

# Following Mexican Youth

## A Short-Run Study of Time Use Decisions

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Education Global Practice Group

January 2016

## Abstract

This paper exploits data from a rotating panel that follows individuals for four quarters to shed light on the factors driving the time use decisions and restrictions faced by Mexican youth. The results of the analysis imply that: (i) once youth aged 15 to 18 years old leave school, it is very unlikely that they will return; (ii) being “neither in work nor in school” (Nini) is a highly persistent condition; and (iii) marriage (perhaps

motivated by teen pregnancy) increases the probability of girls leaving school and raising children by themselves, which may in turn increase their future likelihood of being Ninis, as well as the probability of their children growing up to become Ninis, potentially creating an intergenerational transmission of Nininess. Similar results are found for other countries in the region (Brazil and Argentina).

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# **Following Mexican Youth: A Short-Run Study of Time Use Decisions\***

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*Keywords:* youth, idleness, school, work, transition  
*JEL-Classification:* J01, J24

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\* The present study is a background paper for the regional study “Out of school and out of work: Risk and opportunities for Latin America’s ninis.” (De Hoyos, Rogers, and Székely 2016). Earlier versions of this paper benefited substantially from comments and suggestions by Wendy Cunningham and Rafael de Hoyos. The authors would also like to thank Daniel Lederman, Halsey Rogers, Julian Messina, Miguel Székely, and participants of two workshops held at the World Bank in Washington DC in October 2013 and March 2014 for their feedback. This paper benefited from a DEC’s Research Support grant given to Rafael de Hoyos under the Proposal “Youth Idleness in Latin America: Quantitative and Qualitative Evidence from Mexico”

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## 1. Introduction

This paper empirically analyzes decisions by Mexican youth regarding whether or not to attend school and participate in the labor market, as well as the factors driving these choices. In Latin America, the prevalence of youth “neither in work nor in school” (Ninis) has increasingly attracted the attention of policy makers and the general public (see, for example, Cardenas, De Hoyos, and Székely, 2015; Bassi, Busso, Urzúa, and Vargas, 2012).<sup>1</sup> Analyzing the phenomenon is important for public policy as it is perceived to be associated with other social problems in the region, such as shortfalls in the quality and relevance of education, which may lead to early dropout from school, increased youth unemployment, and heightened propensity for crime, violence, insecurity, and political instability (Bárcena, López, Hopenhayn, and Frishman, 2008; Grogger, 1997; and Jacob and Lefgren, 2003).<sup>2</sup> Other socioeconomic factors such as teenage pregnancy are also commonly associated with the number of Ninis, with the region exhibiting the second highest adolescent fertility rate in the world (69 births per 1,000 women 15-19) after Sub-Saharan Africa (World Development Indicators, 2014).

According to the most recent estimates, almost one in five youth between the ages of 15 and 24 in Latin America are Ninis, accounting for approximately 18 million individuals (De Hoyos, Popova, and Rogers, 2014). Of all youth aged 15 to 24 in 2010, 34 percent were only studying, 33 percent were only working, 12 percent were both studying and working, and 19 percent were Ninis.<sup>3,4</sup> During the last two decades, the percentage of Ninis in the region has gradually declined (although the absolute number has increased), although there has been substantial heterogeneity in trends within this group (De Hoyos et al., 2014; Cardenas et al., 2015). The percentage of Ninis in the region declined from 23.4 percent to 19.6 percent (mainly driven by the decline in female Ninis), while the number increased from 16.4 million to 18.2 million between 1992 and 2010. Results for the region are heterogeneous across countries and by gender. Nini levels and trends have varied greatly at the country level, with some countries such as Peru and Venezuela showing sharp declines in the proportion of Ninis. Moreover, Ninis

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<sup>1</sup> In this paper, “neither in work nor in school” (Ninis) are those who are not working in the labor market nor part of the formal education system at the time of the survey.

<sup>2</sup> Latin Americans identify crime, violence and unemployment as the main concerns for the region (Lagos and Dammert, 2012), which records the highest homicide rates in the world with an average rate of 24.7 homicides per 100,000 people (Chioda, 2013).

<sup>3</sup> The analysis in De Hoyos, Popova, and Rogers (2014) draws on data from 238 household surveys compiled and harmonized in the Socio-Economic Database for Latin America and the Caribbean (SEDLAC), augmented by 24 new country-year surveys added for their study.

<sup>4</sup> This contrasts with an average of 12.9 percent (roughly 7.5 million individuals) of Ninis found among the same demographic in the EU27 in 2011 (Eurofund, 2012).

in the region are disproportionately female, with women accounting for over two-thirds of the group according to the definition used in this paper.<sup>5</sup>

The evolution of these trends in Ninis could limit the region's ability to benefit from the demographic dividend resulting from the sharp decline in economic dependency ratios currently being experienced in Latin America (Cardenas et al., 2015). The sharp acceleration in the growth rate of 15 to 64 year olds relative to those aged under 15 and over 65 since the 1990s is currently bringing the working-age share of the population to a historical maximum. This should pay out substantial economic dividends in terms of poverty and inequality reductions if the labor force accumulates relevant human capital through education or on-the-job experience. Since this demographic "window of opportunity" opened 20 years ago, the region has indeed made significant economic progress: GDP per capita has grown by more than 50 percent in real terms (ECLAC), the proportion of individuals living in poverty has fallen from 27.9 percent of the population in 1992 to 19.3 percent in 2009 (SEDLAC, 2011), and inequality as measured by the Gini index fell by approximately 10 percent during the 2000s. Yet despite these gains, the prevalence of 15 to 24 year olds who are neither in school nor in the labor market has remained a persistent and seemingly structural phenomenon, potentially impeding further welfare gains.

Ninness also has an inequality dimension with ensuing long-term consequences. The incidence of Ninis is higher among those youth coming from households in the lowest quintiles of the income distribution, perpetuating inequality in the long-run. For example, Honduran and Dominican youth in the poorest quintiles are at least twice as likely to be Ninis as those in the top quintile (Cardenas et al., 2015). In the long-run there is evidence that shows that being a Nini when young leaves long-lasting 'scarring' effects on youths' labor market prospects later in life (Cunningham et al., 2008; Székely and Karver, 2014).

In Mexico, the focus of this paper, the evolution of Ninis has followed a pattern similar to that of the region as a whole. However, in Mexico the declining trend in the number of Ninis stabilized around 2004 before reversing, with numbers returning to levels similar to those observed in 1992 (approximately 5 million people) by 2010 (Appendix Figure A1). This trend in the aggregate number of Ninis is the result of a continuous increase in the number of male

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<sup>5</sup> According to the authors, women who have started a household with children account for around 40 per cent of 19 to 24 year old female Ninis, and half of them are not looking for work. They suggest that these women are likely to be in a different situation from younger females or male Ninis who have not yet started their own household.

Ninis, which doubled from nearly 0.66 to 1.28 million between 2000 and 2010, combined with the stabilization of the number of female Ninis at around 3.50 million during the 2000s. In relative terms, the proportion of Ninis in Mexico has been stable since the beginning of the 2000s, at around 22.7 per cent, due to the sizeable increase in the percentage of male Ninis, which went from 7.5 to 12.0 percent between 2000 and 2010, and the slight decrease in the percentage of female Ninis, which went from 36.3 to 33.7 percent during the same period.

The literature has produced several empirical insights into the phenomenon of Nininess in Mexico. Arceo-Gómez and Campos-Vázquez (2011) apply cross-sectional analysis to a combination of census data, household expenditure surveys, and labor surveys covering the period from 1990 to 2010 to study Ninis aged between 15 and 19 years old. In line with the results of De Hoyos et al. (2014), they find that the percentage of Ninis decreased during these two decades. They also find big differences by gender, as well as differential impacts of recessions - which disproportionately affect the young - on the proportion of Ninis. Arceo-Gómez and Campos-Vázquez (2011) estimate that in 2010 there were 8.6 million Ninis aged 15 to 19 in Mexico (approximately 29 percent of this age group), of which 6.5 million were women. Analyzing the reported reasons for not working, they find 70 percent of women with children do not have anyone who can look after them. This finding, combined with high pregnancy rates in Mexico (Azevedo et al., 2012), supports the hypothesis that teenage pregnancy limits the labor force participation of women and, by motivating their decision to instead spend time on housework, increases the proportion of Ninis in the population. Finally, the authors conclude that household income is an important correlate of being a Nini for men but not for women. Using different sources of cross-sectional data, Águila et al. (2013) find similar results, but emphasize the fact that the majority of Ninis are women with children, living in high poverty contexts. Using longitudinal data from the Mexican Family Life Survey and a cross-section from the 2011 Social Mobility Survey, Arceo-Gómez and Campos-Vázquez (2014) find evidence to substantiate this hypothesis. They observe that teenage pregnancy generates a decrease of between 0.6 and 0.8 years of schooling and lower school attendance, fewer hours of work, and a higher marriage rate in the short run. Moreover, in the long-term teenage pregnancy results in a loss of between 1 and 1.2 years of education, with the related consequences of later educational achievement and lower household income, heightening vulnerability and increasing the risk of falling into poverty.

Tuirán and Ávila (2012) analyze several hypotheses and preconceptions about Ninis in Mexico. Studying 12 to 29 year olds using data from the National Youth Survey (ENJ, by its acronym

in Spanish), they find that Nini rates have decreased since the 1960s. Moreover, they find that recessions increase the prevalence of Ninis by 3 to 4 percentage points (p.p.), and that the majority of Ninis are women whose personal lives have affected their schooling and labor force participation decision (e.g. 61 percent of women aged 19 to 23 have children). Notably, the authors conclude that Ninis are present in all levels of society and regions of the country, but that being a Nini does not necessarily mean being unproductive, as many of them are involved in activities that are socially useful.

Several authors have questioned the adequacy of the definition of Ninis and its implications for social policy precisely because of the assumed unproductivity of these youth under the definition. This assumed unproductivity of Ninis is clearly reflected in newspapers and public opinion as referenced by Arceo-Gómez and Campos-Vázquez (2011). Two papers, Negrete-Prieto and Leyva-Parra (2013) and Leyva-Parra and Negrete-Prieto (2014), carefully analyze the numbers of Ninis in a cross-section of Mexican youth aged 14 to 29 from the Mexican Labor Force Survey (ENOE by its acronym in Spanish), the authors show that different definitions for identifying Ninis yield groups of young people with very different characteristics. For example, using the traditional definition of Ninis, the majority (around 70 percent) of Ninis are women. However, this percentage reduces substantially when housework and searching for work are excluded from the definition of Nininess. Leyva-Parra and Negrete-Prieto (2014) also exploit the longitudinal characteristics of ENOE data to show that most Ninis change their status in every quarter for which they are observed in the survey.<sup>6</sup>

Other authors have also called for a better understanding and measurement of Ninis, in particular with regards to housework, family composition, schooling decisions, and the differential policy responses that these may point to (Pederzini, 2011; Rivero and Pederzini, 2014). This research calls for a better understanding of decisions to participate in schooling, the labor market, and housework.

The objective of this paper is to contribute to this body of literature by empirically analyzing youth decisions to attend school, work in the labor market, do both, or neither of these, and their association with past decisions regarding time use, as well as youths' income, immutable endowments, socioeconomic context, and demographic characteristics, as suggested by the theoretical work of Behrman et al. (2014). Studying the dynamic decision process of Ninis is

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<sup>6</sup> This is the first attempt of analyzing the longitudinal nature of ENOE data to study the dynamics of youth decisions. In our paper we exploit further this characteristic of the data.

a complex endeavor in a region that lacks long-term longitudinal data, as is the case for Latin America. Nonetheless, we use one of the few nationally representative household surveys in the region, Mexico's ENOE (the *Encuesta Nacional de Ocupacion y Empleo*), which follows the same households for five quarters. We use these data to estimate multinomial models of youths' decisions to test the predictions of the theoretical model developed by Behrman et al. (2014). Our results contribute to the improved design of policies dealing with the complex topic of at risk youth in Latin America, and will complement previous research on youth unemployment (see Cunningham et al. 2008, for example) and school drop-out (see Bassi, Busso, and Muñoz, 2013).<sup>7</sup>

In Section 2, we briefly describe the ENOE data and do some basic analysis of Nini rates in Mexico. Section 3 outlines the theoretical model by Behrman et al. (2014), the framework that guides our empirical endeavor, as well as our econometric strategy. Our results are discussed in Section 4. Conclusions and suggestions for future research are in Section 5.

## **2. Nini Incidence in Mexico**

### **2.1 Data**

We use household data from the Mexican National Survey of Occupation and Employment (ENOE) for our analysis. The survey, conducted quarterly since January 2005, is administered by the National Institute of Statistics and Geography (INEGI), and is publicly accessible on the institute's website. The total ENOE sample for a single quarter consists of approximately 120,000 households, and is representative at the national and state levels, as well as by the size of locality.

The advantage of ENOE data for our purposes is the rotating panel nature of the survey, which allows us to track education and employment status over time for the same individuals. Each

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<sup>7</sup> Our research builds on previous work by Cunningham and Bustos-Salvagno (2011) who study youth employment transitions in Argentina, Brazil, and Mexico. They use Mexican data for the period from 1987 to 2003 to estimate and decompose transition matrices, which allow them to characterize where young people were before getting jobs and where they go upon leaving them. They find that youth transition from school to informal sector jobs, then to formal sector jobs with longer durations of employment, and then to self-employment. Although the analysis by Cunningham and Bustos-Salvagno (2011) does include a category for Ninis (called "*out of the labor force*" in their paper), the focus of their analysis is on the formal or informal status of youth employment. In a different paper that uses the same data, Cunningham (2009) provides a full discussion of the transitions into and out of unemployment for the same set of countries.



household is visited for 5 consecutive quarters, with 20 percent of the sample being replaced each quarter. This allows us to track each individual for a period of 1 year and 3 months.<sup>8</sup>

The survey consists of two primary instruments: (i) a socio-demographic survey which collects information from all selected household members on characteristics such as age, gender, and education level at the time of visit, and (ii) an occupation and employment survey which collects information on the labor market status of household members aged 12 years and above, using the week prior to the survey visit as the period of reference. We focus on education and labor variables as our outcome variables, looking specifically at whether individuals work and/or study in a given period, as well as their labor income. The survey also collects information on a rich set of socioeconomic characteristics such as gender, marital status, demographic characteristics, and whether respondents live in rural/urban areas, among others.

