



## Do employment subsidies work? Evidence from regionally targeted subsidies in Turkey

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### ABSTRACT

This paper studies the effects on registered employment and number of registered establishments of two employment subsidy schemes in Turkey. We implement a difference-in-differences methodology to construct appropriate counterfactuals for the covered provinces. Our findings suggest that both subsidy programs did lead to significant net increases in registered jobs in eligible provinces (5%–13% for the first program and 11%–15% for the second). However, the cost of the actual job creation was high because of substantial deadweight losses, particularly for the first program (47% and 78%). Because of better design features, the second subsidy program had lower, though still significant, deadweight losses (27%–46%). Although constrained by data availability, the evidence suggests that the dominant effect of subsidies was to increase social security registration of firms and workers rather than boosting total employment and economic activity. This supports the theory that in countries with weak enforcement institutions, high labor taxes on low-wage workers may lead to substantial incentives for firms and workers to operate informally.

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### 1. Introduction

Persistently high unemployment rates have led many countries in Europe and elsewhere to implement employment subsidies with the objective of encouraging employment creation. On average, such programs amount to about one-quarter of total expenditures on active labor market policies in OECD member countries (OECD, 2003). While policymakers tend to equate the number of beneficiaries to the net employment effect of such programs, estimating the actual impact is not so straightforward. Many beneficiaries may have found jobs independently of the subsidies. In addition, subsidies may cause some workers to lose their jobs, either due to changes in relative wages (substitution effects) or because subsidies reduce the market share of some firms relative to others (displacement effects). For all these reasons, the net employment effects of the subsidies may be far from the administrative number of beneficiaries. Estimating the true impact of such initiatives requires building counterfactuals of what would have been the employment outcome in the absence of the subsidies, a difficult task given the lack of random assignment

programs. Despite the high interest in such measures, there are very few studies which rigorously measure the impact of wage subsidies. This is particularly the case for general tax cuts given the difficulties involved in finding appropriate control groups.

In this paper we examine the effects on registered employment and number of registered establishments of two regionally targeted employment subsidies offered by the Government of Turkey to encourage investment and employment in low-income provinces. This paper makes a number of contributions to the literature. First, it makes use of the progressive coverage expansion of the programs to identify appropriate treatment and control groups to estimate their effects on job creation. The research examines the incentives given by Law 5084 (2004), which covered 37 provinces and those given by Law 5350 (2005), which expanded coverage to 13 additional provinces, and modified qualification rules and subsidy amounts relative to the first scheme. Both laws subsidized employers' social security contributions, employee personal income taxes, energy consumption and land. Since these programs affected some provinces but not others, we estimate their effects by means of a difference-in-differences methodology and explore the robustness of the results to a number of different specifications of models and control groups. In particular, in addition to considering as natural control groups, the groups of provinces which are not exposed to treatment, we construct alternative controls by selecting provinces which present similar pre-treatment trends in the outcome variables. This regional approach has

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been used to study the effects of other labor market policies and institutions in the U.S. and elsewhere.<sup>1</sup>

Second, this paper examines the effects of program design by focusing on the differential effects of two subsidy programs of similar nature but with different eligibility conditions and subsidy amounts.

Third, the paper examines the effects of these programs on a number of outcomes normally not considered in the literature. In particular, the paper distinguishes between employment effects at the intensive and extensive margin. This distinction is important, not only to assess the effects on firm creation and number of jobs per firm, but also because one way in which firms can circumvent eligibility conditions for marginal programs is by shifting existing workers to newly created firms. The paper also examines whether employment effects are due to the creation of new jobs or the conversion of unregistered employment to registered jobs.

The Turkish economy comprises an appropriate setting to study this question because of its high level of taxation on labor.<sup>2</sup> In Turkey, combined employer–employee contributions to finance pensions and disability insurance, health insurance, unemployment benefits, and workers' compensation insurance constitute 36.5–42% of gross wages.<sup>3</sup> Income tax ranges from 15 to 35% of the gross wage.<sup>4</sup> Comparisons of the tax wedge on labor income in Turkey with the EU-15 countries (pre-2005 members) and a selection of (new accession) EU-10 countries for workers at different earnings levels and with different family characteristics indicates that for families and singles with children, Turkey's taxes on labor are among the highest in the OECD.<sup>5</sup> This is especially the case for low-wage workers with children where Turkey has the highest tax wedge of all of the OECD countries (World Bank, 2006). Other important features of the Turkish economy are low job creation, low employment and participation rates and a high share of workers in the informal economy (one in three workers in urban areas and three in four in rural areas are not registered with social security).

Our findings suggest that both subsidy programs did lead to significant net increases in registered jobs in eligible provinces. Depending on the model specification, estimated registered employment gains range from 5% to 13% for the subsidy scheme under Law 5084 and from 11% to 15% for Law 5350. While these estimates could be at least partly reflecting substitution effects, as control provinces can be affected adversely by the subsidy, we attempt to minimize this effect by using different sets of provinces—some geographically closer to some further away from the treated provinces—as controls.

