

# **SOCIAL SECURITY AND RETIREMENT IN LATIN AMERICA: RELATION TO YOUTH UNEMPLOYMENT**

**BERNARDO LANZA QUEIROZ**

Dept of Demography  
Universidade Federal de Minas Gerais  
lanza@cedeplar.ufmg.br

**LAETICIA RODRIGUES DE SOUZA**

NEPO  
UNIVERSIDADE ESTADUAL DE CAMPINAS  
LAETICIA@NEPO.UNICAMP.BR

There are two less studied factors that are normally brought into the discussion of trends in the labor supply of the elderly. First, as mortality declines individuals with worse health reach older ages and are less able to stay in the labor force. In a recent paper, De Souza, Queiroz and Skirbekk (2019) showed that health has clearly improved in all Latin American countries in the past 30 to 40 years. Despite this, their LFPRs have declined steadily. The result observed for several countries in Latin America is in line with what has been observed in recent decades for more developed economies (Coile, Milligan and Wise, 2016). This finding indicates that a large share of those not working beyond age 60 have increasingly good health, and that health variation is therefore not the key reason for current retirement trends. The second point is that, it is argued that changes in the elderly labor force participation have an important impact on the jobs available for the youth (Bertoni and Brunello, 2017; Mohnen, 2017; Munnell and Wu, 2012). In this sense, the labor market functions as a “closed-box” and new workers would only be able to find work if older workers leave the labor force. The aim of this paper is to analyze the former theory in the context of the Brazilian and Latin American economies. In this abstract, we use data from the Brazilian household survey (PNAD) and Brazilian Employment Survey (PME) to investigate the relation between elderly labor force and youth unemployment.

keywords: retirement, youth unemployment, Brazil

## 1. Introduction

Changes in population age structure poses an important challenge to economic growth, economic development and public transfer programs across the world (Lee and Mason, 2011). More specifically, there is a huge concern on how population aging can impact on the public pension programs in different developed and developing countries. The impact of population aging on public pension programs is amplified by the patterns of labor force participation of the elderly (Coile, 2018a). As mortality declines and life expectancy and health conditions improve, one could expect that individuals would stay longer in the labor market, thus reducing the impact of population aging in the public pension programs. However, historically it is observed a long-term trend decline in the labor force participation of older workers (Costa, 1998; Burtless & Quinn, 2001; Gruber & Wise, 1999; 2004). In more recent years, for more developed countries, there is an upward trend in labor force participation of older adults, specially more educated ones (Coile, 2018a; 2018b)

In Latin America, Queiroz (2017) showed similar trends from 1990 to 2010. The author shows that in lower income Latin American countries, most men remained in the labor force until age 65 or beyond and that with economic development and related changes, the labor force participation of older men, even those aged 55–59, starts to decline. These changes are a paradox since at the same time people are entering the labor force later, because of increasing educational attainment, living longer; they are leaving the labor force at younger ages (De Souza, Queiroz and Skirbekk, 2019; Wise, 2010). In Brazil, for example, Queiroz and Ferreira (2016) show that labor force participation for the elderly has been declining since the 1990s. They estimated and forecasted the duration of retirement to more than doubled between 1980 and 2020.

There are six main explanations for pattern of labor force participation of older persons. First, the existence of public pension systems (Gruber & Wise, 1999; 2004); second, higher income and expansion of the leisure class (Costa, 1998). Third, Profeta (2004) argues that aging population increases political pressure on social security policies affecting labor force participation at older ages. Forth, Clark et al (1999) points that rising income and socioeconomic changes tend to affect negatively the proportion of the elderly that stay in the labor market. As mentioned, there is a large body of research discussing the four theories presented above.

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of the Brazilian and Latin American economies. In this abstract, we use data from the Brazilian household survey (PNAD) and Brazilian Employment Survey (PME) to investigate the relation between elderly labor force and youth unemployment.

