% level, * = significant at a 10% level

The Beta-weight coefficients confirm the relative significance of youth dependency as correlated with current account deficits, and in absolute standard deviation terms this appears to be on par with the impact of per capita output. Though these pale in comparison to the role of the lagged dependent variable, aggregate output growth, and the variable rate-of-growth term, the Beta-weight result for youth dependency illustrates the role of demographics in determining international capital flows in the historical Latin American experience.

This demonstrable correlation in the cross-country and temporal pooled sample motivated an investigation into the changes in the importance of demographics and the other factors of accumulation during specific time periods. The data were first broken down approximately by decade to view the permutations of regional estimators and associated Beta-weights across time. From there three particular time periods of note in the region were isolated for regression analysis: the beginnings of considerable inflows in the form of loans in the late 1970s; crises, defaults, and repayments in the mid-1980s; and then the renewal of inflows in earnest in the early 1990s. These results and an attempt to reconcile them with the descriptive historical narrative and dependency theory above follow hereafter.

The following tables show the results of regressions run on the larger Latin American sample, divided first by decade (Figures 9 and 10), and then by notable periods (Figures 11 and 12). In the 1961-1979 timeframe it is of note that none of the dependency variables are statistically significant for any of the three dependent variables. This can possibly be understood as resulting from both the autarky of the region during this period – the savings coefficient from 1961-1979 has a positive value, consistent with a closed economy assumption – as well as considerable government intervention in financial and economic life in many Latin American countries. The 1980-1989 sample exhibits a strong negative correlation between both youth and elder dependency and downward pressure on savings and the current account, with little impact on investment. This sample encompasses both the tail-end of major inflows to the region, the crises and defaults of the early 1980s, and the lengthy cessation of new inflows to the afflicted debtors of the region. This sample has been segmented to account for the diversity of experiences within the decade and will be discussed as such shortly. Finally, in the decade up to the year 2000, only youth dependency appears to have a significant and negative correlation with savings and the current account balance.

Breaking down the experience of Latin America with capital markets into smaller time periods, from the rapprochement in the late 1970s to the mid-1990s, clarifies some of the ambiguity relating to the estimators described above. In both the 1978-1981 and 1990-1995 samples (from Figures 11 and 12), which are periods exhibiting marked inflows of foreign capital from abroad, the demographic variables are *not* correlated with the current account balance, meaning significantly that it does appear for these brief periods of capital inflows that external forces had more to do with the attraction of capital

Figure 9.
Poliner (2005)

Explanatory Variable	Dependent Variable, Time 1961-1969 S/Y	1961-1969 I/Y	1961-1969 CAB/Y	1970-1979 S/Y	1970-1979 I/Y	1970-1979 CAB/Y	1980-1989 S/Y	1980-1989 I/Y	1980-1989 CAB/Y	1990-2000 S/Y	1990-2000 I/Y	1990-2000 CAB/Y
Constant	-0.702	-3.008	1.242	4.531	5.982	-1.616	14.338**	4.716	9.786*	7.922*	2.674	6.652*
	(0.304)	(1.425)	(0.565)	(1.181)	(1.497)	(0.412)	(4.167)	(1.365)	(2.302)	(2.521)	(0.966)	(1.925)
LDV	0.877**	0.885**	0.723**	0.555**	0.574**	0.514**	0.696**	0.701**	0.555**	0.864**	0.835**	0.804**
	(30.064)	(32.608)	(13.344)	(9.177)	(8.994)	(7.498)	(14.464)	(13.594)	(8.762)	(25.948)	(22.385)	(21.724)
GDPpercap	0.0003*	0.0002*	0.0003**	0.001**	0.0001**	0.0004*	0.0006**	0.000	0.0006*	0.000	0.000	0.000
	(2.503)	(1.686)	(2.778)	(5.286)	(3.839)	(2.482)	(2.892)	(1.101)	(2.574)	(0.002)	(0.997)	(1.015)
D1	0.012	0.026	-0.014	0.008	0.004	0.002	-0.126**	0.020	-0.159**	-0.074*	0.031	-0.127**
	(0.610)	(1.426)	(0.761)	(0.250)	(0.100)	(0.071)	(4.045)	(0.653)	(3.941)	(2.187)	(1.137)	(3.207)
D2	0.018	0.112	-0.114	-0.146	-0.065	-0.089	-0.422**	-0.114	-0.364*	-0.146	0.001	-0.190
	(0.191)	(1.309)	(1.299)	(1.016)	(0.435)	(0.604)	(3.317)	(0.940)	(2.311)	(1.470)	(0.008)	(1.619)
GROWTH	0.432*	0.419*	0.014	-0.387	-0.209	-0.156	-0.797**	0.777**	-1.442**	-0.097	0.646	-0.760**
	(1.807)	(1.926)	(0.063)	(1.133)	(0.586)	(0.447)	(3.425)	(3.269)	(4.585)	(0.431)	(3.336)	(2.748)
D1*GROWTH	-0.003	-0.002	-0.001	0.006	0.005	-0.001	0.0142**	-0.009*	0.0210**	0.002	-0.008**	0.010*
	(1.196)	(0.791)	(0.453)	(1.415)	(1.141)	(0.141)	(4.297)	(2.600)	(4.718)	(0.703)	(2.781)	(2.572)
RPI	-0.190	0.263	-0.281	-0.918	-0.635	-0.308	0.121	-0.365	0.352	-0.109	-0.607**	0.697
	(0.524)	(0.798)	(0.812)	(1.290)	(0.856)	(0.424)	(0.358)	(1.047)	(0.787)	(0.174)	(1.142)	(0.906)
Adjusted R^2	0.920	0.901	0.709	0.687	0.549	0.337	0.788	0.553	0.549	0.851	0.724	0.802
F -Statistic	264.019	208.173	56.573	60.065	33.707	14.640	106.353	36.033	35.480	177.606	82.273	126.602
Observations:	161	161	161	189	189	189	199	199	199	218	218	218

