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A Comparison of Saving Rates: Microdata Evidence from Seventeen Latin American and Caribbean Countries

ABSTRACT Using microdata on expenditure and income for seventeen Latin American and Caribbean countries, this paper presents stylized facts on saving behavior by age, education, income, and place of residence. Counterfactual saving rates are computed by imposing the saving behavior, the population distribution, or the income distribution of two benchmark economies (the United States and Korea). The results suggest that the difference in national saving rates between Latin America and Caribbean and the benchmark economies can mainly be attributed to differences in saving behavior of the population and, to a lesser extent, to differences in the distribution of the population by education levels. Other demographic or income distribution differences are not quantitatively important as explanations of saving rates.

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Keywords: Saving rates, Latin America

According to the World Development Indicators (WDI), gross national savings in Latin America as a percentage of gross domestic product (GDP) was 20 percent in 2012. This figure is well below East Asia and Pacific (40 percent) and South Asia (30 percent), but about the same as other

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regions like Europe and Central Asia (17 percent) and sub-Saharan Africa (17 percent) and above the United States (12 percent). The comparison between these regions suggests that there is not an obvious relationship among national savings, growth, and development. This might be due to significant heterogeneity within regions. In particular, Latin America and the Caribbean is not a homogeneous entity in many dimensions, including saving rates. In 2012, the saving rate was as large as 26 percent in Bolivia and as low as 9 percent in neighboring Paraguay.

National savings are themselves aggregates of heterogeneous households' (or individuals') personal savings decisions. On theoretical grounds, life-cycle models imply that individuals' savings behavior differs by age.[1] Alternatively, the permanent income hypothesis suggests that consumption (and therefore savings) will differ among individuals whose determinants of permanent income are different.[2] Empirically, Carroll, Rhee, and Rhee test for cultural effects on saving behavior in the United States.[3]

Differences in saving rates among countries can be disaggregated into the following three categories: differences in saving decisions between similar individuals living in different countries (for example, young people being able to spend above their income level in countries where financial restrictions are less binding or differences in adults' savings due to alternative national social security systems); differences in the population distribution of the relevant groups (for example, differences in the proportion of individuals yet to join the workforce or difference in education levels); and differences in the income share of groups (for example, countries with income concentrated in individuals with low saving rates). The goal of this paper is to address the importance of these differences, with particular interest in the first cause (differences in behavior among population groups). In particular, I am interested in addressing how savings patterns differ by age, income, education level, and area of residence (urban versus rural). To do so, I apply a common methodology to microdata on income and consumption of seventeen Latin American and Caribbean countries and two benchmark economies (the United States and Korea) and compute individual saving rates for the adult population and household saving rates. It has been repeatedly

1. Aando and Modigliani (1963); Modigliani and Brumberg (1954).
2. Friedman (1957).
3. Carroll, Rhee, and Rhee (1994).

argued that saving rates in Latin America are low, and this constitutes a constraint on sustained growth.[4] Most studies are based on saving rates constructed from macroeconomic variables. There are two streams in this literature. One is based on individual country studies using time-series estimations.[5] The other stream evaluates Latin American saving rates within a broader sample of countries. Papers in this latter group use a variety of panel data techniques. Edwards is probably the first in this line of research, followed methodologically by Reinhardt; Pérez-Monteiro, Radusweski, and Cavalcanti; and Lane and Tornell.[6] Other Latin American researchers have an even wider country focus. The World Bank research project "Saving across the World" produced a wide-reaching data set that permitted testing other issues like the relationship between income inequality and aggregate savings and between other policy and nonpolicy factors and savings.[7] Gutiérrez reviews the empirical literature and finds a positive association of savings with income level and income growth, macroeconomics stability, foreign credit constraints, and demographics.[8] The relations of savings with other variables like the real interest rate, types of pension systems, and financial development are mixed.

The literature includes several papers that aim to identify the main stylized facts of saving rates in particular countries.[9] Poterba's book, which includes several case studies, is probably the classic citation for this type of research.[10] Deaton; Browning and Lusardi; and Attanasio present comprehensive surveys on consumption and saving that stress the importance of looking at microeconomic behavior to understand national saving differentials.[11]

4. See, for example, Edwards (1996); Gutiérrez (2007); Reinhardt (2008); Pérez-Monteiro, Radusweski, and Cavlcanti (2012).

5. For Mexico, see Bulíř and Swiston (2006) and Gollás (1999); for Colombia, see López-Mejia and Ortega (1998); for Brazil, see Paiva and Jahan (2003); and for Argentina and Mexico, see Casillas (1993).

6. Edwards (1996); Reinhardt (2008); Pérez-Monteiro, Radusweski, and Cavalcanti (2012); Lane and Tornell (1998).

7. Loayza, Schmidt-Hebbel, and Servén (2000a, 2000b).

8. Gutiérrez (2007).

9. For Chile, see Butelmann and Gallego (2001); for Spain, see Alegre Martin and Pou Garcias (2008); for Colombia, see Castañeda Cordy (2001); for the United Kingdom, see Demery and Duck (2006); for Canada, see Alan, Atalay, and Crossley (2006).

10. Poterba (1994).

11. Deaton (1992); Browning and Lusardi (1996); Attanasio (1999).

This paper contributes to the literature on at least two grounds. First, microdata homogenization and the application of a common methodology to a large set of countries are rare in this literature.[12] I go beyond individual case studies and set out the stylized facts for a wide range of Latin American and Caribbean countries in a comparative way. The dimensions considered are important for empirical and theoretical reasons. For example, Dynan, Skinner, and Zeldes report large disparities in saving rates by current income, arguing that the more meaningful comparison would take lifelong income and proposes a methodology for doing so.[13] Butelmann and Gallego report disparities in saving rates by education level as well as by current income: those with higher education were the only group with a positive median saving rate in Chile.[14] Additionally, differences in saving rates by age are predicted by life cycle models and have been reported in several empirical exercises.[15]

Second, there is not a natural benchmark for comparing the relative sizes of saving rates in different countries or regions. I perform a series of counterfactual exercises comparing the structure of savings in Latin America and the Caribbean with that of the United States and Korea. The exercise shows that, relative to these countries, Latin American saving rates are indeed low. The counterfactual exercises point to the main differences in saving determinants between Latin America and the Caribbean and these two benchmarks. In choosing the benchmarks, I selected countries with developed financial markets where constraints on saving and borrowing are likely to be lower than in Latin America. I also wanted to use countries with different cultural traits that could imply different behavior with respect to consumption and savings. Latin America, with its historical ties to Spain and Portugal, has many differences with the Anglo-Saxon background of the United States and Korea's Asian culture. Finally, according to WDI, Korean gross savings as a percentage of GDP are larger than Latin American and Caribbean gross savings, which are in turn larger than U.S. gross savings.

The paper proceeds as follows. The next section presents the methodology, followed by a description of the data. The paper then reports the descriptive results on saving rates and the counterfactual exercises.

12. One exception is Kirsanova and Sefton (2007), who work with data from the United Kingdom, the United States, and Italy.

13. Dynan, Skinner, and Zeldes (2004). See Gandelman (2015b) for an application to Latin American and Caribbean countries.

14. Butelmann and Gallego (2001).

15. For the United Kingdom, see Demery and Duck (2006); for Spain, see Alegre Martin and Pou Garcias (2008).

Methodology

Decomposition

National private savings can be decomposed among population groups along various dimensions. Aggregate private savings are the sum of savings of all relevant groups in a country, which are indexed by i (for example, age brackets). Y and C stand for total private income and consumption, respectively, while y_i and c_i represent group income and group consumption, respectively, and n_i is the size of group i. Therefore national saving is

$$Y - C = \sum_i (y_i - c_i) n_i. \tag{1}$$

By some simple algebraic manipulation, this expression can be transformed into the following disaggregation of the national private saving rate:

$$S_t = \frac{Y - C}{Y} = \sum_i \left(\frac{y_i - c_i}{y_i} \right) \left(\frac{y_i}{Y/N} \right) \left(\frac{n_i}{N} \right), \tag{2}$$

where N is the total population.

The first term in the summation is the ith group saving rate. The second and third terms can be seen as how much this group saving rate is weighted for the aggregate. The second term gives a larger weight to groups whose income level is above the average income level. The third term weights the saving rate according to the relative demographic size of the group. Differences in any of these three terms can explain differences in national saving rates.

Counterfactual Saving Rates

I compute counterfactual saving rates considering various dimensions (namely, age, education, income, and place of residence). For ease of exposition, I explain the process in terms of age brackets, but the same procedure can be applied to other disaggregations of the population. For each Latin American and Caribbean country, one of its characteristics (saving rates, population distribution, and income distribution by age bracket) is replaced with the corresponding characteristic of the benchmark economies. This yields the counterfactual saving rate if the Latin American country had one characteristic of the United States or Korea.

Let the superscript * refer to the benchmark countries (the United States or Korea), while the variables without superscript refer to a given Latin American and Caribbean country. There are three exercises to be performed with respect to each benchmark economy.

First, to what extent are differences in national private saving rates between Latin America and the Caribbean and the United States or Korea due to different saving behavior by the population? For this exercise, I assume that age groups in Latin American countries have the saving behavior of the corresponding population in the United States/Korea, but that the income and demographic distribution remains unchanged. The counterfactual national saving rate for each Latin American and Caribbean country is then

$$\hat{S}^{LA}_{sav=sav^*} = \sum_i \left(\frac{y_i^* - c_i^*}{y_i^*} \right) \left(\frac{y_i}{Y/N} \right) \left(\frac{n_i}{N} \right). \tag{3}$$

Second, to what extent are differences in national private saving rates between Latin America and the Caribbean and the United States or Korea due to differences in the demographic distribution? Here, I assume that the age distribution of each Latin American and Caribbean country is equal to that of the United States/Korea, but that the group saving behavior and the income distribution remain at the actual levels. The counterfactual national saving rate for each Latin American country is

$$\hat{S}^{LA}_{pop=pop^*} = \sum_i \left(\frac{y_i - c_i}{y_i} \right) \left(\frac{y_i}{Y/N} \right) \left(\frac{n_i^*}{N^*} \right). \tag{4}$$

Third, to what extent are differences in saving rates between Latin America and the Caribbean and the United States or Korea due to differences in income distribution? I assume that the income distribution by age bracket in Latin America and the Caribbean is the same as in the United States/Korea, but that the group saving behavior and the age distribution remain unchanged. The counterfactual national saving rate for each Latin American and Caribbean country is

$$\hat{S}^{LA}_{inc=inc^*} = \sum_i \left(\frac{y_i - c_i}{y_i} \right) \left(\frac{y_i^*}{Y^*/N^*} \right) \left(\frac{n_i}{N} \right). \tag{5}$$

Household versus Individual Savings

It is important to define whether the decisionmakers are individuals or households. Ex ante, there are pro and cons for both options. First, empirically it is easier to work at the household level since consumption is not reported at the individual level. To compute individual saving rates, household consumption needs to be allocated among household members using some more or less ad hoc rule. Second, the life cycle theory is constructed assuming individual, rather than household, decisionmakers. Third, household members differ in some of the variables of interest, such as age and education. Computing household saving rates requires classifying household savings by the characteristics of the household head, which may or may not be demographically representative of the household. The next sections show that some of the paper's results are more reasonable using individual saving rates. For completeness and robustness analysis, I perform the analysis at the both household and individual levels, but present them both only when there is an interesting difference.[16]

In computing individual saving rates, I follow the methodology proposed by Kirsanova and Sefton to allocate household consumption (and when necessary income) among individuals.[17] The starting point is the division of household members into three groups: dependent children (individuals under the age of eighteen); principal adults (the head of the household and his or her partner, if any); and dependent adults (other adults). The consumption level of a newborn baby is assumed to be 30 percent of that of an adult, and this proportion is assumed to increase linearly until age eighteen, when the person is considered an adult. After allocating consumption in this way, the consumption of dependent children is reallocated equally between the principal adults. For example, consider a household composed of a couple, a newborn baby and one dependent adult. The household consumption level is 100. The preliminary assignment of consumption consists of 0.3 units to the baby, 1.0 to the father, 1.0 to the mother, and 1.0 to the other adult. The 0.3 of the baby is later reallocated to both parents, such that each has a final consumption 1.15 units of consumption. The total consumption of 100 is divided into 34.8 ($100 * 1.15/3.3$) for each principal adult and 30.3 ($100 * 1/3.3$) for the dependent adult.

In general, the information on income provided by household surveys is less problematic since the major sources of income (such as labor income)

16. All tables and figures are available in Gandelman (2015a).
17. Kirsanova and Sefton (2007).

are generally well identified at the individual level. When such identification is not possible (for example, a government housing subsidy), this income is divided like consumption.

Data

The data set comprises microdata for seventeen Latin American and Caribbean countries (namely, Argentina, Bahamas, Barbados, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, and Uruguay), the United States, and Korea. The databases for Nicaragua present data only at the household level. I therefore present the country's descriptive statistics, but do not include it in the counterfactual exercises at the individual level.

