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Carla Calero
Juan Mejalenko
Oscar Mitnik
Laura Ripani





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Carla Calero¹
Juan Mejalenko²
Oscar Mitnik³
Laura Ripani⁴

April 2018

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This document, led by specialists from the Inter-American Development Bank, is meant to show the design of a case study to request feedback to improve the study.

* This document provides initial results of an ongoing research project on labor market trajectories in Latin America and the Caribbean. The opinions expressed in this document are those of the authors and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

1. Consultant, Inter-American Development Bank, ccaleroleon@gmail.com

2. Office of Strategic Planning and Development Effectiveness at the Inter-American Development Bank, jmejalenko@iadb.org

3. Office of Strategic Planning and Development Effectiveness at the Inter-American Development Bank, omitnik@iadb.org

4. Labor Markets and Social Security Division at the Inter-American Development Bank, laurari@iadb.org

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Introduction

Following the seminal work of Deaton (1985), pseudo-panels (or synthetic panel) analysis has been widely used in the context of consumption and income (e.g. Deaton and Paxson, 1994; Banks, Blundell, and Brugiavini, 2001; Pencavel, 2007). In Latin America, the synthetic panel approach has been used primarily to examine income mobility (e.g. Calónico, 2006; Navarro, 2006; Ñopo, 2011; Ferreira et al., 2013). Recent applications in other contexts include Székely and Karver (2015) for analyzing the phenomena of youth out of school and out of work, Bentaouet-Kattan and Székely (2015) in the context of school attendance, and Levy and Székely (2016) to study the relation between schooling and formality.

In this analysis, we use synthetic panels for nine LAC countries from 1992 to 2014, to explore labor market trajectories over the life cycle. Other studies have investigated the evolution of labor earnings in the region (e.g. Duryea et al., 2002; Brambilla and Tortarolo, 2014), but as far as we know, this is the first analysis using synthetic panels to examine labor market trajectories over the life cycle.

Relying on synthetic panels is unavoidable in LAC for a life cycle analysis, because there are no long panels in the region that could be used for this purpose. There are some short panels associated to the rotation waves in the household surveys, and some longer panels like the Mexican Family Life Survey (that follows individuals for up to 11 years), and the Brazilian RAIS (that follows only formal workers over time). However, there is no available panel data that could be used for a large number of LAC countries, and that follows formal, informal and self-employed workers.

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Methods and data

Synthetic panel analyses rely on two key assumptions: i) after controlling for differences in observable characteristics different birth-cohorts are similar at similar ages; ii) past labor market outcomes of different birth-cohorts are reasonable proxies for the labor market outcomes of future birth-cohorts. Our analyses show that those two assumptions, after controlling for observable characteristics and changes in macroeconomic conditions, are likely to hold.¹

In terms of data, the analysis uses nationally representative household survey data from 1990 to 2014 (not necessarily every year for every country) of nine Latin American countries in the Region: Argentina, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Mexico, Peru and Paraguay. These surveys were processed and harmonized by the Labor Markets and Social Security Information System (SIMS) of the Inter-American Development Bank to facilitate comparisons across countries and over time

1. As with any synthetic panel analysis, it is important to thread carefully when analyzing its results, as it cannot differentiate well the effects of aging from cohort/year effects. For example, if 25- to 30-year-old workers in 2016 experience a different labor market compared to that experienced by 25- to 30-year-old workers in 1991 (i.e., the current 50- to 55-year-old cohort) or compared to the one they will experience in the future, then the analysis may not be appropriate. In a limited robustness check we compared several birth cohorts at the same age for all the countries and we did not find meaningful differences in their labor market trajectories over time.

