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# Banking Crises and the Modern Tax State

## Abstract

Have banking crises boosted path-breaking fiscal innovations? Drawing on the literature that deals with the impact of warfare on fiscal capacity, I argue that banking crises have facilitated the rise of progressive tax instruments by causing revenue needs and demands for fiscal fairness. I test this argument by means of event history analyses and new worldwide data on the introduction of the two main pillars of the modern tax state: the personal income tax (PIT) and the general sales tax (GST). Furthermore, I examine the adoption of PIT in the United States and in Argentina. The findings stress the importance of financial and economic crises for fiscal institutions and call for a closer investigation of how non-bellicist shocks have shaped the modern state.

# 1 Introduction

The rise of the modern nation state is inconceivable without the rise of the tax state. Still today, fiscal capacity lies at the heart of state capacity. In fact, "revenue generation is not simply correlated with state capacity, it is its *sine qua non*: that which the state must be able to do if any other goals are to be pursued" (Hendrix, 2010, p. 283).

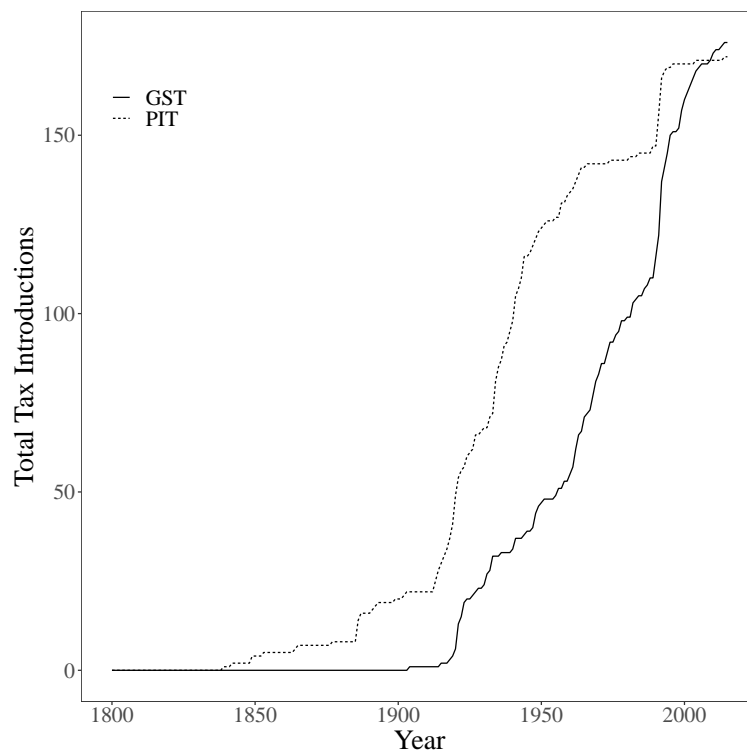
Due to the crucial role of fiscal capacity for contemporary states, a growing body of literature tries to trace back the historical origins of the tax state (Aidt & Jensen, 2009; Helgason, 2017; Mares & Queralt, 2015). Many studies have identified mass warfare as a major driver of fiscal development (Dincecco & Prado, 2012; Queralt, 2019; Thies, 2005; Tilly, 1990). War has helped to expand the tax base and to raise compliance (Levi, 1988), fostered fiscal centralisation (Dincecco, 2009), and increased tax progressivity (Scheve & Stasavage, 2016). However, given the importance of warfare for fiscal capacity, it is surprising that studies so far have largely overlooked the impact of other major asymmetric shocks on fiscal development. Like wars, financial and economic crises have marked historical "‘turning points’ when old orders ended and new ones began to emerge" (Widmaier, Blyth, & Seabrooke, 2007, p. 747). Thus, such crises are 'critical junctures' (Collier & Collier, 1991) that offer room for fundamental institutional transformation.

Based on these considerations, I examine the question whether banking crises have facilitated fiscal innovations. I look at two ground-breaking events for a country's fiscal capacity: the introduction of the personal income tax (PIT) and the introduction of the general sales tax (GST). Both taxes together constitute the financial backbone of modern states and were essential for the unprecedented expansion of government size in the last century (Flora, 1983). Figure 1 shows the rapid diffusion of these two taxes. By the beginning of the 2000s, both taxes were a global phenomenon and most countries in the world levied a PIT and a GST – the latter mainly in the form of a value-added tax (VAT).<sup>1</sup>

