Inter-American Development Bank
Banco Interamericano de Desarrollo (BID)
Office of the Chief Economist
Oficina del Economista Jefe
Working Paper # 393

Inequality and the Family in Latin America

by

Ricardo Hausmann and Miguel Székely

Office of the Chief Economist, Inter-American Development Bank.
1300 New York Avenue, Washington, DC 20577
http://www.iadb.org/oce

January 1999

This is a background paper prepared for the Economic and Social Progress Report on "Facing Up to Inequality", published by the IDB, 1998. Part of the paper draws on the version that appeared as Chapter 3 of the Economic and Social Progress Report, which was coauthored with Bill Savedoff. The authors wish to thank Nancy Birdsall, Suzanne Duryea, and conference participants at Bellagio for their comments, and Martin Cumpa, Naoko Shinkai and specially Marianne Hilgert for excellent research assistance.

Inter-American Development Bank
1300 New York Avenue, N.W.
Washington, D.C. 20577

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Introduction

Latin America is the region with the greatest income inequality in the world. It is the region where the richest 5% of the population concentrate the highest proportion of resources (more than 26% of total income on average), and where the poorest 30% receive the lowest proportion (less than 8% on average).[1] Within the region there are some differences. For instance, while the Gini coefficient in Uruguay is .44, in Brazil, Ecuador and Paraguay it reaches almost .60, but still, all the countries for which recent reliable data is available register inequality indexes above the world average of .41.

Why is inequality in Latin America so high? The structure of the economy, geography, culture, ethnicity, and many other general and social factors are important explanations[2], but when one looks at the personal characteristics of the rich and poor, there are three key variables that make the difference: fertility, female participation and education[3]. With regards to fertility, household survey data from 16 countries in the region around 1995 reveal that the average family in the top 10% of the distribution in the region has 1.4

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[1] See IDB, (1998).

[2] IDB (1998). See also Gavin and Hausmann (1998).

[3] Barros, Duryea and Székely (1999) have documented this in detail. These authors used all the personal characteristics for which household survey data provide information, to compare households in the top 10% and bottom 30% of the household per capita income distribution. Of all the personal attributes (including sex of the household head, regional differences, occupation, sector of activity, age, etc.), they systematically find that the main characteristics that make the richest 10% different from the poor, are the number of children, female labor force participation and education of the adults in the household. It could be argued that the reason why these characteristics are more important is because of the definition used to separate the rich from the poor. Specifically, since they are ordering households according to household per capita income, they should observe (almost by definition) large differences in participation and number of children because income per capita is already a product of participation and household size. To verify how sensitive the conclusions are to the ordering according to per capita income, we used household survey data to order households by the income of the head of household (a table with the results is presented in Appendix table A.1). The interesting result is that in some cases the differences in these three variables are somewhat smaller than those in Barros, Duryea and Székely (1999), but even so, the use of this new ordering still yields very large differences in the number of children (the 30% poorest still has around 1.2 children more than the richest 10% in all 16 countries for which data is available), and female participation is still significantly higher among the rich in 11 out of the 16 cases. Differences in schooling are magnified by this ordering. So, it cannot be said that these characteristics appear to be important just because of the way in which the population is being ordered.

children, while the typical family from the poorest 30% has 3.3[4]. So, as is well known, the poor not only get lower incomes than the rich, but they share this income among more individuals, resulting in greater income per capita inequalities[5]. What makes this fact more interesting is that total fertility rates in Latin America have declined dramatically from 6% in 1960, to 2.9% by 1995[6], but clearly, the reductions in fertility have not reached all sectors of the population and have not reached all countries in the same way.

The second characteristic that makes the households in the top 10% of the distribution different from the poorest 30%, is labor market participation[7]. Male participation varies little across countries and along the income distribution, but surprisingly, the difference comes from the fact that female participation is much lower among poor women than among those in households in the top decile.[8]

The third characteristic is education. The average Latin American adult in the richest 10% of the distribution has 7 more years of education than the adult in the poorest 30%, but more importantly, the education that these adults are able to provide for their children is also very different. As shown by Duryea and Székely (1998), the difference in education attainment among 21 year olds in the richest and 3 poorest deciles, is almost 6 years. It has been estimated that if there were no education inequality, 30 to 40 percent of the total observed inequality would be eliminated. [9]

One interesting aspect about fertility, labor market participation and education attainment, is that these are strongly inter-related decisions made within the family (and not only at the individual level). For instance, given the traditional role that women play

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[4] This will be documented in more detail later in the text.
[5] On average, the Gini coefficient for total household income of the 16 countries for which household surveys are available to us, is around 13% smaller than the Gini for household per capita income.
[6] According to UN population statistics (UN (1997)).
[7] We show detailed evidence on this in Section II of this paper.
[8] As will be stressed later, this does not imply that poor women work less than the rich (in fact it is perfectly compatible with the idea that that the poor actually spend more hours working than the rich). It only means that the activities performed by the rich have a higher probability of being remmunerated in the labor market.
[9] Several works point in this direction. See for instance, Psacharopoulos, et.al. (1993), Londoño and Székely (1998), Barros, Duryea and Székely (1998), and IDB, 1998.

in the household in Latin America, the decision for females of whether or not to participate in the labor market is strongly dependent on the number of children in the household. Similarly, the amount of education invested in each child is a function of the number of children that the household has to educate. To close the circle, the number of children that a couple decides to have is strongly related to the education level that their own parents were able to provide them with. One complication is that the causality between these three variables is obviously very difficult to disentangle.

This paper asks how do the differences in income, fertility, participation and education come about. The central argument we develop is that the differences within and between countries are to a large extent related to a set of family choices that are strongly influenced by the potential returns to female education in the labor market. Differences in income, fertility, participation and human capital investment are not solely affected by personal characteristics. There are underlying conditions in the Latin American economies that are greater than individuals and families themselves and that shape family decisions. Some of them come from the functioning of labor markets, technological progress, factor endowments, and other factors at the country level. For instance, when the returns to education in the labor market are less differentiated, so that uneducated workers receive relative greater pay compared to educated workers, the differences in fertility, participation and the education of the new generations between poor and rich, are smaller. Therefore, what matters the most for these choices are the returns to unskilled labor. This has strong implications for income inequality.

Since the three critical characteristics cannot be understood properly by looking at them independently, we will look at fertility, particiaption and human capital investment together. The three family choices are strongly influenced by the opportunities that women face for using their human capital in the labor market. These opportunities are shaped by the economic context and trigger a set of decisions that vary widely within and between countries The most important relative price is the earning capacity of a woman in the job market relative to the value that the family attaches to her housework. This relative price changes very significantly across countries and implies that two similar

persons would experience radically different inequality and would be enticed to make very different choices about how many children to have and how much to educate them, depending on the particular country in which they live. The different relative prices will cause families to evolve along very different paths over the generations.

In the rest of this work we rely heavily on household survey data for 15 Latin American countries to develop our argument.[10] In Section I, we begin by looking at fertility and try to identify what drives the difference in the number of children between poor and rich households. We argue that the opportunity cost of work for the market vs. work in the house changes very drastically along the income distribution, explaining the different choices made by these households. Section II focuses on labor force participation. Section III focuses on the connection between fertility, participation, and the education attainment of the new generations. Section IV brings our story together by estimating a simultaneous equations model that includes the fertility, participation, and education decisions that households make. Section V concludes by arguing that personal characteristics do not exclusively determine the fundamental choices that people make. The characteristics interact with the surrounding conditions to generate choices. Specifically, the relative prices with which each economy confronts the individual and his/her family are key determinants of fertility decisions, female participation, and investment in human capital.

I. Fertility, Families and Inequality

As mentioned in the introduction, household survey data confirms the well know fact that family size changes quite dramatically along the income distribution. The rich live in much smaller families. Table 1 shows the percentage of people in the top decile and the bottom three deciles that live in single-person households. It shows that the top decile is very significantly over-represented in single-person households, especially in Argentina and Uruguay where over 10 percent of the top decile live alone. However, it is interesting

[10] See Duryea and Székely (1998) for details on the data.

to note that these numbers are dwarfed by the US experience, where almost 28 percent of the top decile live by themselves. The poor, on the other hand, very rarely live on their own in Latin America although not in the US. A similar pattern is apparent for three-person households, where, throughout the region, between a fifth and a quarter of the rich live but barely one tenth of the poor do. By contrast, in the US all segments of the income distribution have a similar probability to live in 3 person households. The situation is dramatically reversed for households with 7 or more members. Here we observe that barely one tenth of the top decile live in such large families, while a striking 40 percent of the poor do.

Theories about the economics of family formation have two potential explanations for the relationship between family size and income. The first is related to the effects of income and the second related to fertility. The income effects are seen as the consequence of two opposing forces. First, it is argued that there are economies of scale in consumption, so that two persons living together can share the same appliances and physical space and thus gain more benefits out of their resources. However, as more people share space there ensues some loss of freedom for each one. Hence, one would expect the rich to use their resources to "buy freedom" by living in smaller households while the poor cannot afford to bestow the economies of scale in consumption provided by larger households. The alternative story relates to demography. As fertility declines, there are simply fewer children in each home so the average size of households is smaller and the proportion of older people in the population increases. Thus, in Argentina, Uruguay and the US, the over-65 population is much larger and is significantly over-represented in single-person households because they are at a later phase of the demographic transition.

Separating the number of adults and children in a home can disentangle the income and demographic stories. If what's important is economies of scale in consumption, then more adults will live together as we go down the income distribution ladder. If the effect were generated by fertility, then the story would be reflected in the number of children. Figure 1 shows that there is no consistent pattern in the way the number of adults changes along the income distribution. While in the US and Argentina there is a weak relationship

between income and the number of adults, in most other countries the number of adults is smaller in both rich and poor households compared to the average of the population. While the number of adults does not exhibit a strongly consistent pattern, the number of children shows very stark contrasts (Figure 2)[11]. Here the differences are quite large and consistent throughout the region. Even in countries that have low fertility rates such as the US, Argentina and Uruguay there is a difference of about 2 children between the top decile and the bottom 30 percent of the population. In higher fertility countries such as Central America, the Andean Region and Paraguay, the rich have between 1.5 and two children while the poor have between 3 and 4 children.

Many hypotheses about poverty have centered on the issue of family and family values. It has often been argued that in the US, poverty is strongly associated with single parent households, while the non-poor live in nuclear or traditional families. While this is very much a US story, the data suggests that it is not primarily a Latin American one. Family structures change surprising little along the income distribution. True, the rich are disproportionately represented among those living alone. It is also true that they are over-represented among those living as couples without children. But the traditional family remains the dominant form in Latin America. As shown in Table 2 most Latin American children live in (pure or extended) nuclear families, i.e. in families with a parent, a spouse and children (pure), which may also include other relatives (extended)[12], while the proportions are lower in the US.

In the typical model, raising children is a costly activity in terms both of the resources spent on each child, and of the income that family members (typically the mother) have to forgo to take care of them[13]. If a higher market wage is available for women, the cost

[11] Household survey data only seldom provides direct information on fertility. We have used the number of children in the household as a proxy variable for the fertility of the parents.
[12] Note that we cannot determine if the spouse is the parent of all children present.
[13] There are several theories in the extensive literature on this issue, all of which suggest that the fact that the poor decide to have more children reflects the outcome of a cost-benefit rational analysis. Galor and Weill (1996), for instance, argue that through the process of development, women's wages increase and this raises the cost of raising children more than it adds resources to the household. Therefore, development induces lower fertility. From this perspective, the poor have more children because of the lower relative market value of the labor they can offer in the market. Another channel that has been suggested by Becker,

of raising children is also larger and this induces lower fertility. On the contrary, the lower the relative market value of women's labor the lower the cost of raising children[14]. This leads to a trade off between the quality and the quantity of children.

There is a widely observed negative relationship between parent's schooling and fertility, which is not surprising, since education is one of the main determinants of earnings[15]. Figure 3 shows the average relationship between number of children and education level for 15 Latin American countries. There is a very consistent pattern: women with six years of schooling or less have 0.7 more children than those with more than 13 years of schooling. The economic explanation is that income has two opposing effects on fertility. First, if children are "normal" goods, there should be a positive relationship between fertility and parent's education and income. However, child rearing requires resources which have an opportunity cost related to the value of a woman's work in the market. The higher the education level the more income a woman forgoes by retiring from work in order to take care of her children. If a woman's potential income in the market is low, then staying at home is relatively cheap, and once at home, taking care of one more child is not that costly. The higher this opportunity cost, the fewer the number of children. Hence, a recurrent feature we find in Latin America, and one that is consistent with this theory and with the vast empirical evidence, is that while the education and income of the father increases the number of children, that of the mother reduces it[16].

