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A Dynamic Analysis of Household Decision-Making in Latin America: Changes in Household Structure, Female Labor Force Participation, Human Capital and its Returns

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Introduction¹

Like other regions of the world, Latin America is going through an intensive transformation process that is intimately linked to the demographic transition from a relatively young population to one that is older. This transition, however, is slightly delayed relative to the most developed parts of the world, creating large differences in dependency ratios across regions and, possibly, opportunities for factor movements. Moreover, regions differ considerably in the amount of human capital and skills available in the short run.

On the other hand, the last few decades have been characterized by a process of trade liberalization and opening up that was particularly important for many countries in Latin America. This process is likely to have important consequences for the returns to human and physical capital, even though recent evidence seems to show that the process was not directly related to the increase in the return to education in the US and Europe. Indeed, one of the reasons to question the direct link between trade liberalization and wage inequality in the North has been that returns to education seem to have increased over the last twenty years, even in countries that are relatively better endowed with low-skill labor. This increase in the return to skill and education that has been documented in many countries in Latin America, has failed to accelerate the process of human capital accumulation in the region. In fact, the accumulation of human capital in Latin America, especially when compared to other developing regions, such as South East Asia, has been painfully slow.²

Changes in demographics and in the return and use of human capital modify the amount of resources available to individual households, as well as those households' needs. At the same time, changes in the economic environment provide incentives to the formation of different types of households as well as to the accumulation of human capital. The most important mechanisms through which these changes are observed include changes in family structure and fertility, availability and accumulation of education, participation in the labor market, and saving behavior.

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² See Duryea and Székely (2000), Attanasio and Székely (2000).

Understanding how the main variables have evolved and how these changes are inter-related is relevant for a wide variety of issues, ranging from the evolution of inequality and poverty, to the dynamics of growth, to the design of social security systems and of safety nets. Analysis of aggregate trends, however, is of only limited use for this purpose. Most of the interesting questions require the detailed analysis of household-level data that make it possible to measure and disentangle the micro trends that constitute the fundamental inputs in the determination of the aggregate ones. Fortunately, good quality data sets are becoming available in many developing countries. Moreover, for many developing countries, including several in Latin America, there are not only single-cross sections also consistent time series of cross sections covering, in some cases, several years.

Ultimately, the fertility, human capital accumulation, labor market participation and savings decisions are taken within the household, so the household, rather than each individual, is the main focus of these dynamics.

This paper presents the results of the Inter-American Development Bank Research Network project “A Dynamic Analysis of Household Decision Making in Latin America.” The object of this project is to quantify and explain the changes in the variables mentioned above, as they are essential for understanding where the region is going and represent important determinants of the standard of living of Latin American households. Researchers in five different countries were encouraged to analyze household-level data sources using a similar methodology and standardized techniques. While each individual study has a slightly different focus, whose choice was driven by the situation of the individual country and the nature of data available, all of the studies present a similar set of basic facts on the evolution of family size and composition, on fertility choices and labor force participation, on the accumulation of human capital, and on returns to human capital. While this does not necessarily present a complete story explaining the joint evolution of these variables, the set of descriptive results presented for each country constitutes an important first step towards such a story. It is hoped that the material presented in this volume can provide an input for subsequent studies.

This paper presents an overview of and introduction to the Research Network project and to the book that is its final product. Section 1 discusses the main household decisions under analysis. Section 2 presents the methodology proposed for the country papers. Section 3 summarizes the main results obtained by the five case studies included in this project. Section 4

summarizes the results of the last two chapters of the book, which take an aggregate approach to the question of what determines fertility declines, and which explore the relation between the demographic changes triggered by fertility declines and a series of economic outcomes and policies from an aggregate approach. Taking an aggregate approach makes it possible to draw some general policy conclusions that are of central interest to the objectives of this project. Section 5 concludes.

1. Household Decisions

As mentioned above, each of the country studies presents a common set of facts. In particular, the authors of the country study were, before developing particular aspects of their research that are described in Section 3, encouraged to report on the evolution, of family structure and composition fertility, participation into the labor force, and human capital accumulation and its returns over the last twenty years or so.

In particular, each of the papers in the project can be divided into two parts. The first part uses microeconomic analysis to identify how recent demographic trends and changes in the economic environment have been reflected in changes in family structure. These changes have important implications for the subsequent steps of the project, where human capital accumulation and labor market decisions are analyzed. Additionally, there is not much information about how families adjust to an aging process in the absence of adequate social security and pension systems, or take their decisions on who participates in the labor market. The theory of family formation and structure by Becker (1993) provides an adequate framework for examining these decision-making processes.

The second part of each paper focuses on human capital accumulation and use. It aims at identifying the reasons why many children drop out of school before having access to the higher education levels that yield the largest returns. Therefore, it will also characterize the evolution of returns to education across generations and over time. In addition, it will examine why different types of households use more or less of the human capital they own (the participation decision), and what drives their savings decisions.

1.1 Family Structure and Fertility

Family structure has undergone important changes in Latin America. While in the developed world there is a large increase in single-adult households (both with and without children), this phenomenon is still not observed in Latin America. This is particularly important as the family has provided an important institution for coping with shocks to individual income; this is especially true for the extended family and families in rural areas. The process of urbanization, the decline in fertility and the changes in the economic environment (in terms of volatility, returns to human capital etc.) constitute potentially important incentives for generating changes in the family structure. All the studies start with an analysis that characterizes the headship rates among individuals of different gender and year of birth, followed by an analysis of family size and structure.

Fertility changes are an important determinant of family size and structure and, ultimately, of household needs. Characterizing such changes and how they have unfolded over time and across generations is therefore extremely important for obtaining insight into family structures and the likely evolution of needs.

The chapters in the book quantify the extent of the decline in fertility in the five countries. Not only do the studies document the overall decline in the number of children of younger cohorts relative to older ones, but they also analyze how this decline has been different for different groups of the population: better educated people account for a large fraction of the decline, while at low income levels fertility is still considerably higher, which imposes pressure on the standard of living of the poorest households. The patterns illustrated in the five chapters are fairly representative of what has happened in Latin America at large. While fertility has been declining, it still remains high.

1.2 Participation in the Labor Market

In the 1980s, female participation rates increased dramatically. However, they seem to have stabilized in most countries in the 1990s and remain well below the rates observed in developed countries. Therefore, one problem might be that households are not using all the resources at their disposal to generate incomes. In the case of poor families, the decision to participate is normally linked with education, since the opportunity cost of not participating in the labor

market is small when the individual has low schooling. However, it is not totally clear why females in better-off households participate less than in other regions in the world.

Fertility changes are likely to be related to female labor supply choices. The latter are important for a variety of reasons. First, they directly change the amount of resources available to a household. Second, by inducing diversification, increased participation probably reduces the amount of income uncertainty faced by a household. Third, they induce changes in the “household production function,” as services provided by the female when not participating in the labor market have to be substituted, to a certain extent, with market goods and services. Fourth, a reduction in fertility presumably foreshadows a transition from an emphasis on the quantity of children to the quality of care devoted to each child. In this sense the transition is likely to be related directly to education choices. Finally, labor market participation by the female is likely to change the distribution of resources within the household.