** = significant at a 1% level, * = signficiant at a 10% level

Absolute T-Statistics appear in parentheses

Figure 10.
Poliner (2005)

Explanatory Variable	Dependent Variable, Time 1961-1969 S/Y	1961-1969 I/Y	1961-1969 CAB/Y	1970-1979 S/Y	1970-1979 I/Y	1970-1979 CAB/Y	1980-1989 S/Y	1980-1989 I/Y	1980-1989 CAB/Y	1990-2000 S/Y	1990-2000 I/Y	1990-2000 CAB/Y
Constant	-0.702	-3.008	1.242	4.531	5.982	-1.616	14.338**	4.716	9.786*	7.922*	2.674	6.652*
	(0.304)	(1.425)	(0.565)	(1.181)	(1.497)	(0.412)	(4.167)	(1.365)	(2.302)	(2.521)	(0.966)	(1.925)
LDV	0.877**	0.885**	0.723**	0.555**	0.574**	0.514**	0.696**	0.701**	0.555**	0.864**	0.835**	0.804**
	(30.064)	(32.608)	(13.344)	(9.177)	(8.994)	(7.498)	(14.464)	(13.594)	(8.762)	(25.948)	(22.385)	(21.724)
GDPpercap	0.0003*	0.0002*	0.0003**	0.001**	0.0001**	0.0004*	0.0006**	0.000	0.0006*	0.000	0.000	0.000
	(2.503)	(1.686)	(2.778)	(5.286)	(3.839)	(2.482)	(2.892)	(1.101)	(2.574)	(0.002)	(0.997)	(1.015)
D1	0.012	0.026	-0.014	0.008	0.004	0.002	-0.126**	0.020	-0.159**	-0.074*	0.031	-0.127**
	0.023	**0.060**	**-0.055**	**0.018**	**0.009**	**0.007**	**-0.230**	**0.053**	**-0.319**	**-0.113**	**0.074**	**-0.182**
D2	0.018	0.112	-0.114	-0.146	-0.065	-0.089	-0.422**	-0.114	-0.364*	-0.146	0.001	-0.190
	0.006	**0.043**	**-0.073**	**-0.057**	**-0.029**	**-0.050**	**-0.172**	**-0.067**	**-0.163**	**-0.057**	**0.000**	**-0.069**
GROWTH	0.432*	0.419*	0.014	-0.387	-0.209	-0.156	-0.797**	0.777**	-1.442**	-0.097	0.646	-0.760**
	(1.807)	(1.926)	(0.063)	(1.133)	(0.586)	(0.447)	(3.425)	(3.269)	(4.585)	(0.431)	(3.336)	(2.748)
D1*GROWTH	-0.003	-0.002	-0.001	0.006	0.005	-0.001	0.0142**	-0.009*	0.0210**	0.002	-0.008**	0.010*
	(1.196)	(0.791)	(0.453)	(1.415)	(1.141)	(0.141)	(4.297)	(2.600)	(4.718)	(0.703)	(2.781)	(2.572)
RPI	-0.190	0.263	-0.281	-0.918	-0.635	-0.308	0.121	-0.365	0.352	-0.109	-0.607**	0.697
	(0.524)	(0.798)	(0.812)	(1.290)	(0.856)	(0.424)	(0.358)	(1.047)	(0.787)	(0.174)	(1.142)	(0.906)
Adjusted R^2	0.920	0.901	0.709	0.687	0.549	0.337	0.788	0.553	0.549	0.851	0.724	0.802
F -Statistic	264.019	208.173	56.573	60.065	33.707	14.640	106.353	36.033	35.480	177.606	82.273	126.602
Observations:	161	161	161	189	189	189	199	199	199	218	218	218

** = significant at a 1% level, * = signficiant at a 10% level

Absolute T-Statistics appear in parentheses

Beta Weight Coefficients appear in Bold

Figure 11.
Poliner (2005)

Explanatory Variable	1978-1981 CAB/Y	1982-1989 CAB/Y	1990-1995 CAB/Y
Constant	-7.794	5.126	5.158
	(0.936)	(1.124)	(1.048)
LDV	0.388**	0.571**	0.770**
	(3.273)	(7.916)	(14.509)
GDPpercap	0.0008*	0.0007**	0.000
	(2.263)	(2.769)	(0.645)
D1	0.012	-0.115**	-0.110*
	(0.147)	(2.619)	(2.116)
D2	-0.176	-0.241	-0.129
	(0.590)	(1.446)	(0.895)
GROWTH	0.104	-1.529**	-0.547*
	(0.177)	(4.701)	(1.662)
D1*GROWTH	-0.004	0.024**	0.006
	(0.612)	(4.993)	(1.295)
RPI	1.468	0.547	0.833
	(0.681)	(1.266)	(0.825)
Adjusted R^2	0.254	0.604	0.789
F -Statistic	4.704	35.626	64.635
Observations:	77	160	120

** = significant at a 1% level, * = signficiant at a 10% level
Absolute T-Statistics appear in parentheses

Figure 12.