Countries perform income and expenditure surveys every decade or so as an input for the construction of the consumer price index. Since the objective of the surveys is the construction of an average consumption basket, data on consumption expenditures are very disaggregated. It includes all forms of consumption like food, beverages, transportation, leisure, education, and health expenditures. Table 1 presents the data sources, most of which are countries' national statistical institutes.

The dates, also reported in table 1, range from 2003 to 2012. Ideally, the information from different countries would capture the same moment in time and the same phase of the business cycle. This is not possible, however, when working with a sample of countries as wide as in this paper. Thus, one of the contributions of this paper is, in itself, a limitation.

There are some differences in the way data are gathered and reported in the surveys. To the extent possible, I have homogenized the definition of saving rates. Labor income is the main source of income for most individuals. It is reported after tax in all cases except Brazil and Nicaragua, where data are gathered gross of taxes and social security contributions. According to Nicaraguan documentation, taxes and social security contributions are gathered in a separate question, but this information is not reported in the microdata. The results section reports descriptive statistics for Brazil and Nicaragua with the rest of the countries. Brazil is included in the counterfactual exercises, but Nicaragua is not due to the inability to compute individual saving rates for this country. As shown in the results section, there are no noticeable differences that can clearly be attributed to this difference in the computation of income. When there is a differential pattern relative

TABLE 1. Data Sources

Country	*Years*	*No. observations (total)*	*No. observations (households)*	*Survey*	*Source*
Argentina	2004–05	104,858	29,138	Encuesta Nacional de Gastos de los Hogares	Instituto Nacional de Estadística y Censos
Bahamas	2013	5,078	1,544	Bahamas Household Expenditure Survey	Department of Statistics, Ministry of Finance
Barbados	2010	6,937	1,141	Country Assessment of Living Conditions	Sir Arthur Lewis Institute of Social and Economic Studies, University of the West Indies
Bolivia[a]	2003–04	38,500	9,149	Encuesta Continua de los Hogares	Instituto Nacional de Estadística
Brazil	2008–09	132,323	55,702	Pesquisa de Orçamentos Familiares	Instituto Brasileiro de Geografia e Estatística
Chile	2011–12	35,651	10,518	VII Encuesta de Presupuestos Familiares	Instituto Nacional de Estadísticas
Colombia	2011	92,188	25,364	Encuesta Nacional de Calidad de Vida	Departamento Administrativo Nacional de Estadística
Costa Rica	2013	19,301	5,705	Encuesta Nacional de Ingresos y Gastos de los Hogares	Instituto Nacional de Estadística y Censos
Ecuador	2004	153,444	39,617	Encuesta Nacional de Ingresos y Gastos de los Hogares Urbanos	Instituto Nacional de Estadística y Censos
Honduras	2004	39,126	8,175	Encuesta Nacional de Condiciones de Vida	Instituto Nacional de Estadística
Korea	2005	11,435	4,763	Korea Labor and Income Panel Study	Korea Labor Institute
Mexico	2005	83,444	20,875	Encuesta Nacional de Ingresos y Gastos de los Hogares	Instituto Nacional de Estadística y Geografía
Nicaragua[b]	2006–07		6,912	Encuesta Ingresos y Gastos de los Hogares	Banco Central de Nicaragua
Panama	2007–08	32,614	8,895	Encuesta de Ingresos y Gastos de los Hogares	Instituto Nacional de Estadística y Censo
Paraguay	2011–12	21,130	5,417	Encuesta de Ingresos y Gastos y de Condiciones de Vida	Dirección General de Estadísticas, Encuestas y Censos
Peru	2008–09	143,885	35,161	Encuesta Nacional de Presupuestos Familiares	Instituto Nacional de Estadística e Informática
Trinidad and Tobago	2005	12,854	3,611	Survey of Living Conditions	Central Statistical Office
Uruguay	2005–06	20,772	7,043	Encuesta Nacional de Gastos e Ingresos de los Hogares	Instituto Nacional de Estadística
United States	2012	16,845	6,751	Consumer Expenditure Survey	Bureau of Labor Statistics

Source: Author's elaboration, based on income and consumption household surveys.

a. The Bolivian survey is part of the continuous household surveys, which introduced a module in 2003–04 to capture detailed data on income and expenses.

b. The Nicaraguan survey reports income and consumption information only at the household level.

to the rest of Latin America and the Caribbean, it is explicitly mentioned in the text.

All forms of monetary and nonmonetary income are computed. Financial capital gains (for example, increases in asset values due to price changes in capital markets) are not commonly reported in the surveys, so they are not included in current income. In contrast, earned interest and dividends are regularly reported and thus are included in the working definition of current income.

The surveys request expenditures over various time frames (yearly, quarterly, monthly, weekly, and daily). The national statistical institutes of all countries but Mexico and the United States convert these totals into monthly figures; those two countries convert expenditures into quarterly data. Consumption of durable goods is also reported, and a portion is imputed to the current period (month or quarter).

In the literature, education and health spending are sometimes considered forms of investment and are deducted from current consumption to construct wider savings definitions. I do not follow this approach, however, and treat all forms of education and health spending as consumption.

I make two further imputations to consumption and income. Quantitatively, the most important is the rent value of houses for homeowners, which appear as consumption and income in all cases but Argentina, Barbados, Korea, and the United States, where this information is not available. Home production for consumption is treated in the same way. The inclusion of imputed rent and home production in both consumption and income does not alter savings in absolute terms, but it does affect the saving rate.

Survey coverage includes representative samples from both urban and rural settings in most countries. In Bahamas, Barbados, Chile, Nicaragua, Panama, Uruguay, and Korea, the sample is only urban. Table 1 reports the number of individuals and households included in each survey.

Differences in Savings among Countries

Table 2 presents my estimates of national household saving rates based on the income and consumption surveys. For comparison, the table also reports the WDI measure of gross domestic savings over GDP for each country. In many countries, the survey was conducted over two years; in those cases, the table reports the two-year average of the WDI measure.

TABLE 2. National Savings Rate

Country	*Year*	*Estimate (%)*	*Gross domestic saving over GDP (%)*
Argentina	2004–05	13	24
Bahamas	2013	–1	15
Barbados	2010	6	9
Bolivia	2003–04	18	14
Brazil	2008–09	18	19
Chile	2011–12	8	26
Colombia	2013	16	22
Costa Rica	2013	14	18
Ecuador	2011–12	9	27
Honduras	2004	–2	11
Mexico	2006	3	22
Nicaragua	2006–07	12	4
Panama	2007–08	14	32
Paraguay	2011–12	15	19
Peru	2008–09	14	26
Trinidad and Tobago	20005	22	57
Uruguay	2005–06	16	19
United States	2012	31	16
Korea	2005	30	35

Source: World Bank, *World Development Indicators* (WDI).
a. Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption).

As expected, my estimates are below the national gross domestic savings figures (except for Bolivia, Nicaragua, and the United States), since they only capture savings made by families within a country. The difference between my estimated saving rates and the WDI rates can be seen as a reflection of firm and government saving rates. The household saving rates of Bolivia, Nicaragua and the United States are higher than the national saving rate, which implies that firms and governments in these countries are saving at a lower rate than households. Working with the same database as the one used here, Dynan, Skinner, and Zeldes present similar results for the United States.[18] They report that the average saving rate for people aged thirty to fifty-nine years is 30 percent, versus 25 percent for the whole sample. In their study, they use two other data sources and estimate saving rates as changes in net assets. These latter estimates are lower than saving rates from income and consumption data.

18. Dynan, Skinner, and Zeldes (2004).

The correlation between my estimates and gross domestic savings is 0.38. The correlation increases to 0.51 when the United States is not included and to 0.61 when the three countries with a household saving rate above the gross domestic saving rate are excluded (that is, Bolivia, Nicaragua, and the United States). Figure 1 presents the corresponding scatter plots. For the Latin American and Caribbean countries, these estimates are reasonably consistent with published national data.

The rest of this section presents my estimates of saving rates by age, education, income level, and place of residence for all countries. These estimates correspond to the first term of equation 2.

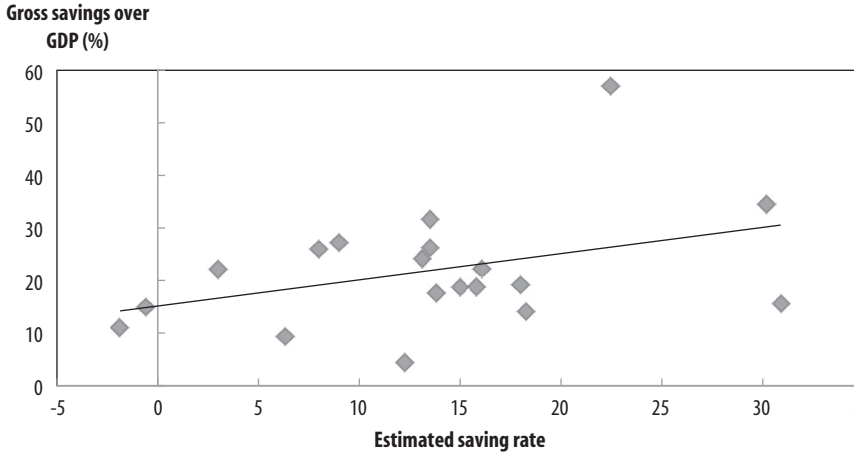
Saving Rates by Age

Figure 2 (pp. 214–19) reports individual saving rates by age bracket, while figure 3 (pp. 220–26) reports household saving rates classified by age of the household head. The life cycle model predicts an inverse-U-shape for saving rates. In the absence of financial restrictions, young individuals consume more than their current income, resulting in negative saving rates. Older individuals also tend to maintain a consumption pattern above their current income (for example, after retirement). The negative saving rates at the extreme years of adult life are financed by positive saving rates in the middle years.

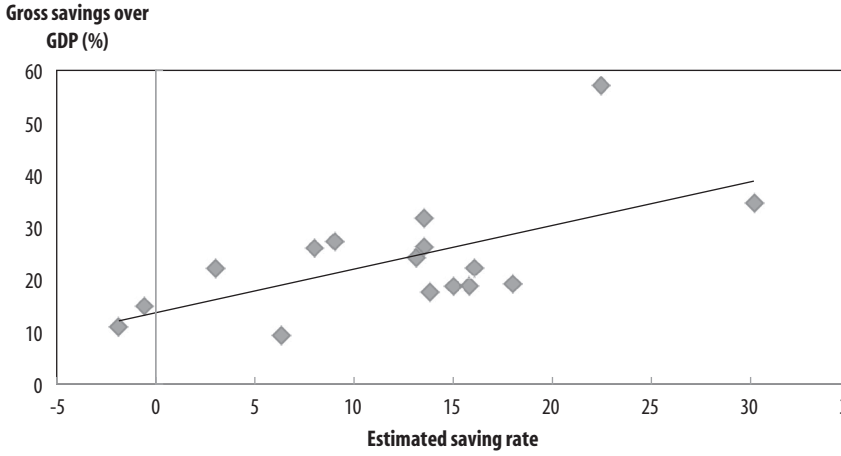
Figure 2 shows that the predicted inverse-U-shape holds for the eighteen countries for which individual saving rates can be computed. Negative saving rates for young individuals are present in the data (except for Barbados and Trinidad and Tobago), but there are zero and negative saving rates for older adults only in Bahamas, Barbados, Costa Rica, Honduras, Mexico, Peru, and Korea. For household saving rates (figure 3), the inverse-U-shape is less evident in most of the nineteen countries, with the exceptions of Brazil, Mexico, and the United States. There are two differences between the data in the two figures. First, for individual savings, I divided consumption and household income as explained in the methodological section. Second, the classification of individual savings is based on the age of the individual taking the consumption-saving decision, whereas household saving rates accumulate the saving rates of individuals of different ages and are then classified by the age of the household head. Therefore, it is not surprising that individual saving rates (figure 2) are closer to the pattern predicted by the life cycle hypothesis. This is an additional argument in favor of paying special attention to the counterfactuals based on individual saving rates.

FIGURE 1. Scatter Plot: Estimated Saving Rates and Gross National Savings over GDP

A. All countries



B. Excluding Bolivia, Nicaragua, and United States



Source: Author's compilation, based on income and consumption household surveys and *World Development Indicators* (WDI).

