Do regional payroll tax reductions boost employment? ☆

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A B S T R A C T

Using a Difference-in-Differences approach, we evaluate the effects of a 10 percentage point reduction in the payroll tax introduced in 2002 in northern Sweden. We find no employment effects among firms existing both before and after the reform, whereas the average wage bill per employee increases by about 0.25% per percentage point reduction in the tax rate. Extending the analysis to include entry and exit of firms, we find evidence of positive effects on the number of firms and a tendency to positive employment effects. Moreover, the wage incidence estimates become insignificant when we account for entry and exit of firms.

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1. Introduction

Changes in labour taxation are often justified by their presumed effects on employment. For example, payroll tax reductions are argued to have positive effects on labour demand and to increase employment. However, the empirical evidence supporting this belief is ambiguous and inconclusive. Moreover, this uncertainty is not limited to the effects of (changes in) payroll taxes but holds for labour taxes in general.

The uncertainty about the employment effects derives from uncertainty with respect to tax incidence and potential shifting of the tax burden from the agent upon whom the tax is levied to someone else.[1] In the absence of tax shifting, assessment of the employment effects of a tax change is straightforward, at least in principle. Essentially, it amounts to the estimation of a labour demand or labour supply elasticity, depending on whether the tax is levied on employers or employees, respectively.

Tax shifting affects the (gross) wage. By so doing, it induces reactions on both sides of the labour market.

For example, a reduction in the income tax paid by employees will increase labour supply. However, employers may also benefit from the tax reduction through lower wages, i.e. tax shifting. The lower wages will reduce the initial supply response but will also induce an increase in labour demand. To what extent the demand increase will compensate for the induced supply contraction depends on the relative magnitudes of the labour supply and labour demand elasticities.

In the case of a reduction in a payroll tax paid by employers, the initial response will be an increase in labour demand. Employees may capture part of the employers' labour cost reduction through higher wages. This tax shifting dampens the initial demand effect but the wage increase may also lead to a counteracting increase in labour supply.

The extent of tax shifting following a given tax change is an empirical question. Likewise, the timing and relative strengths of the resulting counteracting supply and demand reactions are also empirical matters. Taken together, these circumstances make the magnitude of the net impact of a tax change on employment highly uncertain.

Empirical assessments of the effects of labour tax changes face several further difficulties. In particular, there is in general limited variation in taxes paid across agents. Furthermore, when there is some degree of tax differentiation it is often hard to find comparable firms/workers that meet different taxes.

Another potential problem is that in circumstances where employment effects can be estimated, it is seldom possible to account for

impacts along both the extensive margin (# employees) and the intensive margin (# hours worked). However, as pointed out by Eissa et al. (2004), if the labour tax is linear then the responses along the extensive and intensive margins will be equal in nature. The quantitatively most important employment effects of the tax change should thus occur along the extensive margin.

In the literature, the most credible evaluations of the effects of labour taxes are longitudinal studies exploiting changes in regionally differentiated tax schemes. Such schemes make it possible to compare employment changes for firms/workers that are similar and located close to one another, but differ with respect to tax rates (i.e. Difference-in-Differences).

In this paper, we make use of a regional reduction in a linear payroll tax, levied on employers, to estimate wage and employment effects along the extensive margin. The tax reduction amounted to 10 percentage points and took place in 2002, for firms in the northern part of Sweden. The cut decreased the payroll tax rate from 38% to 28%, up to a wage bill ceiling. By means of a Difference-in-Differences approach we compare the change in outcomes for the target area firms to the changes in firms operating in the same industries, outside the target area.

The results show no employment effects among firms existing both before and after the reform, whereas a one percentage point reduction in the payroll tax rate increased the wage bill per employee by about 0.25%, i.e. partial tax shifting. When the analysis is extended to include entry and exit of firms, we find evidence of positive effects on the number of firms and a tendency to positive employment effects, while the wage incidence estimates become insignificant.

The outline of the paper is as follows. Section 2 contains a description of the institutional features of the 2002 payroll tax reduction. In Section 3 we review the previous literature on labour taxes and employment, paying particular attention to tax incidence and identification strategies. Theoretical issues are considered in Section 4; using a wage bargaining framework reflecting the conditions in the Swedish labour market, we discuss factors crucial for wage setting, tax shifting, and employment effects in the context of a payroll tax cut. Section 5 contains a discussion of methodological considerations and the outcome variables used. We discuss data issues in Section 6, present our results in Section 7, and conclude in Section 8.

2. Payroll taxes in Sweden

Swedish employers are obliged by law to pay a payroll tax consisting of contributions to pensions, health insurance, and other social benefits. When the tax was introduced in 1950, the legal payroll tax rate was relatively low — about 6%. However, the tax rate rose sharply in the 1960s and 1970s, peaking at 39% in 1990. Since the mid-1990s, the payroll tax rate has remained rather stable at around 33% (Holmlund, 1983; Confederation of Swedish Enterprises, 2006).