Explanatory Variable	1978-1981 CAB/Y	1982-1989 CAB/Y	1990-1995 CAB/Y
Constant	*-7.794*	*5.126*	*5.158*
	--	--	--
LDV	*0.388***	*0.571***	*0.770***
	0.349	**0.534**	**0.795**
GDPpercap	*0.0008**	*0.0007***	*0.000*
	0.310	**0.195**	**0.047**
D1	*0.012*	*-0.115***	*-0.110**
	0.028	**-0.226**	**-0.181**
D2	*-0.176*	*-0.241*	*-0.129*
	-0.092	**-0.107**	**-0.052**
GROWTH	*0.104*	*-1.529***	*-0.547**
	0.103	**-1.072**	**-0.396**
D1*GROWTH	*-0.004*	*0.024***	*0.006*
	-0.357	**1.136**	**0.310**
RPI	*1.468*	*0.547*	*0.833*
	0.072	**0.066**	**0.036**
Adjusted R^2	0.254	0.604	0.789
Observations:	77	160	120

OLS Coefficients Appear in Italics
Beta Weight Coefficients appear in Bold
** = significant at a 1% level, * = signficiant at a 10% level

to the region than the continent's youth-burdened demographic profile. This was also observed by Higgins in Williamson in Malaysia, Thailand, and other developing East Asian tigers, where 'vigorous investment booms' dominated demographic changes expected to reduce foreign capital dependency.[22] Between these two periods, during the years of crisis and repayment, 1982-1989, youth dependency prevalence does appear to explain in part the tendency for current account deterioration. Perhaps part of the explanation for this result is that many of the countries that attracted the highest inflows in the investment boom in absolute terms and subsequently developed debt crises – Argentina, Brazil, Colombia, Mexico – were then cut off from credit and ran current account surpluses to repay creditors while smaller, less debt-exposed economies with more burdened demographic profiles were still able to run current account deficits (though small in dollar terms, significant in as a share of GDP) to finance savings shortfalls through the 1980s, and thus the evident correlation.

Another perspective on demographic impacts, beyond the coefficients derived from our model and their associated Beta-weights might be instructive. The 'demographic effect' or direct influence of demographics absent other factors on the current account balance is illustrated in Table 4. Decade-based mean values for youth and elder dependency and the current account (along with entire sample means for the demographic variables) are used to estimate this figure[23], which demonstrates that favorable changes in demographic variables appear to be pushing most Latin American economies toward current account surpluses. A table in the section to follow will

[22] Higgins and Williamson, p. 279
[23] The methodology employed here can be found in the Appendix.

Table 4. Past Demographic Effects

Country		Avg. D1	Avg. D2	Avg. CAB/Y	D1*	D2*	Demographic Effect
Argentina	1961-69	47.38	9.79	0.29	48.13	12.88	0.923
	1970-79	46.88	11.91	1.16			0.462
	1980-89	50.64	13.94	2.42			-0.700
	1990-00	47.58	15.33	-0.72			-0.538
Bolivia	1961-69	79.71	6.28	0.00	76.67	6.70	-0.410
	1970-79	80.03	6.43	-1.99			-0.504
	1980-89	77.55	6.52	-1.32			-0.103
	1990-00	73.13	7.08	-7.35			0.506
Brazil	1961-69	81.36	6.52	0.19	65.77	6.99	-2.530
	1970-79	72.81	6.93	-2.11			-1.181
	1980-89	61.98	7.01	2.40			0.642
	1990-00	50.07	7.43	-0.53			2.559
Chile	1961-69	71.59	8.94	-0.26	57.32	9.46	-2.294
	1970-79	63.92	9.18	-1.06			-1.051
	1980-89	50.63	9.28	0.52			1.186
	1990-00	45.74	10.30	0.26			1.754
Colombia	1961-69	92.15	6.40	-0.64	73.49	6.89	-3.049
	1970-79	82.48	6.76	0.72			-1.498
	1980-89	66.50	6.92	0.82			1.180
	1990-00	56.39	7.37	-1.30			2.784
Costa Rica	1961-69	95.59	6.39	-5.11	72.82	6.81	-3.766
	1970-79	79.39	6.26	-8.26			-0.978
	1980-89	63.72	6.59	-2.36			1.604
	1990-00	56.48	7.84	-2.85			2.513
Dominican Republic	1961-69	95.08	6.01	-4.74	77.72	5.97	-2.962
	1970-79	87.87	5.83	-6.23			-1.690
	1980-89	71.13	5.63	-7.71			1.210
	1990-00	60.29	6.38	-7.32			2.859
Ecuador	1961-69	86.53	8.73	-4.14	76.17	7.81	-1.998
	1970-79	83.99	7.86	-3.86			-1.342
	1980-89	75.31	7.37	-2.64			0.263
	1990-00	61.38	7.42	1.03			2.616
El Salvador	1961-69	91.25	5.20	-2.19	81.39	6.55	-1.330
	1970-79	89.09	5.83	-2.73			-1.123
	1980-89	82.12	6.94	-5.99			-0.223
	1990-00	65.67	7.96	-13.81			2.312
Guatemala	1961-69	90.46	5.37	-1.68	89.18	5.84	-0.099
	1970-79	89.07	5.51	-2.27			0.103
	1980-89	90.72	5.86	-3.39			-0.269
	1990-00	86.82	6.49	-6.74			0.232
Haiti	1961-69	73.91	8.91	-3.65	80.32	8.22	0.912
	1970-79	75.96	8.41	-6.89			0.691
	1980-89	81.12	7.75	-10.25			-0.017
	1990-00	79.80	6.89	-13.83			0.429
Honduras	1961-69	94.65	4.76	-1.25	90.84	5.32	-0.503
	1970-79	96.68	5.18	-4.63			-0.954
	1980-89	91.05	5.41	-4.96			-0.059
	1990-00	82.24	5.84	-8.18			1.332
Jamaica	1961-69	86.10	10.17	-2.63	74.48	11.79	-1.560
	1970-79	90.93	11.95	-5.48			-2.839
	1980-89	67.44	12.60	-5.20			0.989
	1990-00	56.43	12.23	-8.24			2.957
Mexico	1961-69	92.44	9.01	-1.91	80.37	7.83	-2.356
	1970-79	92.88	8.11	-1.28			-2.200
	1980-89	79.01	7.04	3.41			0.434
	1990-00	60.36	7.33	-1.72			3.533
Nicaragua	1961-69	99.15	4.91	-3.54	93.83	5.21	-0.826
	1970-79	97.29	5.02	-1.82			-0.539
	1980-89	94.78	5.26	-16.22			-0.176
	1990-00	85.46	5.59	-34.58			1.326
Panama	1961-69	--	--	--	59.40	8.42	--
	1970-79	--	--	--			--
	1980-89	66.42	8.26	4.70			-1.153
	1990-00	54.32	8.55	-1.65			0.832
Paraguay	1961-69	92.82	12.27	-2.54	81.70	8.92	-2.753
	1970-79	85.24	10.03	-2.64			-0.888
	1980-89	78.09	7.67	-5.61			0.936
	1990-00	72.68	6.29	-13.34			2.210
Peru	1961-69	83.53	6.59	-2.12	73.64	6.82	-1.624
	1970-79	81.14	6.63	-2.60			-1.226
	1980-89	72.12	6.69	0.03			0.293
	1990-00	60.11	7.31	-3.20			2.176
Uruguay	1961-69	44.02	13.24	1.77	42.68	16.48	0.605
	1970-79	43.92	15.23	-1.69			0.110
	1980-89	42.79	17.42	1.91			-0.260
	1990-00	40.34	19.42	0.44			-0.358
Venezuela	1961-69	89.91	5.26	9.93	74.49	5.97	-2.440
	1970-79	81.48	5.80	3.38			-1.145
	1980-89	69.03	5.96	4.36			0.933
	1990-00	60.48	6.73	6.68			2.188

