Does capital bear the burden of local corporate
taxes? Evidence from the 2008 tax reform in
Germany

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Abstract

We use an asset price approach to analyze the incidence of local corporate
taxes. Exploiting the German 2008 tax reform we employ an event study
design to assess the effects of local corporate taxes on stock prices. The
reform reduced federal as well as local corporate tax rates, the latter as a
function of the existing local corporate tax rates, as well as the determination
of the tax base. We match firms to the local tax rates prevailing at their
respective headquarters and analyze the differential stock market responses
to the political decision to legislate the reform as a function of local business
tax rates. We find that firms which are located in high tax jurisdictions
significantly outperform firms in low tax jurisdictions during the period
in which the reform was decided. Our results indicate that firm owners
partially bear the burden of local corporate taxes.

JEL classification: H22, H25

Keywords: tax incidence, corporate tax, event study

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1 Introduction

The incidence of corporate taxes is one of the classic questions in public finance. The seminal closed economy analysis by Harberger (1962) indicated that, under several reasonable assumptions, capital bears the entire burden of the tax in the long run. The theoretical literature has argued that this finding is largely reversed in open economies (Harberger (2008)), and even more so at the state or local level. A growing literature on place-based policies also argues that mobile factors of production such as capital or mobile workers will typically not bear the burden of local taxes and subsidies, see Kline and Moretti (2014) for an overview. Suarez Serrato and Zidar (2016) provide a model with heterogeneous firms and monopolistic competition where capital can bear the burden of local corporate taxes, and they estimate that capital roughly bears 30% of corporate taxes at the state level in the US. Determining the incidence of local and state taxes is also a key aspect for equity concerns. With respect to state level corporate taxes in the US, Nallareddy, Rouen and Serrato (2018) show that reductions in state tax rates increase inequality. Ultimately, it remains an empirical question whether capital bears the burden of local corporate taxes.

We study the tax incidence on capital of the local business tax (LBT) in the compelling German institutional setting which is characterized by substantial taxation of business profits at the local level, where local tax rates on business profits have ranged from 10% to over 24%. Not only are these taxes quantitatively important, but there is also considerable tax rate variation among local governments. Moreover, a substantial share of local governments change their tax rate each year, a fact that has already been exploited in empirical studies. Conceptually, capital mobility should be high at the local level, in particular given that Germany is rather densely populated and individual jurisdictions are rather small in population and area, on average. The system of local corporate taxation in Germany therefore provides an excellent empirical laboratory to analyze the incidence of local corporate taxes, as convincingly argued by Fuest, Peichl and Siegloch (2018). These authors show that just over half the burden of these local corporate taxes is shifted onto workers in the form of lower wages in Germany. Given that the tax may also be shifted upwards to suppliers or land owners via

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1 The German LBT ("Gewerbesteuer") is also translated as "trade tax" in the literature.
lower prices for intermediate inputs or lower rents, or downwards to the firm’s customers (consumers or customer firms), it remains an open question whether, and to what extent, capital owners bear the burden of corporate taxes at the local level.

Similar to Fuest, Peichl and Siegloch (2018), we exploit differential effects of local corporate taxes across local governments. We propose an alternative strategy to identify the incidence of local taxes on capital based on an asset price approach, cf. Summers (1985) or Cutler (1988). The key idea of the asset price approach maintains that the tax incidence corresponding to a tax change should be immediately reflected in asset prices once the decision to change the tax occurs. We apply this logic to local corporate taxes, arguing that their changes should be directly reflected in the stock price of firms that are located, and thus potentially affected, in the jurisdiction where the change occurs. At the heart of our strategy is the comparisons of the behavior of stock market prices of firms trading on the German stock market as a function of each firm’s location and its corresponding liability to local corporate taxes in response to changes in the local tax rate.