## **2.Related Literature<sup>1</sup>**

Several studies in the United States and Europe show the impact of pension regulations, income growth and behavior on labor force participation rates (Gruber and Wise, 1999; Wise, 2010). Hurd (1990) shows the retirement peak at age 62 after the introduction of early retirement provisions in the 1960s. However, Krueger and Pischke (1992) find little empirical evidence linking changes in social security wealth and retirement behavior of older workers. The authors argue that the reduction in wealth did not affect downward trend in labor force participation. In other countries, the effects of pension provisions are much larger than in the US. Borsch-Supan (2000) analyzes Germany and other OECD countries and finds large disincentives to work in the public pension programs. Baker, Gruber and Milligan (2003) find that the Canadian pension program has significant impacts on retirement, and that public policy can create incentives for workers to stay in the labor force longer. Profeta (2002) shows that changes in the population age structure are one of the main determinants of the size of the public pension programs and of retirement policies in a series of OECD countries. She shows that as population ages, political pressure increases to maintain or create better conditions for early retirement. Finally, Clark et al (1999) argue that economic development, and rising income, plays an important role in the declining trend in the elderly labor force participation rates. In an international comparison analysis, Gruber and Wise (1999; 2004) showed that for a series of developed countries there are very large incentives to leave the workforce earlier and collect pension benefits. They also show that countries could create incentives for additional years of work by create fair compensations for an additional year of work compared to the current laws in place.

Gruber, Milligan and Wise (2010) studied the relation between trends in elderly labor supply, more specific retirement trends, and changes in youth unemployment. The study, for 12 countries, investigates the common idea that incentives to early retirement were necessary to create jobs for younger workers as they would replace older individuals in the labor force. The study, carried out by research specialists in each country, found no evidence that early retirement trends increase the employment opportunities for younger workers. Kalwij et al (2010) also investigate the same issue for 22 OECD countries showed that older and younger workers are not substitutes and changes in the employment of workers aged 60 and above have small impacts on youth (16-24) employment. They concluded that policies to discourage early retirement will have no impact on the unemployment rates of young workers.

The issue of the relation between elderly employment and youth unemployment, however, should be tested in a less developed economy, especially one going over important changes in the population age structure. In addition to the trends in the labor force of the elderly a larger share of working-age population should also have an impact on the employment rates of the youth (Lam, 2014; Cunningham, 2009). The research on the impacts of public pension system on labor market behavior in Latin America is still incipient (Queiroz, 2017; De Souza, Queiroz and Skirbekk,

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<sup>1</sup> Preliminary version. This section will be extended to include a discussion of more experiences in Latin America, an overview of the labor market and pension programs.

2019). Most of the research concentrates on the impacts of population changes and fiscal impacts of the program to the economy. These studies analyze the idiosyncrasies of the pension system and its impacts on the society. Most of the studies focused on the fiscal impacts of social security regulations and how different economic groups receive more or less benefits from the program (Afonso and Fernandes, 2004; Rocha and Caetano, 2008). However, there are important research on the impacts of the pension programs and its rules and regulations on the labor supply of the elderly. Leme and Málaga (2001) study the impacts of the social security rules on investments in human capital and duration of labor force participation in comparison with a capitalization regime. They find that the pension scheme does not induce further investments in human capital due to the provision of pension benefits at fairly young ages. Legrand (1995) uses 1980 census data to study effects of the social security system and of other variables on men's retirement behavior in Brazil. The results indicate that the system has strong effects on retirement. Self-employed and employers have lower retirement propensities. Education and high levels of income are associated with lower retirement rates. Carvalho-Filho (2008) shows that the social security reform of 1988 impacted the labor supply of rural workers. The author finds that rural workers leave the labor force as soon as pension benefits become available. Finally, Queiroz (2007; 2008) show that there was a decline in the labor force participation of the elderly since 1960 and that more educated workers in the urban areas have higher propensity to retire than less educated workers.

### **3.Data and Methods**

#### **3.1 Retirement and Youth Unemployment**

In this abstract, we perform an initial analysis using Brazilian data. We use data from the Brazilian household survey (PNAD) to gather information on elderly employment and youth unemployment. PNAD allows us to construct a long series of information, from 1981 to 2009, of these two variables in addition to a series of socioeconomic and other control variables. I am aware of the limitations of using PNAD data to study unemployment, but there are other studies about unemployment in Brazil using the same data (Reis and Camargo, 2007; Oliveira et al, 2009). In order to test the results, We perform similar analysis using data from the Employment and Unemployment Survey carried out by SEADE-DIEESE in Sao Paulo.