The chapters of this book document the main changes in female participation into the labor force over time and across generations and try to relate these changes to the other variables mentioned above, in particular to fertility behavior and human capital accumulation. Moreover, these changes are characterized not only at the aggregate level but also for different education and income levels.

1.3 Human Capital Accumulation and Returns

The slow pace of human capital accumulation in Latin America has had a prominent role in the policy debate in the region. Even though the average years of schooling have increased in the past decades, the generations leaving school-age still experience a gap of around 6 years between the years of education they would be expected to have acquired at their age, and the actual attainment. Although with limitations, most of the countries in the region provide access to at least primary and secondary education to their populations. Therefore, the problem seems to be that for some reason most families are not able to invest in the education of their members. The lack of proper education and skills seems particularly important when countries open to international trade and competition and when the relative demand for skilled jobs might be high. Recent evidence suggests that the returns to skills, and more generally to education, have changed and have contributed to changes in inequality as well as to incentives to the accumulation of human capital in Latin America. As most of the accumulation of human capital

occurs at an early stage of the life cycle, the effects of changes in the returns to education can be dramatically different for different generations.

The chapters in the book document how the accumulation of human capital has progressed for different generations in the five countries included in the project. The chapters analyze different dimensions, in that they consider both the average years of education of each of several generations, the dispersion of the years of education and the percentage of individuals with different qualifications. This detailed quantitative analysis is crucial for understanding where the region stands and where its principal problems lie.

Analyzing changes in the return to education is considerably more complicated because of the inherent difficulty of measuring the price of skills as they change over time, which is measured only for people in employment. At the same time, such an analysis is crucial for a variety of reasons. First, quantifying changes in the returns to skills can be informative about the nature of the changes in inequality and their relationship to the process of liberalization of the economies in the region. In this respect, the country studies can provide extremely valuable inputs to a variety of studies. Second, the returns to education are likely to provide incentives to the process of human capital accumulation. It is crucial to the understanding of the (slow) process of accumulation to quantify how the return to various skills and qualification has evolved. The evidence on this fundamental aspect is still very limited. In particular, most of the existing studies either consider an average return to education, or define the return to education as the return to college education. While both components are obviously important, they give a limited picture of what happened. First, the returns to education exhibit some strong non-linearities. The most obvious is the high value of the last year of study in completing a given degree. Second, the percentage of college graduates in Latin America is still very small: in addition to the return to college education, it is also important to look at the return to secondary over primary education.

Ultimately, the understanding of the process of human capital accumulation is going to be crucial to the formulation of development policies. The importance of liquidity constraints, the functioning of the mechanisms within households that determine schooling decisions, and so on, are crucial to the design of policy interventions that could stimulate the accumulation of skills in the region. In this respect the studies presented in this book provide a useful first step.

1.4 Saving and Pension Provision

Many Latin American countries have gone or are going through substantial reforms of the public pension system. These, together with the demographic trends that have partly motivated the reforms, imply important changes in incentives to save to provide for old age. Saving behavior is obviously related to household needs and resources and is therefore linked to the issues mentioned above. Furthermore, if individuals are forward looking, consumption and saving choices should reflect individual expectations about future variables and trends and can therefore be particularly informative.

The analysis of savings and consumption will help to identify the kinds of households that are not being benefited by the new pension systems. This is a particularly relevant issue at present because several Latin American countries have already started to reform their social security and pension systems. Additionally, the analysis could help to assess other economic consequences of pension systems. For instance, improved systems could have an enormous impact on household structure, since the Latin American household would probably be less relied upon as a substitute for resources for retirement for the elderly. If this were so, improved systems would “free” household resources that could be invested in the new generations. Unfortunately, the lack of high-quality surveys with information on consumption and saving has precluded this kind of analysis for some of the country studies.

1.5 Interrelated Household Decisions

Since incentives, resources and needs differ substantially across generations, over the life cycle and across the income distribution, characterizing the dynamics in each of the four dimensions discussed above is crucial. For instance, the structure and decision-making of the average household is likely to change significantly throughout the life cycle. In developed countries, until recently, a typical traditional nuclear family, soon after its formation, goes through an “investment” stage, during which the proportion of members that are not in working age expands. Children are not typically income earners, and a large share of household resources goes to them in the form of investments in education. The “investors” do not expect to receive the full returns to investments in education, since the resources are used for the accumulation of other members’ human capital.

In a second stage, households achieve the maximum income-earning capacity of the life-cycle, and they tend to start saving for retirement, while still supporting some of their members. Finally, the typical household changes structure again when the head ages. At this stage, the household becomes smaller, labor market participation rates decline, and individuals normally retire and support themselves through pensions and social security.

In the case of Latin America, the life cycle of many households differs from this pattern. In this region, significant amounts of inter-household transfers to older family members are observed, and rather than shifting toward smaller nuclear or single person units, the family structure has slightly shifted toward extended families that include several generations. For instance, it has been observed that when the household head reaches prime age, it is common for the household to support older generations. Similarly, as suggested by recent research, the poorest female-headed households tend to shift from nuclear to extended households as a survival strategy. In this case, the shift gives these vulnerable households access to more resources. It is therefore interesting to establish the extent to which the persistent or even increasing role of extended families might be linked to changes in return to human capital and increases in inequality.

Consistent with the patterns mentioned in the previous paragraph, there are also differences at the third stage, when the household head reaches retirement age, since Latin American households have a tendency to shift their structure toward extended households, composed of several generations, and where the main breadwinner is not the oldest person in the unit. This might be due to the absence of adequate social insurance mechanisms.

These patterns are particularly important presently because, given the demographic transition which the region is experiencing, the Latin American population is starting to age. In about half the countries, this means that the proportion of the population that is of working age will increase for the following two decades. In the other half, however, the transition means that the proportion of elderly individuals is already rising significantly and will reach more than 15 percent of the total population in the next 20 years. These trends, combined with substantial reforms in the provision of public pensions, might induce important shifts in household structure and saving behavior, which might in turn impact on female participation decisions and investments in human capital. These phenomena might be particularly important in the short run

and in those countries where the process of aging is more advanced and where social security provision is less adequate.

1.6 Dynamic Household Decisions

As mentioned above, there are several complications involved in the study of the dynamics of household decisions. Perhaps the most important is that family decisions can vary substantially across income groups, across generations going through the demographic transition process at different points of their life cycle, and even over the life cycle of the same household. Given the changing nature of the structure of households, and the focus on the life cycle of households, the projects can only be performed with a thorough analysis of microeconomic data. Furthermore, given the dramatic changes that have occurred in the last few decades, identifying the dynamics of these variables is crucial. The projects, therefore, focus on the analysis of longitudinal data or on the analysis of time series of cross sections for five countries. Moreover, they use a unified methodology that, while requiring a number of strong assumptions, allows the analysis of life cycle patterns with time series of cross sections. A discussion of this common methodology follows below.

2. Methodology

This project does not aim to construct a complete model of household formation and dissolution, fertility and labor supply choices and so on. However, the life cycle model and Becker's theory of household production function can provide a useful theoretical framework for organizing the empirical analysis. The former explicitly considers household decisions over time, while the latter makes explicit the links between family structure, labor supply choices and incentives to accumulate human capital.