FIGURE 2. Personal Savings Rates by Age

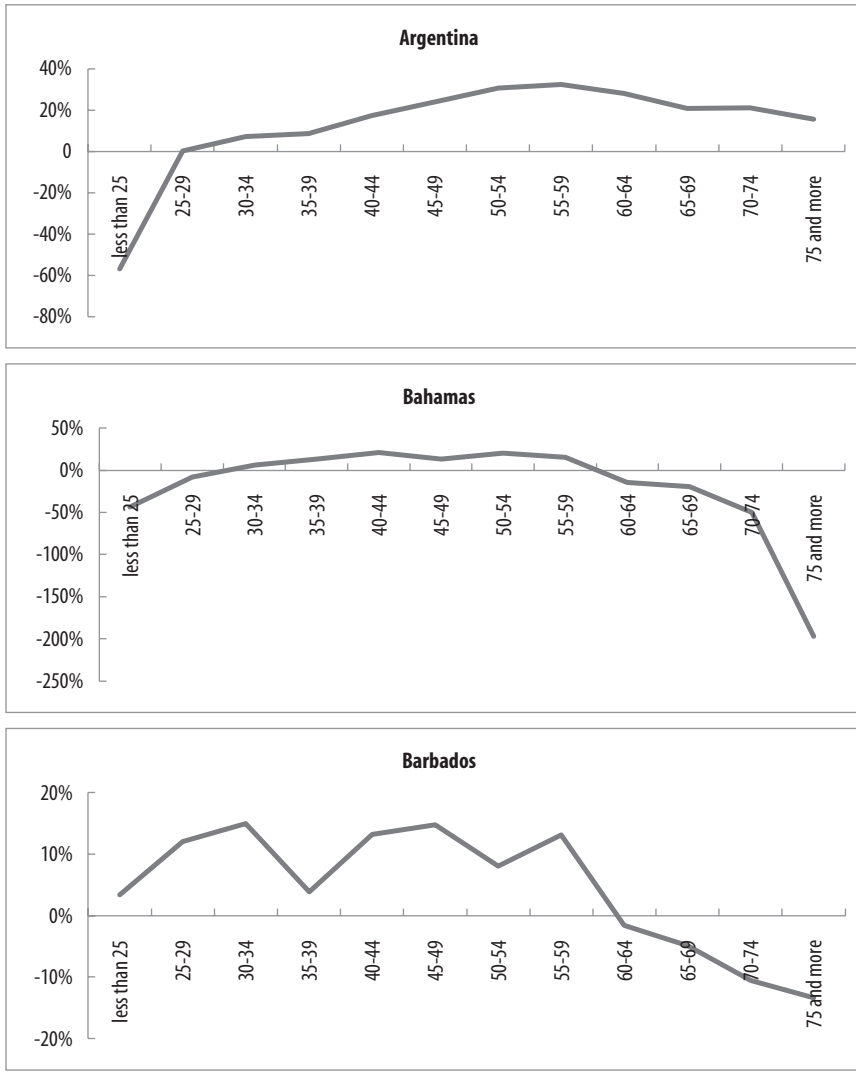


FIGURE 2. Personal Savings Rates by Age (*Continued*)

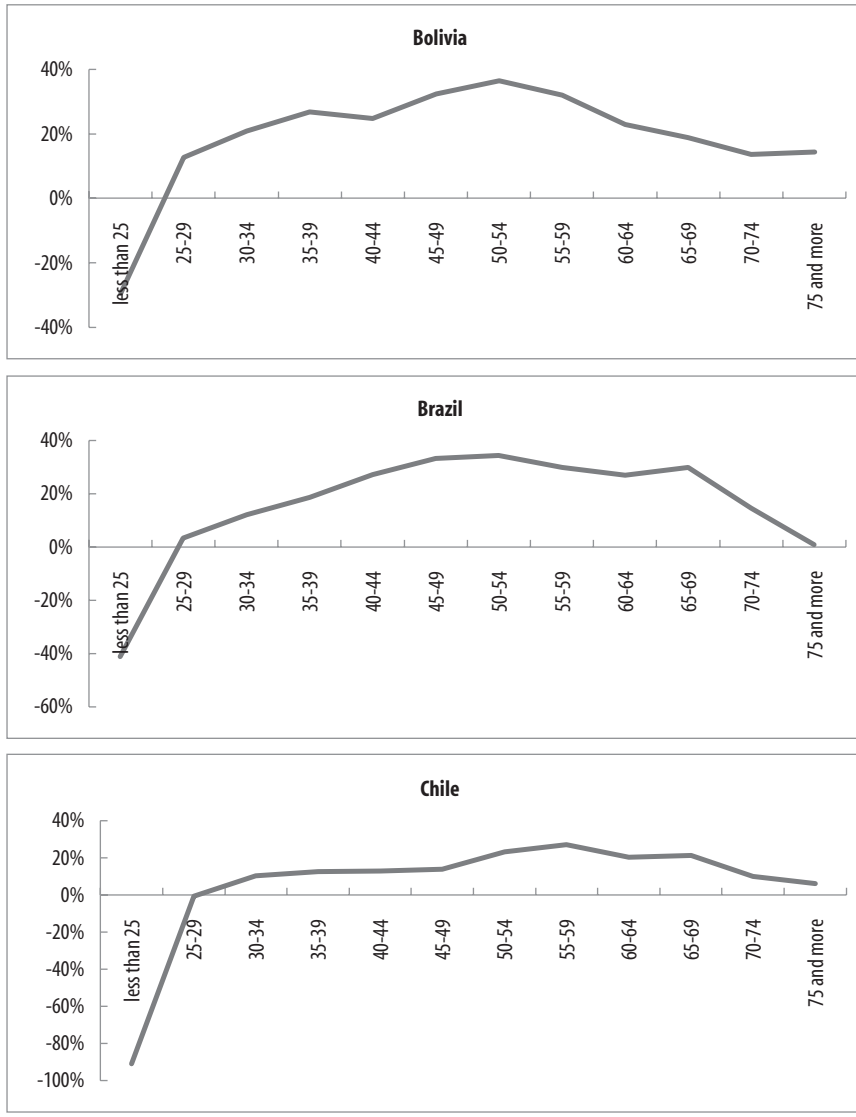


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FIGURE 2. Personal Savings Rates by Age (*Continued*)

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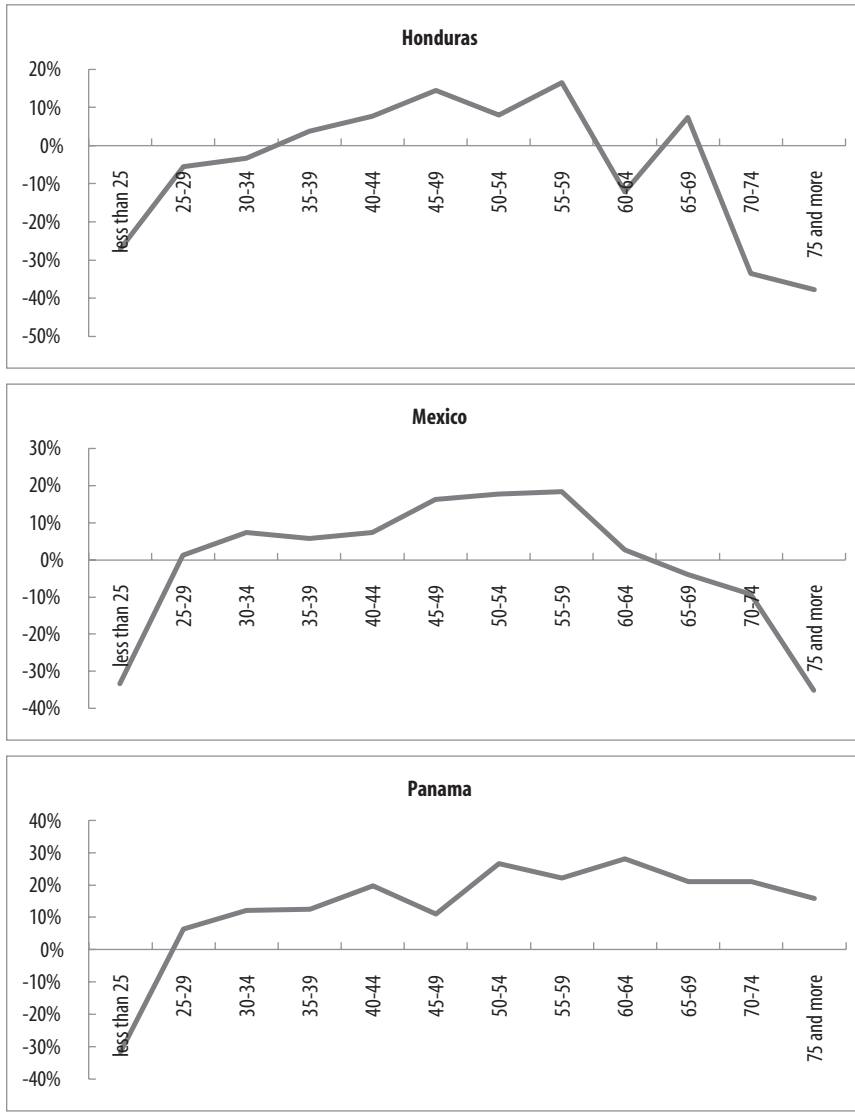

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FIGURE 2. Personal Savings Rates by Age (*Continued*)

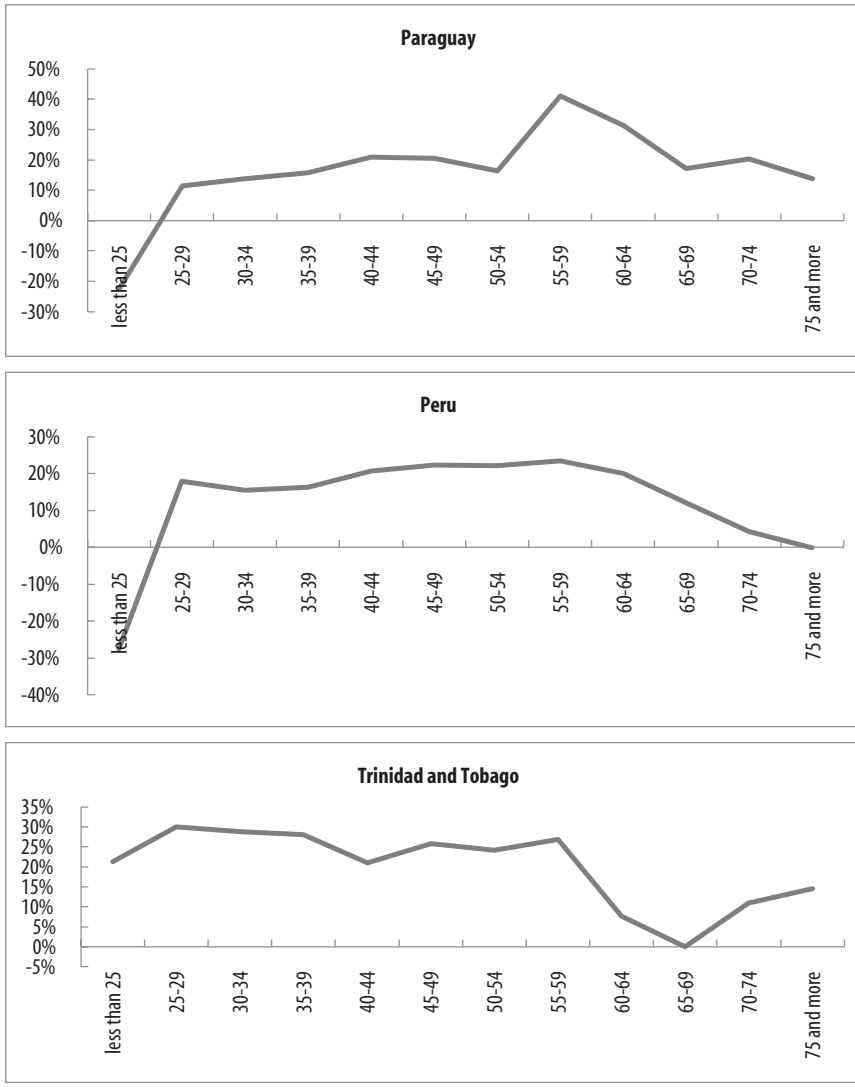

FIGURE 2. Personal Savings Rates by Age (*Continued*)

Source: Author's compilation, based on income and consumption household surveys.

