Capital Mobility & Taxation in Non-OECD Countries – Evidence from China*

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Abstract

Do more mobile firms pay lower taxes? Much research contends that capital mobility creates downward pressure on corporate taxes, as firms can threaten to exit. A substantial share of the existing work, however, is based on country average statutory tax rates in OECD countries. We instead explore this relationship at the firm level in China. Using two comprehensive panel data sets with more than 780,000 Chinese firms over two decades, we find that firms with higher shares of mobile capital, in fact, pay higher effective tax rates. We then explore potential explanations for this counter-intuitive finding using both quantitative and qualitative evidence. We argue that in an environment lacking fiscal transparency and rule of law, collusion between local governments and businesses can partially explain the positive relationship between capital mobility and tax rates. Firms with more fixed assets have stronger incentives to invest in connections with local officials in exchange for lower tax rates compared to their mobile counterparts. We provide evidence that the positive relationship between capital mobility and tax rates is more pronounced in contexts with cozier government-business relations and less transparency.

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1 Introduction

Over the last half-century, political economists have grappled with the idea that the power of capitalist countries to tax corporations is limited, with capital mobility being a crucial constraining factor. Economic growth in capitalist societies is dependent on investment of private actors. Politicians, even in closed economies, have to trade off maximizing revenues and increasing taxes such that capital owners do not limit private investment. The state is *structurally dependent on capital* (Przeworski and Wallerstein, 1988). As capital becomes more mobile, capital owners can threaten moving to other jurisdictions, further exerting downward pressure on tax rates. Standard theoretical arguments, therefore, lead to the expectation that higher capital mobility leads to lower corporate tax rates.

Much of the work investigating the empirical relationship between capital mobility and tax rates has focused on highly developed economies (e.g., OECD countries) using data on average or statutory tax rates at the country level. Departing from this earlier work, we investigate the proposed relationship between capital mobility and taxation under tax competition in a rapidly developing country. More specifically, we use comprehensive panel data with individual firms' effective tax rates across the entire jurisdiction of China, the largest developing country in the world. The case of China allows us to test this general argument at the firm level in a single country, where local governments compete with each other to attract and retain investments. Bureaucrats also have high levels of autonomy in providing tax breaks. As a consequence, the standard theoretical argument would lead us to expect that more mobile firms can threaten to exit to other localities to pay lower effective taxes.

Contrary to conventional expectations, we find that firms with higher shares of mobile capital, in fact, pay higher effective tax rates compared to firms with more fixed-asset ownership. We contend that this positive relationship between mobility and tax rates is likely the result of government-business collusion and political entrenchment of less mobile firms. In emerging economies with less secure property rights, such as China, firms often rely on bribing and connections with local government officials to receive pref-

erential treatment, such as lower effective tax rates. Firms with more fixed assets, we argue, have stronger incentives to invest resources into building connections with bureaucrats and politicians, compared to mobile firms. As a consequence of their political connections, firms with more fixed assets are more likely to receive tax breaks.

We empirically investigate the relationship between capital mobility and effective income tax rates using two different data sources from China. First, we analyze data from the *China National Survey of Industrial Firms* containing effective tax rates for over 780,000 firms in 477 Chinese cities between 1995 and 2007. As a second source, we use the *China Stock Market and Accounting Research Database* for data on effective tax payments by 3,628 firms in 285 cities between 2009 and 2017. The two data sets allow us to investigate the relationship between capital mobility and tax rates on two different samples of firms, as well as two unique time periods. Both data sets contain firm level data on assets types and actual yearly tax payments. The data give us the opportunity to investigate how capital mobility affects corporate taxation under tax competition without relying on country averages or statutory rates, which often hide important variation.

We first establish that the overall relationship between capital mobility and effective tax rates in China is consistently positive across both of the data sets and a number of different empirical specifications. We then empirically explore political connections as a potential explanation for our findings, drawing on both quantitative and qualitative evidence. First, we show that the relationship between capital mobility and effective tax rates differs by city level government-business relations. The advantage of fixed asset firms is stronger in cities with better relations between firms and city tax bureaus. Second, we present evidence that the anti-corruption campaign launched by President Xi Jinping in late 2012 has significantly weakened the relationship between mobility and effective tax rates, compared to the pre-campaign period. Xi's campaign has substantially tightened the control on government-business collusion and corruption. As we show, more mobile firms pay higher taxes prior to the anti-corruption campaign, but this difference is significantly smaller after 2012, even when accounting for firm fixed effects. Finally, we show that even in the post-anti-corruption campaign period and under the regime's current initiative to increase fiscal transparency in local

China, the difference in effective tax rates between mobile and fixed firms are significantly smaller in cities with higher fiscal transparency. Overall, our evidence suggests that while government-business collusion lowers effective tax rates for fixed asset firms compared to more mobile firms, anti-corruption and pro-transparency reforms level the playing field and weakened the positive relationship between mobility and tax rates.

In addition to providing a new theoretical explanation for why capital mobility is not always associated with lower effective taxation, we make several important empirical contributions. First, we take a relatively established theory outside of its traditional testing grounds, as previous work on corporate taxation and capital mobility has largely focused on OECD countries and democracies. Furthermore, much of this work has relied on cross-national data (i.e., country averages), which can mask key relationships among variables and are often weak predictors of effective tax rates. Instead, we are able to provide evidence from firm level data, where capital mobility and tax rates vary by firm across years, industries, and different Chinese cities. Focusing on within-country data and tax competition also allows us to hold constant other potential confounding factors, such as the political system. Lastly, the fine grained data on each firm's actual tax payments and total profits allow us to calculate a yearly effective tax rate for each firm instead of relying on statutory tax rates at the country level.

Our findings illustrates that the relationship between capital mobility and taxation can be quite different in less developed countries where the protection of property rights is typically weaker and where government-business collusion plays a more important role. Our research suggests that the capital mobility/taxation nexus, and the motivations driving tax incentives in particular, warrants further investigation. Our findings suggest that the political power associated with asset mobility may differ across economic and political contexts, most importantly when it comes to comparing OECD to non-OECD countries with weaker property rights.

2 Capital Mobility and Taxation

Much theoretical work suggests that capital mobility ought to lower taxes on capital. While rulers or states may be revenue maximizers (e.g., Levi, 1989; Olson, 1993), capital

mobility should constrain the state's extractive ability. To put simply, firms with mobile capital can choose to *exit* in the face of higher tax rates. Higher capital mobility should, therefore, exert downward pressure on effective tax rates (Hirschman, 1970) and may change distributive outcomes. All else equal, governments may attempt to attract mobile capital by lowering taxes and providing investment incentives, which can result in a "race to the bottom" (Rodrik and van Ypersele, 2001).

Even though this theoretical expectation is well known and straightforward, empirical results are somewhat mixed. On the one hand, research suggests that capital mobility has indeed shifted taxation from capital to labor, generating distributional consequences by lowering effective tax rates on capital and raising taxes on labor (Garrett, 1995; Rodrik, 1997; Bretschger and Hettich, 2002). In fact, statutory corporate tax rates have continuously fallen in OECD countries since the mid 1980s (Devereux, Griffith and Klemm, 2002). On the other hand, Jensen (2012) and others question the supposed effect of globalization on tax competition. Their works find little support for a race to the bottom with respect to tax rates (Hays, 2003; Basinger and Hallerberg, 2004; Plümper, Troeger and Winner, 2009).

Moreover, the relationship between capital mobility and tax rates differs considerably across countries and regions, depending on factors such as resource endowments, regime type, and level of economic development. Cai and Treisman (2005) argue that competition to attract mobile capital must not always constrain governments and instead results in a divergence of government policies between countries with better resource endowments and higher human capital and those with worse local conditions. Li (2006, 2016) and Genschel, Lierse and Seelkopf (2016) show that whether countries compete over mobile capital via tax rates depends on their level of fiscal decentralization and regime type. Jensen (2013) finds while capital mobility may lower firms' taxes in OECD countries, paradoxically, mobility raises tax rates among non-OECD countries with US firms' investments. Pond and Zafeiridou (2019) show that when governments care about firm performance in financial markets, lower taxation of less mobile firms may be preferred, as their financial performance is more likely to suffer. The effect is most prominent under democratic governance and broad participation in the stock market.

A growing body of work suggests that government-business collusion may offer a potential explanation for the different findings about the relationship of capital mobility and taxation. In countries like China, Vietnam and Uganda, fixed assets are associated with higher levels of bribery and corruption. Firms invested in fixed assets are more vulnerable to government extraction, due to their inability to move. As a consequence, these firms are more likely to engage in corruption to protect themselves from the extractive state (Zhu and Deng, 2018; Bai et al., 2019; Zhu and Shi, 2019). Firms with higher capital mobility, in contrast, are found to pay fewer bribes to public officials (Gauthier and Goyette, 2014). Furthermore, higher levels of corruption and political connections are found to help reduce tax rates, in settings such as Brazil, Malaysia, India, and Russia. Tax collectors and tax payers may collude to the government's detriment (Timmons and Garfias, 2015; Tanzi and Davoodi, 2000; Adhikari, Derashid and Zhang, 2006; Hollenbach and Silva, 2019; Marjit, Mukherjee and Mukherjee, 2000; Safavian, Graham and Gonzalez-Vega, 2001).