Financial shocks can help us to understand why some countries have adopted fiscal innovations much earlier than others. Thus, they allow an historical test of the argument that crises can help to overcome deadlocks in economic policy reforms (Alesina & Drazen, 1991; Drazen & Grilli, 1993). In this article, I argue that one major type of financial

crisis – namely banking crises – has boosted fiscal innovations and led to a modernisation of the tax system. However, it is important to differentiate between types of taxes. New progressive taxes like the PIT are more likely to emerge in the wake of banking crises mainly for two reasons. First, these crises are expensive and create a need for additional revenue (Reinhart & Rogoff, 2009). Second, the PIT supplies demands for fiscal fairness (Scheve & Stasavage, 2016) as it consolidates public finances by taxing richer segments of society which are perceived to be closely associated with the emergence of banking crises. To the contrary, banking crises are unlikely to increase the likelihood of introducing regressive taxes like the GST because these taxes shift a crisis’ costs predominantly onto poorer citizens.

Figure 1: Global Development of GST and PIT



*Note:* The graph shows the cumulative amount of tax introductions for 196 states that still exist as of 2017. Data come from the Tax Introduction Database (Genschel & Seelkopf, 2019).

To test the impact of banking crises on fiscal innovations empirically, I use data on sovereign PIT and GST introductions worldwide from the new Tax Introduction Database (TID) (Genschel & Seelkopf, 2019). Event history analysis reveals that banking crises have indeed increased the likelihood of PIT introduction. In contrast, countries are not

more likely to introduce a regressive GST in the wake of a banking crisis. These findings are in line with my theoretical expectations and hold for a variety of robustness checks. Furthermore, looking at the introduction of PIT in the US and Argentina corroborates my findings.

By analysing the historical roots of the tax state, this study contributes to the growing body of literature that investigates the origins of fiscal capacity (Aidt & Jensen, 2009; Mares & Queralt, 2015). First, it expands these studies in geographical and historical scope by looking at a global country sample for the time from 1815-2015. Second, it presents the first empirical test about the impact of asymmetric financial shocks on fiscal innovations. The article shows that such shocks are important, yet largely overlooked events that help us to understand the evolution of the modern tax state. Third, the article contributes to studies that stress the importance of fiscal fairness perceptions for tax policy-making (Scheve & Stasavage, 2010, 2012). Instead of simply regarding taxes as revenue-raising instruments *en bloc*, it calls for a closer differentiation between tax types based on their redistributive impact.

I develop my argument as follows. First, I review the literature on the link between warfare and fiscal capacity. After addressing how banking crises might influence fiscal innovations, I sketch the importance of PIT and GST for fiscal development and discuss how banking crises may affect these taxes. Then, I explain my empirical strategy and present the results. The quantitative analysis is followed by two case studies that trace the origins of income taxation in the US and Argentina. The final section concludes.

## 2 The Origins of Fiscal Capacity

### 2.1 Fiscal Innovations and Fiscal Capacity

Taxation is central to the modern nation state. As a government's fiscal means are decisive for fulfilling its manifold tasks, taxation marks the core of state capacity. Indeed, fiscal capacity and general state capacity are so closely connected that the former often serves as a proxy for the latter (Hendrix, 2010; Thies, 2007). Fiscal innovations,

i.e. the introduction of modern taxes, are a central part of fiscal capacity building. Modern taxes help governments to tap into new tax bases, broaden the tax base, and increase tax efficiency (Seelkopf et al., 2019). For example, the introduction of the PIT allowed governments to encompassingly tax income streams. In many countries, income has either not been subject to taxation beforehand or it has been taxed selectively and inefficiently. Or, take the introduction of the first GST.<sup>2</sup> Whilst excises only allowed governments to selectively tax consumption, a GST taxes consumption of goods and services by default. Consequently, the introduction of GST leads to remarkable increases in central government revenue (Flora, 1983).

In sum, fiscal capacity lies at the heart of general state capacity (Hendrix, 2010). Furthermore, the introduction of modern taxes marks a crucial step in the development of fiscal capacity. Not only do these new taxes boost revenue-raising capacities, but they also enhance the professionalisation of tax administration and minimise economic disturbances. Thus, modern taxes are significant fiscal innovations which have the potential to transform the capacity of the state fundamentally.

## 2.2 Wars

Which factors boost fiscal innovations and fiscal capacity? The major explanatory variable the literature has to offer is warfare. Many studies in political science, economic history, and fiscal sociology argue that inter-state war leads to increasing fiscal capacity (Besley & Persson, 2008; Dincecco & Prado, 2012). In fact, the effect of war on fiscal capacity is closely interwoven with general processes of state building. This finding is pointedly summarised by Charles Tilly's famous *bon mot*: "War made the state, and the state made war" (Tilly, 1975, p. 42). We can distinguish at least three mechanisms via which warfare enhances fiscal capacity.