As the studies in this project focus on examining *changes* in the economic environment faced by households and in their behavior, it is necessary to use a methodology that is suitable for studying intrinsically dynamic phenomena. The choice of a particular methodology ultimately depends on the phenomena one is interested in studying. In what follows, the focus is mainly on households' economic welfare and decisions in a dynamic context. The life cycle model provides a useful and unifying framework for studying household behavior. It is therefore of interest to characterize the evolution of several variables of interest over the household life

cycle. At the same time, however, it is of important to study how life cycle profiles differ across generations. The sub-sections below briefly sketch the methodology used in all five country studies, taking as an example a variable that might be of interest: the average number of children of a group of households.

While in a stationary situation one could use the age variation in a single cross section to characterize the life cycle behavior of this variable, in a situation in which large structural changes are under way, it is important to distinguish between the life cycle patterns and differences across generations and over time. In particular, if cohort effects are likely to be important, the estimates of life cycle patterns obtained from an individual cross section would be problematic. In a famous paper, Shorrocks (1975) stressed that in the presence of cohort effects the age profile observed in a given cross section does not correspond to the life cycle profile of any living cohort and can be completely meaningless and misleading.

2.1 Synthetic Panels

Ideally, to follow the behavior of individual households over time, one would use longitudinal individual data. However, as longitudinal data are rarely available over a long time period, in what follows the need for a methodology based on repeated cross sections is emphasized.

By considering repeated cross sections with information on each household's number of children, one can control for cohort effects and estimate the life cycle profile of different cohorts. The idea, which was first used to study a life cycle problem by Browning, Deaton and Irish (1985), is to form groups of fixed membership over time. One obvious possibility, within the life cycle framework, is to divide the sample according to the year of birth of the household (head). Even though the same household is not followed over time, one can follow the average behavior of a generation as it ages. If several years are available one observes the number of children in each cohort at different ages. If the time period covered by the survey were long enough, one would observe different cohorts at the same age (obviously at different points in time).

A number of points should be stressed:

1. The year of birth is not the only obvious criteria to form groups. Any group of fixed membership over time can be considered. Indeed, simultaneously considered below are year of birth and education of the household head as criteria for forming groups.

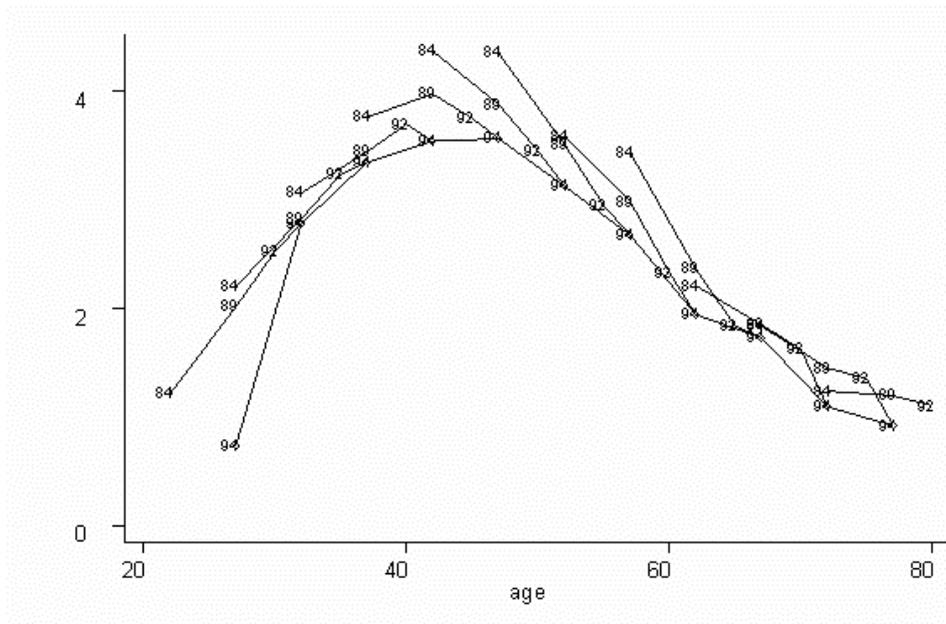
2. If one is interested in a non-linear transformation of the variable of interest, this is not a problem, as one can compute the sample mean of a non-linear transformation of the variable of interest. This is particularly important when studying structural models that involve non-linearities.
3. As the typical survey size is not extremely large, it is often impractical to form groups on the basis of a single birth-year. Obviously one would like to form groups that are as homogeneous as possible. However, one trades this off with the need of having cells of a certain size to minimize sampling error. This issue is of great practical relevance when also using education (and possibly other variables) to form groups.
4. When using cohort averages in regression analysis one can make use of the information on within cell variability to correct for heteroskedasticity implied by sampling error and improve efficiency. Most of the relevant results are in Deaton (1985).

Obviously, the above methodology is not without problems. The implicit assumption that is made in forming group averages of the variables of interest and following them over time is that the sample for each group considered is drawn from a population in which group membership is constant or varies in a completely random fashion in terms of the variable under study. There are several reasons why such an assumption might be questioned. First, if mortality affects different subgroups differently, it is likely that the composition of the groups changes over time. For instance, if the poor die younger, the cohort becomes progressively “richer” as it ages, as a larger proportion of wealthy individuals survives. Furthermore, if family formation is related to some of the variables under study, one can get biases both at the beginning of the life cycle, (as the household heads that form a household first are not a representative sample of all the individuals in the population) and at its end (as some individuals will stay on their own as household heads while other might join their children’s families). These problems are potentially serious. Their importance, however, can be addressed in a variety of ways. Controlling for additional variables that might explain differential mortality (such as education) might be a solution to the first problem. Characterizing the evolution of household headship might give insights on the practical importance of the second.

The use of synthetic panels or average cohort techniques allows a very useful graphical representation of the life cycle evolution of the variables of interest. As this type of graphs will be extensively used in the chapters of this book, it is worth spending some time describing the way this type of graph is constructed and interpreted. This will be illustrated with the help of a simple example, using the number of children in the household as the variable of interest.

Four Mexican surveys covering the years 1984, 1989, 1992 and 1994 are considered below. The sample is divided according to the year of birth of the household head. In order not to reduce too much the number of households in each group 5-year intervals. A total of 12 cohorts are formed, the first formed by household heads born between 1965 and 1969, the second formed by those heads born between 1960 and 1964, the third formed by those born between 1955 and 1959, and so on. The first cohort is only observed in 1994 at an average age of 23. The second cohort is aged, on average, 22 in 1984, 27 in 1989 and so on.

Figure 1. Average Number of Children by Cohort



By using the average number of children of households whose head belongs to the cohorts defined above, one can plot such a variable against age and follow the behavior of each of the cohorts considered, as is done in Figure 1. Each connected segment refers to a cohort. Notice that as the period covered by the surveys is 11 years (albeit only four observations are

available over that period) and cohorts are defined by 5-year intervals, each cohort will overlap with adjacent cohorts.