If, as above work suggest, less mobile firms have stronger incentives to invest in building connections with the government officials, and such connections are likely to reduce effective tax rates, then less mobile firms should pay lower effective tax rates, all else equal. This is particularly likely in countries with weaker rule of law and weak property rights protection. Here government-business relations, or in China the *guanxi* network, are especially important. Given the limited channels for formal policy lobbying and vulnerability of these firms, businesses tend to resort to bribing public officials in order to seek protection, or as an alternative way to obtain *de facto* property rights and legal protection (Tsai, 2007; Dickson, 2008; Wang, 2014; Truex, 2016; Zhu and Shi, 2019; Hou, 2019). With respect to taxation, officials in tax bureaus and other departments related to economic activities may offer tax breaks in exchange for bribes and kickbacks.

We therefore expect that firms with higher proportions of fixed assets have stronger incentives to invest in political connections and bribery compared to more mobile firms. These connections can then be used to lower tax rates. First, firms with fixed assets are more bound to their current location with lower ability to move. In countries with weak property rights enforcement, firms without sufficient political connections, are thus more

vulnerable to local government extraction. More mobile firms, on the other hand, are less vulnerable to such threats. Furthermore, building relationships with local bureaucrats requires repeated interactions. Once such relationships are established, they can lead to a a wide range of benefits (beyond tax breaks) well into the future. Firms with longer time horizons in a specific locality are, therefore, more willing to invest resources into growing and maintaining political connections. In contrast, firms with mobile assets have lower sunk costs and shorter time horizons. The long term benefits to engage in the creation of political connections are thus less clear for more mobile firms.

Similarly, the same motivation holds true on the supply side of tax breaks, i.e., local government officials connected to such firms. Local officials likely prefer giving tax breaks to firms invested in fixed assets, which are a key contributor to local GDP and less likely to move, thus guaranteeing continuous kickbacks in the future.

Viewed in this light, the conventional theoretical expectation that capital mobility increases a firm's bargaining power and reduces their taxes is not necessarily wrong, but is conditional on the economic and political environment. In areas settings with less secure property rights and prevalence of government-business collusion, the empirical relationship between mobility and taxation might change. Within such a context, we contend that more fixed-asset intensive firms have stronger incentives to invest in relationships with government officials, due to their long-term vulnerability. Similarly, officials have stronger incentives to engage in such an exchange with fixed asset firms, resulting in lower effective tax rates for these firms.

In countries or areas with weaker governance, the playing field is tilted towards firms with higher proportion of fixed assets. In contrast, in localities with lower level of corruption and higher level of transparency, we expect this mechanism to be significantly weakened. In the context of more transparent government-business interactions, firms' tax rates depend less on collusion with local officials and investments made in connections to the government.

Of course, a firm's investment in political connections and bribery in exchange for lower effective tax rates can also be viewed a type of extraction, or *taxation*, but with significantly different distributional implications. Given the scope of this paper, we here

only focus on evaluating the relationship between capital mobility and effective tax rates paid to the state.[1]

One way to improve our understanding of the empirical relationship between mobility and taxation is to make use of fine grained data at the firm level and calculate actual effective tax rates, instead of relying on statutory tax rates that are often unrelated to actual taxes paid. Jensen and Malesky (2018), for example, have used micro-level data of firms located in Vietnamese provinces to better understand the use of tax incentives to attract businesses in a one-party autocracy. In a similar vein, we use comprehensive firm level data combined with city level measures and qualitative evidence to examine the empirical relationship between capital mobility and taxation in China.

3 Research Design & Case Selection

China is one of the fastest growing and largest developing countries in the world. At the same time, the state is highly involved in the Chinese economy. In the early 1980s, China decentralized its revenue system and increased fiscal autonomy at the local level. This fiscal decentralization significantly incentivized local governments to promote economic growth and generate revenue sources (Oi, 1999; Shirk, 1993; Ong, 2012). Although the 1994 reform re-claimed part of the revenue to the central government, most expenditures remain local responsibilities. And until recently, tax collection was a responsibility of local governments, which also had discretion over the offering of tax breaks (National Bureau of Statistics, 2015).

At the same time, the cadre evaluation systems of party and government officials creates a strong institution of accountability from above, comparable to that of Vietnam (Jensen and Malesky, 2018). Higher level officials evaluate the performance of lower-level officials against economic performance. These evaluations increase pressure on local government officials to compete over economic growth and investment (Huang, 1996; Lü and Landry, 2014; Guo, 2009; Jiang, 2018). Offering tax breaks, a frequent practice since

[1] It is hard to directly compare the total cost of bribery plus lower effective tax rates versus paying fewer bribes and higher taxes. First, this would require having data on the actual cost of bribes and establishing political connections. It would also require estimates of the short and long term costs, as well as potential moving cost, etc.

the 1990s, is an important tool used by local governments to draw investment and retain firms in their jurisdiction (Ang, 2016; Gao, 2015; Zuo, 2015; Chen, 2018). While the central government did not openly endorse the practice, it allowed local governments to adapt tax break policies according to local conditions (*yin di zhi yi*). The regional competition on tax rates in China has been noted in a number of studies (Liu and Martinez-Vazquez, 2014; Cheng, Lin and Simmons, 2017).[2]

Given the discretion of local government officials to grant tax breaks to firms, Chinese cities actively compete with each other. On the one hand, under the conventional framework, we would expect firms with high capital mobility to be able to use tax competition and the threat of a potential *exit* to negotiate additional tax breaks. On the other hand, the lack of transparency and property rights protection in China during its high-growth period represents a setting with constant government-business collusion and the use of a variety of *guanxi* networks through petty corruption. As we contend above, in such environments fixed asset firms may have stronger incentives to invest in collusion and bribery, suggesting that fixed-asset firms are more likely to receive lower tax rates.

The case of China is, therefore, an excellent case to investigate the capital mobility/taxation nexus in a context outside of the OECD setting. Many developing countries, such as Brazil and India, resemble China in terms of lack of fiscal transparency and prevalent government-business collusion for tax breaks at the local level, where fiscal decentralization can be a facilitator for corruption (Marjit, Mukherjee and Mukherjee, 2000). But even in more centralized tax systems, such as Russia and Malaysia, tax collectors may seek bribes, and "relational based" ties between firms and politicians reduce effective tax rates(Safavian, Graham and Gonzalez-Vega, 2001; Adhikari, Derashid and Zhang, 2006). Moreover, with local bureaucrats' autonomy over tax breaks and local competition over investments, China allows us to investigate the empirical relationship on firm level data in a more homogeneous sample.

To investigate the questions outlined above we have assembled two major sets of firm level panel data, both including firm characteristics and actual tax payments. The first

[2]These policies, from 1990 to present, were later summarized in the catalogue of tax break policies (see The State Tax Bureau of China (2015)). Until the start of the recent Xi regime, the center delegated authorities to local governments in efforts to boost the local economy.

set of data come from the *China National Survey of Industrial Firms (CNSIF)* and cover the years 1995 to 2007. The survey was initiated by the State Economic Census Center of the National Bureau of Statistics (NBS) and includes micro-level data of all above-scale industrial firms (with sales above 5 million RMB) across the entire jurisdictions of mainland China, covering about 2 million observations.[3] As a second data set, we use firm level data from the *China Stock Market and Accounting Research Database (CSMAR)*, which includes all publicly listed firms from 2009 to 2017 (about 24,000 observations).

The two data sets allow us to investigate the relationship between capital mobility and taxation with fine grained firm level data in China. The within country research design accounts for potential confounding factors at the country level, such as differences due to institutional or legal environments. Additionally, both data sets allow us to calculate the effective tax rates based taxes paid and profits earned, taking into into account any tax rebates, tax breaks, or special rates.

To ensure policy consistency over the analyzed time periods, we study two different periods in the two data sets. China implemented a fiscal reform in 1994 and a corporate income tax rate change in 2008. Based on data availability and to avoid major policy disruption, we analyze the national survey data from 1995 to 2007, that is, after fiscal reform and prior to the corporate tax changes. In contrast, we analyze the stock market data on the time period after the corporate tax reform, i.e., from 2009 to 2017.[4] The two data sets complement each other in terms of time period and sample of firms. In addition, as will be detailed below, we also use two sets of data at the city level – firms' rating of relationship with tax bureau officials and a cities fiscal transparency scores – as moderators in the capital mobility-taxation relationship.

[3] Although economic data in China are often subject to manipulation by local officials (Wallace, 2016), the CIES data used here are collected directly at the firm level.

[4] Before 2008, China's standard corporate income tax rate was 33%. Rates for domestic firms were 27% for those with profits between 30,000 and 100,000 and 18% for those below 30,000. Foreign-invested firms' rates were set to 15%. Starting in 2008, the standard corporate income tax rate was changed to 25% for both domestic and foreign firms. Given the time of its implementation, we did not include the year 2008 in either analysis. In both our data sets, we control firms' total profits and their ownership types.

4 Empirical Analysis

Before proceeding to our main analysis, we first discuss and present descriptive statistics of our dependent variable of interest: effective income tax rates. Following the standard calculation for effective income tax rates in China (Liu and Martinez-Vazquez, 2014), we calculate each firm's yearly effective income tax rate by dividing the firm's paid corporate income taxes by its profits.[5] The corporate income tax is one of the primary revenue sources the Chinese government collects from firms. As noted above, important for our research design, local officials have the authority to grant tax breaks on corporate income taxes for a wide range of reasons (Wu et al., 2007; Cheng, Lin and Simmons, 2017).