incorporate this estimation to project both future foreign capital dependency and the associated future demographic effects.

In evaluating the strengths and weaknesses of modeling savings and foreign capital dependency with demographics much of the story might be explained by lending credence to the notion that Latin America was in one or several ways, for most of the period with which this paper is concerned, borrowing constrained. The capital inflows to Latin America during this time were largely determined by 'external factors' that were driven by developments in the core economies rather than by demographically-induced need. Descriptive evidence would suggest that Latin America faced a debt-elastic borrowing constraint when foreign capital was willing to partially fill domestic savings shortfalls, which as described above had the effect of reducing investment and limiting the size of the current account deficit. This borrowing constraint (and reliance upon circumstance in the developed core) then severely restricted the amount of foreign capital allowed to smooth consumption across time and increase realized capital accumulation beyond what domestic savings would allow. With savings demographically squeezed to a low level the stock of capital accumulated more slowly than if foreign capital had been able or willing to fund more investment. The data seem then to illustrate that favorable demographic changes were to a certain extent subsumed within the larger macroeconomic nexus by an amalgam of poor public policy, sensitivity of capital inflows to sudden stop led by developments in the core developed economies, and by a borrowing constraint wrought by a long legacy of defaulting on external obligations. If this explanation of the demographic determinants of accumulation in the past is to be believed, what are the implications for the future?

V. Future Possibilities

What might Latin American savings and investment rates and current account balances look like in the future? To provide a possible interpretation, this inquiry turned to counterfactual estimation using the United Nations demographic projections presented in section two above and the estimators derived for savings, investment, and the current account balance for the pooled 1961-2000 sample.[24] These counterfactual estimates, it should be noted, vary based upon the base year employed as a point of reference to the future demographic make-up. Accordingly, two 'early' reference years, 1989 (the year chosen by Alan Taylor for a similar counterfactual estimate based upon a model of Latin American aggregate demand) and 2002 (the most recent year available in the adapted WDI dataset used herein) were chosen. The counterfactuals were computed in two similar manners: one based upon demographically ascribed changes in savings and investment (Tables 5 and 6, following the Appendix), the other on the current account balance share directly (Tables 7 and 8, following the Appendix). The counterfactuals further assume, perhaps unreasonably, a 2% annual aggregate output growth rate until 2040 in the interest of calculating a dollar value for the computed hypothetical current account balances as a share of GDP.

Both processes of estimation unsurprisingly yield comparable results. The variation is attributable to the choice of base year reference, as one would expect with the counterfactual determined by the same coefficients and future reference year in both instances.[25] The estimates show that Latin America in the future should become a large

[24] The methodology employed here can be found in the Appendix.
[25] It follows, then, that the earlier the base reference year chosen, the higher the change in the current account balance reversal. This insight might limit the usefulness of exploring these counterfactuals too deeply.

capital exporter, with dollar values alternatively on par with or above those in Taylor's results (it should further be qualified that his future projections were for 2025, not 2040) – more than $40 billion (1996 PPP dollars), or up to more than $200 billion, per annum in financial capital exports. In the complementary projection of the demographic effect on the current account (Table 9), the results illustrate a strong upward pressure on the current account balance in 2040, with the possible exceptions of the demographically OECD-like Argentina, Chile, and Uruguay.