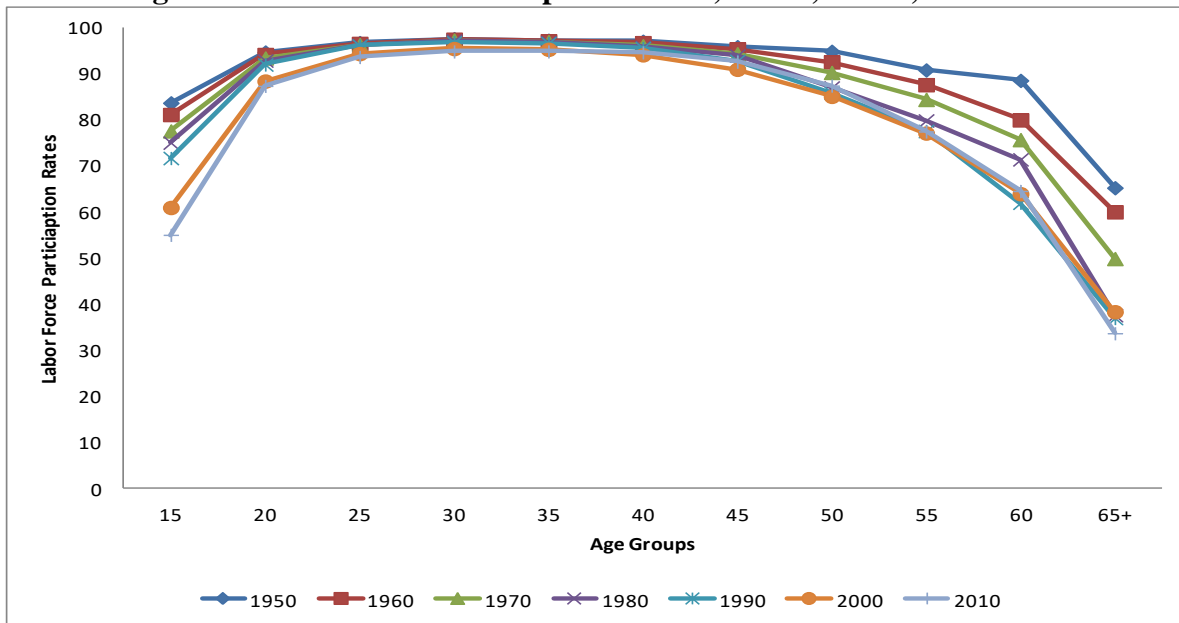
Before turning to formal statistical analysis, we present graphical evidence that illustrates the relation between elderly employment/labor force participation and youth unemployment in Brazil. We pay close attention to years that were characterized by important changes in the structure of the public pension system in Brazil (1988 and 1998). The second part of the analysis uses a simple regression model on the relation between labor force participation of the elderly and employment of younger workers. We test different specifications of the model: model without controls, model with controls (GDP, GDP growth, % population working age, % elderly, dummy for change in pension system). We also tested the model using different lags, that is, youth unemployment in time  $t$  is regress to elderly employment in time  $t-n$ . We tested with  $n$  equals to 1 and 3, mostly because of sample size.

## 4. Preliminary Results for Brazil

### 4.1 Preliminary Evidence

The trend in labor force participation for Brazilian male workers shows significant changes in the last decades (**Figure 1**). It is clear that the length of working life shrank over time. Labor force participation rates of young individuals have declined because of the increase in educational attainment. Based on census data we calculated that 95% of the population aged 10-14 years was in school in 2010 compared to 54% in 1960. The rates have also declined for older workers. In 1950 almost 90% of the population aged sixty to sixty-four years was in the labor force, and this number has declined to 65% in 2000. The same rate of decline is observed for younger old workers. The fall in economic participation is even greater for older workers, those above sixty-five years of age: 30% of them were in the labor force in 2000 compared to over 60% in 1950.