First, wars are expensive. States need to pay for soldiers, equipment, and new war technologies to minimise the risk of losing. Increasing revenue via taxation helps to meet war-induced fiscal needs (Brewer, 1990; Dincecco & Prado, 2012). Once new tax policy measures are in place, politicians have a hard time scaling them back (Scheve & Stasav-

age, 2016). Hence, war-induced ratchet effects can increase fiscal capacities in the long run.

Second, inter-state wars can boost the administrative capacity of states. Due to the organisational demands of warfare, countries are often in need to professionalise and modernise their public administration (Besley & Persson, 2008; Thies, 2005). Furthermore, warfare often leads to fiscal decentralisation, which in turn enhances the administrative capacity to collect taxes (Dincecco, 2009). Yet, wars do not always expand administrative capacities. In certain cases, warfare can even have a negative impact on tax administrations. For example, fiscal needs sometimes lead to short-term revenue raising measures like tax farming (Kiser & Linton, 2001).

Third, wars can lead to higher tax progressivity. Since the burden of war falls mainly on people who are economically worse off and rich capital owners profit from a higher demand for war-related goods, claims to compensate for this unequal treatment gain power (Scheve & Stasavage, 2016). Therefore, tax progressivity increases to satisfy demands for a ‘conscription of wealth’ (Scheve & Stasavage, 2012).

Taken together, the literature on war and fiscal capacity has identified several mechanisms through which warfare can expand fiscal capacity. Whereas the first two factors apply to all sorts of taxes, the compensatory argument exclusively deals with progressive taxation. Since taxing income has been the gold standard for progressive taxation in the last 200 years, the effect of warfare on progressive income taxation has received a lot of attention in the literature (Seelkopf et al., 2019). However, only a few countries have introduced a PIT after a previous war (Limberg, 2019a). Whilst many studies have provided convincing evidence for the effect of warfare on (income) tax base broadening and rate increases (Besley & Persson, 2009; Scheve & Stasavage, 2010), findings for tax introductions are less straightforward. For instance, Mares and Queralt (2015) find weak support for the impact of warfare on PIT introduction whereas Aidt and Jensen (2009) do not find such an effect. In the study by Seelkopf et al. (2019), the correlation between warfare and PIT introduction strongly depends on the country sample and the operationalisation of war. In sum, wars are not a necessary condition for income tax

introductions. In the next section, I argue that looking at shocks other than warfare can help us to explain path-breaking fiscal innovations. Financial and economic crises are an especially prominent example of such asymmetric shocks.