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Initial Results

Figure 1 shows that individuals with higher educational attainment² are more likely to work in the formal sector. After age 27, there is a constant proportion of more educated individuals in formal employment.³ For men, this proportion is never below 45 percent and remains above 55 percent between the ages of 32 and 40. Whereas for women, it is never below 40 percent and remains above 50 percent between the ages of 32 and 40. In contrast, for individuals with less than high school, this proportion is under 21 percent for men and under 7 percent for women.⁴

On the other hand, less educated individuals are more likely to work in informal employment or to be self-employed. At younger ages, informal employment is important, but over the years informality grows, as most men and women with low educational attainment resort to self-employment, which is largely a form of informality. As discussed by Calero et al. (2017), temporary employment in the informal sector would not be a problem as long as workers transit quickly to the formal sector. However, using panel data from Chile, the authors find that the initial employment status of a worker is a strong predictor of his/her future status (two and seven years later).⁵

Labor force participation appears as rather low for women with less than high school (less than 50% on average), although this analysis ignores by construction the increasing labor force participation of women from younger cohorts. Additionally, as mentioned previously, informality remains high particularly for this group. This implies that the entry of women with lower educational levels into the labor market take place mainly in precarious jobs – a pattern that remains throughout the life cycle.

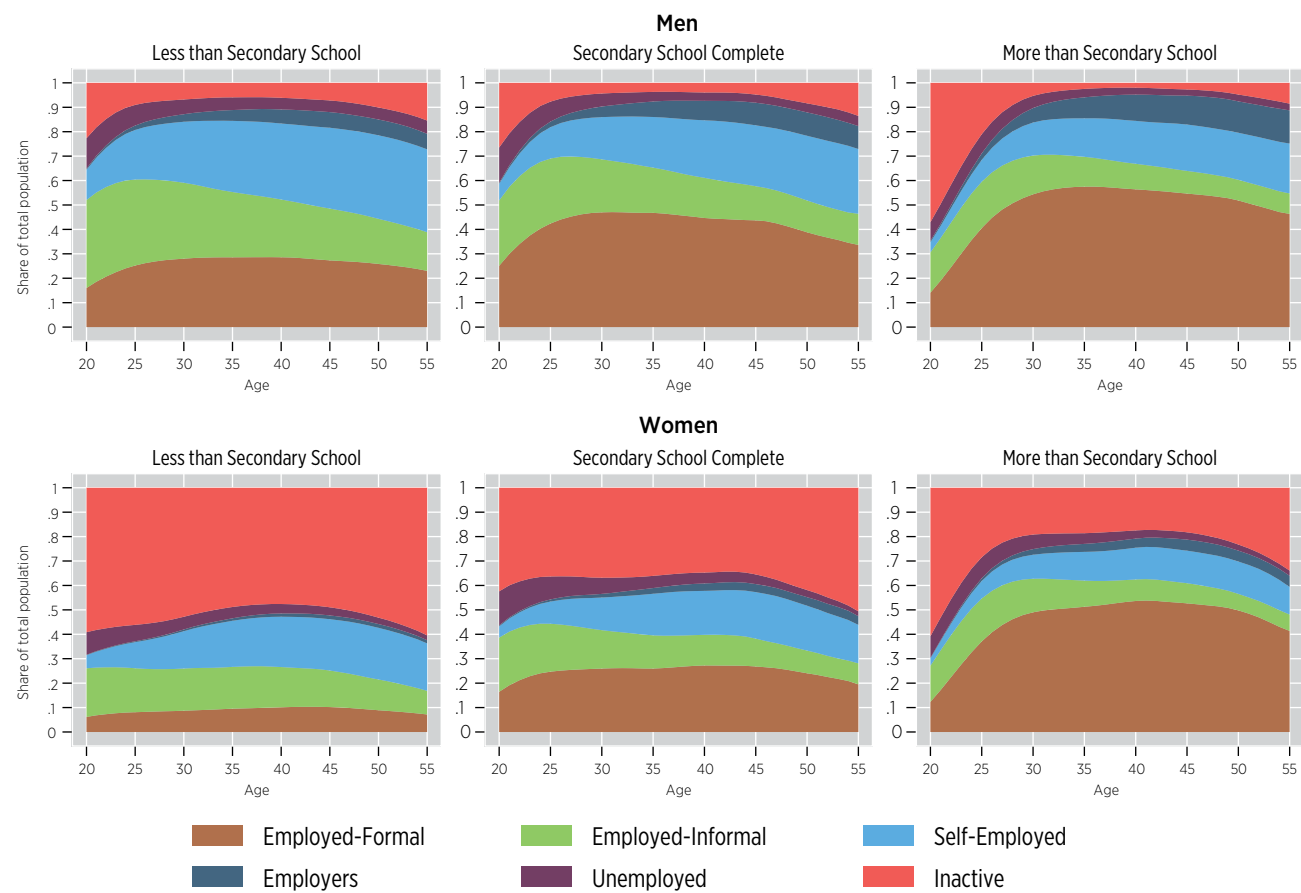
2. We classify individuals in three education groups (less than high school, high school complete and more than high school), and present them by gender.