After calculating the effective income tax rate, we end up with 2,024,432 observations from 1995 to 2007 for 784,267 unique firms in 477 cities across 41 industries (at two-digit coding) in the national survey data. The left plot in Figure 1 displays the density of effective income tax rates for values between zero and one.[6] We use the same method to plot effective tax rates of firms in the stock market data in the right plot of Figure 1, which includes 22,012 total observations from 3,628 unique firms in 282 cities between 2009 and 2017.[7] The two densities peak at different values, which is unsurprising, given the different statutory corporate tax rates in the two time periods. Even though the standard statutory rates were set by the National Tax Bureau, Figure 1 shows a wide range in actual income tax rates paid by firms.

Since both data sets include extremely uncommon values on the effective income tax rate and a high number of zeros, we estimate statistical models on several transformations of the dependent variable, including the original scale. Our main results are based on our preferred measure: the winsorized effective income tax rate (*Winsorized*), which ensures that our inference is not the results of extreme values in the dependent variable.[8]

[5] We drop observations for firm years with zero or negative profits. We do so for two reasons: 1) firms with zero or negative profits are pre-determined to pay zero taxes even without tax breaks according to Chinese Corporate Income Tax Law (see `http://www.gov.cn/flfg/2007-03/19/content_554243.htm`); 2) zeros or negative values in the denominator create infinite or unreasonable effective tax rates.

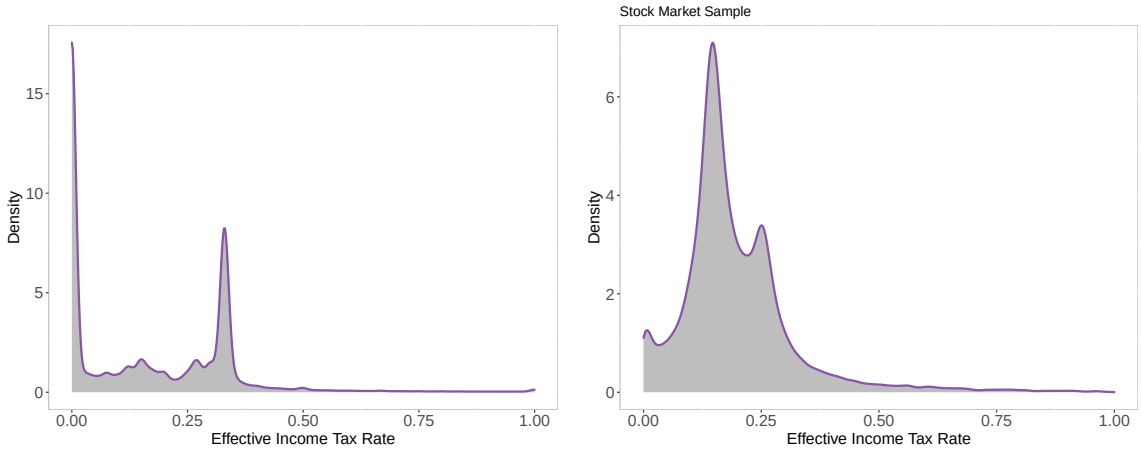
[6] There are 6,260 observations fall out of this range and are not plotted here.

[7] Again, 815 observations fall out of this range and are not plotted.

[8] Specifically, we set values below the 2.5th percentile and above the 97.5th percentile to the 2.5th or

In addition, we create a binary variable that is coded zero for firms paying no income tax and one for those firms that pay income tax rates greater than zero, i.e, an indicator for firms paying a positive effective income tax rate (*Binary*). Lastly, we estimate models on the original measure of effective tax rate (*Untransformed*).[9]

Figure 1: Density of the Effective Income Tax Rates



Note: The left plot shows the density of the effective income tax rate for the sample derived from the *China National Survey of Industrial Firms (CNSIF)* for 1995–2007. The right plot shows the density for the same variable calculated on data from the *China Stock Market and Accounting Research Database (CSMAR)* for 2009–2017. Both data sets contain a large number of firms who pay zero income tax, i.e., both densities spike at zero. At the same time they display a large variation in effective income taxes paid by firms.

We measure our independent variable, capital mobility, as the ratio of mobile assets to the sum of mobile and fixed assets owned by each firm in a given year, i.e., capital mobility $= \frac{\text{mobile assets}}{\text{mobile + fixed assets}}$. We largely follow Jensen (2013) on this measurement, where mobility is seen as the opposite of fixed assets. According to the definition of the dataset, mobile capital or mobile assets are "assets which can be cashed in or spent or consumed in an operating cycle of one year or over one year, including cash, all kinds of deposits, short-term investment, receivables, advance payment, stock, etc." In contrast, fixed assets are defined as "the net value of fixed assets, clearance of fixed assets, project under construction, fixed assets losses in suspense." The net value of fixed

97.5th percentile value.

[9] As a further robustness check we create a measure of logged total tax payments (*Tax Payment (ln)*). Our general results remain the same with this alternative measure, but for space reasons we have omitted those tables from the Appendix.

assets typically includes property, plants, and any equipment and tools associated with production and operation of the business.[10]

Given the observational nature of the data, we are concerned about potential omitted variables that might affect the relationship between capital mobility and effective tax rates. At the same time, for many of the potential confounders, the causal ordering is unclear and their inclusion could potentially induce post-treatment bias (Montgomery, Nyhan and Torres, 2018). We therefore present a number of models with different sets of covariates and fixed effects included in the analysis.

For both data sets, we estimate a set of standard OLS models with different sets of fixed effects. Given that firms are nested within cities, we cluster standard errors at the city level. First, we estimate a pair of bivariate models with only our main variable of interest included: capital mobility. In the second set of models, we add a number of covariates which may influence the relationship between capital mobility and effective tax rates. We include logged firm profits and logged total assets, as companies with more mobile capital may also be more profitable, making them subject to different statutory tax rates. Similarly, larger firms may be more mobile, profitable, and may potentially have more bargaining power with city bureaucracies. In a third set of models, we additionally add covariates for the share of exports in firms' sales, logged total employment, as well as indicators for state-owned or foreign-invested enterprises. More export-oriented firms could profit from Chinese export promotion and exports may be related to capital mobility. Foreign firms have a lower statutory tax rate than domestic firms (state-owned or private) that influences their effective tax rates.

For the models based on the stock market data, we estimate a similar set of models with the same sets of fixed effects. First, we estimate bivariate models, next we control only for profits (logged) and assets (logged). Lastly, we estimate models with covariates for profits (logged), total assets (logged), research and development expenditure as share of total operating costs (R&D intensity), logged expenditure on employees, as well as ownership type. Research and development expenditure may be related to capital

[10]See the definition of these concepts by National Statistics Bureau (/http://www.stats.gov.cn/english/classificationsmethods/Definitions.html).

mobility and has been promoted by the Chinese government through various industrial policies (Chen, 2018).

We estimate the three models with different covariates conditional on two sets of fixed effects. First, we only include fixed effects for years and the city in which the firm is located. We include year fixed effects in case of domestic or international events that influence firm behavior or local economies. City fixed effects allow us to control for China's vast regional variation in implementing and adapting economic policies (Rithmire, 2014). Second, we add additional fixed effects for industry types (at the two digit level industrial coding), as different industries are often subject to different tax policies. In total, we thus estimate six different models for each dependent variable and its transformations.

Given that we are interested in the influence of capital mobility, and most firms' level of capital mobility does not significantly change over time, our main models are based on the differences between firms within each city (and industry) in a given year.[11] The exception is our later model leveraging changes before and after the anti-corruption campaign, where we include firm fixed effects similar to a difference-in-difference design.

4.1 The Influence of Firm Mobility on Tax Rate

Table 1 shows the relationship between capital mobility and the winsorized effective income tax rate based on data from the national survey of industrial firms. Columns one and two present the estimates for the bivariate models with city/year and city/year/industry fixed effects, respectively. The coefficient remains effectively unchanged if we add controls for profits and assets to these models (columns 3 & 4). Similarly, adding covariates for exports, employment, and ownership type does not change the coefficient estimate for capital mobility (columns 5 & 6). In all six models, the estimated coefficient on capital mobility is positive and statistically significant at the 1% level. Higher shares of mobile capital are associated with higher effective tax rates. The full results with all covariates are presented in Table A.1 in the Appendix.

To interpret the results substantively, consider the model presented in column 5 in

[11] Our main results are effectively unchanged if we include firm fixed effects. For space reasons we have not included these results.

Table 1: Effective Income Tax Rate (National Survey)

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.04****	**0.05****	**0.04****	**0.05****	**0.05****	**0.05****
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Controls	No	No	Minimal	Minimal	Full	Full
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	2023967	1813787	2023961	1813781	1973136	1763248
Adj. R2	0.08	0.09	0.08	0.09	0.12	0.12

Note: Minimal controls are total profits (ln) and assets (ln). Full controls additionally includes covariates for export share, total employment (ln), and foreign or state ownership. Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table 1. Here we include fixed effects for city and year, as well as the full controls. Holding all other variables constant, an increase in capital mobility from the median value for firms in Shanghai in 2000 to the third quartile in that group (i.e., from 0.73 to 0.85) is associated with half percentage point rise in the effective income tax rate (or a 16% increase in the tax rate).