Our analysis focuses on the data for individuals aged 15 to 24 years old who completed all 5 interviews in the period between 2005:Q1 and 2013:Q4. This means we have information for 36 cohorts, around 650,000 individuals represented by nearly 3,260,000 observations.

Additionally, we use quarterly state level inflation and industrial production indicators from the Mexican Statistics Office (INEGI). We merge this information with individual information at the state-quarter level to capture the macroeconomic conditions of areas where youths live.

## 2.2 Descriptive Statistics of Nini Incidence

An individual is generally classified as being a Nini if s/he has not worked for pay *in the labor market* for at least one hour during the week prior to the survey, and is not in formal education at the time of the survey. According to this definition and using the sample described above, during the period from 2005 to 2013 approximately 21 percent of young people aged 15 to 24 years were Ninis. Of this 21 percent, 15.6 percentage points are accounted for by women and 5.4 percentage points by men. In other words, the majority of Ninis, 76.3 percent, are women and only 23.7 percent are men. These results are in line with those found by Arceo-Gómez and Campos-Vázquez (2012), De Hoyos et al. (2014), Tuirán and Ávila (2012), Negrete-Prieto and Leyva-Parra (2013), and Águila et al. (2013).

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<sup>8</sup> Panel data in the Latin American Region are still rare. In addition to the data for Mexico, there are also panel data for Argentina and Brazil (i.e. rotating panels similar to the one in Mexico, but with different frequencies of data collection). In the results section, we use these other datasets to verify the robustness of our main findings.

There are marked differences in the incidence of Ninis by age group for women, but not for men. Approximately 10 percent of young men are Ninis, across both 15 to 18 and 19 to 24 year olds (see Table 1). In contrast, young women aged 19 to 24, are almost twice as likely to be Ninis than those aged 15 to 18; there are 38.4 female Ninis for every 100 females in the 19 to 24 age range, compared with only 22.3 in the 15 to 18 age range. For both age groups, a larger proportion of women are Ninis than are men: as a group females are three times more likely to be Ninis than men (9.7 percent vs. 30.5 percent).

Table 1. Ninis in Mexico, by gender and age group

Variable	Male			Female		
	(1)	(2)	(3)	(4)	(5)	(6)
	15 to 18 y.o.	19 to 24 y.o.	15 to 24 y.o.	15 to 18 y.o.	19 to 24 y.o.	15 to 24 y.o.
All	9.5	9.8	9.7	22.3	38.4	30.5
<i>Quintiles of HH income per capita</i>						
Quintile 1	11.2	16.4	13.6	23.3	44.6	33.9
Quintile 2	11.6	13.6	12.4	31.1	52.8	40.8
Quintile 3	10.9	11.0	10.9	23.4	46.8	35.0
Quintile 4	8.3	7.2	7.7	19.3	31.4	25.7
Quintile 5	4.5	4.7	4.6	9.6	16.9	13.8
Urban	9.6	9.9	9.7	17.4	32.0	25.0
Rural	9.5	9.6	9.6	37.0	61.3	48.5

*Notes:* A person is considered a *Nini* when s/he is not working nor studying. Calculations are based on a pooled sample of nearly 375,000 observations (persons) that had complete information on the variables of interest for the first and fifth interviews of the rotating panel (see text for description of data). Weights are used in the estimation.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Young men and women from poorer families (quintiles 1 and 2) are more likely to be Ninis than their richer counterparts (quintile 5), irrespective of their age. Table 1 presents Nini rates by quintiles of household income per capita. For men in the 15 to 18 age group, for example, the likelihood of an individual from a rich family (quintile 5) being a Nini is almost 2.5 times higher than that of individuals from the poorest families (4.5 percent versus 11.2 percent). This trend is more marked for men in the older age group, where probabilities are 16.4 percent and 4.7 percent respectively, and even more marked for women in the 19 to 24 age group where 44.6 percent of the poor are Ninis, compared to only 16.9 percent of those in wealthier households. Note, however, that the probability of being a Nini only decreases monotonically

with the quintile for one group: young men in the 19 to 24 age group. For all other groups, the poorest (quintile 1) are often less likely to be Ninis than those in quintile 2, and for women also than those in quintile 3.

Table 1 also shows substantial heterogeneity in the probability of being a Nini for women but not for men: while for men the probability is roughly constant across the two age groups (between 11.6 percent and 13.6 percent for those in quintile 2), for women in the same quintile the probability is 31.1 percent for those in the 15 to 18 age group and 52.8 percent for those in the 19 to 24 age group. This result applies for all quintiles.

Similarly, differences in Ninis rates for urban and rural youth are high for women, and much less so for men. As Table 1 shows, Ninis rates by urban-rural status among men range between 9.5 percent and 10.0 percent. In contrast, for women rates vary greatly from 17.4 percent for younger women (those aged 15 to 18) to 61.3 percent for older women in rural areas. The latter suggests the inappropriateness of the standard definition of Ninis in capturing the dynamics of family formation and the definitions of gender roles within the household, and their interactions with the participation of women in the labor market.

Table 2. Persistence of Nini status for Mexican youth (first and fifth interviews only),  
by gender and age group

<i>Variable</i>	<i>Male</i>			<i>Female</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>15 to 18</i>	<i>19 to 24</i>	<i>15 to 24</i>	<i>15 to 18</i>	<i>19 to 24</i>	<i>15 to 24</i>
	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>
All	35.0	31.4	33.1	67.5	72.8	71.2
<i>Quintiles of HH income per capita</i>						
Quintile 1	32.1	27.9	29.4	68.2	71.8	70.7
Quintile 3	36.2	32.6	34.4	66.6	73.6	71.6
Quintile 5	29.0	25.7	26.9	62.2	67.2	66.1
Urban	35.1	31.5	33.1	62.2	67.8	66.2
Rural	34.7	31.1	33.0	75.0	82.1	79.7

*Notes:* Reported figures are the percentage of Ninis in the first interview who continue to be Ninis at the fifth interview (a year later) in the corresponding cell (not taking into account their status in the three interviews in the middle). It employs a pooled sample of nearly 360,000 observations (persons) that had complete information on the variables of interest for the first and fifth interviews of the rotating panel (see text for description of data). Weights are used in the estimation. A person is considered a Nini if s/he is not working nor studying.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Nini status among youth is highly persistent in the short-term.<sup>9</sup> Of those youth aged 15 to 24 years old who were Ninis at the time of their first interview, 62.3 percent were also Ninis one year later (during their fifth interview).<sup>10</sup> As shown in Table 2, this figure masks substantial differences by gender. The persistence of Nininess for men amounts to 33.1 percent, while for women is 71.2 percent. Interestingly, persistence is also lower for older men (31.4 percent for those in the 19 to 24 age group) than for younger men (35 percent for those in the 15 to 18 age group), which is not the case for women where the figures are 72.8 and 67.5, respectively. Cell by cell in Table 2, we observe that the persistence of Nininess is higher for women than it is for men; but within each gender and age group there are no big differences in the persistence of Nininess across income and location, except for 19 to 24 year-old women in rural and urban areas.

Figure 1 uses three cohorts of youth in the 15 to 18 age group (those that had their first interview in the first quarter of 2005, 2009, and 2012, each represented by a different line in the figure) to illustrate the persistence of Nininess by gender. Each point in the graph represents the probability of being a Nini in the corresponding quarter, conditional on being a Nini in all previous quarters. In other words, it is the percentage of Ninis in the first interview that continues, or *survives*, in that state in subsequent quarters.

There are substantial differences in Nini status survival for men and women. For men (Figure 1; panel A), between 40 and 50 percent of those who were Ninis during their first interview are Ninis during their second interview; for women, it is between 75 and 85 percent (Figure 1; panel B). For both men and women, the survival rate decreases over time (i.e., as quarters pass), but it does so much faster for men. Between 8 and 10 percent of those young men who were identified as Ninis during their first interview remained being Ninis throughout the 5 quarters for which they were followed by the survey; for women, this figure is between 41 and 52 percent. In addition, it is interesting to see that when we consider the entire history of Nininess

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<sup>9</sup> We use transition matrices to shed some light on some of the unconditional dynamics of youth. A transition matrix can be denoted by:

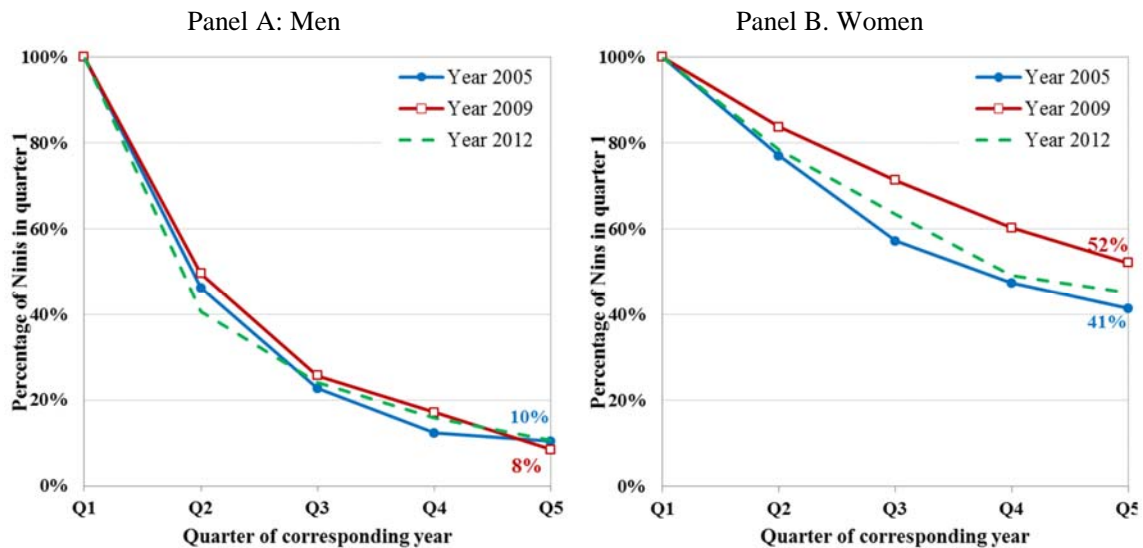
$$Q = \begin{pmatrix} p_{11} & \cdots & p_{1K} \\ \vdots & \ddots & \vdots \\ p_{K1} & \cdots & p_{KK} \end{pmatrix},$$

where each cell  $p_{ij}$  is the probability that a person moved from an initial state  $i$  to a final state  $j$ ;  $i = 1, \dots, K$ ;  $j = 1, \dots, K$ . Defined by:  $p_{ij} = \frac{n_{ij}}{n_i}$ , where  $n_{ij}$  is the number of people who were in state  $i$  and moved to state  $j$  between period  $t$  and  $t + 1$  and  $n_i$  is the number of people who were in state  $i$  in period  $t$ . Following Cunningham and Bustos-Salvagno (2011) and Thomas et al. (2000) we calculate these matrices for the subgroups defined by gender, age groups, rural/urban, and level of education, but include only a few of these in this analysis.

<sup>10</sup> Although not reported in this version, we also calculated these and all other figures taking into account youth attrition from the panel. These results are available from the authors upon request.

during the period in which we observed young men (Figure 1, panel A), compared to only using the first and the last interview (Table 2), the persistence of Ninis is different (approx. 10 per cent versus 35 percent). So, there is substantial movement into and out of Nininess in the period observed.

Figure 1. Probability of being a Nini conditional on being a Nini in all previous quarters (15 to 18 year olds who had their first interview in the first quarter of 2005, 2009, and 2012)



Notes: Weights are used in the calculations. A person is considered a *Nini* if s/he is not working nor studying.  
Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

Interestingly, among the 2009 cohort, which was most affected by the economic crisis of 2008-2009, a much higher proportion of female Ninis continued being Ninis five quarters later compared to other years when GDP was growing (2005 and 2012), but no such effect is observed among male Ninis. The Mexican recession of 2009 was by no means small: annual GDP growth was negative for five consecutive quarters, beginning in the last quarter of 2008 and reaching the peak of economic contraction during the second quarter of 2009, when GDP fell by 7.9 percent compared to a year earlier. The recession, it seems, increased the likelihood of continuing to be a Nini for young women but not for young men, perhaps due to scarcer employment opportunities that were not met by a reduction in school dropout rates. If school enrolment had acted counter-cyclically to the recession, as has been found for other recessions in Mexico (McKenzie, 2003; Ferreira and Schady, 2009), we would have expected the 2009

line to be below those for 2005 and 2012 for both men and women, however, that does not seem to have been the case during this crisis.<sup>11</sup>

So far, we have presented results on the incidence (Table 1) and persistence (Table 2 and Figure 1) of Nininess. In Table 3, we dig a little deeper and explore the percentage of Ninis in their fifth and final interview, who come from studying during the first interview, as opposed to coming from only working, working and studying, or from already being Ninis (tables available upon request).

Approximately a fifth of male Ninis and a tenth of female Ninis aged 15 to 24 years old were studying one year earlier. Given the social expectations for most of these youths to be at school, it is unsurprising that these figures are driven mainly by youth aged 15 to 18 (among whom 28.7 percent of male Ninis and 21.7 percent of female Ninis were studying a year earlier). In comparison, of those male Ninis in the 19 to 24 age range, only 12.2 percent were studying a year earlier, with the corresponding figure for women being nearly half the size at 5.5 percent.