**Figure 1 – Labor Force Participation Rates, Males, Brazil, 1950-2010**



Labor force participation rates fell for workers of different socioeconomic backgrounds. We use years of schooling as a proxy for socioeconomic status (SES) and estimate participation rates using census data from 1960 to 2000 by four different levels of education: 0 to 4, 5 to 8, 9 to 11 and 12 and more years of schooling. This measure is highly correlated with the general socioeconomic status of the individual and is preferred to other measures of SES (e.g. wealth or income) in this study since it offers better comparability among age groups.

We also estimated labor force participation rates by educational groups overtime. In 2010, participation of workers aged 60-64 and 65-69 years old, for all SES groups, intercept at the same levels around 50% and 40%, respectively. For older workers, those above 70 years of age, the rates converge at lower levels around 20% participation rates (results not shown). The results show a decline in the participation rates for all SES groups, but steeper for the oldest age group (65-69). The decline is also steeper for the low SES, which might be explained by the universalization of

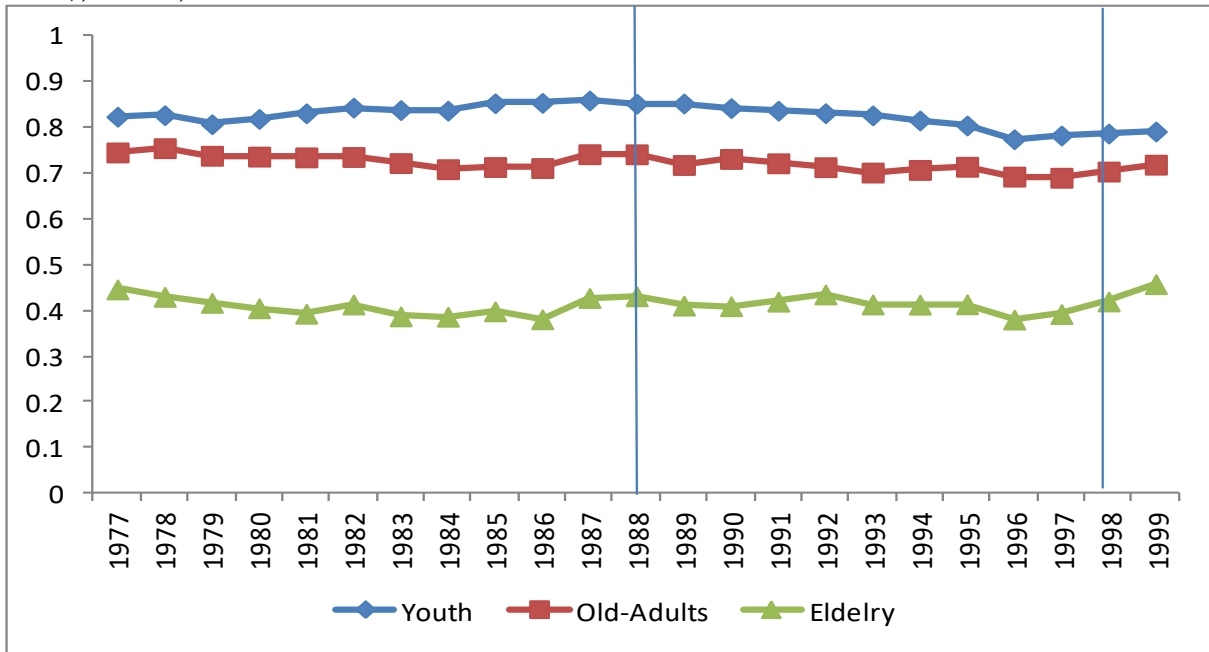
the access to social security benefits. High SES workers have lower participation rates at all times but their decline over time is slower than that of low SES. From 1960 to 2010, the participation rates of workers aged 65-69 years declined 33 percentage points for low SES workers and 20 percentage points for the high SES ones. The lifetime earnings of low SES workers are much lower than those of high SES workers and cannot be the only explanation for the decline and convergence in participation rates. The trend reflects the increase in the coverage of the social security system in the country, a move away from agriculture work and increase levels of income of the older population in the past half-century. Queiroz (2007) studies urban areas in Brazil and also observed that workers with low and high educational attainment have higher probabilities of retirement than those in the middle of the educational distribution.