Murphy and Tamura (1990) is that poor families have higher fertility rates because the rate of return on education is lower than the return on children (the quality vs. quantity hypothesis). In the same line, Neher (1971) argues that poor people may choose to have more children as a result of old-age security. Thus, children are viewed as an investment. The process of economic development (and urbanization) opens opportunities for children from rural/poor families to enjoy higher lifetime income outside the parent's unit. Thus, it erodes the importance of that motive. Rich countries that are characterized by developed capital markets and social security have less incentive to have children for old-age security. Smaller family size among rich households might also reflect some advantages that the rich have relative to poor families. Dahan and Tsiddon (1998) argue that the source of the advantage may be capital market imperfections. Rich families have higher returns to investments in education and therefore choose to have fewer children and invest more in them.

[14] See for example Galor and Weil (1996).

[15] Duryea and Lam (1999) is a recent example of the analysis of these relations in a Latin American country.

[16] We obtained the statistical relationship between the number of children in the household and the education of the parents by controlling for geographic area, age of the household head, and the presence of adults in the household. As would be expected we confirmed that in all of the 15 Latin American countries

The number of children may change across countries for potentially many reasons. Tastes might be different. But one alternative explanation is that relative prices for women's human capital are systematically different across countries. To check this hypothesis we ran regressions of the number of children on the opportunity cost of a woman's income generating capacity, as it emerges from earnings equations. The model used for the estimation is presented in the Appendix, and the basic idea is that the demand for children depends on the market value of the educational endowments of the parents. [17] This allows us to simulate the following experiments. How much of the difference in the number of children in poor and rich households is due to differences in the opportunity cost that rich and poor women face? Would the number of children change if the household faced other relative prices?

Figure 4 summarizes the results from these experiments. The figure shows that if all households had the same education, a low proportion of the differences in El Salvador, Uruguay, Mexico and Venezuela would be eliminated. However, in Honduras, Peru, Bolivia, Chile and Paraguay they would reduce the difference in the number of children by around one half.

The second experiment consists of measuring the impact of having different education levels, but additionally, we allow the prices to vary across countries. Figure 4 shows that when we allow the opportunity cost of participating in the labor market faced by rich and poor parents, to vary, we account for 60% of the differential in the number of children that they have. However, in Honduras, Bolivia, Chile, Panama, Peru and Brazil, the

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for which the estimation is performed, the mother's education has a strong negative effect over the number of children in the household, while the education and income of the father has a positive (weaker) effect.

[17] The simulations that follow use econometric estimates performed in two stages. First, an earnings regression that uses education, experience and the geographic location of the household is estimated separately for working age men and women. The coefficients are used to predict the income that each individual would earn, given his/her labor market experience, education and location. In other words this is an estimate of the income generating capacity. The predicted incomes are used in a second stage regression where the dependent variable is the number of children in the household, and the independent variables are the estimated income-earnings potential. See the Appendix for a discussion of the methodology.

explanatory power of prices and quantities of education is much higher and reaches around 80% of the differences between rich and poor.

The difference between the results of the first and second experiments suggest that in most countries, quantities are important, but that the differences in relative prices faced by rich and poor parents - and which are shaped by the economic environment - play a key role in the decision of how many children to have. In countries like Honduras, Bolivia, and Chile, these relative prices account for most of the differences between rich and poor households. So, the mother's education is not the only critical factor. The potential returns to her education in the labor market - which are determined by the economic context - are as important. Fertility differences across the income distribution and between countries, are therefore due to factors greater than the personal characteristics of individuals. If the returns to education in the labor market were less differentiated, the differences in fertility between poor and rich, would also be smaller.

II. Labor Force Participation

Section I argued that the opportunities faced by a woman in the labor market are strong determinants of fertility decisions. Women that receive a low relative remuneration for the human capital they own tend to have more children. However, fertility in itself has an effect on the participation of adults in the labor force. In this section we explore this link.

Table 3 documents the fact that labor force participation rates change quite systematically along the income distribution. Household survey data reveals that the poor participate systematically less than the rich in all countries. The difference in participation is overwhelmingly explained by female participation, which remains substantially below male rates throughout the region. The gap between the genders in this respect is substantially higher than in the industrial countries. This difference is particularly large in the Central American countries, Mexico, Panama, Venezuela and Chile.

While male participation is relatively constant and high along the income distribution, female participation varies strongly with income in all countries except Paraguay and Peru (Table 3). While on average only 34 percent of women in the top decile are out of the labor force among the poorest 3 deciles, over 55 percent are not working.[18]

When poor women participate, they do so mainly in the informal sector. This is clear from table 3 where the share of informal employment among women of working age is shown. It is clear that the proportions change dramatically along the income distribution. For example, while poor women in Paraguay, Peru and Ecuador have high participation rates, they are conspicuously absent from the formal sector. By contrast, women in the top decile that participate twice as much as poor women, on average, have a much smaller presence in the informal sector and an overwhelming presence in the formal sector.

Why do the poor participate less than the rich do? There is a very large literature that tries to understand what drives the above kind of results[19]. Economic theory explains them by arguing that female participation involves a choice between work at home and work for the market. As with all economic choices, these reflect relative returns. A woman's work will be more valued at home, the lower the productivity of housework and the higher the demand or need for it. Hence, things like access to running water and electricity, which permit the use of appliances for washing, cooking and cleaning free time that can be offered in the market in exchange for a monetary income. By the same token, the larger the number of children that need taking care of, the less time will be left for market work.

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[18] Household surveys ask individuals directly about their time use. The low participation rates among females presented in Table 3 reflect that when women are asked about their activities, a larger proportion of females in poor households declare that they use their time in activities other than performing a job in the labor market. Therefore, not participating does not imply that a woman doesn't work and the differences between poor and rich do not mean that poor women work less hours than the rich. They only reveal that a higher proportion of the rich receive a remuneration in the labor market for the time they spend working. In fact, poor women tend to spend more time working in household tasks, which are not remunerated and therefore do not count as participation. It should be borne in mind that the participation rates will be under estimated when female respondents understate their work activities, and that some types of activities such as working informally in family businesses, which are more common among the poor, are more prone to this problem.

[19] See for instance Psacharopoulos and Tzannatos (1992) for an analysis of Latin American countries, and the volume by Birdsall and Sabot (1991).

Alternatively, the higher the returns to market work, the more women will consider freeing up time to be offered in that attractive market, and maybe arrange for somebody else to do some of the house chores. She might even consider having fewer children (as discussed in Section I). But if the husband is already making a good living, then it might make sense to stay at home and improve the supply of those homemade goods and services that cannot be bought in the market.

Hence, a woman's participation in the labor market should depend positively on some measure of her earning capacity, such as education, and negatively on the husband's earning capacity and the number of children. These relationships are very strongly born by the available evidence. Figure 5 shows the rate of female participation by education level. There is a strong and clear pattern between educational attainment and participation. In fact the differences are quite sharp. While only some 40 percent of women with four years or less of schooling participate in the labor market, over 78 percent of those with higher education do. The contrast is much sharper with respect to female participation in the formal sector where the differences in participation are even larger. These differences are also apparent when comparing men and women as a whole (Figure 6).

We also observe a similar pattern between participation and the number of children (figure 7). The number of children has a negative effect on participation and the impact is sharper in the formal sector. On average, women with 5 or more children participate almost ten percent less than do women with less than 2 children.

It is reasonable to assume that women have more difficulty entering the formal sector because formal employment requires a commitment to work a certain number of hours a day, on fixed schedules, and with severe limitations on absenteeism. Any of the many problems that can arise at home may make a potentially reliable worker into an unreliable one. Women who do work in the formal sector must rely on a network of support that can help deal with unpredictable events at home. This support may involve relatives or domestic servants and may be costly. Hence, only women who can have access to this

network will find it efficient to work in the formal sector. Given the traditional role of women in Latin America, this restriction applies to women but much less to men, and is one reason why men have less difficulty in joining the formal sector.

So, there is a clear relationship between education, the number of children (our proxy for fertility) and the decision of women to participate in the labor market. Other factors such as the relative age of the children, the earning potential of the household head, the presence of other adults and that of retired persons (over 65) may also affect these choices by making housework more demanding or by providing additional resources with which to accomplish those tasks. Our estimates (not presented here) show however, that they are not as important as education and the number of children.

To find our way in terms of the relative relevance and importance of these factors we estimated a participation model that allows women to make three decisions: stay at home, work in the informal sector, or work in the formal sector. The model is presented in the Appendix. We use the model here to simulate some experiments that point to the relative importance of the factors[20]. First, in 8 out of the 14 countries in the estimation, the gap in labor force participation between high and low income women exceeded 10 percent. Of these 8 countries, the difference in educational levels of high income and low income women explained around 40 percent (see figure 8). The only exception is Honduras, where education levels explain the whole gap.

By contrast, the number of children under 6 years of age is statistically significant but has a smaller impact on the participation gap between rich and poor. After taking education

[20] The simulations that follow use econometric estimates performed in two stages, similar to those in Section I. First, an earnings regression that uses education, experience and the geographic location of the household is estimated separately for men and women. The coefficients are used to predict the income that each individual would earn, given his/her labor market experience, education and location. In other words, this is an estimate of the income generating capacity. The second stage consists of estimating a multinomial logit regression to predict the probability that each person has for not participating in the labor market, participating in the informal sector, or participating in the formal sector. This regression uses the number of children in the household and the estimated income generating capacity of the individual in question as independent variable. The simulations consist on using the coefficients from the regressions to evaluate the probabilities by using different mean values of each variable, depending on the experiment in question. The Appendix shows the coefficients of the multinomial regression and provides a more detailed discussion.

and other factors into consideration, the number of children explains around 2 percent of the labor force participation gap. In fact, the association between participation and the number of children is due mainly to the association of both variables with the education of the woman. Controlling for education, the number of children looses some of its effect on the decision. On average, each additional child under 6 reduces the participation rate by 4.1 percentage points. By contrast, each additional year of schooling increases participation by 2.1 percent. Hence, while the difference in years of schooling between the rich and the poor exceeds typically 6 years, the difference in the number of children under 6 is around one. Therefore, education dominates over the number of children in explaining participation along the income distribution, but as we will see later, the number of children also has an effect on education. So, part of the effect of education on participation is related to fertility indirectly.

While education has a large effect on participation, it has an even larger impact on work in the formal sector. Using our model we simulated the effect of giving women in the lower 30 percent the same education as those in the top 10 percent and measured the effect on participation. The results are quite dramatic, with most of the gap in formal employment being eliminated in most countries (figure 9). The probability of working in the informal sector declines by an average of 6 percentage points when we simulate giving poor women the same education as the rich.

The earning potential of the household head also has an impact on participation, although smaller. If we were to give the poorer 30 percent of women the same income of the male household head as that of the rich, their participation would increase by an average of 5 percentage points. Alternatively, giving the household heads where poor women live the same education as that of the household heads of the rich would reduce informal employment by an average of 5 percentage points.

Now, other things being equal, it is generally the case that the formal sector pays women more than the informal sector. How much is this premium worth? To find out we

estimated another set of earnings equations[21] and used them to estimate how much more would a 35-year-old urban woman with 7 years of schooling make if she were in the formal sector vs. working as self-employed. In all countries the gap between formal and informal wages is larger for women than it is for men of similar age and education. The average premium between formal and informal employment is 18.5% for women and 7% for men.

What explains these larger premia for women? One intuitive explanation is that women value flexibility while employers value predictability. Poor uneducated women may find it harder to commit to a strict schedule because they do not have the resources to generate the network of support that would allow them to allocate their time in a more predictable way. As the education of the woman goes up, her salary increases making that network affordable. Also the income of the household head helps in this same direction. For men, given the traditional distribution of household tasks between the genders in Latin America, there is less of a problem supplying reliability and hence the premium for formal work is smaller.

This is one of the reasons why women with equal education and experience earn a premium in the formal sector compared to their potential income in the informal sector and that this premium is larger for women than for men of otherwise equal characteristics.

