***ITAX* Policy Watch paper**

Tax Competition for FDI: China's Exceptional Approach*

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Abstract

In this Policy Watch study, we explore the different approaches to corporate income tax (CIT) setting in three economically significant regions: USA, EU and People's Republic of China (PRC). We characterise tax setting in the three regions as occurring at three hierarchical levels and examine the impact of this on tax competition. We find that there is considerable heterogeneity across the regions. The approach in the PRC is particularly notable. While the PRC has established centralised rate of CIT at the highest level, it is unique in having a tax-sharing system with its lower tiers of government. This connection between the different levels of government within the PRC plays a crucial role in China's unique CIT rate-setting agenda that results in intense and tacit interjurisdictional tax competition.

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1. Introduction

As researchers into implications of interjurisdictional competition for foreign direct investment (FDI), we are often asked for "real-world" examples to give context to our analytical results. It became clear to us that much of the discussion of tax competition in corporate income tax (CIT) rates is focused on the experiences of OECD countries, while the level of understanding of regimes in the rest of the world was patchy. This is true even for China, one of the largest hosts of FDI on the planet. We thought that it might be useful to pool our knowledge on CIT setting in some major global regions in order to highlight the similarities and differences in approaches adopted. Specifically, we look at CIT setting in three major regional economies: United States of America (USA), European Union (EU), and People's Republic of China (PRC). Our focus in this brief article is to draw international comparisons as to: (i) which level (or levels) of regional government sets the CIT rate; (ii) whether the CIT rate is uniform across industries; and (iii) if the region treats foreign capital differently from that of domestic firms. We shall focus disproportionately on the situation in the PRC, as we believe that the tax-setting mechanisms there are less widely understood than those of Western nations. While our main focus will be on corporate tax setting, we shall also take into account other policies adopted by countries to attract foreign investment.

Our target audience for this article are researchers on incentives for FDI (such as ourselves), who are looking for some "stylized facts" to support their analytical modelling, rather than specialists in public finance or policy practitioners, who will already have a deeper understanding of these tax regimes than what we offer here. Our approach is to compare the tax-setting authority of different levels of government across our three regions of choice. In an attempt to make the comparisons more meaningful, despite the differences in the nature of the three regional economies, we adopt a unifying terminology for the different levels of government within each region where we categorize the three institutional levels of interest in Table 1.[1]

1 USA excludes Puerto Rico and District of Columbia; EU membership as of 01 February 2020; PRC excludes Hong Kong, Macau, and Taiwan.

Table 1. Tiers of government in the regions under consideration

	REGION		
Tier of government	**USA**	**EU**	**PRC (or Mainland China)**
1. **Top**	Federal government	EU Commission	Central government
2. **Middle**	50 states	27 member countries	31 provinces and centrally controlled municipalities
3. **Lower**	Cities and counties	Sub-national governments	Cities, counties, and townships

The approaches to setting CIT rates at the top level are markedly different, distinguished by the degree to which this tier of government controls the tax-setting agenda. At one extreme is the EU which does not collectively tax corporate earnings, with CIT rates being set independently and competitively by EU member states, as well as by some federal states and municipalities. In the middle is the USA, where a CIT rate is imposed at the federal level, but also by most states, and at some local levels. At the other extreme, and in stark contrast to the EU, is the PRC where tax setting is totally centralised at the top level. CIT rates, along with all other taxes, are set uniformly by the central government of the PRC. This does not mean that lower levels of government in the PRC are starved of tax revenues because, while the tax setting may be centralized, the collected revenues are shared amongst the many different tiers of government in the PRC. It is this tax sharing mechanism that constitutes the most striking difference between the PRC and the Western nations with respect to taxation of firms. We shall discuss the mechanism in-depth in subsequent sections.

Given our interest in tax competition, we may question whether the centralization of tax setting in the PRC deprives other tiers of government of an important instrument in competing for economic activity. As we shall see, despite the PRC's highly centralized tax system, there appears to be strong political and fiscal incentives and opportunities for the different layers of local government to manipulate the effective CIT rates faced by the firms. This leads to implicit yet fierce inter-jurisdictional tax competition that is tacitly approved by the central government.

In the following sections we shall start with a comparison of the levels at which CIT rates are established in the three regions under consideration. We do not focus our attention on inter-regional

rivalry in attracting FDI.[2] Instead, we identify the opportunities for tax competition *within* geographic regions, that is, at the middle and lower tiers of government identified in Table 1.

We then turn our focus more closely to the situation in the PRC, showing significant differences in effective CIT rates across the country. This serves as evidence for inter-jurisdictional tax competition, despite the centralized tax system in the PRC. This distinguishes the approach to tax competition taken by the Chinese governments from those of governments in the West.

2. Top-tier CIT setting

A major distinguishing feature between the regions under consideration is their level of integration. The USA and the PRC are both nation states, whereas the EU is a customs union of 27 nation states that retain autonomy in several respects, not least of which is in the setting of tax rates. Consequently, while the USA and the PRC can (and do) set national CIT rates, the EU can only establish rules and guidelines regarding the setting of CIT rates by its member states.

2.1. USA

In a tax reform in 2017, the Federal CIT rate in the USA was reduced from 35% to 21% and moved from worldwide income taxation to territorial taxation, the first change in the CIT since 1986. A territorial tax system for corporations, in comparison to a worldwide tax system, excludes profits multinational corporations earn in foreign countries from their domestic tax base. Shifting to a territorial tax system raises concerns about base erosion and profit shifting (BEPS). Corporations are no longer faced with an extra tax on foreign-earned profits, hence there is an incentive to shift domestic income to foreign subsidiaries that are located in regions with low CIT rates in order to minimize the worldwide tax liability.

From 1986-2017, the average worldwide CIT had declined from around 38% to about 23%. As a result, the CIT rate in the USA, having been in the middle of the global tax range, gradually found

[2] Effectively we are focusing on FDI decisions where the firms have a geographical preference, perhaps to access consumers, but have to yet to decide upon a specific location within the region. Their choices will be influenced by, *inter alia*, differences in the CIT rates amongst the potential investment locations.

itself at the upper end of the distribution. Consequently, the decision by the USA to cut its CIT rate can be seen as an effort to retain competitiveness relative to other industrial countries (York, 2018).

2.2. EU

There is no tax-setting authority in the top-tier of EU governance. Consequently, the EU Commission cannot adjust a common CIT rate to make the region more attractive to potential investors relative to the rest of the world. Instead, the focus has been on avoiding an intra-EU "race to the bottom" in CIT rates by preventing member states from making tit-for-tat cuts in their CIT rates in order to attract investment that would already have come to the EU.

A Committee of Experts under the chairmanship of Dr Onno Ruding was appointed by the European Commission to consider whether differences in taxation amongst member states caused major distortions in the internal market, particularly with respects to investment decisions and competition. If this proved to be the case, the committee was asked to identify the specific measures that would be necessary to eliminate the distortions.