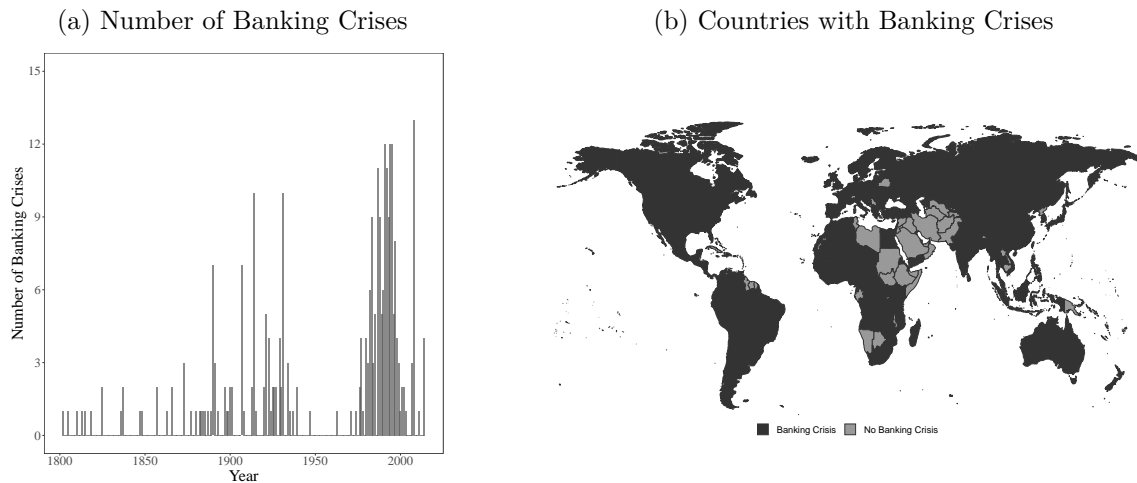
## 2.3 Banking Crises

Financial crises are far from a new phenomenon (Kindleberger, 1989). Since the beginning of the 19<sup>th</sup> century, hundreds of crises have taken place all around the globe (Reinhart & Rogoff, 2013). Although the 2008 crisis was exceptionally severe (Claessens, Klose, Laeven, & Valencia, 2013), most of its characteristics were remarkably similar to previous crises (Reinhart & Rogoff, 2009). Economists differentiate between several forms of financial crises such as banking crises, currency crises, and debt crises (Cassis, 2011; Reinhart & Rogoff, 2009). However, it is often hard to disentangle different types of crises. For instance, the financial crisis of 2008 started as a banking crisis and quickly transformed into a sovereign debt crisis. Empirically, banking crises are the type of financial crisis which is easiest to identify comparatively (Laeven & Valencia, 2013). Therefore, in this study I focus on financial crises which come in the form of banking crises. Figure 2a shows the yearly amount of countries experiencing a banking crises since 1800. Although there have been crises since the early 18<sup>th</sup> century, their absolute number increased heavily during the time from 1880 to 1940. Whilst the post-World War II era was characterised by remarkably stable financial institutions and nearly no major banking crises, the number of crises has rocketed again after the collapse of the Bretton Woods system. Furthermore, Figure 2b shows that banking crises are not a phenomenon limited to rich democracies. Instead, countries on every continent have experienced banking crises in the last 200 years. Although there is variation and some countries in the Middle East have not been hit by a banking crisis so far, most countries in the world have faced at least one crisis.

How can banking crises lead to fiscal innovations? Based on the discussion of the warfare literature in the previous section, I argue that two factors are crucial: revenue needs and fiscal fairness arguments. I will describe each in turn.



Figure 2: Banking Crises Worldwide, 1800–2015



*Note:* Data come from [Reinhart and Rogoff \(2013\)](#) and has been updated using [Reinhart and Rogoff \(2014\)](#) as well as [Laeven and Valencia \(2018\)](#).

First, just like wars, banking crises are extremely expensive. All else equal, the state extracts less revenue due to shrinking tax bases in the wake of banking crises ([Kindleberger, 1989](#)). Furthermore, spending increases via automatic stabilisers. Bank bailout packages and economic stimulus programmes can boost public spending in times of crisis even further. The combination of these two dynamics – revenue shortfall and higher spending – puts an enormous fiscal burden onto governments.

How can governments react to fiscal distress? In principle, states have three main options of how to face fiscal pressure: they can take up public debt, they can cut expenditure, and they can increase revenue via taxation. First, taking up public debt can be an attractive short-term solution ([Saylor & Wheeler, 2017](#)). However, high levels of public debt can create political and economic problems ([Checherita-Westphal & Rother, 2012](#); [Égert, 2015](#); [Walton & Ragin, 1990](#)). This might lead to fiscal adjustment policies in the medium run. Second, cutting expenditure via public policy retrenchment can ease fiscal pressure. Whilst this a straightforward fiscal measure, such austerity policies also come at a cost. Retrenchment is unpopular and (electorally) risky ([Pierson, 1994](#)). Radical cuts in public expenditure, particularly in social policy programmes, are highly visible and can create public unrest. In democracies, this might cause electoral backlashes ([Schwander & Manow, 2017](#)), whilst in autocracies, austerity can endanger regime stability ([Knutsen &](#)

Rasmussen, 2018). Finally, governments can raise revenue extraction to deal with fiscal pressure. In particular, the introduction of new fiscal instruments allows states to tap into previously untaxed revenue sources (Seelkopf et al., 2019). Additionally, new taxes allow governments to expand revenue capacity even further in the future via base exemptions and tax rate hikes. Thus, the introduction of a new tax is also a fiscal investment (Besley & Persson, 2010). In sum, high revenue needs in the aftermath of banking crises can lead to the introduction of new taxes.

Furthermore, banking crises can influence tax policies by inducing claims for fiscal fairness. If crises are perceived as violations of fairness principles, demand to compensate for these violations may increase (Scheve & Stasavage, 2016). We can differentiate between two aspects of banking crises that can influence fairness perceptions: risk-taking on financial markets and bailouts.

