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# **Employment, Wages, and Dividend Taxation**

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# Employment, Wages, and Dividend Taxation

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## ABSTRACT

This paper tests the effect of dividend taxation on employment. Since dividend taxation affects real investments, tax-induced changes in real investments should map into employment effects. Using a difference-in-difference approach around the Swedish 2006 dividend tax cut and unique corporate-level data with income tax information on every employee, we find robust evidence of dividend tax-induced employment effects. In response to the dividend cut, both employment and wage levels increase in cash-constrained firms relative to cash-rich closely held corporations.

*Keywords:* Dividend taxation, Employment, Wages, Private Firms

*JEL classification:* H21, H25

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## 1. Introduction

Policy makers frequently reduce dividend taxation to foster growth and capital formation in an economy (e.g., the 2003 dividend tax cut in the United States). In line with theory (Chetty and Saez 2010), recent empirical literature documents that a dividend taxation cut can improve allocation of investment as investments are shifted from cash-rich to cash-constrained firms (e.g., Becker et al. 2013, Alstadsæter and Jacob 2014). While the empirical literature focuses on corporate investments in capital stock exploiting large policy shocks<sup>1</sup>, very little is known about the effects of dividend taxation on employment. Since an increase in a firm's real capital could also increase the marginal return to labor, we would expect this to increase (1) the number of employees and/or (2) employee income. In the present paper, we evaluate how the 2006 Swedish dividend tax cut of 10 percentage points affected employment and wages in Swedish closely held corporations (CHCs) as this tax cut induced investment responses (Alstadsæter and Jacob 2014).

We exploit unique administrative tax data on all CHCs and all their employees with information on labor income over the 2002–2011 period. Representing about 60% of all Swedish corporations and generating more than 50% of taxable corporate income, CHCs are an important part of the Swedish economy. Using a difference-in-difference (DD) design that compares cash-constrained CHCs to cash-rich CHCs, we show empirically that employment responds to the dividend tax cut. Following the dividend tax cut and the increase in real investments, cash-constrained firms hire more employees relative to cash-rich firms. Our empirical results suggest that the tax cut of 10 percentage points increased the number of employees by about 4.9%. Second, we show empirically that the average, median, and highest employee labor incomes in cash-constrained CHCs increase by about 6% relative to cash-rich CHCs around the dividend tax cut. Overall, our results suggest that dividend taxation affects not only investment in capital stock but also employment.

## 2. Data and Institutional Background

Our data sample comprises the tax balance sheet information and profit and loss statements of all Swedish CHCs. The unique feature of our data is that we are able to link employee information from the full sample of employees to the corporate data. Each employee has an employer identifier that allows us to link employees' income information to the firm to obtain the average, median, and top incomes, as well as the exact number of employees in a CHC.

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<sup>1</sup> Frank et al. (2010), Campbell et al. (2013), and Yagan 2013.

Corporate profits are subject to double taxation in Sweden, with taxation at the corporate level and at the owner level upon dividend payout.<sup>2</sup> The 2006 tax reform reduced the taxation of dividends by 10 percentage points, from 30% to 20%, for active owners of CHCs. Theory suggests that cash-constrained (cash-rich) firms are sensitive<sup>3</sup> (irresponsive<sup>4</sup>) to dividend tax changes, since they finance investments through new equity (retained earnings). Consistent with these theoretical views, empirical studies show that a dividend tax cut induces a reallocation of investments from cash-rich to cash-constrained firms (e.g., Becker et al. 2013).

As shown by Alstadsæter and Jacob (2014), the Swedish 2006 dividend tax cut led to cash-constrained CHCs increasing their investments. In a standard Cobb–Douglas production function,  $Y = A \cdot L^\alpha K^{1-\alpha}$ , the marginal product of labor is positive and increasing in the level of capital,  $\frac{\partial Y}{\partial L} = \alpha A \cdot L^{\alpha-1} K^{1-\alpha} > 0$ . Since a reduction in dividend taxation, such as the Swedish 2006 dividend tax cut, increases  $K$  ( $\frac{\partial K}{\partial \tau} < 0$ ), firms are expected to increase  $L$  ( $\frac{\partial L}{\partial \tau} < 0$ ) due to the increased marginal product of labor. The documented increase in real investments among cash-constrained firms following the tax cut would increase the marginal return to labor for these firms. We thus expect that the dividend tax cut increases (1) the number of employees and/or (2) the income of employees of cash-constrained CHCs relative to the employees of cash-rich CHCs.