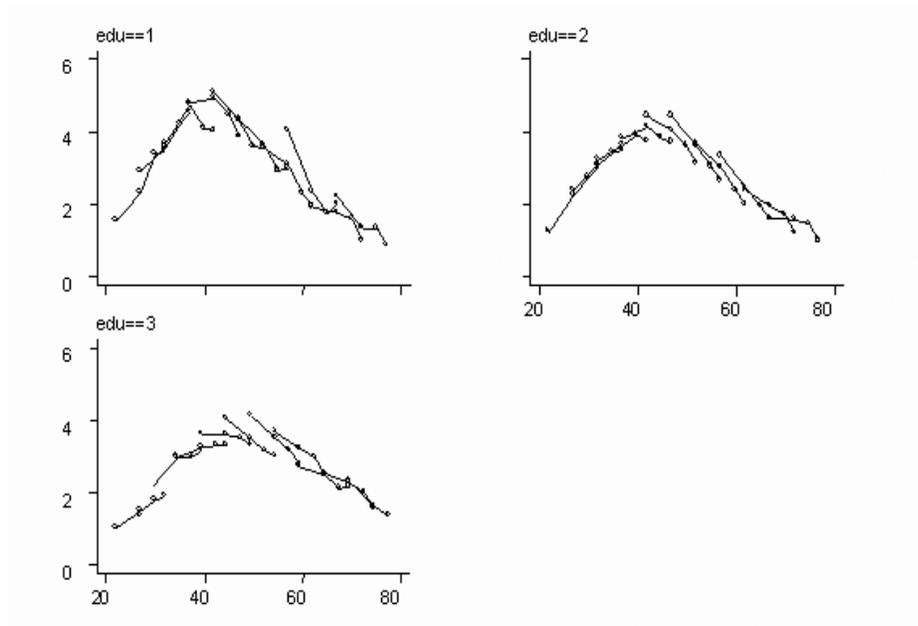
As can be seen from the picture, each cohort is observed over a different interval of its life cycle. By tracking these different pieces one can try to estimate an entire life cycle profile. The average number of children increases with age and declines in the last part of the life cycle, as children leave the original household.

Notice the large differences across cohorts: younger cohorts seem to have a considerably lower number of children, reflecting the decline in fertility rates in Mexico over this period. It might be tempting to interpret the vertical difference between overlapping cohorts as pure “cohort effects.” While for a variable such as children, this interpretation is a reasonable one, formally and for other variables, it is not given, as one should remember that overlapping observations refer to different time periods. Differences might be due, therefore, to time effects.

The figure also plots the cross-sectional age profile for 1994. The difference between the cohort and the cross-sectional profile makes it clear how misleading the former can be if used to infer life cycle profiles.

As is clear from this picture, the methodology proposed can be used with at least two surveys. However, the larger the number of surveys and the longer the time period covered the larger is the number of degrees of freedom a researcher has to model life cycle behavior. It should be stressed that when few surveys are available it is usually better to have them spaced over a long time interval rather than in adjacent years.

Figure 2. Average Number of Children by Cohort and Education



In the process of constructing the picture the entire sample has been divided into cohorts. Fine partitions are also possible. It is possible, for instance, to divide the sample by the level of education, as well as the year of birth. Figure 2, for instance, considers three levels of education, low, medium and high. Notice that the cohort effects visible in Figure 1 are mainly due to the behavior of the highly educated households.

2.2 Cohort, Age and Time Effects

As mentioned above, while tempting, one cannot in general interpret the vertical difference between the estimated cohort profiles at the same age as a “cohort” effect, as such a difference could be explained by time effects. In general, without additional restrictions and/or information, one cannot disentangle age, time and cohort effects. As a cohort is defined by the year of birth, it is obvious that there is a linear relationship among the three variables. In other words, it will be always possible to express a cohort effect as a combination of time and age effects.

The problem is immediately seen if one considers a simple empirical specification that one might want to fit to average cohort data:³

³ See the discussion in Heckman and Robb (1986). The equation above does not consider interactions between cohort, time and age effects, but this would not change the substance of the problem.

$$(1) \quad y(a, c, t) = \alpha_c D^c + \alpha_a D^a + \alpha_t D^t$$

where D^a and D^c are vectors of dummies identifying the age group and cohort, respectively, to which the individual or household head belongs, and D^t is a vector of dummies identifying the year in which the household was interviewed. The identification problem is associated with the fact that the three effects are linearly dependent; that is, once one knows the cohort to which the individual (household head) belongs and the year in which he/she was interviewed, one also knows exactly his/her age ($a = t - c$).

Of course one can “solve” the identification problem by arbitrarily normalizing a coefficient (or a set of dummies) to zero. In a way, this would be simply a way of labeling the different effects. There are situations in which such a normalization is reasonable. In the example given above, for instance, of the average number of children, it is reasonable to assume that time effects are close to zero and, therefore, interpret the data as being affected only by age and cohort effects. In other situations, such simple restrictions are not as plausible. It is sometimes possible to appeal to economic models to impose some additional restrictions, but this is not always the case.

Some of the papers that comprise this book will occasionally use the restrictions suggested by Deaton and Paxson (1994), to identify some of these effects. In particular, one can assume that the year effects sum to zero and are orthogonal to all linear trends in the data. This implies that all deterministic linear trends in the data are interpreted as a combination of age and cohort effects. Under these assumptions, one can regress the data points plotted in Figure 1 on a polynomial in age, a set of cohort dummies and a set of year dummies constrained to have zero mean and to be orthogonal to a time trend.⁴

The age and cohort profiles estimated with the latter procedure depend on the arbitrary normalization that year effects sum to zero and are orthogonal to a linear trend. An alternative restriction, which allows the identification of age profiles, is the assumption that there are no cohort effects in the variable under study. This would be the case if cohort effects in income and consumption would exactly cancel out. It has suggested by Deaton and Paxson (1994) that some

⁴ On this issue see the discussions in Heckman and Robb (1986), MaCurdy and Mroz (1995), Attanasio (1998), and Deaton and Paxson (1994).

versions of the life cycle model do imply such a restriction, and imposing such a restriction makes it possible to identify unrestricted year effects.

3. Contents of Country Papers

The standard procedure for Inter-American Development Bank Research Networks was followed for selecting the countries included in this study. The research competition was announced, applications were solicited, and a set of studies was selected by the review committee (the editors of this book) based on the criteria in the announcement of the competition. Five country studies—for Brazil, Colombia, Peru, Mexico, and Uruguay—were selected from more than 30 proposals submitted.

The structure of the papers is as follows. Each paper begins by discussing the data used in the project. While all countries ended up using time series of cross-sectional household surveys, the details of the data are different from country to country. In particular, the time series length, the frequency of the surveys, the coverage (urban vs. rural) and the type of variables on which information is available differ across countries. Just to give an example, only two of the five studies analyze data on consumption and savings. The first section of each paper is the only one where the analysis is performed regarding individual data, as it studies headship rates. This first part is very useful because it provides information on family formation and family arrangements as well as on the validity of some of the assumptions implicitly made when using the synthetic cohort analysis using the age of the household head to form cohorts. The papers then move on to the analysis of family structure and fertility decisions. The second part each paper is devoted to human capital accumulation, participation and savings decisions (where the data provides information on household consumption and income). As stressed above, since the focus of this project is on the dynamics of the variables under study, all the studies are based on the analysis of repeated cross sections. In most cases, authors attempt to identify cohort, age and time effects for some of the variables using the methodology described above. Finally, some of the papers engage in an analysis of simultaneous decisions taken by households, by using regression analysis.