The results in Table 1 are based on the winsorized dependent variable. In the Appendix, we show the same models for the effective tax rates on the original scale (Table A.2) and the dichotomized dependent variable (Table A.3). Throughout all models and specifications of the dependent variable, we find a positive and statistically significant association between effective income taxes and capital mobility. With the untransformed dependent variable, the estimated coefficient on capital mobility is slightly larger. For the binary dependent variable, we consistently find evidence that more mobile firms are more likely to pay a positive effective income tax rate.

In addition to the city and year fixed effects, we also estimate the models with the full set of controls but including fixed effects for the interaction between city and year for the three dependent variables (Table A.4). Again, the coefficient of capital mobility is effectively unchanged, capital mobility has a positive association with effective income

Table 2: Effective Income Tax Rate (Stock Market Data)

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.00**	**0.02****	**0.03****	**0.04****	**0.04****	**0.05****
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**
Controls	No	No	Minimal	Minimal	Full	Full
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.04	0.15	0.09	0.18	0.10	0.18

Note: Minimal controls are total profits (ln) and assets (ln). Full controls additionally includes covariates for research and development intensity, employee benefits (ln), and indicators for foreign, state, or private ownership. Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

tax rates throughout.[12]

Next, we estimate a similar set of models using the stock market data. Table 2 shows the estimated coefficients for capital mobility with the winsorized effective income tax rate from the stock market data as our dependent variable. As with the data from the national survey, the coefficient for capital mobility is generally estimated to be positive in all six models. Though in the bivariate model with only city and year fixed effects (column 1), the estimated coefficient is quite small and rounds to zero.[13]

Again, we also estimate these models on the untransformed and dichotomized effective income tax rate. In models with the untransformed dependent variable, the coefficient on capital mobility is larger but estimated with substantially more uncertainty and not statistically significant (Table A.6). This difference in results can be traced to only about 170 of the almost 23,000 observations, with very extreme and unrealistic effective income tax rates. With the dichotomized dependent variable, our main finding remains: firms with more mobile capital are more likely to pay positive income tax rates (Table A.7). Our main finding of a positive relationship remains in models with fixed effects

[12]Our results remain if we estimate models with the winsorized dependent variable on yearly cross-sections and include city fixed effects. Capital mobility is positively related to effective income tax rates for all years in the sample. Due to space constraints we have omitted these results.

[13]The full results for all covariates are shown in Table A.5.

for the interaction between city and year (Table A.8).

4.2 State-Business Collusion as a Moderator

In the previous section, we examined the relationship between capital mobility and effective income tax rates using two different samples of firm level data from China. Contrary to work on OECD countries, we find a positive association between capital mobility and effective tax rates. This result raises questions about the standard account that firms are able to use higher capital mobility to their advantage. Instead, it suggests a more complicated reality about the relationship between mobility and taxation in China, or developing countries in general. As we discuss above, firms with more fixed capital securing better political connections is one potential explanation for the positive relationship between capital mobility and effective tax rates. In this section, we provide some qualitative and quantitative evidence for this potential mechanism.

Many local government officials and businesses in China have used tax-break policies to build mutually beneficial relationships and consolidate connections with betwen firms and governments (Zheng, 2006; Chen, 2018; Choi, 2009). The hundreds tax break policies issued by the central government, which generated more sub-policies at the local level, were hard to monitor. Criteria for evaluating firm eligibility were highly flexible. As a consequence, an investigation by the China National Audit Office found that 98% of the investigated counties had issued tax break policies without central government approval, reducing tax revenues by more than 7 billion yuan.[14] To attract investment and achieve economic development targets, with the goal to further their own careers, local officials were highly motivated to provide tax breaks/benefits. These practices seem to have become institutionalized over time. In order to seek bribes and kickbacks, tax bureaus and other government departments would directly reach out to firms or tax companies with connections to firms.[15]

Firms, moreover, actively seek help from local governments. While official application processes exists, without building networks with local tax bureaus it is nearly impossible to stay on top of and navigate through the hundreds of policies issued by

[14] See China National Audit Office, http://www.audit.gov.cn/n5/n25/c63597/content.html.
[15] Author's interviews, 2009. In addition, see Choi (2009).

state and local governments. Part of the difficulty stems from the fact that these policies are often created in an *ad hoc* manner. Furthermore, firms often have to acquire approval from several different departments before formally receiving tax breaks. Nurturing and maintaining good relationships with local government officials are viewed as essential for firms to "get things done" and to receive approval within a realistic time frame. To facilitate the eventual implementation of tax breaks or exemption policies, many firms employ specific personnel in charge of establishing and maintaining good relations with the tax bureau and other departments.

Qualitative evidence suggests that firms with a lower degree of mobility, i.e., higher proportion of fixed assets, are significantly more likely to invest in political connections to acquire tax breaks. Moreover, these firms are more likely to be the targets of public officials seeking gifts. Many of these businesses are engaged in natural resource extraction, e.g., coal, petroleum, power generation, and mining, where the location of natural resources is geographically constraining. For example, a coal mining company in the Tongliang county of Chongqing city with a fixed asset share of 85%, was caught bribing a local official with 147 thousand rmb. Before the arrest of the official and the firm's closure, the company enjoyed an average income tax rate of 10% since its establishment in 2005.[16] Similarly, a steel company in the Liaocheng City of Shandong Province, with a fixed asset share of 83%, had been paying an effective income tax rate of about three percent. And yet, the company was awarded to be on the list of "the top 100 tax paying companies" in Liaocheng.[17] Liaocheng has recently gained unwanted attention due to an investigation into corruption, money embezzlement, and suicide by public officials.[18]

Other avenues for firms to gain influence exist as well. Since its establishment in 1997, a real estate and software company in Chengdu, Sichuan had been successful in receiving tax breaks. In the mid 2000s, however, a newly appointed official denied the firm's qualification for the tax breaks based on the policy's restrictions with respect to

[16] Authors' calculation based on China National Survey of Industrial Firms. Also see the report by *China Legal Daily* at http://www.legaldaily.com.cn/index/content/2012-05/25/content_3598724.htm?node=20908.

[17] Authors' calculation, also see records at the Tax Bureau of Liaocheng http://liaocheng.sd-n-tax.gov.cn/art/2007/11/6/art_22992_49102.html.

[18] See for example the announcement by Shandong Central Commission for Discipline Inspection http://www.sdjj.gov.cn/tbbg/201607/t20160728_11244711.htm.

industry type. After denial of the tax benefit, a former colleague of the official was given a well-paid position in the company. The former official soon informed his former colleague in government that the firm's CEO was a member of the budget committee in the local People's Congress, who could influence the budget allocated to the government official's office. In the end, the firm was once again approved for the tax break policy.[19]

Firms with higher capital mobility by definition have a higher ability to relocate in case of difficulties or higher costs in the current location. And yet, at least in China, the potential threat of exit does not seem to lead to higher bargaining power over local governments. Instead, these firms tend to have weaker incentives to invest resources in bribing, corruption, and networking with local governments. Similarly, government officials put less value in relationships with more mobile firms, as they suspect that the businesses may not remain in the locality in the long run.[20]

While the qualitative evidence, brought to bear here, is suggestive of a mechanism that potentially links the capital mobility/taxation relationship to political connections and corruption, there is no direct test allowing us to examine this proposition. Given the two different time periods we study in this paper, however, each data set provides a unique opportunity to further investigate the potential mechanism.

First, to examine the potential role of political connections given the estimated relationship in the Chinese firm survey (*CNSIF*), we rely on data from the 2005 World Bank Investment Climate Survey (Enterprise Analysis Unit - World Bank Group, 2005). The survey investigates various aspects of business-government relations and was conducted across a sample of firms in 123 cities in China. The survey included questions about firms' interaction with government agencies. We primarily use the firms' survey responses about their perceived relationship with tax bureaus as an indicator for political connections at the city level, i.e., better relationships are indicative of better political connections.

We use the survey responses to create city level measures of government-business relationships for the 123 cities, which we merge to the firm survey data for 2004 based

[19] Author's interviews, January 2009 and May 2019.
[20] Author's interview, February 2010.