3. We differentiate between those individuals that are employed in formal jobs, in informal jobs, and self-employed. The term formal employment refers to employed individuals contributing to the social security or pension system, while non-contributing employed individuals are in informal employment.

4. For individuals who had completed secondary school, this proportion is under 46 percent for men and under 32 percent for women.

5. For instance, they find that only 20 percent of individuals who started out being employed in the informal sector moved to the formal sector over the next seven years. Meanwhile, 80 percent of people who started out being employed formally remained in the formal sector in the next seven years.

Figure 1. Active-Age Population Employment Status over the Life Cycle



Note: The figure shows the shares of the active age population that are employed (formally and informally), self-employed, employers, unemployed, and inactive (outside of the labor force). Agricultural workers are excluded from the analysis.

Figures 2 and 3 present the evolution of earnings over the lifecycle.⁶ Figure 2 includes those in the ages 20 to 55 not working as zero earnings, while Figure 3 only includes those individuals working. In both cases the evidence from the use of synthetic panels suggests that earnings grow faster over the lifecycle for those who attain higher levels of education. And even though this is true for both men and women, male workers register higher growth rates – even at older ages. In contrast, as can be seen in Figures 2 and 3, less educated workers present relatively flat earnings over the life cycle.

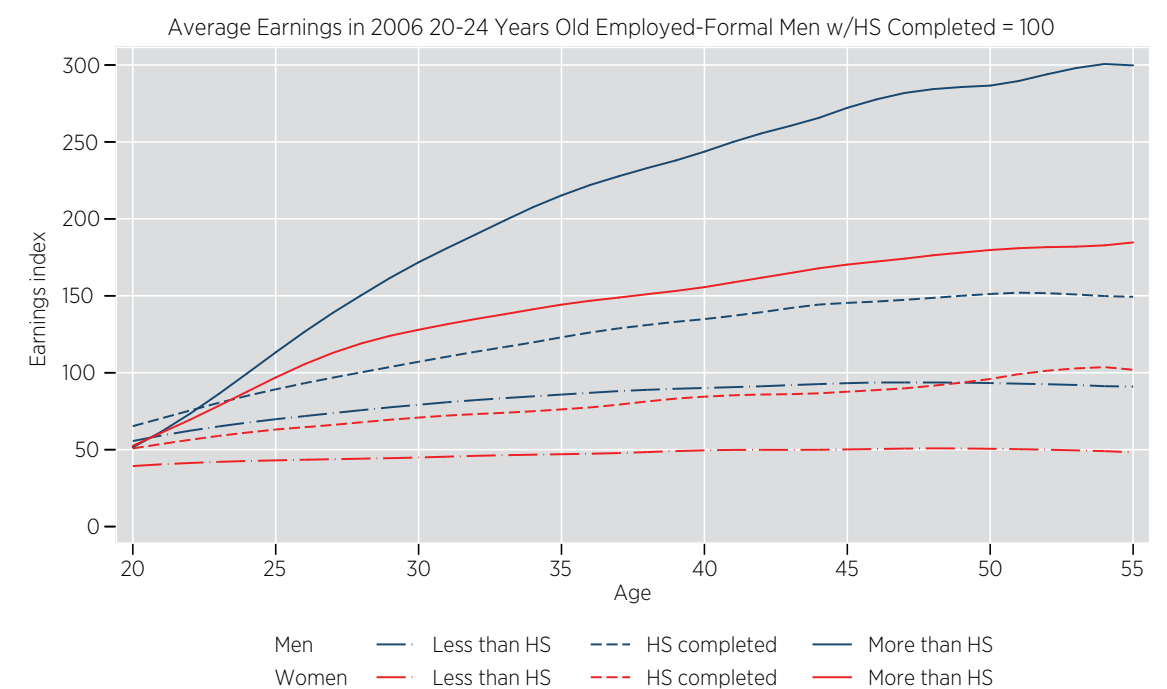
⁶ We create an earnings index in each country based on real earnings, setting as 100 the average earnings of 20-24 years old males with high school complete, in formal employment in 2006, in each country.