The contents of the five country papers included in the study are summarized below, while Section 4 summarizes the results of the final two chapters, which present an aggregate perspective on the issues discussed above.

3.1 Brazil

The paper on Brazil by Ricardo Paes de Barros is an interesting exploration into the relationship among a set of decisions taken by the family that affect individuals' well-being in a permanent way. The author uses a set of 16 household surveys spanning 19 years (between 1979 and 1997), each survey including more than 100,000 households.

The paper starts with a description of the evolution of household structure and family size. As in the average Latin American country, Brazil experienced a substantial decline in fertility rates during these years, as well as an increase in the proportion of individuals over 65 years of age.

In terms of changes in household composition, it is found that the family size reaches its peak when the household head reaches around 40 years of age, although this peak has been occurring earlier in the life cycle over the years. There is strong evidence that the household size of younger cohorts tends to be smaller than that of older cohorts. For instance, while those born in 1950 have families with a maximum size of 4.6, the family size was 5.4 for those born ten years earlier. On average, family size is diminishing at a rate of 0.8 members per decade. However, there is evidence that the rate of decrease is slowing.

Another important finding is that the proportion of families headed by women in Brazil has increased during the sample period, with younger cohorts presenting a larger proportion of female heads of household than older cohorts. As an example, the percentage of female heads in the cohort born in 1940 is close to 12 percent, compared to 16 percent in the cohort born in 1950.

One particularly finding is the low rate at which education levels have increased over the past 20 years. Illiteracy rates have been declining since the beginning of the past century, but the rate of decline has slowed down for the cohorts born after 1960, at a rate close to 7.5 percent every ten years. Additionally, the average rate of human capital accumulation is still strikingly low, reaching only 6.5 years of education for the cohort born in 1970. Moreover, there is a clear slowdown in the growth rate of average education for the cohorts born after 1960. The proportion of adult population that reached at least four years of primary schooling has increased since the beginning of the century, but it is still low for the younger cohorts (75 percent). The proportion for those with more than eight full years of education has also grown, but again it remains low (30 percent), especially for the younger cohorts. Finally, although it has also

increased, the proportion with at least complete high school education has not yet reached 10 percent.

All these findings are explained to a large extent by the decrease in the retention rate (i.e, the percentage of the adult population that has a certain level of education as a proportion of the population that has reached at least that level of education) up to fourth grade, a phenomenon which is not encountered in the second cycle (from fifth to eighth grades). The retention rate for high school education has been increasing over time, but the probability that a young adult who has completed this cycle goes on to university does even reach 45 percent.

Another interesting feature of the Brazilian case is that the returns to education are quite high (10-17 percent on average, per extra year of schooling), as compared to international standards. Although it is not possible to identify whether this profile is due to the cohort effect or time effect, there is evidence that the returns to education tend to be lower for younger than for older cohorts, which suggests that cohort effects may be playing an important role in these outcomes.

With regards to labor force participation, male participation tends to resemble the expected inverted U trend over the life cycle, with negligible differences between birth cohorts. The life cycle pattern for female participation is also an inverted U, but with a significantly lower peak than that of men (a 60 percent participation rate for women compared to a rate of almost 100 percent for men). Women also begin to leave the work force at 45 years old, while men begin to leave when they are about 50 years of age.

Differences in participation are also apparent across education groups. There is very little difference in the case of males, but in the case of female participation, it is found that the rate tends to be significantly higher for those with a higher educational level. For instance, for women born in the 1960s, the participation of the 30 to 40 age groups in the work force varies from 50 percent for women with the first stage of incomplete primary schooling to 75 percent among women who have completed high school.

Finally, the author uses regression analysis to study the determining factors of family structure and behavior. Three main conclusions emerge from this approach. The first is that on average an extra year of education reduces fertility by 0.32 children (that is, for every three years of additional education, women tend to have 1 child less). It is also found that the impact of education on fertility has declined over time. The second conclusion is that the main factors

driving the changes in female labor force participation in recent decades, is that the average Brazilian woman is going through the stage in her life cycle where participation peaks.

The third conclusion is concerned with the low education attainment of recent generations. As is common in the literature, it is found that parental education has a strong impact on children's education, but additionally, the author is able to characterize some factors of family environment, and school availability and quality, which turn out to be as important as parental background in determining schooling outcomes.

The main policy implication of the paper is that access to education is a major factor affecting other household decisions and welfare. A system with low retention rates for large sectors of the population can constitute a bottleneck for improvement in living conditions, since it triggers a set of household decisions that end up translating into low per capita incomes and low investments in human capital for future generations. Policy instruments that provide incentives for families to keep their children in school might be an effective way of breaking this vicious circle.

3.2 Colombia

The paper on Colombia, by Fabio Sánchez and Jairo Núñez, uses information from 23 urban household surveys spanning the 1976-1998 period. One possible concern with this type of data is that migration might change the composition of urban samples, which in turn changes the type of households belonging to each cohort. This blurs the picture of changes in behavior for each of the cohorts under analysis.

Nevertheless, the authors argue that changes in sample composition do not influence their conclusions. They present a series of statistics that suggest that the characteristics of household heads that migrate from rural areas are not particularly different from samples already living in urban areas. Thus, the credibility of the results depends on whether the tests proposed to evaluate changes in sample composition are seen as convincing.

In terms of household size and composition, the authors find that younger generations of household heads are more likely to head extended families (defined as families whose members are 30 years of age or more, or have additional adults) and less likely to head nuclear families (husband, wife and children younger than 30 years of age). For instance, 68 percent of 38-year-old household heads lead nuclear families, while for household heads over 38, the percentage of

nuclear families decreases and the percentage of extended families increases. It is also found that single-parent families are also more common in the younger generations. The empirical evidence shows as well that family size is smaller in the younger households: family sizes for the 1935 cohort household heads at age 40 reached about seven individuals, while for the 1955 cohort family size is about 4.8 individuals at the same age.

As for the accumulation of human capital, the average years of schooling has increased across generations, as expected, and the gender gap in this variable has been eliminated. The proportion of men born between 1930 and 1960 with primary education or less decreased from 60 percent to 30 percent, while the proportion with complete and incomplete secondary school increased from 27 percent to 55 percent, and the share with college education only reached 10 percent. In contrast, the proportion of women born between 1930 and 1960 with primary education decreased from 65 percent to 27 percent (more rapidly than men), the percentage with complete and incomplete secondary school increased from 27 percent to 53 percent, while the percentage with college education reached 11 percent.

The estimations of returns to education show that significant increases occur in average income once a school degree is achieved (primary, secondary and college). However, an enormous jump in income occurs once a college degree is obtained (almost 100 percent for men and 71 percent for women). It is also found that the labor income gap between workers with college degree and workers with primary education has decreased across cohorts. In contrast, the income gap across cohorts between workers with complete college and workers with complete and incomplete secondary school has increased.

Interestingly, the gender income gap has been closing for younger cohorts. The narrowing of differences has occurred at every level of education, but more strongly between men and women with complete college degree.