FIGURE 3. Household Savings Rates by Age of Household Head

FIGURE 3. Household Savings Rates by Age of Household Head (*Continued*)

(*continued*)

FIGURE 3. Household Savings Rates by Age of Household Head (*Continued*)

F I G U R E 3 . Household Savings Rates by Age of Household Head (*Continued*)

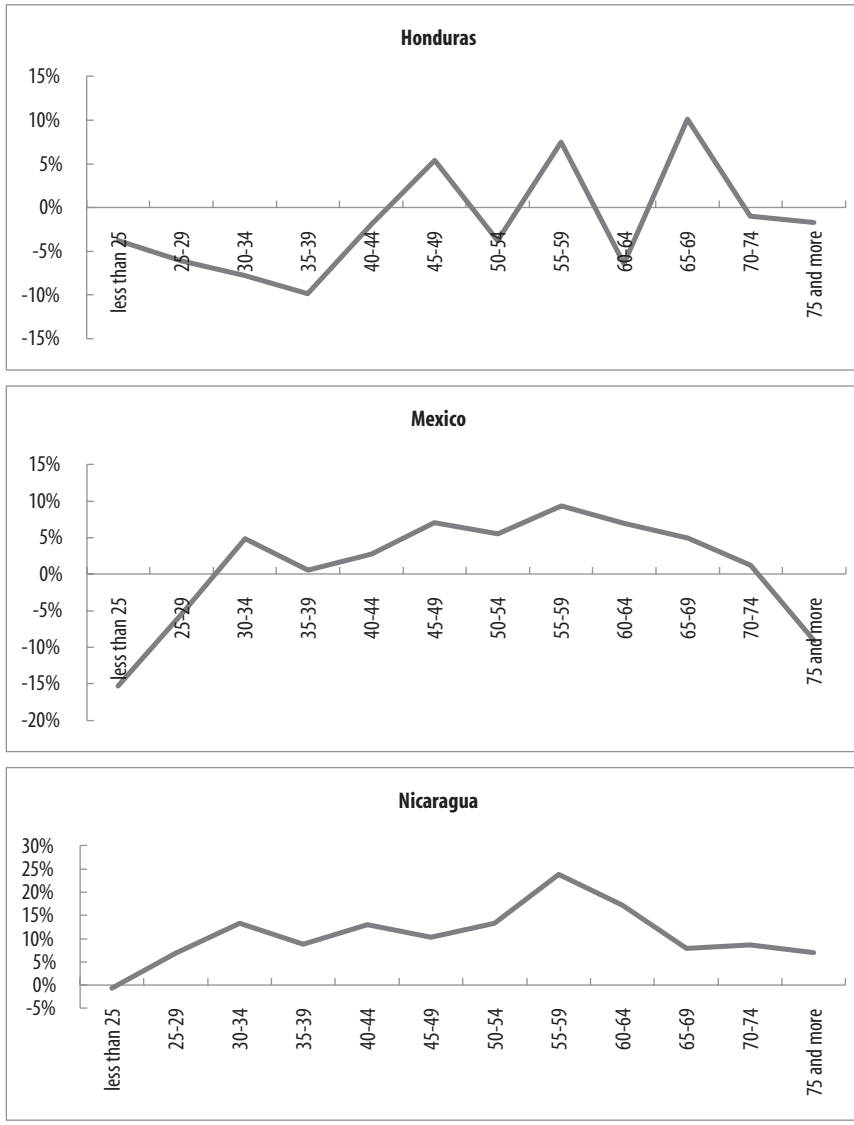

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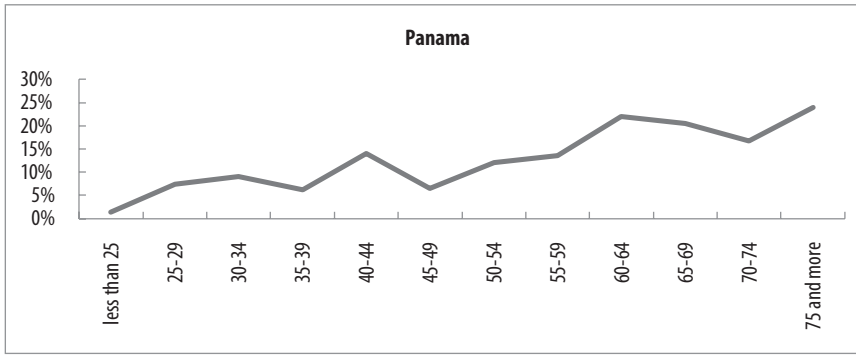
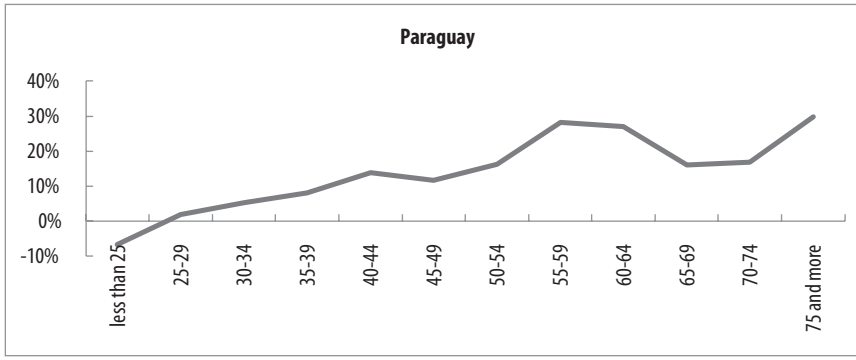
FIGURE 3. Household Savings Rates by Age of Household Head (*Continued*)





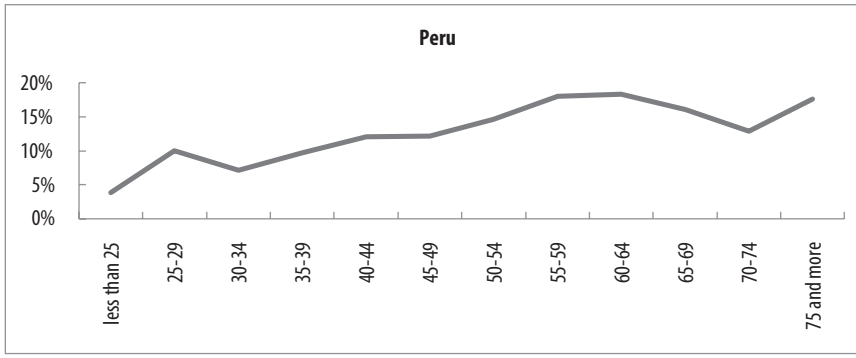
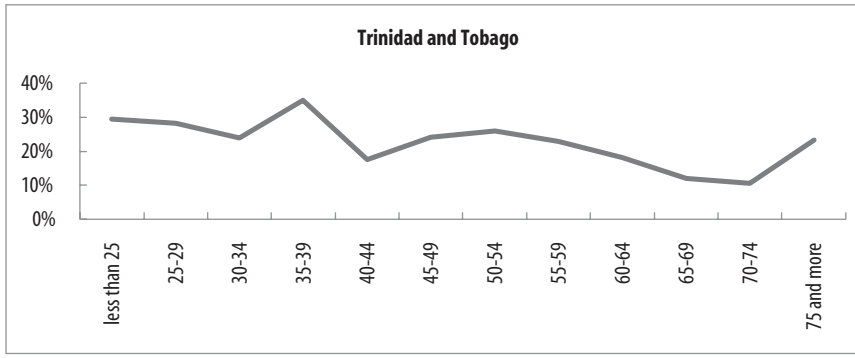
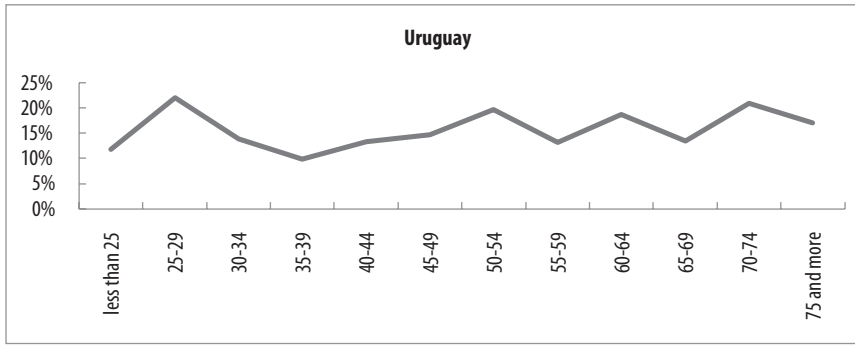
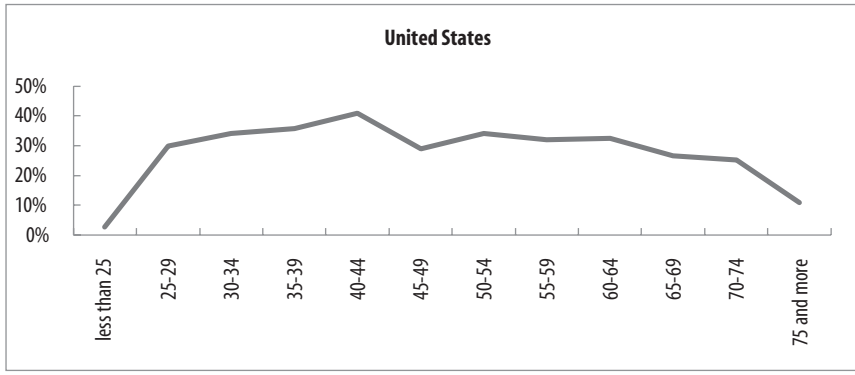


FIGURE 3. Household Savings Rates by Age of Household Head (*Continued*)

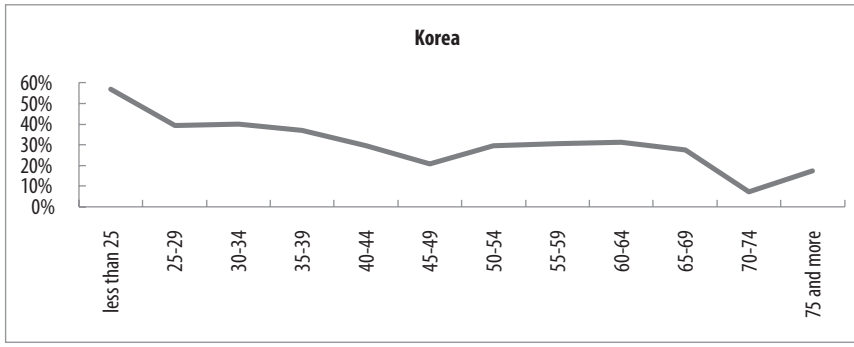






(*continued*)

FIGURE 3. Household Savings Rates by Age of Household Head (*Continued*)



Source: Author's compilation, based on income and consumption household surveys.

Saving Rates by Education Level

The correlation between saving rates and education levels is expected to be positive for at least two reasons. First, the decision to engage in advanced educational studies implies the postponement of entry into labor markets and therefore the postponement of the highest income-generating phase of an individual's life. There is a relation between education and time preferences that is similar to the relation between savings and time preferences. More impatient people with a relatively lower valuation of the future are likely to enter the labor market earlier and to study and save less. Second, education might be a reasonable proxy for permanent income. If rich people save more (a question with a less-than-obvious answer), more educated people should also save more.[19]

Tables 3 and 4 present saving rates by education level. The degree of information on education between countries is dissimilar. The common ground for all countries is a division among the following: incomplete primary education, incomplete secondary education, complete secondary education, and more than complete secondary education (at least some tertiary education).

Personal saving rates have a very clear and monotonic relation with education for most countries (except Argentina, Bolivia, Brazil, and Uruguay). More educated individuals save more than less educated individuals. The

19. See the next section and Dynan, Skinner, and Zeldes (2004).

TABLE 3. Personal Saving Rates by Educational Level
Percent

Country	*Incomplete primary*	*Incomplete secondary*	*Complete secondary*	*University*
Argentina	13	15	13	14
Bahamas	−103	−18	3	7
Barbados	−6	−3	10	12
Bolivia	14	23	17	19
Brazil	8	8	3	33
Chile	−4	0	4	13
Colombia	15	9	10	24
Costa Rica	−25	−6	1	34
Ecuador	−5	5	3	21
Honduras	−25	−14	7	32
Mexico	−19	−3	−4	18
Panama	−10	3	7	21
Paraguay	0	5	19	31
Peru	−1	8	11	21
Trinidad and Tobago	20	16	24	35
Uruguay	10	15	13	20
United States	5	14	27	34
Korea	−50	9	30	41

Source: Author's compilation, based on income and consumption household surveys.

TABLE 4. Household Saving Rates by Educational Level of the Household Head
Percent

Country	*Incomplete primary*	*Incomplete secondary*	*Complete secondary*	*University*
Argentina	15	14	13	12
Bahamas	−22	−4	7	0
Barbados	21	13	5	7
Bolivia	23	20	15	14
Brazil	9	14	19	27
Chile	16	8	6	8
Colombia	22	10	7	19
Costa Rica	−8	2	11	28
Ecuador	6	6	7	14
Honduras	−15	−7	5	19
Mexico	−2	−1	−1	11
Nicaragua	8	5	8	20
Panama	9	9	10	16
Paraguay	8	10	14	27
Peru	14	9	12	15
Trinidad and Tobago	21	22	21	21
Uruguay	17	16	15	16
United States	13	25	28	33
Korea	17	24	29	35

Source: Author's compilation, based on income and consumption household surveys.

saving rates of the less educated are negative in nine countries out of eighteen.

This savings-education pattern is much less clear in household savings. For instance, Barbados has exactly the opposite relation, with lower household saving rates for households with more educated household heads. As explained in the methodology section, one drawback in computing personal saving rates is that it requires making some assumptions on how to distribute consumption and household income, while the drawback of the household head classification is that it accumulates the saving rates of individuals with different education levels within a household and assigns the saving rate to the household head. Given the evidence in the literature of positive assortative matching in marriage markets [20] (that is, individuals tend to marry people with a similar education level), I was expecting to find a much more similar picture of personal and household level saving rates classified by education level.

Saving Rates by Income Level

The relation between saving rates and income levels is less clear than it might seem at first glance. Conventional wisdom suggests that rich individuals save more because they can afford to do so. Alternatively, in line with Benjamin Franklin's adage that a penny saved is a penny earned, saving can be seen as leading to wealth. Either way, there is a sense that saving rates and income/wealth go hand in hand.

From an economist's perspective, this relation is not so obvious. First, even if savings in absolute levels are higher for richer people, this does not need to be the case in relative terms with respect to income. Second, the life cycle model predicts a relation between saving rates and age that is common to all income levels, whereby older individuals use their past savings to finance current consumption above their current income and experience negative savings. If the past savings of elderly rich people are larger than the savings of poorer people, rich individuals will be able to have larger negative saving than poorer individuals in old age. Therefore, the relation between current income and savings might also depend on age.