Ruding (1992) concluded that distortions did arise within the EU and that their elimination could not be left to market forces and tax competition. His committee put forward detailed proposals, intended to be implemented in three phases. At the heart of the proposals was the recommendation that the EU established a maximum and a minimum corporate tax rate across member states, together with the integration of local corporate income taxes into those rates. However, given that the decision-making processes of the EU require unanimity on tax proposals, it is unlikely that a consensus will ever be achieved on the adoption of a minimum CIT rate, given the opposition of several countries.

2.3. PRC

The situation in the PRC is quite different from that in the USA and the EU in a number of respects. Of primary importance is the relationship between the top-tier central government and the middle tier of 31 provincial and centrally controlled municipalities.

There is a unitary tax policy and unified tax rates set by the Central People's Government of China. Historically and prior to 2008, China maintained a dual-track corporate income tax system: one

for foreign invested enterprises (FIEs) and the other for domestic enterprises.[3] Under this dual-track system, FDI was strongly encouraged with FIEs receiving stronger preferential treatment compared with their domestic counterparts. This included FIEs facing reduced CIT rates, ranging from 15% to 24% (as opposed to 33% for domestic enterprises) and a series of generous tax incentives such as tax holidays, refunds for reinvestment, and the waiver of withholding tax on dividends. This policy was deemed to have contributed to China's success in attracting a large volume of FDI. For instance, the total amount of FDI in China in 1990 was around 3.5 billion USD, while this figure increased dramatically to 83.5 billion USD in 2007.

Nevertheless, after almost three decades of implementing the dual-track tax system, the policy came under close scrutiny and heated debate due to complaints by disadvantaged domestic firms. This was especially the case after China's accession to the WTO in 2001, which required a level playing field for all enterprises in China. Consequently, in 2008, the Chinese authority terminated the dual-track regime by removing the preferential tax treatment offered to FIEs and unifying the corporate income tax rates for all enterprises, regardless of the firms' ownership. Under the new law, the standard CIT rate became 25% for all enterprises, but this rate can be reduced to 15% for qualified enterprises that are engaged in industries encouraged by the central government (such as new/high-tech enterprises and certain integrated circuits production enterprises). Tax holidays are also offered to enterprises engaged in encouraged industries.

In particular, these tax incentives under the uniform CIT system are usually offered for R&D investment, which is the focus of the Chinese government in fostering technology-intensive industries as a source of further economic growth. There are two primary tax incentives of this kind: the additional tax deduction for R&D expenditures and preferential tax rates for high-tech enterprises (HTEs). The former tax incentives apply to all enterprises and allow them to deduct additional R&D

[3] An FIE is a legal form allowing the company to operate in the PRC. It can take a wide range of forms, including equity joint ventures, cooperative joint ventures, wholly-owned foreign enterprises, and foreign-invested companies limited by shares.

costs than the actual occurred amount from calculating tax liability.[4] The latter tax incentive offers the qualifying HTEs a flat 15% CIT rate.[5] The PRC also offers other incentives aimed at encouraging inward flows of funds, technology and information. Furthermore, the PRC provides numerous preferential treatments in foreign taxation, and has tax treaties in force with more than 50 countries.

3. Middle-tier CIT setting

We now consider the mechanisms used by the middle tiers of government of our three regions in order to attract FDI through fiscal incentives, including taxes on corporate profits. Through their actions, the governments influence both the aggregate regional FDI and its geographical allocation across the regions.

3.1. USA

While there is an academic dispute as to whether American states consciously compete with one another in order to attract investment (see, for example, Chirinko and Wilson, 2017), the fact is that they are free to set their own CIT rates, similar to the situation facing member states of the EU. Figure 1 illustrates the variation in statutory CIT rates across American states. Where the substantive differences arise is the fact that there is no prohibition on states in the USA giving investment incentives to specific, individual firms. Indeed, there are several, well-documented cases of subsidy competition between two or more states to attract large investments.

[4] The policy speculates that: (i) if the R&D expenses are recorded into the profits or losses of the current period but have not resulted in intangible assets, then the firms can enjoy an extra 50% deduction of the actual expenses from calculating their tax liability. This equates to a net saving of 12.5% for eligible expenses, compared with the standard 25% CIT rate; (ii) if the R&D expenses have resulted in intangible assets, 150% of which can be amortized over at least 10 years (Jia and Ma, 2017).

[5] To qualify for HTE status, the enterprises must meet several criteria, such as conducting business in a designated high- and new-technology sector, earning at least 60% of total sales from high- and new-technology products and services, engaging at least 10% of total workforce in R&D related work, and investing 3% to 6% of total revenue in R&D (Jia and Ma, 2017).