In terms of labor force participation, the younger cohorts of women have experienced a remarkable increase during the past years. At age 25 more than 90 percent of men participate in the labor market regardless of the cohort, and this percentage remains around 95 percent until age 50, when men's participation begins to decrease smoothly. However, in the case of women, at age 40 about 35 percent of women belonging to the cohort born around 1937 participated in the labor market, but this percentage reaches 65 percent for the generation born around 1957.

After the descriptive cohort analysis of changes in household size and structure, fertility, human capital accumulation, returns to education, income profiles, and labor supply, the authors present a scheme where they interpret the relation between all variables by using regression analysis in which a wide set of explanatory variables is included. They argue that the main explanatory variable that triggers the other household decisions is changes in the returns to education. Greater returns lead to higher female labor force participation, which in turn reduces fertility rates and induces greater incentives to invest in human capital. Since investment in education for newer generations is to a large extent a function of parental education, improvements in parents' background and fewer children per family result in better educated new generations.

3.3 Peru

The Peruvian study, undertaken by Jaime Saavedra and Martín Valdivia, uses a series of household surveys with information on both income and expenditure to examine savings behavior.

The authors start their descriptive analysis by examining the evolution of household size and structure, and argue that there are strong cohort effects in reductions in the number of children in the household, but they also observe interesting trends in household dynamics. They observe that in Peru, the role of the extended family (that is, households including adults that are neither the head of household or the head's spouse) is particularly important. One pattern that emerges from the data is that self-reported household heads are also the main income earners until the head is around 55 years of age. From then on, other family members become the main income earners. This pattern suggests that as individuals age they tend to merge into other households where younger members can contribute to supporting their consumption requirements. It is argued later in the paper that this change in household structure has implications for saving decisions.

The analysis of human capital investment in Peru reveals that a "big push" was observed in Peru during the past three decades, since there are almost no uneducated individuals in the most recent generations. Educational attainment at other levels has also improved substantially for younger cohorts. One interesting feature of this trend towards a population with higher

schooling is that the gap between the education levels of males and females has practically vanished in the country over the past two decades.

In terms of returns to education, it is shown that older cohorts have much higher returns than younger cohorts for all educational levels. This may be related to changes in the quality of the educational system, and/or to the significant increases in educational attainment achieved in the past decades. Normally, the increase in the relative supply of educated workers effect is partially offset by economic growth, as this generates an increase in relative demand. In that sense, the decreasing trend would indicate that supply pressures have dominated over the past fifty years.

By gender, returns to higher education among males increase up to 45 years of age and then start decreasing. Returns to primary and secondary education show a downward trend throughout the life cycle. Among females, the pattern of returns to higher education is similar but somewhat more pronounced. The life cycle pattern of returns to primary education is increasing, while that of secondary education is decreasing.

As in other Latin American countries, the main change in the labor market is that female participation has increased dramatically, and this change is closely associated with the fertility declines and improved education of recent decades. The paper shows that during the past three decades, female labor force participation increased from 30.5 percent in 1970 to 34.3 percent in 1980 and 38.2 percent in 1990, while for males the share has been stable at 81.5 percent, 80 percent and 79.2 percent, respectively.

As for the the life cycle pattern for males and females, participation reaches almost 100 percent for men between 35 and 50 years of age, and it falls steadily thereafter. Participation rises faster along the life cycle for less educated males but reaches higher levels for more educated men. Among females, participation reveals a smooth increase until the early forties, after which it falls faster than for men. In the case of college-educated females, although they start participating later, their labor market insertion reaches higher rates than for the other education levels.

With regards to employment relationship, the proportion of self-employed is very low at early stages of the life cycle, but it increases throughout as cohorts age. By contrast, salaried work decreases since the early stages of the cycle. At higher levels of education the proportion of young people who are self-employed is lower. For primary and secondary educated workers the

increase in this rate follows a slightly increasing trend throughout the life cycle, while among workers with higher education there is a slight decrease until their forties. An inverse trend can be seen for the proportion of salaried workers by educational level, that is, a steady downward trend in salaried work over time.

Finally, the authors engage in an analysis of household saving under three different variations: a standard saving rate, saving computed by excluding net transfers from the estimation of household income, and estimated savings after controlling for household demographic factors. The authors do not find evidence supporting the life cycle hypothesis of savings, that states that individuals tend to dis-save at young and older ages but increase their savings during the phases of their life cycle that are characterized by greater income-earning capacity. The authors speculate that the reason why they do not find the expected “hump-shape” pattern of savings for Peruvian households, is that family arrangements, and especially the tendency to merge into extended households at older ages, blurs the picture of individual saving behavior.

In terms of methodology, the novelty of this paper is that it uses a slightly different identification strategy than the one discussed in Section 2.2 above. The authors argue that business cycle fluctuations are the most common source of the year effects associated with the variables of interest, and since year effects are associated with GDP per capita fluctuations, they include information on GDP in their regression analysis. This allows for identifying age and cohort effects, after controlling for “year effects” as proxied by a GDP per capita measure.

After controlling for some of the mechanisms through which inter-generational transfers take place, the authors find that for households with more educated individuals, a hump-shaped pattern of savings is observed. This is not the case for households whose heads are less educated. As the authors argue, the reason might be that for households with lower incomes, who tend to have lower education levels, the family substitutes for the lack of past savings or for the lack of pensions, and it is therefore the main available instrument for smoothing consumption over the life-cycle.

3.4 Mexico

The study on Mexico by Alejandro Villagómez and Andrés Zamudio exploits household survey income and expenditure data to focus on the implications for household savings and

consumption decisions of fertility, family structure, education and labor force participation. The study covers the 1984-1996 period, which was characterized by a strong economic crisis during the first and last two years, and a period of economic recovery during the middle years.

The authors argue that one of the most important policies that triggered changes in household decision-making, is the National Health Plan of 1973 and a new General Population Law of 1974, which included an aggressive birth control program that accelerated the decline in fertility that was already being observed as a secular long term trend. This change generated an intensive transformation of household decisions, since it allowed women to devote more time to labor market activities rather than concentrating on childbearing and household chores, which, due to cultural patterns, are normally the responsibility of women. The possibility of devoting more time to activities rewarded in the labor market, and fewer children in each family implied, in turn, that more resources can be devoted for investment in the human capital of each child. This is, according to the authors, one of the factors behind the increase in the number of years of education of each cohort.

Although plausible, the latter argument is a hypothesis that is not tested in the paper. In fact, it is possible that the main policy triggering the change in household decision making, was the substantial increase in resources devoted to public education, along with the strong expansion of the educational system, which also took place during the 1960s and 1970s. This may have been an additional force behind the reduction in fertility rates and the increase in female labor force participation.

Specifically, the empirical evidence presented in the paper illustrates that the total fertility rate fell from 6.4 in 1950 to 3.2 in 1990 and 2.8 in 1995, and an important cohort effect with respect to household size and number of children, is observed. It is shown that household size is closely related to the educational level of the head. Cohorts with lower educational levels tend to have larger families (reaching a maximum of 6.5 members) than cohorts with more education. For the latter the maximum number of members is around 5.