Empirically, there is one more problem. Individuals experiencing temporary income shocks are not likely to dramatically alter their consumption level. A negative temporary income shock moves someone down the income

20. See, for instance, Greenwood and others (2014).

TABLE 5. Saving Rates by Income Decile[a]
Percent

	Decile									
Country	*First*	*Second*	*Third*	*Fourth*	*Fifth*	*Sixth*	*Seventh*	*Eighth*	*Ninth*	*Tenth*
Argentina	−59	−22	−19	−9	−3	3	5	10	13	31
Bahamas	−450	−119	−53	−41	−18	−4	−5	11	14	23
Barbados	−1,291	−200	−55	−48	−5	6	5	21	23	32
Bolivia	−59	−5	1	9	13	14	18	21	27	24
Brazil	0	−36	−19	−9	−3	3	8	11	17	34
Chile	−54	−26	−13	−6	−4	−1	2	7	8	22
Colombia	−498	−27	−10	−3	2	7	12	13	16	34
Costa Rica	−76	−51	−23	−25	−12	−16	−3	5	15	38
Ecuador	−14	−6	−5	−1	0	2	4	5	8	22
Honduras	−361	−145	−93	−62	−50	−33	−20	−10	2	30
Mexico	−33	−15	−9	−3	−5	−1	1	3	4	10
Nicaragua	−22	−8	−6	−1	−3	3	5	8	11	31
Panama	−17	−8	1	3	3	6	10	10	14	21
Paraguay	−192	−76	−49	−25	−21	−3	−2	8	17	48
Peru	−38	−5	3	−1	7	9	10	12	14	25
Trinidad and Tobago	−154	−54	−21	−11	10	6	12	21	22	50
Uruguay	−20	1	8	8	8	13	10	14	16	24
United States	−2,945	−503	−21	3	22	29	33	41	45	56
Korea	−160	−26	3	11	19	26	31	33	41	52

Source: Author's compilation, based on income and consumption household surveys.
a. The table reports personal saving rates for all countries but Nicaragua, which are household saving rates.

distribution and at the same time produces a smaller (even negative) saving rate than what is expected. On the other hand, a positive temporary income shock moves someone up the income distribution and at the same time produces larger than normal saving rates. Therefore, temporary shocks induce a false positive relation. Measurement error in income produces the same artificial effect as temporary shocks inducing a spurious positive correlation between current income and savings.

The data presented in table 5 do not address the more interesting question of the relation between saving rates and permanent income.[21] Rather, they refer to current income, with all the aforementioned difficulties in their interpretation. Qualitatively, there are no large differences between the computations based on individuals and households, so the paper only reports those

21. Using lifetime income and wealth proxies, Gandelman (2015b) finds that the rich save more in most Latin American and Caribbean countries.

TABLE 6. Saving Rates by Area of Residence
Percent

Country	*Rural*	*Urban*
Argentina	25	12
Bolivia	33	34
Brazil	6	18
Colombia	29	15
Costa Rica	17	–5
Ecuador	7	10
Honduras	–15	3
Mexico	–4	4
Paraguay	5	18
Peru	16	13
United States	32	31

Source: Author's compilation, based on income and consumption household surveys.

based on individuals for all countries but Nicaragua, which are reported at the household level.

According to the results, the first income bracket with positive savings is the ninth decile for Honduras; the eighth decile for Bahamas, Costa Rica, and Paraguay; the seventh decile for Chile and Mexico; the sixth decile for Argentina, Barbados, Brazil, and Nicaragua; the fifth for Colombia, Trinidad and Tobago, and Ecuador; the fourth for the United States; the third for Bolivia, Panama, Peru, and Korea; and the second for Uruguay.

Saving Rates by Region of Residence

There are several reasons to think that there might be differences between urban and rural regions, including the following possibilities. First, financial services are more concentrated in urban than rural areas. Second, there is lower enforcement of labor regulations in rural areas, and rural workers are less likely to benefit from pensions and social assistance after retirement. Third, consumption patterns in rural and urban areas are different due to the availability of shopping centers and cultural traits. Finally, there are differences in average education levels. As some of these reasons are likely to increase savings and some likely to decrease them, there is no clear prediction on saving differences between urban and rural areas. Table 6 reports that saving rates in rural areas are larger than in urban areas in Argentina, Colombia, and Costa Rica. Saving rates are larger in urban areas than in rural areas in Brazil, Honduras, Mexico, and Paraguay, and they are of similar magnitude in Bolivia, Ecuador, Peru, and the United States.

Counterfactual Exercises

As explained in the methodological section, the counterfactual exercises measure the importance of three different factors in the national private saving rates. First, it might be that institutional characteristics (such as the financial system, pension system, macroeconomic instability, and so forth) or national cultural traits determine different savings behavior between countries. Second, it might be that individuals in two countries have the same saving behavior conditional on their characteristics (for example, age), but that the distribution of people is different between countries. Even if comparable individuals in two countries have exactly the same behavior, a country with a larger percentage of retired people will have a lower national saving rate. Third, even if the first two factors are the same in two countries, it might be that national saving rates differ due to differences in income distribution. Consider two countries where people have exactly the same saving behavior, conditional on their characteristics, and that the people-characteristics distribution is the same. Suppose, for example, that the distribution of income in one country is more concentrated among older, retired individuals, while in the other country the income distribution is more concentrated among adults who are still in the job market. In this case, the second country would have a higher national saving rate than the first.

Summing up, the counterfactual exercises are computed by allowing national saving rates to differ by differences in saving behavior, differences in population distribution, and differences in income distribution. These three determinants of the national private saving rates are the three terms of equation 2. The counterfactuals can be computed for any meaningful breakdown of the population, and they are thus presented by age brackets, education levels, and income distribution. To compute the counterfactual saving rate, I take each Latin American and Caribbean country and impose one characteristic of a benchmark economy, leaving the other two characteristics as is.

Figure A1 in the appendix presents the age distribution of the population of each country.[22] The first age bracket goes from eighteen to twenty-four, while intermediate brackets are in five-year increments and the last one accumulates all individuals above seventy-five years old. As expected, the distribution is decreasing with the exception of the last bracket. Figure A2 reports a picture of relative income by age. Those above (below) the 100 percent

22. The basic data to construct the counterfactuals are reported in Gandelman (2015a).

TABLE 7. Summary of Counterfactual Exercises: Simple Country Averages[a]
Percent

Exercise and characteristic imposed	Counterfactual saving rates		Counterfactual change in saving rates	
	Benchmark economy		Benchmark economy	
	United States	Korea	United States	Korea
Age bracket				
Saving behavior	27	17	15	6
Population distribution	14	15	2	3
Income distribution	12	12	0	0
Education				
Saving behavior	23	18	11	7
Population distribution	35	20	24	8
Income distribution	7	9	–5	–3
Income quintile				
Saving behavior	–5	34	–16	23
Population distribution	10	9	–1	–3
Income distribution	14	7	3	–4
Area of residence				
Saving behavior	31		18	
Population distribution	14		1	
Income distribution	12		–1	

Source: Author's compilation, based on income and consumption household surveys.
a. The actual average saving rate in Latin America and the Caribbean is 11 percent. For detailed results, see tables A1 (age brackets), A2 (education), A3 (income quintiles), and A4 (area of residence).

line reflect age brackets whose individuals or households earn more (less) than the country average. The inverse-U-shape reflects the fact that younger and older people earn less than adults in their labor market years, in line with the abundant evidence from the labor economics literature. In relative terms, Uruguayan and Brazilian elderly are the richest of the region, with income above the national average. In all other countries, the elderly are below the national average. In relative terms, the poorest elderly are those of Korea, Bahamas, and Barbados, with 25 percent, 53 percent, and 51 percent of national income, respectively. For the youngest age bracket, the Latin American and Caribbean countries with the lowest relative income are Chile, Argentina, and Uruguay, with average income of 36 percent, 38 percent, and 36 percent of national income, respectively. In the United States and Korea, the youngest group's average income is 33 percent and 32 percent of national income, respectively.

Table 7 presents summary results of the counterfactual exercises, which are presented for each country in tables A1 through A4 in the appendix. The table includes the average counterfactual saving rate and the average change

in national saving rates. According to the exercises based on age brackets, differences in national saving rates with the benchmark economies are mainly due to differences in saving behavior. Imposing U.S. saving behavior more than doubles saving rates, with increases of 15 percentage points. The counterfactual based on Korea also suggests that saving behavior is the main driver of differences: the exercise based on individual saving rates implies an increase of 6 percentage points, while the exercise based on household saving rates (not reported) implies an increase of 18 percentage points. The results reported in the appendix suggest that for Bolivia, Brazil, and Paraguay, differences in the age distribution with Korea explain more than differences in behavior. For Argentina, Colombia, Panama, and Peru, differences in saving behavior by age and in age distribution explain about the same change as in the counterfactuals.

The exercises based on education levels show that differences in national saving rates with the benchmark economies are due to differences in saving behavior and in the distribution among education levels in the benchmark economies and in Latin America. As shown in the appendix, for some countries (namely, Argentina, Bahamas, Barbados, Chile, and Panama), the effect of saving behavior is quantitatively more important than education distribution, while for others (Brazil, Costa Rica, Honduras, Paraguay, Trinidad and Tobago, and Uruguay), the opposite is true. There are also some countries where the effect of these two dimensions is about the same size.

The exercises based on income groups show that the most relevant dimension for explaining differences in saving rates with the benchmark economies is differences in saving behavior, which run in opposite directions for the United States and Korea. Imposing U.S. saving behavior (by income quintiles) decreases average Latin American saving rates by 16 percentage points, making them negative. In contrast, imposing Korean saving behavior (by income quintiles) triples the average Latin American saving rate.

Finally, the exercises based on area of residence suggest, again, that differences in saving behavior with the United States are the main driver of differences in national saving rates. Korea is not included in this exercise since the Korean survey gathers only urban data.

The results so far indicate that differences in saving behavior are the most common explanation for differences in saving rates with the benchmark economies. This difference in saving behavior can be attributed to many factors, including cultural and institutional differences. Decomposing the change in the counterfactual saving rates into smaller components provides some intuition on what explains these differences. This decomposition is a simple application of equation 3, where instead of imposing the whole distribution of

saving behavior of the benchmark economy, only the components of interest are used. For instance, one exercise imposes the saving behavior of younger individuals in the benchmark economies while keeping the saving behavior of older individuals (and the population and income distribution) at the Latin American level. Suppose that a country is formed only of young and old individuals. The counterfactual rate due to differences in saving behavior (equation 3) is then

$$(6)\quad \hat{S}^{LA}_{sav=sav^*} = \hat{S}^{LA}_{sav_{young}=sav^*_{young}} + \hat{S}^{LA}_{sav_{old}=sav^*_{old}};$$

$$\hat{S}^{LA}_{sav=sav^*} = \left(\frac{y^*_{young} - c^*_{young}}{y^*_{young}}\right)\left(\frac{y_{young}}{Y/N}\right)\left(\frac{n_{young}}{N}\right) + \left(\frac{y^*_{old} - c^*_{old}}{y^*_{old}}\right)\left(\frac{y_{old}}{Y/N}\right)\left(\frac{n_{old}}{N}\right).$$

Summary results of this decomposition are presented in table 8; the details by country are in tables A5 to A7 in the appendix. The total for each exercise equals the change in saving rate due to saving behavior in table 7.

I divide the counterfactual based on age bracket into four groups: under thirty-five years old, thirty-five to forty-nine years old, fifty to sixty-four years old, and sixty-five years old and over. The first category captures the first years in the labor markets, while the last reflects retirement age. This last category explains a very small fraction of the increase in saving rates due to changes in saving behavior. Note also that the most important category is that of thirty-five to forty-nine years old. The two categories below fifty years old explain the vast majority of the differences in the counterfactual saving rates (10 out of 15 percentage points for the United States). This suggests that differences in the pension system are not the cause of saving differentials. Whatever is producing the differences in savings reported in the exercises based on age brackets must be related to differences in the active years in the labor market.

The decomposition for differences in saving behavior by education suggests that the increase in the counterfactual Latin American saving rates is due to differences in the saving behavior of more educated groups: complete secondary and at least some tertiary education explain 8 of the 11-percentage-point change in the counterfactual saving rate based on the United States and even in the counterfactuals based on Korea. The decomposition of differences by income quintiles for the United States shows that the lowest U.S. quintile saving rates are well below Latin America's lowest quintile; that is,

TABLE 8. Decomposition of Counterfactual Changes in Saving Behavior[a]
Percent

Exercise	Benchmark economy	
	United States	*Korea*
Age bracket		
Under 35 years old	3	0
35–49 years old	7	7
50–64 years old	3	3
65 years old and over	2	–5
Total	15	6
Education level		
Incomplete primary	1	–6
Incomplete secondary	3	1
Complete secondary	4	4
Some university	4	7
Total	11	7
Income quintile		
First	–41	1
Second	1	2
Third	4	3
Fourth	6	5
Fifth	14	12
Total	–16	23

Source: Author's compilation, based on income and consumption household surveys.
a. The table presents simple country averages. For detailed results by country, see tables A5 (age brackets), A6 (education level), and A7 (income quintiles).

imposing U.S. saving rates decreases national saving rates. This is likely due to credit consumption (for example, credit cards) being more available for the poor in the United States. On the other hand, the top income quintiles in the United States and Korea save more than in Latin America and the Caribbean; thus, the imposition of their saving behavior increases national saving rates. About half of the increase in the saving rates produced in the counterfactual based on Korea is due to what happens in the top quintile.