First, risk-taking of financial investors is often associated with subsequent crises (Corsetti, Pesenti, & Roubini, 1999; Weller, 2001). Such risk-taking can either be of structural, long-term nature or come in the form of sudden speculative attacks (Eichengreen, Rose, & Wyplosz, 1995). Moreover, especially wealthy people profit from these financial market dynamics (Volscho & Kelly, 2012). Importantly, speculation might not induce fiscal fairness demands per se. After all, taking risks includes the option of failure as speculation can lead to profits, but also to losses. When loans default and financial investments are unprofitable, speculation is costly and the investor bears the costs of failure by losing money. In such a case, demands to restore fiscal fairness are less likely to emerge because (1) profits from financial risk-taking may be perceived as deserved and (2) speculators are already punished because they have to bear the costs of risk-taking. However, this implies that costs from risk-taking are completely internalised. Yet, speculation on financial markets does not solely cause costs for the individual risk-taker. When speculative bubbles burst, they have a negative effect on all kinds of socio-economic outcomes (Reinhart & Rogoff, 2009). Looking at lower income groups underlines this point. Lower income groups are less likely to make risky financial investments due to a lack of capital. Yet, they are hit particularly hard by the economic effects of banking crises (Pfeffer,

[Danziger, & Schoeni, 2013](#)). To sum this point up, financial speculation by richer subgroups entails negative externalities that affect societies as a whole. Thus, banking crises might increase demand for taxing the wealthy. Not only may their wealth be perceived as less deserved, but higher taxes on the rich can also fulfil the function of internalising the negative externalities of financial risk-taking ([Limberg, 2019b](#)).

Second, the financial crisis of 2008 has put a spotlight on financial bailouts. Saving financial institutions with taxpayers' money is not only expensive, but it may also violate personal principles of fiscal fairness. It is a hard political sell to explain citizens why they have to pay for bailing out financial investors who have become rich on financial markets ([Volscho & Kelly, 2012](#)). Hence, these bailouts could be perceived as an unequal treatment ([Scheve & Stasavage, 2016](#)). As a result, demand for taxing richer members of society who might profit from bailouts can increase. It is important to mention that financial bailouts are directly connected to a crisis' external effects; the decision to bail out or not to bail out entails a political trade-off. Bailing out financial institutions can create notions of unfairness due to beneficial treatment. In contrast, the decision not to bail out struggling banks risks even more disastrous economic effects. Nevertheless, this trade-off does not challenge the idea that banking crises induce fairness claims. Both ways, demand for fiscal fairness would increase: either by creating compensatory claims to correct direct unequal treatment (in the case of bailouts) or by causing stronger negative externalities that induce demand for an internalisation of costs (in the case of no bailouts).

In sum, banking crises may increase demand for fiscal fairness and push for higher taxes on the rich. The main idea is straightforward: those people who are perceived as responsible for the crisis and/or as profiteers from state action should compensate those who might suffer from the crisis. The PIT can help to satisfy such demands because of its versatility. For example, levying an income tax for the first time means taxing a new financial and industrial elite ([Ansell & Samuels, 2014](#); [Mares & Queralt, 2015](#)). Furthermore, with a versatile policy tool like the income tax, governments can react to fairness demands in a flexible way: policy-makers can increase the top tax rate, close tax

loopholes for high income earners, or levy specific surcharges. The additional income tax of 10% which was levied on employees working in the financial sector in Italy after the crisis of 2008 is an example of such a targeted use of the income tax.

Fiscal pressure and fairness claims are not independent of one another. In particular, fiscal fairness considerations can evolve due to crisis-induced revenue needs. Whether spending increases are perceived as unfair might depend on the type of expenditure: bank bailouts are more likely to provoke fiscal fairness considerations than unemployment programmes. Thus, whilst during other economic crises both factors could have an isolated effect on fiscal innovations, banking crises strongly link revenue needs with fairness claims. The extent of this overlap depends on the capability of governments to shift bailout costs onto the financial sector ([Grossman & Woll, 2014](#)). The higher the degree of cost internalisation in the financial sector, the looser the connection between revenue needs and fiscal fairness claims. Nevertheless, even if bailout costs are entirely internalised, other negative externalities from risk-taking can push for fiscal fairness claims in the absence of revenue needs. Thus, differentiating between fiscal pressure and fairness considerations helps to disentangle dynamics of tax policy-making in times of crisis. At the same time, however, we have to keep in mind that banking crises create a strong link between both factors which are usually regarded separately in the literature on war and fiscal capacity.