In sum, a woman's earning capacity and the number of children in the household are key determinant of where she will end up working: at home, in the informal sector, or in the formal sector. As opposed to men, there is a very strong relationship between female participation and income and this effect is even stronger when we consider participation in the formal sector.

[21] These simulations are similar to the previous ones. We first estimate earnings regressions, and use the coefficients to predict each person's income based on their personal characteristics. Secondly, we use the coefficients to evaluate the function at other mean levels, and recompute the predicted income.

III. Children's Educational Attainment

Similarly to the link between fertility and participation, there is a circular relation between fertility and educational attainment of the new generations. As seen in Section I, the economic opportunities that a woman faces and therefore, the fertility decisions, depend on her human capital and the returns to education. However, the possibility of acquiring human capital within the family for the new generations, in turn, depends on the number of children that the household has to support. This section looks into this issue.

The educational attainment of children also changes systematically along the income distribution. Education gaps (measured as the difference between the number of years of education a child is expected to have given his/her age, and the actual number of years attained) are not very evident at age 12, where in many countries the differences in attainment along the income distribution are less than half a year (See figure 10 and See Duryea and Székely (1998)). However, in some countries the education gaps are much larger such as Brazil, El Salvador, and Paraguay. In these countries, there is already an important gap in attainment between rich and poor, but enrollment rates at this age remain relatively high in most of the region, with an attendance rate of almost 90 percent for the bottom 30 percent of the income distribution.

The picture changes quite dramatically by age 15, a time at which most children are expected to be in high school. At this early age, the differences in attainment and enrollment start being quite sharp. At this age, children are expected to have between 8 and 9 years of schooling, which most of the children in the top decile tend to get. While in many countries the gap in attainment between rich and poor is about a year, in El Salvador, Honduras, and Brazil the gap is almost 4 years, while it is around 2 years in Mexico, Panama, and Paraguay. However, by this time many of the poorer children have already left school and will not be acquiring more schooling. Enrollment among the 15 year-olds of the poorest 30 percent of the population is barely 32 percent in Honduras, 42

percent in Paraguay, and 50 percent in El Salvador and Ecuador. Interestingly, in spite of the fact that in Brazil this group of children have attained barely 3.5 years of schooling, 68 percent are still enrolled.[22]

By age 21 we observe an accumulated education gap in Figure 10. In countries like Peru and Venezuela the differences are only about two years. By contrast, the gap exceeds 6 years in Brazil, Paraguay, and El Salvador and averages about 4 to 5 years in Mexico, Panama, Chile, and Costa Rica. Also, by age 21 less than 20 percent of the bottom 3 deciles are enrolled in school in all countries except Peru, Chile, and Venezuela. By contrast the top 10 percent presents enrollment rates in excess of 50 percent in Uruguay, Costa Rica, Argentina, El Salvador, Panama, and Chile.[23]

Educational attainment of the children has an even tighter relationship with the education of the parents[24]. This is patently clear in Figure 11 where we present the educational attainment of 15 year olds by the education of the mother[25]. In fact, the education of the parents does a better job at predicting the attainment of the children than does income. One interpretation is that the parents' schooling plays a pedagogical and exemplary role for their children. An alternative hypothesis is that attainment depends not on the income of the period in which the survey was conducted, but instead on the income over the years in which the schooling was accumulated. From this point of view, a person's education may be a better predictor of lifetime earnings than the income in any given month. Moreover, a mother's education may be more closely related to schooling not because of any distinct pedagogical function played by mothers, but instead because a mother's labor force participation is strongly related to her education. Hence, the higher the education of the mother, the more likely it is that the household has two incomes. We tested this idea by asking whether the educational attainment of children was positively

[22] See Duryea and Székely (1998) for more details.
[23] See Duryea and Székely (1998).
[24] This strong association is well documented in the vast literature on the subject. The most comprehensive surveys can be found in Behrman (1997) and Behrman and Kowles (1997).
[25] A similar picture emerges if one considers instead the education of the father, as there is a very high correlation between the two. Econometrically, there is a tighter link between mother's education and school attainment of the children, which will be explained below.

or negatively affected by whether the mother was in or out of the labor force. If the story is a pedagogical one, we would expect that mothers that do not participate in the labor market have more time to improve their children's schooling. Nevertheless, what we found was that children of mothers that participate had higher educational attainment than those of mothers out of the labor force. Table A3 in the Appendix shows that even after controlling for the effect of the number of children in the household, gender, parent's education, household income, urban-rural location, age of the child, and the presence of elderly members in the household, participation in the labor market by a child's mother increases the probability of attending school. In 13 out of the 15 Latin American countries for which we have information, the positive effect of mother's participation on her child's attainment is positive and statistically significant (the only exceptions are Argentina and Peru). On average, if the mother participates in the labor market, the probability that her child remains in school increases by around 5%.

An additional element that is strongly related to attainment is the number of children in the household. More children implies that it will be harder to finance the education of each one. This idea is strongly born by the data (Figure 12, and Table A3 in the Appendix). Twenty one year-old children in households with 6 children or more have on average 2 years less education than children in households with 1 or even 3 children. This reflects the tradeoff between quantity and quality of children. The higher the demand for quantity, the harder it will be to have them achieve more schooling. Hence, quantity makes quality more expensive. But as we saw in the previous section on fertility, the higher the potential income of the mother in the market, the lower the demand for quantity. It is just one more logical step to note that if the parents opt for fewer children because of the mother's career opportunities, then they will have all the more resources to invest in the education of the children they do have. Hence, the relationship between education of the mother, number of children, and attainment.

How much of the differences in educational attainment of high and low income children are due only to the fact that their parents have different education levels? Using our model, we estimated that, on average, the variations in the parents' level of education

explain about 30% of the differences in their children's educational attainment. In El Salvador, Honduras, Panama, and Mexico, the proportion of the difference explained reaches 50% (see Figure 13). After accounting for the differences attributed to parental education, economy-wide factors also contribute to the gap in children's educational attainment. One important factor is how much the labor market values an additional year of schooling, i.e. the return to education. Equalizing returns to education between primary and higher education across countries does indeed account for a significant amount of the educational attainment gap. On average, the combination of disparities in returns to education and parental education explain 55% of the difference in the educational attainment of high and low income children. However, in Mexico, Panama, Honduras, El Salvador, and Brazil, these factors explain close to 80 per cent of the difference.

The Intergenerational Transmission of Inequality

Since education and other endowments of the parents have such a strong relationship to their children's school attainment, it is important to ask if such links condemn us to reproduce, generation after generation, the same inequality. This question can be formally studied by estimating the inter-generational transmission of schooling.

The principle of the calculation is the following. We know that the education of the children depends to a large extent on that of the parents. When today's children become parents, their childrens' education will also depend on theirs and so on. One question that can be asked is whether this process converges towards equilibrium or is explosive, and whether different segments of society are moving towards the same education or towards different levels of education in the long run.

We present the essential intuition in graphic form in Figure 14. On the horizontal axis we have the education of today's parents. On the vertical axis we have that of today's children. A 45^{o} line is drawn. Points on this line indicate that parents and children have the same education. Another line is drawn, which cuts the 45^{o} line from above. That is

the line that relates the attainment of today's children to their parents' education. Notice that if this line were constant across the generations, all society would eventually converge to an education level equal for all at point E. If a family starts at point A, with very little education, then the next generation would get to point B, and the following to point C. By contrast, if a family starts with a lot of education, such as point X, then the next generation would move to point Y, and so on. Point E is the only single equilibrium for the educational long run. However, a different picture would emerge if the curve had cut the 45^o line from below. Then society would be pulled to the extremes with some people having more education in every generation while other would have less. A final possibility is that shown in Figure 15 where the educational attainment line crosses the 45^o line at two points, one low L and one high H.

One way of assessing these forces is by estimating a model of attainment of the children, based on the education of the parents, and use it to calculate the equilibrium points. In order to find out if the whole society is converging towards the same point, as in Figure 14, or towards two different points, as in Figure 15, we split the sample according to the education of the mother and estimated the equation for each sample. One equation for the sample containing children whose mother has less than 9 years of schooling and another for those whose mothers had 9 years or more of schooling. With the estimated coefficients we calculated the equilibrium points for the two groups.

The results are presented in Table 4. The countries are organized according to the level of educational attainment of the lower group. Honduras, Brazil, Bolivia, and Paraguay have a projected low equilibrium education for the bottom group. By contrast, Peru, Chile, Uruguay, and Panama have a high projected attainment. All countries are moving towards more than complete primary for the lower group, but only 5 countries are moving towards an attainment in excess of 10 years of schooling. For the top group, Argentina, Peru, Paraguay, Mexico, Ecuador, and Costa Rica are moving towards an average education of more than 13 years, i.e. at least two of higher education. In general, there is an association between the level of education of the bottom group and the gap between the two groups. Looking at the relationship between these two variables we can

see that there is a strong negative association. Countries with low attainment at the bottom will tend also to have high education inequality.

IV. Putting the Stories Together

We have shown that fertility, participation in the labor market, and educational attainment of the children vary strongly along the income distribution and that the earning potential of women, as measured by their own educational attainment, plays a central role in all of these decisions. However, this earning potential depends not only on the educational attainment itself but also on the returns to that attainment generated by the economy as a whole. Moreover, choices about fertility, labor market participation, and attainment also include other elements, such as those that affect the productivity of household work (e.g. availability of water, electricity, and urban transport), the availability and total cost of child-care, and the quality of education. These elements vary across countries and across localities of the same country and are hard to measure directly. However, they come into the explanation of why some countries are more unequal than others, and why some have more fertility than others.

To put all these stories together, we estimated a recursive model of earnings, participation, number of children, and attainment of those children and estimated it for 14 Latin American countries. The technical presentation of the model is presented in the Appendix[26]. Here we will play with some simulations of the model to illustrate the mechanisms of inequality across the region.

[26] The method for the simulations is similar to the one we already employed to estimate participation and the number of children in the household. The difference is that in this case, we have three kinds of decisions (rather than one), that are taken simultaneously. The simulation method is as follows: at a first stage, earnings equations are estimated based on experience, education and geographic location. The coefficients from the regressions are used to predict each person's income earnings potential, based on personal characteristics. The estimated income feeds into three simultaneous equations that determine the number of children per household, the probability of participating formally and informally in the labor market, and children's education attainment. By using the coefficients from the regressions and evaluating

To provide a clearer picture of the dynamics of the model, in Figure 16 we show the proportion of the differences in per capita income between rich and poor families that can be accounted for simply by the lower education level of poor parents, and by the fact that the returns to a year of low education are much lower than the return to a year of higher schooling. On average, we find that if the only difference between the poor and the rich were the quantities of education of the parents (in this case the return of each year is equal across countries and education levels), we would explain 26% of the per capita income differences. However, the prices paid for different types of education are not the same, and when we account for this, we are able to explain around 60% of the differences between rich and poor. In the case of Brazil, Peru, Mexico, and Bolivia, the differences in relative prices and quantities of education for parents actually explain more than 60% of the disparities in per capita income between the rich and the poor. The lesson we derive from this is that personal differences between one person and another matter, but that the magnitude of the difference is determined by the economic environment where they live.

Two Couples on a Trip Across Latin America

Imagine two couples who always decide to live in urban areas. The Altamira couple (Family A) is composed of two 35-year-old people each with 12.1 years of schooling (the average in the top 10% for the 14 countries in our sample). The Bajares couple (Family B) is also 35 years of age but each has only 5.04 years of schooling. We will use these two fictional families to ask the following questions. How unequal will they be if they lived in different countries of the region? How many children will they decide to have? How different would be the choices about labor market participation that they make? And how much education will their children get?

Notice that in this experiment we are keeping the people constant and are only changing the environment in which they are making their decisions. If there are large differences in the choices they make and in the inequality they experience, we cannot blame it on their

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each equation at certain mean values, the estimated per capita income of the members of the household can be obtained. See the Appendix for more details.

education differences per se, which are the same, by design. Hence, the inequality must be coming somehow from the environment.

Table 5 shows the results from the estimation. Fertility decisions vary quite markedly. Almost everywhere, Family B would have more children. Fertility would be highest in El Salvador, Mexico, and Venezuela and lowest in Brazil and Peru. The differences exceed 1 for Argentina, Bolivia, Brazil, and Honduras. They are lowest in Uruguay, Chile, and Ecuador.