### 3. Empirical Strategy and Results

We extend the DD approach of Alstadsæter and Jacob (2014) and compare cash-rich to cash-constrained CHCs around the 2006 dividend tax cut to identify how employment responded to the dividend tax cut. Using the industry-adjusted pre-reform average cash-to-asset ratio, we sort CHCs into quintiles. We define the bottom quintile of the cash-to-asset ratio distribution as cash-constrained CHCs (treatment group) and the top quintile of the cash-to-asset ratio distribution as cash-rich CHCs (control group).

To illustrate graphically how a dividend tax cut affects the difference in employment between the treatment and control groups, Figure 1 plots the difference in the number of employees (Panel A) and the median employee income (Panel B). The 2006 tax reform reduces the differences in the number of employees and in median employee income between

<sup>2</sup> Corporate income tax was 28% (26.3% in 2009). Alstadsæter et al. (2014) provide detailed descriptions of data and the Swedish tax system.

<sup>3</sup> Harberger (1962), Feldstein (1970), Poterba and Summers (1985).

<sup>4</sup> King (1977), Auerbach (1979), Bradford (1981).

cash-rich and cash-constrained CHCs. This is a first indication that the dividend tax cut affects employment in two ways: (1) It increases employees and (2) raises employee incomes.

[Insert Figure 1 about here]

Next, we estimate the following DD model:

$$L_{i,t} = \alpha_0 + \alpha_1 \cdot Post \times Treatment + \alpha \Pi_{i,t} + \alpha_i + \alpha_{j,t} + \varepsilon_{i,t}, \quad (1)$$

where  $L_{i,t}$  is the dependent variable. We use four different proxies for the factor labor: (1) the number of employees, (2) average employee income, (3) median employee income, and (4) top employee income. We exclude all wages of owner–managers to avoid income shifting around the reform that might affect the results (Alstadsæter and Jacob, 2012). All income variables are in natural logarithms. We include a vector of firm-level control variables ( $\Pi_{i,t}$ ), as listed in Table 1, firm fixed effects ( $\alpha_i$ ), and industry–year fixed effects ( $\alpha_{j,t}$ ). We use robust standard errors clustered at the firm level.

Table 1 presents summary statistics and variable definitions for our sample of nearly 200,000 firm–year observations. On average, our sample CHCs have 6.3 employees, with an average labor income of SEK 258,839 (about USD 36,000 in 2009). Since we know each employee’s income, we also know the top earner in each firm. On average, the highest labor income in a CHC is SEK 345,783.

[Insert Table 1 about here]

Table 2 presents the regression results from estimating equation (1). In line with our expectations, the DD coefficient  $\alpha_1$  is positive in all four specifications. The estimates are not only statistically but also economically significant. For example, the 10 percentage point dividend tax cut increases the average number of employees in cash-constrained CHCs by 4.9% (= 0.31/6.3) relative to employees in cash-rich CHCs. At the same time, median employee income increases by 5.7% in a cash-constrained CHC relative to a cash-rich CHC. The 10 percentage point dividend tax increase has led to an increase in real investments of 16% (Alstadsæter and Jacob 2014) and cash-constrained CHCs appear to increase their employee base as well as employee income. The latter could be the result of higher hourly wage rates or more hours worked. Unfortunately, this is not observable in our data. The effect on median employee income in a firm is similar to the effect on average employee income. Interestingly, the effect on the top earner is slightly stronger. On average, the top earner’s income in a cash-constrained CHC increases by 6.5% relative to a cash-rich CHC.

Overall, our results indicate that a dividend tax cut can also affect employment in a firm. Dividend tax-induced employment effects comprise two margins. First, a dividend tax cut appears to increase the number of employees in cash-constrained relative to cash-rich firms. Second, a dividend tax cut appears to increase employee income in cash-constrained relative to cash-rich firms.

[Insert Table 2 about here]

#### **4. Conclusion**

Prior theoretical and empirical research suggests that dividend taxation affects corporate investment. Dividend tax cuts lower the cost of capital, which encourages more capital formation. Since firms invest more, they demand more labor, raising the aggregate demand for labor. This paper shows empirically that dividend taxation additionally affects levels of employment and employee income. These results have important policy implications because dividend taxation affects not only capital formation but also labor markets. Another implication of our result is that studies of tax effects on capital formation and real investments should also consider employment effects.