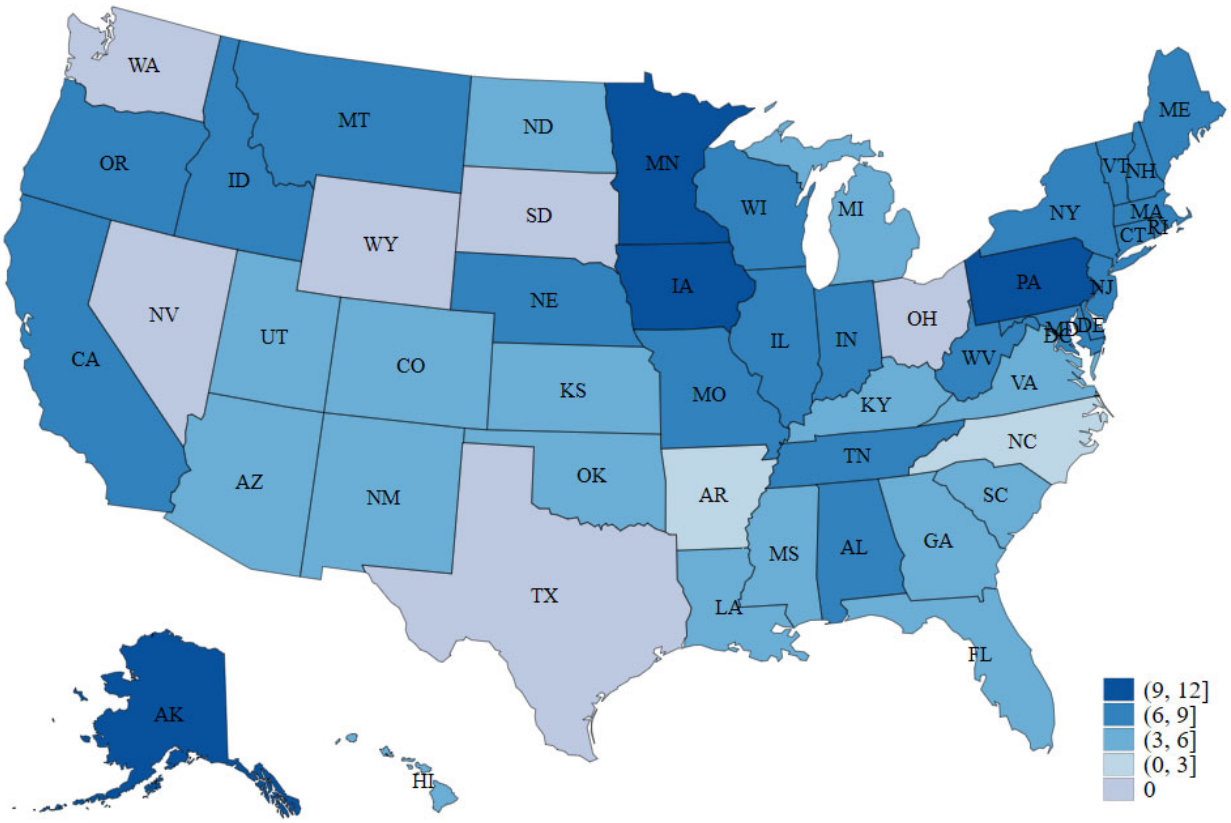

Figure 1. Top statutory CIT rates of US States, 2017-2019 (means, percentage).

Source: Tax Foundation

Oman (2000) reports that these investment incentives were pervasive and grew strongly in the latter decades of the 20th century. Increasing inter-state competition to attract major corporate investment projects was reflected in the subsidies being offered for each job directly created. Thus, the per-capita subsidy for an automotive job rose from roughly $4,000 in the late 1970s and early 1980s to the sum of $168,000 paid by Alabama in the early 1990s to attract a Mercedes plant. Oman notes that the competition to attract corporate investment has not specifically targeted foreign firms, but that there has been "a close parallel between the intensification of inter-state competition and the accelerated growth of inward FDI in the United States".

Several subsidy deals in the last two decades in the USA have been associated with the automobile industry. Slattery (2020) highlights that recent subsidy deals also include R&D intensive industries such as pharmaceuticals, software, wholesale trade, retail, and corporate headquarters. A

popular magazine called *Site Selection* offers corporations information about subsidy deals and development planning. Within this magazine there is a feature called 'Incentives Deal of the Month' which outlines deals other companies have received.

The subsidies that companies receive come from a variety of programs and state funds. There are variations across states and companies in the arrangement and structure of subsidy deals. Any subsidy offer from the state is agreed by the governor and the state economic development agency, whereas the support from the local government is decided by the city and county. Slattery (2020) discusses how subsidy deals could be in the form of 'tax credits and programs that the state already has in place to create jobs and investment, tax abatements for the individual firm, infrastructure projects, low-cost loans, job training programs, and exemptions from state regulations' or a property tax exemption.

Foxconn received a subsidy deal worth roughly $5 billion to locate a subsidiary in the State of Wisconsin. The package comprises of 15 years of corporate tax abatements. Because of two existing tax credits Foxconn would have negligible state tax liability and would be eligible to receive $2.85 billion in cash from the discretionary tax abatement. In addition to the tax benefits, the state of Wisconsin also consented to develop infrastructure which would directly benefit Foxconn. These infrastructure investments were in the form of road improvements valued at over $250 million, while sales tax breaks were provided for construction valuing $150 million. A Tax Increment Financing district was created, totalling an additional $1.5 billion. On top of all of this, Foxconn was also exempted from some state environmental regulations.

3.2. EU

The 27 member states remain free to set their corporate income tax rates and, if they wish, to compete to attract and retain investment by offering firms lower taxes than those set in neighbouring states (see Devereux, Lockwood and Redoano, 2008, for evidence on this). However, the EU does restrict the ability of member states to discriminate amongst sources of investment.

Firstly, the EU has addressed the issue of tax discrimination by member states, in response to countries such as Ireland having set different tax rates for domestic firms and foreign multinationals in the past. In 1998 the EU council adopted a Code of Conduct for business taxation in which member states committed themselves to refrain from "unfair" tax policies, that discriminate against (less mobile) domestic firms in favour of (more mobile) multinational firms (see European Commission, 1998). In response to the Code of Conduct, Ireland introduced a general corporate income tax in 2003. By setting the rate at 12.5%, well below its former tax rate on domestic firms, Ireland showed its willingness to sacrifice tax revenues on immobile capital in order to continue to compete aggressively for foreign investment.

Secondly, the EU sets strict limitations on the ability of member states to give investment inducements to specific firms that will give them an advantage over their competitors. The EU Treaty prohibits State Aid, except in special circumstances where "it is justified by reasons of general economic development." (with any exemptions being monitored by the European Commission). Thus, member states are banned from offering advantages "in any form whatsoever conferred on a selective basis to undertakings by national public authorities" (see European Commission, 1998).

France has the highest statutory CIT rate among European OECD countries at 32%. Portugal and Germany follow, at 31.5% and 29.9%, respectively. At the other end of the spectrum, Hungary (9%), Ireland (12.5%), and Lithuania (15%) have the lowest CIT rates. Consistent with this, Figure 2 shows the significant variation in the (forward-looking) effective tax rates across EU countries. These rates are synthetic tax policy indicators calculated on the basis of a prospective, hypothetical investment project (see Hanappi, 2018 for further details). There has been a secular decline in CIT rates from an average across European OECD countries of 31.6% in 2000 to the current average CIT rate of 21.9%. This is below the worldwide average which, measured across 176 jurisdictions, was 24.2% in 2019 (taxfoundation.org).