Figure 2. LAC: Life Cycle Earnings Profile – Active Age Population



Note: The figure shows the life cycle profiles of a real earnings index (net of expenses for self-employed), where the index is set equal to 100 for the real average earnings in 2006 of 20 to 24-year-old men with high school complete, employed formally, in each country.

Figure 3. LAC: Life Cycle Earnings Profile – Workers



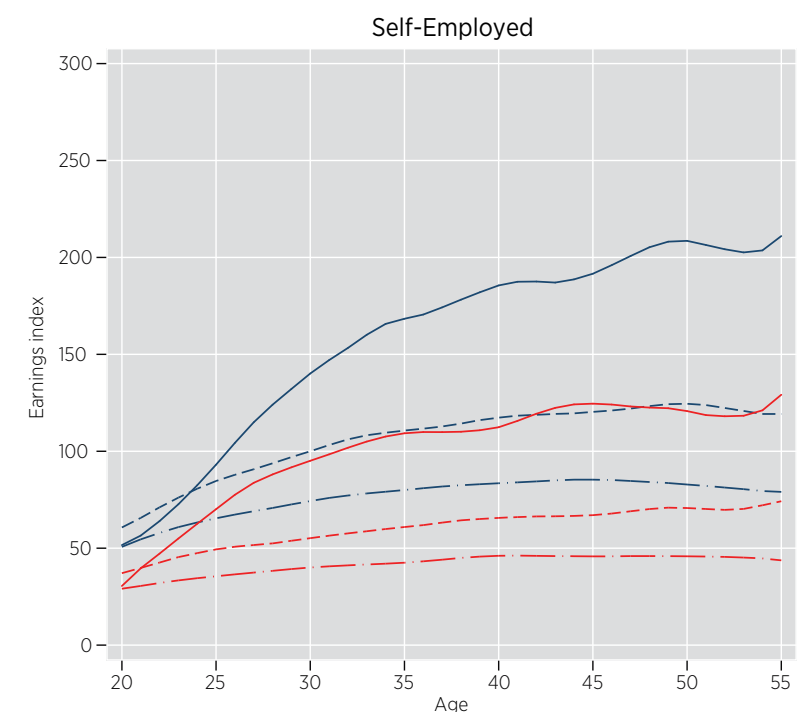
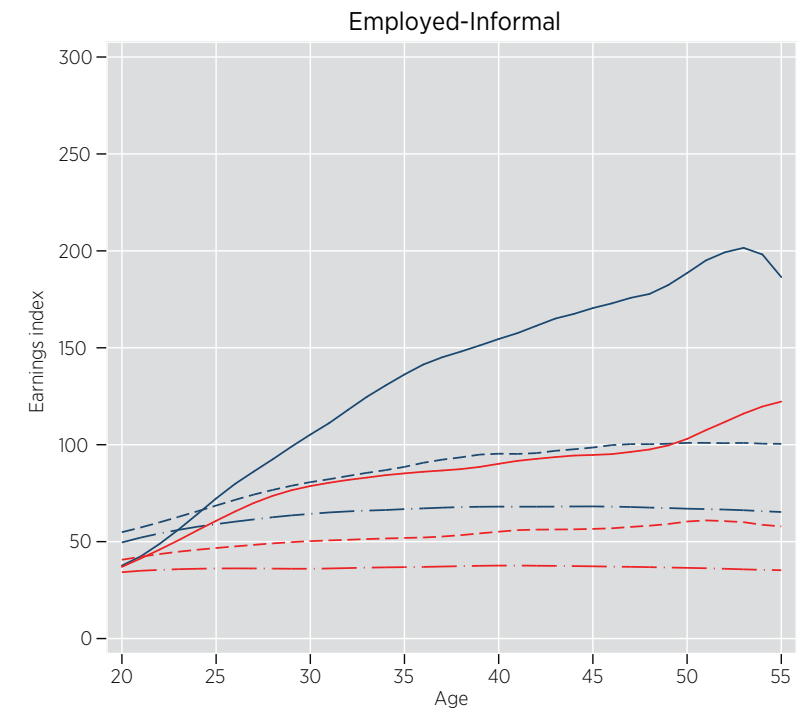
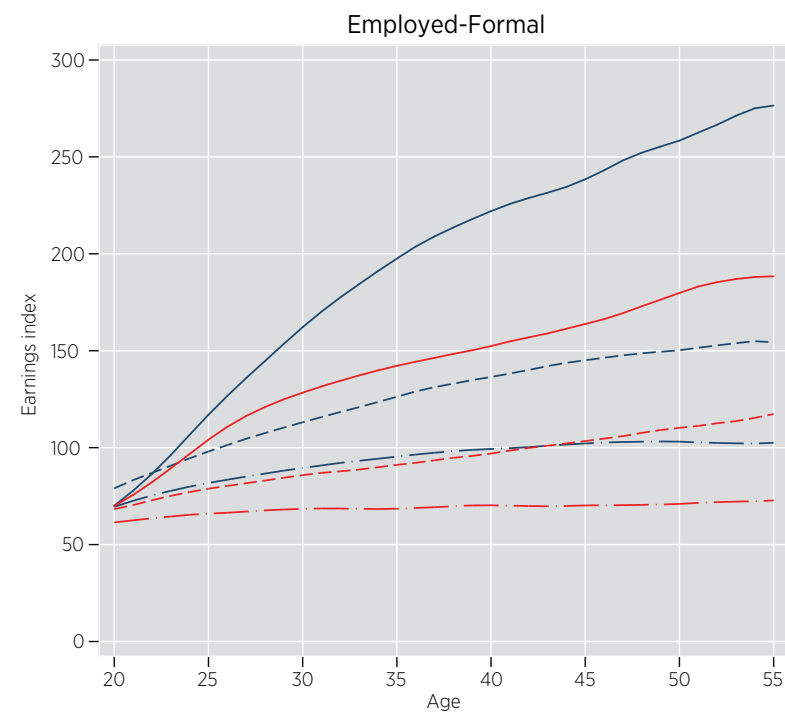
Note: The figure shows the life cycle profiles of a real earnings index (net of expenses for self-employed), where the index is set equal to 100 for the real average earnings in 2006 of 20 to 24-year-old men with high school complete, employed formally, in each country.

