

**Adolescents and Young Adults in Latin America:
Critical Decisions at a Critical Age**

**Young adult labor market experience
(incomplete first draft)**

**Prepared by the Instituto de Estudios Superiores de
Administración (IESA) for
Inter-American Development Bank Research Network
Eighth Round of studies
Caracas, May, 2000**

Researchers:
Josefina Bruni Celli
Richard Obuchi

Adolescents and Young Adults in Latin America: Critical Decisions at a Critical Age

The young adult labor market experience

Introduction

This study explores and analyzes the young adult labor market experience in the Latin American countries included in the IADB country household survey database¹. It is divided in two sections. The first section focuses on the patterns of entry and consolidation of young adults in the labor force. In it, we describe and analyze the trajectory of young adults between ages 18 and 25 in terms of labor market participation, labor market status, and movements into and between occupations and economic sectors. The guiding questions throughout this section are: 1) how does the labor market experience of young adults change between ages 18 and 25?; 2) is this period one of final definitions and consolidation, or a segment in a longer transitional period?; 3) to what extent do differences in sex and educational level affect the young adult labor market experience?; 4) can we observe any country specific differences in these experiences?

The second section turns to the analysis of the determinants of income of young adults. Analysis focuses on returns to schooling, occupational, sector and gender effects on income, and returns to experience. In order to identify the young adult labor market experience on the income dimension, findings pertaining to this age group are compared and contrasted with those of late adolescents and prime aged adults. Country differences on the income dimension of the young adult labor market experiences are also inquired upon, and the possible causes of these differences explored.

Patterns of entry and consolidation in the labor force

Following we explore and analyze the trajectory of young men and women as they move from late adolescence into full adulthood. Analysis focuses on the features of labor market participation, status and distribution across occupations and economic sectors between ages 18 and 25.

¹ These are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Panama, Peru, Paraguay, El Salvador, Uruguay and Venezuela.

In all countries, the period of young adulthood (18-25 years of age) was found to be one of final definitions for men, for by age 25, their participation rates and distribution across economic sectors and occupations, have almost reached their final adult configuration. In most countries, distinct patterns were also observed in the first (18-21) and second (21-25) half of male young adulthood. The first half generally features a continuation of the trends initiated in late adolescence. Patterns in the second half take a different course that converges into those of full adulthood.

Females show more complex and less clean-cut trajectories during young adulthood. Early in the period, their participation and status emulates that of men, but with a lag. But as they reach full young adulthood, their experience turns erratic, partly as a result of their entrance into motherhood. In contrast to the case of men, at age 25, female trajectories do not stabilize or merge into a steady process. Rather they continue to change well into their mid thirties. Furthermore, the fact that the educational attainment of women has risen more rapidly over the last two decades than those of men makes the identification of stable or steady patterns among females a difficult endeavor.

Overall, educational attainment strongly affects the labor market experience of young adults, regardless of gender. Nonetheless, differences in educational attainment seem to have a more radical effect among women than among men.

Though sharing the above general features, countries showed many differences in the patterns of entry and consolidation of young adults in the labor force. Such differences were found to be to some extent related to these countries' educational and economic structures.

General regional patterns of entry and consolidation of young adults in the labor market

This section provides an aggregate regional overview of patterns of entry and consolidation of young adults in the labor markets. For this purpose, we look at how participation rates, occupations and economic sectors evolve along this period. Calculated participation rates includes all countries in the study. The analysis of occupations excludes Argentina due to the incompatibility of its categories with those of other countries. Consideration of economic sectors excludes Argentina for the previous reason and Nicaragua for lack of data.

Participation in the labor market

Among men, entrance into the market during young adulthood follows a smooth concave trend joining accelerated entry in late adolescence and the final consolidated state reached towards the early thirties. Nonetheless, ages 18 and 21 mark important break points throughout this process. Furthermore, by age 25, men have almost reached final prime-aged adult participation rates. Between ages 15 and 18, the number of males that have entered the labor force rises by a factor of 1.77 from 37.1% to 65.6%. Though entrance rates de-accelerate strongly from between 16 and 17 years on, such de-acceleration experiences a small fall between ages 17 and 18, when young men generally

reach legal adulthood (see higher second differences in Table 1). Between ages 18 and 19 the rate of growth of male participation drops sharply marking the beginning of a new trend of lower rate increase in participation that culminates at age 21 (80.2%). The period between 21 and 22 marks another break featuring a sharp small increase in the entrance rates. After that, growth in participation rates pick up the previous trend, though with a small jump at age 24, up to age 25 (92.0%). After age 25, male participation rates continue to grow slowly and continuously until they reach a peak, just 4 percentage points above, at age 32 (96.1%).

Female participation rates (19.9%) are much lower than those of males (39.3%) at age 15, but they rise faster (factor of 1.98 to 1) between ages 15 and 18. Unlike males, no increase in second differences is observed upon arrival into age 18, though as with males, entrance rates do drop sharply after that age. It is the arrival into age 21 that marks an important point in the case of females; this age features a break in the trend with a sudden sharp increase in participation rates. After age 21, female entrance patterns are more erratic and less defining than those of males. They rise slowly up to age 24, move up suddenly between ages 24 and 25, decrease continuously throughout the late twenties down to 54.6% (not seen in table), pick up in the early thirties, and finally stabilize towards the late thirties where participation reaches a peak (see Figure 13).

| Table 1 | | | | | | | | | | | | | |
|--|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|----------|
| Participation rates of men and women. Latin America | | | | | | | | | | | | | |
| | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | Peak: 32 | Peak: 38 |
| Males | 37.1% | 47.8% | 56.8% | 65.6% | 72.3% | 77.1% | 80.2% | 84.3% | 87.0% | 90.1% | 92.0% | 96.1% | |
| Rate of Δ | 0.26 | 0.29 | 0.19 | 0.16 | 0.10 | 0.07 | 0.04 | 0.05 | 0.03 | 0.04 | 0.02 | | |
| Second diff. | | 0.11 | (0.34) | (0.17) | (0.35) | (0.34) | (0.39) | 0.26 | (0.38) | 0.11 | (0.41) | | |
| Females | 19.9% | 25.5% | 32.4% | 39.3% | 44.0% | 45.9% | 50.6% | 51.5% | 52.6% | 52.7% | 56.9% | | 59.6% |
| Rate of Δ | 0.40 | 0.28 | 0.27 | 0.21 | 0.12 | 0.04 | 0.10 | 0.02 | 0.02 | 0.00 | 0.08 | | |
| Second diff. | | (0.29) | (0.04) | (0.21) | (0.43) | (0.65) | 1.41 | (0.83) | 0.22 | (0.94) | 65.14 | | |

Occupations and economic sectors

Early adulthood is a period of both flux and final definition for all young adults, regardless of gender, in terms of where they work and the kind of work they do. In the aggregate, changes in the distribution of workers across occupations and sectors during this period derive from two sources: the concentration of inflows of maturing new entrants into certain groups of occupations and sectors, and the migration of already participating workers between occupations and sectors.

In late adolescence male workers are highly concentrated in the agricultural occupations (40%) (see Figures 1 and 2). As new workers enter other occupations, most notably that of “non-agricultural production workers,” between ages 15 and 18, the proportion of workers in agricultural occupations decreases, though their numbers remain the same in absolute terms. Age 18 represents a milestone to the extent that at this moment, the number of agricultural workers decreases sharply, while the rise in the

number of non agricultural production workers accelerates, suggesting the possible presence of worker migration from the first to the second occupation. Age 18 also features the crossing of the down sloping curves representing agricultural occupations and the ascending curves of non-agricultural production worker occupations, meaning that from this age on non agricultural production occupations overtake the agricultural ones as the single largest occupational category (see Figures 1 and 2). By age 25, the distribution of workers across agricultural and “urban” production occupations is the exact reverse of the distribution at age 15. Now it is the number of non-agricultural production workers (34.9%) that doubles the number of agricultural workers (17.97%).

Following in magnitude among young men, are the commercial and service occupations. A key feature of these is that they remain the same both in absolute and relative terms throughout the period of young adulthood.

Though remaining small in both relative and absolute terms, the second-fastest growing occupations during male young adulthood are the administrative and technical-professional occupations. Growth of the administrative occupations accelerates at age 18. The same occurs in the technical-professional occupations at age 20.

Finally, young adulthood is a time of definitive occupational decisions among males. Note in Figures 3 and 4, that the distribution of occupations reached at age 25 remains very much the same throughout the period of full prime aged adulthood. In the post age 25 period, the only occupation that shows any relative and absolute increase is that of upper level directive occupations. A close look at Figure 1 shows that this growth derives from a movement of a portion of young men from administrative and professional positions into higher directive positions, as they move further into their working prime age.

Gender differences in occupations are present from the beginning of, and through young adulthood. In particular, among women, non-agricultural production occupations are of secondary importance, while the service occupations hold, throughout the period, the single largest number of workers. Another key difference between men and women is that while male occupations remain concentrated in agricultural and non-agricultural production occupations throughout the period, female occupations tend to diversify between early and late young adulthood (see Figures 5 and 6)

At age 15 females evenly concentrate (56.3%) in the agricultural and service occupations. Between ages 15 and 19, the first decreases in absolute terms, suggesting, as in the case of men, the presence of worker migration from agricultural into other occupations throughout this period. Though service occupations remain highest in absolute terms throughout, they decrease proportionally in a continuous way, from late adolescence until late young adulthood. This is due to the continuous entrance of new workers in three other occupations over the period: administrative, technical-professional, and to a lesser extent, commercial occupations. By age 25, the distribution of women across service, administrative, technical-professional and commercial occupations, is almost even, both proportionally and absolutely. As shall be seen in the next section, the higher participation rates of better-educated women are a central determinant in the configuration of these patterns.

Note in Figures 7 and 8 showing the distribution of occupations after age 25, that the distribution of women across occupations reached at age 25 is less definitive and stable than that of males. Two factors seem to account for this. The first is the slight but continuous outflow of women from the labor-force, during their late twenties, which concentrates in the administrative occupations, in turn are associated with mid education levels. The second, seemingly more important factor amounts to the sharply higher educational level of young adult females relative to women between 31 and 40 years of age. The table that follows shows that changes in educational attainment have been sharper among women than among men over the last decades in Latin America. In particular, the proportion of women with 5 or less years of education has decreased more than in the case of men, while upper secondary educational attainment has increased faster than in the case of men. This is why we see that women in their 40's are more prevalently located in occupations associated with low levels of education (service occupations), and less prevalently located in occupations associated with middle levels of education (administrative occupations) than women at ages 25 and 26.²

| Males | 0 to 5 | 6 to 9 | 10 to 12 | 13+ |
|-------------------------|--------|--------|----------|--------|
| 18-25 | 26.35% | 36.07% | 27.99% | 9.59% |
| 26-30 | 29.23% | 32.30% | 24.71% | 13.76% |
| 31-40 | 34.59% | 30.14% | 20.85% | 14.42% |
| Ratio of 18-25 to 31-40 | 0.76 | | 1.34 | |
| Females | 0 to 5 | 6 to 9 | 10 to 12 | 13+ |
| 18-25 | 23.47% | 34.32% | 30.91% | 11.30% |
| 26-30 | 28.36% | 32.39% | 25.25% | 14.00% |
| 31-40 | 36.82% | 29.20% | 21.54% | 12.45% |
| Ratio of 18-25 to 31-40 | 0.64 | | 1.44 | |

Patterns in economic sectors parallel those of occupations. Men rapidly move out to the agricultural sector in late adolescence, moving into the urban production sectors (industry, construction, transportation and utility sectors) which also receive a strong flow of new entrants (see Figures 9 and 10). Together, these sectors surpass the agricultural sector by the time young men are 18. Movement out of the agricultural sector continues, though more slowly between ages 18 and 25. By age 24, urban production sectors, by now prevalent, reach a peak. At age 25, the distribution of men across sectors stabilizes, remaining the same as men move into mid prime age.

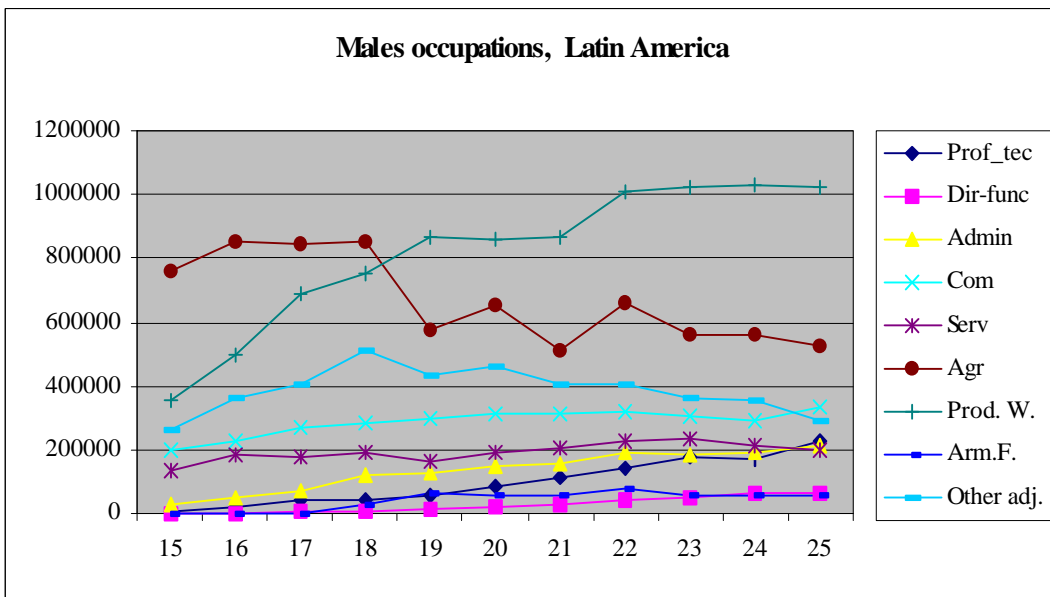
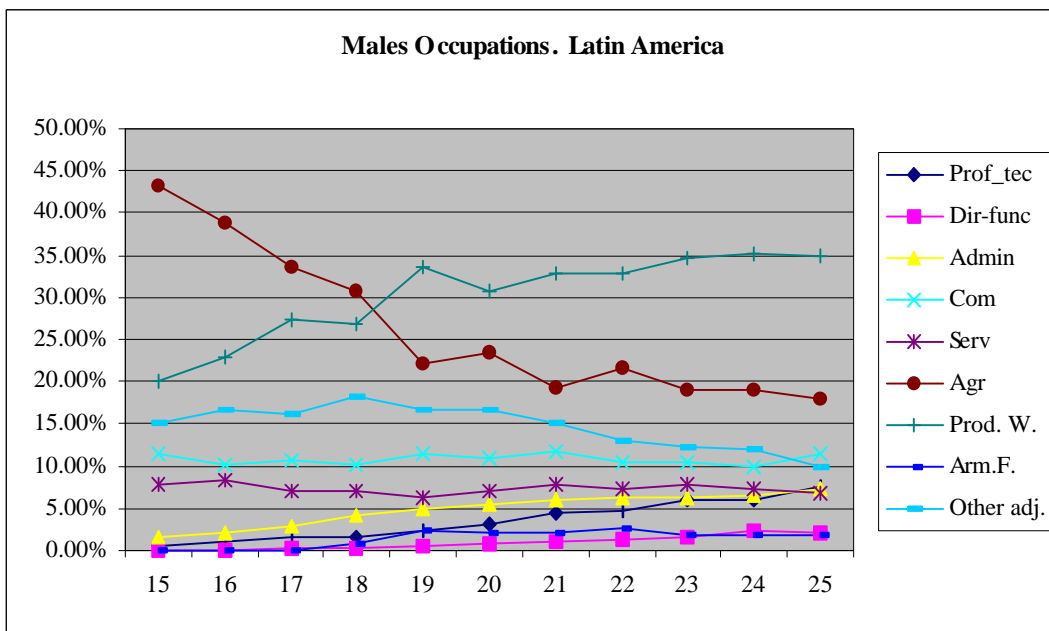
Females also move out of the agricultural sector in late adolescence, and proceed to move and newly enter the commercial, finance and community and social service sectors during early adulthood (see Figures 11, 12 and 13). Entrance into the commerce sector reaches a peak at age 20, while entrance into the financial sector peaks at age 25.

² More will be said about the association of education level with occupation in the next section.