Table 3. From school to Nini: Percentage of Ninis in fifth interview who were studying during the first interview, Mexico, by gender and age Group

<i>Variable</i>	<i>Male</i>			<i>Female</i>		
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>15 to 18</i>	<i>19 to 24</i>	<i>15-24</i>	<i>15 to 18</i>	<i>19 to 24</i>	<i>15-24 y.o.</i>
	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	<i>y.o.</i>	
All	28.7	12.2	20.1	21.7	5.5	10.7
<i>Quintiles of HH income per capita</i>						
Quintile 1	39.7	20.8	29.1	24.3	7.8	13.0
Quintile 3	29.5	11.0	20.7	22.2	4.1	9.7
Quintile 5	25.7	13.8	17.9	25.3	8.2	12.3
Urban	31.7	13.7	22.1	25.6	7.2	12.7
Rural	19.4	5.9	13.1	16.1	2.1	7.2

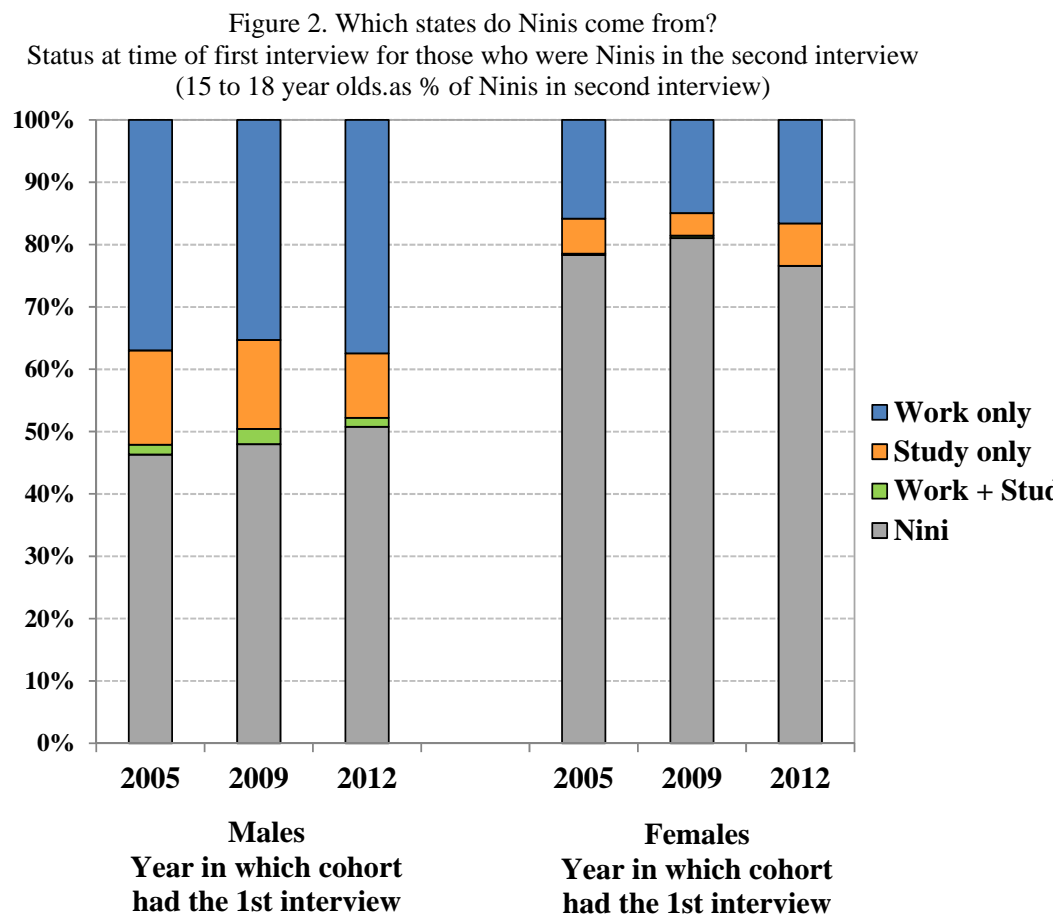
*Notes:* We employ a pooled sample of nearly 360,000 observations (persons) that had complete information on the variables of interest for the first and fifth interviews of the rotating panel (see description in text). Weights are used in the estimation. A person is considered a *Nini* if s/he is not working nor studying.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

The evidence suggests that male Ninis from disadvantaged socioeconomic backgrounds and urban areas are more likely to have been studying a year earlier than other male Ninis. As

<sup>11</sup> A deeper analysis of the effects of the recession on labour participation and school enrolment is left for further research.

shown in Table 3, a higher proportion of poor male Ninis in the 15 to 18 age group were studying a year earlier than the corresponding proportion of the non-poor (39.7 percent versus 25.7 percent). Although less marked, the same tendency is observed for male 19 to 24 year-olds (20.8 percent versus 13.8 percent). For young women in both age groups the proportion of Ninis who were studying a year earlier is roughly constant across income quintiles. In terms of urban/rural dynamics, almost a third of male Ninis and a quarter of female Ninis aged 15 to 18 years old and living in urban centers were studying a year earlier. For both genders, a higher proportion of urban youth transition from school into Nininess between the first and the fifth interview relative to rural youth.

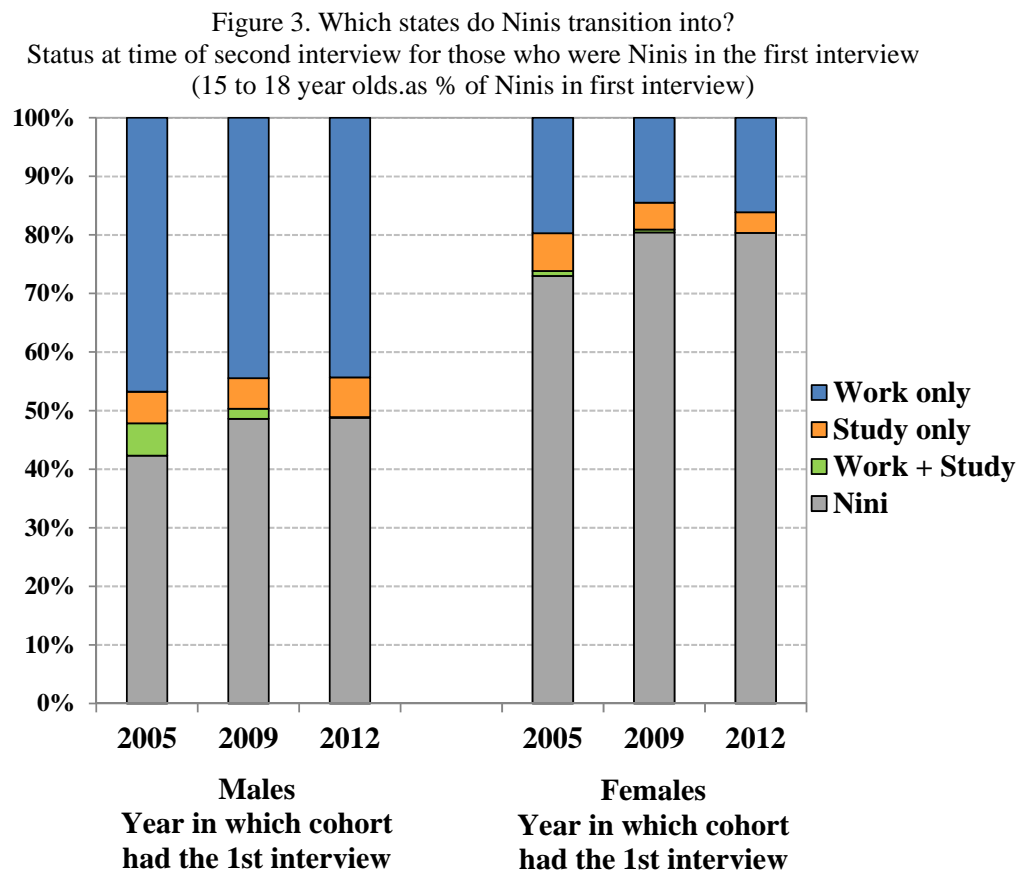


Notes: Weights are used in the estimation. A person is considered a *Nini* if s/he is not working nor studying.  
Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

Where do Ninis come from in terms of their study and work time use? Figure 2 answers this question. It identifies Ninis in the second interview and goes back to the first interview to calculate the percentage of Ninis (in the second interview) that come from each of four states: work only, study only, work and study, and Ninis. This exercise is conducted for three different

cohorts (2005, 2009, and 2012) and for male and female 15 to 18 year olds. Also, we changed the period of analysis from a year to one quarter to show a different perspective of the data.

Figure 2 shows that at any given point in time between 45 percent and 55 percent of male Ninis (bottom part of the bars) come from being Ninis during the previous quarter, between 35 percent and 45 percent come from working only and the rest, between 10 percent and 15 percent, come from either studying only, or working and studying. In contrast, nearly 80 percent of female Ninis observed in the second interview come from being Ninis in the first interview, around 5 percent come from studying only, and around 15 percent come from working only. These results once more capture the persistence of Nininess, in particular for young women.



Notes: Weights are used in the estimation. A person is considered a *Nini* if s/he is not working nor studying.  
Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

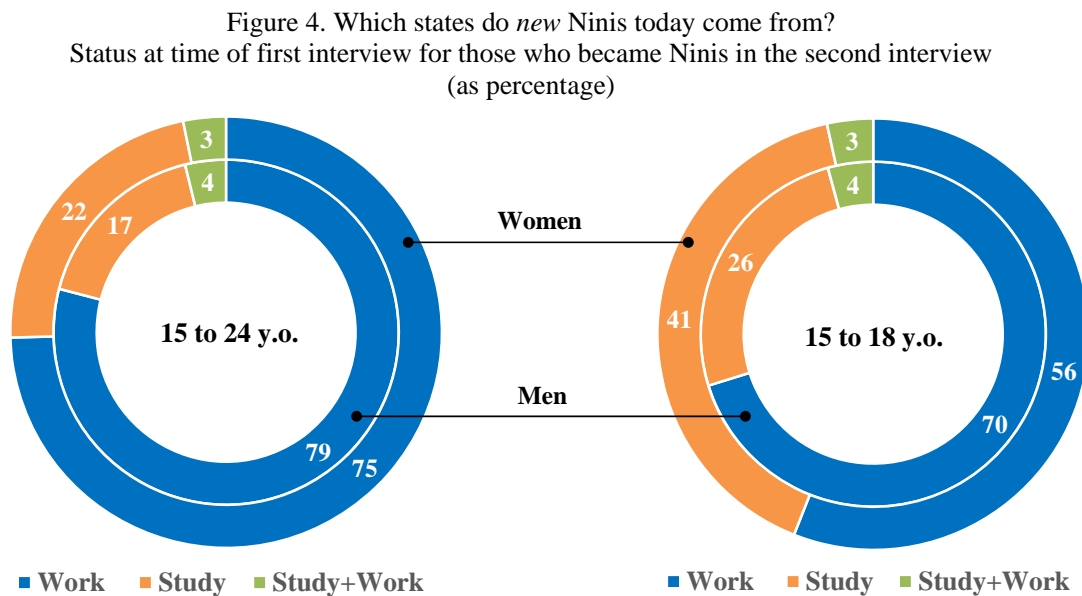
Where do Ninis transition to in the following quarter? Figure 3 shows, not surprisingly given the results above, that nearly 50 percent of male youths and around 80 percent of female youths continue to be Ninis (irrespective of which cohort we look at). Nearly 45 percent of male Ninis



and only 20 percent of female Ninis transition into work; while around 5 percent of Ninis, both men and women, go back to school exclusively.

Taken together, Figures 1 to 3 illustrate the high short-term persistence of Nininess and the high probability of youth transitioning from being Ninis into employment, and seldom back to school.

To bring this section to a close, we delve deeper into the previous results investigating the composition of states from which new Ninis come. Figure 4 (left panel) shows that, among those youth aged 15 to 24 years old, roughly four out of five transition into Nininess from work, while the remainder mainly go from studying to becoming Ninis. Differences between genders are small for this cohort. Coming directly from studying is more common amongst younger new Ninis than older ones, for both men and women. Nonetheless, most new Ninis aged 15 to 18 still come from working rather than directly from school: 7 out of 10 young men and 6 out of 10 young women come from work, while the rest come mainly from school (Figure 4, right panel).



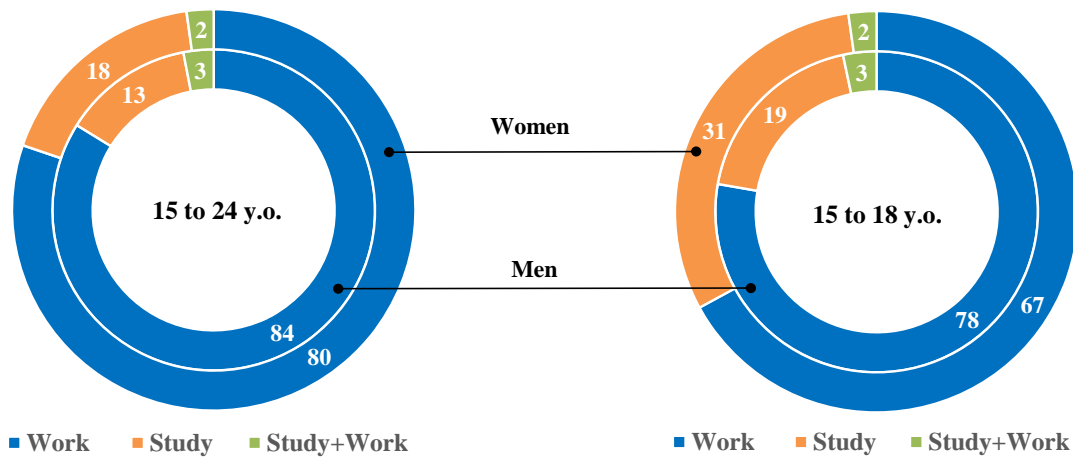
*Notes:* Weights are used in the estimation. A person is considered a *Nini* if s/he is not working nor studying. This graph uses information for all cohorts included in the sample.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

Finally, Figure 5 shows the states that those who are Ninis in the first interview transition into in the second interview, conditional on transitioning out of Nininess. The left panel shows the results for youth aged 15 to 24 years old, and the right panel for those aged 15 to 18 years old. Figure 5 makes it clear that once Mexican youth are Ninis it is very difficult for them to

transition back into school. For 15 to 24 year-olds who do transition out of Nininess, the transition is usually towards work rather than studying, for both men and women (Figure 5, left panel). Even among 15-18 year olds who transition out of Nininess, the norm is to start working. Roughly four out of five young males who are Ninis transition into work rather than school, while the remaining transition back into school, or school and work. For women, the percentage of transition Ninis who choose to go back to school is larger by 12 p.p., although work, and not school, remains the state young women transition into after Nininess.