The results for the education decomposition and the income decomposition suggest that the lower saving rates in Latin America and the Caribbean are produced by lower saving behavior of their more educated and richer individuals. Lower savings might be due to lower income for a given consumption, higher consumption for a given income, or a combination of both. These results suggest that raising the saving rate in Latin America and the Caribbean would require increasing saving rates at the top of the income

and education distribution. A word of caution is warranted, however. This process would most likely translate into regressive policies from the point of view of income distribution in a region already characterized by very large income disparities.

Summary, Discussion, and Conclusions

In this paper, I use microdata on income and consumption from seventeen Latin American and Caribbean countries, plus the United States and Korea. The descriptive statistics show an inverse-U-shape of saving rates by ages for most countries, as predicted by the life cycle model. Although the shape of the saving rates by age is in line with theory, the positive savings rates for older individuals is unintuitive without considering precautionary savings and uncertainty in medical expenses, a bequest motive for saving decisions, or wealth in the utility function.[23]

The estimates presented here suggest a monotonic relation between education and saving decisions. According to the the not-so-obvious claim that richer people save more, more education is associated with more income and through this channel translates into higher savings. A different motive for the association between education and savings is related to individual time preferences. More patient individuals are more likely to engage in educational investments and to save since both decisions imply a relatively higher valuation of the future. The relation between education and savings should not be interpreted as causal, but rather as an empirical regularity.

The descriptive section closes showing a monotonic relation between current income levels and saving rates. This relation should be taken with caution, however, since income shocks and measurement errors that affect saving rates also affect the classification of individuals in income scales, favoring the finding of a positive correlation. Nevertheless, proxies for lifetime income and wealth indicate that in most Latin American and Caribbean countries, the richer do save more.[24]

The second section of results describes simulation exercises in which different characteristics of a given Latin American and Caribbean country were

23. Dynan, Skiinner, and Zeldes (2004); Becker and Tomes (1986); Carroll (2000).
24. Gandelman (2015b).

replaced with the corresponding characteristics of a benchmark economy (the United States or Korea). The three dimensions tested were differences in saving behavior by groups, differences in the demographic distribution of the population, and differences in income distribution. The results suggest that the main driver of differences in saving rates between the United States or Korea and Latin America and Caribbean are differences in saving behavior. To a lesser extent, differences in population distribution due to differences in education can explain part of the differences in saving rates with Korea.

The conclusion that saving behavior is the main driver of differences in national savings with the United States and Korea does not illuminate the causes of those differences. There are many potential explanations, ranging from institutional differences, such as the degree of development of the financial sector, the social security system, and macroeconomic stability, to intrinsic cultural traits like differences in the social value of work, savings, and the intergenerational transmission of wealth.

To shed some light on which of the former is more important, I decompose the aggregate changes by particular age, education, and income groups. The exercise shows that in groups defined by age, differences in saving behavior at retirement age do not explain the differences in the counterfactual. Quantitatively, the most important age bracket for assessing differences in saving behavior is from thirty-five to forty-nine years old. Given that most of the effect due to differences in saving behavior in age groups is before fifty years old, differences in saving rates with the benchmark economies are most likely not produced by differences in the pension or social security systems, but rather are related to other differences in the labor market (for example, job quality, income level, or the tax system).

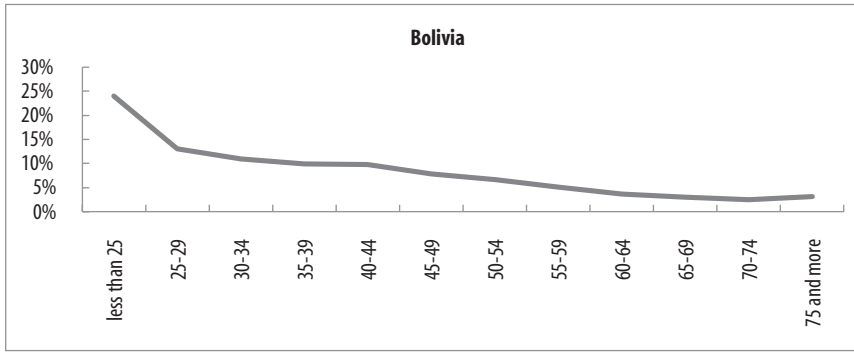
The decomposition by education level and income level shows that lower Latin American and Caribbean saving rates are explained by lower saving behavior of more educated and wealthier individuals. This presents a political dilemma. Policies promoting the saving rates of these segments of the population in Latin America and the Caribbean are likely to increase income and social disparities in a region where large inequalities are already in place.

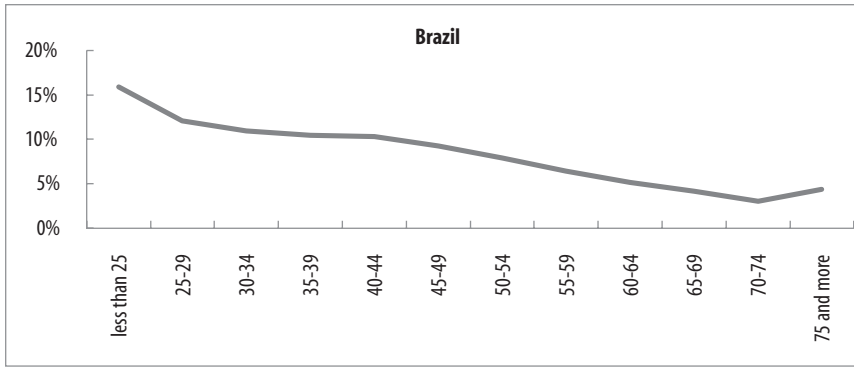
Finally, the poorest groups in the United States have much larger negative saving rates in absolute terms than in Latin America and the Caribbean. This may be due to differences in access to credit and other mechanisms for financing consumption. The reduction of credit constraints for the poor, while increasing their well-being, is likely to reduce national saving rates in Latin America and the Caribbean.

Appendix: Supplemental Figures and Tables

FIGURE A1. Distribution of Population by Age

FIGURE A1. Distribution of Population by Age (*Continued*)





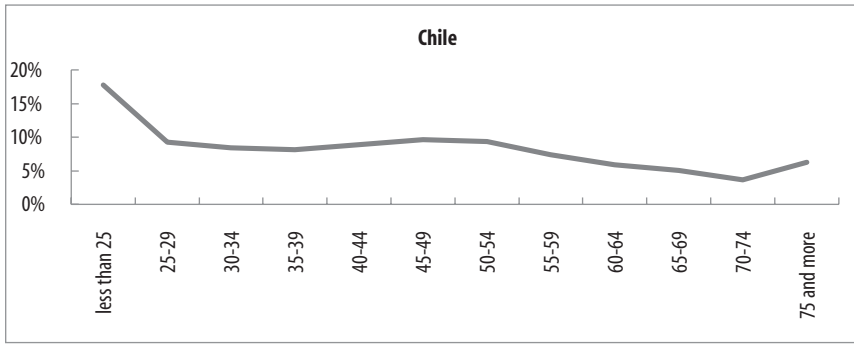


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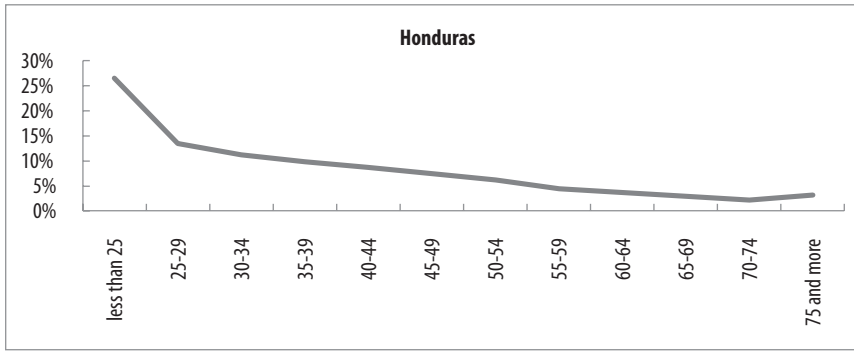
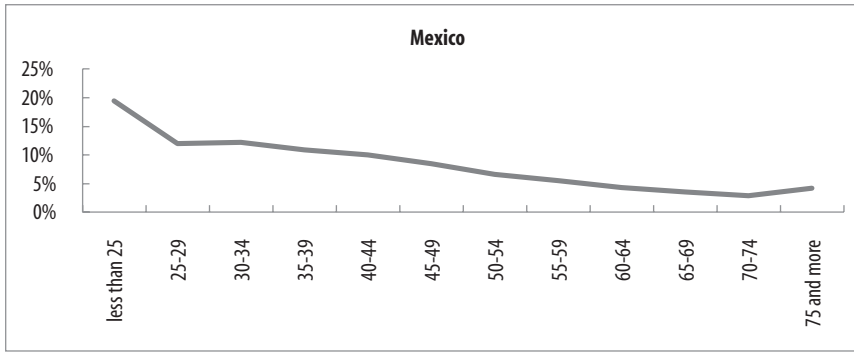
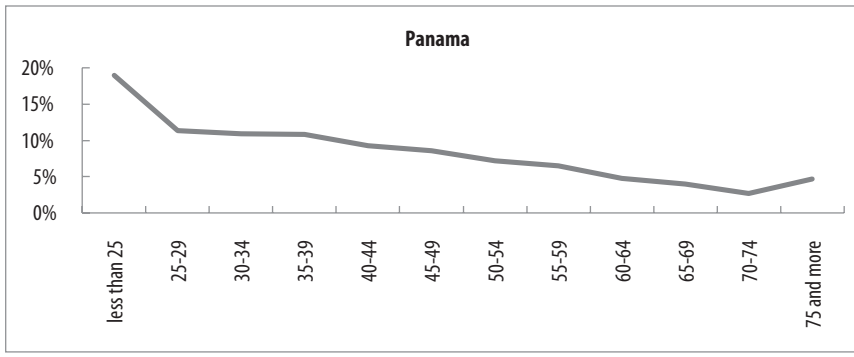
FIGURE A1. Distribution of Population by Age (*Continued*)

FIGURE A1. Distribution of Population by Age (*Continued*)







(*continued*)

FIGURE A1. Distribution of Population by Age (*Continued*)