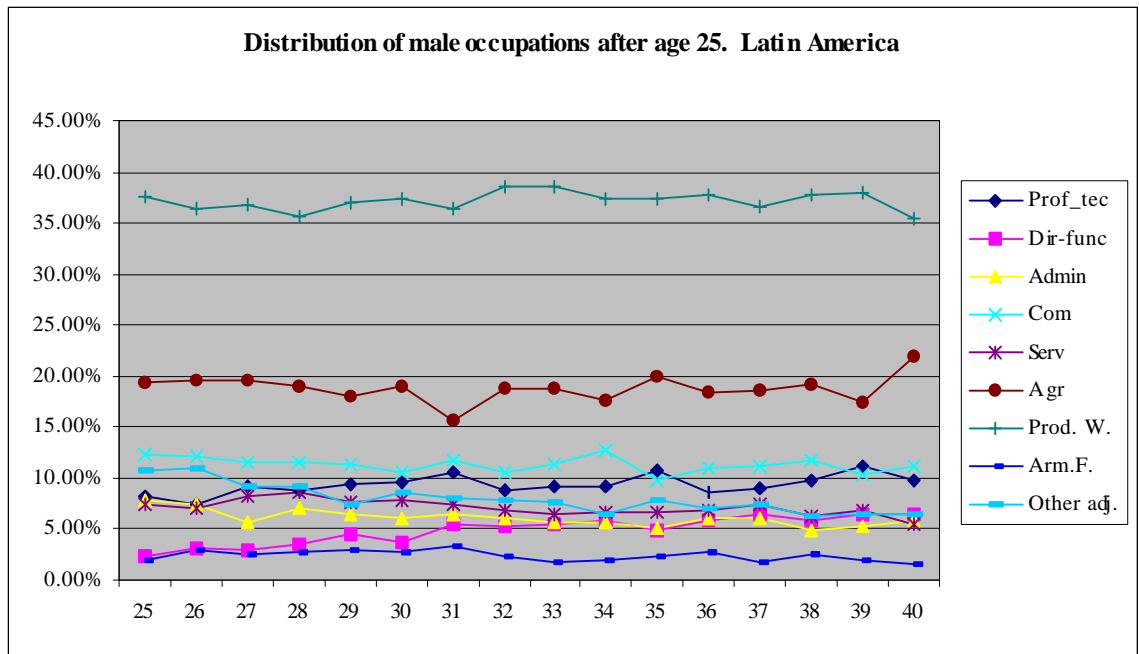
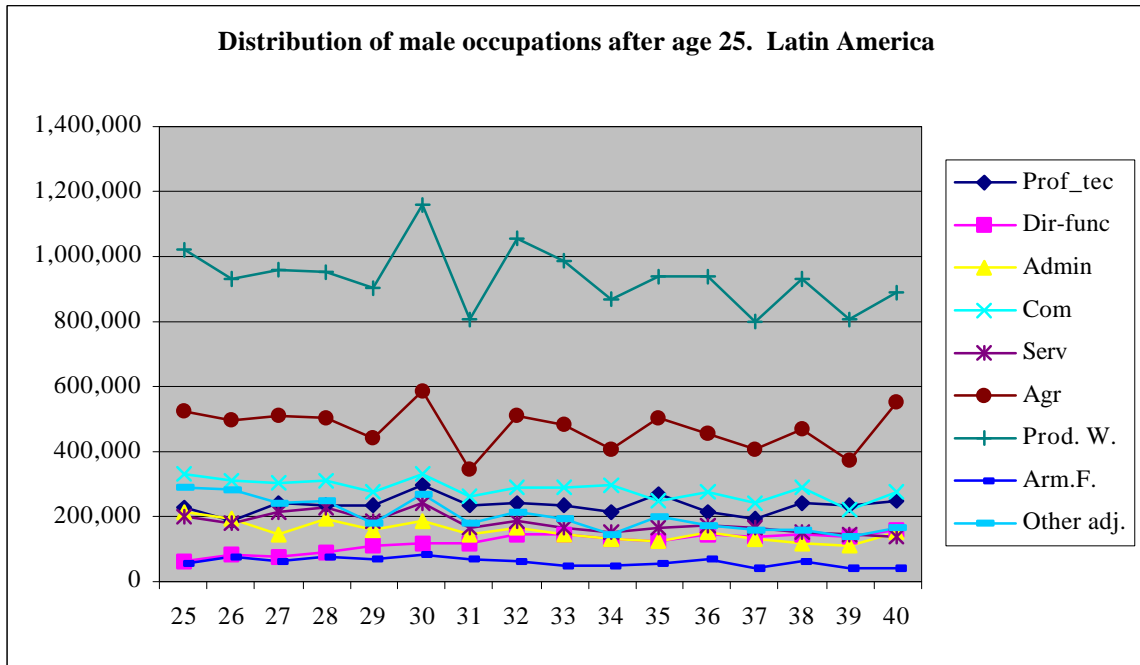
By age 25 the largest proportion of women are located in the “Communal, social and personal services” sector. This sector, which indifferently combines workers of all educational levels, from professional workers to low educated service workers, passing through middle educated administrative workers (see table below), continues to grow both proportionately and absolutely until women reach peak participation at age 38.

| | Prof_tec | Dir-func | Admin | Com | Serv | Agr | Prod. | Arm.F. | Other adj. |
|---------|----------|----------|--------|-------|--------|-------|--------|--------|------------|
| Females | 33.61% | 2.51% | 15.49% | 2.12% | 33.54% | 0.13% | 9.41% | 0.37% | 2.81% |
| Males | 25.08% | 5.55% | 10.41% | 1.94% | 17.53% | 1.46% | 26.71% | 8.42% | 2.91% |

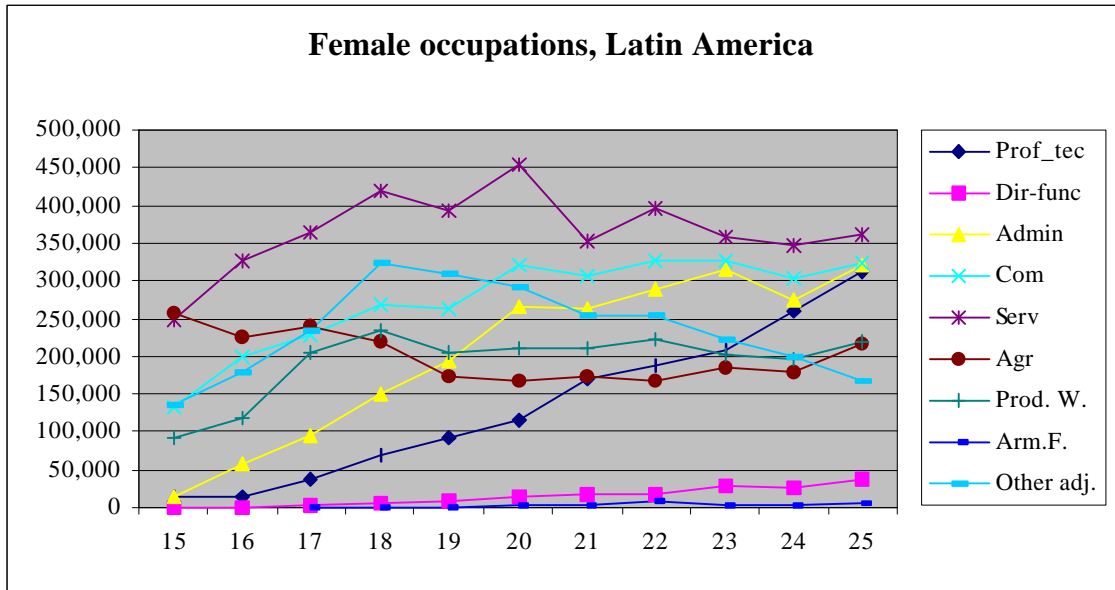
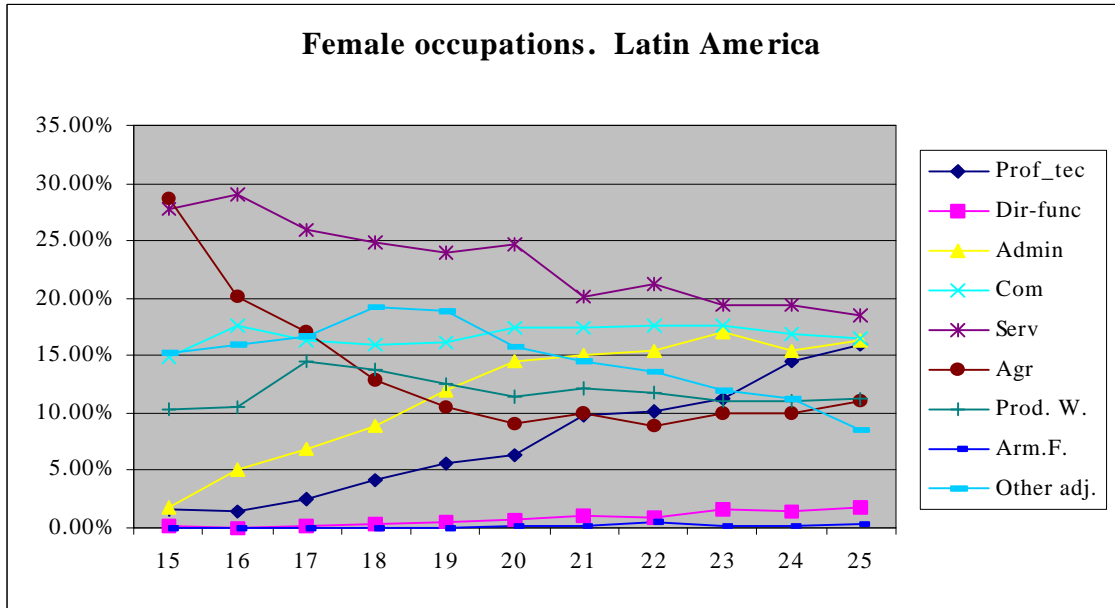
Figures 1 and 2



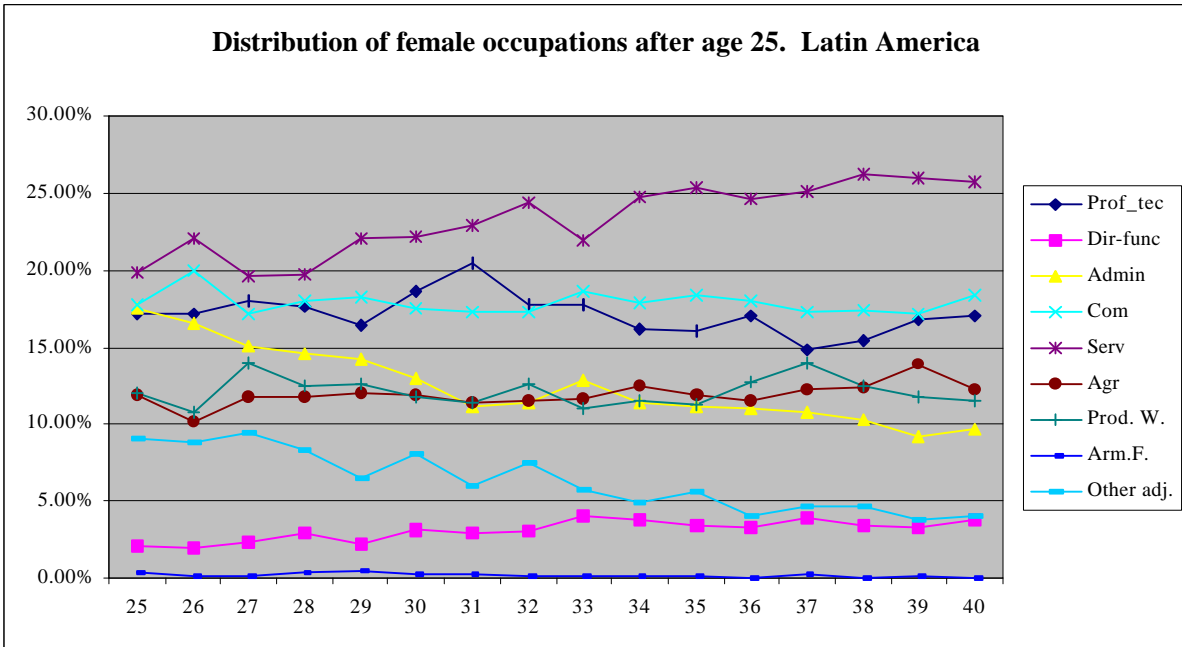
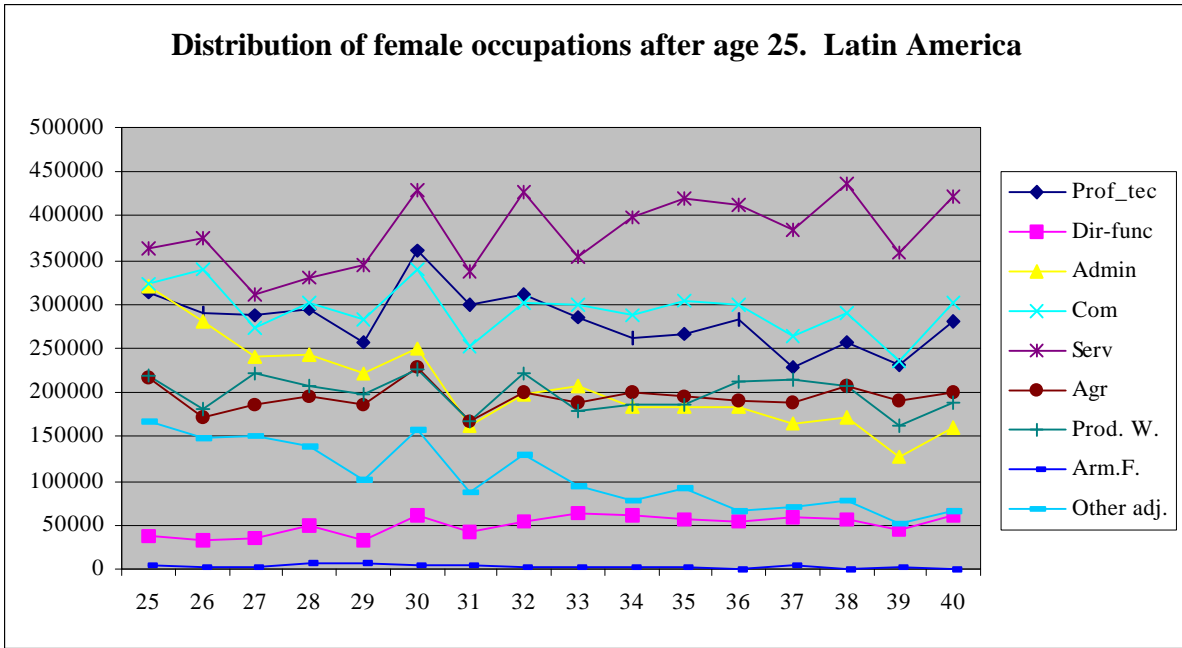
Figures 3 and 4



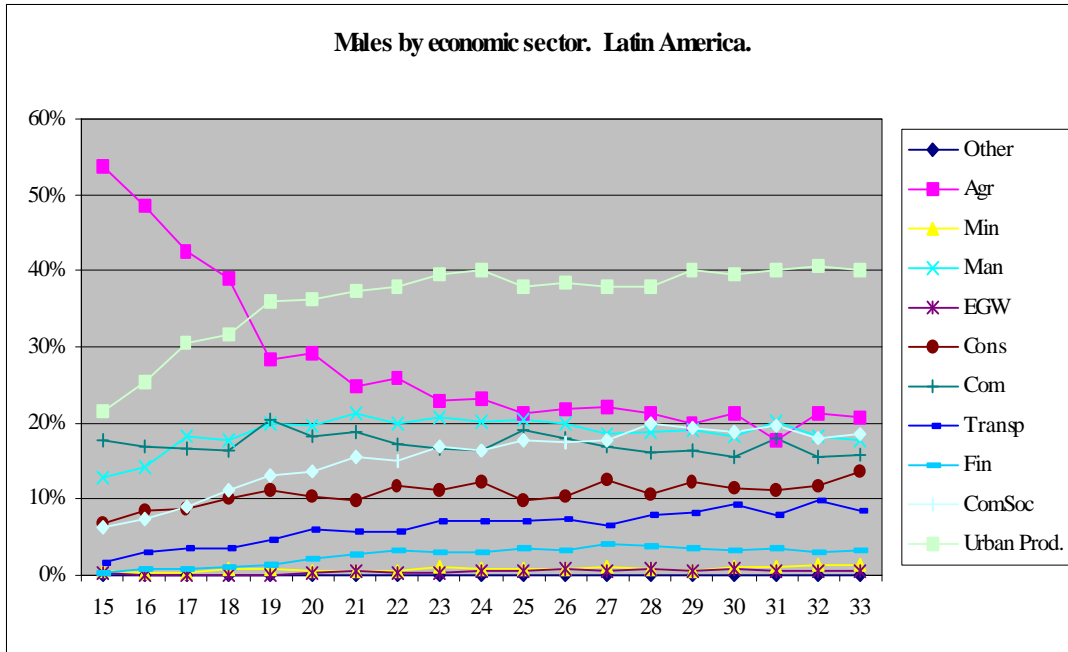
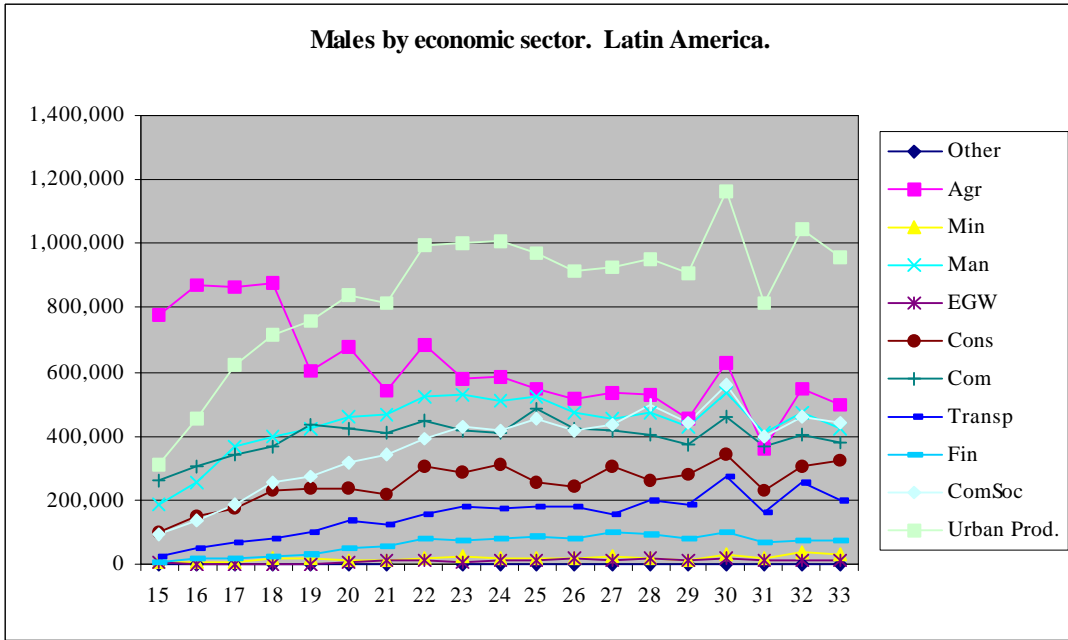
Figures 5 and 6