Figure 5. Which states do Ninis today transition into (excluding those who remain Nini)?  
Status at time of second interview for those who were Ninis in the first interview and who are not Ninis anymore  
(as percentage)



Notes: Weights are used in the estimation. A person is considered a *Nini* if s/he is not working nor studying. This graph uses information for all cohorts included in the sample.

Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

Taken together, all the results presented in this section suggest that youths' first step is to find a job, and then once they have one, they drop out of school and never return, and if they lose that job, they either enter into a persistent state of Nininess, or transition into and out of employment. These results are in line with others in the literature such as those of Cunningham and Busto Salvagno (2011).

### 3. Model and Econometric Specification

We use Behrman et al.'s (2014) model of youths' decisions regarding time use as the basis of our analysis. According to Behrman et al.'s (2014) model for young people aged 15 to 24, youth allocate their time across four mutually exhaustive choices: attend school  $\{s\}$ , work in the labor market  $\{h\}$ , do both  $\{b\}$ , or do neither of these  $\{n\}$ . Each youth has a utility function

that depends upon a vector of consumption. Youths' income is given by the product of transfers and their labor income, if any. In this model, labor income depends positively on human capital endowments: the higher the human capital, the higher the labor income. Given this, youths maximize the present value of their utility stream subject to their budget constraints in each period.

At the critical age when youths' outcomes begin to depend on their own decisions, in addition to those of their parents, youths possess a set of immutable endowments, reflecting parental contributions during their childhood years, household and socio-demographic characteristics, preferences, cultural norms and the like. Between that point and the point when youths' decisions depend only on themselves, youths make decisions regarding their status  $\{s, h, b, n\}$  taking into account their history of past decisions and these immutable endowments. A crucial assumption of the model is that school and work both contribute to the process of human capital accumulation, or in other words, those who decide to become Ninis do not increase their human capital.

Finally, wages are a function of human capital, and indirectly a function of the history of previous time-use decisions and general economic conditions. The authors also allow wages to depend on the quality of education, and allow imperfect information regarding future returns to education. The solution of this model yields four decision rules  $G(\cdot)$  for each outcome  $\{s, h, b, n\}$  at each of youths' ages.

The model offers an interesting set of predictions: (i) previous decisions about time-use affect current decisions regarding time use (e.g. hysteresis); (ii) exogenous increases in income reduce the probability of being out of school; (iii) immutable endowments and schooling affect human capital accumulation and wages; (iv) higher quality education reduces the probability of school drop outs; (v) information about future returns to school affect current decisions about human capital accumulation; and (vi) decisions taken today will have significant consequences for labor market outcomes in the long-term (e.g. scarring).

### **3.1. Econometric Specification**

As outlined above, decisions regarding time use are made by relevant household members and by adolescents themselves, based on their previous decision history and on expectations regarding future developments. Whatever the balance between the household and the adolescent in the decision making process, choices between major time uses can be viewed as

the allocation of available resources between the marginal returns to current consumption on one hand, and to future investment benefits on the other.

Empirically, estimation of the model developed by Behrman et al. (2014) is based upon a linearized (first-order Taylor series) expansion of the decision functions  $G_{j,a}(\cdot)$  that would yield reduced form equations for the probability of choosing any of the four time use alternatives at age  $a$ :

$$G_{j,a} = G_{j,a}[Y_a, \alpha_a, H_{a^*}, (H_{a-1}, H_{a-2} \dots, H_{a^*+1}), Q^s, \beta_H, \phi_a | \omega, x, \pi_a] + u_{j,a} \quad (1)$$

where  $u_{j,a}$  are random components capturing the joint distribution of all shocks (all other terms are described below). An alternative would be to assume that  $u_{j,a}$  are independently and identically distributed (i.i.d.) shocks with extreme value distribution; under these assumptions, the probability that individual  $i$  will allocate time to alternative  $j$  at age  $a$  is defined as:

$$\Pr(i = j|a) = \frac{\exp\{G_{i,j,a}[Y_a, \alpha_a, H_{a^*}, (H_{a-1}, H_{a-2} \dots, H_{a^*+1}), Q^s, \beta_H, \phi_a | \omega, x, \pi_a]\}}{\sum_{j=1}^4 \exp\{G_{i,j,a}[Y_a, \alpha_a, H_{a^*}, (H_{a-1}, H_{a-2} \dots, H_{a^*+1}), Q^s, \beta_H, \phi_a | \omega, x, \pi_a]\}} \quad (2)$$

where the individual subscript  $i$  is included in the decision functions of equation (2) to denote that the estimation of this functional form should be undertaken at the individual level. Under this specification, the probability of observing any of the four choices  $\{s, h, b, n\}$  at a given age is determined by a multinomial model with the following covariates: (i)  $Y_a$  is the youth's income, which may be approximated by household per capita income; (ii)  $\alpha_a$  is the youth's subjective value for present over future consumption; (iii)  $H_{a^*}$  represents immutable endowments, which could be captured by grades of schooling at age 15 or measures of socio-emotional skills at age 15; (iv)  $(H_{a-1}, H_{a-2} \dots, H_{a^*+1})$  is a measure of the history of past decisions regarding time use; (v)  $Q^s$  a measure of the quality of education received, proxied by private versus public schooling or the age-for-grade ratio; (vi) the returns to schooling,  $\beta_H$ ; (vii) the perceived returns to schooling,  $\phi_a$ ; (viii) socioeconomic context captured by parents' education,  $\omega$ ; (ix) demographics such as gender, marital status, co-habitation,  $x$ ; and (x) macroeconomic conditions such as GDP volatility, inflation rates, or trade openness, represented by  $\pi$ .<sup>12</sup>

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<sup>12</sup> The model by Behrman et al. (2014) also allows us to estimate the probability of observing a transition between one choice of time use, for example,  $s_a = I$  to  $n_{a+1} = I$ , and its association with the variables described above. In this

Under functional form (2) there are policy-relevant hypotheses that can be identified: for example, the partial correlation of a change in  $Y_a$  and the change in the probability of transitioning out of school  $\partial \Pr(i \neq s|a, s) / \partial Y_{i,a}$ . Estimation of relations such as (2) is likely to be challenging because some important variables – such as future expectations, and some right-hand-side endogenous variables such as self-efficacy and executive function (as proxies for  $H_{a^*}$ ) – are unlikely to be observed. Nevertheless, we use panel data for Mexico from the ENOE survey to estimate equation (2), and to shed light on the short-term dynamics of time use among youth, and the potential influence of the variables identified by the theoretical model in determining the former. For the macro/community variables we use quarterly state level inflation and industrial production indicators from the Mexican Statistics Office (INEGI).

In order to capture the history of past decisions ( $H_{a-1}, H_{a-2} \dots, H_{a^*+1}$ ) regarding time use for each individual, and given the limitations of the available data which only follow individuals for 5 consecutive quarters, we calculate the following indices:

$$I_i^S = \alpha_1 S_{i,q1} + \alpha_2 S_{i,q2} + \alpha_3 S_{i,q3} + \alpha_4 S_{i,q4},$$

where  $I_i^S$  is the index that reflects the history of past decisions in terms of schooling for individual  $i$ ;  $S_{i,q1}$  is a dummy variable that takes a value of 1 if individual  $i$  was studying during the first interview, and 0 otherwise;  $S_{i,q2}$  is a dummy variable that takes a value of 1 if individual  $i$  was studying during the second interview, and 0 otherwise; and similarly for  $S_{i,q3}$  and  $S_{i,q4}$ . The weights,  $\alpha_s$ , represent the relative importance of studying in the past in the calculation of the index. Arbitrarily, we have set the values of these parameters to  $\alpha_1 = 0.05$ ,  $\alpha_2 = 0.10$ ,  $\alpha_3 = 0.20$ ,  $\alpha_4 = 0.65$ . Note that  $\sum_{l=1}^4 \alpha_l = 1$ , which implies that the minimum value the index could take is 0 (when the individual was not studying at the time of any of the interviews) and the maximum value is 1 (when the individual was studying at the time of all the interviews). Three other indices could be calculated in a similar fashion for the three other status choices ( $I_i^h, I_i^b$ , and  $I_i^n$ ). In all cases, we have kept constant the values of the weights. This implies that the history of any particular event has the same weight as the history of any other particular event in the corresponding index. Finally, in our regression models, we use one

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case, the parameters of the multinomial logit would be identified by comparing the covariates of individuals that change their choice for time use with those who did not change:

$$\Pr(i = j|a, j') = \frac{\exp\{G_{i,j,a}[Y_a, \alpha_a, H_{a^*}, (H_{a-1}, H_{a-2}, \dots, H_{a^*+1}), Q^S, \beta_H, \phi_a | \omega, x, \pi_a]\}}{\sum_{j=1}^4 \exp\{G_{i,j,a}[Y_a, \alpha_a, H_{a^*}, (H_{a-1}, H_{a-2}, \dots, H_{a^*+1}), Q^S, \beta_H, \phi_a | \omega, x, \pi_a]\}}, \text{ where } j \neq j'.$$

of the indices for comparison,  $I_t^b$ , as each one of them is a perfect linear combination of the others. The base index constitutes the base for the comparisons with the others. Table 4 presents descriptive statistics of the variables of interest included in the econometric model for the group aged 15 to 18 years old.

Table 4. Descriptive Statistics of History of Past Decision Indices, 15 to 18 y.o

Variables	Males			Females		
	<i>Nini</i> ( <i>n</i> )	<i>Study Only</i> ( <i>s</i> )	<i>Work Only</i> ( <i>h</i> )	<i>Nini</i> ( <i>n</i> )	<i>Study Only</i> ( <i>s</i> )	<i>Work only</i> ( <i>h</i> )
$I^n$ : Index Nini	0.419	0.016	0.155	0.683	0.020	0.289
$I^s$ : Index Study Only	0.196	0.857	0.081	0.156	0.913	0.113
$I^h$ : Index Work Only	0.348	0.011	0.700	0.144	0.004	0.541
$I^b$ : Index Work & Study	0.038	0.117	0.063	0.017	0.063	0.058

Notes: complete information on the variables of interest for the first and fifth interviews of the rotating panel (see text for description of data). Weights are used in the estimation. A person is considered a *Nini* when s/he is not working nor studying. Indices take values from 0 to 1.

Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

In each case, the higher the value of the index, the more exposure the individual has had to that state. The value of each index is higher, relative to the other indices, when looking at the corresponding column that refers to that status (e.g., when looking at the Study Only index in the Study Only column). Except for the decision to work, women exhibit higher indices than those for men, which means that, on average, women have more experience than men of being Ninis and of studying during the previous year than do men, while men have more experience of working.

## 4. Results

### 4.1 The Decisions of Youth and Their Associated Factors in Mexico

Appendix Table A1 presents reduced form estimations of the linearized decision function  $G_{j,a}(\cdot)$  in equation 1 for youth aged 15 to 18, by gender. Results for 19 to 24 year olds are presented in Appendix Table A2 for comparison. The tables show marginal effects, or marginal changes in the case of dummy variables (evaluated at sample means of the covariates), of the underlying multinomial logit regressions. We have slightly adjusted the time use states discussed in the theoretical model in Section 2, to accommodate the fact that not many 15 to 18 year olds work and study at the same time. Hence, the dependent variable in the econometric models considers only three alternatives of time use - *Nini*, *study only*, and *work only* - and exclude information for those who work and study. Standard errors are robust to

heteroskedasticity. Although not shown, all models include state, year and quarter fixed effects. We use data on the fifth interview of every individual who completed all five interviews in the rotating panel (one observation per individual), and construct the indices of *Nini*, *study only*, *work only*, and *work & study* using information from the first four interviews, as described in the previous section.<sup>13</sup> Descriptive statistics of the variables included in the models are presented in Appendix Tables A3 and A4.

In what follows we focus on the *Nini* outcome of the models and structure the discussion of the results around six sets of variables: (i) indices  $I_i^n$ ,  $I_i^s$ , or  $I_i^h$  as proxies for the history of past decisions regarding time use ( $H_{a-1}, H_{a-2} \dots, H_{a^*+1}$ ); (ii) quintiles of household income per capita to proxy for youth income ( $Y_a$ ); (iii) a set of dummy variables concerning youths' education as an attempt to capture youths' immutable endowments,  $H_{a^*}$ ; (iv) parents' education to proxy for socioeconomic context,  $\omega$ ; (v) other demographic characteristics ( $x$ ); and (vi) macroeconomic conditions as proxied by the quarterly inflation rate and the growth rate of the industrial production index, both measured at the level of the state in which the individual was interviewed.