Contrary to Fuest, Peichl and Siegloch (2018) we do not focus on the effects of individual tax changes by individual local governments over a range of years, since we employ an event study research design. In general, the timing and the communication of the decentralized decisions by local governments to change local tax rates are rather intransparent. Thus, while the data on the actual tax rates and changes for any given year are available, it is typically not possible to collect information on the decision to change tax rates at the local level over several years with the necessary precision, in particular with respect to the event time. To overcome this difficulty we exploit a key institutional feature of the German 2008 tax reform which exposed all firms to a substantial reduction in their local and federal tax rates. The key aspect for our analysis was that, due to the construction of the local tax rate and the design of the reform, the reduction was a function of the existing level of local taxes. Thus, depending on each firm’s location the reform resulted in a different reduction for each firm. Moreover, tax base changes of the reform affect firms differently depending on the prevailing local tax rate. A firm facing a high local tax rate benefits relatively more from a base reduction than a firm based in a low tax jurisdiction. Thus, focusing on the local tax rates in 2007 allows us to compare the differential effects for the different treatment
intensities induced by the tax reform decision. Furthermore, since the reform was decided at the federal level, the event time coincided for all firms. Finally, given that the decision to reform was at the federal level, the resulting differential effects on local tax levels can be largely seen as exogenous.

As we explain in detail in Section 2, the 2008 tax reform affected firms in several ways. First, the reform reduced corporate tax rates, but this reduction was a function of the existing local tax rate, where the tax reduction was larger for firms located in low tax jurisdictions. This direct effect should benefit low tax firms. However, the tax shield of leveraged firms should also be reduced more strongly for low tax firms, which should benefit high tax firms, relatively. Moreover, the reform changed the definition of the tax base. Overall, the reform seems to have reduced the tax base of the local corporate tax. This should have favored firms facing a higher local tax rate. Finally, as has been argued by Summers (1985) and others, general equilibrium effects may also determine the valuation of asset prices. We are agnostic a priori about which effect should be dominant, and it is also evident that these opposing effects can offset each other.

The results indicate that local corporate taxes matter for firm value. We find that stocks of firms facing higher local corporate tax rates perform substantially better than those firms facing lower taxes. Thus, local corporate taxes matter for the value of firm owners. Perhaps surprisingly, the tax base effects together with tax shield effects dominate the direct effect of larger tax rate reductions in jurisdictions with lower tax rates. Our analysis thus confirms the findings of Suarez Serrato and Zidar (2016), who also argue that firm owners partially bear the burden of state level corporate taxation.

2 Institutional setting

2.1 The local business tax in Germany

The German local business tax (LBT) is levied on all incorporated and unincorporated businesses, with different rules for applying for different legal forms. Given that we focus on publicly traded firms, only the rules for incorporated businesses matter for our analysis. Corporate businesses are subject to the federal corporate tax and the local business tax.
The LBT is levied on the profits of firms that operate an establishment in a given municipality. The tax base is determined at the federal level and thus does not depend on the municipality. It largely corresponds to the tax base of the federal corporate income tax. However, interest payments, which are fully deductible from the federal corporate tax base, are partly added to the tax base of the local tax. Similarly, other payments such as leasing rates are also partly added to the tax base. For firms that operate more than a single establishment the total tax base is apportioned to the municipalities, where at least a single establishment is located, according to their share in the total wage bill of the firm. The local tax rate $\tau_g$ results from the multiplication of the federally determined base factor $b_t$ ("Gewerbesteuermesszahl") and the local tax multiplier $m_{ti}$ ("Hebesatz"), so that $\tau_g = b_t m_{ti}$, where the subscript $t$ indicates the time, and the subscript $i$ corresponds to the municipality. The federal base factor is typically constant and taken as given by the municipalities. The federal base factor had been constant before the 2008 reform. Local governments can change their local multiplier at a yearly frequency, and thus determine the overall tax rate. In the sample of headquarter municipalities, which we use in our analysis, roughly 8% of the local governments change their tax rate in any given year, on average.

2.2 Main Changes of the tax reform 2008

The 2008 tax reform was one of the most important tax reforms in the history of the Federal Republic of Germany. Given the difficult economic situation in the early 2000s in Germany, the reform was aimed at reducing the tax burden on firms and investors. In terms of the effective marginal and average tax rates, the reform moved Germany from being one of the OECD countries with the highest tax rates on businesses to a more average position. The reform addressed personal income taxes, in particular with the introduction of a dual income tax for labor and capital income, as well as the federal corporate tax and the local business tax. Importantly, the reform not only lowered various tax rates, but it also changed the determination of tax bases.