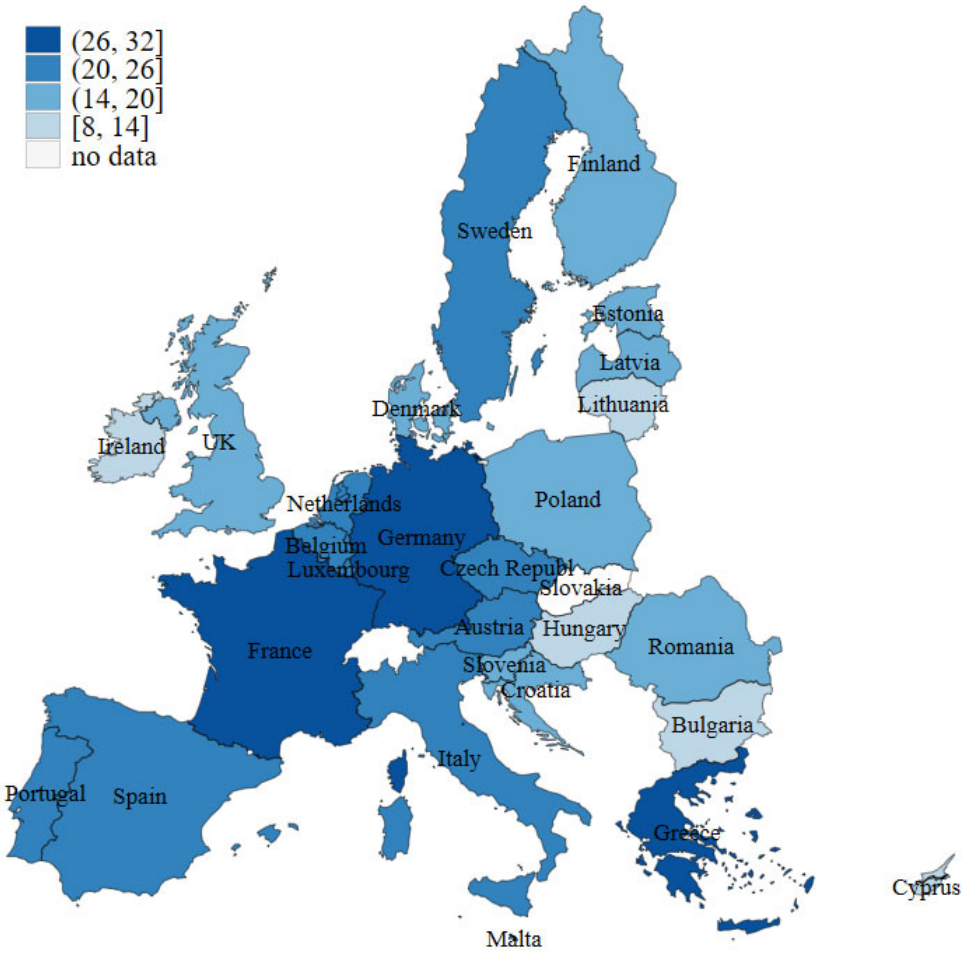

Figure 2. Effective average tax rates across EU countries, 2017-2019 (mean, percentage)

Source: OECD Statistics

3.3 PRC

The remarkable economic growth of the PRC has encouraged substantial research examining the Chinese economy from various aspects. A notable strand of research links the economic growth the PRC has experienced to tournament competition among local government leaders (Zhou, 2009; Xu, 2011). An important hypothesis from this research is that local government leaders compete with each other in promoting total investment and enhancing the growth of the local economy in order to raise their prospects of political promotion. This political competition, which is based on GDP growth, contributes substantially to the high growth levels of investment in the PRC. Xu (2011) examines two important features, political centralization and economic regional decentralization. Political

centralization encompasses the idea that higher level officials in the hierarchical political system can influence their lower-level counterparts, such that the former can promote the latter depending on their performance. In contrast, regional economic decentralization offers local government officials the flexibility to promote economic growth using a variety of different instruments.

That inter-jurisdictional tax competition for FDI can occur under the uniform statutory tax rate in China can largely be attributed to the strong political and fiscal incentives faced by local governments. The political incentives were mainly generated by the highly centralized political system in China with strong top-down mandates and a homogeneous governance structure. Since the reforms and opening up of the economy, the focus of the central government has shifted to the economic sphere, with local government officials being evaluated more upon economic outcomes rather than the old criteria of political performance. In particular, the central government maintains absolute powers in deciding either the promotion or the dismissal of local officials, based on a range of criteria, with a majority related to improved economic performance.

Motivated by their career-oriented concern to climb up within the government hierarchy, local officials have had strong incentives to promote the local economy in order to stay ahead of the professional career ladder (Liu and Martinez-Vazquez, 2014). This kind of "promotion tournament" governance brings about a phenomenon that local government officials do not cooperate with each other in the process of promoting local economies and the economic policies have a high degree of imitation and competition (Zhou, 2007). In practical terms, this competition mechanism has been made possible because of the multidivisional-form structure of the Chinese economy, which allows for open "yardstick competition" among local officials (Qian and Xu, 1993; Maskin *et al*., 2000; and Xu, 2011).[6] Given the limited funding from the central government, the stimulus to the local economy from FDI makes it subject to intense competition amongst the middle and lower tiers of government.

[6] Li and Zhou (2005) provide empirical evidence that the central government indeed employs personnel control over promotion and termination of provincial governors to induce provincial economic growth. As those authors show, a better economic performance increases a provincial governor's probability of being promoted and it decreases the probability of termination of their careers.

Significantly, beyond the political incentives, strong fiscal incentives are added to local governments' motives to compete for capital in order to promote economic development. This is largely due to the nature of Chinese fiscal institutions and their treatment of revenues and expenditures. The current fiscal system, the so-called tax-sharing system (TSS), has been in place since 1994 and defines three categories of tax revenue: central revenue; local revenue; and revenue that is shared between the central and local governments. The TSS also established separate state and local tax bureaux at the provincial, prefectural, county, and township levels. The state tax bureaux were accountable for collecting central and most of the shared taxes (e.g., CIT, VAT), while the local tax bureaux were responsible for collecting local taxes (e.g., deed tax, land appreciation tax).[7] CIT belongs to the category of shared taxes, with 60% being retained by the central government and the remainder being assigned to provincial governments for distribution to the many different layers of local government. Provincial governments have discretion in setting their own tax-sharing rules for the sub-provincial governments within their borders (i.e., cities, counties, and townships). Since local governments care about revenue, they must decide how best to generate revenues and take measures to maximize them. Thus, a high tax revenue retention rate motivates local governments to promote economic development in order to obtain more revenue (Liu et al., 2020).

While the TSS has tended to centralize revenues, expenditure responsibilities remain largely decentralized.[8] Consequently, the fiscal adequacy of local governments has declined significantly, and local officials have experienced mounting fiscal pressures to finance their expenditure needs. In order to deal with this situation, local governments developed additional incentives to support local business development to increase their shared revenues. In sum, these strong political and fiscal incentives for local governments to promote local economy have ultimately been transformed into fierce competition among local governments for capital, especially foreign capital.

[7] In 2018, a tax administration reform was implemented in China. The state and local tax bureaux merged into a consolidated tax authority. This new tax authority is responsible for all functions formerly performed by the corresponding state and local tax bureaux.

[8] See Liu *et al.* (2015) for a detailed discussion of the expenditure assignment in China.

Local governments in the PRC take different measures to compete for FDI including: providing implicit tax incentives; improving local hard infrastructure; and optimizing the internal systems. On the one hand, even though it is the central government's exclusive privilege to set up statutory CIT rates and any tax incentives for foreign investors, local governments have considerable discretion in intervening in the implementation of tax policies and hence changing the actual amount of revenue being collected from the firms.[9] A typical measure is to place firms strategically in "development zones", where they receive preferable tax treatment and where the central government has granted local governments a high degree of discretion to change the effective tax rate (Liu and Martinez-Vazquez, 2014).[10] Other measures include: offering reduced rates for local property tax and urban infrastructure tax; exemptions from other regular administrative fees, such as land transaction fees; negotiating revenue loss contracts with enterprises, allowing foreign firms effectively hide profits from taxation; and lowering tax collection effort directly (Jia *et al*., 2020). Yu *et al.* (2016) discuss how local government officials can directly affect investment decisions by offering tax reductions and subsidies, allocating land and loans from local state-owned banks, using Local Financing Platforms to fund a variety of investments which may consist of funds for the construction of investment projects such as roads, airports, bridges, power plants etc., and speeding up the administrative approval process of large projects that would positively impact both FDI and investment from other areas within the PRC. Yuan *et al*. (2019) investigate the mechanisms through which Public-Private Partnership (PPP) affects capital flows and regional tax rates in the context of tax competition.