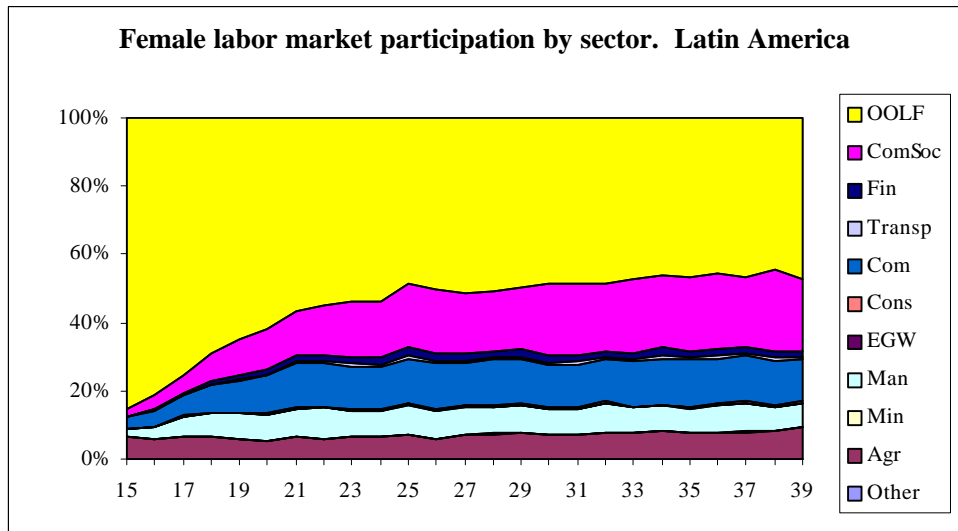
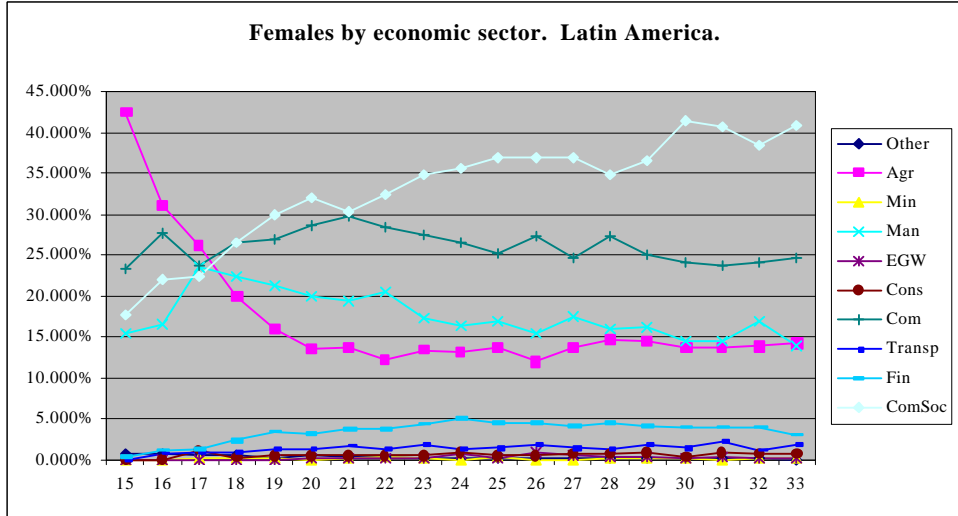
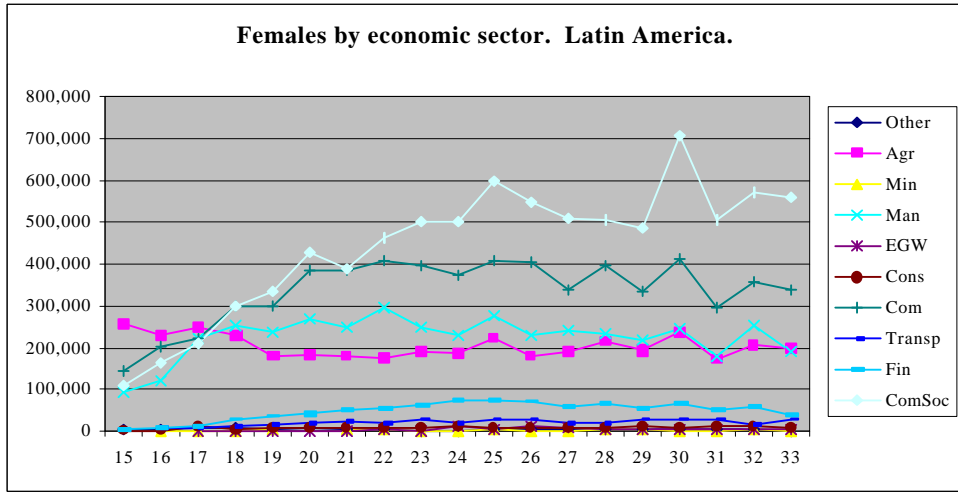
Figures 7 and 8



Figures 9 and 10



Figures 11, 12 and 13



Effect of education on patterns of entry, consolidation and status of young adults in the labor market

Human capital investment decisions made during adolescence may affect the labor market experience of young adults (18-25 years of age). In this section we look into the effects of these decisions on labor market experience of young adults. In the section that follows we look into how patterns of labor market participation evolve among young adults with differing occupational attainments. We then turn to the question of how educational attainment affects, more generally, the labor market status of individuals as they move from early young adulthood (18 years of age) to late young adulthood (25 years of age) and beyond. In the final sub-section we explore how education levels affect the movement into and settlement of young adults into occupations.

Patterns of entry, exit and participation of young adults by education levels

Educational attainment defines the time in which young adults enter the labor force. Figures 14, 15, 16 and 17 show the sequence of entry into the labor force of males and females by educational level, and the consequent cumulative distribution of the labor force by educational attainment throughout young adulthood and beyond. The following patterns stand out in these figures:

- 1) Males with 0 to 5 years of education are just a few points below adult participation rate at age 18 (82%). They reach adult participation rate in the middle of the period of young adulthood (91% at age 22). The 0 to 5 adult participation ridge is about 6-percentage point lower than that of all other male adults.
- 2) 73.5% of males with 6 to 9 years of education have entered the labor force by age 18. By age 25, 95.4% participate in the labor force. Full adult participation, located only two percentage points above is reached by age 28.
- 3) The group of males with 10 to 12 of education experiences a very fast increase in participation between 18 and 25 years of age from 44% to 95%. Such violent increase is evidenced by the fact that the participation rates of males with 10 to 12 years of education lag decreasingly behind those with 6 to 9 years of educational attainment throughout young adulthood, converging with the latter at age 25.
- 4) Males with 13 or more years of education begin to enter the labor force only at the start of young adulthood (age 18). Between ages 18 and 19 their participation rate is approximately 20%. Though they do not reach full adult participation by age 25 (83%), this group experiences the fastest growth in participation during adulthood. Males with this level of education reach full adult participation rates (98%) in their early thirties.
- 5) Females with 0 to 5 years of education reach a local peak participation rate (45%) at age 19. Participation rates then decrease continuously throughout

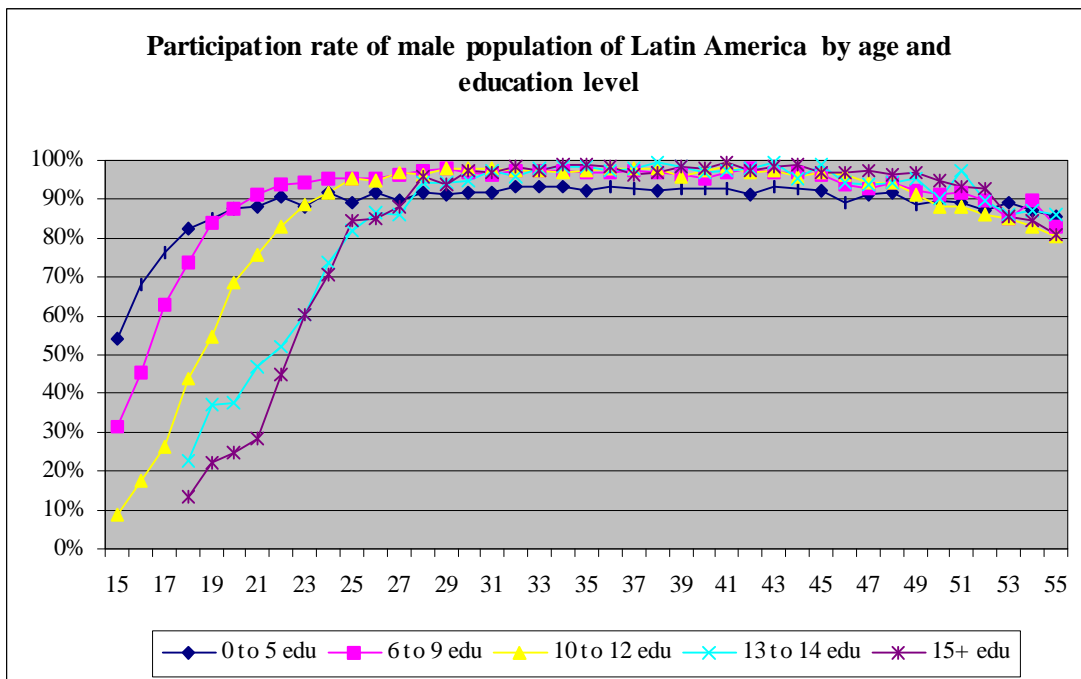
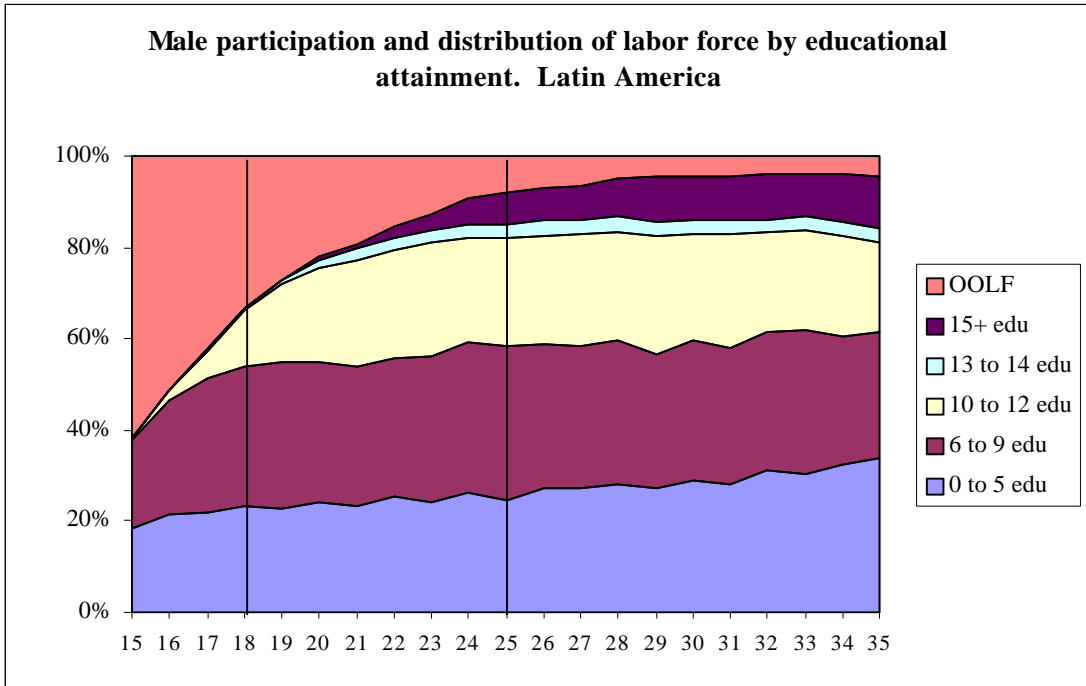
young adulthood reaching a low (40%) at age 24; this process may be related to childbearing. Participation of females with 0 to 5 years of education picks up only after young adulthood, reaching a peak at age 38(52%)

- 6) Participation rates of females with 6 to 9 years of education are almost identical to those of females with 0 to 5 years of education at age 18 (44%). After that, their participation rates are on average three percentage points above those of the latter. Females with 6 to 9 years of education follow the same pattern of entry and exit found among females with 0 to 5 years of education, but with a three-year lag during early adulthood. They reach a local peak in participation at age 22 (49%), and then begin to leave the labor force reaching a low at age 27 (43%). Participation rates then pick up reaching a high at age 38 (56%).
- 7) Participation of females with 10 to 12 years of education rises continuously throughout young adulthood. Females with 10 to 12 years of education experience very fast growth in participation rates between ages 18 (34%) and 21(62%). Participation then continues to grow, now more slowly, until age 25 (66%). From age 21 on, the participation rates of women with 10 to 12 years of education remain on average 15 percentage points above those of women with 0 to 9 years of education. Nonetheless, females with 10 to 12 years of education experience the same entrance and exit patterns found in women with 0 to 5 and 6 to 9 years of education, but with a 6 and 3 year lag, respectively. That is, a local peak is reached at age 25 (66%). Then women begin to leave the labor force until age 31, where participation reaches a low 61%. After that, participation slowly picks up again. Peak participation is reached in the early 40's, where it averages 67.5%.
- 8) As in the case of males, females with 13 or more years of education begin to enter the labor force after age 18. Participation rate averaging 25% at age 19 rises in a steep straight line throughout young adulthood, reaching 72% at age 25. After age 25 participation rates continue to grow, leveling out at an average of 85% between 30 and 45 years of age.

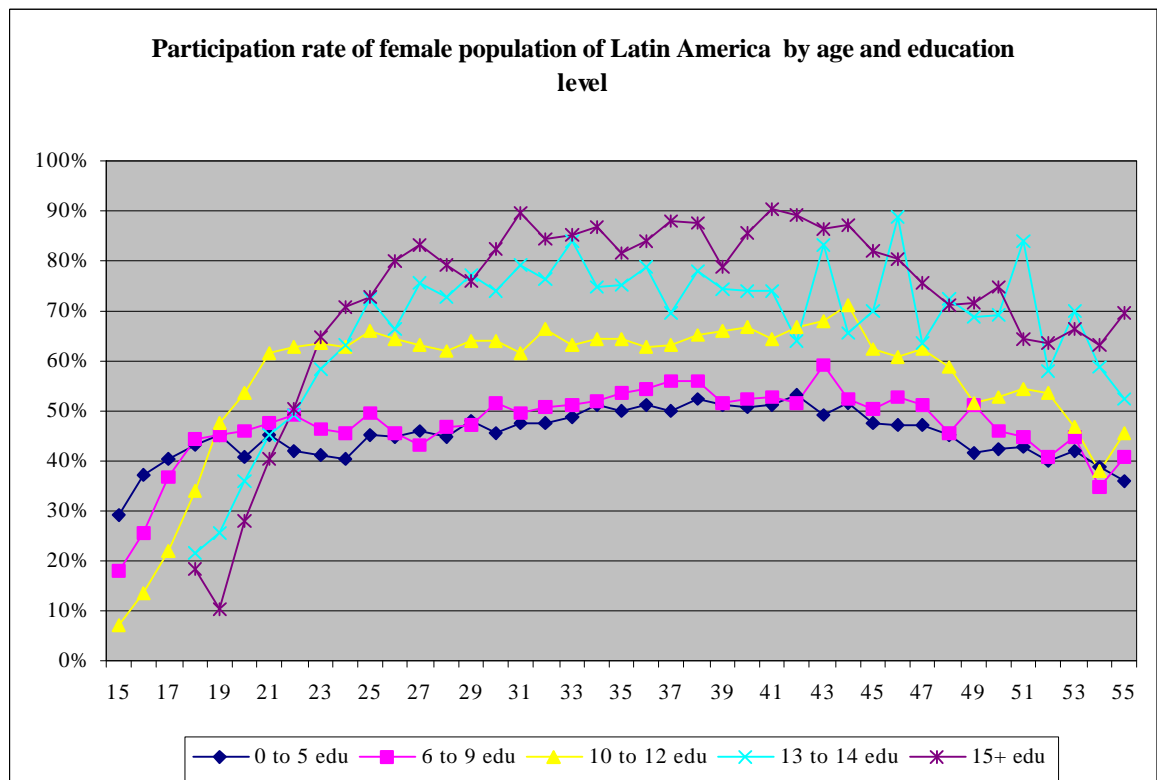
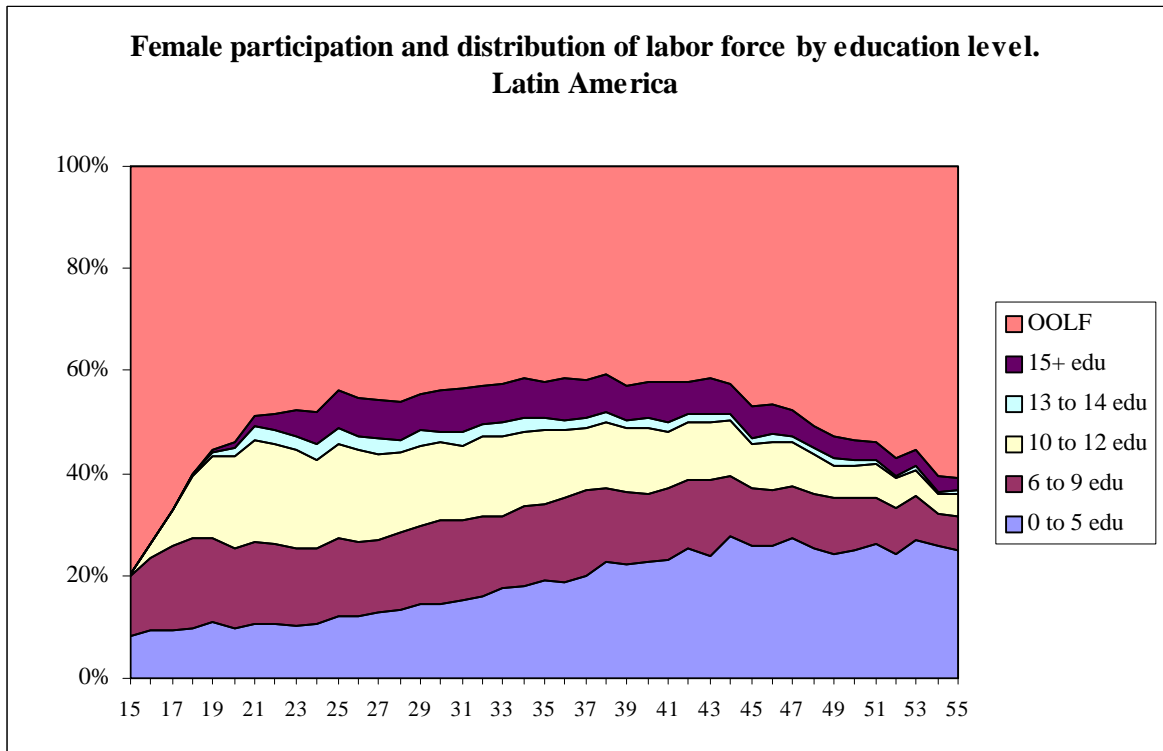
Three central findings emerge from the above. First, participation rates of both males and females with 10 or more years of education were found to grow rapidly and continuously throughout young adulthood. Instead, those of people with 9 or less years of education either grew very slowly (case of men) or even diminished slightly after reaching a local peak in the early and mid twenties (case of women). This suggests that many of the changes observed at the aggregate level in the distribution of young adult workers across occupations and sectors (see section I), derive from the process of entry of individuals with higher levels of education. This issue will be explored in the next to the following sub-section. Second, educational attainment plays a more determinant role in female labor market participation than in the case of males. Participation rates of the latter tend to merge as they reach their late twenties. Instead, those of females with different educational levels go further and further apart after a brief crossover at age 21. Third, all females with 12 or less years of education experience small decreases in

participation after reaching local participation peaks during young adulthood. Even lags in this phenomenon by educational level, suggests that as women opt for higher educational attainment they tend to postpone childbearing decisions.