### **3 Cornerstones of the Fiscal State: PIT and GST**

To find out whether banking crises have led to fiscal innovations, I will look at two path-breaking events for the evolution of fiscal capacity: the introduction of PIT and GST. Together, the two taxes form the backbone of the modern tax state. Studying the introduction of these taxes is especially suitable for analysing the fiscal imprints of banking crises because of several reasons. First and foremost, both taxes are of central fiscal importance. Nowadays, an overwhelming majority of states worldwide levy a PIT as well as a GST ([Seelkopf et al., 2019](#)). For the years 2005-2015, both taxes together generated on average more than 47 percent of all government revenue worldwide ([Prichard, 2016](#)). The global mean for PIT revenues as a share of total revenues was roughly 14.6

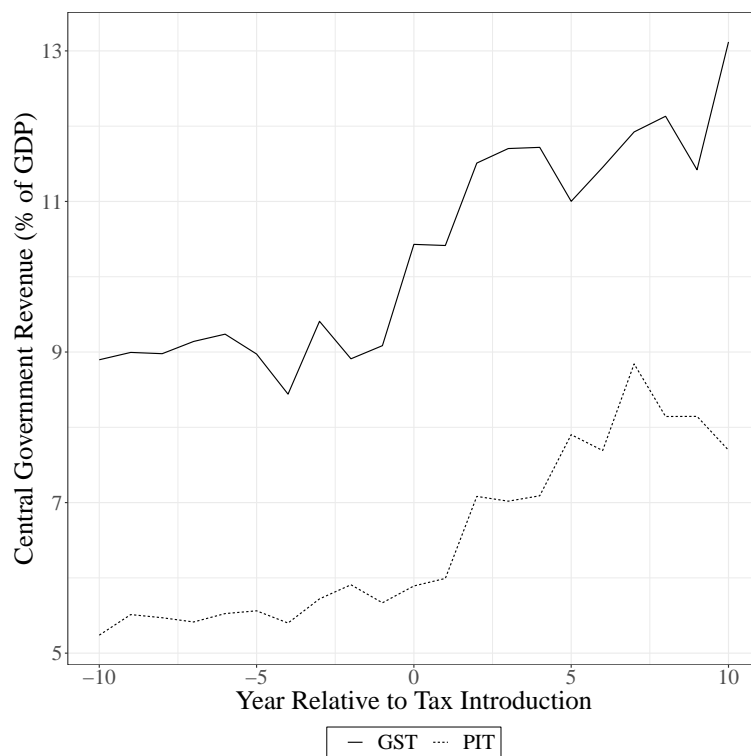
percent, whilst the global average of GST revenues was 32.9 percent of total revenues.

Moreover, both taxes are administratively sophisticated fiscal instruments. Levying a PIT and a GST not only requires a professional bureaucratic apparatus, but it also enhances a country's ability to monitor and regulate economic activity (Daunton, 2001; Mares & Queralt, 2015). Together, the two taxes oversee and regulate the most important streams of economic activity: income (PIT) and consumption (GST). Therefore, both account for the lion's share of a country's tax related administrative capacity and economic oversight.

Finally, the two taxes cover two diametrically opposing tax types: a progressive tax and a regressive tax. The PIT is the textbook example of a progressive tax (Kiser & Karceski, 2017; Seligman, 1914a). The taxable person is directly assessed and pays the PIT duty to the public authorities. This direct assessment allows the tax burden to be modified according to the individual 'ability to pay'. Typically, the absolute and relative tax burden increases with growing income. The progressive scope of the PIT becomes even more striking when we look at it from a historical perspective. Introducing a PIT allowed governments for the first time to comprehensively tax economic activity of the new, upcoming industrial elite which stemmed its wealth from previously untaxed incomes such as profits and trade (Ansell & Samuels, 2014; Mares & Queralt, 2015). Contrary to the PIT, the GST is considered as a classical example of a regressive tax. The GST is paid to public authorities indirectly via intermediaries who are predominantly the retailers. The financial situation of an individual cannot be directly addressed and, therefore, it is difficult to adjust the tax burden accordingly. Furthermore, poorer citizens use a higher share of their disposable income for consumption. Hence, the GST is commonly regarded as a regressive tax since it puts a higher tax burden on lower income groups.

When looking at the impact of banking crises on fiscal innovations, we must closely differentiate between PIT and GST uptake. Both revenue needs and fairness claims would lead us to suggest that banking crises boost the introduction of PIT. Introducing a PIT can ease crisis-induced needs for revenue (Aidt & Jensen, 2009; Mares & Queralt, 2015). Figure 3 shows the development of central government revenue before and after

Figure 3: Central Government Revenue Development Before and After Tax Introduction



*Note:* The graph shows the median of central government revenue as a percentage of GDP for 31 countries. Data come from [Andersson and Brambor \(2018\)](#).

the introduction of the PIT (dotted line). Up to the introduction of the PIT, revenue collection remained stable at just below 6% of GDP in the median of the country sample.<sup>3</sup> However, after the introduction of the PIT, revenue collection increased strongly. Five years after PIT introduction, median central government revenue already made up 8% of GDP. Furthermore, imposing a higher tax burden on the rich by introducing a PIT supplies compensatory demands to make the rich pay for ‘their’ crisis. Historically, the tax base of the PIT was even more narrowly focused on the rich because of two reasons. First, a high share of people did not receive a formal income from employment or capital investment. Therefore, they were not affected by the income tax. Second, even for those receiving income from employment, PIT exemptions were originally so high that they did not have to pay any income taxes at all ([Seligman, 1914a](#)). In sum, most income taxes were originally levied on the richest members of society alone and were therefore well-suited to satisfy fiscal fairness claims.