[9] While local tax bureaux are essentially operational departments within local governments, the state tax bureaux are under the supervision of central authority. However, in practice, the taxing behaviours of state tax bureaux are also subject to the influence of local governments, as they physically locate in the domains controlled by local officers (Liu and Martinez-Vazquez, 2014). Nevertheless, the recent merger of state and local tax bureaux into a consolidated tax authority in 2018 is expected to further centralize tax administration and enable tax information to be monitored more comprehensively by the central authority, thereby reducing local discretion in setting effective tax rates. A full investigation of this point is outside the scope of the current paper and the extent of this change will be watched and analysed when more recent data become available.

[10] See Zheng (2006) Table 3 for a detailed list of the major preferential tax policies for foreign capital investing in the development zones in China.

Empirically, by calculating the average effective tax rates on FDI and utilizing the spatial econometric approach, Liu and Martinez-Vazquez (2014) provide strong empirical evidence of the existence of tax competition among the Chinese provinces and the mechanism through which the competition takes place. In particular, they explicitly identify the establishment of development zones, accompanied by potentially favourable policies such as preferential tax rates, tax exemptions, tax breaks, and discounted land rents, as an important conduit for provincial tax competition. Using city-level panel data, Liu *et al*. (2020) take a step further to examine tax competition within the Chinese provinces and provide empirical evidence on the existence of it at the city level. Furthermore, their analysis clearly shows that an increase in the local CIT-sharing ratio, proxying local fiscal incentives, makes city governments' horizontal tax reactions stronger thereby providing evidence of the role of fiscal incentives in motivating local tax competition in the Chinese context. Along the same lines, Lv *et al*. (2020) argue that local tax sharing ratios matter for the extent of inter-jurisdictional tax competition, which eventually leads to the unbalanced investment rates across regions in China.

4. A closer look at tax competition in the PRC

As having been established above, the PRC is a unitary country with the central government setting uniform statutory corporate income tax rates across all provinces. This begs the question as to whether standard models of tax competition over statutory corporate income tax rates are applicable for the rivalry among provinces in the Chinese context. In the absence of the power to set tax rates, the Chinese style of interprovincial tax competition is largely characterized as strategic adjustments in the effective tax rates facing firms in the provinces. This section provides some descriptive evidence on this by showing how effective tax rates in China across provinces and industries have evolved over time, paying particular focus to the treatment of foreign firms relative to domestic enterprises,

4.1. Data

Our analysis is based on the Annual Survey of Industrial Firms (ASIF) conducted by the National Bureau of Statistics of China, which contains all industrial firms that are either state-owned, or non-state firms with annual sales of five million Yuan (about $650,000) or more. Industry is defined to include mining,

manufacturing and public utilities. For the analysis in the current paper, we focus only on manufacturing firms, distributed across all 31 provinces and centrally controlled municipalities in Mainland China.

To rule out outliers and misreported information in the dataset, we use the following criteria to clean the data. First, we drop observations with missing or negative key variables, including total assets, sales, and employment. Second, we drop firms with fewer than eight workers as they fall under a different legal regime (Brandt *et al*., 2012). Third, we delete observations with negative total assets minus total fixed assets and total assets minus liquid assets, as these violate the basic rules of the Generally Accepted Accounting Principles (GAAP). Finally, we winsorize the upper one percent tails of the calculated effective CIT rate of the firms.

Our final unbalanced panel dataset covers 643,537 manufacturing firms for years 1998-2013, corresponding to 2,891,360 observations in total, with the number of observations ranging from a minimum of 90,267 in 2000 to a maximum of 298,415 in 2008. ASIF covered 90% of China's manufacturing output in 2004 (Brandt *et al.*, 2012) and 70% of China's manufacturing output in 2013 (Huang *et al.*, 2020). Finally, it should be noted that the ASIF is not available for 2010, which is an issue encountered by other researchers using this data source such as Huang *et al.* (2020).

4.2. Effective CIT rates

The "effective CIT rate" is defined as the income tax paid divided by the firm's pre-tax profit, where the rate is set to zero for loss-making firms. In Table 2, we show the weighted average of the effective CIT rate over time, where the weights correspond to the total assets of the firms. We use the following notation: "Overall" to represent the full sample of firms; "SOEs" for state-owned and collective-owned firms; "Private" for privately owned firms; and "Foreign" for firms based in Hong Kong, Macao or Taiwan (HMT) or foreign countries.

Two observations can be made of the data in Table 2. Firstly, foreign firms faced a significantly lower effective tax rate than any other type of firm prior to 2008, reflecting the preferential tax treatment for foreign firms in China in that period. Secondly, following the corporate tax reform in

China in 2008, which abandoned differential tax treatment for foreign and domestic capital, the effective CIT rate increased dramatically, with the gap between foreign firms and other types being diminished in general and sometimes reversed in the most recent years. These numbers are plotted in Figure 3 where the vertical line indicates the last year of the old taxation regime (2007). The convergence in effective CIT rates after that date is quite apparent.

Table 2. Weighted average of effective CIT rates in the PRC for different types of firm, 1998-2013

YEAR	Overall	SOEs	Private	Foreign
1998	17.6	20.6	16.1	8.7
1999	17.0	20.6	16.3	8.5
2000	16.0	19.3	17.3	8.0
2001	16.6	19.5	18.8	8.5
2002	17.4	21.6	18.7	9.0
2003	16.4	19.9	19.3	8.9
2004	16.3	19.6	20.2	9.4
2005	16.0	20.1	18.7	9.1
2006	15.6	19.5	18.4	9.6
2007	15.2	20.3	17.4	9.4
2008	14.9	18.3	15.2	12.3
2009	13.9	15.8	13.7	12.5
2010	-	-	-	-
2011	16.0	20.1	15.5	15.2
2012	16.8	19.8	16.0	16.5
2013	16.7	17.5	15.6	17.5

Note: Authors' calculations. Given data unavailability, 2010 is not included in the analysis.