The Table also shows the estimated probability that Mrs. Altamira and Mrs. Bajares will be in the labor market. Participation would be lowest in Brazil followed by Peru, Mexico, Bolivia, and Argentina and highest in Uruguay, Honduras, El Salvador, and Panama. Mrs. Altamira would have a 90 percent probability of working in Uruguay's formal sector, but would only have a 35 percent chance of doing so in Brazil. In Brazil, she would have a 34 percent probability of being informal and an 11 percent probability of being formal.

Mrs. Altamira's maximum chance of being out of the labor force is in Paraguay, with 22 percent probability. Mrs Bajares maximum chance of being formal is in Bolivia and Peru with 30 percent. By contrast, Mrs. Altamira maximum chance of being formal is in Uruguay with 91 percent, while Mrs. Bajares maximum chance of being informal is in Uruguay with 90 percent, followed by Panama (77 percent) and Honduras (75 percent).
The expected wage they would receive in the formal and informal sectors would also vary quite dramatically across the region.

The estimated schooling attainment of the children in each country is also shown in the table. On average, the children of the Altamira family will get 9.8 years of schooling while those of the Bajares' will get only 9. Family A would achieve its highest attainment in Argentina and it's lowest in Venezuela. Family B would achieve its highest attainment in urban Bolivia followed by Peru and its lowest attainment in Brazil, which is the country that would exhibit the largest gap in education between the two families.

The choices for the number of children and the educational attainment exhibit some elements of the quantity vs. quality trade-off in these simulations. However, Brazil generates an unusually large gap due to low achievement in the Bajares' family, while Argentina also shows a large gap caused by high achievement of the Altamiras'.

To show whether the distribution of schooling or the returns to education are driving these results, we performed an experiment with the equations we used for explaining participation and fertility decisions. In this case, we asked what would be the differences in attainment between rich and poor children in each country if all families faced the same relative prices across countries and across the income distribution. This is equivalent to asking how much of the differences in attainment of rich and poor children are only due to the fact that their parents have different educational levels. We estimate that, on average, the differences in the parent's level of education explain around 30% of the differences in children's attainment. In El Salvador, Honduras, Panama, and Mexico, the proportion of the difference explained reaches 50%.

Allowing the returns to education to vary is equivalent to asking how much of the difference in attainment is due to the differences in prices and quantities of the parent's education. We estimate that on average, these prices and quantities explain 55% of the difference in poor and rich child's attainment. However, in Mexico, Panama, Honduras, El Salvador and Brasil, the explanatory power is close to 80 percent.

V. Conclusions

We have seen in this paper the inter-related nature of critical choices that vary systematically along the income distribution: participation, fertility, and educational attainment. We identified the critical role played by the opportunity cost for women to enter the market. A high return to female market work generates a high participation, a lower demand for children, and higher attainment by those children. That is the virtuous

circle. However, we found that this process depends not only on the educational attainment of the mother; but on the potential returns to her education in the labor market, which vary quite dramatically across the region. We found out these variations by simulating a model in which we left constant the educational differences between two hypothetical families. Different countries generated very different levels in the inequality these families would experience. Hence, their specific education per se cannot explain the large and changing level of inequality they would experience across the different countries of Latin America. Something else in the structure of the economy is making fertility differentials large in some countries and small in others. Something is making wage gaps vary, and making the same type of women stay at home in some countries, work by themselves in the informal sector in others, or have relatively easy access to the formal sector. Choices of attainment also change dramatically.

What could explain these differences? Part of the answer is in the returns to schooling, which reflect the structure of demand and supply of education by the rest of the economy. Hence, high returns reflect in part low educational attainment by the population as a whole. However, low attainment must itself be explained by elements that in the past have affected the choices of fertility and attainment of the previous generations. The same elements that came into determining the steady state equilibrium gaps we estimated previously affect the rewards that different people receive for the same education in different countries. Part of the answer is in the difference in the earnings equations, which reflect to a large extent the demand for labor and skills in the economy. Part of the answer also has to do with the relative sensitivities to those relative prices when making participation, fertility, or attainment decisions.

Hence, by travelling this microeconomic road we have hit upon the macroeconomic boundary. It is things larger than the characteristics of the families that are driving the returns to education and the economic opportunities available for women; things that make similar people choose differently in different countries. If something generates very unequal earnings, then these will feed back into very different choices of fertility, and

also on participation and attainment so that over time households will also be more unequal in their family characteristics.

What are these things? A full answer is not available, but IDB (1998) has argued that the *stage of development* of each country - including the demographic transition, urbanization, the development of labor markets, and the accumulation of physical and human capital -, *factor endowments* (including the abundance of natural resources) and *geographic characteristics* are some of the key determinants of the relative prices that households face. Although it could be argued some of the above elements are difficult (or even impossible) to change, it is important to identify them. Identifying them is a necessary condition for designing policies that guarantee that the standard of living of the Altamira and Bajares families will start to converge, rather than following two diverging paths over future generations.

Appendix

Fertility Decisions

One limitation of household survey data is that it not always contains information about all the children that a woman has had. Typically we are able to count the number of children living in a household and we are able to identify their mother, but we do not know if the woman has other children living elsewhere. Therefore, rather than strictly looking at fertility, we can only focus on the number of children in the household, and try to determine if this number is significantly correlated with other variables.

To perform the simulations on fertility discussed in the main text, we performed an exercise in two stages. In the first stage, we estimate wage regressions of the following form:

$$\ln(y_i) = c + b_1 e_i + b_2 \exp_i + b_3 (\exp_i)2 + b_4 urb_i + u_i$$

where the dependent variable is the logarithm of the income of each earner, *e* represents the number of years of education of person *'i'*, *exp* denotes experience (measured as the age minus six, minus the years of education)[27], exp^2 is its squared value, and *urb* is a dummy variable for urban areas. The regression is performed separately for men and women, correcting for sample selection bias[28].

We use the estimated coefficients (corrected for sample selection bias) to predict the income (denoted $y^{*)}$ that each person would obtain if he/she participated in the labor market by using their education, experience, and location. These predicted incomes are denoted y_m^* and y_f^* (for males and females, respectively) and then used in a regression where the dependent variable is the number of children in the household, and the independent variables are y_m^* and y_f^* and the urban-rural location dummy[29]. With these two equations we can simulate the number of children that a prototype person would have, and we can test for the sensibility of that result to the education of the mother, to the education and income of the male spouse or male household head, etc., by multiplying the regression coefficients by the mean values of the variables in question.

[27] To measure experience we take into consideration the number of children each woman has. The assumption is that a woman loses one year of labor market experience per child.
[28] In the case of Argentina, Bolivia, and Uruguay, we only have urban data, so the dummy variable is not included.
[29] This second-stage regression was only estimated for the sample of 35-40 year old females.

Female Labor Market Participation Decisions

Female participation decisions have been studied extensively in the literature. One of the problems of econometric estimations is data availability and specifically, that it is difficult to obtain a good measure of the opportunity cost that a woman faces when deciding weather participating actively in the labor market or not. One way of tackling the issue, is to produce a variable that gives some idea about the income that a person would obtain in the labor market if he/she were to participate, and then use this to see if the decision of participating is statistically associated with this measure. This is the approach followed here.

The exercise requires a two-stage process. The first stage is identical to the wage regression in the fertility equation previously discussed. Then we use y^* as an independent variable in a multinomial logit equation of the following form:

$$\ln(p_i) = c + \gamma_1 nkids_i + \gamma_2 y_f^* + \gamma_3 y_m^* + \gamma_4 urb_i + \gamma_5 age_i$$

where *nkids* is the number of children each female has, y_f^* is the predicted income of the female in question, y_m^* is the predicted income of the male spouse or male household head, and *age* is a dummy variable for age. p_i is a variable that takes the value of 0 if woman *'i'* is not participating in the labor market, 1 if she participates in the informal sector, and 2 if she participates in the formal sector of the economy.

The coefficients from the multinomial logit estimation are presented in Table A.2.
With these two equations we performed several simulations. For example, given the coefficients and the mean value of the wage regression one can estimate the income of a prototype person by simply multiplying the coefficients by the assumed education, experience and location. With this information we predict y_m^* and y_f^* respectively, and if we had the number of children that each woman has, her age and her rural-urban location, we could multiply them by the coefficients of the multinomial logit regression to obtain the predicted probabilities of being types 0, 1 or 2[30]. With this method, one can vary the education of the woman, the education or income of the male head or male spouse, the number of children and the age to assess the impact on the probabilities of participating in the labor market.

Obviously, this kind of exercise is subject to econometric problems such as endogeneity. This is the case especially with variables such as the number of children in the household. Unfortunately it is difficult to get around this problem with the information from household surveys because it is almost impossible to construct good instrumental variables. Several robustness tests were performed to the estimates presented in Table A2 to check whether the conclusions changed when attempting to substitute the variable *nkids* with constructed instruments. The conclusions we derive from the results did not vary significantly in any of these estimations.

[30] To assess the probabilities we obviously make the corresponding transformations to the coefficients so that they yield the predicted probabilities.

Putting the Stories Together

To put the decision making process of the family together, regarding participation, fertility, and children's education we estimated a recursive model of earnings, participation, number of children, and attainment of those children and estimated it for 14 Latin American countries. Since all these are interrelated decisions, we estimate a simultaneous equation system following these steps:

1. First, we run earnings regression of the following form

$$\ln(y_i) = c + \beta_1 e_i + \beta_2 \exp_i + \beta_3 (\exp_i)2 + \beta_4 urb_i + u_i$$

with which we predict y_m^* and y_f^* (corrected for sample selection bias) as in the exercises previously described .

2. The predicted variables y_m^* and y_f^*, which represent the income generating potential of a person with certain education, experience and location, feed into the following regression:

$$nkids = c + \alpha_1 y_m^* + \alpha_2 y_f^* + \alpha_3 urb_i + u_i$$

where the idea is that the coefficients of this regression can be used to predict the variable *nnkids* for each household, based only on the opportunity cost (proxied by the earnings potential variables) and location. We denote $nkids^*$ the number of children in each household predicted by y_m^* and y_f^* and *urb*. From this perspective, the only reason why two couples in the urban sector would choose to have a different number of children, is because they have different education levels, and because the returns to their education (the opportunity cost) differs.

3. Thirdly, we reestimate the multinomial logit described previously in this Appendix, by running the following regression

$$\ln(p_i) = c + \gamma_1 nkids_i^* + \gamma_2 y_f^* + \gamma_3 y_m^* + \gamma_4 urb_i + \gamma_5 age_i$$

where *nkids* has been substituted by $nkids^*$. With the coefficients from this regression and the average values for y_m^*, y_f^*, $nkids^*$, *urb*, and the age of each female, we can predict the probability of being out of the labor force, participating in the formal sector, or in the informal sector, which we label p_i^*.

4. Fourth, we estimate earnings equations of the same form as in the first stage regression above, but we run them separately for men and for women in the formal and informal sectors, respectively. The coefficients allow us to predict the following income-earnings potentials

$y_{m,f}^*$ = income of males in the formal sector
$y_{m,i}^*$ = income of males in the informal sector

$y_{,f,f}^{*}$ = income of females in the formal sector
$y_{f,i}^{*}$ = income of females in the informal sector

5. Fifth, we estimate the income per capita of each family through the following formula:

$$ypc_i^{*} = \{y_m^{*} + [p_i^{*}(1)]y_{f,i}^{*} + [p_i^{*}(2)]y_{f,f}^{*}\}/(nkids^{*} + 2)$$

The formula says that the estimated income per capita (*ypc**) of family '*i*' is calculated by adding up the predicted income of a male with certain education, experience, and geographic location, with the income of the female computed as the estimated probability of being in the informal sector times the informal sector predicted income (the income is also predicted based on education, experience and rural-urban location), plus the estimated probability of being in the formal sector times the formal sector predicted income. All this is divided by the number of children we would expect for a couple with certain education, experience, and rural-urban location to have.

6. Finally, we estimated the education attainment of each family through the following regression:

$$educh_i^{*} = c + y_m^{*} + [p_i^{*}(1)]y_{f,i}^{*} + [p_i^{*}(2)]y_{f,f}^{*} + nkids^{*} + sex + u_i$$

where $educch_i^{*}$ represents the predicted attainment of the child, and sex is a dummy variable for the gender of the child.