For corporate businesses the main changes of the tax reform 2008 where as follows. Starting from 2008, the federal corporate tax rate was lowered from 25% to 15%. Before and after the reform the federal corporate tax was also subject to an additional tax factor called the 'solidarity surcharge', introduced in 1994 to
finance the cost of reunification. Since this factor was at 5.5% of the tax liability, the actual total federal rate was reduced from $25\% + (5.5\% \times 25\%) = 26.375\%$ to $15\% + (5.5\% \times 15\%) = 15.825\%$. The base factor of the local business tax was changed from 5% to 3.5%. The latter reduction at the federal level resulted in a differential effect.

The reform also affected the effective tax rates via deduction possibilities. Before the reform, the LBT could be deducted from the tax base of the federal corporate tax. This was no longer the case after the reform. Moreover, before the reform the LBT was also deductible from its own base, which was not the case afterwards. Altogether these measures implied a substantial reduction of the combined (federal plus local) statutory corporate tax rate. Moreover, the reduction was larger for firms based in low tax municipalities, mostly due to the fact that the local corporate tax rate could no longer be deducted from the federal corporate tax base.

The tax bases were also directly changed. With respect to the federal corporate tax, thin capitalization rules were introduced to reduce tax base shifting to foreign countries.² Importantly for our study, the reform changed the determination of the LBT base. Before the reform 50% of the interest on permanent debt (i.e. debt with duration of more than one year) were added to the tax base of the local business tax, whereas after the reform, this figure was reduced to 25% of all debt. Moreover, there were new rules regarding the treatment of leasing rates and rents. The effects of these measures on the tax base were debated at the time of the reform. The ex post evidence indicates, however, that these measures actually reduced the LBT base relative to the previous situation. Such a reduction should benefit firms in high tax jurisdictions more than their counterparts in low tax jurisdictions.

### 2.3 Timing of the reform

The tax reform followed a prolonged discussion that originally showed substantial involvement of academics, administrators, civil society actors and politicians. While the first key details on the envisioned reform were circulated as early as  

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²This thin capitalization rule consisted of a cap on tax deductibility of paid interest, for the local as well as the federal corporate tax. This cap was set to 30% of the earnings before interest, taxes, depreciation and amortization (EBITDA).
July 2006, there was a lengthy discussion between the involved policy actors. Given the German tradition of cooperative government and compromise, it is well known that no piece of legislation leaves the parliament the same way it entered. Changes and amendments to proposed legislation are rather commonplace. Thus, for a substantial period of time there was uncertainty about the reductions in the federal corporate tax and the LBT, as well as on tax base measures. Since the LBT is the most important source of revenue for local governments in Germany, politicians at the local level were concerned about potential losses of tax revenue at the local level. Moreover, given the federal nature of the German political system, the reform had to be agreed upon by the first (The Bundestag) and second chamber (The Bundesrat). The latter consists of the representatives of the state governments which in turn are fiscally closely connected to their local governments. Finally, the government was run by a centre-right centre-left coalition government. While the Minister of Finance (Peer Steinbrück) was from the centre-left party, the government was led by the Chancellor (Angela Merkel) from the centre-right. Thus, while the ministry of finance prepared the draft legislation, it was substantially disputed in the coalition and had to be agreed by the coalition government. The bottom line is that there was substantial uncertainty throughout the preparation and legislation process.

The first key date of the reform was July 12, 2006, when the "Cornerstones" ("Eckpunkte") of its proposed legislation were decided by the government. On February 1, 2007 the joint working party of the state and federal governments agreed on a draft legislation, and on February 6, 2007, the draft legislation was presented by the Ministry of Finance. On March 14, 2007 the government decided to propose the draft legislation to the parliament. On April 25, the Bundestag Committee on Public Finances publicly discussed the draft, and the Committee agreed on the proposal on May 23. The second chamber had provided its opinion already on May 11, along with some suggested changes to the draft legislation. The latter were agreed by the government on May 21. The Bundestag passed the reform on May 25. The Second Chamber passed the reform on July 6.