## 5.2 Retirement and Youth Unemployment

Before we turn to more formal statistical analysis, we show the relation between elderly employment and youth unemployment using aggregate series of labor force participation and youth unemployment from the PNADs and PED-DIEESE-Sao Paulo. Unfortunately, there were some changes to the PNAD survey which creates some limitations to the analysis of labor force participation and the PED survey does not have a very long time series to allow a more detailed analysis of the trends in the labor market.

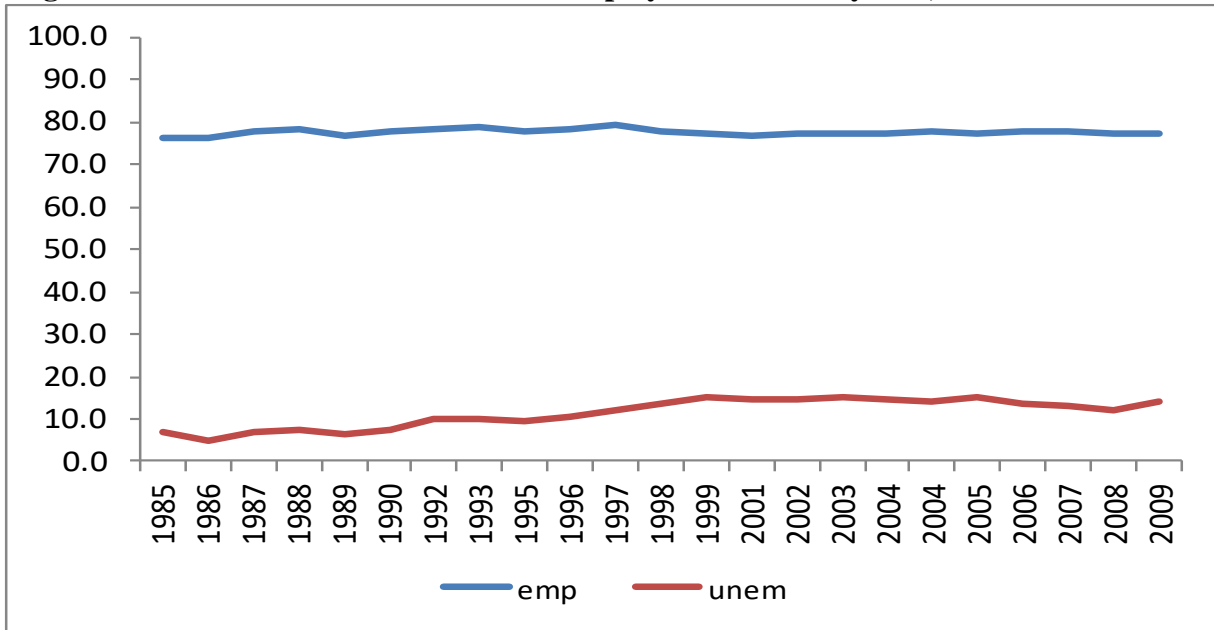
**Figure 2** shows the labor force participation rates, from 1979 to 2010, for males from aged 55 to age 64 and from ages 16 to 24. The main changes in the social security program (1988 and 1999) is marked in the vertical lines – they marked the large reform of the pension program in the 1988 constitution and the implementation of the 1998 reform by Cardoso's government. The trends in old-adults labor force participation is very stable over the period of analysis, but we observe a small decline in labor supply after the 1988 reform, especially around 1992 and 1993, and a steep decline in the years before the implementation of the *Fator Previdenciario*. The impact is stronger for workers aged 55 to 64 that could be affected directly by the changes in the legislation. The elderly labor force participation show very small fluctuations over time, and an increase in the last years of the 1990s. The evolution of the youth labor supply is downwards, showing signs of decline especially from 1990 on. The change in the labor supply of the young seems to be much more related to important changes in the educational attainment of this group than to variations in elderly labor supply. The graph does not seem to show any strong correlation between the two variables.