Estimates also indicate that the cost of the actual job creation was high because of substantial deadweight losses.<sup>6</sup> This was particularly true for the first program where we estimate that between 47% and 78% of the subsidized jobs would have been created without the program. Because of better design features, the program under Law 5350 had lower, though still significant, deadweight losses (27–46%) and, as a result, this appears to have been more cost-effective even though the subsidies themselves were higher than under Law 5084. Although data limitations constrain our capacity to test whether the dominant effect of the subsidies was to increase social security registration of firms and

workers or to boost total employment and economic activity, the evidence we have suggests the former was more important. This supports the theory that in countries with weak enforcement institutions, high labor taxes on low-wage workers may lead to substantial incentives for firms and workers to operate informally.

The rest of the paper is organized as follows. Section 2 provides a brief review of the existing literature, while Section 3 describes the regional incentives. Section 4 presents the data, our identification strategy, and the descriptive statistics. Main results are provided in Sections 5 and 6, and a simple cost–benefit analysis is conducted in Section 7. Finally, Section 8 concludes.

## 2. Previous literature

Employment subsidies aim to reduce the cost of labor to employers.<sup>7</sup> They can be applied to all employment or only to new hires (marginal subsidies). They can also be general, in the sense of applying to all workers and establishments, or targeted, if only certain types of workers (for example, low-wage, youth, long-term unemployed, women, or disabled workers) or certain sectors or geographic locations qualify. Subsidies can be implemented as direct wage refunds or, quite commonly, as credits on social security contributions and other labor taxes.

To determine the effects of employment subsidies, economists have resorted to two approaches. The first is to make inferences based on estimates of the elasticity of labor demand. The second is to directly estimate the employment effects of actual subsidy measures.

Regarding the first approach, labor demand elasticity estimates give a measure of the expected percentage change in employment given a percentage change in labor costs. However, this approach is confounded by the fact that, *a priori*, it is unclear whether the incidence of the subsidy falls on the employer or on the employee, which depends on the elasticity of the labor demand and labor supply. When the incidence is fully on the employer, subsidies will lead to lower total labor costs and increased labor demand. However, when the incidence is on the employee, the result will be higher take-home pay for workers and no effect on labor demand. In the intermediate case when the two parties share the burden of a tax, and assuming competitive labor markets, both employment and wages will increase. Other factors can also come into play. One is whether minimum wages are binding. In that case, excess supply of labor implies that firms can recruit more workers without having to increase wages.

The existing literature provides some guidance on the plausible range of labor demand elasticity estimates with most estimates clustering around the  $-0.30$  to  $-0.50$  range (Hamermesh, 1993). Yet, as noted above, labor demand elasticities do not fully capture the employment effects of changes in subsidies (or labor taxes) because that depends also on the extent to which they are shifted on to employees (also commonly referred as “pass through”). Studies provide a wide range of estimates, which indicate that, in some cases, the pass through can be quite large. For example, research in Latin America suggests that anywhere from 20 to 70% of the employer's social security contributions are passed on to the worker (Heckman and Pagés, 2004). However, at least one study for Chile finds full wage shift and no employment effects (Gruber, 1997). For OECD countries, Nickell (2003) concludes that the most reasonable assessment based on the literature available is that labor taxes have a modest effect on employment and therefore tax credits should also exert small effects. He concludes that a 10-percentage point change in the tax wedge can be expected to affect employment by between 1 and 3%, “...a relatively small but by no means insignificant effect” (p. 8). It should be noted however that this conclusion refers to across-the-board tax credits. The evidence suggests that the rate of pass through declines around the minimum wage (Taymaz, 2006). Therefore, tax credits might have larger effects for low-wage workers.

<sup>1</sup> See for example Autor et al. (2006, 2007) or Besley and Burgess (2004).

<sup>2</sup> Throughout the paper, “labor taxes” is used as a term to include both social security contributions (levied on employers and employees) as well as personal income taxes levied on employees.

<sup>3</sup> The range is due to contribution rates for work injury which vary by industry.

<sup>4</sup> Between 2000 and 2004, income tax rates ranged from 15 to 40%. In 2005, the top rate was cut to 35% and the number of brackets was reduced from six to five.

<sup>5</sup> The “tax wedge” is defined as income taxes and combined (employer–employee) social security contributions, minus cash benefits, as a percentage of total labor compensation. The calculations of the tax wedge are based on OECD estimates with additional calculations made by the World Bank to take into account Turkey's consumption tax credits which were not included by the OECD. Note that payroll taxes account for about 70% of Turkey's overall labor taxes. Personal income taxes on wages account for the remainder.

<sup>6</sup> We use “deadweight loss” throughout the paper to refer to the number of jobs that would have been created independently of the subsidy programs.

<sup>7</sup> We use the terms “employment subsidies” and “wage subsidies” interchangeably to refer to subsidies that reduce the cost of labor for employers.

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