Table 3: Effective Income Tax Rate – Relationship w. Tax Bueaus (National Survey)

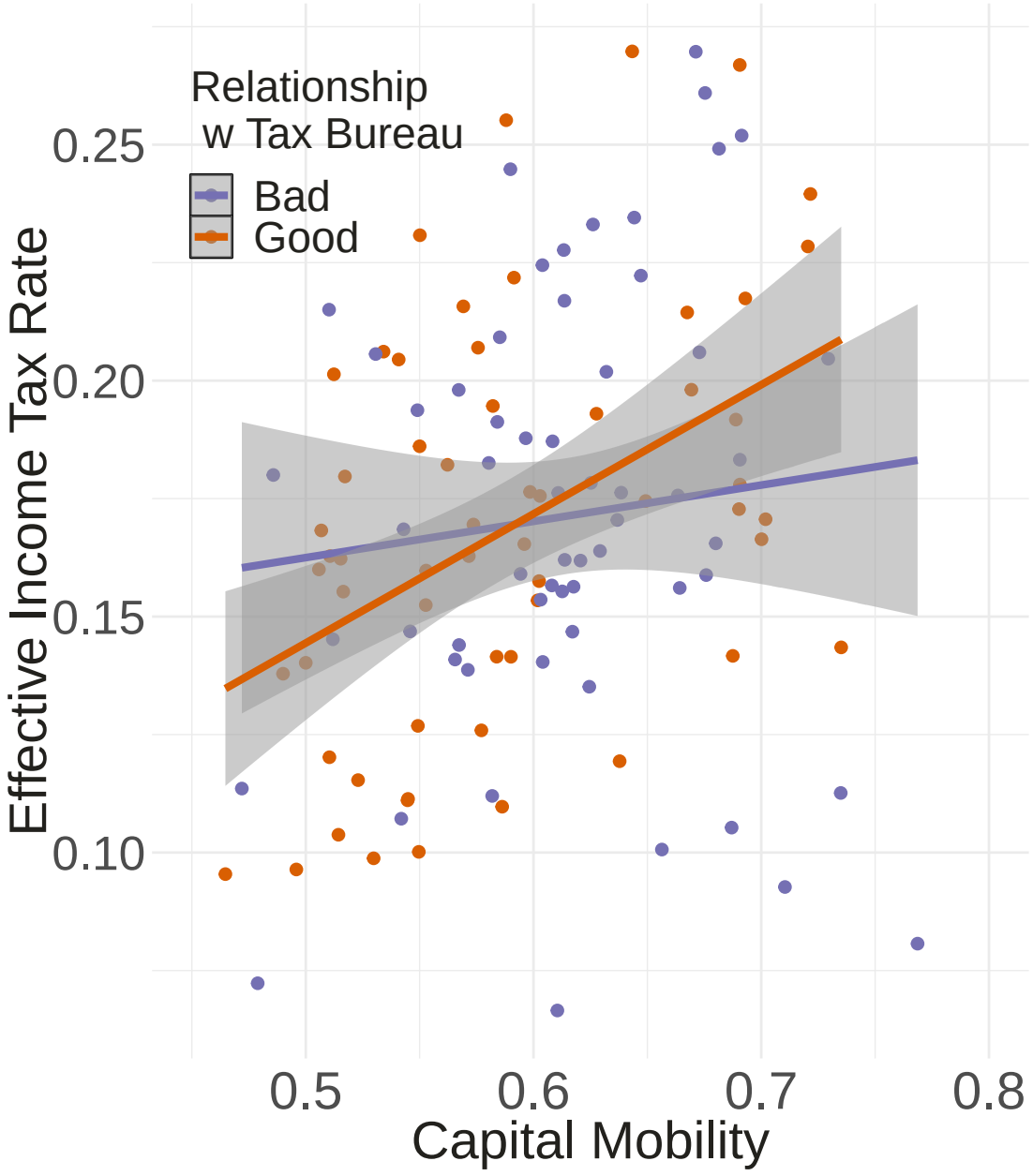
	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	-0.13	-0.10**	-0.13*	-0.10**	-0.11	-0.05
	(0.07)	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)
Relationship w. Tax Bureau	-0.09**		-0.09**		-0.09**	
	(0.02)		(0.02)		(0.02)	
Cap. Mobility × Tax Bureau	**0.05***	**0.04****	**0.04***	**0.04****	**0.04****	**0.02***
	(0.02)	**(0.01)**	**(0.02)**	**(0.01)**	**(0.02)**	**(0.01)**
Controls	No	No	Minimal	Minimal	Full	Full
City FE	No	Yes	No	Yes	No	Yes
N	165423	165423	165423	165423	165168	165168
Adj. R2	0.01	0.09	0.02	0.10	0.11	0.17

Note: Minimal controls are total profits (ln) and assets (ln). Full controls additionally includes covariates for total exports (ln), total employment (ln), and foreign or state ownership. Models estimated with standard errors clustered by city.
* $p < 0.05$, ** $p < 0.01$,

on firm locations. While imperfect, given that we would prefer a firm level measure of corruption, this allows us to investigate differences in firm behavior based on city averages. Specifically, we aim to proxy the city level environment for corruption or government-business collusion with the measure of firm-tax bureau relationships. If our conjecture about the link between capital mobility, corruption, and tax rates is correct, then we should observe this relationship play out differently depending on city context. We expect the positive relationship between mobility and tax rates to be particularly pronounced in cities where government-business collusion is more prevalent.

As a first indication that this is indeed the case, we plot the bivariate association between firm level capital mobility and effective tax rates for two types of cities in Figure 2. The association for firms in cities where the average relationship between firms and tax bureaus is below (i.e., worse than) the median of the tax bureau relationship variable are plotted in purple, while the association for firms in cities where the average relationship is above the median are plotted in orange. The relationship between tax rates and mobility is stronger in cities where government-business relations are better than the median. In cities with worse government-business relationships, the linear relationship between mobility and tax rates is close to zero.

Figure 2: Relationship between Mobility and Income Tax Rates Across Cities



Note: This figure shows the relationship between city average capital mobility and effective tax rates for cities with below (purple) and above (orange) median firm-tax bureau relationships. The positive association between mobility and tax rates is only present in cities with above median government-business relationships.

To estimate this potential potential mechanism using regression analysis, we regress firms' effective income tax rates on our independent variable of interest (capital mobility)

interacted with the city level measure of the relationship between firms and tax bureaus. We again include three sets of covariates. In addition, models presented in columns 2, 4, and 6 include city fixed effects, which results in the constituent term for the tax bureau relationship to drop out. As Table 3 shows, we find evidence in line with the proposed explanation.[21] First, the constituent terms are in the expected direction, capital mobility has a negative association with tax rates in cities where relations with the tax bureau are worst and the constituent term of our proxy for corruption environment is estimated to be negative. Most importantly, in line with the proposed explanation, we find that the interaction between firm level capital mobility and city level firm-tax bureau relationship is positive and statistically significant. In cities with better firm-tax bureau relationships, more mobile firms pay higher effective tax rates. Conversely, firms with more fixed assets pay lower taxes but only in cities with potential for political connections. This finding holds true across the full set of controls and if we include city fixed effect, i.e., when analyzing only within city variation.[22]

4.3 Anti-Corruption Campaign as a Tipping Point

In November 2012, President Xi Jinping, who took power that same year, launched a major anti-corruption campaign in China, which continues to this day. One goal of the campaign is to curb rampant corruption and government-business collusion in China (Manion, 2016). Along with the anti-corruption campaign, in 2014, the State Council of the central government issued a "Notice on Clearing and Regulating Taxation and Other Preferential Policies," which started a crack down on local governments offering tax breaks based on government-business collusion. Any such tax break would now have to be inspected and approved by the State Council of the central state (The State Council of China, 2014). Though the central government later provided a grace period to fend off potential lawsuits by businesses (The State Council of China, 2015). The crackdown reduced the issuance of illegitimate tax breaks based on government-business connections

[21] Table A.9 in the Appendix shows the full results with estimates for all covariates.

[22] We have run the same regression models but using time spent with tax bureaus as the proxy for corruption potential. While we find a positive interaction effect, the estimate is not significant when standard errors are clustered at the city level. For space reasons we have omitted those results.

or bribery (Ye, 2017). As a result, many bureaucrats started avoiding direct contact with business owners. The frequency with which public officials would attend banquets with business leaders, another avenue for gifts or money to be presented to public officials, sharply declined. Overall, the campaign significantly changed how governments and businesses interact (Ang, 2020; Overholt, 2017).

We use this anti-corruption campaign as a potential shock to the system of corruption. If corruption and bribery are important factors that influence the relationship between capital mobility and firm taxation, then the relationship should change with the beginning of the anti-corruption campaign. To test this proposition, we use the stock market data and estimate the same models as above but interact our independent variables with an indicator variable that is zero for the period from 2009 to 2012 and one after 2012.

Table 4 presents the results regarding the interaction of capital mobility with the post 2012 dummy when estimated on the winsorized dependent variable. For these models estimating the effect of mobility in the pre- and post-anti-corruption campaign periods, we alternatively include city and year (columns 1, 3, 5) or firm and year fixed effects (columns 2, 4, 6). In models with firm and year fixed effects, constant firm level differences are absorbed and we can estimate how firms are affected differently before and after the start of the anti-corruption campaign (similar to a difference-in-differences design). The full results with covariates are presented in Table A.10 in the Appendix.

The positive and significant estimate for the constituent term of capital mobility indicates the positive association in the period up until 2012. After the beginning of the anti-corruption campaign in the post-2012 period, however, the relationship between capital mobility and effective income taxation is substantially weaker. Depending on the specific model, the estimated relationship is halved for the period after 2012. In general these results hold across all three of our dependent variables.[23] As the Chinese government cracked down on local corruption and government-business collusion, the positive relationship between capital mobility and tax rates disappears. After 2012, the disadvantage for more mobile firms is much lower. These results, especially where we

[23]The estimates of the post 2012 interaction effect are generally robust to using the untransformed effective rate (Table A.11) or the binary coding (Table A.12) as the dependent variable. In some of the models without any control variables we do find insignificant interaction effects.