Given the complicated interaction of the actors within the federal and corporatist structures that characterize policy-making in Germany, it is challenging to define a particular breakthrough day, that could be used in an event study design. We therefore focus on monthly stock market returns. Moreover, the key votes in
both legislative chambers took place in May 2007. Thus, while the implementation of the reform can be seen as a somewhat gradual process, it was becoming evident during May that the reform was going to pass in its final form. Therefore, we focus on this month as our event time.

Figure 1: Distribution of firms in our sample within the German municipalities. 
Source: Data on the location of firms are retrieved from Hoppenstedt and Amadeus. Own illustrations.
3 Data and descriptive analysis

Our sample of publicly listed firms correspond to all firms that comprise the composite German stock market index (CDAX) on the Frankfurt Stock Exchange (FSE), which meet the “prime standard” requirement. Thus, we use all firms that meet key transparency requirements and are frequently traded. Moreover, daily or monthly data for various market factors for the FSE are readily available from Stehle’s German stock market data, see (Brückner et al. (2015)). The resulting portfolio of firms includes a diverse set of stocks. Datastream provides data on the total return index for each individual firm in this sample, which accounts for dividend reinvestment and stock splits. To estimate market factor models, we employ the market factor data provided at Richard Stehle’s webpage for the FSE, see Brückner et al. (2015).

![Figure 2: Distribution of firms in our sample within the German municipalities. Source: Data on the location of firms are retrieved from Hoppenstedt and Amadeus. Own illustrations.](image)

Information on the municipalities where the headquarters are located is provided by the Hoppenstedt database. We also refer to firm profiles on Amadeus, which provides the history for most of the firms, including previous names, locations, and etc. By combining the two sources, it is possible to carefully trace firms back in time and establish their location in 2007, and merge them with the correct municipality-level data. In those cases where location information was not retrievable, we drop the firm from the sample. The final sample corresponds to 235 firms. Figure (1) shows the distribution of these firms in Germany. The
Figure 3: Percentage of changes in business tax multiplier (BTM).
This figure shows the percentage of changes in the number of municipalities in our sample increasing or decreasing their business tax multiplier.

number of firms in municipalities can be seen by comparing the shade. The darker a municipality is specified on the graph, the higher is the number of firms in that municipality. The relatively high dispersion of headquarters and lack of concentration allows considering the general validity of our results. The firms are distributed across 113 municipalities, as shown on figure (1).

LBT rates are available from the Federal and States’ Statistical Offices. These rates are matched with the firm- and municipality-level data. While the federal component of the corporate tax rate is the same for all the publicly listed firms, the tax multiplier can be different across municipalities and, in turn, a source of variation in the total corporate tax at the regional level in Germany. Figure 2 shows the distribution of the 2007 tax multipliers within our sample of headquarter locations.

Since municipalities can adjust their tax multipliers once a year, they could have, in principle, reacted to the federally legislated reform by adjusting their multiplier. However, state and federal policy makers had argued that local tax revenues should remain largely constant after the reform. In Figure 3, we plot changes of business tax multiplier in different years. Apparently, at least in 2008 and 2009, municipalities hardly changed their tax multipliers. These years were characterized by rather few tax changes, and only after the financial crisis in 2010 and 2011 did local governments engage in substantial tax increases.³

³The German economy was hit hard by the global financial crisis in 2009. However, it
Moreover, even though the tax increases were more prevalent among the high tax municipalities, the compression of the tax rate distribution remained substantially below the pre-reform level. This supports the notion that the reform resulted in an effective change in the tax burden. Thus, asking whether local tax differences affect the distribution of that burden is a sensible question.

4 Empirical Framework

4.1 Identification

To identify the effects of local taxation on stock market valuations we exploit the fact that firms located in high tax municipalities should have been affected differently by the reform relative to firms in low tax municipalities. They should benefit less, since they enjoy a smaller tax rate reduction. On the other hand, the value of their tax shield is reduced less, and they benefit more from reductions in the tax base. Thus, our key variable of interest is the local tax rate (the local multiplier) in 2007, since this variable will determine the size of these effects for the firms.