How plausible is this considerable reversal, from foreign capital dependence to strong capital export? A few important caveats should be stated after the above explanation of future prospects for capital export. First, coefficients derived from a borrowing-constrained, or sudden-stop prone, demographically young past, even though statistically significant may be of limited usefulness in projecting savings and the current account into a presumably demographically working age future. Put another way, the magnitude of demographically driven current account surpluses might be poorly estimated by data from a borrowing-constrained past where demographic changes were 'muted' by outside events and policy choice. Moreover due to a lack of significant elder dependency samples in the data, one may know even less about the role that even small changes in this dependent group will actually have on foreign capital dependency in Latin America.

While the demographic projections made by the United Nations might not be unassailable they are widely regarded as the standard reference. Should Latin America not demographically mature in the manner assumed above, from, for example, strong working-age cohort emigration, outcomes could be widely divergent. In terms of

economic developments, both Latin America and the rest of the world must remain open to financial capital flows for the scenario described above to take place. A more likely problem in Latin America, however, might be the inability of a financial service sector to develop across the continent to allow the workforce to save and subsequently reinvest those deposits in profitable investments domestically and then abroad. Some countries, like Argentina and Chile, have well-developed financial sectors, but these have been plagued by cronyism, corruption, and inefficiency, even after the reforms of the early 1990s. Countries lacking this financial service infrastructure are also those that expect to witness the most impressive declines in dependency burdens, which might in turn limit the ability of the region to adequately deploy savings towards investment projections domestically and export financial capital.

And, to reiterate the above, the estimations and counterfactuals developed herein are intended only to provide rough-hewn ranges of values for what demographically-led changes in savings, investment, and the capital account might imply in the future. These are based largely on estimators derived from data in which demographic impacts, this paper contends, were partially subsumed by external or countervailing economic forces as one would expect in an alternatively autarkic or borrowing-constrained economy. This section has described in depth only one possible scenario, albeit a plausible one, but by no means the only reasonable possibility.

VI. Conclusion

Latin America has begun a shift from a population structure dominated by relatively large dependent youths to one with an enlarged working age population relative to both children and the elderly. Though impressive declines in youth dependency have

taken place since peak years in the 1960s and 1970s, demographic projections suggest that considerable declines are still to come. This inquiry has demonstrated empirically that demographics 'matter' in understanding Latin America's patterns of foreign capital dependence. Specifically, this work shows that dependency theory notions about shrinking youth dependency ratios – that they should entail higher rates of saving and less dependence on foreign capital – largely hold for Latin America from 1960 to 2000. The descriptive narrative has attempted to reconcile the historical experience – of limited global capital markets, regional persistence of autarkic policy, hesitance in the core developed economies to lend to the region, debt crises, and re-engagement – over the past four decades with what theory suggests and regression analysis offers to provide a more nuanced picture of change over time in the region. Counterfactuals, though not an ideal tool for future estimation, convincingly show that the demographic shifts projected for the next several decades could reverse Latin America's tendency for persistent current account deficits towards one of consistent current account surplus. The financial capital exported by the region could in turn become an important source of liquidity for the global economy as the now developed world ages.

Appendix

Countries Included, and (Years of Sample Exclusion due to Incomplete Data):

Argentina	Haiti
Bolivia, (1961-1969)	Honduras
Brazil	Jamaica
Chile	Mexico
Colombia	Nicaragua
Costa Rica	Panama, (1961-1979)
Dominican Republic	Paraguay
Ecuador	Peru
El Salvador	Uruguay
Guatemala	Venezuela

Note: From a modified version of the World Development Indicators, arranged by Robert Schmidt and provided by Allen Kelley for Economics 219 Underdeveloped Areas.

Calculation of Counterfactual Change:

$$\Delta(S, I, CAB/Y)_t = \frac{\beta_{D1}(D1_{i,2040} - D1_{i,1989})}{1-\beta_{LDV}} + \frac{\beta_{D2}(D2_{i,2040} - D2_{i,1989})}{1-\beta_{LDV}}$$

Calculation of Demographic Effect:

$$DemographicEffect_{i,t} = \frac{\beta_{D1}(D1_{i,t} - D1^{*}{}_{i})}{1-\beta_{LDV}} + \frac{\beta_{D2}(D2_{i,t} - D2^{*}{}_{i})}{1-\beta_{LDV}}$$

Note: $D1^{*}{}_{i}$ and $D2^{*}{}_{i}$ represent country averages for D1 and D2 from 1961 to 2000.

