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# Work and tax evasion incentive effects of social insurance programs☆ Evidence from an employment-based benefit extension

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ABSTRACT

This article studies how social insurance programs shape individual's incentives to take up registered employment and to report earnings to the tax authorities. The analysis is based on a social insurance reform in Uruguay that extended healthcare coverage to the dependent children of registered private-sector workers. The identification strategy relies on a comparison between individuals with and without dependent children before and after the reform. The reform increased benefit-eligible registered employment by 1.6 percentage points (about 5% above the pre-reform level), mainly due to an increase in labor force participation rather than to movement from unregistered to registered employment. The shift was greater for parents with younger children and for cohabiting adults whose partners' jobs did not provide the couples' children with access to the benefit. Finally, the reform increased the incidence of underreporting of salaried earnings by about 4 percentage points (25% higher than the pre-reform level), mostly for workers employed at small firms. The increase in fiscal revenue from higher levels of registered employment was several orders of magnitude greater than the loss of revenue due to an increase in underreporting.



## 1. Introduction

A large body of research on labor and public economics has examined the effects of social insurance and social welfare programs on incentives in the labor market. Most of the empirical literature has focused on behavioral responses to social insurance benefits (Krueger and Meyer, 2002) and to in-work benefits (Blundell and MaCurdy, 1999; Moffitt, 2003; Eissa and Hoynes, 2006). In many studies, emphasis has been placed on the financial incentive effects of labor force participation. The effects of responses on additional margins such as registered and unregistered employment and on underreporting of earnings to evade payroll taxes has received less attention (Slemrod and Yitzhaki, 2002; Sandmo, 2012; Slemrod and Weber, 2012). Understanding what leads firms and their employees to register with the formal system and to declare their true income to the government is a first order public finance issue for most economies around the world. For developing and middle-income countries, this is an important issue because of widespread tax non-compliance, poor enforcement of regulations, and low levels of social insurance coverage. Higher levels of registered employment and more reporting of income subject to payroll taxes would result in increased access to social insurance for workers and their families. Moreover, a reduction in tax non-compliance could also help remedy a variety of market distortions that limit economic growth and economic development (La Porta and Shleifer, 2008; Levy, 2008). This issue is also relevant in advanced economies with smaller but still sizeable underground sectors (Schneider and Enste, 2000; Schneider, 2005).

This paper contributes to these discussions by exploring how social insurance programs shape individuals' incentives to take up registered employment and to alter the reporting of earnings to the tax authorities. This question is addressed empirically by examining a large-scale policy change in Uruguay's social insurance system. In this system, most

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benefits are made available only to employees registered with the social insurance administration who pay contributions and payroll taxes. Until 2007, a health insurance benefit was in place according to which the social insurance administration covered the employee's insurance premium from a private healthcare provider. However, the plan did not cover the employee's family. The 2008 reform extended the healthcare coverage funded by the Social Insurance Administration (SIA) to include all registered employees' dependent children under the age of 18. The reform also increased the payroll tax contribution deducted from employees' salaried earnings, although, as described in detail below, the market value of the extended benefit was substantially greater than the increase in the tax liability for most workers with children.

This health insurance benefit extension (HIBEX) reform modified several margins of adjustment for eligible individuals (i.e., adults with dependent children). The reform introduced incentives to move into benefit-eligible employment (i.e., 25 h or more per week at a registered job) to take advantage of the subsidy for dependent children's insurance premiums. The new benefit created an additional incentive for those not working to enter benefit-eligible employment, for those working in unregistered employment to formalize, and for registered workers below the 25-hour cut-off to increase their declared hours of work per week to at least 25.

The identification strategy relies on the fact that childless adults were not eligible for the benefit extension. The reform's impact can thus be estimated using a difference-in-difference approach, comparing the behavioral responses of adults with children to that of childless individuals before and after the reform. The analysis is based on a pool of repeated cross-sections of a nationally representative Uruguayan household survey that covers three years prior to and after the reform. The empirical analysis suggests that the benefit extension had a significant effect on labor market outcomes for eligible individuals. Specifically, the number of individuals in benefit-eligible registered employment increased by 1.6 percentage points with respect to the comparison group, about 5% higher than the pre-reform level. The evidence suggests that this aggregate effect was mostly the result of a reduction in the number of those not working rather than a consequence of increased work hours among registered employees below the threshold, or a movement of unregistered workers to registered employment. The effects were substantially larger for single parents, parents with several children, and parents with younger children, for whom the reform represented a stronger financial incentive. For single parents, a sizeable fraction of the effect can be attributed to movements from unregistered to registered employment. The response from individuals in couples depended on the benefit eligibility of their partners, with larger effects on individuals with a partner whose employment health insurance arrangements did not already offer coverage to the couple's children.