(i) *History of past decisions regarding time use* ( $H_{a-1}, H_{a-2} \dots, H_{a^*+1}$ )

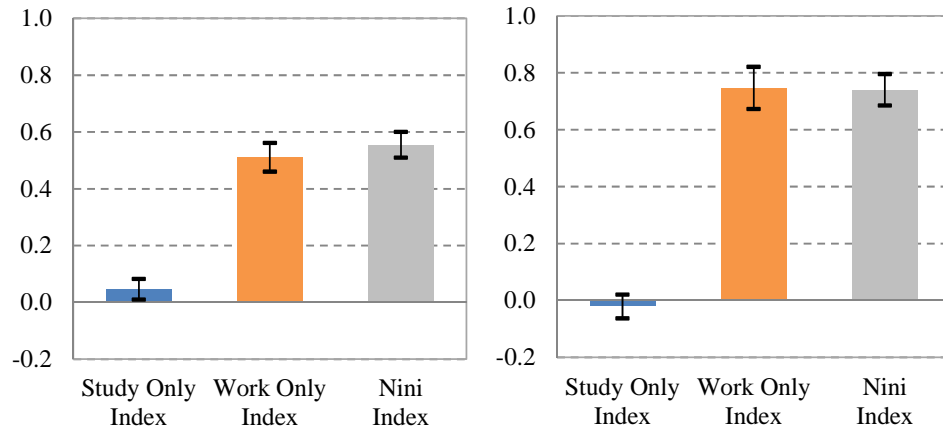
The history of past decisions during the previous year matters for future decisions regarding time use. That can be seen in Appendix Table A1 and A2 where indices are statistically significant and sizeable in most regressions, for most outcomes, for both genders and age groups. For example, *ceteris paribus*, and with *Work & Study* as the comparison group for the indices, higher values of the Nini index – or in other words, having being exposed to longer periods of being out of school and out of work – is associated with an increased probability of currently being a Nini for both men and women (Figure 6, third bar in each panel; Appendix Table A2), although persistence of Nininess for women is higher. In general, we also found that having been Nini for longer periods, as reflected by a higher Nini index, reduces the probability of *study only* by 89 p.p (in comparison to the *work & study* Index) for young men aged 15 to 18 and in 83.3 p.p. for women (Appendix Table A2). More time as a *Nini* in the

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<sup>13</sup> Note that although we do not estimate the models with *Work & Study* as a category of the dependent variable, we do allow this state to be part of the history of youth's past decisions and hence create an index for it. This index is used in the multinomial logit model as the base groups, and excluded from the regression, as including the four indices will induce problems of perfect collinearity with the other indices of past decisions (as long as we include the constant, which is what we do). Each index can be written as a liner combination of all the other three indices.

recent past also increases the probability of *work only* for both men and women, but by a smaller amount (between 9.2 for women and 34 p.p. for men).

Figure 6. Proportional Change in the Probability of Being Nini to a One-Unit Change in the Corresponding Index of Past Decisions, Youth Aged 15-18 y.o., by Gender  
(a) Male (b) Female



*Notes:* The value of the bars represent the marginal effects on the probability of being Nini for the corresponding variables from the underlying estimation of multinomial logit models (one for each gender). The dependent variable in the multinomial models takes three states (Nini, Work Only, and Study Only). Only marginal effect for the outcome of Nini is presented in this graph. The models include controls for history of past decision indices, youth's own education level, parental education level, household income quintiles, a set of demographic variables, and state economic condition variables. Complete results are presented in Appendix Table A1. Indices take values from 0 to 1.

*Source:* Authors' calculations based on model estimation using data from the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Having been enrolled in school for longer in the recent past, as reflected by the Study index, increases the probability of current *study only* (for both men and women, but more for women), reduces the probability of current *work only* (for both men and women, but more for men), and increases marginally (for men) or has no impact on the probability of current Nininess (Appendix Table A1 and Figure 6). In contrast, having been in *work only* in the recent past in general has the opposite effect to having been in school only (just described). The only exception is that having been in *work only* in the recent past increases the probability of currently being *Nini* (Figure 6), more for men than for women (in 51.1 p.p. for men and 74.7 p.p. for women; in comparison with *work & study*).

Taken together, the previous estimates in Appendix Table A1 and Figure 6 indicate that youth tend to remain in school, but that those who leave are unlikely to go back. For those who have left school and have experienced being *Nini*, the probability of going back to school is diminished by 89.7 p.p. in the case of men, and by 83.3 p.p. in the case of women, all relative



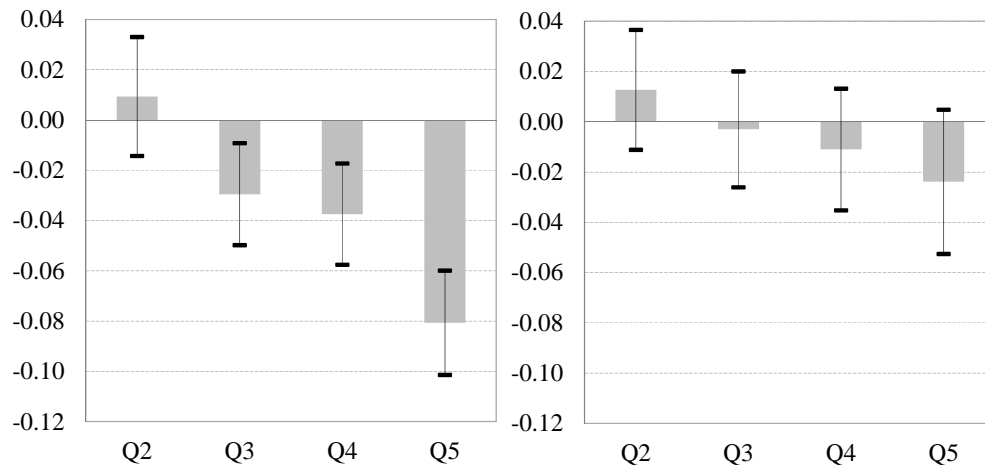
to the *work & study* Index. In other words, transitions are more common between *work only* and *Nini*, than between *work only* or *Nini* and *study only*.

All in all, the history of past decisions regarding time use influences decisions regarding time use in the future, but as students leave school it is harder for them to go back, particularly if they have experienced Nininess.

(ii) *Quintiles of household income per capita to proxy for youth income,  $Y_a$*

As Figure 7 shows, the relationship between quintiles of household income per capita and the probability of being *Nini* is non-linear for men and inexistent for women aged 15 to 18 years old. Male youths from better-off households (those in the fifth quintile of the distribution of household income per capita) have a 8.1 p.p. lower probability of being *Nini* compared to those in poor households (those in the first quintile, the comparison group). Quintiles 3 and 4 exhibit lower and similar (according to the confidence intervals) probabilities of being *Nini*, while the probability for youth in quintile 2 is not statistically different from that of those in quintile 1, creating a non-linearity in the response. For women, although the same pattern is present (see Figure 7), there is not enough statistical confidence to distinguish these patterns from each other or from the first quintile.

Figure 7. Proportional Change in the Probability of Being Nini to HH Income Quintile changes, Base Group is Quintile 1, Youth Aged 15-18 y.o., by Gender  
(a) Male (b) Female



*Notes:* The value of the bars represent the marginal effects on the probability of being Nini for the corresponding variables from the underlying estimation of multinomial logit models (one for each gender). The dependent variable in the multinomial models takes three states (Nini, Work Only, and Study Only). Only marginal effect for the outcome of Nini is presented in this graph. The models include controls for history of past decision indices, youth's own education level, parental education level, household income quintiles, a set of demographic variables, and state economic condition variables. Complete results are presented in Appendix Table A1.

*Source:* Authors' calculations based on model estimation using data from the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Some different patterns of inequality in the probability of being *Nini* also appear for youth in the 19 to 24 age group (Appendix Table A2). The relationship is markedly linear, not only for men but also for women, and the difference between the first and the fifth quintiles is substantially higher: -23 p.p. for men and -38.3 p.p. for women.

From these results, the lack of a stronger correlation between household income and the probability of being a *Nini* is surprising, in light of the fact that almost 60 percent of Mexican *Ninis* are in the bottom 40 percent of the household income distribution. These results suggest that interventions aimed at reducing income constraints to education, such as cash transfers or scholarships, would have to be substantial to reduce dropouts and the incidence of *Nininess*. Using the estimates from the model, we estimate that a monthly transfer of approximately MX\$1,280 (in 2013 Pesos) would be necessary to reduce dropout and hence the probability of becoming a *Nini* by about 3 p.p. among Mexican males between 15 and 18 years old.

The quintile of household income also matters for other youth decisions (Appendix Table A1 and A2). First, for both age groups and genders, the evidence surprisingly suggests that once we control for other characteristics, higher incomes are associated with a reduced probability of youth *studying only* (between -3.7 p.p. and 18.1 p.p.), with a linear association. For youth aged 19 to 24, these associations are generally smaller in magnitude (between -3.3 and 7.1 p.p). Secondly, the associations between income and youth *working only* are positive and statistically significant for both men and women in both age groups. Importantly, for all combinations of age group and gender, the higher the quintile, the larger the association between income and *working only* (compared to the corresponding base group: quintile 1). Also, marginal effects are larger for men than for women in the age group 15 to 18 years old, but smaller in the age group 19 to 24 years old.

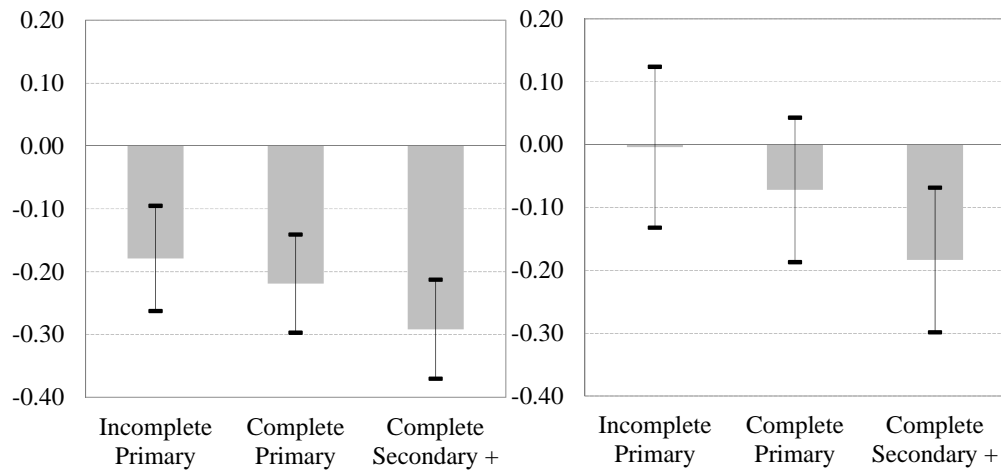
(iii) *Youth education as an attempt to capture youths' immutable endowments,  $H_a^*$*

For young men, we find a robust negative association between the current education level and being a *Nini* (Figure 8). We use education attainment at the time of the interview in an attempt to capture youths' immutable endowments. Compared with young men aged 15 to 18 with no education, for example, those who had completed primary education are 21.9 p.p. less likely to be *Nini*, and 29.2 p.p. less likely to be *Nini* if they had completed at least secondary education. This shows that the higher the education level, the lower the probability of being *Nini* for men. For women, however, completing at least secondary education translates into a 18.4 p.p. lower, and statistically significant, probability of becoming *Ninis* (Figure 8). For youth aged 19 to 24

years old, more education is associated with a lower likelihood of being *Ninis* (Appendix Table A2). In all cases, the associations are consistently larger (more negative) for men than they are for women.

Education is more associated with an increased likelihood of *studying only* for men than for women in the younger group. As expected, for the younger men, aged 15 to 18, education is associated with a reduced probability of *working only* for those with at least complete secondary education and an increased probability of *working only* if they have incomplete primary education (see Appendix Table A1).

Figure 8. Proportional Change in the Probability of Being Nini to Changes in Youth's Education, Base Group is No Education 1, Youth Aged 15-18 y.o., by Gender  
(a) Male (b) Female



*Notes:* The value of the bars represent the marginal effects on the probability of being Nini for the corresponding variables from the underlying estimation of multinomial logit models (one for each gender). The dependent variable in the multinomial models takes three states (Nini, Work Only, and Study Only). Only marginal effect for the outcome of Nini is presented in this graph. The models include controls for history of past decision indices, youth's own education level, parental education level, household income quintiles, a set of demographic variables, and state economic condition variables. Complete results are presented in Appendix Table A1.

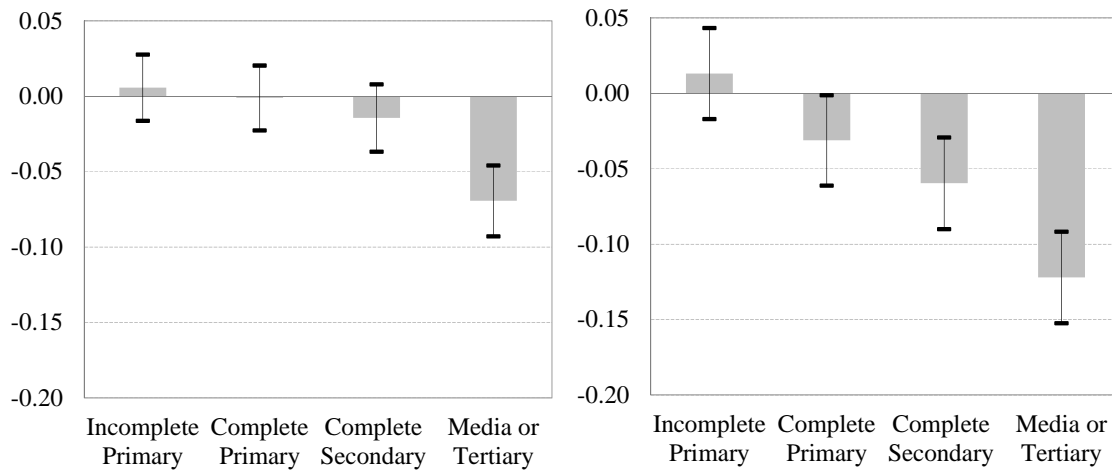
*Source:* Authors' calculations based on model estimation using data from the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

(iv) *Parents' education to proxy for socioeconomic context,  $\omega$*

Socioeconomic context, as measured by parental education is associated with the decision to be *Ninis* for young women but less so for young men (Figure 9). Compared to the base group (household head with no education), young women aged 15-18 coming from households where the head has completed lower secondary school or has at least some upper secondary (or tertiary) education, are 6 p.p. and 12.2 p.p. less likely to be *Ninis*, respectively (Figure 9; Appendix Table A1). For young men, parental education is only associated with being *Nini*

when the parent has a high level of education (upper secondary or some tertiary), and even in that case the associations are smaller than for women. For 19 to 24 year olds, evidence regarding the importance of socioeconomic context is mixed: for men, the higher the education level of the household head, the lower the probability of being *Nini*; while for women, the education of the head of the household is not related to the probability of being *Nini* (Appendix Table A2).