Table 4: Effective Income Tax Rate (Stock Market Data) – Pre-/Post-2012

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.01***	**0.04****	**0.05****	**0.07****	**0.05****	**0.05****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**
Capital Mobility × post 2012	**-0.02****	**-0.02****	**-0.03****	**-0.03****	**-0.03****	**-0.03****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**
Controls	No	No	Minimal	Minimal	Full	Full
City FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.04	0.34	0.09	0.36	0.10	0.38

Note: Minimal controls are total profits (ln) and assets (ln). Full controls additionally includes covariates for research and development intensity, employee benefits (ln), and indicators for foreign, state, or private ownership. All covariates are also interacted with the indicator for years after 2012. Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

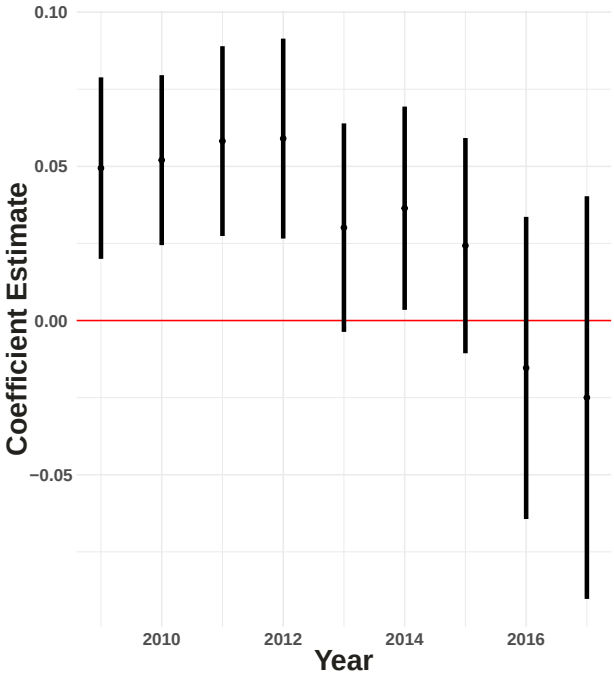
include firm fixed effects, are quite strong evidence for the idea that the anti-corruption campaign significantly weakened the mechanism by which fixed-asset firms gained advantage over mobile firms.[24]

In Table A.13 in the Appendix, we present the results when we interact our main independent variable with the year fixed effects, i.e., estimating year specific effects for capital mobility. Alternatively, we interact capital mobility and all covariates with the year fixed effects. To better visualize the results, Figure 3 presents the coefficient estimates for capital mobility from model 4 in Table A.13. As one can see the relationship between capital mobility and effective tax rates becomes weaker over time. In line with the initial grace period mentioned above, the relationship first weakens and turns negative in 2016. We do find a significant positive effect in 2014, and one possibility is that this is due to the grace period noted above.[25]

[24]These results generally remain the same if we interact all covariates with the pre-/post-2012 interaction. Due to space constraints we have not included those results.

[25]Alternatively, we have estimate separate cross-sectional models for each year. We find positive and significant associations in the data for each year up until 2014. There is no significant evidence of a relationship for 2015, 2016, and 2017. While a positive relationship is still observed after the beginning of the anti-corruption campaign (2013 and 2014), there is a clear change in the relationship after 2014. This corresponds to the time at which the Chinese central government started its crack down on local governments offering of tax breaks, providing additional evidence for this potential mechanism. We have

Figure 3: Coefficient Estimates for Capital Mobility by Year



Note: This figure shows the relationship between capital mobility and effective tax rates over time. As one can see, the relationship weakens after the beginning of the anti-corruption campaign and is estimated to be negative in 2016, though statistically insignificant.

As a last test of the potential mechanism outlined above, we use a city level measure of fiscal transparency as a moderator of the capital mobility-taxation relationship. As part of Xi's effort to establish a more efficient market and cleaning up the bureaucracy, the Third Plenum of the 18th Party Congress implemented the decision to increase fiscal transparency in cities nationwide (China CCP Central Committee, 2013). If our argument is correct, we should see less of a positive relationship between mobility and effective tax rates in more fiscally transparent cities, where tax rates should be strictly decided by rules and laws rather than personal relations. We test this argument by merging the city fiscal transparency index from the reports published by Tsinghua University (Yu, 2018) to the stock market data for the years 2014 to 2018.

As Table 5 shows, fixed asset firms have less of an advantage in more transparent

omitted those results due to space limitations.

Table 5: Effective Income Tax Rate (Stock Market Data) – Interaction with Fiscal Transparency

	Winsorized		
	(1)	(2)	(3)
Capital Mobility	0.15*	0.16**	0.16**
	(0.06)	(0.06)	(0.06)
Fiscal Transparency (ln)	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)
Capital Mobility × Transparency	**-0.04****	**-0.03***	**-0.03***
	(0.01)	**(0.01)**	**(0.01)**
Controls	No	Minimal	Full
City FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	10623	10623	10384
Adj. R2	0.05	0.10	0.11

Note:
Minimal controls are total profits (ln) and assets (ln). Full controls additionally includes covariates for research and development intensity, employee benefits (ln), and indicators for foreign, state, or private ownership. Models estimated with city and year fixed effects and standard errors clustered by city. $^{*}p < 0.05$, $^{**}p < 0.01$,

cities. When we regress effective tax rates on the interaction of capital mobility with the logged fiscal transparency measure, the positive relationship between mobility and tax rates is significantly weaker in cities with higher fiscal transparency. The results are similar for our alternative transformations of the dependent variable, but the interaction is insignificant for the untransformed effective tax rate. Overall, the finding points in the same direction and suggest that the curb on government-business collusion and increase of transparency alleviate the mobility-tax relationship we observe in China. These results are particularly notable since the analysis is on data from the post anti-corruption campaign period.

5 Conclusion

In this paper, we investigate the relationship between capital mobility and taxation in China. The case of China allows us to examine the capital mobility-taxation relationship in a developing country with local tax competition, holding many other covariates constant. China is representative of a larger set of cases where property rights are less

secure than in OCED countries and effective tax rates typically vary widely from the standard rates based on government-business collusion.

Using two sets of firm-level panel data over two time periods, we show that firms with higher level of mobility, in fact, pay higher effective tax rates compared to firms with larger proportions of fixed assets. Our findings suggest that the relationship between asset mobility and effective tax rates in developing countries may not be the same as in OECD countries. Instead, in an environment that lacks fiscal transparency and where tax rates are often subject to negotiation, government-business collusion can be an important path for firms to receive tax breaks. Even within the same country, a more corrupt environment with cozier relationship between government and business can change the capital mobility-taxation nexus.

Our findings reveal the limitation of the current literature on tax policies in non-OECD countries and shed light on potential directions for future research. On the demand side for tax breaks, while firms prefer paying lower taxes, one has to take into consideration of the cost of the such choices in less transparent environments. Capital mobility may not necessarily increase a firm's leverage to receive tax breaks. Instead, it may simply weaken a firm's incentive and ability to build a stronger relationship with government officials. In contrast, firms with higher proportion of fixed assets may have stronger incentives to invest in building connections, due to their vulnerability to bribe seeking, the sunk cost of fixed assets, and the long term benefits of such investments.

On the supply side, the incentives of tax officials to provide tax breaks demand further examination. In particular, how do bureaucrats' incentives change depending on whether they are interacting with more mobile or more fixed-asset firms? Our finding suggests that bureaucrats may be more likely to offer lower tax rates in exchange for private goods when it comes to less mobile firms, possibly because of their continuous contribution to the economy and long-term personal benefits.

We believe our results underline the importance of using firm-level data to investigate these questions. Analyzing firm level effective tax rates within a single country allows for a more fine grained investigation of the relationship between mobility and taxation, as well as the varying conditions that moderate such a relationship. Therefore, it is worth

replicating our effort in other developing countries.

Lastly, as noted above, assuming our results are true, one could see investments in political connections as another type of taxation. In this case, the *total tax bill* could considered as the sum of investments in government relationships plus income taxes. If fixed asset firms indeed invest more in political connections, this would increase their *total tax bill*. Given the scope of this paper, we are unable to know how high the costs of such investments are and how the *total tax bill* compares between fixed asset and more mobile firms. It seems unlikely, however, that in the long-run investment in political connections for individual firms are higher than paying the full tax bill.[26] Nevertheless, the distributional consequences of such diversion are immense. Examining this trade-off and cost differentials more closely will be an important avenue for future research.

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[26] Of course, the economy wide costs of corruption may be significantly higher.