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Country		Youth	Elderly	(S/Y), 1989	(I/Y), 1989	CAB, 1989	Δ(S/Y)	Δ(I/Y)	(S/Y), 2040	(I/Y), 2040	Est. CAB, 2040	ΔCAB, 1989-2040	$mn Value of 2004 CAB
Argentina	1989	50.722	14.620	21.994	15.515	6.479	-2.46	-4.08	19.54	11.44	8.101	1.622	47,604.90
	2040	32.01	22.99										
Bolivia	1989	75.303	6.532	10.929	11.588	-0.658	2.29	-5.00	13.22	6.59	6.629	7.287	2,797.13
	2040	34.77	13.38										
Brazil	1989	57.839	7.031	27.950	24.758	3.192	-6.27	-7.14	21.68	17.62	4.058	0.866	86,708.65
	2040	31.64	22.95										
Chile	1989	47.560	9.512	29.780	25.149	4.632	-9.10	-6.91	20.68	18.24	2.442	-2.190	6,479.53
	2040	32.26	26.87										
Colombia	1989	61.281	7.114	22.675	18.490	4.185	-4.69	-6.68	17.99	11.81	6.173	1.989	24,377.23
	2040	32.87	21.24										
Costa Rica	1989	61.639	7.001	22.559	26.471	-3.912	-5.07	-6.96	17.49	19.51	-2.027	1.884	-779.19
	2040	32.66	21.84										
Dominican	1989	66.580	5.666	17.417	28.476	-11.058	-3.88	-6.94	13.54	21.54	-7.998	3.060	-6,403.30
Republic	2040	33.75	19.71										
Ecuador	1989	69.695	7.259	17.757	24.677	-6.920	-2.00	-6.73	15.75	17.95	-2.199	4.721	-1,880.20
	2040	32.05	19.74										
El Salvador	1989	75.772	7.530	4.875	15.328	-10.453	0.52	-6.22	5.39	9.11	-3.716	6.736	-1,843.28
	2040	33.08	17.55										
Guatemala	1989	90.518	6.151	8.348	13.515	-5.167	6.15	-5.00	14.50	8.52	5.979	11.145	4,768.37
	2040	37.18	10.51										
Haiti	1989	84.459	7.439	5.396	14.253	-8.857	5.87	-4.17	11.27	10.08	1.186	10.043	264.53
	2040	37.48	10.6										
Honduras	1989	87.883	5.569	13.731	19.141	-5.409	4.40	-5.83	18.14	13.31	4.826	10.236	1,225.77
	2040	34.84	12.44										
Jamaica	1989	61.886	12.730	17.825	26.611	-8.786	-1.57	-5.41	16.25	21.20	-4.943	3.843	-863.66
	2040	31.44	22.75										
Mexico	1989	69.237	6.885	22.878	22.943	-0.065	-4.84	-8.13	18.04	14.81	3.228	3.293	45,612.02
	2040	31.74	23.53										
Nicaragua	1989	92.021	5.444	-5.194	27.461	-32.655	5.21	-5.98	0.02	21.48	-21.460	11.195	-4,067.26
	2040	35.29	12.05										
Panama	1989	60.262	8.322	11.928	6.154	5.774	-6.12	-7.48	5.81	-1.32	7.130	1.356	2,170.94
	2040	31.34	24.7										
Paraguay	1989	76.506	6.857	27.509	23.844	3.665	2.27	-4.84	29.78	19.00	10.777	7.112	4,450.49
	2040	37.06	13.46										
Peru	1989	67.309	6.831	20.831	20.697	0.134	-2.80	-6.81	18.03	13.89	4.138	4.004	8,551.88
	2040	31.78	19.96										
Uruguay	1989	41.947	18.222	17.861	12.066	5.794	-4.93	-4.02	12.93	8.05	4.885	-0.909	2,199.39
	2040	31.84	28.08										
Venezuela	1989	66.109	6.193	25.742	12.705	13.036	-3.43	-6.80	22.31	5.90	16.406	3.370	43,029.66
	2040	32.7	19.72										

Table 5. 1989 - 2040 Counterfactual Capital Export from Savings / Investment Regressors

$264.4 billion in capital exports per annum

Country		Youth	Elderly	(S/Y), 2002	(I/Y), 2002	CAB, 2002	Δ(S/Y)	Δ(I/Y)	(S/Y), 2040	(I/Y), 2040	Est. CAB, 2040	ΔCAB, 2002-2040	$mn Value of 2004 CAB
Argentina	2002	45.01	16.12	26.850	11.961	14.890	-2.42	-3.19	24.43	8.77	15.664	0.774	92,042.82
	2040	32.01	22.99										
Bolivia	2002	68.05	7.67	9.752	14.738	-4.986	1.82	-4.14	11.57	10.60	0.967	5.953	408.11
	2040	34.77	13.38										
Brazil	2002	41.84	7.94	22.031	19.956	2.075	-8.39	-5.78	13.64	14.18	-0.535	-2.611	-11,436.53
	2040	31.64	22.95										
Chile	2002	41.90	11.18	25.566	21.965	3.601	-8.94	-5.97	16.63	16.00	0.633	-2.968	1,680.07
	2040	32.26	26.87										
Colombia	2002	50.48	7.53	13.747	15.240	-1.493	-6.25	-5.82	7.50	9.42	-1.917	-0.424	-7,569.01
	2040	32.87	21.24										
Costa Rica	2002	47.81	9.02	16.828	21.852	-5.024	-6.07	-5.36	10.76	16.49	-5.734	-0.710	-2,203.84
	2040	32.66	21.84										
Dominican	2002	51.49	7.12	14.700	23.481	-8.781	-5.47	-5.45	9.23	18.03	-8.798	-0.017	-7,043.79
Republic	2040	33.75	19.71										
Ecuador	2002	53.50	7.78	20.254	27.720	-7.466	-4.41	-5.48	15.84	22.24	-6.398	1.068	-5,469.83
	2040	32.05	19.74										
El Salvador	2002	58.23	8.28	1.863	16.401	-14.538	-1.97	-4.81	-0.10	11.59	-11.695	2.843	-5,800.86
	2040	33.08	17.55										
Guatemala	2002	79.88	6.48	7.398	18.700	-11.302	4.56	-4.18	11.96	14.52	-2.558	8.744	-2,040.29
	2040	37.18	10.51										
Haiti	2002	69.52	6.13	-3.132	20.518	-23.650	2.44	-3.63	-0.69	16.89	-17.575	6.076	-3,919.58
	2040	37.48	10.6										
Honduras	2002	74.01	6.05	12.097	27.715	-15.618	2.36	-4.75	14.46	22.96	-8.501	7.116	-2,159.22
	2040	34.84	12.44										
Jamaica	2002	47.88	11.02	12.944	34.462	-21.518	-5.11	-5.07	7.83	29.39	-21.557	-0.039	-3,766.77
	2040	31.44	22.75										
Mexico	2002	53.11	8.22	18.802	20.677	-1.875	-6.69	-6.62	12.12	14.06	-1.946	-0.071	-27,493.96
	2040	31.74	23.53										
Nicaragua	2002	74.83	5.53	6.049	32.099	-26.050	2.34	-4.82	8.39	27.28	-18.888	7.162	-3,579.87
	2040	35.29	12.05										
Panama	2002	47.65	8.96	23.837	25.000	-1.163	-7.84	-6.43	16.00	18.57	-2.574	-1.411	-783.83
	2040	31.34	24.7										
Paraguay	2002	67.25	6.12	8.349	19.500	-11.151	0.19	-4.49	8.54	15.01	-6.473	4.678	-2,673.00
	2040	37.06	13.46										
Peru	2002	51.72	7.85	17.524	18.426	-0.902	-4.77	-5.43	12.75	12.99	-0.240	0.661	-497.03
	2040	31.78	19.96										
Uruguay	2002	39.02	20.08	14.374	12.295	2.079	-4.18	-3.20	10.20	9.10	1.097	-0.982	494.02
	2040	31.84	28.08										
Venezuela	2002	52.80	7.21	29.064	17.100	11.964	-5.01	-5.58	24.05	11.52	12.530	0.565	32,862.28
	2040	32.7	19.72										