Therefore, the system of equations uses the number of years of education, experience, and geographic location as exogenous variables, and with this information it predicts the income earning potential in the formal and informal sectors, the probability for females to be out of the labor force, in the formal or informal sectors, the number of children that a couple with the above characteristics would have, and their attainment. The main advantage is that as explained in the text, the methodology allows us to simulate several scenarios by making an explicit distinction between the effects of the number of years of schooling (the quantity effect), and the returns to education (the price effect).

Table 1

SHARE OF POPULATION BY HOUSEHOLD SIZE AND INCOME

	Top 10% of the Distribution				Bottom 30% of the Distribution			
	1	2-3	4-6	7 or more	1	2-3	4-6	7 or more
Argentina	14.26	46.81	36.68	2.25	0.36	17.82	49.46	32.37
Bolivia	4.13	26.08	59.75	10.03	0.68	7.92	52.39	39.01
Brasil	5.53	40.91	51.05	2.52	0.49	12.73	52.76	34.01
Chile	4.63	35.30	55.87	4.2	0.77	14.19	62.64	22.40
Colombia	3.91	31.08	50.60	14.42	0.42	11.43	56.78	31.37
Costa Rica	4.63	36.41	53.57	5.39	1.56	12.4	54.24	31.80
Ecuador	4.84	27.15	57.18	10.83	0.79	8.52	45.9	44.79
El Salvador	3.35	31.23	56.48	8.93	0.79	9.11	41.65	48.45
Honduras	3.12	23.84	55.98	17.07	1.17	7.79	37.86	53.19
Mexico	4.63	30.82	58.60	5.95	0.68	6.95	42.64	49.73
Panama	7.19	40.10	48.54	4.17	1.56	11.66	47.86	38.93
Paraguay	5.62	28.46	53.12	12.8	0.38	8.09	36.63	54.90
Peru	5.08	25.66	56.49	12.75	0.42	5	43.67	50.91
Uruguay	11.41	49.21	38.22	1.15	1.3	19.93	56.04	22.73
Venezuela	3.53	31.22	52.52	12.72	0.48	6.85	43.02	49.65
Average	5.72	33.62	52.31	8.35	0.79	10.69	48.24	40.28
USA	27.87	59.75	12.37	0	6.47	32.14	48.08	13.31

Source: Author's calculations.

Table 2

Share of Children Living in Nuclear and Single-Parent Households By Country and Income Level

	Nuclear		Single Parent	
	Top 10%	Bottom 30%	Top 10%	Bottom 30%
Argentina 96	80.84	82.61	7.29	13.11
Bolivia 95	86.19	74.16	12.57	15.37
Brazil 95	79.01	74.85	9.80	16.89
Chile 94	62.54	67.35	9.07	18.01
Colombia 95	83.08	67.35	12.78	19.31
Costa Rica 95	82.63	80.47	10.94	20.93
Ecuador 95	85.83	79.96	11.72	15.13
El Salvador 95	90.37	49.53	13.71	28.89
Honduras 96	70.92	81.28	13.69	26.90
Mexico 94	91.87	72.78	10.89	10.50
Panama 95	76.28	85.73	9.91	25.97
Paraguay 95	87.55	85.57	14.72	11.75
Peru 96	85.1	75.57	13.50	9.90
Uruguay 95	79.46	63.93	8.62	18.99
USA 95	75.36	65.92	6.82	41.12
Venezuela 95	87.26	74.5	15.28	27.26

Source: Calculations from household survey data

Table 3

Labor Force Participation Rates by Income Decile (ages 18 to 65)

	Total							Informal					
		Total		Top 10%		Bottom 30%		Total		Top 10%		Bottom 30%	
	All	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
Argentina 96	65.5	83.2	48.8	88.5	68.1	80.9	39.6	35.1	22.2	18.0	12.8	48.2	27.6
Bolivia 95	63.4	76.2	51.5	80.2	57.6	72.8	44.6	38.0	36.6	21.0	20.7	45.0	38.5
Brazil 95	69.2	86.8	52.5	85.8	61.7	85.9	44.8	48.2	20.0	32.6	17.8	56.8	18.4
Chile 94	58.1	80.0	37.5	78.5	55.7	78.3	21.3	33.1	14.3	17.4	13.5	37.2	12.9
Colombia 95	62.3	84.5	42.1	87.2	52.2	82.8	27.2						
Costa Rica 95	62.0	86.0	38.0	86.0	57.0	82.0	25.0	42.0	17.6	21.2	10.9	52.8	17.0
Ecuador 95	72.3	89.1	55.8	90.2	69.6	87.7	50.4	54.7	44.4	29.7	27.9	68.5	52.0
El Salvador 95	61.4	82.4	43.4	84.2	62.4	78.3	23.1	46.3	30.2	24.4	23.4	60.6	23.9
Honduras 96	63.1	88.4	39.7	86.6	61.7	86.5	24.1	55.9	30.2	34.4	21.8	72.3	31.5
Mexico 94	N.A.	84.2	37.9	82.4	52.3	85.1	29.9	58.2	28.8	30.7	19.5	67.7	33.2
Panama 95	60.2	80.4	40.0	83.5	63.8	79.6	24.3	39.2	15.2	11.7	6.6	63.8	19.6
Paraguay 95	60.1	90.8	72.8	84.9	60.2	83.0	59.0	64.8	52.8	36.1	34.9	88.1	65.1
Peru 96	78.7	84.1	59.8	90.8	72.8	93.6	64.7	49.6	44.3	28.8	29.5	53.7	46.7
Uruguay 95	71.7	85.3	57.0	88.7	67.2	83.6	48.3	27.5	22.7	16.6	12.9	35.3	28.1
Venezuela 95	70.3	82.3	39.6	86.6	59.3	76.5	24.7	41.1	18.5	29.4	13.9	43.7	19.3
Industrial Countries	61.2	94.0	73.0										

Source: Calculations from household survey data

Table 4

Estimated Education Equilibrium for the Two Education Groups

	More Educated	Less Educated
Argentina 96	14.29	9.63
Bolivia 95	12.19	8.07
Brazil 95	11.10	7.62
Chile 94	12.95	11.41
Colombia 95	12.73	9.76
Costa Rica 95	13.35	9.83
Ecuador 95	13.35	9.83
El Salvador 95	12.76	8.93
Honduras 96	10.77	6.58
Mexico 94	13.65	9.98
Panama 95	13.28	10.38
Paraguay 95	13.81	8.64
Peru 96	14.13	11.84
Uruguay 95	12.38	10.81
Venezuela 95	11.77	9.51

Source: Estimations based on regression results.

Table 5

The Altamiras and Bajares: Women's Formal Labor Force Participation Rate, Number of Children, and Children's Educational Attainment By Country and Income Level

	LFP Rate		Number of Children		Children's Educ. Attain.	
	Top 10%	Bottom 30%	Top 10%	Bottom 30%	Top 10%	Bottom 30%
Argentina 96	49.67	20.19	1.10	2.69	10.68	9.42
Bolivia 95	49.78	30.05	1.19	2.18	10.45	10.07
Brazil 95	34.49	11.10	0.83	1.81	9.14	6.96
Chile 94	54.90	10.36	2.27	2.04	10.07	10.03
Costa Rica 95	57.38	8.78	1.84	2.11	8.65	8.40
Ecuador 95	50.36	25.68	2.09	2.44	9.09	8.90
El Salvador 95	72.91	14.59	3.27	3.32	8.58	8.03
Honduras 96	75.42	10.45	1.03	2.23	8.36	7.58
Mexico 94	41.70	16.18	2.96	3.57	10.54	9.17
Panama 95	79.75	5.70	1.44	2.44	10.20	8.88
Paraguay 95	46.94	28.14	1.43	2.49	8.88	8.51
Peru 96	45.71	29.68	1.37	2.00	10.40	9.97
Uruguay 95	90.82	5.11	2.42	2.14	9.34	9.30
Venezuela 95	62.96	10.52	3.29	3.59	8.37	8.05

Source: Calculations from household survey data

Appendix Table A.1

Number of Children, Female participation and education of the adults living in the household, by socioeconomic level

Country	Number of Children per households[1]			Female labor force participation			Education of adults in the household		
	Richest 10%	Poorest 30%	Total	Richest 10%	Poorest 30%	Total	Richest 10%	Poorest 30%	Total
Argentina96	1.75	2.46	2.04	48.66	37.94	40.78	14.34	7.13	9.40
Bolivia95	2.52	2.92	2.91	57.88	57.95	56.56	13.71	7.09	9.28
Brasil95	1.77	2.69	2.23	55.05	47.74	50.36	11.40	2.10	5.06
Chile94	2.05	2.18	2.11	50.85	31.82	36.06	13.83	5.74	8.64
Colombia97	1.77	2.78	2.32	56.49	38.43	43.94	12.76	3.56	6.65
Costa Rica95	2.34	2.91	2.57	43.23	33.06	37.54	12.35	4.27	6.99
Ecuador95	2.42	3.27	2.90	62.41	61.28	59.20	12.15	4.25	7.11
El Salvador95	2.57	3.33	2.92	55.56	39.25	46.43	10.82	1.97	5.01
Honduras96*	3.08	3.80	3.50	52.62	43.34	44.32	9.81	2.31	4.80
Mexico96	2.27	3.34	2.82	40.11	46.92	41.51	14.05	3.67	7.18
Nicaragua93*	1.93	2.69	2.29	52.51	37.66	44.18	9.57	2.22	4.90
Panama95	3.06	4.19	3.64	58.58	31.45	40.75	14.47	5.32	8.59
Paraguay95	2.57	3.63	3.15	67.11	69.01	66.95	11.69	3.64	6.11
Peru97*	2.61	3.67	3.09	45.08	80.08	63.20	12.25	5.82	8.41
Uruguay 95	2.22	2.95	2.82	58.04	47.49	52.78	12.88	5.17	7.79
Venezuela95	1.95	2.09	1.99	44.74	38.66	40.80	11.43	4.63	6.95

* yalljb usado en vez de yallsr

1 calculado sólo para los hogares donde el jefe del hogar tiene entre 30 y 45 años

Appendix Table A.2

Coeficients from Multinomial Logit regression

Dependent variable, Female Albor Market Participation

(Baseline, p=0)

p=1	Argentina 96	Bolivia 95	Brazil 95	Chile 94	Costa Rica 95	Ecuador 95	El Salvador 95
nkids	-0.11	-0.00	-0.03	-0.14	-0.05	-0.06	-0.04
yf	-1.28	-2.23	-0.10	-0.61	0.19	-0.75	-0.39
ym	-0.45	-0.24	-0.19	-0.14	-0.19	-0.13	-0.21
urb			0.57	1.07	0.16	0.28	0.97
age2	0.19	0.63	0.17	0.25	0.15	0.28	0.38
age3	0.53	0.74	0.24	0.49	0.05	0.27	0.75
age4	0.47	0.92	0.19	0.62	0.24	0.33	0.43
age5	0.25	0.78	0.14	0.36	-0.13	0.28	0.37
age6	0.00	0.38	-0.01	0.11	-0.52	-0.34	0.08
age7	-0.64	-0.39	-0.37	-0.35	-0.99	-0.43	-0.28
cons	3.49	5.69	-1.65	2.94	-1.39	7.34	0.38
p=2							
nkids	-0.19	0.02	-0.17	-0.17	-0.11	-0.03	-0.05
yf	2.37	3.07	1.05	2.07	2.04	1.94	2.21
ym	-0.45	-0.23	-0.26	-0.13	-0.24	-0.12	-0.27
urb			1.27	0.19	0.28	-1.33	0.32
age2	-0.12	0.08	-0.13	-0.13	-0.28	0.05	0.13
age3	-0.11	-0.17	-0.27	-0.23	-0.34	0.18	0.29
age4	-0.26	-0.41	-0.51	-0.37	-0.61	0.10	-0.60
age5	-0.79	-0.87	-0.98	-0.95	-0.84	-0.65	-0.80
age6	-0.91	-1.62	-1.47	-1.21	-1.66	-0.51	-1.31
age7	-1.72	-2.36	-1.98	-1.89	-2.71	-1.18	-2.23
cons	-5.36	-8.89	-3.84	-15.03	-13.20	-16.21	-7.26

*Age groups start at 20 years of age. Age2 represents 25-30 years of age. The rest are successive five-year groups.