As for types of households, nuclear families are the most important type in Mexico, representing around 65 percent of the sample. However the importance of this type of family is not constant at different ages. It is relatively important when individuals are young, but once they age, the relative importance of nuclear families decreases. When individuals grow older, extended and single-person families become more important. The increasing importance of other

types of families can be explained by the fact that some households become single-person families as a result of the dissolution of the family, via marriage of the children and death of the spouse, and these individuals tend to merge into households with younger heads.

The analysis of human capital accumulation reveals that older cohorts have, on average, less than three years of schooling, while for the youngest cohorts this number is above eight years. Additionally, differences between males and females for younger cohorts are much smaller than in the case of older cohorts. The smaller educational gap between males and females for younger cohorts reflect the spread of educational opportunities after the 1970s and the increased investment in human capital by younger households.

The authors find, as expected, that returns to secondary education are higher than to primary education. Over the period considered in this analysis (1984-1996) the differences in these returns increased, but in particular the returns for secondary and higher education. It is worth noting that the returns did not decrease during the years of economic crisis in 1995-96. Furthermore, returns increased at an especially rapid rate for women during the 1990s.

As for labor force participation decisions, the paper finds that there are important cohort effects for females. For instance, for women between 20 and 40 years of age, there is an important increase in hours worked during the 1990s. This could be explained by the decrease in fertility, the increase in women's education and the higher rate of returns on their education. In addition, labor force participation of women increased dramatically between 1994 and 1996.

An important change in the economic environment of Mexico, taking place during the period under study, and which affects household decisions, is the reform of the pension system in the early 1990s. The system was pay-as-you-go system was largely replaced by a fully funded pension scheme. These types of changes tend to reduce household savings as measured by household surveys, since the "forced savings" generated through individual accounts in a fully funded pension system reduce the need for saving through traditional financial instruments. On the other hand, if these types of measures are introduced during periods of economic expansion, which imply higher incomes, and thus, higher savings capacity, the final outcome in terms of savings will be more difficult to determine. This is the case of Mexico during the years under study. The same argument applies in the case of other household decisions, such as labor force participation and investment in human capital. Both of these factors tend to increase household incomes, and therefore, boost savings capacity.

In regard to household saving, the paper's main result is that younger cohorts are saving more than their older counterparts. This result is totally driven by those individuals with high and average education levels, as cohorts of individuals with low education are actually saving less than older cohorts with low education. The fact that individuals with high education are also the ones that participate more in the labor market and obtain higher incomes suggests that indeed, the reason why household saving has increased in the newer generations is that there is a positive income effect. If true, this hypothesis has interesting policy implications, since it suggests that the poor have lower saving capacity, and therefore, have fewer opportunities to accumulate income-earning assets. This, in turn, results in lower incomes.

Thus, to improve the conditions of the households with lower incomes, it might be more effective to create income-earning opportunities at present, which might trigger their savings capacity, rather than concentrating on maintaining expensive pension systems that actually substitute for own savings for retirement.

3.5 Uruguay

The case of Uruguay, presented by Marisa Bucheli, Andrea Vigorito and Daniel Miles is especially interesting in the Latin American context, since this is one of the two countries with the most advanced demographic transition, and one of the countries with the highest education levels in the region. The paper uses cohort analysis to describe these patterns, and it also discusses the implications for present policies.

The authors argue that one of the causes of the sharp decline in fertility levels decades ago is the migration of an Italian population into the country during the 1850s, with different cultural patterns and fertility rates. This affected not only family sizes and structures, but also changes in the age pattern of marriages, divorce rates, and the role of women in society.

One important change place in Uruguay is that the formation of nuclear households by younger generations is taking place later in the life cycle. This is related to lower fertility levels and a longer stay in the education system. The only exception to this general trend is found in the 15-19-year-old group, whose fertility rate slightly increased during the last decade (from 6.6 to 7 percent between 1985 and 1995).

It was also found that nuclear and extended families are the most important type of household in Uruguay, with a prevalence of male-headed households. In contrast, female-headed families are restricted to single-parent and single-parent families, that result mainly from divorce or widowhood. According to the authors, the creation of extended families is associated with the educational level of the household head. For instance, in the 50-65 old age group, around 67 percent of the male heads of nuclear families born between 1932-36 achieved six or less years of schooling; while for extended households this participation hovers around 72 percent.

With regard to schooling, the paper states that a policy change in 1973, which made secondary education compulsory, is one of the main factors explaining the high rates of human capital accumulation. This, added to lower family sizes, changes in the cultural pattern of women's role in society, and an active role of the state in expanding the educational system, resulted in universal coverage of primary education, and about 80 percent of completion rates for high school students. Human capital accumulation, however, starts declining at around age 18/19, and by age 24, only a minority continue in the education system.

The analysis of returns to education reveals that cohort effects are positive in particular for women: younger cohorts receive higher returns than older ones. These effects are particularly important for individuals with 13 years of education or more. In general, income grows at decreasing rates throughout the life cycle, except for the most qualified individuals for whom, after the age of 48, predicted incomes grows at increasing rates.

Uruguay also displays interesting features in female participation in the labor market. Participation rates are high by Latin American standards, influenced by higher education levels and also by the delay in marriages. Interestingly, the age pattern of participation differs considerably from the pattern presented in the average country, where women present lower participation rates at the middle of the age range because of childbearing. In Uruguay, participation rates remain at high levels until the later stages of the life cycle. However, as in other countries, it is also true that participation rates are higher for women with more education than for those with less schooling.

Finally, the authors argue that all the household decisions identified above are interrelated. The triggering factor is that fertility rates decline as a result of cultural patterns that delay marriage and therefore allow for a lower number of years of childbearing. Older mothers and fathers, who have children at ages of high productivity and wages, are able to invest more in

the human capital of their children, which in the longer term improves labor market prospects. This, in turn, has an additional effect on the age of marriage. Although this is a common pattern in Uruguay, the high divorce rates prevalent in the country lead to higher proportions of single household heads, which may also have negative effects on educational attainment through their effect on household resources. All in all, it seems that the first of these two patterns dominates since Uruguay continues to present a virtuous circle of high incomes-high education that is apparently not broken by family dissolution.

4. An Aggregate Approach

This volume includes two final chapters aimed at drawing the general policy implications of this project. The previous chapters provide a picture of the dynamics of household decisions at the microeconomic level and stress that substantially declining fertility rates represent a major transformation in Latin American households. All the country studies document the decline in fertility rates and argue that these fertility declines have triggered changes in female labor force participation, household structures, increased investment in the human capital of children, and even in household savings decisions. However, due to the nature of the country-studies, it is difficult to explore the underlying causes of such fertility declines. This is a crucial question from the point of view of this project. Chapter 7 is aimed precisely at exploring what causes fertility changes and what determines differences in fertility across countries.

On the other hand, as documented in each country study, fertility changes have crucial effects on household decisions. But in the aggregate, these effects are magnified and may allow countries to take advantage of demographic structures to enhance their development prospects. Which policies are best in order to capitalize the opportunity? The final chapter of this volume addresses this issue and concludes with a discussion of the main policy implications of this project.