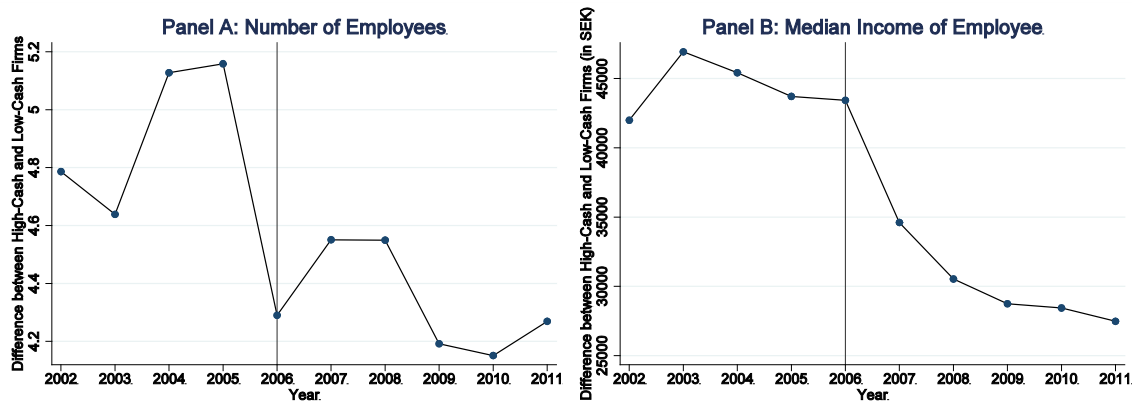
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This figure shows the differences in the number of employees (Panel A) and median employee income (Panel B) between the control group (cash-rich firms) and the treatment group (cash-constrained firms). The vertical line indicates the 2006 tax reform.

**Fig. 1.** Dividend Taxation and Employment.



**Table 1**  
Summary statistics.

Variable	Description	Mean	Std. dev.
Num_Employees	Number of employees	6.293	27.013
Avg_Income	Average employee income in firm, SEK	258,839	121,864
Med_Income	Median employee income in firm, SEK	258,150	121,261
Max_Income	Maximum employee income in firm, SEK	345,783	210,033
Working_Assets	Ratio of working capital to total assets	0.472	0.339
Sales_Assets	Ratio of turnover to total assets	2.083	1.626
Debt_Assets	Ratio of debt to total assets	0.572	0.355
RE_Assets	Ratio of retained earnings to total assets	0.258	0.288
Sales_Growth	Growth in turnover from $t-2$ to $t$	0.040	0.452
Ln(TA)	Natural logarithm of total assets	14.616	1.299

**Table 2**  
DD estimates.

	Num_Employees (1)	Avg_Income (2)	Med_Income (3)	Max_Income (4)
<b>Post×Treatment</b>	<b>0.3101***</b> <b>(0.0854)</b>	<b>0.0569***</b> <b>(0.0041)</b>	<b>0.0556***</b> <b>(0.0043)</b>	<b>0.0649***</b> <b>(0.0044)</b>
Working_Assets	0.5602*** (0.0761)	0.0026 (0.0057)	0.0041 (0.0058)	0.0135** (0.0060)
Sales_Assets	0.4918*** (0.0319)	0.0261*** (0.0017)	0.0253*** (0.0018)	0.0413*** (0.0021)
Debt_Assets	-2.0380*** (0.1062)	-0.0861*** (0.0053)	-0.0823*** (0.0056)	-0.1403*** (0.0058)
RE_Assets	-3.2236*** (0.1834)	-0.0645*** (0.0084)	-0.0621*** (0.0086)	-0.1321*** (0.0090)
Sales_Growth	0.2812*** (0.0414)	0.0473*** (0.0029)	0.0465*** (0.0029)	0.0666*** (0.0030)
Ln(TA)	3.3449*** (0.1365)	0.1445*** (0.0044)	0.1388*** (0.0045)	0.2390*** (0.0047)
Industry–Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Observations	192,610	192,610	192,610	192,610
Adj. R <sup>2</sup>	0.9780	0.7042	0.6857	0.7706

Robust standard errors are clustered by firm. FE stands for fixed effects.