Figures 14 and 15



Figures 15 and 16



Educational determinants of labor market status

The story of the labor market experience of young adults is in large part a story about the trajectory of their status as workers or potential workers. A central question asked in this study was thus, what determines being in a state of employment, unemployment and out of the labor force, among young adults in Latin America? Given the large size of informal economies in Latin America, the question also arose as to what determined the location of working young adults in the formal and informal sectors of the economy. To answer these questions multinomial logit regressions were run on regional-wide data. Methodological details and regression results are shown in Appendix 1. Tables 5 and 6 below, show predicted total probabilities of location of males and females, respectively, in each one of the four following categories according to age and educational attainment: out of the labor force, unemployed, working in the formal sector, working in the informal sector.

In the case of males (see Table 5), predicted total probabilities of being out of the labor force, fit the findings based on aggregate data analyzed above. Between late adolescence (14 to 17 years of age) and mid young adulthood (21 to 22 years of age), higher educational attainment is associated with a lag in the process of entry into the labor market. Entry is faster, though, among individuals with higher educational attainment. Thus, by the end of young adulthood (ages 23 to 25) the following has occurred: 1) the participation rate of males with the lowest educational attainment (3 years of schooling) has been surpassed by all other educational groups; 2) the participation rates of men with highest educational attainment is still slightly higher than that of men with middle educational attainment. Again, as found in the analysis of descriptive data, as men move into full adulthood, men with higher educational attainment experience higher participation rates than men with lower educational attainment.

Unemployment probabilities also differ by age and educational attainment during young adulthood. In early and mid young adulthood, the groups that are pressuring most strongly for entry into the labor market, that is, the groups with higher educational attainment, tend to experience higher unemployment probabilities. It is important to point out though, that this rule applies only to groups with 12 or less years; not to groups with higher (college and university) education. Note that by mid young adulthood (ages 21-22), the unemployment probability of men with higher education is already lower than that of men with 6 to 12 years of education. Similarly, though pressure for entry is still strongest for men with higher education in late young adulthood (note their sharp increase in participation between mid and late young adulthood), these continue to experience lower unemployment probabilities than men with 6 to 8 years of education. This suggests that men with college level education are more easily absorbed by the market than those with middle levels of educational attainment during mid and late young adulthood.

The probability of being located in the informal sector decreases, and the probability of being located in the formal sector increases, when age and educational attainment increase jointly. In early (18 to 20) and mid (21 to 22) adulthood, higher educational attainment is associated with a lower probability of location in the informal sector, but not

necessarily with a higher probability of location in the formal sector. This is because individuals with the highest educational attainment in these age groups are less likely to be occupied and thus also less likely to be in the formal sector than individuals with lower educational levels. In early adulthood the probability of being located in the formal sector is within the 22% to 28% range in all educational (3, 6, 9 and 12 years of education) groups. As men in each of these educational groups move into mid-young adulthood, their probability of being located in the formal sector increases more in higher educational groups than in lower educational groups. By late adulthood, men with upper secondary education have a 52.76% probability of being located in the formal sector, while such probability among men with three years of education was risen only from 22% to 25.32% between early and late adulthood. As with the case of unemployment probability, men with higher (college) education never experience a low probability of being located in the formal sector. In mid adulthood (21-22) when they begin to enter the labor market, their probability of being located in the formal sector (40.61%) is already almost as high as that of men with upper secondary education (45.25%). In late young adulthood, when they massively enter the labor market, their probability of being located in the formal sector (about 65%) is far above that of men with 12 years of education (52.76%). Again, this suggests that the formal sectors of Latin American economies most easily absorb college and university graduates.

The probability of being located in the informal sector generally³ rises slightly with age, regardless of educational attainment. The model predicts this even for men with college or university education. We do not discard a modeling problem, but such small continuous increases with age may be picking up the tendency of men to set up their own small businesses as they move into prime age.⁴

Though overestimating the probability of being in the labor force for women with educational attainment below higher education, estimations of the probability of female location outside of the labor force generally fit the patterns found through descriptive statistics. In early young adulthood, women are much more likely than their male age-education equivalents to be out of the labor force. Moreover at that age, females with upper secondary education are more likely to be out of the labor force than women with 6 or less years of education. As women move into late young adulthood, those with higher educational levels experience rapid entry into the labor force. Instead, women with a lower educational level reach a low local peak in labor market participation in mid-adulthood. They then proceed to move back out of the labor force throughout late young adulthood in the case of women with 3 years of education, and with a lag, through the early thirties among women with 6 years of education (the childbearing slump)⁵.

A cross over in female participation rates occurs in late young adulthood (23 to 25 years of age) according to the model (at age 21 in descriptive statistics). As women move into their early thirties, the probability of being out of the labor force falls sharply to 22%

³ A small slump is observed in the movement from late adulthood into the early 30's

⁴ Recall that informality is operationalized as working in a company with 5 or less workers.

⁵ Note that the model fails to predict the slump for women with 9 and 12 years of education.

among those with higher education (similar to descriptive statistics), while it remains about the same (47%) among those with lower educational levels.

Probability of unemployment is lowest among women with high and low educational attainment, and highest among women with middle educational attainment. The apparently high capacity of formal economies to absorb individuals with college education may explain the low unemployment probability of women with high educational attainment. Low unemployment probability among low educated women may instead result from their higher tendency to stay out of the labor force, and their tendency to seek and find work in the more flexible informal sector of the economy. Assuming the above processes are true, the higher probability of unemployment of women with middle levels of education, may derive from the stronger pressure they put on entry into the market and the formal sector in particular, combined with the lower capacity of the latter sector to absorb them.

Patterns in Table 6, provide some support to the above hypotheses. First, note that the unemployment probability of women with 3 years of education is high during early adulthood (18-20), just when these are pushing into the market. Unemployment probability decreases sharply when they reach ages 21 to 22, when the inter-period movement into the labor force also sharply decreases. Note that women with higher educational attainment not only show higher unemployment probabilities at this age (21-22), but also experienced a much smaller reduction in relation to the previous period. It is then the stronger push of these more educated women between ages 18-20 and 21-22 into the labor force that explains their persisting of high unemployment rates in mid young adulthood. Second, note that the highest unemployment probability of college graduates taking place in late young adulthood (moment at which they massively seen entrance into the market) is lower than that which had been experienced by women of other educational levels at the time in which they were entering the market. The fact that the probabilities unemployment of educated women are relatively low regardless of their strong push into the formal sector, at that age (23-25) suggests that the formal sector is highly capable of absorbing them.

As in the case of men, the location of women in the formal sector increases with the joint growth of education and age. The inverse is instead not consistently true in the case of the informal sector, especially in the middle levels of education. This may be due to the lower capacity of women to enter the formal sector of the economy than men at mid levels of education, and their subsequent opting for the informal sector. It is important to note that throughout young adulthood, the proportion of occupied women with 6 to 9 years of education in the informal sector is consistently higher than that of men, and that as women age, this feature tends to accentuate.

Comparisons of Tables 5 and 6 shows that the unemployment probabilities of women are always lower than those of men. In order to avoid misleading conclusions, it is important to recall that unemployment probabilities are not the same as unemployment rates. In the latter, labor force is in the denominator, while in the former the full population is in the denominator. In fact, estimations based on logistics regressions in the table below show that young adult females experience higher unemployment rates than males at all levels of education. The table also shows that during prime age females this

relationship is reversed. This suggests that during young adulthood, time in which women try to enter the labor force, these are less likely to find work than men. Lower unemployment rates in prime age adulthood may derive from the fact that at this time women have fully entered household occupations and are thus less pressured than men to remain within (or re-enter) the labor force.

| | 6 years | | 12 years | | 17 years | | All | |
|---|---------|--------|----------|--------|----------|--------|-------|--------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| Young adults (18-25) | 4.59% | 6.35% | 6.06% | 8.33% | 7.60% | 10.38% | 5.14% | 7.08% |
| Prime age (26-55) | 2.26% | 1.86% | 2.01% | 1.65% | 1.82% | 1.50% | 2.18% | 1.79% |
| * Estimations based on logistic regression. See model and regression coefficients in Appendix 2. | | | | | | | | |
| **Does not include countries missing ZONE variable: Argentina, Brazil, Panama, Uruguay, Venezuela | | | | | | | | |

Table 5
MALES IN LATIN AMERICA. LABOR MARKET STATUS BY AGE AND SCHOOLING

| 14 to 17 year olds | | | | | | |
|--------------------|------------|------------|------------|-------------|--------------|-------------|
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 41.8% | 58.1% | 85.2% | | | |
| Unempl | 4.2% | 4.0% | 1.4% | | | |
| Formal | 13.7% | 10.2% | 3.7% | | | |
| Informal | 40.2% | 27.7% | 9.6% | | | |
| 18 to 20 year olds | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 18.65% | 19.40% | 27.68% | 47.23% | | |
| Unempl | 5.75% | 6.76% | 7.97% | 8.20% | | |
| Formal | 22.30% | 26.29% | 28.37% | 24.43% | | |
| Informal | 53.30% | 47.55% | 35.98% | 20.13% | | |
| 21-22 years old | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 13.17% | 10.06% | 11.09% | 17.46% | 35.47% | |
| Unempl | 5.00% | 6.51% | 7.45% | 7.42% | 5.81% | |
| Formal | 24.15% | 33.01% | 40.83% | 45.25% | 40.61% | |
| Informal | 57.68% | 50.43% | 40.63% | 29.87% | 18.11% | |
| 23-25 years old | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 10.03% | 7.90% | 7.12% | 7.30% | 8.39% | 9.76% |
| Unempl | 5.19% | 5.94% | 6.34% | 6.25% | 5.63% | 4.96% |
| Formal | 25.32% | 33.24% | 42.60% | 52.76% | 62.42% | 67.71% |
| Informal | 59.46% | 52.93% | 43.94% | 33.69% | 23.56% | 17.56% |
| 30 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 10.36% | 8.70% | 7.00% | 5.38% | 3.95% | 3.14% |
| Unempl | 4.87% | 4.78% | 4.50% | 4.04% | 3.47% | 3.06% |
| Formal | 26.60% | 35.82% | 46.19% | 56.87% | 66.92% | 72.88% |
| Informal | 58.17% | 50.69% | 42.31% | 33.71% | 25.67% | 20.92% |
| 35 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 9.24% | 7.74% | 6.21% | 4.75% | 3.48% | 2.76% |
| Unempl | 4.57% | 4.47% | 4.19% | 3.75% | 3.21% | 2.83% |
| Formal | 27.21% | 36.54% | 46.96% | 57.63% | 67.61% | 73.50% |
| Informal | 58.98% | 51.25% | 42.63% | 33.86% | 25.70% | 20.91% |
| 45 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 10.48% | 8.90% | 7.24% | 5.63% | 4.17% | 3.34% |
| Unempl | 3.88% | 3.85% | 3.66% | 3.33% | 2.88% | 2.56% |
| Formal | 24.70% | 33.61% | 43.82% | 54.57% | 64.88% | 71.09% |
| Informal | 60.93% | 53.64% | 45.27% | 36.48% | 28.07% | 23.01% |

Estimations based on multinomial logit regressions shown in Appendix 1.

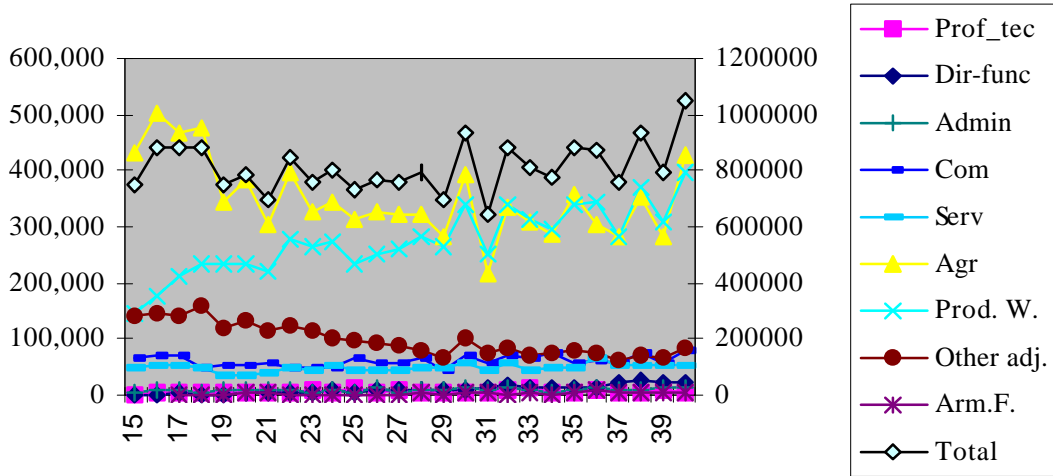
| Table 6 | | | | | | |
|---|------------|------------|------------|-------------|--------------|-------------|
| FEMALES IN LATIN AMERICA. LABOR MARKET STATUS BY AGE AND SCHOOLING | | | | | | |
| 14 to 17 year olds | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 70.1% | 81.8% | 94.9% | | | |
| Unempl | 3.0% | 2.4% | 0.7% | | | |
| Formal | 5.5% | 3.5% | 1.0% | | | |
| Informal | 21.3% | 12.4% | 3.4% | | | |
| 18 to 20 year olds | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 48.54% | 49.86% | 61.29% | 78.64% | | |
| Unempl | 5.23% | 6.08% | 6.17% | 4.78% | | |
| Formal | 11.78% | 13.71% | 12.75% | 8.26% | | |
| Informal | 34.45% | 30.35% | 19.79% | 8.33% | | |
| 21-22 years old | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 46.36% | 39.23% | 42.19% | 55.66% | 76.80% | |
| Unempl | 3.85% | 5.55% | 6.20% | 5.18% | 2.76% | |
| Formal | 12.89% | 19.50% | 23.54% | 21.86% | 13.33% | |
| Informal | 36.89% | 35.71% | 28.07% | 17.30% | 7.12% | |
| 23-25 years old | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 48.08% | 41.93% | 39.69% | 40.85% | 45.13% | 49.66% |
| Unempl | 3.53% | 4.48% | 5.01% | 4.97% | 4.30% | 3.59% |
| Formal | 12.51% | 18.20% | 24.46% | 30.44% | 34.61% | 35.50% |
| Informal | 35.88% | 35.40% | 30.83% | 23.75% | 15.97% | 11.25% |
| 30 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 46.55% | 42.50% | 37.58% | 31.92% | 25.86% | 21.86% |
| Unempl | 1.89% | 2.02% | 2.09% | 2.07% | 1.96% | 1.84% |
| Formal | 12.92% | 18.90% | 26.78% | 36.45% | 47.34% | 54.79% |
| Informal | 38.64% | 36.59% | 33.56% | 29.56% | 24.84% | 21.51% |
| 35 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 43.39% | 39.39% | 34.59% | 29.15% | 23.42% | 19.68% |
| Unempl | 1.85% | 1.97% | 2.02% | 1.99% | 1.87% | 1.74% |
| Formal | 13.81% | 20.09% | 28.27% | 38.18% | 49.15% | 56.57% |
| Informal | 40.95% | 38.55% | 35.12% | 30.69% | 25.57% | 22.02% |
| 45 years of age | | | | | | |
| | 3 yrs.educ | 6 yrs.educ | 9 yrs.educ | 12 yrs.educ | 15 yrs. Educ | 17 yrs.educ |
| Out of LF | 46.61% | 42.80% | 38.15% | 32.71% | 26.79% | 22.81% |
| Unempl | 1.49% | 1.60% | 1.67% | 1.67% | 1.60% | 1.51% |
| Formal | 11.86% | 17.46% | 24.94% | 34.27% | 44.98% | 52.45% |
| Informal | 40.04% | 38.13% | 35.25% | 31.35% | 26.63% | 23.23% |
| Estimations based on multinomial logit regressions shown in Appendix 1. | | | | | | |

Occupation and entry into occupations by education level

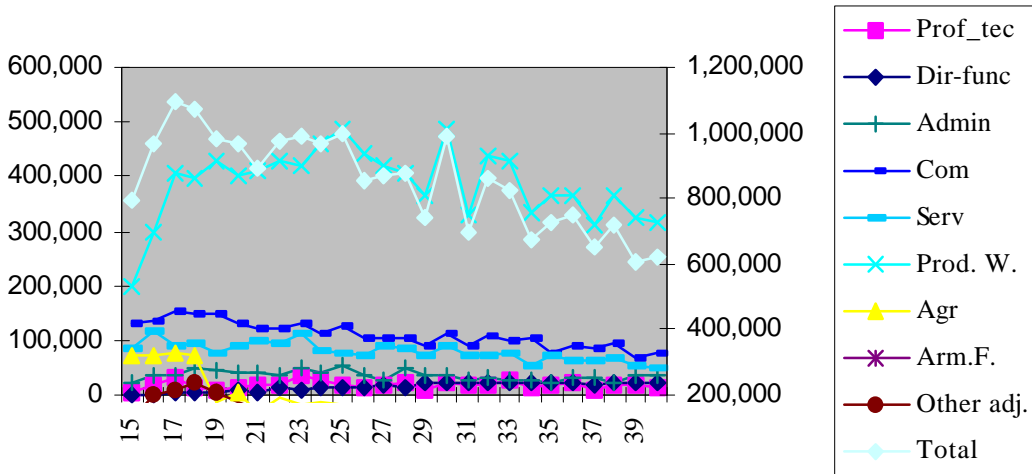
The labor market experience of young adults in the occupational dimension differs sharply across educational groups. In this section we take a separate look of males and females with 0 to 5 years of education, 6 to 9 years of education, 10 to 12 years of education, and 13 or more years of education. These breakpoints represent exist points observed in the vast majority of countries.