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Capital Mobility & Taxation in Non-OECD Countries – Evidence from China

A Appendix

Table A.1: Effective Income Tax Rate (National Survey)

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.04****	**0.05****	**0.04****	**0.05****	**0.05****	**0.05****
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Profits (ln)			-0.00**	-0.00**	-0.00**	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			0.01**	0.01**	0.01**	0.01**
			(0.00)	(0.00)	(0.00)	(0.00)
Exports (ln)					-0.00	0.00
					(0.00)	(0.00)
Employees (ln)					0.00**	0.01**
					(0.00)	(0.00)
Foreign Ownership					-0.10**	-0.09**
					(0.00)	(0.00)
State Ownership					-0.01**	-0.01**
					(0.00)	(0.00)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	2023967	1813787	2023961	1813781	1973136	1763248
Adj. R2	0.08	0.09	0.08	0.09	0.12	0.12

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.2: Effective Income Tax Rate (National Survey)

	Untransformed					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.06***	**0.07***	**0.08****	**0.08***	**0.08****	**0.09***
	(0.03)	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**
Profits (ln)			-0.05**	-0.06**	-0.06**	-0.06**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			0.07**	0.07**	0.06**	0.06**
			(0.00)	(0.01)	(0.01)	(0.01)
Exports (ln)					-0.00	-0.00
					(0.00)	(0.00)
Employees (ln)					0.03**	0.03**
					(0.01)	(0.01)
Foreign Ownership					-0.08**	-0.07**
					(0.02)	(0.02)
State Ownership					-0.01	-0.01
					(0.02)	(0.03)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	2023967	1813787	2023961	1813781	1973136	1763248
Adj. R2	0.00	0.00	0.00	0.00	0.00	0.00

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.3: Effective Income Tax Rate (National Survey)

	Binary					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.14****	**0.15****	**0.16****	**0.17****	**0.16****	**0.17****
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**
Profits (ln)			0.03**	0.03**	0.03**	0.03**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			0.01**	0.00**	0.01**	0.01**
			(0.00)	(0.00)	(0.00)	(0.00)
Exports (ln)					0.00	0.00*
					(0.00)	(0.00)
Employees (ln)					0.01**	0.01**
					(0.00)	(0.00)
Foreign Ownership					-0.22**	-0.21**
					(0.00)	(0.00)
State Ownership					-0.06**	-0.07**
					(0.00)	(0.00)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	2023967	1813787	2023961	1813781	1973136	1763248
Adj. R2	0.09	0.09	0.11	0.12	0.13	0.14

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.4: Models with City × Year FE (National Survey)

	Untransformed	**Winsorized**	**Binary**
	(1)	(2)	(3)
Capital Mobility	**0.08****	**0.04****	**0.15****
	(0.03)	**(0.00)**	**(0.00)**
Profits (ln)	-0.06**	-0.00**	0.03**
	(0.00)	(0.00)	(0.00)
Assets (ln)	0.07**	0.01**	0.01**
	(0.01)	(0.00)	(0.00)
Export Share	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Employees (ln)	0.03**	0.00**	0.01**
	(0.01)	(0.00)	(0.00)
Foreign Ownership	-0.08**	-0.10**	-0.23**
	(0.02)	(0.00)	(0.00)
State Ownership	-0.01	-0.01**	-0.06**
	(0.02)	(0.00)	(0.00)
City × Year FE	Yes	Yes	Yes
N	1973136	1973136	1973136
Adj. R2	0.00	0.14	0.15

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.5: Effective Income Tax Rate (Stock Market Data)

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.00**	**0.02****	**0.03****	**0.04****	**0.04****	**0.05****
	(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**
Profits (ln)			-0.02**	-0.02**	-0.02**	-0.02**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			0.04**	0.03**	0.03**	0.03**
			(0.00)	(0.00)	(0.00)	(0.00)
R&D Intensity					-0.14**	-0.05*
					(0.03)	(0.02)
Employee Benefits (ln)					-0.00**	-0.00
					(0.00)	(0.00)
Foreign Ownership					0.01	0.00
					(0.01)	(0.01)
State Ownership					0.02**	0.01**
					(0.00)	(0.00)
Private Ownership					-0.00	0.00
					(0.00)	(0.00)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.04	0.15	0.09	0.18	0.10	0.18

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.6: Effective Income Tax Rate (Stock Market Data)

	Untransformed					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.01**	**0.05**	**0.06**	**0.12**	**0.09**	**0.15**
	(0.07)	**(0.08)**	**(0.07)**	**(0.08)**	**(0.09)**	**(0.11)**
Profits (ln)			-0.07**	-0.07**	-0.08**	-0.09**
			(0.01)	(0.01)	(0.02)	(0.02)
Assets (ln)			0.08**	0.07**	0.08**	0.07**
			(0.02)	(0.02)	(0.03)	(0.03)
R&D Intensity					-0.09	-0.02
					(0.47)	(0.49)
Employee Benefits (ln)					-0.01	0.00
					(0.01)	(0.01)
Foreign Ownership					0.09	0.11
					(0.13)	(0.14)
State Ownership					0.14	0.15
					(0.09)	(0.09)
Private Ownership					0.04	0.05
					(0.09)	(0.09)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.7: Effective Income Tax Rate (Stock Market Data)

	Binary					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.05****	**0.09****	**0.05****	**0.06****	**0.05****	**0.05****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**
Profits (ln)			0.05**	0.05**	0.05**	0.05**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			-0.03**	-0.03**	-0.02**	-0.02**
			(0.00)	(0.00)	(0.00)	(0.00)
R&D Intensity					-0.06	-0.06
					(0.04)	(0.04)
Employee Benefits (ln)					-0.01**	-0.01**
					(0.00)	(0.00)
Foreign Ownership					-0.02	-0.02
					(0.01)	(0.01)
State Ownership					-0.00	0.00
					(0.01)	(0.01)
Private Ownership					-0.00	-0.00
					(0.01)	(0.01)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	Yes	No	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.03	0.04	0.10	0.10	0.10	0.11

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.8: Models with City × Year FE (Stock Market Data)

	Variable			
	Untransformed	**Winsorized**	**Binary**	**Tax Payment (ln)**
	(1)	(2)	(3)	(4)
Capital Mobility	**0.07**	**0.03****	**0.05****	**0.65****
	(0.10)	**(0.01)**	**(0.01)**	**(0.07)**
Profits (ln)	-0.07**	-0.02**	0.05**	0.91**
	(0.02)	(0.00)	(0.00)	(0.02)
Assets (ln)	0.07*	0.03**	-0.03**	0.42**
	(0.03)	(0.00)	(0.00)	(0.02)
R&D Intensity	-0.13	-0.13**	-0.06	0.29
	(0.51)	(0.03)	(0.04)	(0.41)
Employee Benefits (ln)	-0.01	-0.00**	-0.01**	-0.06**
	(0.02)	(0.00)	(0.00)	(0.01)
Foreign Ownership	0.10	0.01	-0.01	0.13
	(0.14)	(0.01)	(0.01)	(0.11)
State Ownership	0.15	0.02**	0.00	-0.07
	(0.10)	(0.00)	(0.01)	(0.07)
Private Ownership	0.05	-0.00	0.00	0.05
	(0.09)	(0.00)	(0.01)	(0.07)
City × Year FE	Yes	Yes	Yes	Yes
N	15570	15570	15570	15064
Adj. R2	-0.08	0.09	0.11	0.55

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.9: Effective Income Tax Rate – Relationship w. Tax Bureaus (National Survey)

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	-0.13	-0.10**	-0.13*	-0.10**	-0.11	-0.05
	(0.07)	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)
Relationship w. Tax Bureau	-0.09**		-0.09**		-0.09**	
	(0.02)		(0.02)		(0.02)	
Cap. Mobility × Tax Bureau	**0.05***	**0.04****	**0.04***	**0.04****	**0.04****	**0.02***
	(0.02)	**(0.01)**	**(0.02)**	**(0.01)**	**(0.02)**	**(0.01)**
Profits (ln)			-0.01**	-0.01**	-0.01**	-0.01**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			-0.00	0.00	0.00**	0.00**
			(0.00)	(0.00)	(0.00)	(0.00)
Exports (ln)					0.01*	-0.00
					(0.01)	(0.00)
Employees (ln)					0.01*	0.01**
					(0.00)	(0.00)
Foreign Ownership					-0.12**	-0.11**
					(0.01)	(0.01)
State Ownership					-0.04**	-0.02**
					(0.01)	(0.00)
City FE	No	Yes	No	Yes	No	Yes
N	165423	165423	165423	165423	165168	165168
Adj. R2	0.01	0.09	0.02	0.10	0.11	0.17

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.10: Effective Income Tax Rate (Stock Market Data) – Pre-/Post-2012

	Winsorized					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.01***	**0.04****	**0.05****	**0.07****	**0.05****	**0.05****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**
Capital Mobility × post 2012	**-0.02****	**-0.02****	**-0.03****	**-0.03****	**-0.03****	**-0.03****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**
Profits (ln)			-0.02**	-0.02**	-0.02**	-0.02**
			(0.00)	(0.00)	(0.00)	(0.00)
Profits (ln) × post 2012			0.00	-0.00	0.00	-0.00
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			0.04**	0.03**	0.04**	0.03**
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln) × post 2012			-0.00	0.00	-0.00	0.00
			(0.00)	(0.00)	(0.00)	(0.00)
R&D Intensity					-0.20**	-0.13*
					(0.04)	(0.05)
R&D Intensity × post 2012					0.09	0.03
					(0.05)	(0.05)
Employee Benefits (ln)					-0.00**	-0.00*
					(0.00)	(0.00)
Employee Benefits (ln) × post 2012					-0.00	-0.00
					(0.00)	(0.00)
Foreign Ownership					0.01	0.01
					(0.01)	(0.02)
Foreign Ownership × post 2012					0.01	0.01
					(0.01)	(0.01)
State Ownership					0.02*	0.00
					(0.01)	(0.01)
State Ownership × post 2012					0.01	0.00
					(0.01)	(0.01)
Private Ownership					-0.00	0.01
					(0.01)	(0.01)
Private Ownership × post 2012					-0.00	-0.01
					(0.01)	(0.01)
City FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.04	0.34	0.09	0.36	0.10	0.38