p=1	Honduras 96	Mexico 94	Panama 9	Paraguay	Peru 96	Uruguay 95	Venezuela 95
nkids	-0.06	-0.01	-0.04	0.01	-0.09	-0.06	-0.07
yf	0.12	-0.11	-0.44	-0.37	-2.46	-0.72	-0.59
ym	-0.34	-0.36	-0.39	-0.01	-0.21	-0.06	-0.14
urb	0.46	0.10	0.27	-0.74	0.04		0.57
age2	0.47	0.52	0.30	0.22	0.19	0.18	0.29
age3	0.45	0.43	0.77	0.55	0.29	0.30	0.52
age4	0.46	0.26	0.61	0.46	0.41	0.38	0.42
age5	0.16	0.26	0.43	0.41	-0.02	0.22	0.13
age6	-0.03	-0.05	0.31	0.32	-0.24	-0.04	-0.39
age7	-0.07	-0.38	-0.47	0.21	-0.58	-0.78	-0.66
cons	-0.24	0.09	-0.38	3.60	5.92	7.68	2.91
p=2							
nkids	-0.06	-0.18	-0.11	-0.03	0.05	-0.17	-0.04
yf	2.54	1.92	2.54	1.97	2.76	1.59	2.11
ym	-0.43	-0.38	-0.33	-0.07	-0.20	-0.06	-0.15
urb	0.38	-0.29	0.21	-0.68	-2.23		-0.05
age2	-0.25	0.20	0.09	-0.28	-0.12	-0.01	0.22
age3	-0.09	-0.09	0.53	-0.26	-0.22	0.00	0.42
age4	-0.76	-0.40	0.00	-0.18	-0.26	-0.12	0.24
age5	-0.67	-0.84	-0.22	-1.07	-0.49	-0.64	0.05
age6	-1.41	-0.99	-1.05	-0.90	-1.07	-0.99	-0.58
age7	-1.60	-2.33	-2.95	-0.58	-1.74	-1.92	-1.52
cons	-7.51	-5.31	-4.96	-18.02	-4.75	-16.56	-13.80

*Age groups start at 20 years of age. Age2 represents 25-30 years of age. The rest are successive five-year groups.

Appendix Table A.3

Dependent Variable: probability of 15-18 year olds of being enrolled in school

Independent Variable	Argentina		Bolivia		Brazil		Chile		Colombia		Costa Rica		Ecuador	
Kid's Age	-0.0891	**	-0.0292	**	-0.0811	**	-0.0382	**	-0.0785	**	-0.0911	**	-0.0643	**
Gender	-0.0186		0.0026		-0.0329	**	-0.0224	**	-0.0737	**	-0.0693	**	-0.0110	
Father's Educ	0.0131	**	0.0071	**	0.0119	**	0.0043	**	0.0223	**	0.0174	**	0.0225	**
Mother's educ.	0.0242	**	0.0051	**	0.0210	**	0.0177	**	0.0412	**	0.0326	**	0.0335	**
Log of household pc income	0.0841	**	-0.0056		0.0299	**	0.0092	*	-0.0021		-0.0033		0.0013	
urban-rural					0.0970	**	0.0730	**	-0.0197	**	0.1618	**	0.1943	**
# other kids in hh	-0.0482	**	-0.0050	**	-0.0079	**	-0.0209	**	0.0623	**	-0.0347	**	-0.0279	**
Mother participates	-0.0579		0.0258	**	0.0432	**	0.0050		0.0765	**	0.0561	**	0.0416	*
# elderly members of hh	-0.0481		0.0478	**	0.0259	**	0.0437	**			0.0740	**	0.1074	**

Independent Variable	El Salvador		Honduras		Mexico		Panama		Paraguay		Peru		Uruguay		Venezuela	
Kid's Age	-0.0963	**	-0.1466	**	-0.1446	**	-0.0571	**	-0.1070	**	-0.0691	**	-0.0818	**	-0.0937	**
Gender	-0.0024		-0.1104	**	0.0705	**	-0.0350	**	0.0463	*	0.0087		-0.0912	**	-0.0955	**
Father's Educ	0.0126	**	0.0217	**	0.0201	**	0.0052	**	0.0171	**	0.0102	**	0.0144	**	0.0086	**
Mother's educ.	0.0271	**	0.0287	**	0.0303	**	0.0140	**	0.0269	**	0.0071	**	0.0214	**	0.0253	**
Log of household pc income	0.0118		0.0277	*	-0.0036		0.0314	**	0.0119		-0.0166	**	0.0538	**	-0.0213	**
urban-rural	0.2472	**	0.1881	**	0.1263	**	0.1394	**	0.2141	**	0.1438	**			0.1196	**
# other kids in hh	-0.0045		-0.0096	*	-0.0363	**	-0.0187	**	-0.0173	**	-0.0185	**	-0.0279	**	-0.0146	**
Mother participates	0.0593	**	0.0605	**	0.0442	**	0.0208		0.1302	**	-0.0105		0.0334	**	0.0054	
# elderly members of hh	0.0593	**	0.0546	**	0.0643	**	-0.0218		0.0779	**	-0.0019		0.0618	**	0.0782	**

**Statistically significant at the 99% level

*Statistically significant at the 95% level

Figure 1

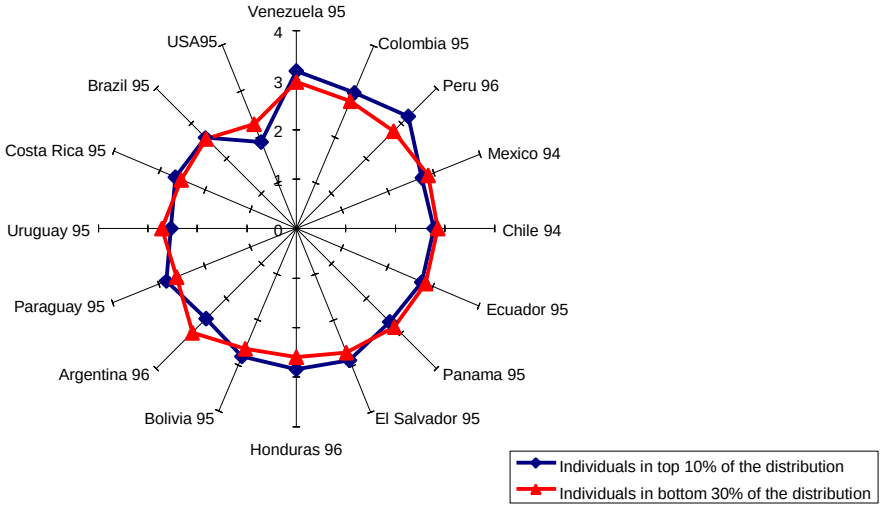


Figure 2

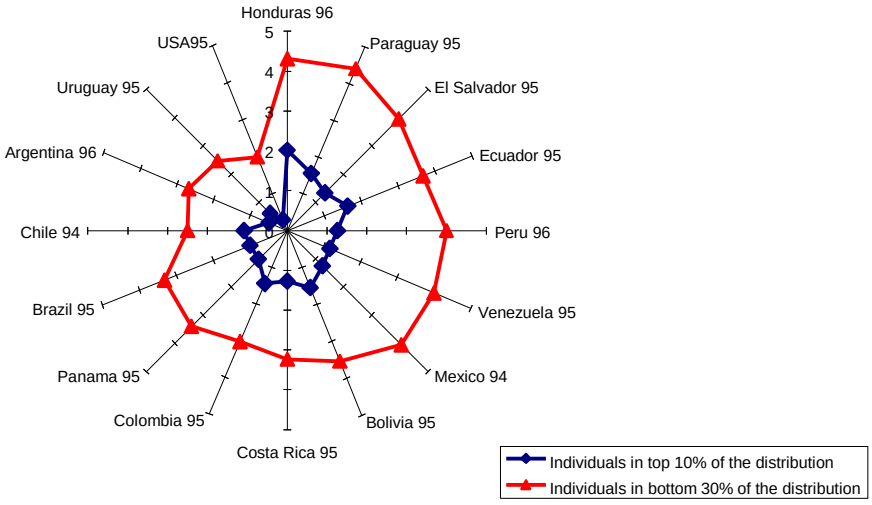


Figure 3

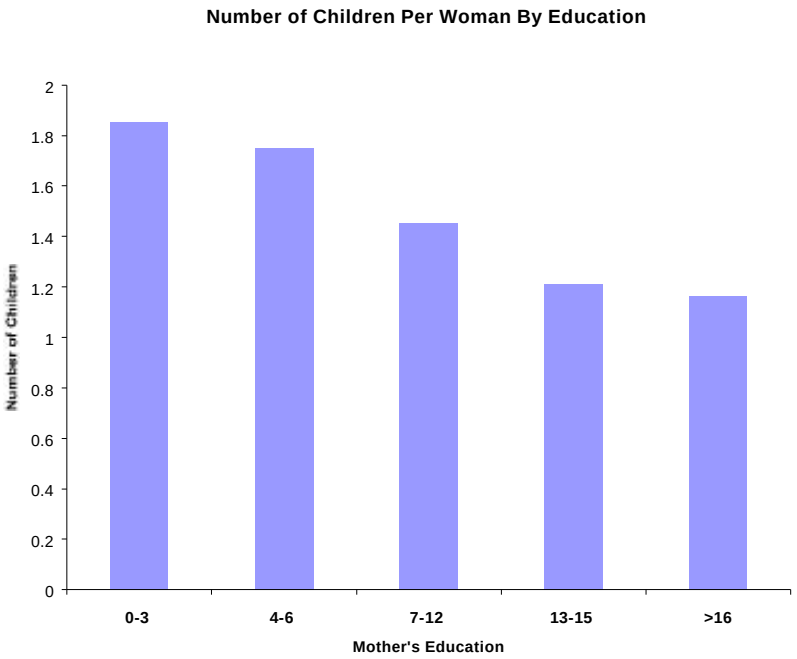
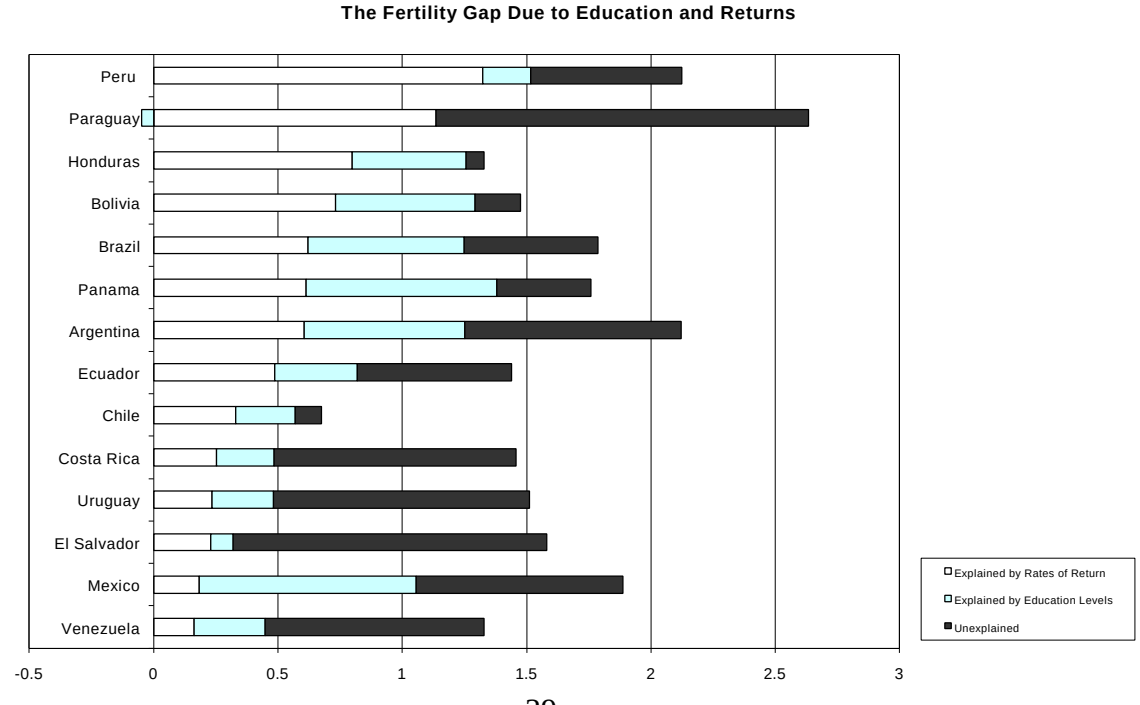
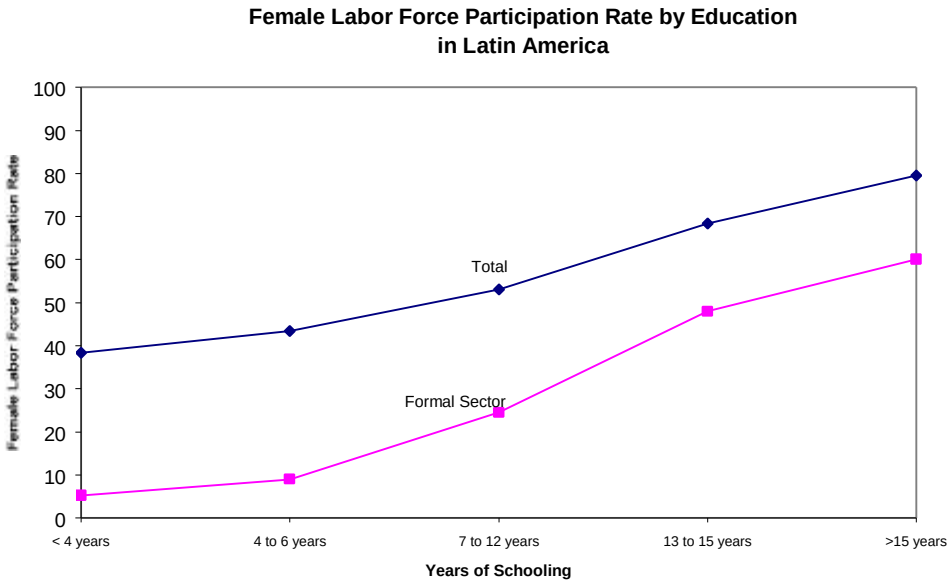