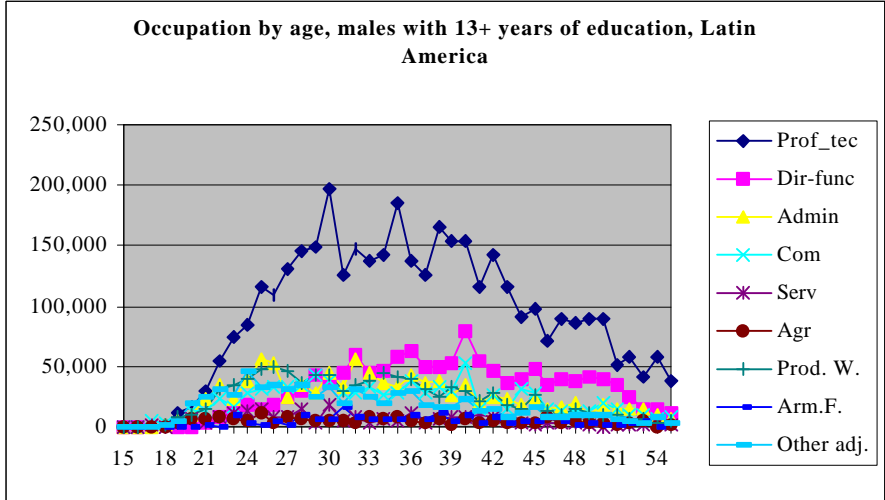
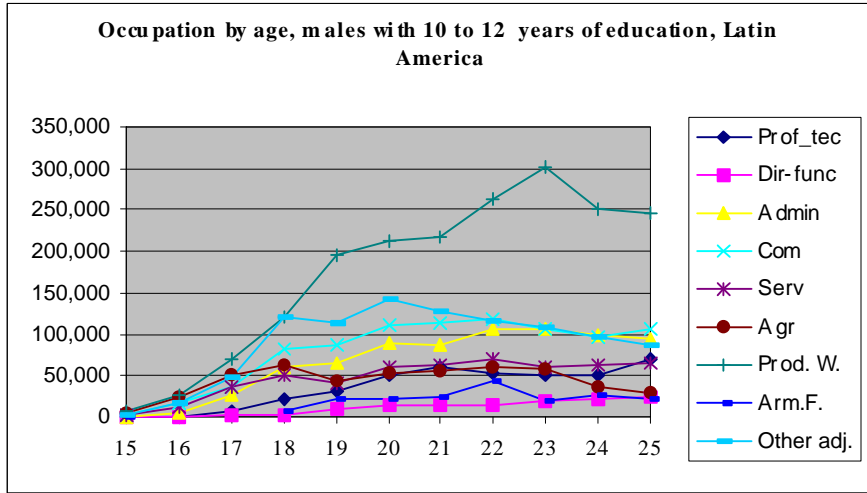
Figure 17 shows the absolute number of workers per occupation among males with 0 to 5 years of education. Note that these workers concentrate in the agricultural occupations during mid and late adolescence. This number falls slowly in late adolescence, sharply at age 18, and then continues to fall through and beyond young adulthood. In contrast, the number of non-agricultural workers starts out at a low point in mid-adolescence, and grows almost linearly through and beyond prime aged adulthood. Note that the two lines join in the late 20's. The top black line, associated with the right axis, represents the total size of the labor force of the educational group. Note that the number of workers with this age level is nearly constant from mid adolescence and through young adulthood and beyond. Thus, in this case, the reduction of agricultural workers and the rise in production workers represents a migration process from agricultural to urban production occupations.

Figure 17
Occupations of males in Latin America. 0 to 5 years of education

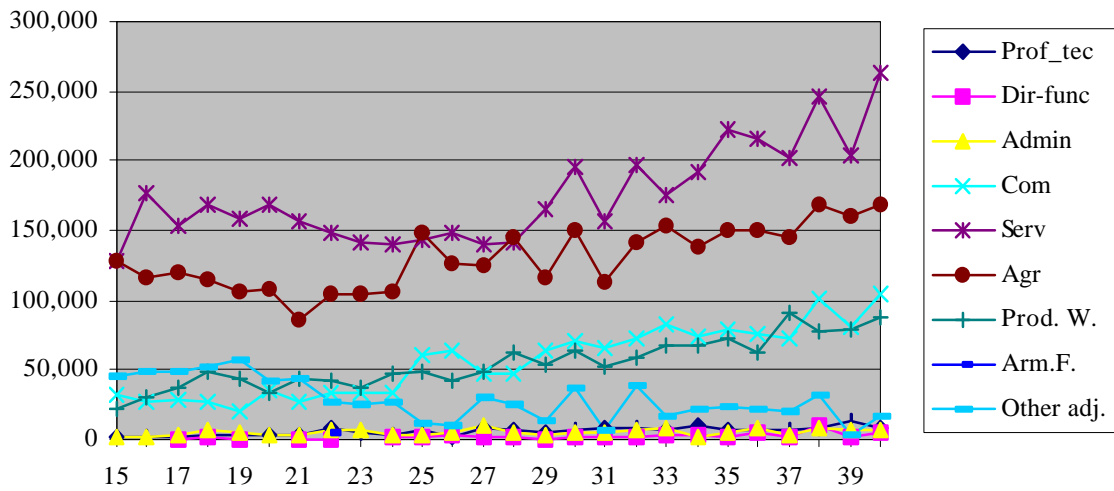


Occupations of males in Latin America. 6 to 9 years of education.

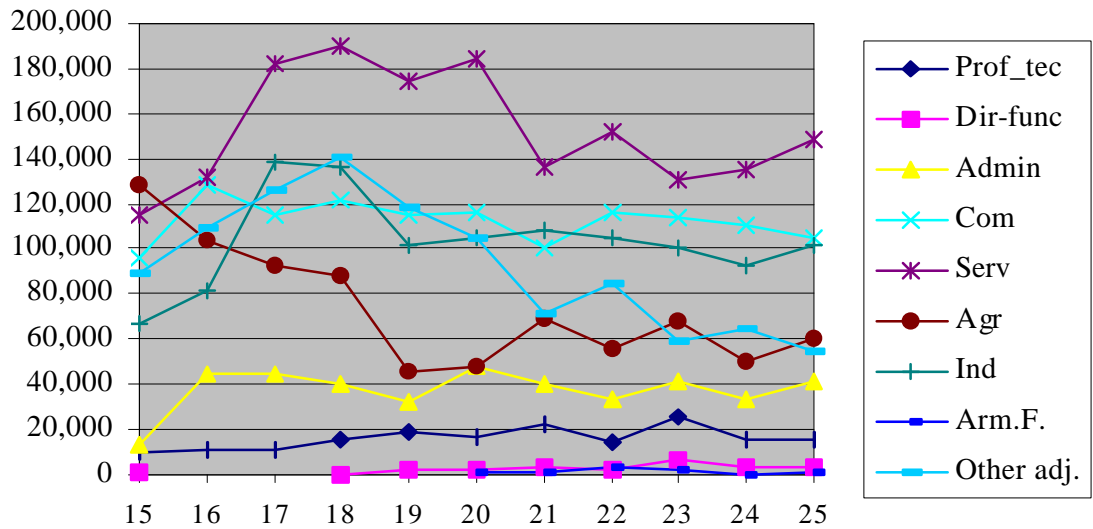




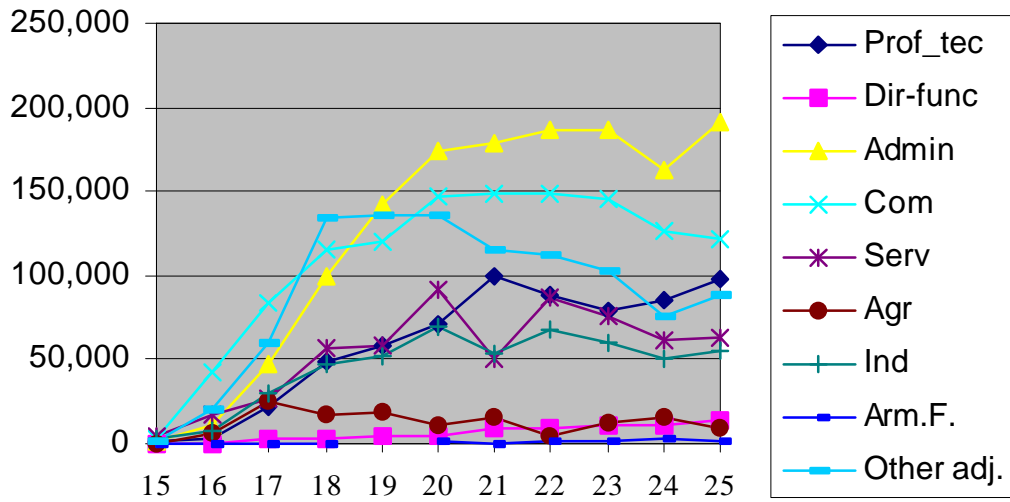
Occupation by age, females with 0 to 5 years of education, Latin America



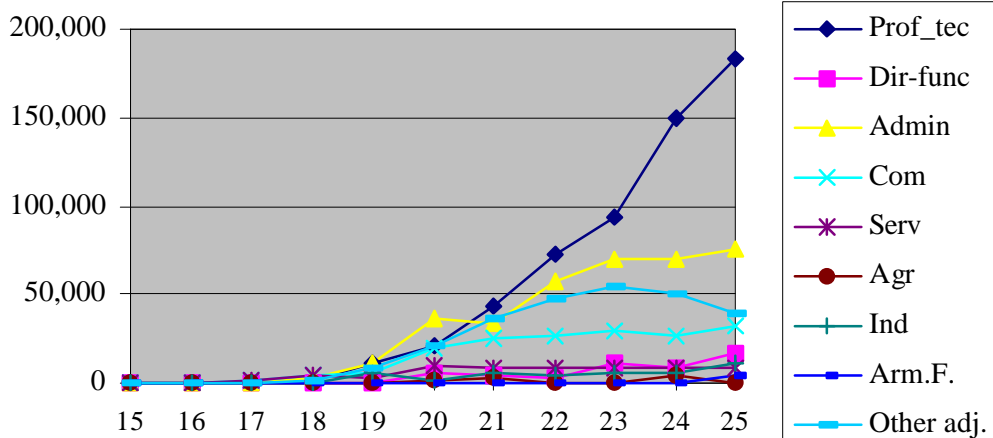
Occupation by age, females with 6 to 9 years of education, Latin America



Occupation by age, females with 10 to 12 years of education, Latin America



Occupation by age, females with 13+ years of education, Latin America

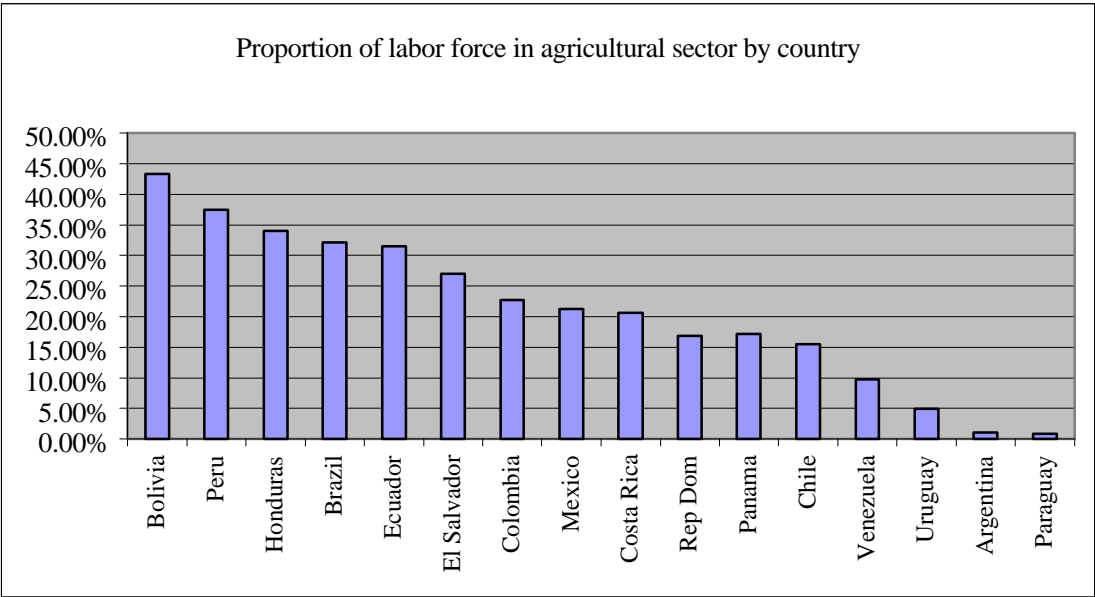
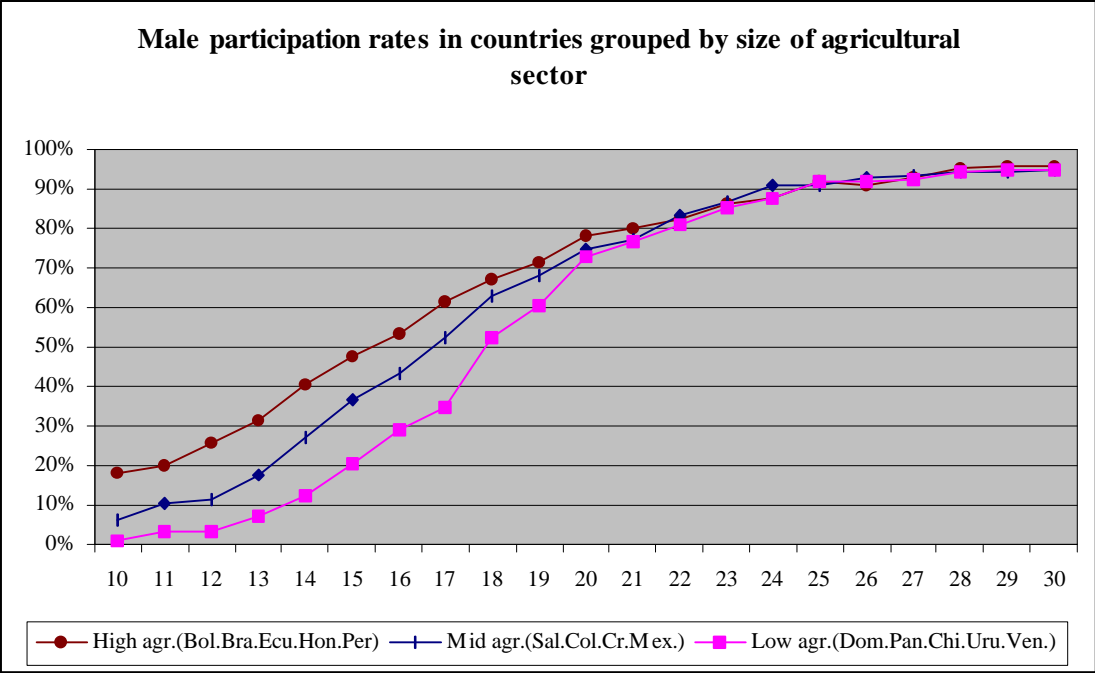


Country differences in patterns of entry

Patterns of entry and consolidation into the labor market differed by countries. Given the large number of countries, these were grouped for the purpose of analysis according to male patterns of entry, which in turn is related to rurality and level of education. Note in the figure that follows that males enter the labor market earlier in countries with large agricultural sectors, and most slowly in those with small agricultural sectors:

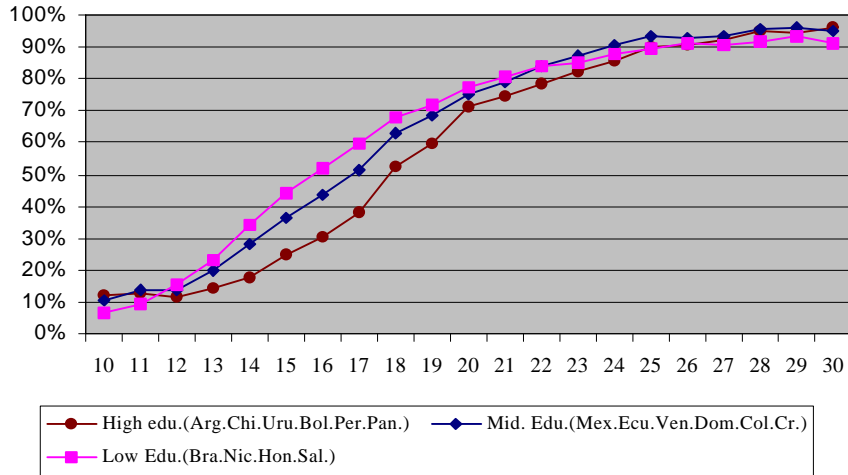
Rates of entry into the labor market also seem to differ between countries with higher and lower mean educational levels:

Consequently, for the purpose of analysis, countries were grouped by combinations of rurality and mean educational attainment:

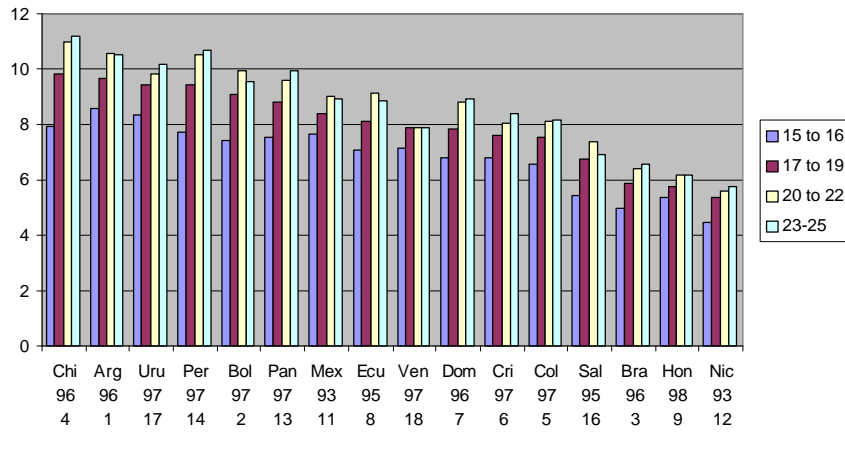


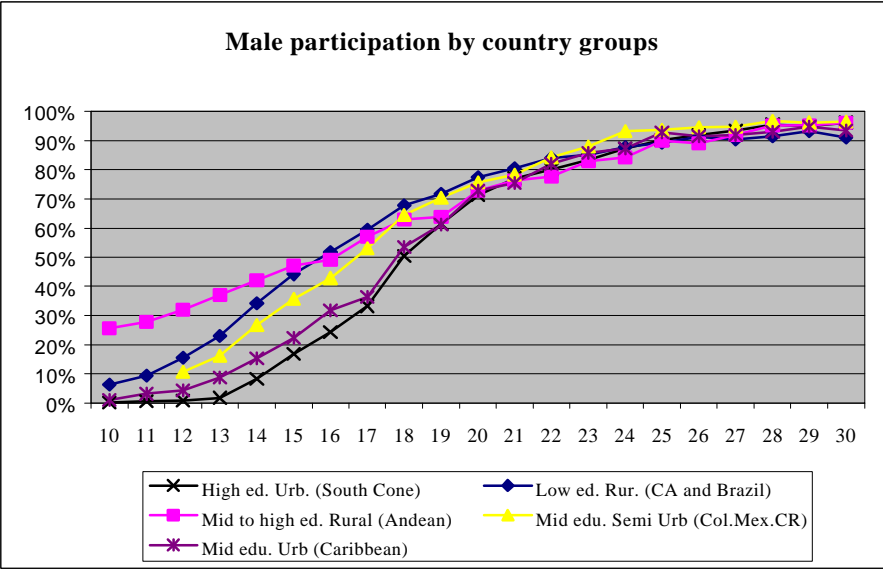
Note: household surveys of Argentina and Paraguay only covered urban areas.

Male participation rates in countries grouped by educational attainment of young adults



Males. Mean education level by age groups in different countries



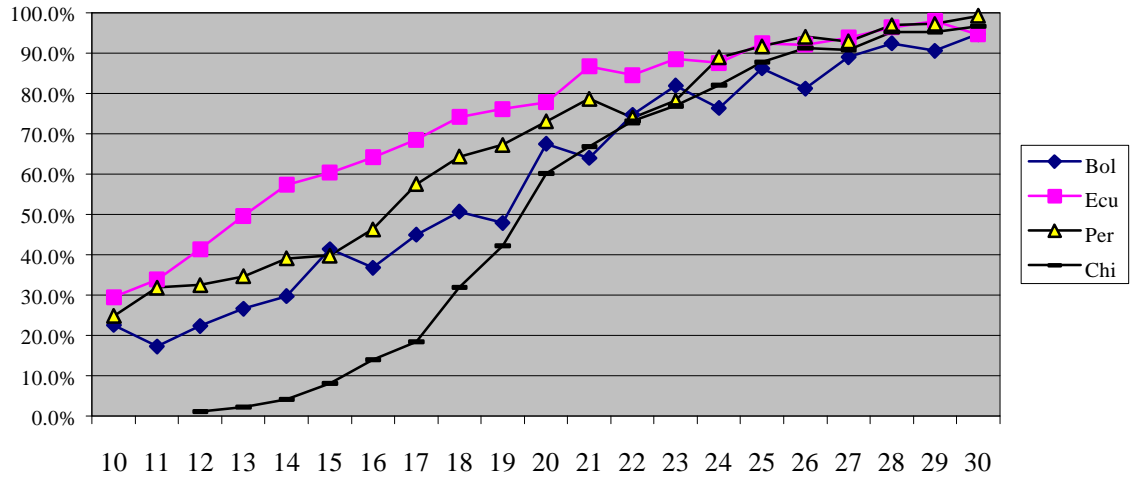


Andean countries (Ecuador, Peru and Bolivia).

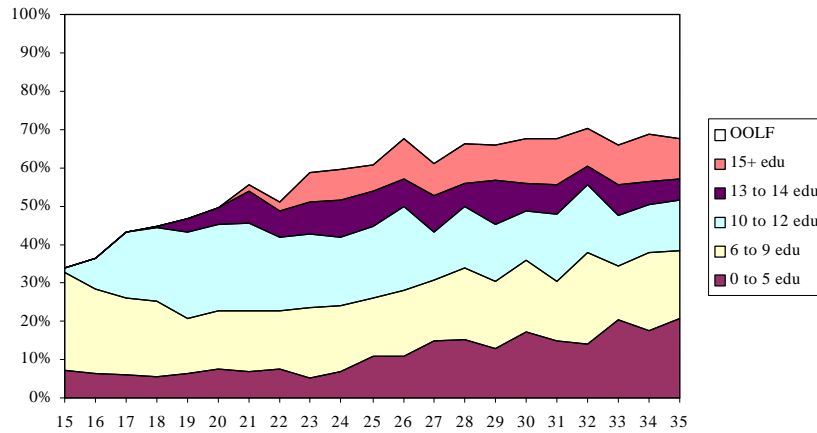
These countries feature early entry of men into the labor market, who show 20% to 30% participation rates at age 10. Given early entry, labor market participation increases linearly rather than exponentially (as is the case in most other countries) between mid adolescence and the early twenties; meaning that in these countries, 18 to 20 year olds pressure less strongly for labor market entry than in most other countries. As in other countries though, after age 21 the labor market participation curve flattens out, marking a de-accelerated entry process. Again, as in most countries, participation rates reach a peak at age 30, and are only a few points below than peak by age 25.

The agricultural sectors in these countries are among the highest in the region (see Table XX).

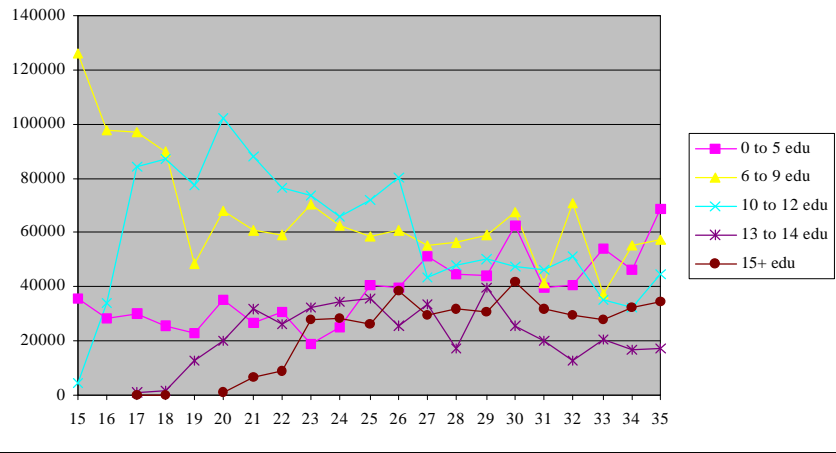
Male participation rates in Andean Countries



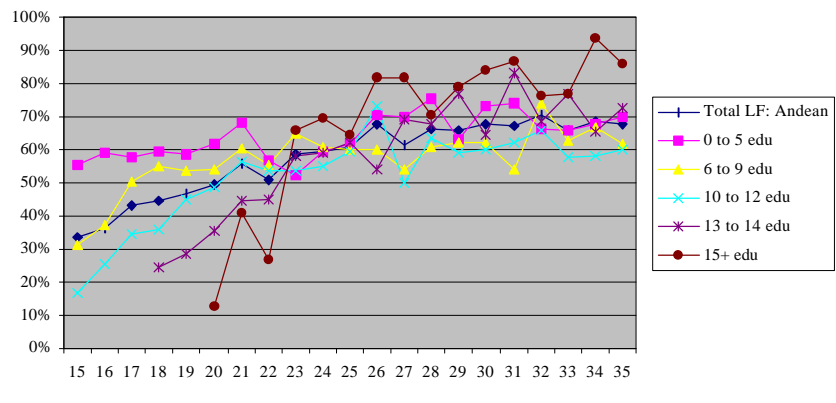
Females participation rates by educational level. Andean country group.



Female labor force by educational level. Andean country group.

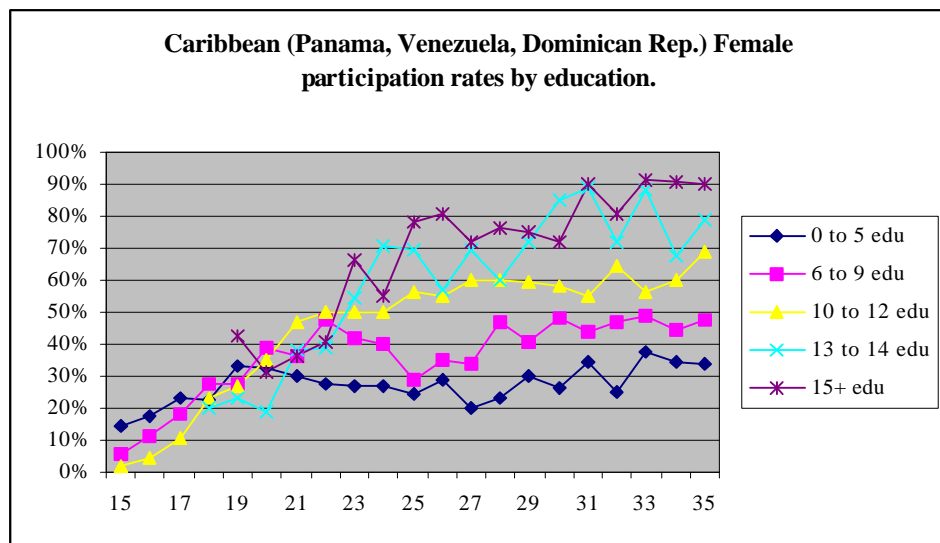
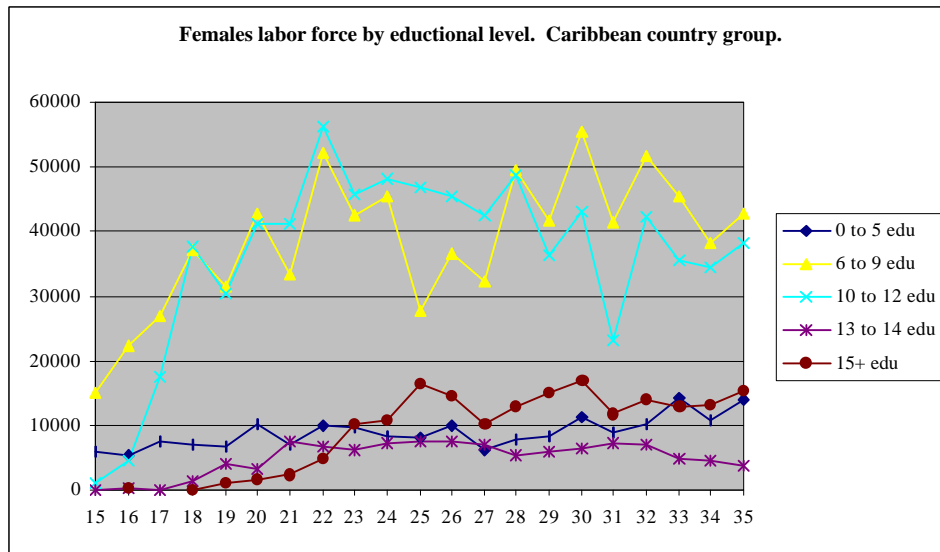
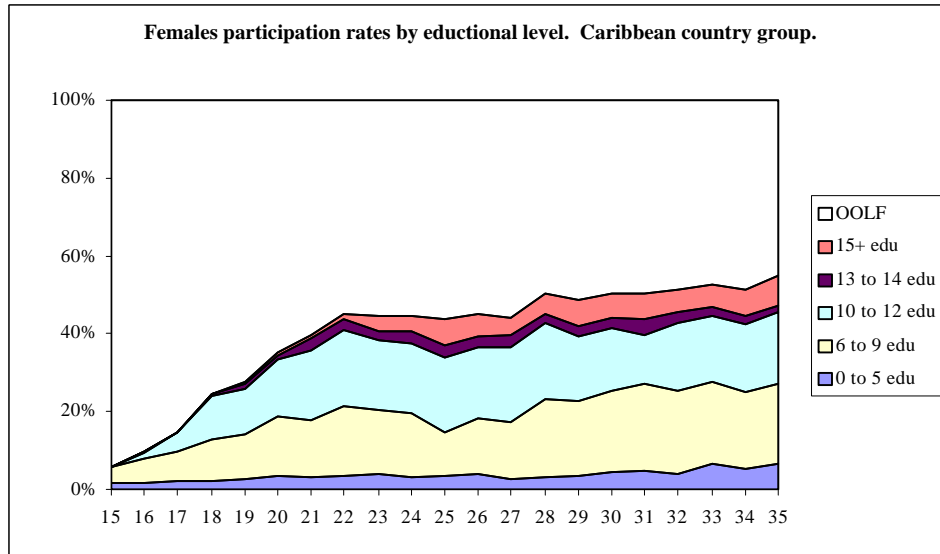


Female participation by educational level. Andean country group.