One might argue that banking crises only lead to PIT uptake in democratic settings.

After all, democracies might be more responsive to redistributive demands. However, [Scheve and Stasavage \(2012\)](#) show that autocracies respond to fiscal fairness claims as well because "nondemocratic leaders have an incentive to set policies that make protests and revolutions less likely" ([Scheve & Stasavage, 2012](#), p. 96). Thus, I expect that banking crises facilitate PIT uptake in both democratic and autocratic settings.

For GST, predictions are less unanimous. On the one hand, crisis-induced revenue needs increase the likelihood of GST uptake. Again, [Figure 3](#) shows that the introduction of a consumption tax is an effective way of raising revenues as well (solid line). Thus, GST introduction might be more likely in the wake of a crisis due to fiscal pressure. On the other hand, introducing a GST makes poorer segments of the population pay for the costs of the crisis. This would run against possible demands for fiscal fairness. Thus, we could even expect that the likelihood of GST introduction is lower after a banking crisis. In sum, I expect that both factors neutralise each other. Therefore, banking crises are unlikely to facilitate GST uptake.

## 4 Data and Methods

To test my argument empirically, I analyse new data on the introduction of PIT and GST around the globe with event history models. Data on tax introductions come from the new Tax Introduction Database (TID) ([Genschel & Seelkopf, 2019](#)). TID is the most comprehensive database on tax legislation with regards to its country coverage and historical scope. It entails information on tax introduction for 220 historical and recent countries for the period 1750 to 2017. I focus my analysis on countries that are still existing nowadays. Furthermore, I am only interested in how banking crises influence *sovereign* tax introductions. Thus, I exclude cases where a tax has been introduced before a country was fiscally independent, i.e. when a tax has been imposed by colonial rulers or when a country has split from a larger legal entity and taken over the tax system.

For PIT, TID entails information on the year of the first permanent introduction of personal income taxation. Importantly, a tax qualifies as a PIT if it is based on the direct assessment of a taxpayer's income ([Seelkopf et al., 2019](#)). The taxpayer is a nat-

ural person, although in certain cases legal entities like corporations might also be taxed under the PIT. Note that corporate income taxes are exclusively levied on the income of corporations as legal persons. Hence, they are not considered as PIT and are therefore not covered by my analysis.

GST introduction is coded as the year the first general tax on consumption was introduced. This can either be a classical GST or a VAT. Whilst a classical GST is levied either at the retail stage or at multiple stages (as in the turnover tax), a VAT is always levied at multiple stages of the production chain, with business able to claim a deduction for taxes paid on inputs against the total tax due at outputs to customers. The VAT is widely considered to be technically and administratively superior to the classical GST ([James, 2015](#)). Most countries have introduced a classical GST first and then later replaced it with a more efficient VAT. In these cases, I take the introduction year of the classical GST. 28 countries did not levy a classical GST before they introduced a VAT. Here, the introduction year of the VAT is taken.

In total, the sample consists of 80 countries for the analysis of PIT introduction and 134 countries for the introduction of GST. I transform the data into an event history dataset with yearly varying covariates. In line with [Aidt and Jensen \(2009\)](#), I set the start year for PIT at 1815 after the end of the Napoleonic Wars. Hence, countries were at risk of introducing the PIT from then onwards. Since the GST was invented later, its start year is set at 1900. If a country gained independence after 1815/1900, it enters the risk set at the year of (fiscal) independence ([CoW, 2017](#); [Seelkopf et al., 2019](#)). I restrict the period of analysis by setting 2015 as the end year. The countries which have not had a PIT or, respectively, a GST by 2015 are right censored. In total, 75 out of 80 countries had introduced a PIT by 2015 and 123 out of 134 had a GST by then. As soon as a country introduces the respective tax, it drops out of the sample.