For a first look at the effects of the tax reform, we assign the firms in our sample to two groups using the mean of the 2007 tax multiplier as the cut-off to form two unweighted portfolios of these firms. We plot the evolution of these portfolios of high and low tax firms, respectively, in Figure (4). The two portfolios closely move together until March 2007. Starting around March 15, the two portfolios start to diverge. Around the beginning of June 2007, the divergence seems to come to an end. The plot indicates that the stock prices of high and low tax firms reacted rather differently to the reform.

In what follows, we study more formally the effect of the reform during the spring of 2007. In terms of share price levels, our approach would correspond to a difference-in-difference approach with different treatment intensities. However, we do not specify our empirical framework in the share price levels, but rather follow the finance literature and consider an event study approach, or consider the relationship between the cross-section of cumulative abnormal returns and the local tax treatment.

rebunded quickly in 2010 and 2011, so that local governments could raise tax rates to refill their depleted coffers after the crisis.
Figure 4: Cumulative returns

Notes: Sub-figure (a) shows the evolution of cumulative returns in a six-months-window around the 25 April 2007 for the two portfolios. Note that 15 April 2006 is a Sunday and, therefore, excluded from the dataset. Source: Own illustrations using data provided by Datastream.
4.2 Abnormal returns

The rate of return on stock \( i \) at time \( t \) is \( r_{i,t} = \ln(R_{i,t}) - \ln(R_{i,t-1}) \) where \( R \) refers to the total return index which is retrieved from Datastream and is corrected for stock splits and dividend reinvestments. To correct for correlations with the market, we estimate the following regression.

\[
\begin{align*}
    r_{i,t} &= \alpha_i + \beta_{1i} r_{m,f,t} + \beta_{2i} SMB_t + \beta_{3i} HML_t + \beta_{4i} WML_t + \epsilon_{i,t},
\end{align*}
\]

where \( r_{i,t} \) is the excess return on stock \( i \), or portfolio \( i \), at time \( t \) and \( r_{m,f,t} \) shows the market rate of return in excess of the risk free rate. \( SMB_t \) (Small minus big), \( HML_t \) (High minus low), and \( WML_t \) (Winners minus losers) are additional market factors that correspond to the market models of Fama and French (1993) and Carhart (1997). We estimate this regression in its complete form with four factors characterizing the FSE. Our results are robust to alternative formulations that use a CAPM or a Fama-French three factor model instead of the above form. To acquire the \( \hat{\alpha} \) and \( \hat{\beta} \), we estimate the regression over a window of one year, ending six months before the event time. To do so, we drop out those firms which do not have sufficient data in their estimation window and this leaves 188 firms in our sample. The difference between the actual price realizations and the predicted values from regression (1) correspond to the abnormal returns.

4.3 Cumulative abnormal returns

Before discussing our event study estimations, we provide a more general assessment of the stock market performance of these firms over the entire time period, when the public discussions were taking place, from 12.March.2007 to 06.July.2007. To do so, we calculate cumulative abnormal returns over the mentioned time period for each firm, generating a cross-section of firms. Figure (5) shows the dispersion of cumulative abnormal returns calculated through the time period mentioned before against the local tax multiplier. The positive slope implies that on average, firms facing higher local corporate tax rates had a better performance over the time period when the reform decisions were being shaped and taken. Table (1) shows the result of estimating a cross-sectional regression of form

\[
    CAR_i = \phi^0 + \phi^1 T_i + \epsilon_i^1,
\]
where $CAR_i$ shows the cumulative abnormal returns for each firm in the specified time interval mentioned before. $\phi^0$ is the potentially industry-specific intercept, $T_i$ indicates the local tax rate to which each firm is subject to. It amounts to the product of the newly announced federal business tax rate and the municipal business tax multiplier. Columns 1 and 2 in Table 1 show the results of estimating such a regression and both capture a statistically significant positive impact from the expected local tax rate onto the performance of firms in the stock market. Column 3 reports the result of a similar regression but with a different set of cumulative abnormal returns to examine a placebo time period. In this specification, we take the time period right after our estimation window in equation (1) up to March 9th, which is the last day with market data before March 12th. The coefficient on the tax rate is not statistically significant and, therefore, does not show a meaningful relationship. All regressions use robust standard errors.