Figure 4 presents a disaggregation of Figure 3 in Employed-Formal, Employed-Informal and Self-Employed.⁷ Female workers who are either self-employed or employed in the informal sector exhibit lower average earnings than male workers. What is striking is that this is true even if the comparison is with men characterized by lower educational levels. For example, women with more than high school education earn less than men that just completed secondary education, up to the age of 50.

Furthermore, the findings reveal that the type of employment or work individuals hold make an important difference. Those employed in the informal sector and those that are self-employed register very similar average earnings profiles in their careers. Meanwhile, those who are employed in the formal sector exhibit not only higher average earnings but also higher growth rates over the life cycle in comparison to the other two groups. This is consistent with our previous results indicating high substitution between employment in informal jobs and self-employment over time.

Figure 4. LAC: Life Cycle Earnings Profile – Employed and Self-Employed

Average Earnings in 2006 20-24 Years Old Employed-Formal Men w/HS Completed = 100



Men — Less than HS — HS completed — More than HS
 Women — Less than HS — HS completed — More than HS

7. Employers were excluded from this analysis

Note: The figure shows the life cycle profiles of a real earnings index (net of expenses for self-employed), where the index is set equal to 100 for the real average earnings in 2006 of 20 to 24-year-old men with high school complete, employed formally, in each country.

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Initial Conclusion

Latin America and the Caribbean countries present highly segmented labor markets by education and type of employment. Over the life cycle that segmentation not only does not disappear, but worsens, in particular relative to the higher educated groups. While men and women start with similar earnings, their life cycle earnings profile imply that the ratio of female to male earnings decreases continuously over time, regardless of education level (actually, even further for highly educated women and men).

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