Figure 9. Proportional Change in the Probability of Being *Nini* to Changes in Parental Education, Base Group is No Education 1, Youth Aged 15-18 y.o., by Gender  
(a) Male (b) Female



Notes: The value of the bars represent the marginal effects on the probability of being *Nini* for the corresponding variables from the underlying estimation of multinomial logit models (one for each gender). The dependent variable in the multinomial models takes three states (*Nini*, *Work Only*, and *Study Only*). Only marginal effect for the outcome of *Nini* is presented in this graph. The models include controls for history of past decision indices, youth's own education level, parental education level, household income quintiles, a set of demographic variables, and state economic condition variables. Complete results are presented in Appendix Table A1.

Source: Authors' calculations based on model estimation using data from the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

The education of the household head also matters for youths' decisions to *study only* and to *work only*. For men and women in both age groups, more parental education is associated with an increased probability of *studying only*, and with a reduced probability of *working only*. The estimates are large in magnitude, and in many cases larger than those for the outcome of being a *Nini* (in absolute values). For example, for those in the 15 to 18 age range, we find an increased probability of *studying only* of 13 p.p. and a reduced probability of *working only* of 11.6 p.p. for men who come from households where the head has completed secondary school (compared with the base group of no education). Similarly, the higher the level of education of the head of the household, the larger the associations with the probability of *studying only* and *working only* (more positive and more negative, respectively). This evidence is consistent with

the hypothesis that households in which heads are more educated are associated with children who remain in school for longer and, at the same time, delay their entrance into the labor market.

These results align well with the hypothesis that households whose heads are more educated tend to raise children who remain in school for longer. In addition, our results also seem to suggest that the schooling decisions of women are more an outcome of predefined roles bound by cultural norms or traditions, and are not merely influenced by household income, but also by the education level of the household head, by and the attitudes and biases that accompany specific education levels.

(v) *Demographic characteristics,  $x$*

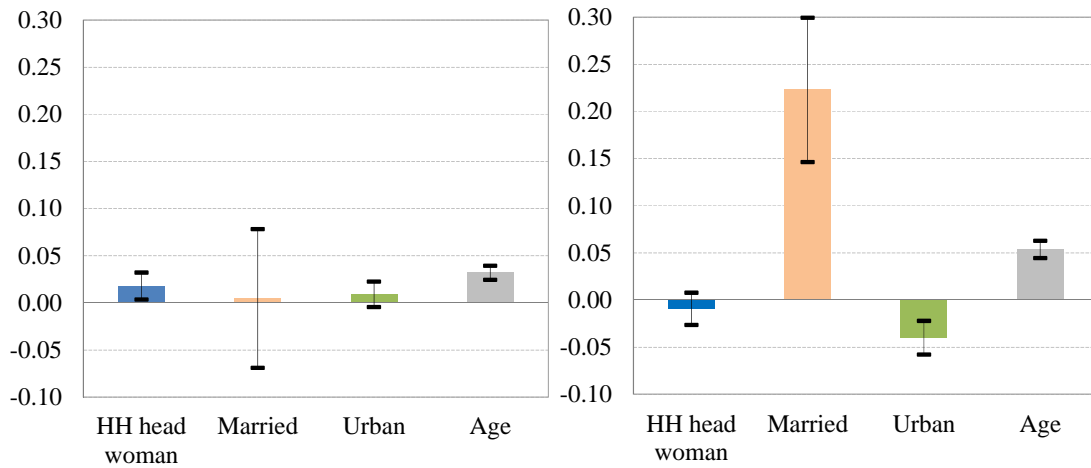
Other demographic characteristics also show significant associations with the outcomes under study (Appendix Table A1). Figure 10 shows the results for the outcome of being a *Nini*.

For young men aged 15 to 18 years old, being married or living in urban areas show no association with the probability of being a *Nini* (Figure 8). Living in a household where the head is a woman does increase the probability of being a *Nini* by 1.8 p.p. Given that teenage pregnancy is prevalent in Mexico (Azevedo et al., 2012) and hypothesising that many of these women will end up in single-headed households, there is the potential for an intergenerational transmission of Nininess that goes from teenage pregnancy, to female single-headed households, to the increased probability of male children in these households being *Ninis*. It is important to note that for male youth aged 19 to 24 years old, the probability of being *Nini* decreases by 7.2 p.p. when married (Appendix Table A2).

For young women, being married exhibits economically large associations with time use decisions and observed outcomes. *Ceteris paribus*, being married is associated with a 22.3 p.p. increase in the probability of being a female *Nini* (Figure 10), with a reduced probability of *studying only* (21.1 p.p.; Appendix Table A1), and with a slightly decreased probability of *working only* (1.2 p.p.; Appendix Table A1). Finally, living in urban areas reduces the probability of a woman becoming a *Nini* by 4 p.p. in comparison with her rural counterpart. These figures indicate that women, when married (which often indicates teenage pregnancy), are more likely to be *Ninis* (at home in this case), probably taking care of children, and reducing their participation in education or labor market activities. They also support the evidence that early pregnancy, even when a partner is present, may reduce the educational opportunities of

women (as shown by Arceo-Gómez and Campos-Vázquez, 2014). This is in line with qualitative work carried out in Mexico and Honduras (World Bank, 2014).

Figure 10. Proportional Change in the Probability of Being Nini to Changes in Demographic Characteristics, Youth Aged 15-18 y.o., by Gender  
(a) Male (b) Female



*Notes:* The value of the bars represent the marginal effects on the probability of being Nini for the corresponding variables from the underlying estimation of multinomial logit models (one for each gender). The dependent variable in the multinomial models takes three states (Nini, Work Only, and Study Only). Only marginal effect for the outcome of Nini is presented in this graph. The models include controls for history of past decision indices, youth's own education level, parental education level, household income quintiles, a set of demographic variables, and state economic condition variables. Complete results are presented in Appendix Table A1.

*Source:* Authors' calculations based on model estimation using data from the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Other demographic characteristics, such as whether the household head is a woman (possibly related to high teenage pregnancy rates), or urban/rural status, show some significance for some of the outcome decisions, but the associations are in the majority of cases relatively smaller than those of the other variables discussed.

#### (vi) *Macroeconomic conditions*

To capture the effects of macroeconomic conditions on the probability of being a *Nini* we use quarterly inflation and the industrial production index (Appendix Table A1). For young men aged 15 to 18 years old, we find a negative association between good macroeconomic conditions (higher production) and the probability of being a *Nini*, a positive association with *studying only*, and a negative association with *working only* (albeit only statistically significant at the 10 percent level). For young women, we find the same associations but with opposite signs in each case (statistical significance is also weaker). Inflation is not significant in any model specification for this age group.

## 4.2. Results for Other Countries in the Region

To analyze the robustness of our main findings we use data from Argentina and Brazil, the other two countries for which we found (rotating) panel data, to estimate models similar to the ones presented in the previous section. We focus on the results for young men aged 15 to 18 years old.

For Argentina, we use data from the *Encuesta Permanente de Hogares* (EPH) for 2005-2013. This rotating panel follows individuals every six months and for four periods. For Brazil we use the *Pesquisa Mensual de Emprego* (PME) for the period 2005-2013. This too is a rotating panel, but follows individuals every month for four months.

Table 5 presents the results of multinomial models similar to the ones presented for Mexico in the previous section (in Appendix Table A1). Overall, we find empirical evidence consistent with the implications of the theoretical model: (i) history matters for current decisions regarding time use (indices show statistically significant coefficients); (ii) income is an important (non-linear) predictor of Nininess; (iii) own and parental education are important in determining the time use decisions of youth (especially in Brazil);<sup>14</sup> and (iv) unlike in Mexico, marriage and cohabitation is not associated with an increased probability of being a Nini.

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<sup>14</sup> Note that having completed secondary education is positively associated with an increased probability of being a Nini in both Argentina and Brazil. This is in contrast with the results from Mexico and it is puzzling. More work is needed to understand the factors behind this result.

Table 5. Multinomial Logit Model using Data for Argentina and Brazil , Men, 15 to 18 y.o

Variables	BRAZIL - Males 15-18 (4 first interviews)			Variables	ARGENTINA - Males 15-18		
	Nini	Study Only	Work only		Nini	Study Only	Work only
Index Study Only	-0.007 (0.009)	0.032*** (0.009)	-0.025*** (0.003)	Index Study Only	-0.038 (0.033)	0.134*** (0.036)	-0.096*** (0.011)
Index Nini	0.171*** (0.014)	-0.171*** (0.014)	0.001 (0.001)	Index Nini	0.250*** (0.037)	-0.259*** (0.040)	0.009 (0.008)
Index Work Only	0.140*** (0.016)	-0.165*** (0.017)	0.025*** (0.004)	Index Work Only	0.296*** (0.045)	-0.378*** (0.050)	0.082*** (0.014)
Quintil 2	-0.005 (0.005)	0.002 (0.006)	0.003*** (0.001)	Quintil 2	-0.044*** (0.012)	0.035*** (0.013)	0.010** (0.004)
Quintil 3	-0.008 (0.006)	0.000 (0.006)	0.008*** (0.002)	Quintil 3	-0.033** (0.016)	0.003 (0.020)	0.029*** (0.009)
Quintil 4	-0.015** (0.006)	0.004 (0.007)	0.010*** (0.002)	Quintil 4	-0.049*** (0.016)	0.045** (0.019)	0.004 (0.007)
Quintil 5	-0.032*** (0.006)	0.030*** (0.006)	0.003** (0.001)	Quintil 5	-0.031 (0.028)	-0.013 (0.037)	0.043** (0.021)
Complete primary	-0.010*** (0.003)	0.014*** (0.003)	-0.003*** (0.001)	Complete primary	-0.066*** (0.026)	0.086*** (0.031)	-0.020* (0.011)
Complete secondary +	0.436*** (0.036)	-0.490*** (0.038)	0.055*** (0.010)	Complete secondary +	0.142*** (0.044)	-0.162*** (0.051)	0.020 (0.017)
				Household head: Incomplete primary	-0.008 (0.052)	0.032 (0.062)	-0.024 (0.037)
Household head: Complete primary	-0.008 (0.005)	0.011* (0.006)	-0.003** (0.001)	Household head: Complete primary	-0.058 (0.051)	0.107* (0.059)	-0.050 (0.036)
Household head: Complete secondary	-0.021*** (0.005)	0.027*** (0.005)	-0.007*** (0.001)	Household head: Complete secondary	-0.071 (0.052)	0.138** (0.061)	-0.066* (0.036)
Household head: Tertiary	-0.037*** (0.005)	0.046*** (0.006)	-0.010*** (0.002)	Household head: Tertiary	-0.101** (0.051)	0.173*** (0.060)	-0.072** (0.036)
Household head is female	0.011*** (0.004)	-0.014*** (0.004)	0.004*** (0.001)	Household head is female	0.012 (0.010)	-0.019 (0.012)	0.008* (0.004)
Married	0.006 (0.012)	-0.014 (0.013)	0.008* (0.005)	Married	0.007 (0.039)	-0.006 (0.044)	-0.001 (0.014)
Age	0.008*** (0.002)	-0.009*** (0.002)	0.002*** (0.000)	Age	0.028*** (0.005)	-0.039*** (0.006)	0.011*** (0.002)
Obs.	17585				10645		
Pseudo R-squared	0.6797				0.4258		

Notes: Results are marginal effects evaluated at means of covariates. Standard errors, robust to heteroskedasticity, are in parentheses. The underlined multinomial logit models are estimated with a pooled sample of people who had complete information on the variables of interest for four consecutive quarters and months in Argentina and Brazil, respectively. The dependent variable is a categorical variable which outcomes are represented by the columns of each country in the table. Sample weights are used in estimation. A person is considered *Nini* when she/he is not working nor studying. In the models for both countries the base group for comparison is given by people who were not Nini, in income quintile one, with no education or incomplete primary and who were not married. Each model includes controls for year and quarter (for Argentina) and month (for Brazil), and state fixed effects (32 dummy variables for Argentina and 5 dummy variables for Brazil). \*\*\*, \*\*, and \* denotes statistical significance at 1, 5, and 10 percent levels, respectively. Source: Authors' calculations based on *Encuesta Permanente de Hogares*, 2003:Q1 – 2013:Q; and *Pesquisa Mensal de Emprego*, 2007:M1-2012:M8.



## 5. Conclusions

The last few years have seen the attention of policy makers and the general public to be increasingly focused on Ninis. The perception is that Ninis are associated with other social problems in the region, such as shortcomings in the quality and relevance of education, which may lead to early dropout, and high levels of youth unemployment, crime, and violence. A related concern is that being Ninis will prohibit a sizeable part of today's youth population from accumulating the human capital necessary for their own future success in the labor market, as well as for the economic prosperity of their countries.

This paper contributes to our understanding of the decision process behind being a Nini and the factors with which it is associated, by testing the implications of the theoretical model developed by Berhman et al. (2014). To achieve this, the analysis employs almost a decade of information from the quarterly ENOE labor survey in Mexico, exploiting the longitudinal nature of the data, and verifying the robustness of the main results using data from Argentina and Brazil.

Our initial results show that nearly a fifth of Mexican youth are Ninis, with a majority of this group, 76.3 percent, being composed of women and, in particular, women aged 19 to 24. Descriptive statistics also show large difference by gender, rural/urban status, and household income. Moreover, Nini status is also much more persistent among youth from poor families, especially when they are younger, and among women living in rural areas. Approximately a fifth of male Ninis and a tenth of female Ninis aged 15-24 years old were found to be studying a year earlier, composed mostly of younger individuals who are disproportionately from disadvantaged socioeconomic backgrounds and urban areas.