Southern cone countries

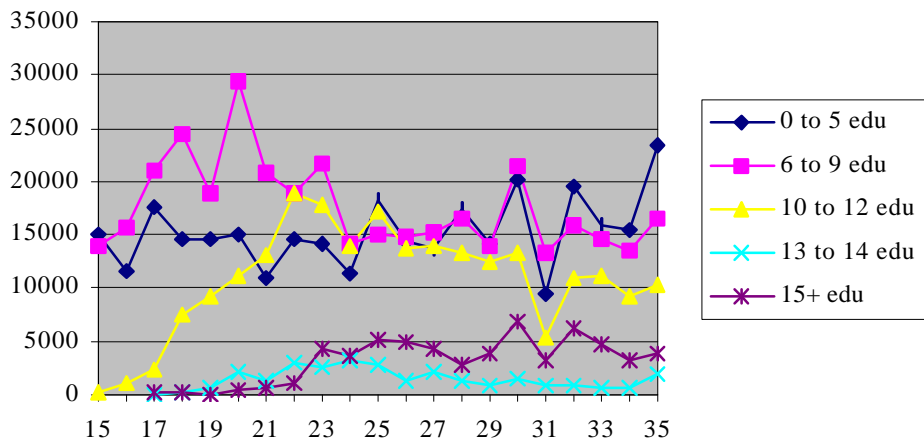
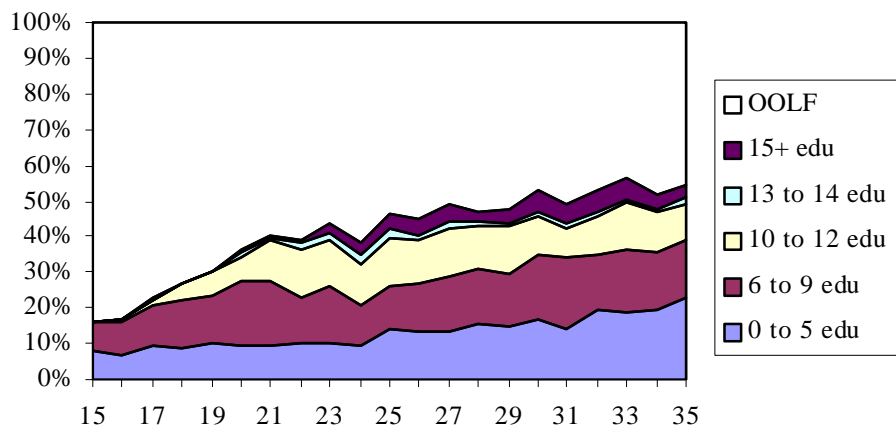
Caribbean countries



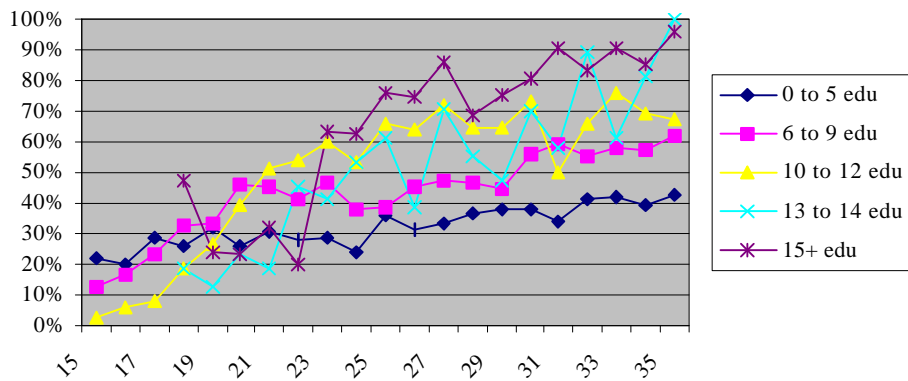
Colombia, Mexico and Costa Rica

Honduras, Nicaragua, El Salvador

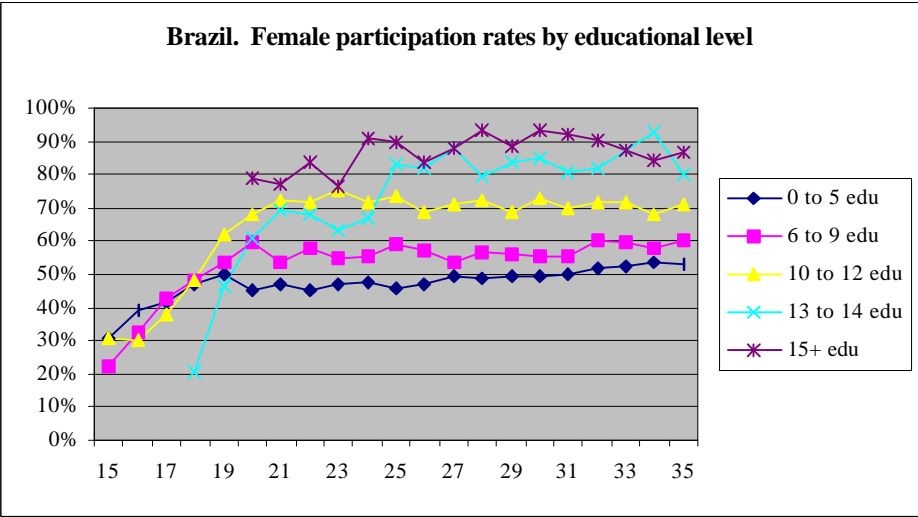
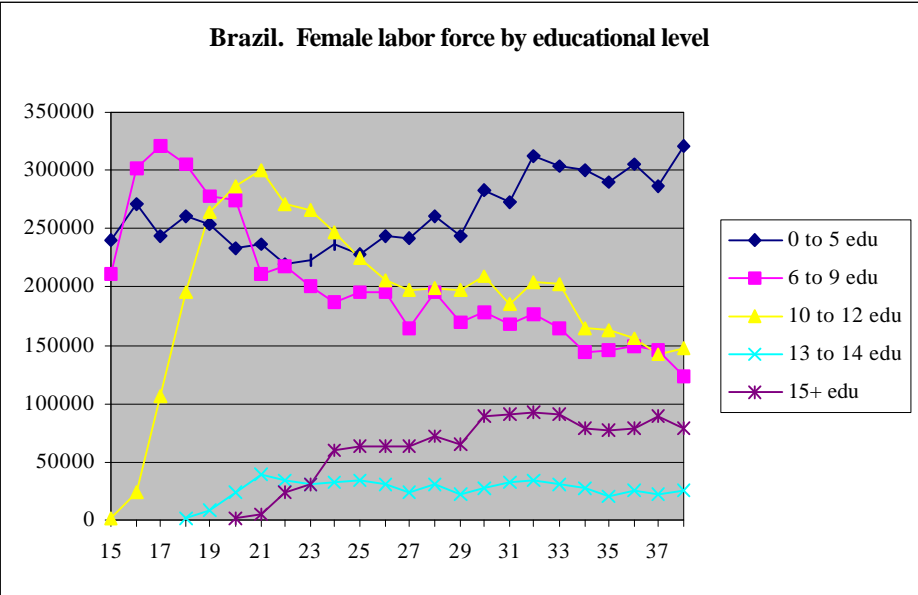
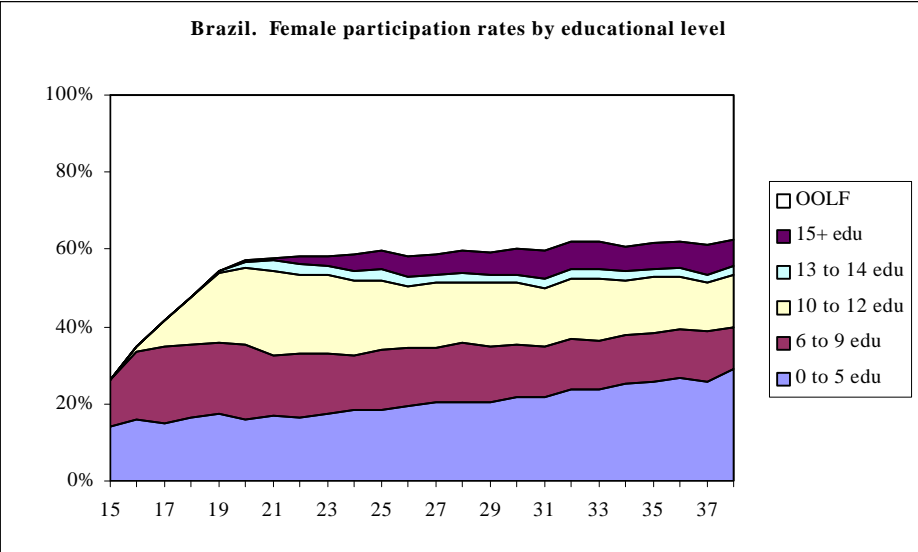
Honduras, El Salvador, Nicaragua. Female participation rates by education level.



Honduras, Nicaragua, El Salvador. Female participation rates by educational level



Brazil



The determinants of wage for young adults in Latin America

In this section we describe the results of the linear regressions analysis of the effect of education, experience, sex, country, occupation, formality, self-employment and economic sectors in the wage of workers. Concretely, the following wage equations were run:

| Individual country regressions | Individual country regressions | Pooled regressions | Pooled regressions |
|---|---|--|--|
| All population Young adults Prime age | All population Young adults Prime age | All population Age 14-17 Young adults Prime age | All population Age 14-17 Young adults Prime age |
| <i>yedc</i> | <i>yedc</i> | <i>Yedc</i> | <i>Schooling dummy</i> |
| <i>exp</i> | <i>exp</i> | <i>Exp</i> | <i>exp</i> |
| <i>exp2</i> | <i>exp2</i> | <i>Exp2</i> | <i>exp2</i> |
| <i>sexo</i> | <i>sexo</i> | <i>Sexo</i> | <i>sexo</i> |
| <i>Yedc*exp</i> | <i>Yedc*exp</i> | <i>Yedc*exp</i> | <i>Country dummy</i> |
| <i>Formal-self dummy</i> | <i>Formal-self dummy</i> | <i>Country dummy</i> | |
| <i>Rama dummy</i> | <i>Occupation dummy</i> | <i>Country*yedc dummy</i> | |

We included as many countries as possible in the pooled regressions by using only variables that were common for most countries included in the IADB data set. In order to allow meaningful comparisons among countries we create a wage index for each country using as basis the median wage. The resulting variable was called “windex” and its log was used as dependent variable in all regressions.

We also estimate rates of return of education for each country using the linear regression analysis suggested by Freeman (1979). The rates of return of education by country allow us to analyze with more detail the effect of education among age groups and educational levels by country and groups of countries.

Effect of education on earnings

There is a positive and significant return to education for young adults in Latin America. According to the regression’s results (see table 1) the return to education increase for this age group is significantly higher than for adolescents (age 14-17). The return to education decrease for prime age adults.

In the second set of regressions (see table 2) we used five dummy variables according to the educational level of the individual instead of using one single variable of years of education. The results were consistent with the previous ones. As educational level increases there is an increase in earnings for young adults and for the other age groups.

We also found that the returns of an educational level in earning increases as age group increases.

The results of the regression analysis by country (see appendix X) for young adults show that there is a tendency among rural countries (Bolivia, Peru, Ecuador, Nicaragua and Honduras with the exception of El Salvador) to have low returns to education. Urban and semi urban countries (Argentina, Chile, Uruguay, Colombia, Mexico, Costa Rica, Dominican Republic, Panama and Venezuela) show rates of return in the medium levels. Brazil shows the highest rate of return to education. Moreover, in all countries, with the exception of Peru, Dominican Republic and Nicaragua, the return to education in young adults is higher than the return to education in prime age adults.

Table 1. Wage and its determinants (using yedc and IcXye_i). All Countries

Dependent variable: lnwindex

Independent variables: yedc (years of education) exp (experience=age-6-yedc) exp2 (exp*exp) scexp (yedc*exp) sexo lcoun_i (country i dummy) IcXye_i (country i dummy*yedc)

Icoun_18 is omitted

IcXye_18 is omitted

| | All population | | age 14-17 | | Young adults | | Prime age | |
|----------------------|----------------|-------|-----------|-------|--------------|-------|-----------|-------|
| Adj R ² = | 0.307 | | 0.1288 | | 0.2029 | | 0.31 | |
| lnwindex | Coef. | P> t | Coef. | P> t | Coef. | P> t | Coef. | P> t |
| Yedc | 0.119355 | 0 | 0.124952 | 0 | 0.187063 | 0 | 0.145218 | 0 |
| Exp | 0.048938 | 0 | 0.068519 | 0.039 | 0.198376 | 0 | 0.066578 | 0 |
| Exp2 | -0.00055 | 0 | 0.001526 | 0.509 | -0.00548 | 0 | -0.00077 | 0 |
| Scexp | -0.00066 | 0 | -0.00277 | 0.252 | -0.00924 | 0 | -0.00162 | 0 |
| Sexo | 0.245765 | 0 | 0.19452 | 0 | 0.20262 | 0 | 0.258111 | 0 |
| lcoun_1 | -0.20455 | 0 | -0.02026 | 0.871 | -0.01529 | 0.734 | -0.15114 | 0 |
| lcoun_2 | -0.30824 | 0 | -0.18774 | 0.149 | -0.13354 | 0.014 | -0.25576 | 0 |
| lcoun_3 | -0.04349 | 0.001 | -0.2422 | 0.001 | -0.14465 | 0 | -0.0124 | 0.458 |
| lcoun_4 | -0.25125 | 0 | 0.024312 | 0.845 | -0.16497 | 0 | -0.30576 | 0 |
| lcoun_5 | -0.20815 | 0 | 0.140361 | 0.074 | -0.08793 | 0.011 | -0.23669 | 0 |
| lcoun_6 | -0.01028 | 0.6 | 0.115001 | 0.33 | 0.105248 | 0.025 | -0.03735 | 0.132 |
| lcoun_7 | 0.245999 | 0 | 0.26742 | 0.03 | 0.23561 | 0 | 0.244829 | 0 |
| lcoun_8 | -0.12358 | 0 | 0.715939 | 0 | 0.328985 | 0 | -0.13886 | 0 |
| lcoun_9 | 0.139834 | 0 | 0.891786 | 0 | 0.656975 | 0 | -0.02204 | 0.352 |
| lcoun_11 | -0.1977 | 0 | -0.14006 | 0.134 | -0.11292 | 0.006 | -0.13995 | 0 |
| lcoun_12 | 0.179853 | 0 | -0.03804 | 0.718 | -0.05384 | 0.276 | 0.189431 | 0 |
| lcoun_13 | -0.23746 | 0 | -0.0387 | 0.818 | -0.05473 | 0.299 | -0.20731 | 0 |
| lcoun_14 | -0.39924 | 0 | 0.315676 | 0.072 | -0.24535 | 0.001 | -0.4125 | 0 |
| lcoun_16 | 0.157912 | 0 | 0.247637 | 0.004 | 0.166873 | 0 | 0.128298 | 0 |
| lcoun_17 | -0.1719 | 0 | -0.08651 | 0.593 | 0.011732 | 0.821 | -0.13879 | 0 |
| lcXye_1 | -0.00412 | 0.036 | -0.03237 | 0.062 | -0.0306 | 0 | -0.00866 | 0 |
| lcXye_2 | 0.034385 | 0 | 0.038843 | 0.044 | 0.011851 | 0.043 | 0.028703 | 0 |
| lcXye_3 | 0.045489 | 0 | 0.05026 | 0 | 0.035345 | 0 | 0.046901 | 0 |
| lcXye_4 | 0.012393 | 0 | -0.00322 | 0.855 | -0.0085 | 0.061 | 0.015975 | 0 |
| lcXye_5 | 0.0358 | 0 | 0.015059 | 0.225 | 0.021393 | 0 | 0.035546 | 0 |
| lcXye_6 | 0.010117 | 0 | 0.004781 | 0.801 | 0.000486 | 0.931 | 0.010077 | 0 |
| lcXye_7 | -0.01534 | 0 | -0.03647 | 0.061 | -0.02638 | 0 | -0.01638 | 0 |
| lcXye_8 | 0.017979 | 0 | -0.05261 | 0.003 | -0.02766 | 0 | 0.014466 | 0 |
| lcXye_9 | 0.009263 | 0 | -0.02085 | 0.195 | -0.02803 | 0 | 0.010839 | 0 |
| lcXye_11 | 0.036348 | 0 | 0.014081 | 0.316 | 0.013981 | 0.003 | 0.0339 | 0 |
| lcXye_12 | 0.015439 | 0 | 0.051471 | 0.01 | 0.037312 | 0 | 0.013919 | 0 |
| lcXye_13 | 0.008843 | 0 | -0.03396 | 0.181 | -0.02156 | 0 | 0.005701 | 0.035 |
| lcXye_14 | 0.029797 | 0 | -0.02004 | 0.393 | 0.012155 | 0.106 | 0.028011 | 0 |
| lcXye_16 | 0.010061 | 0 | -0.01736 | 0.231 | 0.000892 | 0.855 | 0.014129 | 0 |
| lcXye_17 | 0.006542 | 0.001 | -0.03184 | 0.144 | -0.02484 | 0 | 0.004838 | 0.055 |
| _cons | 2.861788 | 0 | 2.735849 | 0 | 2.080021 | 0 | 2.521784 | 0 |

Table 2. Wage and its determinants (using Ischog_i). All Countries

Dependent variable: lnwindex

Independent variables: Ischog_1 (0 to 5 years of education) Ischog_3 (10 to 12 years of education) Ischog_4 (13 to 14 years of education) Ischog_5 (15 or more years of education) exp (experience=age-6-yedc) exp2 (exp*exp) sexo lcoun_i (country i dummy)

lcoun_18 is omitted

| | All population | | age 14-17 | | Young adults | | Prime age | |
|----------------------|----------------|-------|-----------|-------|--------------|-------|-----------|-------|
| Adj R ² = | 0.2834 | | 0.102 | | 0.175 | | 0.2845 | |
| Inwindex | Coef. | P> t | Coef. | P> t | Coef. | P> t | Coef. | P> t |
| <i>Ischog_1</i> | -0.48263 | 0 | -0.24237 | 0 | -0.36493 | 0 | -0.47256 | 0 |
| <i>Ischog_3</i> | 0.466347 | 0 | 0.266426 | 0 | 0.403223 | 0 | 0.457377 | 0 |
| <i>Ischog_4</i> | 0.811206 | 0 | (dropped) | | 0.78389 | 0 | 0.790397 | 0 |
| <i>Ischog_5</i> | 1.356642 | 0 | (dropped) | | 1.195226 | 0 | 1.343253 | 0 |
| <i>exp</i> | 0.039688 | 0 | -0.00507 | 0.6 | 0.057133 | 0 | 0.038253 | 0 |
| <i>exp2</i> | -0.00052 | 0 | -0.00053 | 0.511 | -0.00238 | 0 | -0.00056 | 0 |
| <i>sexo</i> | 0.237025 | 0 | 0.183883 | 0 | 0.18734 | 0 | 0.25046 | 0 |
| <i>lcoun_1</i> | -0.22931 | 0 | -0.23201 | 0 | -0.26472 | 0 | -0.22026 | 0 |
| <i>lcoun_2</i> | -0.05073 | 0 | 0.074332 | 0.111 | 0.021996 | 0.306 | -0.0366 | 0.003 |
| <i>lcoun_3</i> | 0.260137 | 0 | 0.055979 | 0.042 | 0.136207 | 0 | 0.314469 | 0 |
| <i>lcoun_4</i> | -0.12248 | 0 | 0.024707 | 0.529 | -0.20077 | 0 | -0.1398 | 0 |
| <i>lcoun_5</i> | 0.089859 | 0 | 0.269449 | 0 | 0.123371 | 0 | 0.071535 | 0 |
| <i>lcoun_6</i> | 0.038714 | 0 | 0.119043 | 0.002 | 0.088892 | 0 | 0.012823 | 0.269 |
| <i>lcoun_7</i> | 0.120451 | 0 | 0.088687 | 0.103 | 0.040137 | 0.055 | 0.099443 | 0 |
| <i>lcoun_8</i> | 0.000837 | 0.935 | 0.352653 | 0 | 0.098759 | 0 | -0.02736 | 0.035 |
| <i>lcoun_9</i> | 0.186276 | 0 | 0.787725 | 0 | 0.469996 | 0 | 0.051723 | 0 |
| <i>lcoun_11</i> | 0.081589 | 0 | -0.0381 | 0.272 | 0.050538 | 0.001 | 0.135937 | 0 |
| <i>lcoun_12</i> | 0.239438 | 0 | 0.203084 | 0 | 0.190228 | 0 | 0.253681 | 0 |
| <i>lcoun_13</i> | -0.16309 | 0 | -0.27192 | 0 | -0.2257 | 0 | -0.15251 | 0 |
| <i>lcoun_14</i> | -0.15746 | 0 | 0.163103 | 0.007 | -0.11626 | 0 | -0.17908 | 0 |
| <i>lcoun_16</i> | 0.21472 | 0 | 0.215758 | 0 | 0.22451 | 0 | 0.217851 | 0 |
| <i>lcoun_17</i> | -0.12829 | 0 | -0.34125 | 0 | -0.211 | 0 | -0.11562 | 0 |
| <i>_cons</i> | 3.772757 | 0 | 3.828924 | 0 | 3.85296 | 0 | 3.815729 | 0 |

Freeman's regressions for males allow us to explore with more detail the returns to education by country, age group and educational level. The age-earning profile constructed using the results of the Freeman's regression including all countries (see table 3) shows that earning increases with age and educational level.