## 4.4 Event study

In this section, we make use of an event study methodology to study the effect of the tax reform decision on stock returns. Employing a panel of abnormal returns calculated based on the method in section 4.2, we estimate the following firm-level regression.
Table 1

<table>
<thead>
<tr>
<th>Cumulative abnormal returns</th>
<th>(1)</th>
<th>(2)</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax rate</td>
<td>0.850** (0.415)</td>
<td>0.878** (0.405)</td>
<td>0.658 (0.548)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.462*** (0.0575)</td>
<td>-0.464*** (0.0558)</td>
<td>-0.418*** (0.0750)</td>
</tr>
<tr>
<td>Industry control</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
<td>188</td>
</tr>
</tbody>
</table>

Notes: The table shows the estimates of regressing cumulative abnormal returns on local business tax rate that corresponds to the federal rate multiplied with business tax multiplier, which varies across municipalities. Cumulative abnormal return is calculated over the time-period between 12.03.2007 to 06.07.2007. In the first column, we estimate the effect for all firms. In the second column, we control for the industry that each firm belongs to. The placebo regression covers the entire time period, starting 6 months before (right after the end of our market estimation window) and ending on 09.03.2007 (last Friday before March 12th). Robust standard errors are in the parentheses. ∗ p < 0.10, ** p < 0.05, *** p < 0.01

AR_{it} = \gamma_0^t + \gamma_1^I + \gamma^2 D_t + \gamma^3 T_{it} + \gamma^4 D_t \times T_{it} + \varepsilon_{it}^2 \tag{3}

Where \( \gamma_0^t \) is the month fixed effects and \( \gamma_1^I \) indicates industry fixed effects. \( T \) is the local business tax rate, i.e. the 2007 multiplier times the new base factor, and \( D_t \) indicates the time dummy, which is equal to one for the time of our event and zero, otherwise.

Regressions in Table 2 estimate different forms of equation (3), first without any fixed effects in column one and then with time and industry fixed effects, as specified in the further columns. Robust standard errors are clustered at the firm level. In all specifications, the interaction term of the event dummy and the expected business tax is positive, implying a positive impact of around 0.7 percent on the abnormal returns in the respective month.

Although it became evident that the legislation will be passed, and was passed, in May 2007, a concern may arise that trades might have been already forming
**Table 2**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
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<tr>
<td>D*Tax rate</td>
<td>0.699**</td>
<td>0.711**</td>
<td>0.711**</td>
</tr>
<tr>
<td></td>
<td>(0.336)</td>
<td>(0.337)</td>
<td>(0.337)</td>
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<tr>
<td>Tax rate</td>
<td>-0.0177</td>
<td>-0.0304</td>
<td>-0.00945</td>
</tr>
<tr>
<td></td>
<td>(0.134)</td>
<td>(0.134)</td>
<td>(0.136)</td>
</tr>
<tr>
<td>D</td>
<td>-0.147***</td>
<td>-0.223***</td>
<td>-0.223***</td>
</tr>
<tr>
<td></td>
<td>(0.0507)</td>
<td>(0.0507)</td>
<td>(0.0508)</td>
</tr>
</tbody>
</table>

| Time FE           | yes     | yes     |
| Industry FE       | yes     |         |
| Constant          | yes     | yes     | yes     |

**Notes:** The table shows the estimates of regressing firm-level monthly abnormal returns on local business tax rate that corresponds to the federal rate multiplied with business tax multiplier. D is equal to one for May 2007 and zero, otherwise. T stands for the local tax rate of the municipality, where the firm is located. Robust standard errors in parentheses, which are clustered at the firm level. * p < 0.10, ** p < 0.05, *** p < 0.01

their expectations and accordingly, reacting on the market. We estimate placebo regressions based on (3) by including different time specific dummies and their interactions with the local business tax to account for placebo events over a time window of 1 year around the event.