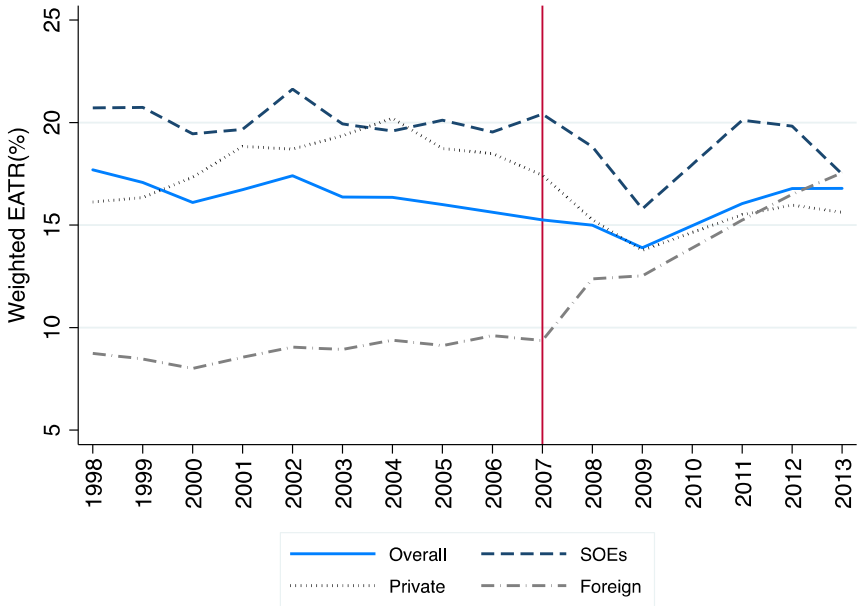

Figure 3. Weighted average of effective CIT rates in the PRC for different firm types, 1998-2013

4.3. Regional variation in effective CIT rates

Table 3 shows the geographical variation in effective CIT rates over the entire sample period of 1998-2013. It reveals significant variations in effective tax rates across provinces for all categories of capital. The standard deviations of effective CIT rates are lower for foreign and private capital than for SOEs, indicating that tax competition for foreign and private capital (particularly the former) may be especially fierce, as they are relatively more mobile than the SOEs, which are generally affiliated to a certain level of government.

Figure 4 provides visual representations of the geographical disparities in tax rates across the PRC for all firms (Panels A and C) and foreign firms alone (Panels B and D), separately for the time periods before and after the 2008 CIT reform.[11] Comparing the figures, three aspects seem apparent. Firstly, effective CIT rates are generally higher for the overall sample of firms, compared with those faced by foreign firms in the pre-2008 period (see Panels A and B). Secondly, the spatial disparity in effective CIT rates is larger for the overall sample of firms than for foreign firms in the pre-2008 period (see Panels A and B). Thirdly, effective CIT rates look spatially more similar across both samples (of all firms and foreign firms) following the post-2008 CIT reform (see Panels C and D). These first two elements are consistent with the hypothesis that provinces competed more aggressively for foreign firms prior to the CIT reform in 2008, resulting in effective CIT rates for foreign firms being lower and with less geographic variation than when all forms of firm ownership are considered together. The last element suggests that the provinces' relatively more aggressive competition for foreign firms has been attenuated post-2008, because of the elimination of the preferable tax treatment of foreign investment in China.

[11] Figure A1 in the Online Appendix lists the corresponding names of the Chinese provinces in the maps.

Table 3. Weighted average of effective CIT rates by province and firm type (1998-2013)

PROVINCE	Overall	SOEs	Private	Foreign
Beijing	16.7	19.8	20.0	13.1
Tianjin	14.7	18.5	17.0	11.5
Hebei	19.4	23.3	15.0	12.0
Shanxi	18.7	16.5	19.8	10.3
Mongolia	12.5	10.1	14.6	10.0
Liaoning	18.8	24.3	16.5	10.9
Jilin	12.0	11.3	13.4	9.6
Heilongjiang	17.6	19.6	14.5	12.7
Shanghai	14.2	17.6	16.3	11.4
Jiangsu	15.4	18.3	18.6	9.6
Zhejiang	19.2	22.6	21.5	12.0
Anhui	17.1	19.3	17.6	11.0
Fujian	13.3	21.2	15.7	10.8
Jiangxi	16.5	18.9	12.6	12.4
Shandong	18.7	21.0	16.4	12.1
Henan	19.9	23.1	13.9	16.3
Hubei	16.0	20.4	13.1	8.1
Hunan	14.9	17.3	12.5	9.0
Guangdong	12.7	17.1	15.5	10.7
Guangxi	16.2	19.8	11.6	12.0
Hainan	9.4	9.7	10.0	9.0
Chongqing	11.4	12.0	13.8	7.7
Sichuan	16.4	17.4	14.5	9.8
Guizhou	19.9	22.8	15.8	10.9
Yunnan	19.7	23.7	14.5	11.0
Tibet	8.9	8.0	6.6	4.5
Shaanxi	15.1	16.2	14.6	10.5
Gansu	19.0	18.7	12.6	11.9
Qinghai	16.8	16.5	10.0	5.4
Ningxia	12.9	12.0	15.3	9.0
Xinjiang	11.8	14.0	12.3	10.4
Mean	15.7	17.8	14.7	10.5
Standard deviation	3.1	4.4	3.1	2.2
Minimum	8.9	8.0	6.6	4.5
Maximum	19.9	24.3	21.5	16.3

Note: Authors' calculations. Given data unavailability, 2010 is not included in the analysis.