Table 3. Freeman's regression including all countries (males)

Dependent variable: $\ln \text{index}_{ij}$

Independent variables:

$$\sum_{ij} e_i a_j$$

where e_i is education level (see table) and a_j is age group (see table)

(education level 1)*(age group 2) is omitted

| | 1: Less than first big exit point | 2: From first big exit point to year before next big exit point | 3: From second big exit point to less than secondary | 4: Secondary | 5: More than secondary |
|----------|-----------------------------------|---|--|--------------|------------------------|
| 1: 14-17 | -0.137 | 0.030 | 0.213 | -- | -- |
| 2: 18-20 | 0.000 | 0.221 | 0.392 | 0.627 | 0.825 |
| 3: 21-22 | 0.063 | 0.354 | 0.542 | 0.726 | 1.001 |
| 4: 23-25 | 0.119 | 0.431 | 0.638 | 0.850 | 1.214 |
| 5: 26-34 | 0.210 | 0.547 | 0.799 | 1.076 | 1.554 |
| 6: 35-45 | 0.277 | 0.713 | 0.976 | 1.268 | 1.869 |
| 7: 46-55 | 0.299 | 0.803 | 1.140 | 1.444 | 2.019 |
| 8: 56+ | 0.162 | 0.752 | 1.145 | 1.359 | 1.987 |

* All significant to .05

Freeman's regression results by country (see Appendix X) reinforce the previous findings that rural economies (with the exception of El Salvador and Nicaragua and plus Panama) have relatively low rates of return to education for young adults compare to other Latin American countries. We found that in these countries the age-earning profile for low levels of education (below educational level 2) does not increase as age increases. Relatively high levels of education (3 and 4) have a positive return but only for workers older than 23 years old (with the exception of Bolivia for which the critical age is 21 years old). In Panama the critical age is as high as 35 years old. In general the educational level does not have a positive effect on earnings of young adults unless it is relatively high (more than secondary) and it occurs only to late young adults workers (older than 23 years old). This pattern holds not only for young adult but also for prime age adults. For all other countries studied the age-earning profiles indicates that for young adults and the other age groups more education yields higher earnings and as age increases earnings increase.

Effect of experience on earnings

There is a positive and significant return to experience (see table 1) for young adults and the other age groups. Young adults have the highest return to experience compare to late adolescents and prime age adults and the return is higher than the return to education. Adolescents and prime age adults have a lower effect of experience and its magnitude is similar between these two groups. For adolescents and prime age adults the return to education is significantly higher than the return to experience. Experience² is negative for all age groups but it is not significant for adolescents. The highest coefficient of experience² is for young adults.

The regression results by country (see Appendix X) show that for young adults experience is not significant for Nicaragua and Peru. Colombia and Venezuela show the lowest experience effect in young adults. Argentina, Uruguay, Ecuador and Bolivia show an experience effect in the medium range, and the highest experience effect is for Mexico, Costa Rica, Brazil, Honduras, El Salvador, Panama, Dominican Republic and Chile. For all countries, with the exception of Colombia and Brazil, the experience effect is higher for young adults than the return to education for the same group. For prime age adults, the experience effect is smaller than the return to education for all countries.

Experience² is negative for all countries and age groups (see table 1), although it is not significant (at 5%) for young adults in Nicaragua and Peru, and it is not significant (at 5%) for prime age adults in Ecuador (significant at 10%), Honduras and Peru.

The effect of the interaction schooling*experience (see table 1) is negative for young adults and the other age groups although it is not significant for adolescents. Schooling*experience effect is higher for young adults than for prime age adults. The regression results by country show that schooling*experience is higher for young adults than for prime adults in all countries although it is not significant for prime age adults in Bolivia, Ecuador, Honduras, Peru (significant at 10%) and it is not significant for young adults in Nicaragua and Peru. The effect of the interaction is higher for young adults.

Effect of gender on earnings

There is a positive and significant effect of gender on earnings for young adults and the other age groups (see table 1). This effect is more important than education and experience. The gender differential increases by age group. The gender effect for young adults is slightly higher than the effect for adolescents. There is a significant increase in the effect for prime age adults compared to young adults.

The regression results by country show that for all countries, with the exception of Bolivia and Ecuador, the difference on earning because of gender increases with age. Rural countries (El Salvador, Honduras, Peru, Ecuador, Bolivia with the exception of

Nicaragua) tend to have the highest gender effects although Panama, Dominican Republic, Venezuela and Brazil also show this tendency. The highest gender effects correspond to El Salvador, Panama, Ecuador and Bolivia. Argentina, Chile, Uruguay, Colombia, Mexico, Costa Rica and Nicaragua show the lowest gender effect in the region. There is a relatively small difference between young adults and prime age adults in Chile, Dominican Republic, Panama, Venezuela and El Salvador.

Effect of occupation on earnings

The linear regression results by country (see Appendix) show that for young adults occupations *agricultural workers, service workers and commerce and sales workers* have a negative occupational effect (using as basis *non-agricultural workers, machine and transportation vehicle operators and similar*). The exceptions are Nicaragua and Honduras for which almost all occupations yield negative occupational effects. In addition for Bolivia, Ecuador and Peru *commerce and sales workers* have positive occupational effects and *directors and senior officials* have negative occupational effects. On the other hand, there are positive occupational effects in almost all countries in occupations *professionals and technicians, directors and senior officials and administrative personnel*. The exception is Nicaragua for which the only occupation with positive occupational effect is *professionals and technicians*. For prime age adults the results tend to be similar.

Effect of formal*self-employed on earnings

The linear regression results by country (see Appendix X) indicates that for young adults and prime age adults in all countries (the only exception is Brazil) there is a negative effect of employed informal (using as basis formal employed). Self-employed in the informal sector have a similar effect (with the exception of Chile, Dominican Republic and Costa Rica). The effect self-employed informal tends to be not significant in most countries.

For prime age adults there is a similar pattern (with the exception of Costa Rica for which self-employed informal have a negative effect).

Effect of economic sector on earnings

The linear regression results by country (see Appendix X) show that *agriculture* as economic sector has a negative sector effect (using as basis *manufacturing industry*) on earning of young adults in most Latin America countries. It is not significant for Ecuador and Dominican Republic, and it is positive only for Panama.

Commerce sector effect tends to be not significant (Bolivia, Peru, Dominican Republic, Panama, Venezuela, Mexico and Costa Rica) or negative (Chile, Bolivia, El Salvador and Brazil). Its sector effect is positive only in Uruguay, Ecuador and Colombia.

Community, social and personal services has a negative sector effect for Dominican Republic and Venezuela, it is not significant for Chile, Bolivia, Honduras, Brazil and Costa Rica and its positive for all other countries.

Transportation and storage services has a positive sector effect for all countries except for Bolivia, Dominican Republic, Venezuela and Costa Rica for which it is not significant

Financial establishment has a positive sector effect for all countries except for Venezuela, Honduras and Costa Rica for which it is not significant.

Construction has a positive sector effect for Dominican Republic, Panama, Venezuela, Colombia and El Salvador, negative for Brazil and it is not significant for all other countries.

Extraction of minerals has a positive sector effect for Chile, Ecuador, Venezuela and Mexico but it is not significant for all other countries.

Electricity, gas and water has a positive sector effect for Uruguay, Bolivia, El Salvador and Colombia, negative for Panama and it is not significant for all other countries.

These results suggest that sector effect could be closely linked to the economic structure of the country. For example Venezuela, Chile, Ecuador and Mexico are the only countries for which *mineral extraction* has positive sector effect. All these countries have as a common feature a large mineral industry (oil in the case of Venezuela, Ecuador and Mexico and copper and other minerals in Chile). In this context, it is difficult to establish patterns among countries or groups of countries. However, in almost all countries, *agriculture* has a negative sector effect.

Analysis of the determinants of wage of young adults in Latin America

Pooled mincerian regressions for all Latin American countries show the following results:

- 1) The rates of returns to education of young adults (18.7%) are higher than those of late adolescents (12.5%) and prime aged adults (14,5%). A possible explanation for the increase in rates of return between late adolescence and young adulthood is that late adolescents face social and legal restrictions to participate in the labor market which prevent them to enter in occupations for which human capital accumulation has positive effects.
- 2) Young adults also exhibit the highest returns to experience (19.8%) when compared to late adolescents (6.9%) and prime age adults (6.7%). The reason for the increase in returns to experience between late adolescence and young adulthood may lie in that at this latter age people enter occupations in which experience becomes more important. Basic training in adult jobs may also be accounting for this. Lower returns to

experience among prime aged adults are in turn associated with decreasing returns to experience over the worker's lifecycle.

- 3) Male to female differences in income, which are similar in late adolescence(18.4%) and young adulthood (18.7%), become sharper among prime aged adults (25%). There are several factors that could contribute to this result. For instance, the possibility of maternity of women implies expected costs for the employer because of the time that the person could potentially spend out of work, greater risk of absenteeism and potential retirement of the labor force. In addition some countries have labor laws that protect women rights but generate higher costs for the employer. For young adults, female labor participation is increasing but after age 25 becomes erratic which could suggest a higher intermittence of female participation in the labor market. This, plus a higher risk of the factors mentioned previously, could negatively affect female earnings at prime age and enhance the gender differentials observed for young adults. The regression analysis indicates that there are no significant changes in gender differences from adolescents to young adults. Gender differences become relatively more important only after young adulthood. In the regressions by country we found that Bolivia, Ecuador, Panama and El Salvador have the largest gender differentials in the region and that Argentina, Nicaragua and Costa Rica have the lowest differentials.
- 4) In addition formal employed workers have a positive effect on earnings.

Country by country regressions show the following occupational effects on the income of young adults in most Latin American countries:

- 1) All else equal, those working as *agricultural, service, commercial and sales workers* have lower income levels than industrial workers.
- 2) Those working in *professionals, technical, managerial and administrative occupations* obtain higher incomes than industrial workers. Nicaragua and Honduras are the only countries for which *professionals and technicians, directors and senior officials* and *administrative personnel* have negative occupational effects.

The inter-occupation differentials observed in the results of the regressions could be compensations for nonobservable characteristics of the job or benefits for the worker not included in the wage. The data set does not have information about these variables and therefore it was not possible to test this hypothesis. Another possible explanation is a dual economy model in which wage differentials are associated to technological and organizational characteristics of the high wage sector. In this context, labor is not fully mobile between sectors, wage differential persists and there is underemployment. Capital-intensive industries, the modern sector or public sector of the country could systematically pay higher wages than labor-intensive industries.

The linear regression results by country also show the following economic sector effects on income of young adults in Latin America:

- 1) Workers in the *agricultural* sector have lower income levels than workers in the *manufacturing industry*. The only countries for which agriculture was not significant

were Ecuador and Dominican Republic, and the only one for which the effect was positive was Panama.

- 2) The income effect of the *Commerce* sector tends to be not significant (Bolivia, Peru, Dominican Republic, Panama, Venezuela, Mexico and Costa Rica) or negative (Chile, Bolivia, El Salvador and Brazil). It is positive only for Uruguay, Ecuador and Colombia.
- 3) *Community, social and personal services* has a negative sector effect for Dominican Republic and Venezuela, it is not significant for Chile, Bolivia, Honduras, Brazil and Costa Rica and its positive for all other countries.
- 4) *Transportation and storage services* have a positive sector effect for all countries except for Bolivia, Dominican Republic, Venezuela and Costa Rica for which it is not significant.
- 5) *Financial establishment* has a positive sector effect for all countries except for Venezuela, Honduras and Costa Rica for which it is not significant.
- 6) *Construction* has a positive sector effect for Dominican Republic, Panama, Venezuela, Colombia and El Salvador, negative for Brazil and it is not significant for all other countries.
- 7) *Extraction of minerals* has a positive sector effect for Chile, Ecuador, Venezuela and Mexico but it is not significant for all other countries.
- 8) *Electricity, gas and water* has a positive sector effect for Uruguay, Bolivia, El Salvador and Colombia, negative for Panama and it is not significant for all other countries.

These results suggest that sector effect could be closely linked to the economic structure of the country. For example Venezuela, Chile, Ecuador and Mexico are the only countries for which *mineral extraction* has positive sector effect. All these countries have as a common feature a large mineral industry (oil in the case of Venezuela, Ecuador and Mexico and copper and other minerals in Chile). However, in almost all countries, *agriculture* has a negative sector effect.

There are several factors that could contribute to this result. For instance, the possibility of maternity of women implies expected costs for the employer because of the time that the person could potentially spend out of work, greater risk of absenteeism and potential retirement of the labor force. In addition some countries have labor laws that protect women rights but generate higher costs for the employer. For young adults, female labor participation is increasing but after age 25 becomes erratic which could suggest a higher intermittence of female participation in the labor market. This, plus a higher risk of the factors mentioned previously, could negatively affect female earnings at prime age and enhance the gender differentials observed for young adults. The regression analysis indicates that there are no significant changes in gender differences from adolescents to young adults. Gender differences become relatively more important only after young adulthood. In the regressions by country we found that Bolivia, Ecuador, Panama and El

Salvador have the largest gender differentials in the region and that Argentina, Nicaragua and Costa Rica have the lowest differentials.

APPENDIX 1
Multinomial logistic regressions

| (1) | (2-5) | Dropped countries: Brazil, Colombia, Panama (missing single category) |
|---|---|---|
| Total population 10+ | By age groups | 14-17 years of age: |
| Psudo R2=.2703 | Psudo R2-→ | Psudo R2: .2015. Prob. Chi2>0: .00 |
| Obs. 526,317 | Obs. -→ | Obs.: 55,177 |
| Dependent: OOLF, Unemployed, Formal, Informal. Omitted: OOLF | Dependent: OOLF, Unemployed, Formal, Informal. Omitted: OOLF | Coeff. Signif below .01. For unemployed: single (.063), head household, Mexico, Paraguay. For formal: Nicaragua. For informal: Rep. Dom. |
| Education | Education | 18 to 20 years of age: |
| Age | Exp | Psudo R2: .163 Prob. Chi2>0: .00 |
| Age^2 | Exp^2 | Obs.: 38.115 |
| Sex | Sex | Coeff. Signif below .01. For unemployed: head(.177). For informal: Costa Rica, Rep. Dom. |
| Single | Single | 21 to 22 years of age: |
| Sex-single interaction | Sex-single interaction | Psudo R2: .1741 Prob. Chi2>0: .00 |
| Primary household earner | Primary household earner | Obs.: 23.693 |
| Country dummies (Omitted: Argentina) | Country dummies (Omitted: Argentina) | Coeff. Signif below .01. For unemployed: Paraguay (.046). For formal: Bolivia. For informal: Education, Chile, Rep. Dom., Nicaragua(.029) |
| | | 23 to 25 years of age: |
| | | Psudo R2: .1917 Prob. Chi2>0: .00 |
| | | Obs.: 33.662 |
| | | Coeff. Signif below .01. For unemployed: Income head (.147). For informal: Chile, Costa Rica, Rep. Dom (.03)Nicaragua, Venezuela. |
| | | 26 to 55 years of age: |
| | | Psudo R2: .2538 Prob. Chi2>0: .00 |
| | | Obs.: 321,171 |
| | | All coefficients significant to .01. |
| | | |

APPENDIX 2
Logit regressions

| Equations: (1-18) and (17-24) | Equations: (25-26) | Equations: (27-28) | Equations: (29-30) |
|---|--|--|--|
| 1-18: Young adults 19-24: Prime aged Country by country | 25: Young adults 26: Prime aged Pooled | 27: Young adults 28: Prime aged Pooled | 29: Young adults 30: Prime aged Pooled |
| Dependent: 1=unemployed, 0=employed. | Dependent: 1=unemployed, 0=employed. | Dependent: 1=unemployed, 0=employed. | Dependent: 1=unemployed, 0=employed. |
| Education | Education | Education | Education |
| Age | Age | Age | Age |
| Age^2 | Age^2 | Age^2 | Age^2 |
| Sex | Sex | Sex | Sex |
| Single (if in country) | Single (if in country) | Single (if in country) | Single (if in country) |
| Sex*single interaction | Sex*single interaction | Sex*single interaction | |
| Primary household earner | Primary household earner | Primary household earner | |
| | Country dummies. Omitted: Colombia. | Country dummies. Omitted: Colombia. | Country dummies. Omitted: Colombia. |
| | | | |
| | Dropped: Argentina, Brazil, Panama, Uruguay, Venezuela. | Dropped: Brazil, Panama | All countries included |
| | Not significant: | Not significant: | Not significant: |
| | Young adults: single main effect. | Young adults: single main effect. | Young adults: none |
| | Prime aged: sex-single interaction | Prime aged: sex-single interaction | |