Figure 4



Note: The fertility gap is calculated as the difference in the number of children per household in the top decile to the bottom three deciles

Figure 5



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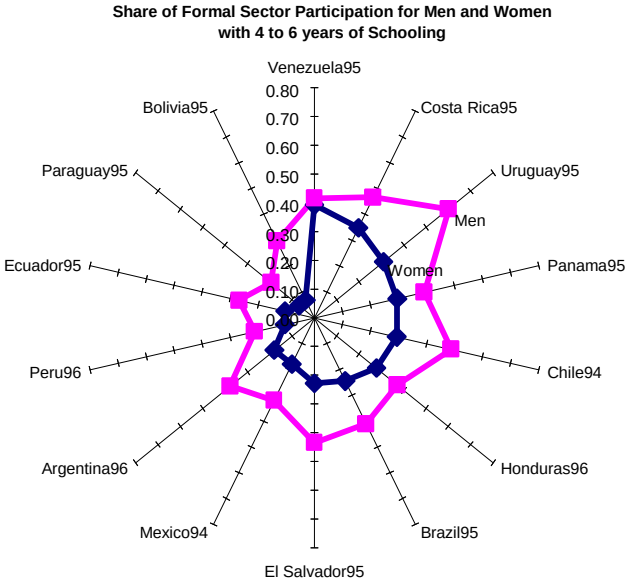


Figure 7

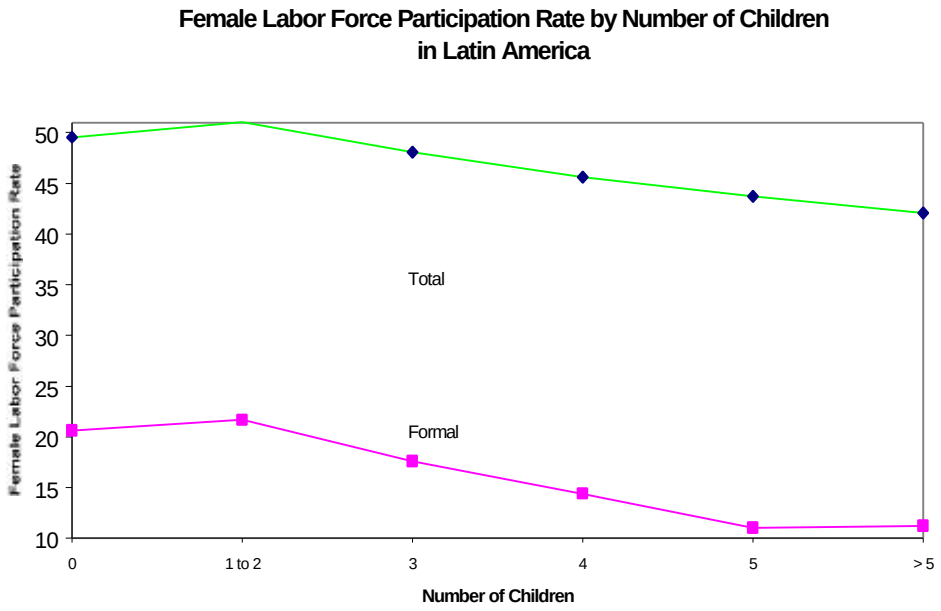
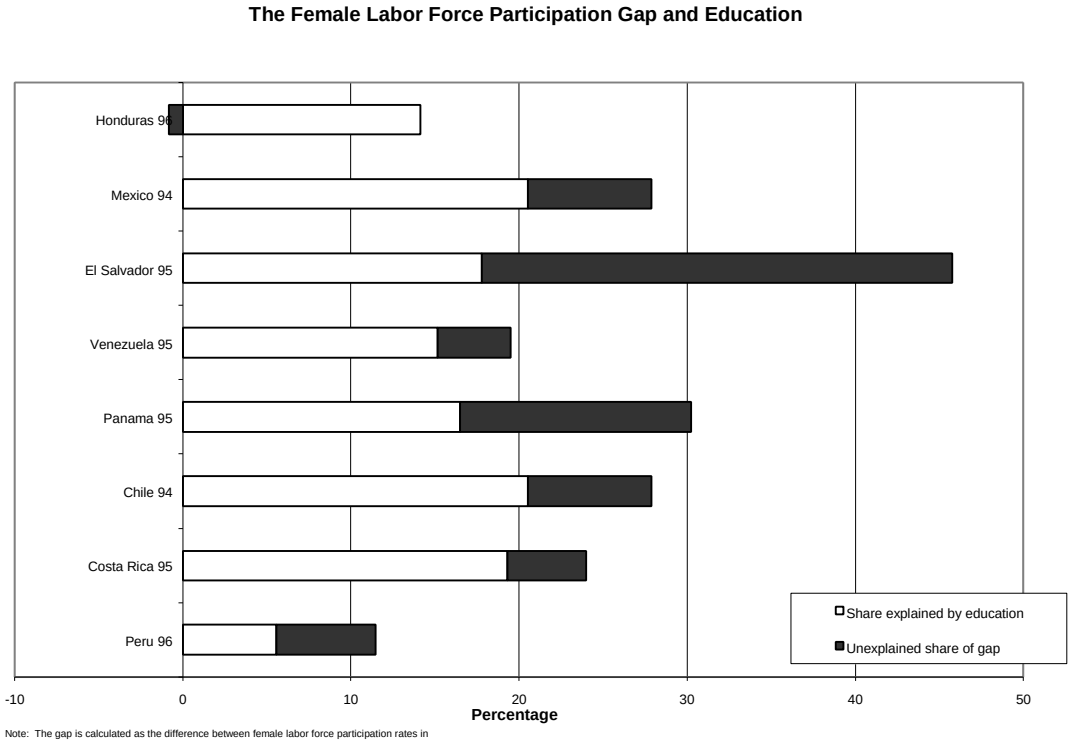


Figure 8



Note: The gap is calculated as the difference between female labor force participation rates in the top 10% and bottom 30% of the income distribution. Only countries with a gap of 10% or more are included.