The results of the multinomial logit models also support several of the predictions of the theoretical model: (i) the history of past decisions matters for future decisions, at least in the periods in which youths are observed; (ii) the relative welfare position of the household, as measured by income per capita quintiles, is associated with decreased probabilities of being Ninis for men (but not for women) ; (iii) for all youth, we find a robust negative association between current education level and being a Nini; (iv) socioeconomic context, as measured by parental education is associated with female youths' decisions to be Ninis, but not those of young men; (v) other demographic characteristics also show significant associations with the outcomes under study, in particular being married or cohabitating (for young women), or living in a female headed household (for young men); (vi) macroeconomic conditions seem to be

related to the probability of being a Nini for men, but not for women. Several of these findings are also corroborated using data from Argentina and Brazil, in particular, the importance of previous decisions on time use and their relevance for current decisions.

The most important lessons from this paper are: (i) once youth aged 15 to 18 leave school it is very unlikely that they will return; (ii) being a Nini is a highly persistent condition; (iii) marriage of young women (perhaps as a result of teen pregnancy) increases the probability of girls leaving school and raising children by themselves, which increases their likelihood of becoming Ninis and also the probability of their male children being Ninis in the future, potentially creating an intergenerational transmission of Nininess.

These results seem to validate the predictions of the theoretical model, although in this paper we do not interpret them in a causal way. However, they are indicative of strong relationships between youth decisions and the variables of interest. In all analyses presented, moreover, we have seen the inadequacy of the definition of *Nini* to capture non-labor market work (our definition of Nini refers only to work performed in the labor market), in particular for women. The analyses should thus be interpreted with this in mind.

The patterns shown in this paper for different socioeconomic groups suggest a place for policies that target education access programs particularly at young boys between 15 and 18 years of age, as well as including girls in anti-dropout programs and facilitating schooling opportunities for young women with children. The first dropout is crucial for the future of Ninis and as such is important that policy responses target youth at risk of dropping out for the first time. In addition, the high concentration of female Ninis who have started a household is an intuitively different phenomenon to that of male Ninis. The former could potentially reflect a rational decision to partake in domestic work and reducing the number of Ninis in this category, if deemed desirable, would likely involve intrinsically different policies probably oriented more towards child care.

## References

Águila, E., Mejía, N., Pérez-Arce, F. and A. Rivera (2013). “Pobreza y Vulnerabilidad en México: El caso de los Jóvenes que no Estudian ni Trabajan,” RAND Working Paper, WR-991.

Arceo-Gómez, E. and R. Campos-Vázquez (2011). “¿Quiénes son los NiNis en México?,” Working Paper Series of the *Centro de Estudios Económicos*, num. 2011-08, *El Colegio de México*, Mexico.

Arceo-Gómez, E. and R. Campos-Vázquez (2014). “Teenage Pregnancy in Mexico: Evolution and Consequences,” *Latin American Journal of Economics*-formerly Cuadernos de Economía, Instituto de Economía. Pontificia Universidad Católica de Chile., vol. 51(1), pages 109-146, May.

Azevedo, J.P, Favara, M., Haddock, S.E, Lopez-Calva, L.F., Müller, M. and E. Perova (2012). *Teenage Pregnancy and Opportunities in Latin America and the Caribbean: On Teenage Fertility Decisions, Poverty and Economic Achievement*, World Bank, Washington, DC.

Bárcena, A., López, L., Hopenhayn, M. and D. Frishman (2008). *Juventud y Cohesión Social en Iberoamérica: Un Modelo para Armar*, Economic Commission for Latin America and the Caribbean (ECLAC), United Nations, 2008.

Bassi, M., Busso, M., and J.S. Muñoz (2013). “Is the Glass Half Empty or Half Full? School Enrollment, Graduation, and Dropout Rates in Latin America,” IDB Working Paper Series No. IDB-WP-462, Washington DC, USA.

Bassi, M., Busso, M., Urzúa, S. and J. Vargas (2012). *Desconectados: Habilidades, educación y empleo en América Latina*, Inter-American Development Bank, Washington DC, USA.

Behrman, J. R., de Hoyos, R. and M. Székely (2014). “Out of school and out of work: A conceptual framework for approaching the “ninis” in Latin America,” background paper for the Regional Study on Youth Out of School and Out of Work in Latin America, World Bank, Education Global Practice, 2014.

Cárdenas, M., De Hoyos, R. and M. Székely (2015). “Out of School and Out of Work Youth in Latin America: A Persistent Problem in a Decade of Prosperity,” *Economía: The Journal of LACEA* (forthcoming).

Chioda, L. (2014) *Crime and Violence prevention over the lifecycle in Latin America and the Caribbean*, World Bank, Washington, DC.

Cunningham, W. (2009). “Unpacking youth unemployment in Latin America,” Policy Research Working Paper Series 5022, The World Bank, Washington, DC, USA.

Cunningham, W. and J. Bustos-Salvagno (2011). “Youth employment transitions in Latin

America,” Policy Research Working Paper Series 5521, The World Bank, Washington, DC, USA.

Cunningham, W., McGinnis, L., Garcia Verdu, R., Tesliuc, C. and D. Verner (2008). *Youth at Risk in Latin America and the Caribbean: Understanding the Causes, Realizing the Potential*, The World Bank, Washington DC, USA.

De Hoyos, R., Popova, A. and H. Rogers (2014). “Out of School and Out of Work: A Diagnostic of Ninis in Latin America,” Background Paper for the LAC Regional Study “Out of School and Out of Work: Challenges & Solutions around Idle Youth (Ninis) in Latin America,” mimeo, The World Bank, Washington DC, USA.

Eurofound (2012), *NEETs – Young people not in employment, education or training: Characteristics, costs and policy responses in Europe*, European Foundation for the Improvement of Living and Working Conditions, Publications Office of the European Union, Luxembourg.

Ferreira, H. G. and N. Schady (2009). “Aggregate Economic Shocks, Child Schooling, and Child Health,” The World Bank Research Observer, Vol 24, num 9.

Grogger, J. (1997). “Market Wages and Youth Crime,” National Bureau of Economic Research, Working Paper 5983, March 1997.

Jacob, B. and L. Lefgren (2003). “Are Idle Hands the Devil’s Workshop? Incapacitation, Concentration and Juvenile Crime,” *National Bureau of Economic Research*, Working Paper 9653, April 2003.

Lagos, M. and L. Dammert, (2012) “La seguridad ciudadana: el problema principal de América Latina,” Corporación Latinobarómetro, available at:  
[www.latinobarometro.org/documentos/LATBD\\_La\\_seguridad\\_ciudadana.pdf](http://www.latinobarometro.org/documentos/LATBD_La_seguridad_ciudadana.pdf)

Leyva-Parra, G. and R. Negrete-Prieto (2014). “NiNi: Un término ni pertinente ni útil,” *Coyuntura Demográfica*, num. 5, p. 15-20.

McKenzie, D.J. (2003). “How do Households Cope with Aggregate Shocks? Evidence from the Mexican Peso Crisis,” *World Development* 31(7): 1179-99.

Negrete-Prieto, R. and G. Leyva-Parra (2013). “Los NiNis en México: Una aproximación crítica a su medición,” *Realidad, Datos y Espacio-Revista Internacional de Estadística y Geografía*, vol. 4, num. 1, p. 90-121.

Pederzini, C. (2011). “De NiNis, quehaceres y búsquedas: jóvenes, educación y trabajo en el Censo de Población 2010,” *Coyuntura Demográfica*, num. 1, p. 31-34.

Rivero, E. and C. Pederzini (2014). “No todo es tiempo perdido. Cómo pasan las horas los NiNis mexicanos,” *Coyuntura Demográfica*, num. 6, p. 29-33.

Székely, M. and J. Karver (2014). “Youth Out of School and Out of Work in Latin America: A Cohort Approach,” background paper for the Regional Study on Youth Out of School and Out of Work in Latin America, World Bank, Education Global Practice, 2014.

Thomas, D., Beegle, K., and E. Frankenberg (2000). “Labor market transitions of men and women during an economic crisis: Evidence from Indonesia,” RAND Working Paper Series 00-11.

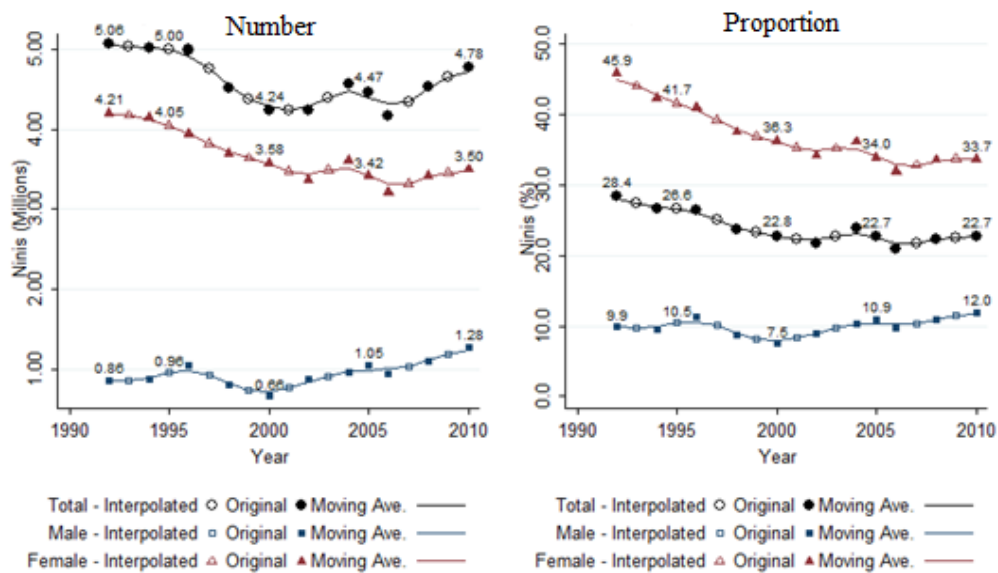
Tuirán, R. and J.L. Ávila (2012). “Jóvenes que no estudian ni trabajan: “¿Cuántos son? ¿Quiénes son? ¿Qué hacer?,” *Este País. Tendencias y Opiniones*, March 2013.

World Bank (2006). *World Development Report 2007: Development and the Next Generation*, Washington DC, USA.

World Bank (2014). “*Jóvenes que no estudian ni trabajan en Latinoamérica. Una investigación cualitativa en Honduras y México*”, Mimeo, Washington DC, USA.

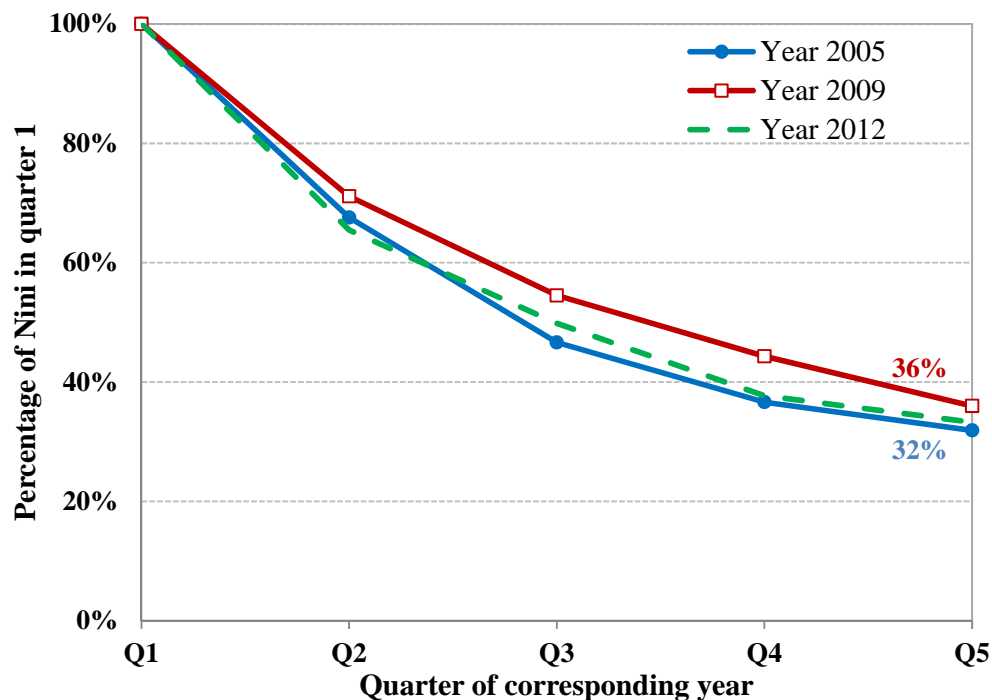
## Appendix

Appendix Figure A1. Number and Proportion of Ninis in Mexico (15-24 y.o.), 1992-2010



Source: De Hoyos, Popova, and Rogers, (2014).

Appendix Figure A2. Probability of being a Nini conditional on being a Nini in previous quarters (for those aged 15 to 18 year who had their first interview in the first quarter of 2005, 2009, and 2012)



Notes: Weights are used in the calculations. A person is considered a *Nini* when s/he is not working nor studying. Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE).

Appendix Table A1. Multinomial Logit Model, by Gender, Youth Aged 15 to 18 y.o.