Note: Models estimated with standard errors clustered by city.
* $p < 0.05$, ** $p < 0.01$,

Table A.11: Effective Income Tax Rate (Stock Market Data) – Pre-/Post-2012

	Untransformed					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.10**	**0.33***	**0.35****	**0.69****	**0.39****	**0.95****
	(0.10)	**(0.16)**	**(0.10)**	**(0.16)**	**(0.13)**	**(0.23)**
Capital Mobility × post 2012	**-0.15**	**-0.18**	**-0.42****	**-0.43****	**-0.50****	**-0.54****
	(0.13)	**(0.14)**	**(0.13)**	**(0.14)**	**(0.17)**	**(0.19)**
Profits (ln)			-0.30**	-0.35**	-0.34**	-0.39**
			(0.02)	(0.03)	(0.03)	(0.04)
Profits (ln) × post 2012			0.37**	0.37**	0.45**	0.42**
			(0.03)	(0.03)	(0.04)	(0.04)
Assets (ln)			0.31**	0.32**	0.33**	0.34**
			(0.03)	(0.04)	(0.04)	(0.07)
Assets (ln) × post 2012			-0.36**	-0.37**	-0.43**	-0.42**
			(0.03)	(0.04)	(0.05)	(0.05)
R&D Intensity					-0.22	-0.38
					(0.79)	(1.17)
R&D Intensity × post 2012					0.34	0.58
					(0.97)	(1.17)
Employee Benefits (ln)					0.00	0.06
					(0.02)	(0.03)
Employee Benefits (ln) × post 2012					-0.02	-0.02
					(0.03)	(0.03)
Foreign Ownership					-0.02	-0.41
					(0.20)	(0.35)
Foreign Ownership × post 2012					0.17	0.37
					(0.26)	(0.29)
State Ownership					-0.01	0.18
					(0.14)	(0.24)
State Ownership × post 2012					0.23	0.42*
					(0.18)	(0.19)
Private Ownership					-0.07	-0.66**
					(0.14)	(0.24)
Private Ownership × post 2012					0.16	0.32
					(0.18)	(0.19)
City FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	-0.01	-0.04	0.00	-0.03	0.00	0.00

Note: Models estimated with standard errors clustered by city.
* $p < 0.05$, ** $p < 0.01$,

Table A.12: Effective Income Tax Rate (Stock Market Data) – Pre-/Post-2012

	Binary					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Mobility	**0.07****	**0.13****	**0.07****	**0.10****	**0.07****	**0.06****
	(0.01)	**(0.02)**	**(0.01)**	**(0.02)**	**(0.01)**	**(0.02)**
Capital Mobility × post 2012	**-0.03***	**-0.03***	**-0.04****	**-0.04****	**-0.03***	**-0.03***
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**	**(0.02)**	**(0.02)**
Profits (ln)			0.04**	0.05**	0.05**	0.05**
			(0.00)	(0.00)	(0.00)	(0.00)
Profits (ln) × post 2012			0.01**	0.01**	0.01**	0.01*
			(0.00)	(0.00)	(0.00)	(0.00)
Assets (ln)			-0.01**	0.01**	-0.01**	0.02**
			(0.00)	(0.00)	(0.00)	(0.01)
Assets (ln) × post 2012			-0.03**	-0.02**	-0.02**	-0.01*
			(0.00)	(0.00)	(0.00)	(0.00)
R&D Intensity					-0.18*	-0.20*
					(0.07)	(0.09)
R&D Intensity × post 2012					0.19*	0.14
					(0.09)	(0.09)
Employee Benefits (ln)					-0.01**	-0.01*
					(0.00)	(0.00)
Employee Benefits (ln) × post 2012					-0.00	-0.00*
					(0.00)	(0.00)
Foreign Ownership					-0.03	-0.00
					(0.02)	(0.03)
Foreign Ownership × post 2012					0.02	0.01
					(0.02)	(0.02)
State Ownership					-0.01	-0.02
					(0.01)	(0.02)
State Ownership × post 2012					0.01	0.01
					(0.02)	(0.02)
Private Ownership					-0.00	0.00
					(0.01)	(0.02)
Private Ownership × post 2012					0.00	-0.01
					(0.02)	(0.02)
City FE	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	20945	20945	20945	20945	15570	15570
Adj. R2	0.03	0.16	0.10	0.22	0.11	0.25

Note: Models estimated with standard errors clustered by city.
* $p < 0.05$, ** $p < 0.01$,

Table A.13: Effective Income Tax Rate (Stock Market Data) – Estimates by Year

	Winsorized			
	(1)	(2)	(3)	(4)
Capital Mobility 2009	**0.06****	**0.06****	**0.05****	**0.05****
	(0.02)	**(0.01)**	**(0.02)**	**(0.02)**
Capital Mobility 2010	**0.05****	**0.05****	**0.05****	**0.05****
	(0.01)	**(0.01)**	**(0.01)**	**(0.01)**
Capital Mobility 2011	**0.05****	**0.04****	**0.06****	**0.06****
	(0.01)	**(0.01)**	**(0.02)**	**(0.02)**
Capital Mobility 2012	**0.05****	**0.06****	**0.05****	**0.06****
	(0.01)	**(0.01)**	**(0.02)**	**(0.02)**
Capital Mobility 2013	**0.03***	**0.03***	**0.02**	**0.03**
	(0.01)	**(0.01)**	**(0.02)**	**(0.02)**
Capital Mobility 2014	**0.04***	**0.04***	**0.04***	**0.04***
	(0.02)	**(0.02)**	**(0.02)**	**(0.02)**
Capital Mobility 2015	**0.02**	**0.02**	**0.02**	**0.02**
	(0.02)	**(0.01)**	**(0.02)**	**(0.02)**
Capital Mobility 2016	**-0.03**	**-0.03**	**-0.02**	**-0.02**
	(0.02)	**(0.02)**	**(0.03)**	**(0.03)**
Capital Mobility 2017	**-0.01**	**-0.02**	**-0.02**	**-0.02**
	(0.03)	**(0.03)**	**(0.03)**	**(0.03)**
Profits (ln)	-0.02**		-0.02**	
	(0.00)		(0.00)	
Assets (ln)	0.03**		0.03**	
	(0.00)		(0.01)	
R&D Intensity	-0.14**		-0.12*	
	(0.03)		(0.06)	
Employee Benefits (ln)	-0.00**		-0.00*	
	(0.00)		(0.00)	
Foreign Ownership	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.02)	(0.02)
State Ownership	0.02*	0.02*	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Private Ownership	-0.00	-0.00	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
N	15570	15570	15570	15570
Adj. R2	0.10	0.10	0.37	0.38
City FE	Yes	Yes	Yes	Yes
Firm FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Ctrls × Year FE	No	Yes	No	Yes

Note: Models estimated with standard errors clustered by city. * p < 0.05, ** p < 0.01,

Table A.14: Effective Income Tax Rate (Stock Market Data) – Interaction with Fiscal Transparency

	Winsorized			**Untransformed**			**Binary**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Capital Mobility	0.15*	0.16**	0.16**	0.63	0.47	0.46	3.36*	1.52	1.96*
	(0.06)	(0.06)	(0.06)	(0.40)	(0.32)	(0.36)	(1.51)	(0.92)	(0.76)
Fiscal Transparency (ln)	0.02	0.02	0.02	0.08	0.05	0.05	0.51*	0.10	0.18
	(0.01)	(0.01)	(0.01)	(0.06)	(0.05)	(0.05)	(0.24)	(0.16)	(0.13)
Capital Mobility × Transparency	**-0.04****	**-0.03***	**-0.03***	**-0.16**	**-0.13**	**-0.13**	**-0.95***	**-0.25**	**-0.39***
	(0.01)	**(0.01)**	**(0.01)**	**(0.10)**	**(0.09)**	**(0.10)**	**(0.39)**	**(0.23)**	**(0.18)**
Profits (ln)		-0.02**	-0.02**		0.12	0.13		0.91**	0.92**
		(0.00)	(0.00)		(0.10)	(0.10)		(0.03)	(0.03)
Assets (ln)		0.03**	0.03**		-0.09	-0.11		0.23**	0.25**
		(0.00)	(0.00)		(0.09)	(0.10)		(0.02)	(0.03)
Employee Benefits (ln)			-0.01**			-0.02			-0.04*
			(0.00)			(0.03)			(0.02)
Foreign Ownership			0.02			0.04			0.06
			(0.01)			(0.02)			(0.09)
State Ownership			0.03**			0.14*			-0.02
			(0.01)			(0.06)			(0.06)
N	10623	10623	10384	10623	10623	10384	10238	10238	10007
Adj. R2	0.05	0.10	0.11	-0.01	-0.00	-0.00	0.08	0.64	0.65
Controls	No	Minimal	Full	No	Minimal	Full	No	Minimal	Full
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Models estimated with standard errors clustered by city. * $p < 0.05$, ** $p < 0.01$,