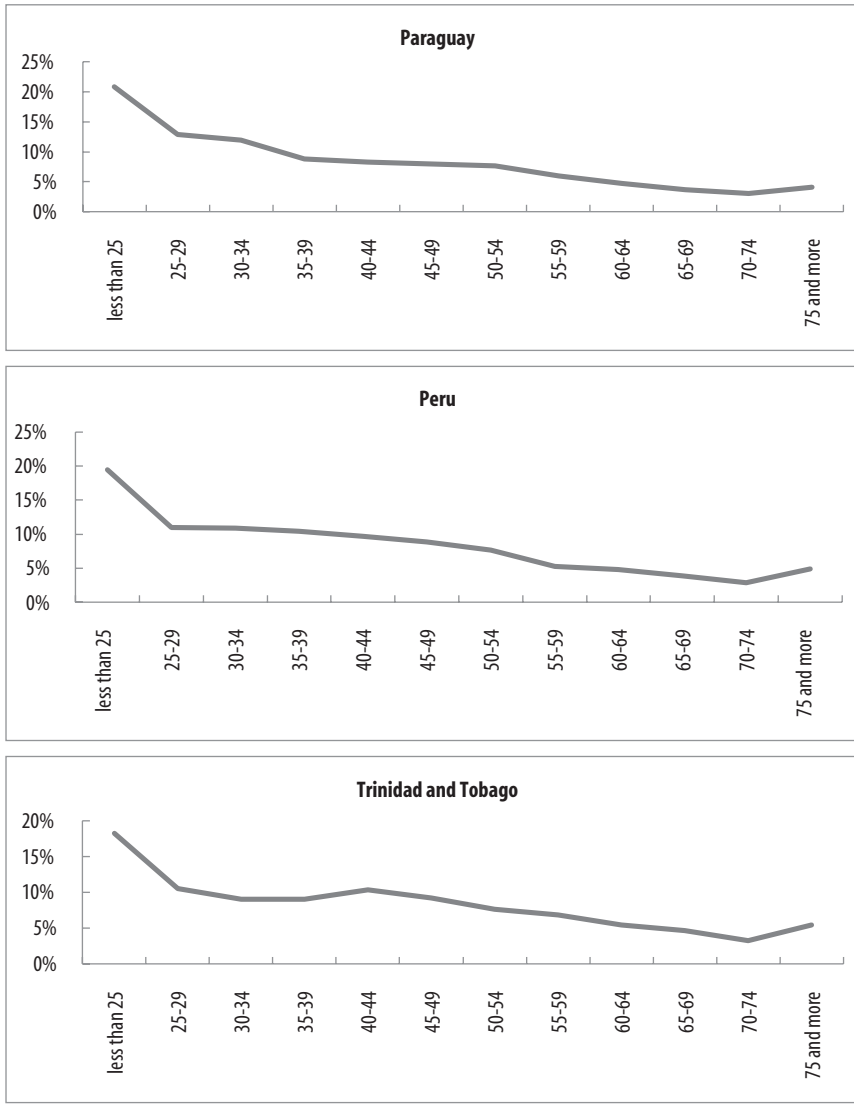
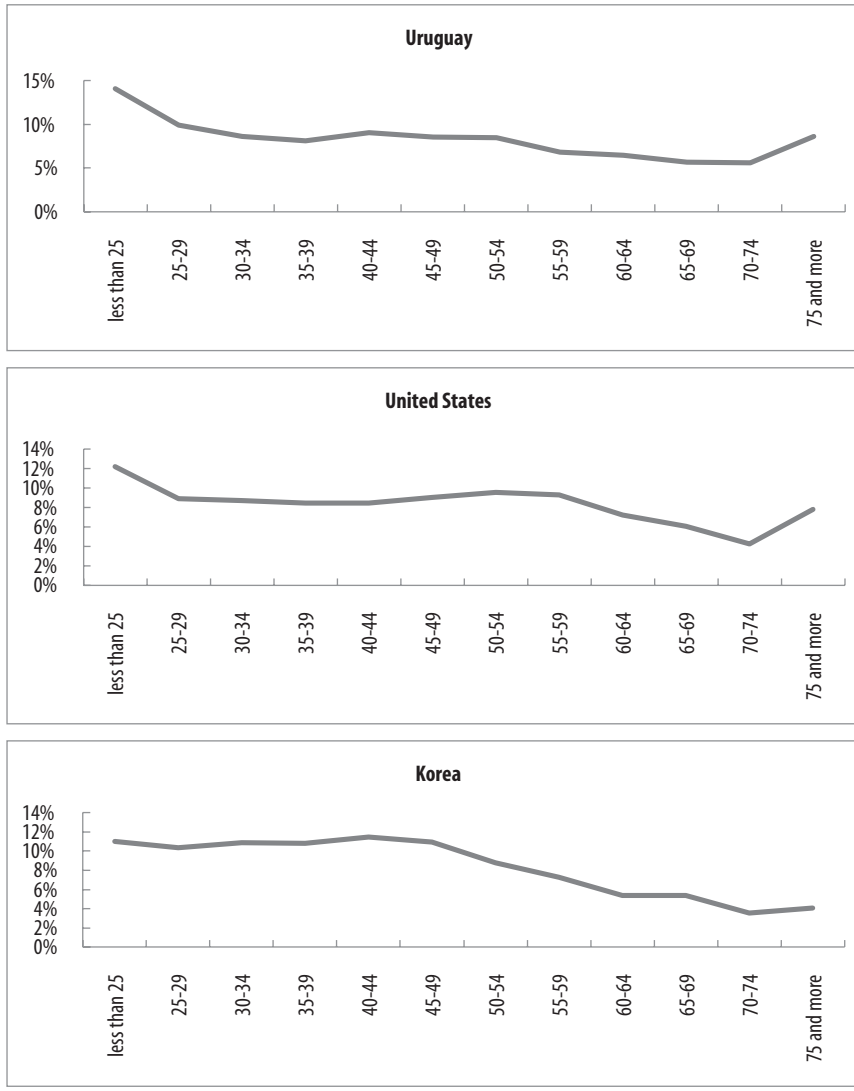


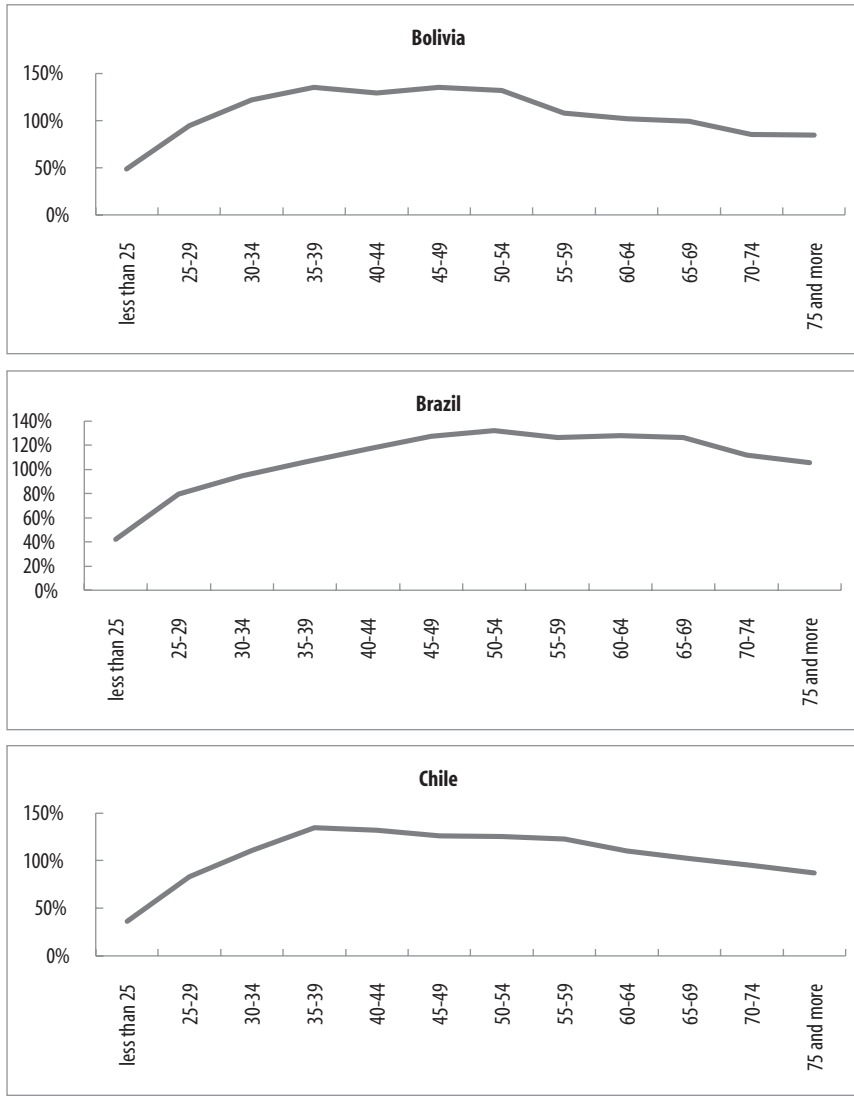
FIGURE A1. Distribution of Population by Age (*Continued*)



Source: Author's compilation, based on income and consumption household surveys.

FIGURE A2. Individual Relative Income by Age

FIGURE A2. Individual Relative Income by Age (*Continued*)



(*continued*)

FIGURE A2. Individual Relative Income by Age (*Continued*)

FIGURE A2. Individual Relative Income by Age (*Continued*)

(*continued*)

FIGURE A2. Individual Relative Income by Age (*Continued*)

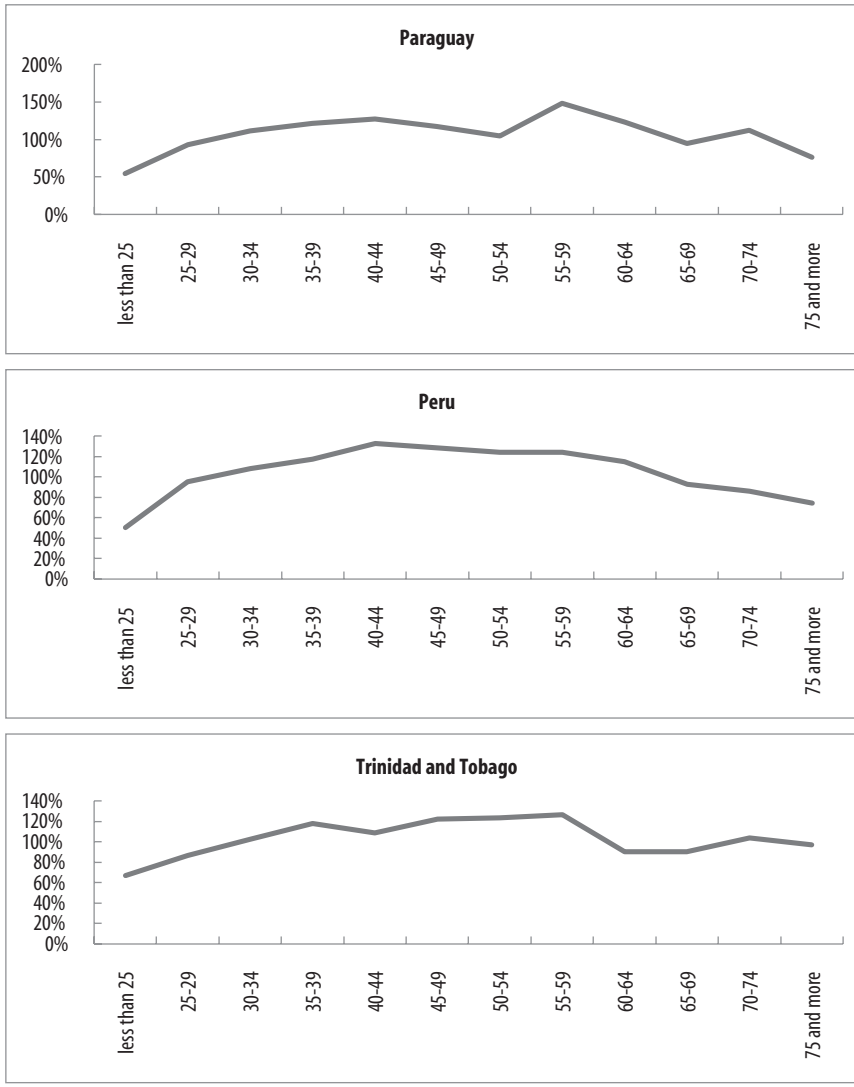
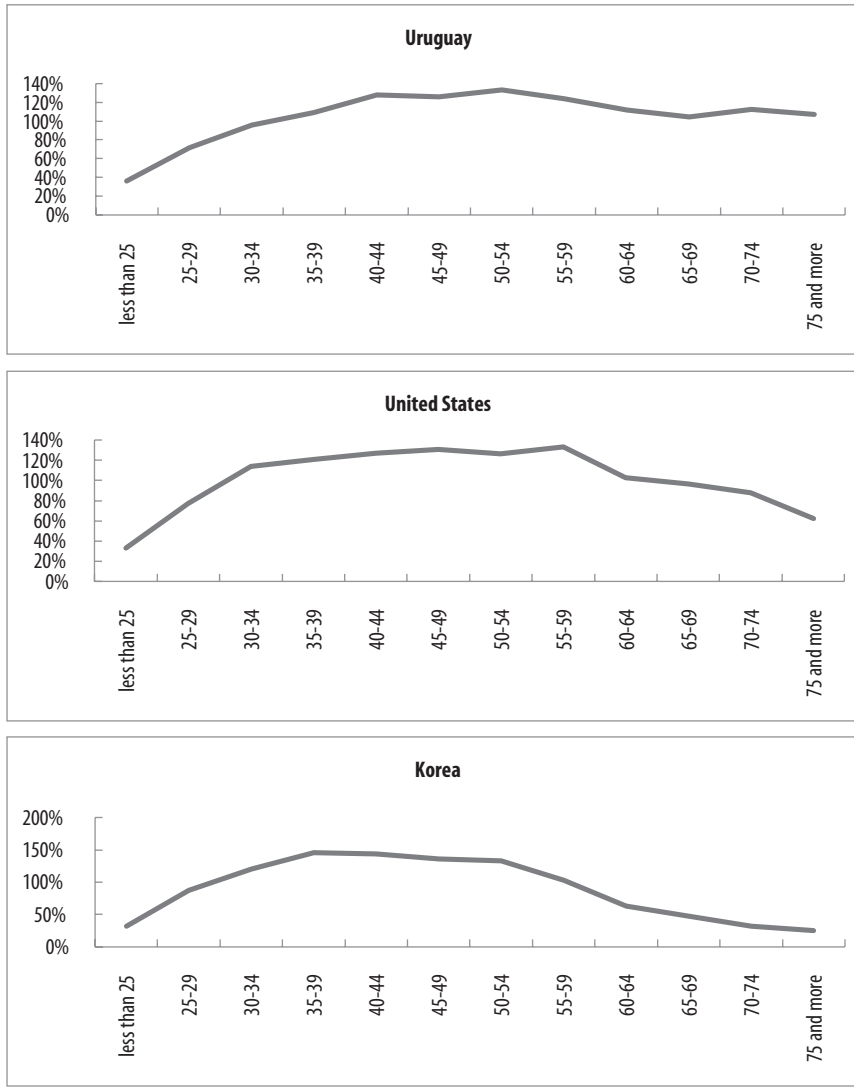


FIGURE A2. Individual Relative Income by Age (*Continued*)



Source: Author's compilation, based on income and consumption household surveys.