In addition to the statutory payroll tax, collective agreements commit most employers to pay around 10.4% of gross wages to finance job search support, retraining and severance payments when employees are laid off.[2]

Initially, all firms paid the same legal payroll tax rate. Since the early 1980s, however, firms in northern Sweden have been entitled to different forms of payroll tax cuts. In 1982, firms in four municipalities in the northernmost county (*Norrbotten*) were allowed to cut payroll taxes by 10 percentage points. Starting in 1984, firms in *all* municipalities in Norrbotten were allowed to reduce the payroll tax by 10 percentage points. In 1991, the target area was expanded even further, covering the northern half of Sweden with the exception of

the coastline. This area is commonly referred to as the "Regional Support Area" (RSA) A. See Fig. 1.[3]

The payroll tax cut in RSA A was reduced from 10 to 8 percentage points in 1997. By the end of 1999, it was abandoned altogether, as it did not to comply with EU regulations (SOU 2000:87; SOU 2005:68).

A new regional payroll tax cut for firms in RSA A was introduced on January 1st 2002. Again, the reduction was set to 10 percentage points, but was restricted to annual gross wage bills up to SEK 852,000.[4] This limit roughly corresponds to three employees with average earnings in the manufacturing sector. In order to comply with EU regulations, the payroll tax reduction was restricted to private sector employers not active in the agriculture, fishing or transport industries. Furthermore, the reduction applied only to workers below the age of 65, the stipulated retirement age.

The reduction in the regional payroll tax rate came on top of an already existing general cut of five percentage points for all firms in the country, which was introduced in 1997.[5] The same wage bill ceiling applied to both the general and additional regional payroll tax reductions.[6]

The 2002 reform implied that firms in RSA A could cut their payroll taxes by 15 percentage points up to the wage bill ceiling, whereas firms outside RSA A could only cut their taxes by five percentage points up to the ceiling. The statutory payroll tax rate was 32.82% in 2002. The payments determined through collective agreements amounted to an average of about 10.4 percentage points. Thus, the additional payroll tax reduction for RSA A firms below the wage bill ceiling implies a 7.3% $[0.10/(1.4322 - 0.05)]$ reduction in labour costs. To illustrate how the payroll tax rate varies over time and by region for firms of different sizes, see Fig. 2A and B. These figures depict the marginal and average payroll taxes of the gross wage bill, respectively. The diagrams show both the general reduction and the RSA A reduction.[7]

The marginal and average payroll tax rates are equal for firms with wage bills less than SEK 852,000. For firms with wage bills over the ceiling, the marginal tax rate reduction is zero, while the average rate (bounded below by 28.22%) is monotonically increasing towards the total payroll tax rate of 43.22%. It is evident from Fig. 2B that this increase is quite rapid; the payroll tax reduction becomes successively more thinly spread out over the wage bill. In a firm with a wage bill of SEK 1,700,000, which corresponds to roughly twice the wage bill ceiling, the reduction following the reform in 2002 will only amount to five percentage points.

It is worth noting that profiles of the marginal and average tax rates pertaining to the general reduction are qualitatively the same as the corresponding profiles associated with the RSA A reduction. This means that, if firms in RSA A are representative of firms in other parts of Sweden, then inferences about the effects of payroll tax reductions in RSA A should be qualitatively valid with respect to the general reduction. Thus, even though the effects of the general tax reduction cannot be evaluated by themselves, we can rely on the analogy with the effects estimated for the RSA A reduction to draw qualitative conclusions.[8]

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[2] The information on payroll taxes according to collective agreements comes from Medlingsinstitutet (2008). To compute the payroll tax rate facing the average private firm, the payroll taxes paid have been weighted by the share of employees covered by different collective agreements in 2004.

[3] Two "Regional Support Areas" (RSAs) have been defined in Sweden, A and B. The aim of the RSAs is to stimulate regional growth in more remote and sparsely populated parts of the country through investment and employment subsidies. The difference between RSA A and RSA B is simply that subsidies are somewhat more common and more extensive in RSA A than in RSA B.

[4] At exchange rates prevailing in early 2002, 852,000 SEK amounts to 92,000 EUR and 82,000 USD.

[5] The general payroll tax reduction was unchanged until 2007, when it was reduced from five percentage points to 2.5 percentage points. In 2008, the general payroll tax cut was abolished altogether.

[6] In 2005, all firms received capital tax cuts, which were financed by lowering the wage bill ceiling for the general payroll tax cut, from SEK 852,000 to SEK 741,600.

[7] The figures are schematic in the sense that the payroll costs determined through collective agreements do not constitute a constant share of the wage bill. Instead, they vary around the average rate of 10.4%.

[8] The general reduction cannot be evaluated because all firms are eligible for it and, moreover, because the firms became eligible at the same time. This means that it is impossible to define a group of firms for comparison that did not (at some point in time) experience the reduction.