Table 6. 2002 - 2040 Counterfactual Capital Export from Savings / Investment Regressors

$41.05 billion in capital exports per annum

Country		Youth	Elderly	(S/Y), 1989	(I/Y), 1989	CAB, 1989	Est. CAB, 2040	ΔCAB, 1989-2040	$mn Value of 2040 CAB
Argentina	1989	50.722	14.620	21.994	15.515	6.479	7.509	1.030	44,126.16
	2040	32.01	22.99						
Bolivia	1989	75.303	6.532	10.929	11.588	-0.658	4.476	5.134	1,888.56
	2040	34.77	13.38						
Brazil	1989	57.839	7.031	27.950	24.758	3.192	3.554	0.362	75,927.40
	2040	31.64	22.95						
Chile	1989	47.560	9.512	29.780	25.149	4.632	2.769	-1.863	7,349.00
	2040	32.26	26.87						
Colombia	1989	61.281	7.114	22.675	18.490	4.185	5.384	1.199	21,260.24
	2040	32.87	21.24						
Costa Rica	1989	61.639	7.001	22.559	26.471	-3.912	-2.799	1.112	-1,075.86
	2040	32.66	21.84						
Dominican	1989	66.580	5.666	17.417	28.476	-11.058	-9.086	1.972	-7,274.41
Republic	2040	33.75	19.71						
Ecuador	1989	69.695	7.259	17.757	24.677	-6.920	-3.727	3.194	-3,185.99
	2040	32.05	19.74						
El Salvador	1989	75.772	7.530	4.875	15.328	-10.453	-5.767	4.685	-2,860.70
	2040	33.08	17.55						
Guatemala	1989	90.518	6.151	8.348	13.515	-5.167	2.786	7.953	2,222.06
	2040	37.18	10.51						
Haiti	1989	84.459	7.439	5.396	14.253	-8.857	-1.678	7.179	-374.28
	2040	37.48	10.6						
Honduras	1989	87.883	5.569	13.731	19.141	-5.409	1.847	7.256	469.11
	2040	34.84	12.44						
Jamaica	1989	61.886	12.730	17.825	26.611	-8.786	-6.184	2.602	-1,080.50
	2040	31.44	22.75						
Mexico	1989	69.237	6.885	22.878	22.943	-0.065	2.032	2.097	28,713.32
	2040	31.74	23.53						
Nicaragua	1989	92.021	5.444	-5.194	27.461	-32.655	-24.704	7.952	-4,682.02
	2040	35.29	12.05						
Panama	1989	60.262	8.322	11.928	6.154	5.774	6.481	0.707	1,973.24
	2040	31.34	24.7						
Paraguay	1989	76.506	6.857	27.509	23.844	3.665	8.677	5.012	3,583.21
	2040	37.06	13.46						
Peru	1989	67.309	6.831	20.831	20.697	0.134	2.801	2.667	5,788.15
	2040	31.78	19.96						
Uruguay	1989	41.947	18.222	17.861	12.066	5.794	4.977	-0.817	2,240.94
	2040	31.84	28.08						
Venezuela	1989	66.109	6.193	25.742	12.705	13.036	15.240	2.204	39,970.81
	2040	32.7	19.72						