TABLE A1. Counterfactual Saving Rates Using Age Brackets[a]
Percent

Country	Actual saving rate	Counterfactual saving rate			Change in counterfactual rate relative to actual rate		
		Saving behavior	Population distribution	Income distribution	Saving behavior	Population distribution	Income distribution
A. Benchmark: United States							
Argentina	13	28	17	13	15	4	0
Bahamas	−1	29	−5	−1	29	−4	0
Barbados	6	28	8	5	22	2	−1
Bolivia	18	25	23	19	7	5	0
Brazil	18	28	21	19	10	3	1
Chile	8	29	11	8	21	3	0
Colombia	16	27	19	17	11	2	1
Costa Rica	14	29	17	13	15	3	−1
Ecuador	9	26	12	10	17	3	1
Honduras	−2	23	1	−1	24	2	1
Mexico	3	27	4	4	24	1	1
Panama	13	27	17	13	14	4	0
Paraguay	15	25	20	15	10	5	0
Peru	14	26	16	14	13	2	1
Trinidad and Tobago	22	24	22	22	2	0	−1
Uruguay	16	29	17	15	13	1	−1
B. Benchmark: Korea							
Argentina	13	18	17	11	5	4	−2
Bahamas	−1	21	1	5	22	2	5
Barbados	6	15	10	7	9	4	0
Bolivia	18	16	25	19	−2	6	1
Brazil	18	19	21	18	1	3	0
Chile	8	18	11	7	10	3	−1
Colombia	16	19	20	16	3	3	0
Costa Rica	14	23	18	13	9	4	−1
Ecuador	9	17	12	10	8	3	1
Honduras	−2	14	2	0	15	4	2
Mexico	3	19	6	5	15	3	2
Panama	13	16	16	12	4	3	−1
Paraguay	15	15	19	14	0	4	−1
Peru	14	17	17	15	4	3	1
Trinidad and Tobago	22	12	24	22	−11	1	0
Uruguay	16	14	17	13	−2	1	−3

Source: Author's compilation, based on income and consumption household surveys.

a. The counterfactual exercises are based on individual-level microdata. In each column, the indicated characteristic (saving behavior, population distribution, or income distribution) of the benchmark country is imposed on the Latin American or Caribbean country, holding all other factors equal.

TABLE A2. Counterfactual Saving Rates Using Educational Levels[a]
Percent

Country	Actual saving rate[b]	Counterfactual saving rate			Change in counterfactual rate relative to actual rate		
		Saving behavior	Population distribution	Income distribution	Saving behavior	Population distribution	Income distribution
A. Benchmark: United States							
Argentina	14	24	19	10	10	5	–4
Bahamas	0	27	4	0	26	3	–1
Barbados	7	25	14	5	18	7	–2
Bolivia	18	20	28	11	1	10	–7
Brazil	18	19	100	7	1	81	–11
Chile	8	28	14	6	20	6	–2
Colombia	16	22	38	10	6	22	–6
Costa Rica	14	25	48	6	11	34	–8
Ecuador	9	23	24	6	14	15	–3
Honduras	–2	19	77	–5	21	79	–3
Mexico	3	22	23	1	19	20	–2
Panama	13	27	23	9	14	11	–4
Paraguay	16	22	41	10	6	25	–5
Peru	14	25	24	10	11	10	–3
Trinidad and Tobago	22	21	58	14	–1	36	–8
Uruguay	16	20	31	10	4	15	–6
B. Benchmark: Korea							
Argentina	14	26	15	12	12	1	–2
Bahamas	0	30	–1	1	29	–1	1
Barbados	7	26	9	7	19	2	0
Bolivia	18	5	23	12	–13	5	–6
Brazil	18	7	58	11	–11	40	–7
Chile	8	30	7	7	22	–1	–1
Colombia	16	12	21	11	–4	5	–5
Costa Rica	14	23	20	8	10	7	–6
Ecuador	9	18	12	7	9	3	–2
Honduras	–2	5	35	–2	6	37	–1
Mexico	3	16	8	2	13	5	–1
Panama	13	28	13	12	15	0	–1
Paraguay	16	15	26	13	–1	10	–3
Peru	14	20	15	13	6	1	–1
Trinidad and Tobago	22	18	37	18	–4	15	–4
Uruguay	16	15	22	11	–1	6	–5

Source: Author's compilation, based on income and consumption household surveys.

a. The counterfactual exercises are based on individual-level microdata. In each column, the indicated characteristic (saving behavior, population distribution, or income distribution) of the benchmark country is imposed on the Latin American or Caribbean country, holding all other factors equal.

b. The actual saving rates slightly differ from those in tables A1, A3, and A4 due to some missing data on education level.

TABLE A3. Counterfactual Saving Rates Using Income Quintiles[a]
Percent

Country	Actual saving rate	Counterfactual saving rate			Change in counterfactual rate relative to actual rate		
		Saving behavior	Population distribution	Income distribution	Saving behavior	Population distribution	Income distribution
A. Benchmark: United States							
Argentina	13	–7	12	16	–20	–1	3
Bahamas	–1	1	–4	7	2	–3	7
Barbados	6	15	–2	19	9	–9	13
Bolivia	18	–7	17	22	–26	–1	3
Brazil	18	20	23	15	2	5	–3
Chile	8	–17	8	9	–25	0	1
Colombia	16	5	14	19	–11	–2	3
Costa Rica	14	–2	13	14	–16	–1	0
Ecuador	9	–30	8	11	–39	–1	2
Honduras	–2	15	–4	–2	17	–2	0
Mexico	3	–14	3	4	–17	–1	1
Panama	13	–18	12	15	–31	–1	2
Paraguay	15	–2	12	19	–17	–3	4
Peru	13	–21	12	16	–34	–1	3
Trinidad and Tobago	22	–5	21	27	–28	–2	5
Uruguay	16	–9	15	18	–25	–1	2
B. Benchmark: Korea							
Argentina	13	34	11	12	21	–3	–1
Bahamas	–1	34	–4	–3	34	–4	–2
Barbados	6	36	–3	2	29	–9	–5
Bolivia	18	33	16	19	15	–2	1
Brazil	18	37	20	–10	19	2	–28
Chile	8	34	7	6	26	–1	–2
Colombia	16	36	13	12	20	–3	–4
Costa Rica	14	36	11	8	22	–2	–6
Ecuador	9	32	7	9	23	–2	0
Honduras	–2	37	–6	–15	39	–4	–13
Mexico	3	34	2	3	31	–1	0
Panama	13	33	11	13	21	–2	0
Paraguay	15	35	10	10	20	–5	–5
Peru	13	32	12	14	19	–2	1
Trinidad and Tobago	22	34	19	21	12	–3	–2
Uruguay	16	34	14	16	18	–2	0

Source: Author's compilation, based on income and consumption household surveys.

a. The counterfactual exercises are based on individual-level microdata. In each column, the indicated characteristic (saving behavior, population distribution, or income distribution) of the benchmark country is imposed on the Latin American or Caribbean country, holding all other factors equal.

TABLE A4. Counterfactual Saving Rates Using Area of Residence[a]
Percent

Country	Actual saving rate	Counterfactual saving rate			Change in counterfactual rate relative to actual rate		
		Saving behavior	Population distribution	Income distribution	Saving behavior	Population distribution	Income distribution
Argentina	13	31	13	13	18	0	0
Bolivia	34	31	41	32	−3	7	−2
Brazil	17	31	18	16	14	1	−1
Colombia	16	31	16	16	15	0	0
Costa Rica	14	32	−1	9	18	−15	−5
Ecuador	9	31	11	8	22	2	−1
Honduras	−2	31	4	−4	33	6	−3
Mexico	3	31	4	2	28	1	−1
Paraguay	15	31	20	13	16	5	−2
Peru	13	31	15	13	18	1	0

Source: Author's compilation, based on income and consumption household surveys.

a. The counterfactual exercises are based on individual-level microdata. The benchmark country is the United States. In each column, the indicated characteristic (saving behavior, population distribution, or income distribution) of the benchmark country is imposed on the Latin American or Caribbean country, holding all other factors equal.

TABLE A5. Decomposition of the Counterfactual Change in the National Saving Rate due to Differences in Saving Behavior, by Age Bracket[a]
Percent

	Benchmark: United States					*Benchmark: Korea*				
		Age bracket					*Age bracket*			
Country	*Total counterfactual change*	*Under 35 years*	*35–49 years*	*50–64 years*	*Over 65 years*	*Total counterfactual change*	*Under 35 years*	*35–49 years*	*50–64 years*	*Over 65 years*
Argentina	15	6	7	2	0	5	4	7	1	–8
Bahamas	29	5	9	7	9	22	2	8	7	4
Barbados	22	0	9	8	6	9	–2	8	7	–5
Bolivia	7	1	4	1	1	–2	–3	4	1	–4
Brazil	10	4	4	2	1	1	2	4	1	–6
Chile	21	7	9	4	1	10	5	9	4	–7
Colombia	11	2	5	3	0	3	–1	5	3	–5
Costa Rica	15	6	6	1	2	9	5	6	1	–3
Ecuador	17	3	8	4	1	8	0	8	4	–4
Honduras	24	6	11	6	3	15	0	11	6	–1
Mexico	24	5	11	4	3	15	2	11	4	–1
Panama	14	3	8	3	0	4	0	8	3	–6
Paraguay	10	2	6	2	1	0	–2	6	1	–5
Peru	13	1	7	3	2	4	–2	7	3	–4
Trinidad and Tobago	2	–8	4	4	2	–11	–13	4	4	–6
Uruguay	13	4	6	3	0	–2	3	6	2	–13

Source: Author's compilation, based on income and consumption household surveys.
a. The counterfactual exercises are based on individual-level microdata.

TABLE A6. Decomposition of the Counterfactual Change in the National Saving Rate due to Differences in Saving Behavior, by Education Level[a]
Percent

	Benchmark: United States					*Benchmark: Korea*				
		Education level					*Education level*			
Country	*Total counterfactual change*	*Incomplete primary*	*Incomplete secondary*	*Complete secondary*	*University*	*Total counterfactual change*	*Incomplete primary*	*Incomplete secondary*	*Complete secondary*	*University*
Argentina	10	0	0	3	7	12	0	–2	3	10
Bahamas	26	1	5	10	11	29	1	4	11	13
Barbados	18	0	4	8	6	19	–1	3	10	8
Bolivia	1	–2	–2	2	5	–13	–18	–4	2	7
Brazil	1	6	3	0	–7	–11	–8	1	0	–5
Chile	20	0	2	6	12	22	–2	1	7	16
Colombia	6	–2	1	3	4	–4	–15	0	4	7
Costa Rica	11	2	6	3	0	10	2	5	3	3
Ecuador	14	1	3	5	5	9	–5	2	5	8
Honduras	21	8	9	3	1	6	–7	8	3	2
Mexico	19	3	6	4	6	13	–4	4	5	9
Panama	14	0	3	4	7	15	–1	1	5	10
Paraguay	6	1	3	1	1	–1	–8	1	1	4
Peru	11	1	1	4	6	6	–8	0	5	9
Trinidad and Tobago	–1	–1	–1	1	0	–4	–5	–2	3	1
Uruguay	4	0	–1	2	4	–1	–6	–3	2	6

Source: Author's compilation, based on income and consumption household surveys.
a. The counterfactual exercises are based on individual-level microdata.

TABLE A7. Decomposition of the Counterfactual Change in the National Saving Rate due to Differences in Saving Behavior, by Income Quintile[a]
Percent

	Benchmark: United States						*Benchmark: Korea*					
	Total counterfactual change	*Income quintile*					*Total counterfactual change*	*Income quintile*				
Country		*First*	*Second*	*Third*	*Fourth*	*Fifth*		*First*	*Second*	*Third*	*Fourth*	*Fifth*
Argentina	–20	–45	1	3	6	14	21	–1	2	3	5	12
Bahamas	2	–31	4	5	8	16	34	4	5	5	6	14
Barbados	9	–16	3	3	6	13	29	8	4	3	4	10
Bolivia	–26	–45	–1	2	4	14	15	–1	0	1	3	12
Brazil	2	–14	4	5	5	2	19	6	5	5	4	–1
Chile	–25	–54	0	3	6	19	26	–1	1	3	5	17
Colombia	–11	–32	0	2	5	14	20	2	1	2	4	11
Costa Rica	–16	–40	1	4	7	13	22	0	2	4	6	9
Ecuador	–39	–67	0	4	7	18	23	–2	1	3	6	15
Honduras	17	–23	4	7	10	19	39	4	5	6	9	16
Mexico	–17	–52	0	4	7	24	31	–1	1	3	6	22
Panama	–31	–57	–1	3	5	18	21	–2	0	2	4	15
Paraguay	–17	–38	2	5	7	7	20	2	3	4	6	5
Peru	–34	–57	–1	3	6	16	19	–2	1	2	5	13
Trinidad and Tobago	–28	–41	1	2	4	6	12	1	2	2	3	3
Uruguay	–25	–47	–1	2	6	16	18	–2	0	2	4	13

Source: Author's compilation, based on income and consumption household surveys.
a. The counterfactual exercises are based on individual-level microdata.

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