Estimation results related to these regressions are provided in the Table 3 and illustrated in Figure 6. None of the coefficients on the interaction term are statistically significant or large in magnitude in comparison with our benchmark event coefficient. These results cast light on the fact that traders have priced their expectations into the valuation of stocks in the month of the event, but do not indicate significant effects before and after May 2007.

To further investigate the variations in the business tax multiplier across regions, we divide our sample based on the mean of business tax multiplier in 2007 across municipalities into two groups. We then calculate the average abnormal return within each group and construct a High-minus-Low portfolio. Figure 7 captures its performance around the time of the event, over a window of one year.
Figure 6: Effect of the expected business tax on monthly abnormal returns
The graph illustrates the point estimates together with their 95% confidence intervals based on the firm-level regressions, employing market-adjusted monthly abnormal returns on the expected business tax. All regressions include time and industry fixed effects. Standard errors are clustered at the firm level. According to Table 3, only the coefficient at the event time is statistically significant.

around the event time. Sub-figures (a) and (b) illustrate and compare the monthly cumulative (normal) returns and the market-corrected monthly abnormal returns with their 95% confidence intervals, respectively.
Figure 7: Monthly returns

Notes: Sub-figure (a) shows the evolution of monthly cumulative returns in a six-months-window around the May 2007 corresponding to the high-tax minus low tax portfolio. Sub-figure (b) illustrates market adjusted returns together with the 95% confidence intervals.
5 Discussion and conclusion

Differences of local tax rates affected the reaction of stock market prices to the legislation of the 2008 tax reform in Germany. This indicates that local corporate taxes matter for firm valuation. The incidence of local corporate taxes therefore is at least partly born by firm owners.

Our interpretation of the results is that the direct tax reduction effects are dominated by tax base and tax shield effects. This can explain why high tax firms fare better as a result of the tax reform decision.

The effects occur rather gradual. This can be traced to the nature of the legislative process, where the likelihood of the final reform being implemented increases over time. Moreover, the information about the actual local tax treatment is likely not to be readily available, so that the market may not necessarily be fully efficient.

References

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Figure 8: Changes in the Business tax multiplier.

Notes: Sub-figures indicate the change in business tax multiplier with respect to the previous year. In the first years, there are no considerable changes in the business tax rate multipliers and this occurs only gradually. Own illustrations.
## A.2 Additional tables

### Table 3

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<th>(−3)</th>
<th>(−2)</th>
<th>(−1)</th>
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<th>(1)</th>
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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
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<td>D*Tax rate</td>
<td>−0.446</td>
<td>−0.174</td>
<td>0.398</td>
<td>0.240</td>
<td>−0.296</td>
<td>0.711**</td>
<td>0.108</td>
<td>0.204</td>
<td>−0.0716</td>
<td>0.0552</td>
<td>−0.457</td>
<td>−0.114</td>
</tr>
<tr>
<td></td>
<td>(0.418)</td>
<td>(0.350)</td>
<td>(0.396)</td>
<td>(0.385)</td>
<td>(0.385)</td>
<td>(0.337)</td>
<td>(0.382)</td>
<td>(0.345)</td>
<td>(0.360)</td>
<td>(0.513)</td>
<td>(0.391)</td>
<td>(0.478)</td>
</tr>
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<td>D</td>
<td>0.0109</td>
<td>−0.0291</td>
<td>−0.153***</td>
<td>−0.102*</td>
<td>−0.00838</td>
<td>−0.223***</td>
<td>−0.0805</td>
<td>−0.127***</td>
<td>−0.114***</td>
<td>−0.0308</td>
<td>−0.0821</td>
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<td>(0.0517)</td>
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<td></td>
<td>(0.132)</td>
<td>(0.135)</td>
<td>(0.134)</td>
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<td>(0.122)</td>
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</table>

**Notes:** The table shows placebo estimates of regressing firm-level monthly abnormal returns on the local business tax rate. The number above each column corresponds to the event time, with column (0) as the reference period for which $D$ is equal to one in May 2007 and zero, otherwise. Robust standard errors in parentheses, which are clustered at the firm level. In our placebo-event regressions, we account for a time period of one year around the event time. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$