Table 7. 1989 - 2040 Counterfactual Capital Export from CAB Regressors

$214.98 billion in capital exports per annum

Country		Youth	Elderly	(S/Y), 2002	(I/Y), 2002	CAB, 2002	Est. CAB, 2040	ΔCAB, 2002-2040	$mn Value of 2040 CAB
Argentina	2002	45.01	16.12	26.850	11.961	14.89	15.33	0.44	90,104.97
	2040	32.01	22.99						
Bolivia	2002	68.05	7.67	9.752	14.738	-4.99	-0.79	4.19	-334.94
	2040	34.77	13.38						
Brazil	2002	41.84	7.94	22.031	19.956	2.08	-0.05	-2.13	-1,096.70
	2040	31.64	22.95						
Chile	2002	41.90	11.18	25.566	21.965	3.60	1.21	-2.39	3,200.40
	2040	32.26	26.87						
Colombia	2002	50.48	7.53	13.747	15.240	-1.49	-2.02	-0.53	-7,991.11
	2040	32.87	21.24						
Costa Rica	2002	47.81	9.02	16.828	21.852	-5.02	-5.75	-0.72	-2,208.58
	2040	32.66	21.84						
Dominican	2002	51.49	7.12	14.700	23.481	-8.78	-9.00	-0.22	-7,205.77
Republic	2040	33.75	19.71						
Ecuador	2002	53.50	7.78	20.254	27.720	-7.47	-6.89	0.57	-5,893.74
	2040	32.05	19.74						
El Salvador	2002	58.23	8.28	1.863	16.401	-14.54	-12.64	1.89	-6,271.35
	2040	33.08	17.55						
Guatemala	2002	79.88	6.48	7.398	18.700	-11.30	-5.07	6.23	-4,045.87
	2040	37.18	10.51						
Haiti	2002	69.52	6.13	-3.132	20.518	-23.65	-19.35	4.30	-4,315.41
	2040	37.48	10.6						
Honduras	2002	74.01	6.05	12.097	27.715	-15.62	-10.60	5.02	-2,692.05
	2040	34.84	12.44						
Jamaica	2002	47.88	11.02	12.944	34.462	-21.52	-21.74	-0.22	-3,798.59
	2040	31.44	22.75						
Mexico	2002	53.11	8.22	18.802	20.677	-1.87	-2.18	-0.30	-30,772.17
	2040	31.74	23.53						
Nicaragua	2002	74.83	5.53	6.049	32.099	-26.05	-21.00	5.05	-3,980.30
	2040	35.29	12.05						
Panama	2002	47.65	8.96	23.837	25.000	-1.16	-2.44	-1.28	-742.43
	2040	31.34	24.7						
Paraguay	2002	67.25	6.12	8.349	19.500	-11.15	-7.90	3.25	-3,263.85
	2040	37.06	13.46						
Peru	2002	51.72	7.85	17.524	18.426	-0.90	-0.63	0.28	-1,291.80
	2040	31.78	19.96						
Uruguay	2002	39.02	20.08	14.374	12.295	2.08	1.24	-0.84	558.47
	2040	31.84	28.08						
Venezuela	2002	52.80	7.21	29.064	17.100	11.96	12.17	0.20	31,907.03
	2040	32.7	19.72						

Table 8. 2002 - 2040 Counterfactual Capital Export from CAB Regressors

$39.87 billion in capital exports per annum

Table 9. Estimated Future Demographic Effects

Country		Youth	Elderly	CAB, 2002	Est. CAB, 2040	D1*	D2*	Demographic Effect
Argentina	2002	45.01	16.12	14.89	15.33	48.13	12.88	-0.303
	2040	32.01	22.99					0.141
Bolivia	2002	68.05	7.67	-4.99	-0.79	76.67	6.70	1.217
	2040	34.77	13.38					5.409
Brazil	2002	41.84	7.94	2.08	-0.05	65.77	6.99	3.829
	2040	31.64	22.95					1.702
Chile	2002	41.90	11.18	3.60	1.21	57.32	9.46	2.179
	2040	32.26	26.87					-0.215
Colombia	2002	50.48	7.53	-1.49	-2.02	73.49	6.89	3.748
	2040	32.87	21.24					3.217
Costa Rica	2002	47.81	9.02	-5.02	-5.75	72.82	6.81	3.686
	2040	32.66	21.84					2.964
Dominican	2002	51.49	7.12	-8.78	-9.00	77.72	5.97	4.166
Republic	2040	33.75	19.71					3.947
Ecuador	2002	53.50	7.78	-7.47	-6.89	76.17	7.81	3.866
	2040	32.05	19.74					4.438
El Salvador	2002	58.23	8.28	-14.54	-12.64	81.39	6.55	3.495
	2040	33.08	17.55					5.389
Guatemala	2002	79.88	6.48	-11.30	-5.07	89.18	5.84	1.416
	2040	37.18	10.51					7.644
Haiti	2002	69.52	6.13	-23.65	-19.35	80.32	8.22	2.374
	2040	37.48	10.6					6.674
Honduras	2002	74.01	6.05	-15.62	-10.60	90.84	5.32	2.678
	2040	34.84	12.44					7.697
Jamaica	2002	47.88	11.02	-21.52	-21.74	74.48	11.79	4.725
	2040	31.44	22.75					4.503
Mexico	2002	53.11	8.22	-1.87	-2.18	80.37	7.83	4.538
	2040	31.74	23.53					4.234
Nicaragua	2002	74.83	5.53	-26.05	-21.00	93.83	5.21	3.150
	2040	35.29	12.05					8.199
Panama	2002	47.65	8.96	-1.16	-2.44	59.40	8.42	1.861
	2040	31.34	24.7					0.586
Paraguay	2002	67.25	6.12	-11.15	-7.90	81.70	8.92	3.179
	2040	37.06	13.46					6.426
Peru	2002	51.72	7.85	-0.90	-0.63	73.64	6.82	3.465
	2040	31.78	19.96					3.742
Uruguay	2002	39.02	20.08	2.08	1.24	42.68	16.48	-0.302
	2040	31.84	28.08					-1.141
Venezuela	2002	52.80	7.21	11.96	12.17	74.49	5.97	3.372
	2040	32.7	19.72					3.574