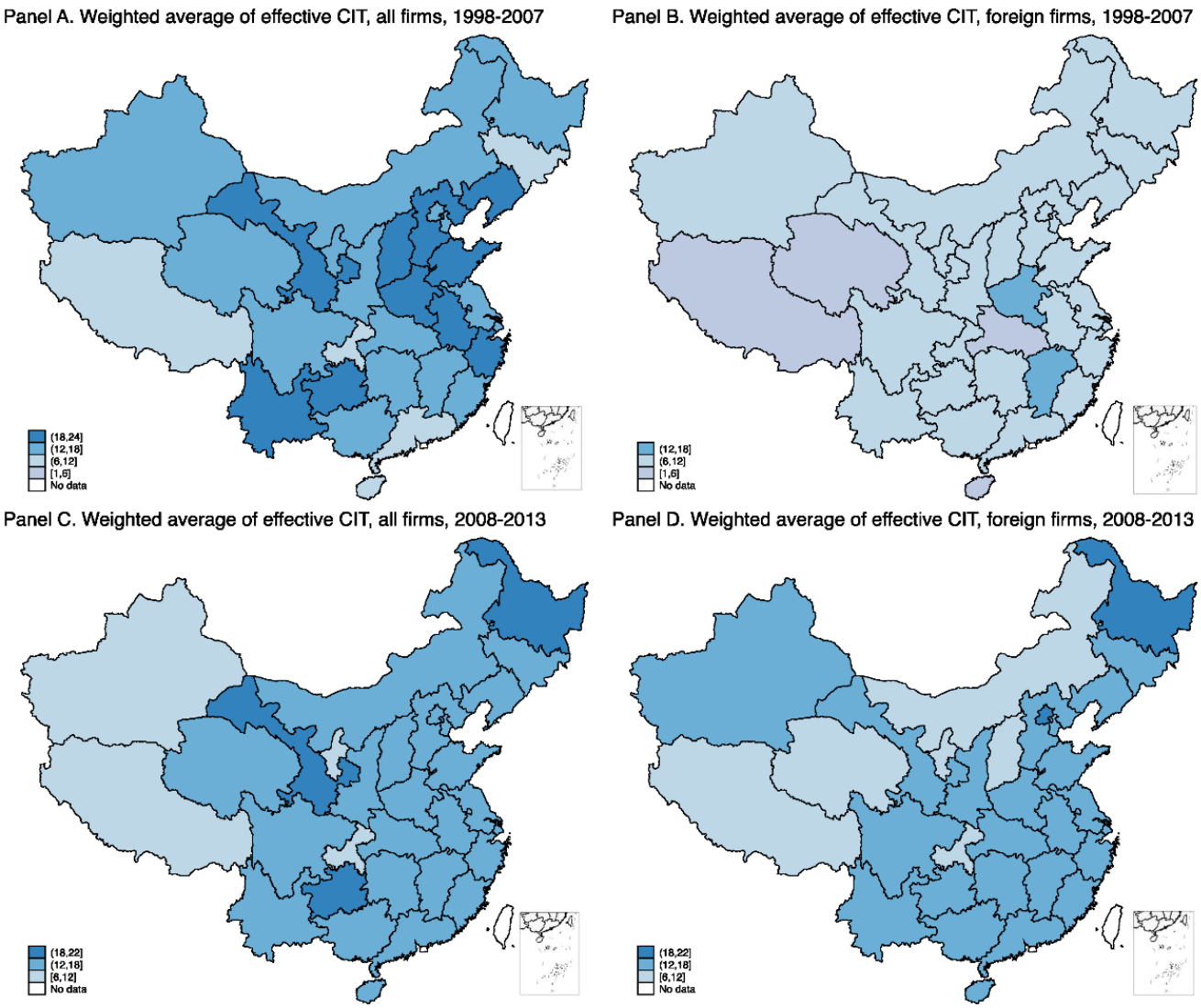

Figure 4. Weighted average of effective CIT rates by province, 1998-2013

4.4. Regional impact of the 2008 reform

Table 4 suggests that, in the post-2008 period, the effective CIT rate for foreign capital rose in all provinces, but the extent of the increase differed geographically. A general tendency seems to be that the well-developed provinces experienced larger increases in effective CIT rates than the less-developed provinces. This is reflected in Figure 5 that illustrates the geographical divergence in changes in effective CIT rates resulting from the 2008 reform.

Table 4. Changes in weighted averages of effective CIT rates, by province and firm type, before and after the 2008 reform

	Private			Foreign		
PROVINCE	**1998-2007**	**2008-2013**	**change**	**1998-2007**	**2008-2013**	**change**
Beijing	20.9	18.1	-2.8	9.8	19.7	9.9
Tianjin	18.4	14.1	-4.3	8.7	17.3	8.6
Hebei	15.2	14.4	-0.9	9.8	16.5	6.7
Shanxi	21.3	16.7	-4.6	9.7	11.4	1.7
Mongolia	15.6	12.7	-2.9	9.5	10.9	1.4
Liaoning	19.0	11.4	-7.6	9.1	14.6	5.5
Jilin	12.9	14.4	1.4	6.3	16.1	9.8
Heilongjiang	14.6	14.3	-0.3	9.9	18.2	8.4
Shanghai	15.8	17.2	1.4	9.0	16.4	7.4
Jiangsu	19.6	16.3	-3.3	7.3	14.4	7.1
Zhejiang	23.3	17.8	-5.5	10.9	14.1	3.2
Anhui	20.5	11.8	-8.7	10.4	12.3	1.9
Fujian	16.3	14.2	-2.1	9.2	14.0	4.8
Jiangxi	12.7	12.5	-0.2	12.1	12.8	0.7
Shandong	16.2	16.8	0.7	10.4	15.5	5.2
Henan	12.4	16.8	4.4	15.7	17.3	1.6
Hubei	12.8	13.7	1.0	5.1	14.3	9.2
Hunan	12.9	10.9	-2.0	7.3	12.4	5.1
Guangdong	16.2	14.0	-2.2	8.7	14.6	5.9
Guangxi	11.3	12.0	0.7	11.2	13.6	2.4
Hainan	6.7	16.5	9.7	5.7	15.7	10.0
Chongqing	14.8	12.0	-2.8	6.3	10.7	4.4
Sichuan	14.3	14.8	0.4	7.9	13.6	5.7
Guizhou	16.0	15.4	-0.6	10.2	12.2	2.0
Yunnan	15.3	12.8	-2.5	9.5	14.1	4.7
Tibet	5.2	9.4	4.2	1.8	10.0	8.2
Shaanxi	14.7	14.4	-0.3	9.6	12.3	2.7
Gansu	12.8	12.1	-0.6	11.1	13.1	2.0
Qinghai	8.3	13.2	4.9	4.5	7.3	2.8
Ningxia	17.3	11.4	-5.9	7.8	11.4	3.6
Xinjiang	13.3	10.4	-3.0	8.9	13.4	4.5

Note: Authors' calculations. Given data unavailability, 2010 is not included in the analysis.

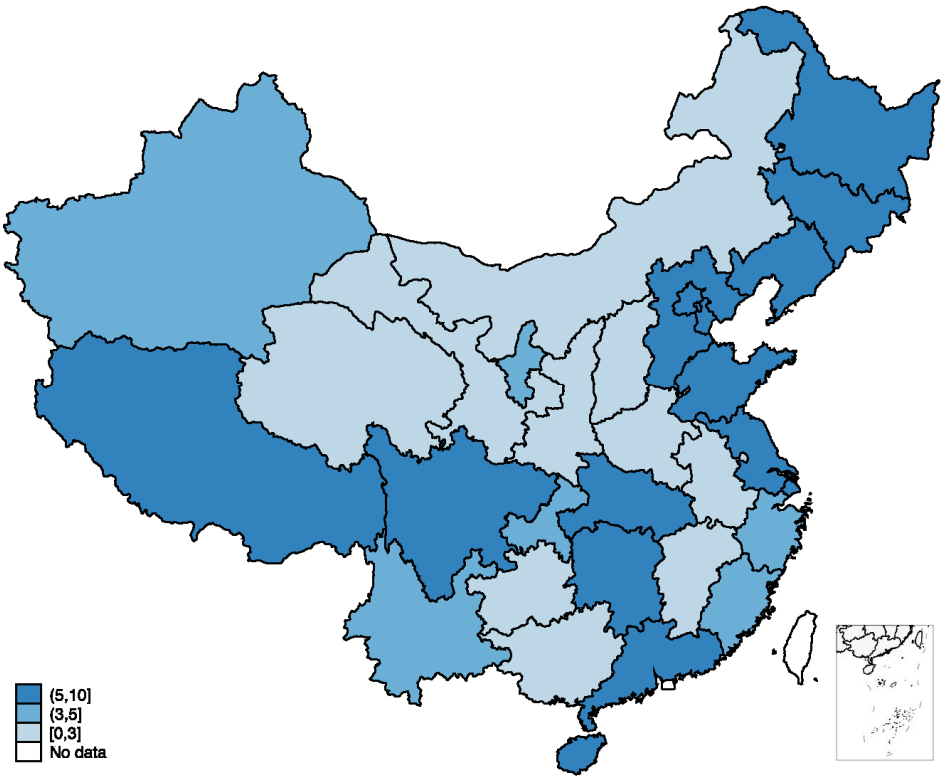

Figure 5. Changes in weighted average of effective CIT rates pre- and post- 2008 reform, foreign firms only.