Figure 9

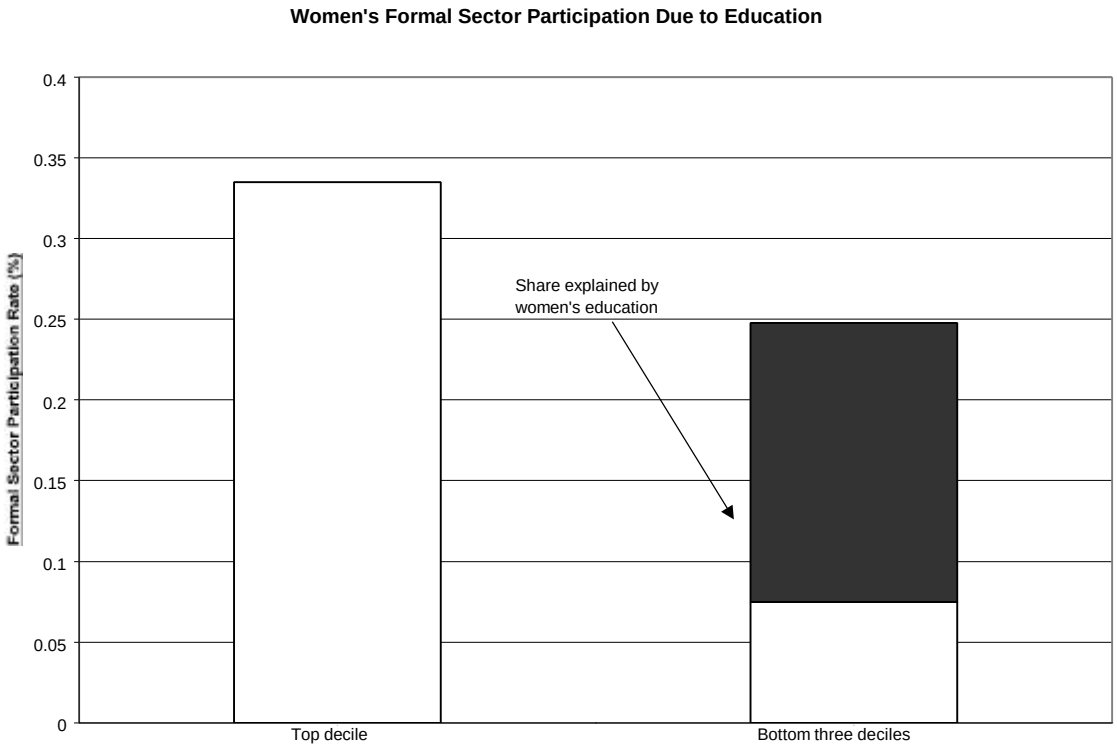


Figure 10

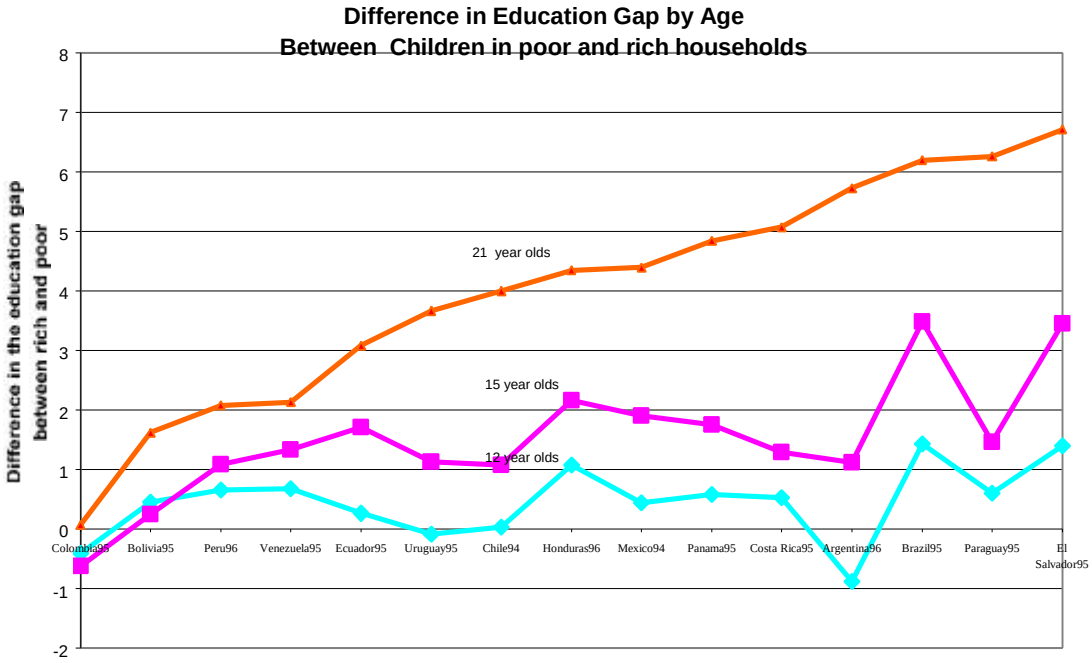


Figure 11

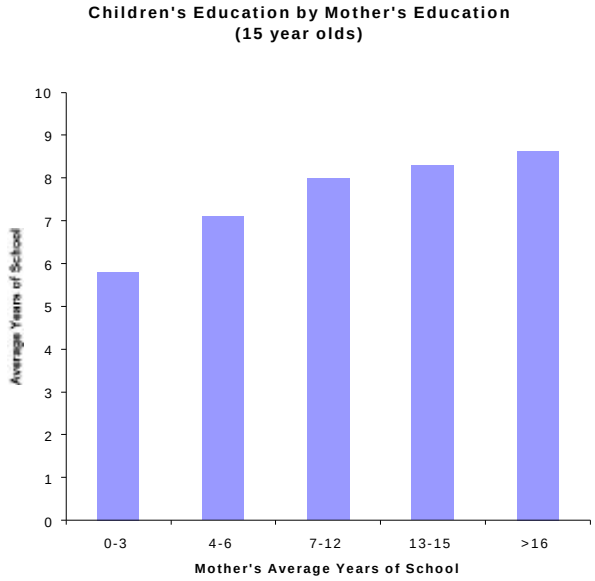


Figure 12

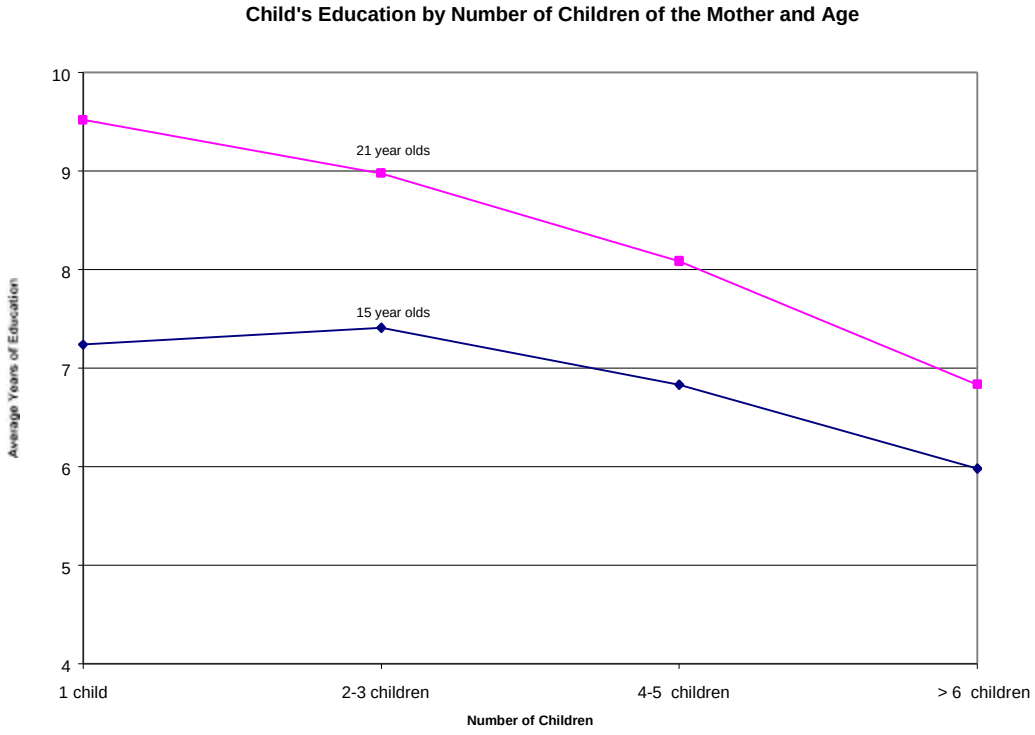


Figure 13

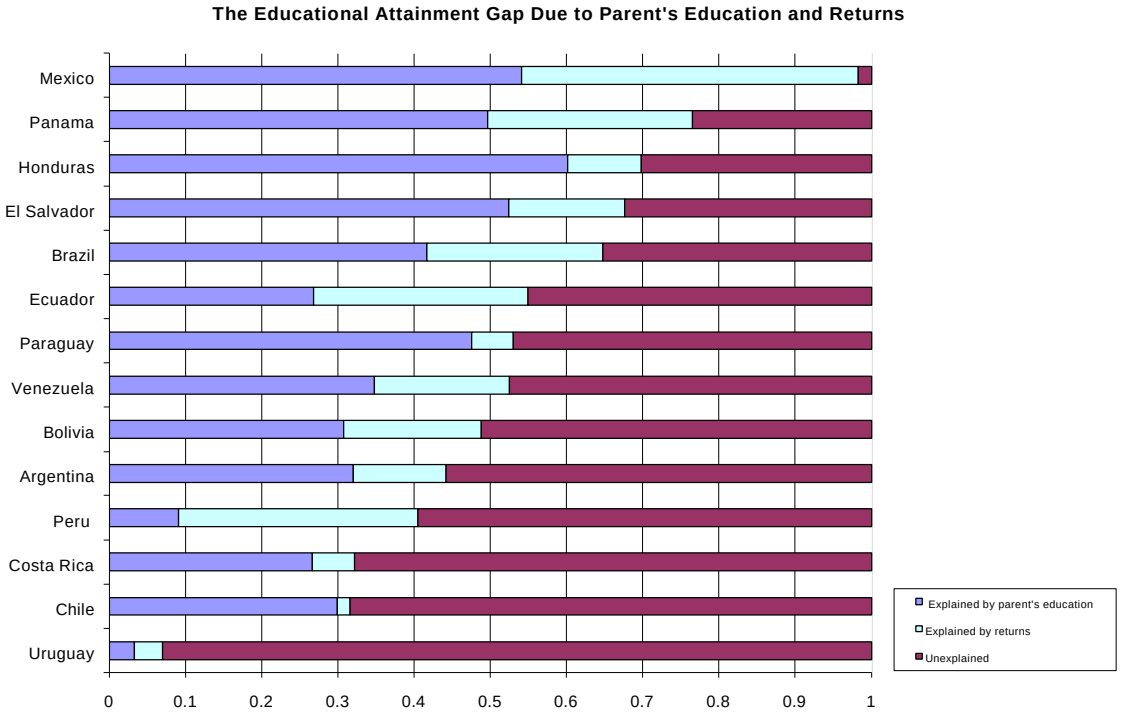


Figure 14

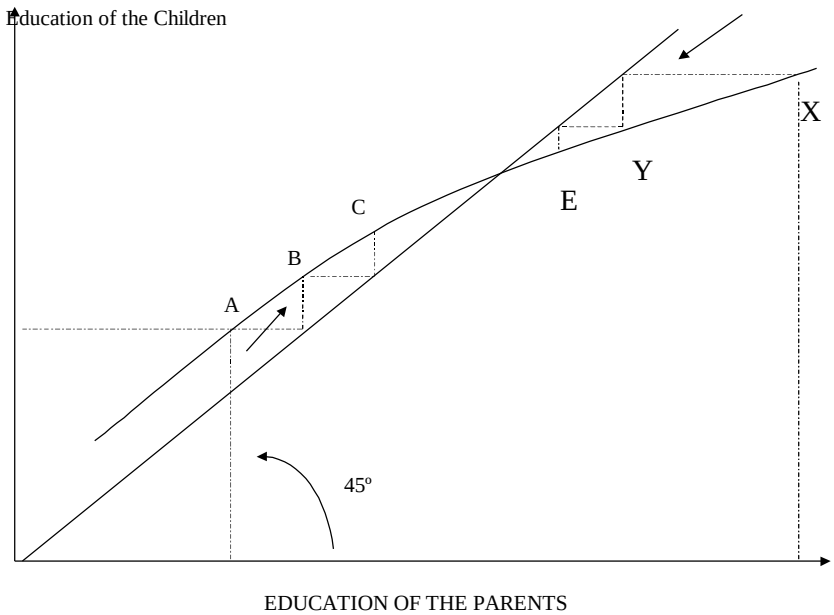


Figure 15

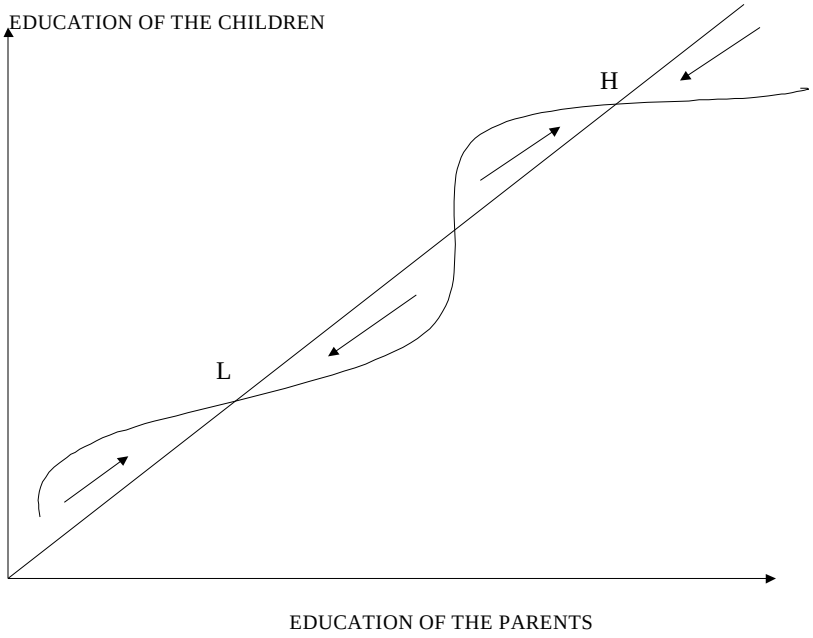
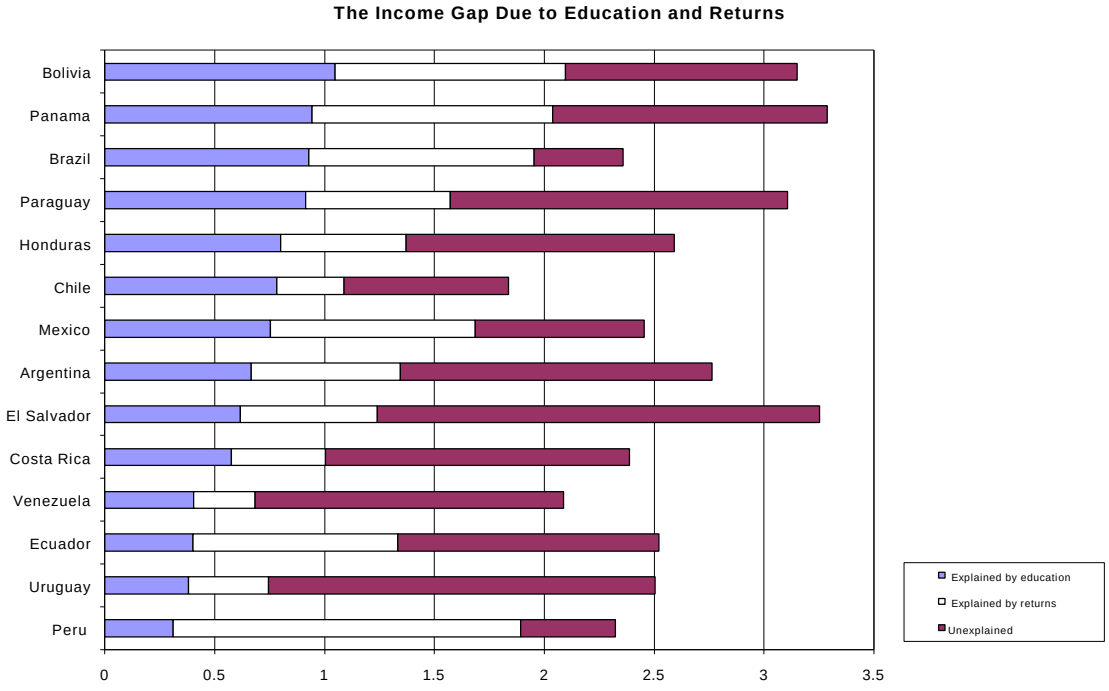


Figure 16



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