Variables	Outcomes for Males			Outcomes for Females		
	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>
Index Study Only	0.046** (0.019)	0.320*** (0.021)	-0.366*** (0.016)	-0.021 (0.021)	0.151*** (0.022)	-0.130*** (0.007)
Index Work Only	0.511*** (0.026)	-1.245*** (0.044)	0.734*** (0.031)	0.747*** (0.038)	-0.987*** (0.045)	0.239*** (0.015)
Index <i>Nini</i>	0.555*** (0.023)	-0.897*** (0.030)	0.342*** (0.020)	0.741*** (0.028)	-0.833*** (0.030)	0.092*** (0.008)
Quintil 2	0.009 (0.012)	-0.082*** (0.019)	0.072*** (0.010)	0.013 (0.012)	-0.037*** (0.014)	0.024*** (0.003)
Quintil 3	-0.030*** (0.010)	-0.077*** (0.017)	0.107*** (0.010)	-0.003 (0.012)	-0.034** (0.014)	0.037*** (0.004)
Quintil 4	-0.037*** (0.010)	-0.180*** (0.018)	0.217*** (0.012)	-0.011 (0.012)	-0.050*** (0.015)	0.061*** (0.006)
Quintil 5	-0.081*** (0.011)	-0.181*** (0.025)	0.262*** (0.020)	-0.024 (0.015)	-0.059*** (0.020)	0.083*** (0.009)
Incomplete primary	-0.179*** (0.043)	0.075 (0.065)	0.104*** (0.034)	-0.004 (0.065)	-0.030 (0.077)	0.034** (0.016)
Complete primary	-0.219*** (0.040)	0.186*** (0.057)	0.033 (0.026)	-0.072 (0.059)	0.053 (0.068)	0.019 (0.012)
Complete secondary +	-0.292*** (0.040)	0.363*** (0.057)	-0.071*** (0.026)	-0.184*** (0.059)	0.195*** (0.068)	-0.012 (0.012)
Household head: Incomplete primary	0.006 (0.011)	0.036 (0.024)	-0.041** (0.018)	0.013 (0.015)	-0.013 (0.020)	0.000 (0.007)
Household head: Complete primary	-0.001 (0.011)	0.069*** (0.024)	-0.067*** (0.018)	-0.031** (0.015)	0.048** (0.020)	-0.017** (0.007)
Household head: Complete secondary	-0.014 (0.011)	0.130*** (0.024)	-0.116*** (0.018)	-0.060*** (0.016)	0.089*** (0.020)	-0.029*** (0.007)
Household head: Media or tertiary	-0.069*** (0.012)	0.280*** (0.024)	-0.211*** (0.018)	-0.122*** (0.015)	0.171*** (0.019)	-0.049*** (0.007)
Household head is female	0.018** (0.007)	-0.006 (0.014)	-0.012 (0.010)	-0.009 (0.009)	0.007 (0.011)	0.002 (0.004)
Married	0.005 (0.038)	-0.101 (0.094)	0.096 (0.064)	0.223*** (0.039)	-0.211*** (0.043)	-0.012** (0.005)
Urban	0.009 (0.007)	0.098*** (0.015)	-0.107*** (0.011)	-0.040*** (0.009)	0.059*** (0.011)	-0.019*** (0.004)
Age	0.032*** (0.004)	-0.105*** (0.008)	0.073*** (0.005)	0.054*** (0.005)	-0.078*** (0.006)	0.025*** (0.002)
Inflation	0.002 (0.002)	-0.002 (0.005)	-0.001 (0.003)	-0.001 (0.003)	0.001 (0.004)	0.000 (0.001)
Industrial growth index	-0.001*** (0.000)	0.002*** (0.001)	-0.001** (0.001)	0.001 (0.001)	-0.001 (0.001)	0.000 (0.000)
<i>Obs.</i>		63909			64219	
<i>Pseudo R-squared</i>		0.5898			0.5996	

*Notes:* Results are marginal effects evaluated at means of covariates. Standard errors, robust to heteroskedasticity, are in parentheses. The underlined multinomial logit models are estimated with a pooled sample of people who had complete information on the variables of interest for the first and fifth interviews of the rotating panel. The dependent variable is a categorical variable which outcomes are represented by the columns of each gender in the table. Sample weights are used in estimation. A person is considered a *Nini* when s/he is not working nor studying. In all models, the base group for comparison is given by people who were not *Nini*, with no education, who were not married (nor cohabitating), and who lived in rural areas during the first interview. Each model includes controls for year (of fifth interview) fixed effects (8 dummy variables), and state fixed effects (31 dummy variables). \*\*\*, \*\*, and \* denotes statistical significance at 1, 5, and 10 percent levels, respectively. *Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Appendix Table A2. Multinomial Logit Model, by Gender, Youth Aged 19 to 24 y.o

Variables	Outcomes for Males			Outcomes for Females		
	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>
Index Study Only	0.266*** (0.026)	0.103*** (0.008)	-0.369*** (0.028)	0.576*** (0.044)	0.092*** (0.009)	-0.667*** (0.041)
Index Work Only	0.013 (0.021)	-0.255*** (0.011)	0.242*** (0.023)	0.207*** (0.038)	-0.381*** (0.014)	0.174*** (0.033)
Index <i>Nini</i>	0.351*** (0.021)	-0.157*** (0.011)	-0.194*** (0.023)	0.917*** (0.038)	-0.301*** (0.014)	-0.616*** (0.034)
Quintil 2	-0.070*** (0.014)	-0.033*** (0.009)	0.103*** (0.016)	-0.113*** (0.014)	-0.036*** (0.008)	0.149*** (0.012)
Quintil 3	-0.139*** (0.012)	-0.044*** (0.008)	0.183*** (0.014)	-0.150*** (0.012)	-0.031*** (0.008)	0.181*** (0.011)
Quintil 4	-0.209*** (0.011)	-0.065*** (0.007)	0.274*** (0.013)	-0.275*** (0.013)	-0.038*** (0.007)	0.313*** (0.012)
Quintil 5	-0.239*** (0.011)	-0.071*** (0.007)	0.310*** (0.013)	-0.381*** (0.014)	-0.043*** (0.007)	0.424*** (0.013)
Incomplete primary	-0.183*** (0.024)	-0.006 (0.006)	0.189*** (0.025)	-0.095*** (0.033)	-0.014 (0.022)	0.109*** (0.030)
Complete primary	-0.191*** (0.023)	0.009 (0.007)	0.183*** (0.023)	-0.117*** (0.029)	-0.009 (0.021)	0.125*** (0.026)
Complete secondary +	-0.204*** (0.022)	0.042*** (0.006)	0.162*** (0.023)	-0.154*** (0.027)	0.023 (0.020)	0.130*** (0.024)
Household head: Incomplete primary	0.024*** (0.008)	0.006 (0.005)	-0.029*** (0.010)	0.006 (0.015)	0.012* (0.007)	-0.019 (0.015)
Household head: Complete primary	0.027*** (0.008)	0.012*** (0.005)	-0.039*** (0.010)	0.000 (0.015)	0.015** (0.007)	-0.016 (0.015)
Household head: Complete secondary	0.040*** (0.009)	0.016*** (0.005)	-0.055*** (0.011)	0.002 (0.015)	0.026*** (0.007)	-0.028* (0.015)
Household head: Media or tertiary	0.041*** (0.011)	0.056*** (0.008)	-0.097*** (0.013)	-0.026 (0.017)	0.057*** (0.008)	-0.031* (0.017)
Household head is female	0.007 (0.006)	-0.005 (0.003)	-0.002 (0.007)	-0.024** (0.010)	-0.005 (0.005)	0.029*** (0.010)
Married	-0.072*** (0.006)	-0.039*** (0.004)	0.111*** (0.007)	0.222*** (0.009)	-0.054*** (0.005)	-0.168*** (0.008)
Urban	0.050*** (0.006)	0.023*** (0.004)	-0.073*** (0.007)	-0.035*** (0.010)	0.022*** (0.005)	0.013 (0.010)
Age	-0.002 (0.002)	-0.007*** (0.001)	0.010*** (0.002)	-0.004 (0.002)	-0.012*** (0.001)	0.016*** (0.002)
Inflation	-0.003* (0.002)	-0.001 (0.001)	0.004* (0.002)	-0.010*** (0.003)	0.003* (0.001)	0.007** (0.003)
Industrial growth index	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.000)	0.000 (0.001)
<i>Obs.</i>		74745			78844	
<i>Pseudo R-squared</i>		0.5797			0.5839	

Notes: Results are marginal effects evaluated at means of covariates. Standard errors, robust to heteroskedasticity, are in parentheses. The underlined multinomial logit models are estimated with a pooled sample of people who had complete information on the variables of interest for the first and fifth interviews of the rotating panel. The dependent variable is a categorical variable which outcomes are represented by the columns of each gender in the table. Sample weights are used in estimation. A person is considered a *Nini* when s/he is not working nor studying. In all models, the base group for comparison is given by people who were not *Nini*, with no education, who were not married (nor cohabitating), and who lived in rural areas during the first interview. Each model includes controls for year (of fifth interview) fixed effects (8 dummy variables), and state fixed effects (31 dummy variables). \*\*\*, \*\*, and \* denotes statistical significance at 1, 5, and 10 percent levels, respectively. Source: Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.



Appendix Table A3. Descriptive Statistics of Estimation Sample Variables, 15 to 18 y.o

<i>Variables</i>	<i>Males</i>			<i>Females</i>		
	<i>Nini</i>	<i>Study Only</i>	<i>Work Only</i>	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>
Index Study Only	0.1955	0.8571	0.0814	0.1564	0.9131	0.1125
Index Work Only	0.3477	0.0107	0.7003	0.1441	0.0041	0.5409
Index Study & Work	0.0380	0.1165	0.0631	0.0165	0.0633	0.0579
Index Nini	0.4188	0.0157	0.1552	0.6831	0.0196	0.2886
Quintil 1	0.2213	0.2268	0.1018	0.2043	0.2219	0.0758
Quintil 2	0.2388	0.1619	0.2340	0.3037	0.1785	0.2360
Quintil 3	0.2771	0.2492	0.2740	0.2585	0.2525	0.2916
Quintil 4	0.2012	0.2128	0.2653	0.1811	0.2078	0.2831
Quintil 5	0.0616	0.1493	0.1249	0.0524	0.1392	0.1135
No education	0.0503	0.0012	0.0198	0.0406	0.0010	0.0144
Incomplete primary	0.0727	0.0206	0.0957	0.0805	0.0154	0.0558
Complete primary	0.4691	0.4464	0.4514	0.4333	0.4217	0.3665
Complete secondary	0.4015	0.5230	0.4255	0.4357	0.5478	0.5471
Media or tertiary	0.0064	0.0087	0.0076	0.0099	0.0140	0.0162
Household head: No education	0.1422	0.0665	0.1898	0.1793	0.0731	0.1790
Household head: Incomplete primary	0.2601	0.1339	0.3105	0.3025	0.1450	0.2984
Household head: Complete primary	0.2975	0.2184	0.2959	0.2837	0.2340	0.2991
Household head: Complete secondary	0.2378	0.3129	0.1705	0.1832	0.2986	0.1763
Household head: Media or tertiary	0.0624	0.2683	0.0332	0.0514	0.2494	0.0471
Household head is female	0.2734	0.2089	0.2075	0.2032	0.2086	0.2340
Married	0.0141	0.0020	0.0350	0.1993	0.0039	0.0482
Urban	0.7323	0.8263	0.5758	0.5752	0.8018	0.6508
Age	16.6	16.2	16.9	16.7	16.3	17.0
Inflation	1.1009	1.0647	1.0543	1.0896	1.0473	1.0326
Industrial growth index	0.380	0.688	0.624	0.795	0.641	0.801
<i>Obs.</i>	<i>6,379</i>	<i>41,412</i>	<i>16,118</i>	<i>11,529</i>	<i>46,292</i>	<i>6,398</i>

*Notes:* complete information on the variables of interest for the first and fifth interviews of the rotating panel (see text for description of data). Weights are used in the estimation. A person is considered a *Nini* when s/he is not working nor studying.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

Appendix Table A4. Descriptive Statistics of Estimation Sample Variables, 19 to 24 y.o

<i>Variables</i>	<i>Males</i>			<i>Females</i>		
	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>	<i>Nini</i>	<i>Study Only</i>	<i>Work only</i>
Index Study Only	0.0885	0.7895	0.0217	0.0411	0.8283	0.0297
Index Work Only	0.4877	0.0286	0.8589	0.1775	0.0174	0.7256
Index Study & Work	0.0276	0.1571	0.0296	0.0080	0.1128	0.0328
Index Nini	0.3962	0.0248	0.0899	0.7734	0.0415	0.2120
Quintil 1	0.2656	0.3182	0.1056	0.2173	0.2857	0.0862
Quintil 2	0.1899	0.1000	0.1462	0.2263	0.1110	0.1444
Quintil 3	0.2487	0.1736	0.2436	0.2952	0.1902	0.2365
Quintil 4	0.1932	0.1913	0.2965	0.1876	0.2100	0.3060
Quintil 5	0.1025	0.2169	0.2082	0.0737	0.2031	0.2269
No education	0.0691	0.0011	0.0159	0.0371	0.0020	0.0092
Incomplete primary	0.0446	0.0013	0.0542	0.0687	0.0032	0.0354
Complete primary	0.1676	0.0120	0.2058	0.2251	0.0141	0.1440
Complete secondary	0.4458	0.2767	0.4746	0.4508	0.2183	0.4402
Media or tertiary	0.2728	0.7088	0.2495	0.2182	0.7623	0.3712
Household head: No education	0.1147	0.0394	0.1286	0.1324	0.0411	0.1138
Household head: Incomplete primary	0.2130	0.0770	0.2255	0.2197	0.0882	0.2040
Household head: Complete primary	0.2809	0.1724	0.2928	0.2719	0.1989	0.2775
Household head: Complete secondary	0.2581	0.2742	0.2525	0.2645	0.2656	0.2551
Household head: Media or tertiary	0.1333	0.4369	0.1006	0.1115	0.4061	0.1495
Household head is female	0.2497	0.2043	0.2099	0.1882	0.2416	0.2534
Married	0.1092	0.0123	0.2710	0.5882	0.0436	0.2254
Urban	0.8025	0.9255	0.7337	0.6463	0.9106	0.8038
Age	21.3	20.8	21.7	21.7	20.7	21.8
Inflation	1.01	1.04	1.05	1.06	1.05	1.05
Industrial growth index	0.817	0.598	0.794	0.807	0.634	0.705
<i>Obs.</i>	<i>8,233</i>	<i>20,423</i>	<i>46,089</i>	<i>28,387</i>	<i>21958</i>	<i>28,499</i>

*Notes:* complete information on the variables of interest for the first and fifth interviews of the rotating panel (see text for description of data). Weights are used in the estimation. A person is considered a *Nini* when s/he is not working nor studying.

*Source:* Authors' calculations based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), 2005:Q1 - 2013:Q4.