In addition to these responses in labor supply and employment registration, the reform could also have affected an additional margin of non-compliance, i.e., the underreporting of earnings to tax authorities to evade payroll tax and social insurance contributions. The HIBEX may have affected this form of non-compliance with the tax authorities because of the higher health insurance contribution rate (from 3 to 6%) and because those entering registered employment had to face the payroll taxes associated with the whole bundle of social insurance benefits (more than 30% of taxable earnings). The analysis below exploits a unique source of information on underreporting: a household survey in Uruguay asked registered employees whether their salaried earnings were being underreported to the tax authorities. Based on the plausibly exogenous variation introduced by the reform, the results presented below suggest that the extended benefit increased the incidence of underreporting of salaried earnings for individuals with children by about 4 percentage points, almost 25% higher than the pre-reform level. Moreover, this effect was confined to workers employed at small firms.

This paper contributes to the recent literature on labor supply, social insurance programs and tax compliance. First, it provides an analysis of individuals' reactions to social insurance policies in the labor market beyond the labor supply margin typically studied in the empirical literature (Ben-Shalom et al., 2011). The analysis below also covers the effect of social insurance benefits on the registered–unregistered employment margin of adjustment. This is related to recent studies on the effects of work-based benefits such as the Earned Income Tax Credit (EITC) on formal employment (Potter Gunter, 2013). Because the EITC subsidizes only declared work, it induces individuals with low incomes to shift more hours from informal (or unregistered) to registered employment. This paper makes an analogous argument: since the additional benefit is only available through registered employment, the reform introduces an additional incentive to take up jobs that comply with tax regulations.

Second, this paper provides evidence to show that individuals also respond to the policy change through an additional margin of non-compliance, mainly the underreporting of salaried earnings. While the literature on tax evasion has typically concentrated on underreporting of self-employment income, in Uruguay (and in many other developing and middle-income countries) only employers report workers' salaried earnings, and they pay the full amount of taxes due.[2] This analysis adds to the limited evidence currently available on underreporting and the incentives introduced by social insurance programs. The results presented here complement previous findings in at least two ways. On the one hand, rather than rely on indirect evidence such as the comparison between household income and expenditures (Tonin, 2011) or between income distributions from two separate sources (Kumler et al., 2012), the findings are based on direct evidence of underreporting as stated by salaried workers. Moreover, the analysis also breaks down the impact of the reform on underreporting by firm size. This confirms the results of recent theoretical models (Kleven et al., 2009) and reinforces empirical findings found for other countries, including the United States (Chetty et al., 2013). The direct evidence of adjustments to the policy reform in terms of off-the-book employment and underreporting of salaried earnings extends the range of evidence on tax evasion (Slemrod and Weber, 2012) and contributes to the literature that attempts to disentangle tax evasion from real behavioral responses to policies (Chetty, 2009; Saez et al., 2012).

Finally, this paper provides one of the first estimations of the labor market response to social insurance benefits in Latin America. Bosch and Manacorda (2012) survey a relatively large body of empirical literature on the impact of non-contributive programs (such as conditional cash-transfers) on labor supply. They highlight the scarcity of evidence for the region on the effects of social insurance programs linked to registered employment. The findings presented here are in line with the theoretical literature on the effects of benefits tied to registered employment on individual choices between formal and informal employment (Levy, 2008; Galiani and Weinschelbaum, 2012).

This paper is organized as follows. Section 2 describes the institutional background of Uruguay's social insurance system and the 2008 healthcare insurance benefit extension. Section 3 details the work and tax evasion incentive effects introduced by the reform. Section 4 describes the data and the identification strategy to estimate the effects of the reform. Section 5 presents the main results on labor supply, registered employment, and underreporting of salaried earnings. Section 6 discusses a series of robustness and specification checks. Section 7 presents an analysis of the fiscal incidence of the reform accounting for its behavioral effects. Section 8 concludes with a discussion of the implications of these results for the analysis of tax and benefit systems in developing and advanced economies.

[2] The empirical literature on underreporting of salaried earnings is scarce in part due to a lack of data. Moreover, this form of non-compliance is not deemed significant in developed countries because third-party information reporting is effective in inducing compliance, as suggested by the tax law literature (e.g. Shaw et al., 2010) and by empirical studies (e.g., Kleven et al., 2011).