Note: Authors' calculations. Given data unavailability, 2010 is not included in the analysis.

4.5. Industrial variation of weighted average of effective CIT rates

As well as geographical differences in effective CIT rates, there are substantial differences in the tax treatment of different sectors. Table 5 details the effective CIT rates across industries for different types of capital and reports the preferential tax treatment given to foreign capital (relative to private capital) prior to the 2008 reform and shows how this varies across industries.

In particular, Table 5 shows that effective CIT rates in all industries significantly increased as a consequence of the 2008 reform, but that the extent of the increase varied across industries and ownership, with private capital experiencing declines in effective CIT rates in general, while foreign capital faced increases in effective CIT rates in all industries.

Table 5. Changes in weighted averages of effective CIT rates, pre- and post- 2008 reform, by industry

	Private			Foreign		
INDUSTRY	**1998-2007**	**2008-2013**	**change**	**1998-2007**	**2008-2013**	**change**
Agricultural & Sideline Foods Processing	13.5	12.6	-0.9	9.2	13.5	4.2
Food Production	15.7	14.6	-1.1	10.1	14.9	4.8
Beverage Production	14.1	14.6	0.5	11.5	16.6	5.1
Tobacco Industry	20.8	14.9	-6.0	11.6	24.2	12.6
Textile Industry	17.7	16.3	-1.4	9.5	13.9	4.4
Clothes, Shoes & Hat Manufacture	19.3	16.5	-2.8	10.2	15.3	5.0
Leather, Furs, Down & Related Products	17.0	16.9	-0.1	10.5	14.9	4.4
Timber Processing, Bamboo, Cane, Palm Fiber & Straw Products	14.6	13.8	-0.9	7.8	13.2	5.4
Furniture Manufacturing	17.6	17.1	-0.5	8.0	15.1	7.1
Papermaking & Paper Products	18.6	14.8	-3.7	9.0	14.3	5.3
Printing & Record Medium Reproduction	19.5	17.0	-2.5	11.4	17.4	6.0
Cultural, Educational & Sports Articles Production	20.3	17.4	-2.9	9.4	15.7	6.3
Petroleum Processing, Coking & Nuclear Fuel Processing	19.5	14.1	-5.4	9.4	12.0	2.6
Raw Chemical Material & Chemical Products	17.8	14.7	-3.2	8.9	14.4	5.5
Medical & Pharmaceutical Products	15.0	13.6	-1.4	10.8	16.5	5.7
Chemical Fiber	16.0	12.8	-3.2	10.0	11.9	1.8
Rubber Products	18.7	16.0	-2.7	8.3	16.4	8.1
Plastic Products	19.9	15.7	-4.3	9.2	14.2	5.1
Non-metal Mineral Products	17.3	15.1	-2.2	8.0	13.4	5.4
Smelting & Pressing of Ferrous Metals	17.1	13.4	-3.7	6.7	14.0	7.2
Smelting & Pressing of Non-ferrous Metals	17.1	13.6	-3.5	9.1	14.4	5.3
Metal Products	19.6	17.1	-2.5	8.8	15.0	6.2
Ordinary Machinery Manufacturing	21.3	16.0	-5.3	9.7	15.6	5.8
Special Equipment Manufacturing	20.6	16.1	-4.5	9.2	14.7	5.5
Transport Equipment Manufacturing	19.3	16.3	-3.0	9.3	15.3	6.0
Electric Machines & Apparatuses Manufacturing	20.7	15.2	-5.5	8.8	14.1	5.3
Communications Equipment, Computer & Other Electronic Equipment Manufacturing	16.2	14.8	-1.4	7.5	15.4	7.9
Instruments, Meters, Cultural & Office Machinery Manufacture	18.4	15.5	-2.9	9.3	15.3	6.0
Craftwork & Other Manufactures	17.9	16.5	-1.4	11.5	16.8	5.3
Waste Resources and Old Material Recycling & Processing	17.5	11.0	-6.5	9.1	14.1	5.0

Note: Authors' calculation. Given data unavailability, 2010 is not included in the analysis

5. Concluding comments

The purpose of this article has been to investigate whether the PRC's CIT setting agenda is unique and distinct from the practices of the USA and the EU. Firstly, we characterized tax setting in the regions

into three levels, where there is substantial heterogeneity across the regions. The EU plays a passive role at the top level, yet the EU member states have autonomy in setting and competing in CIT rates while some municipalities within the EU also have tax setting power. The top-level Federal government in the USA establishes a CIT rate but, in addition to this, the States and local levels of government also have their own tax setting agendas. In contrast to this the PRC's CIT rate is centralized at the highest hierarchical level but, uniquely, has a tax sharing system with lower tiers of government. This link between the different tiers of government within the PRC plays a pivotal role in China's exceptional CIT rate setting agenda which results in implicit and intense interjurisdictional tax competition.

Secondly, we discussed how China and the USA offer state aid and discriminate among different sources of investment, whereas at the other extreme it is illegal to participate in such activity in the EU. Middle- and lower-tier governments in the USA and China offer generous subsidy deals, tax credits, investments in infrastructure to attract individual companies to their jurisdiction. Chinese authorities especially target high-tech enterprises through tax deduction for R&D expenditures and preferential tax rates.

Thirdly, we explored the evidence that local government officials in the PRC participate in tournament competitions to strategically increase total investment. Local government officials compete with each other in promoting total investment and enhancing the growth of the local economy in order to boost their chances of political promotion. This kind of tournament competition is widespread amongst rival leaders in cities. The institutional bedrock of such competition is the exceptional blend of political centralization and economic regional decentralization in the PRC.

Lastly, we showed how effective CIT rates in the PRC across provinces and industries have changed over time. We find that significant variations in effective CIT rates exist across provinces for all categories of capital. Moreover, provinces compete fiercely for foreign firms resulting in effective CIT rates for foreign firms being lower than for any other type of firm.

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Online Appendix

Figure A1. Names of the Chinese Provinces