**Figure 2 – Labor Force Participation Rates, Old Adults (55-64), Youth (16-24) and Elderly (65-75), Males, Brazil**

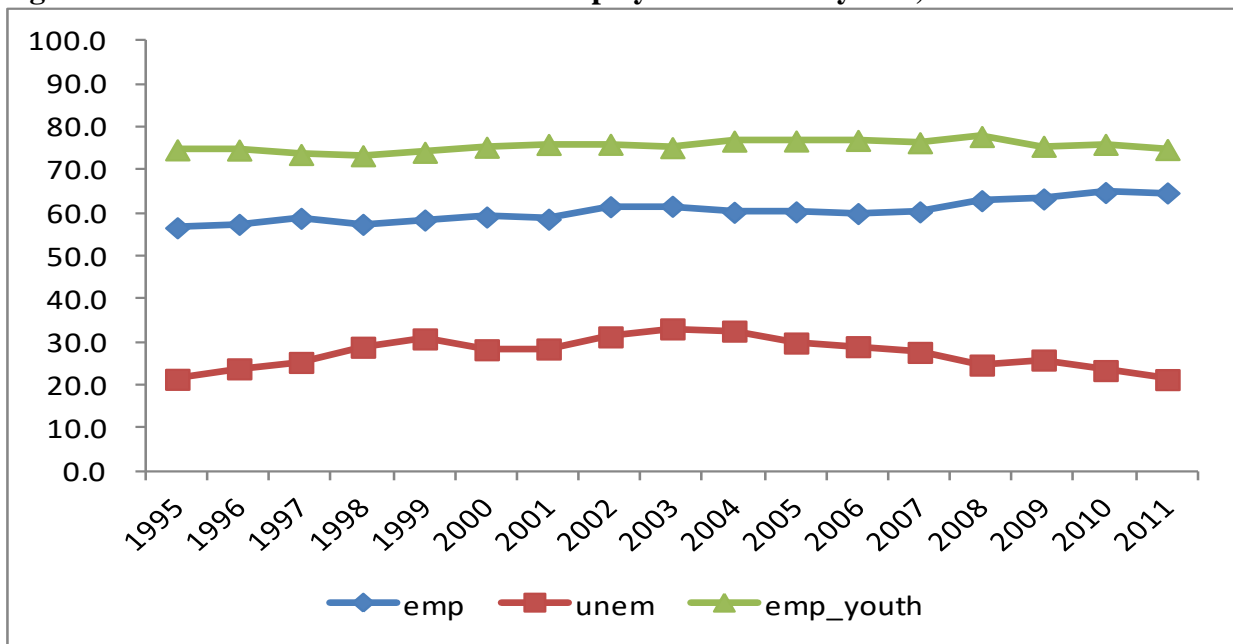


**Figure 3** shows the relation between elderly employment ratios and the youth unemployment rates. The results show an increase in the youth unemployment rate starting around 1995, but the employment rate of the elderly did not change much, if anything we observe a small decline in the labor force of the elderly. The figure does not indicate that the transition of the employment of older workers has any implication in the trajectory of the youth in the labor market. **Figure 4** shows similar data for Sao Paulo Metropolitan Area (RMSP) using information from SEADE, but a shorter series. We do not observe any relation between changes in the employment of the elderly and youth unemployment. In fact, in Sao Paulo we observed that from 2005 on there was an increase in the labor force participation of the elderly and a decline in the unemployment rate of the youth. We also observe that the decline in the unemployment rate of the youth cannot be explained by an increase in the number of inactive, since the labor force participation rates do not show significant changes during the period of analysis.

**Figure 3 – LFP of older workers and Unemployment rates of youth, Brazil – 1985-2009.**



**Figure 4 – LFP of older workers and Unemployment rates of youth, Sao Paulo – 1995-2011**





We then move on to a more formal statistical analysis to study the relation between old age labor force participation and youth unemployment. We follow the simple regression specification proposed by Gruber and Wise (2010):

$$Unemp_{youth} = \alpha + \beta LFPR_{elderly} + \gamma X_i + \varepsilon \quad (1)$$

where,  $Unemp$  is the unemployment rate of the youth (measure from PNAD, PME and PED),  $LFPR$  is the labor force participation rate of the elderly,  $X$  is a matrix of observable variables that might affect employment and unemployment rates; such as GDP growth, population age structure, educational attainment; and an error term.