4.1 Determinants of Fertility Changes

Chapter 7, based on Behrman, Duryea and Székely (1999a) first characterizes differences in fertility and mortality and in related dependency ratios across regions and over time. The paper then uses a panel of 96 countries covering the period 1965-1995 to decompose the differences in fertility rates between developed and developing countries and the differences in fertility

between 1960 and 1995 for several developing regions and for 22 individual countries in the Latin American and Caribbean region. These decompositions indicate that the main correlates of fertility differences across space and over time are female schooling and health, with the former having larger associations with differential fertility among regions/countries at a point of time and the latter having larger associations with fertility declines over time.

Because it is the dynamic changes in fertility in each country that are really of interest for the purposes of this volume rather than inferences about dynamics that may be misleadingly made from cross-sectional comparisons, the importance of associations of increased female schooling relative to those of improved health may be overstated in the literature, which is substantially based on inferring longitudinal relations from cross-sectional data. Therefore, in considering promising policy alternatives that may have high payoffs in terms of economic growth through enhancing “demographic windows of opportunity” and triggering virtuous circles of household decisions at the micro level, it is necessary to have careful studies that identify the causal factors underlying the strong associations between health and fertility declines. Following this argument, focused investments in health may be an important key to development and to improvements in the conditions of households and individuals.

4.2 Broader Implications from Fertility Declines

The final chapter, based on Behrman, Duryea and Székely (1999b), provides an aggregate perspective, which is complementary to the micro approach, of the five country studies in this volume, and to the analysis of the determinants of fertility. The central objective of the paper is to examine the policy implications of the main household decision examined in the country papers, which is fertility. As already mentioned, fertility decisions affect the number of children in the household, which in turn determines the pace of a country’s demographic transition. Fertility choices taken today by households will be reflected in demographic changes in the years to come. In the aggregate, these shifts affect the demographic transition and with it the opportunities and challenges faced by a country.

Specifically, the chapter explores the relations between changing age structures and a series of aggregate variables across regions and over time. The analysis of the relations between the changing age structures triggered by fertility choices and aggregate economic variables is parallel to the microeconomic analysis of the previous section. On the one hand, the micro

country studies analyze the average behavior of cohorts of individuals which are followed in the absence of data that tracks the same individual as he/she ages over time. On the other, in a similar fashion, the authors follow the average behavior of a set of variables as countries go from a stage at which large proportions of their population are young to later stages at which the relative shares of older groups increases.

In the context of the literature on individual decision-making discussed in Section 2.2, a change in any aggregate variable can be traced back to changes in behavior over the life cycle, changes across cohorts, and changes at a specific point of time. The interest of this last chapter is in the first of these three effects—i.e., how life cycle effects are revealed as the population shares of different birth cohorts change due to the demographic transition that is triggered by fertility changes.

The specification employed in this paper, which is based on a panel of data for a wide set of countries for the period 1950 to 1995, includes the average age of the population of each country in each time period, country fixed effects, and year fixed effects:⁵

$$(2) \quad X_{i,t} = \alpha AD_{i,t} + \beta year_{,t} + \gamma country_i + \varepsilon_{i,t}$$

where X is a one of a set of aggregate variables for country i and year t ; AD is a vector of dummy variables indicating the average age of the country in that particular year; the variable $year$ indicates the year of each observation; the variable $country$ indicates the country of each observation and ε is the error term. The coefficient estimates for the elements in the AD vector reveal whether, after controlling for country fixed characteristics and time effects, the X variable shifts as the average age of the country changes.

Specifically, the paper presents evidence on the associations between the average ages of populations and three groups of economic outcomes: (1) macroeconomic aggregates (domestic saving as a share of GDP, GDP per capita, capital per worker and tax revenue as a share of GDP); (2) governmental expenditures on education and health; and (3) social indicators (inequality, unemployment, homicide rates, and schooling progression rates). The results suggest

⁵ It can be noted that this procedure is similar to the smoothing technique used in the country papers, in which a dependent variable is regressed on a series of age and cohort dummies, while time effects are normalized and assumed to be zero. In the aggregate approach, the dependent variable is regressed on country average age dummy variables, and controls for year and country fixed effects (including time effects also helps to de-trend the dependent variables), are included.

that the variables considered follow clear age-related patterns, that the patterns differ by regions, and that the patterns differ with different policy regimes related to trade openness, domestic financial market deepening and macroeconomic volatility.

The evidence is consistent with the possibility that some age structure shifts can provide favorable conditions for development. East and Southeast Asia in recent decades have been able to benefit from this demographic opportunity. However, in other regions, such as Latin America and the Caribbean, which is poised to experience the largest age structure shifts in the coming decades, creating an adequate economic environment to translate the opportunity into higher living standards for its population is a major challenge.

5. Final Remarks

The research presented in this volume constitutes one of the first attempts to present systematic evidence based on household surveys and using a consistent methodology for five countries in Latin America. As emphasized above, the region has undergone important changes in several areas, ranging from family size and structure, to the return to skills and participation in the labor force. While obviously important for a large number of issues, quantitative and systematic evidence on these phenomena is hard to come by. This book hopes to fill an important gap.

The evidence presented in the country studies establishes a set of stylized facts and quantifies their magnitude, and it is hoped that this evidence will provide an input for future research on several important policy issues. The final two chapters take an aggregate approach and discuss substantial policy implications.

The region faces important challenges in the coming years. Policymakers will not be able to shape future policies in an effective way without an understanding of the main trends faced by individual households. One of the main issues is the accumulation of human capital and its determinants. It is clear that in many Latin American countries the process has been remarkably slow, or at least slower than in other countries. This is remarkable, especially in light of the increase in the price of skills observed in most countries. The evidence presented on the evolution of skill premia and the accumulation of human capital is fundamental to an understanding of the process whereby households make education choices. Without such an understanding, it would be impossible to design effectively policies designed to stimulate the accumulation of skills.

A first important research direction that emerges from the evidence presented in this volume is to identify the factors that have prevented faster growth in human capital in the region. Are liquidity constraints responsible for this, as some have argued? To what extent is income variability (even the variability of transitory shocks) reflected in shocks to the process of human capital accumulation? And to what extent does the process of liberalization, or increasing income volatility, make the process more difficult?

Directly linked to this set of issues is the relationship between fertility choices and education choices: to what extent will the decline in family size imply a shift in Latin America from a model based on the quantity of children to a model based on the quality of care devoted to each child? To what extent are these issues linked to female labor force participation?

The evidence presented is also relevant for the debate on the relationship between trade and inequality. While trade liberalization was proposed at some point as a possible explanation for the increase in inequality in the US, such an explanation was later mostly dismissed because it would imply a decrease in the skill premium in regions with relatively abundant unskilled labor. However, the evidence on the evolution of skill premia in Latin America has been limited so far. Of course, the issues involved are can be more complicated. Complicating factors include the nature of trade liberalization,⁶ whether skills have more than one dimension, so that one should consider the evolution of different “skill premia,” or whether skill premia are measured without taking into account changes in the rate of unemployment, if the process of technology adoption is endogenous, and so on.

While the studies in this book do not provide an answer to all these questions, they constitute an important first step in that direction. A message that emerges clearly from the case studies presented is that there is now good quality evidence from large household surveys from many countries in Latin America. This wealth of information should be used systematically in the policy debate.

⁶ Attanasio, Goldberg and Pavnick (2002) present evidence that in Colombia in the early 1990s, trade liberalization implied larger reduction of tariffs in sectors where unskilled labor was used more heavily.

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