We estimate the proposed model with different specifications. Table 1 reports the coefficient of the relationship between elderly labor supply and youth unemployment. The top part of the table report the results without considering any control variable and the bottom part reports the same coefficients in models controlling for different characteristics. The first row, top and bottom panel shows only a relation between the two variables and does not aim to show any causal relation. We also show the same relation using a lagged variable for the elderly employment. Finally, we related changes in the youth unemployment to changes in elderly employment over 3 years.

**Table 1 – Estimates of the Coefficients Relating Elderly Employment to Youth Unemployment, Brazil, Males**

Model	PNAD (1985-2009)	PME* (2002 – 2012)	PED-SEADE (1995-2011)
No controls	0.068 (0.999)	-2.031 (0.177) ***	-0.233 (0.374)
With Controls	-0.098 (1.065)		-0.433 (0.395)
1 year lagged w/ controls	0.1395 (1.028)	-0.429 (0.308)	-0.136 (0.412)
1 year difference w/ controls	4.606 (3.741)	-0.201 (0.450)	0.002 (2.181)

\* monthly data, does not include control variables.

\*\*\* significant at 1%

Table 1 reports results using different specifications and datasets (PNAD, PME and PED). It is important to stress that each dataset covers a somewhat different period depending on data availability and the consistency of each survey. The first line reports the basic regression model relating youth unemployment and older workers labor supply without controls. The only model with statistically significant estimates is the one using PME data. The estimates indicate that an increase in the labor force participation of the elderly reduces the unemployment rate of the youth, a result that is contrary to the theoretical model. In the PME estimate we are using monthly data, thus we did not include any control variable. The different specifications indicate similar results, negative relation, but the estimates are not significant. The estimates using data from PNAD and PED are not significant. The only estimate showing that any increase in elderly employment increases youth unemployment is obtained using PNAD data. The other three specifications (control, lagged and difference) indicate a very similar story, that is, we do not observe any relation between changes in old adults or elderly employment and youth unemployment.

## 5. Discussion

The rapid process of population aging will have huge impacts on the sustainability of the Brazilian pension system. The increase in the old age dependency ratio means a larger number of beneficiaries will depend on a smaller number of workers. The demographic problem is not the sole issue in this matter. There is also a strong downward trend in labor force participation at older ages. Early retirement has increased the dependency ratio more than would be predicted by demographic analysis. Labor force participation rates of older men fell significantly between 1950 and 2010, as in other developed and developing countries. During this time, the Brazilian social security system expanded, absorbing a larger group of the population and helping to accelerate the trends toward early retirement. The trend towards early retirement can also be explained by income growth and better options for the old-age population. In general, there are two main criticisms to this view. The first one argues that early retirement is important to create employment opportunities to young workers, in other words, if the elderly postpone retirement one would observe an increase in youth unemployment rates. The second view argues that elderly leave the labor force earlier mainly because of poor health conditions.

In the second part of the paper, I put forth a second question: how old-age employment is related to youth unemployment? We use three different data sets and both descriptive and regression analysis to discuss the relation between the two variables. As observed for more developed countries (Gruber and Wise, 2010), we do not find any relation between old-age employment and youth unemployment. In the case of Brazil, economic growth and educational variables seem to be much more related to variations in youth unemployment than employment history of the elderly.

In sum, retirement is an important stage on one's life cycle. Contrary to the past, most workers today enjoy a long and healthy period of retirement. In Brazil, the expansion of the social security system, economic development and rising income have allowed more workers to leave the labor market. In addition, improvements in goods and services provided to the elderly have transformed retirement into a more pleasurable and desirable stage of life. The importance of the public pension systems throughout the world is unquestionable, and the well-being of the elderly depends heavily on the provision of income from such programs. However, the necessity to reform the Brazilian pension system is clear. But, there are still several questions on how the reform should take place. One important point, not addressed in this paper, is the evolution of labor demand. As point by Skirbekk et al (2012) cognitive capacity is a better measure of active aging than age itself, and as technology evolves and firms demand different abilities, how older workers will fit this new demand.

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