I apply event history analysis to estimate the effect of several covariates on the likelihood of introducing a PIT or, respectively, a GST. More specifically, I use Cox proportional hazard (PH) models ([Cox, 1975](#)). The likelihood of tax introduction marks a country's hazard rate. As Cox models are semi-parametric, they do not assume a specific



shape of the baseline hazard. However, Cox PH models assume proportional hazards. Hence, they are based on the assumption that the effects of the covariates on the hazard rate remain stable over time (Box-Steffensmeier & Jones, 2004). Therefore, explicitly testing for PH is essential when using Cox PH models (Box-Steffensmeier & Zorn, 2001). I do this by using Grambsch and Therneau's global PH test (Grambsch & Therneau, 1994).

My main independent variable is a dummy that measures whether a country has faced a banking crisis. Data come from Reinhart and Rogoff (2013, 2014) who have collected information on the starting year of banking crises worldwide since 1800.<sup>4</sup> Reinhart and Rogoff (2013) code the beginning of a banking crisis as the year in which a country faces "bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions" or, in the absence of bank runs, "the closure, merging, takeover, or large scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions" (Reinhart & Rogoff, 2013, Appendix 1). I recode the variable so that it takes the value '1' when a country has faced the start of a banking crisis in the previous ten years. I choose the time interval of ten years for two reasons. First, banking crises last several years on average (Laeven & Valencia, 2013; Reinhart & Rogoff, 2009). Yet, especially in the 19<sup>th</sup> century, the exact termination of a crisis is hard to determine. Furthermore, the effects of a crisis often span over a longer time. For example, Reinhart and Rogoff (2014) show that it takes eight years on average to return to pre-crisis GDP per capita levels. Thus, looking at a longer time period after the initial start of the crisis accounts for the longevity of banking crises. Second, policy reactions after banking crises come with a time lag. Introducing a major financial innovation like a PIT or GST is an immense legislative endeavour. Law-making processes, parliamentary or non-parliamentary, therefore last longer and tax introductions immediately after the start of a crisis are unlikely. However, since the choice of the exact length of the time interval can be contested, I check my results by using varying time intervals in the robustness section.

I start by running models that solely include the banking crisis dummy. As this is

my main variable of interest, running minimal specifications ensures that my findings are not driven by the choice of my covariates (Lenz & Sahn, 2017). Afterwards, I include several control variables to account for other possible factors that might influence tax introductions. Since the literature stresses the impact of inter-state warfare on fiscal institutions, I include a dummy that turns ‘1’ when a country has faced a major inter-state war in the last ten years.<sup>5</sup> As democracies might be more likely to introduce modern taxes (Levi, 1988), I control for the level of democracy by including the Polity2 index as a covariate (Marshall, Jaggers, & Gurr, 2011). This index measures democratic levels on a scale that ranges from -10 (total autocracy) to 10 (total democracy).<sup>6</sup> Another factor that might facilitate fiscal innovations is economic development (Hinrichs, 1966; Kiser & Karceski, 2017). To control for the effect of economic modernisation, I include for a country’s GDP per capita (ln level) (Gapminder Foundation, 2015). Also, when many regional peers have already adopted a tax, introduction may be more likely. This can have two reasons. First, countries that became independent at a later point in time when a tax had already spread widely have a higher likelihood to introduce it. Second, countries might learn from regional peers’ legislation or simply emulate their policies. To account for these interdependencies, I include a spatial lag that measures the absolute number of countries in a respective region that have already introduced a PIT/GST (Seelkopf, Lierse, & Schmitt, 2016). To avoid simultaneity bias, I lag the number of regional introductions by one year (Beck, Gleditsch, & Beardsley, 2006). Furthermore, I include region fixed effects to control for unobserved regional heterogeneity. Finally, I check the results by subsequently including a dummy for communist successor states. I expect these countries to be quicker at introducing a PIT/GST after the dissolution of the communist Bloc (Appel, 2011).

## 5 Results

### 5.1 Main Results

Table 1 presents the results of the Cox PH models. Except for the minimal specification for PIT (Model 1), the Grambsch–Therneau PH test fails to reject the null hypothesis of PH. Model 5 has a global test result of 0.06, which is close to the conventional threshold of 0.05 but still acceptable. Let us first look at PIT introduction. Having experienced a banking crisis in the previous ten years has a positive and highly significant influence on PIT introduction. Hence, countries are more likely to introduce a PIT in the wake of a banking crisis. This finding is robust to adding more covariates. In addition, I run an interaction effect between the banking crisis dummy and the democracy variable (Figure A1). In line with my expectations, the crisis effect does not vary with different levels of democracy. This supports the assumption that both democracies and autocracies react to fiscal fairness demands (Scheve & Stasavage, 2010, 2012).

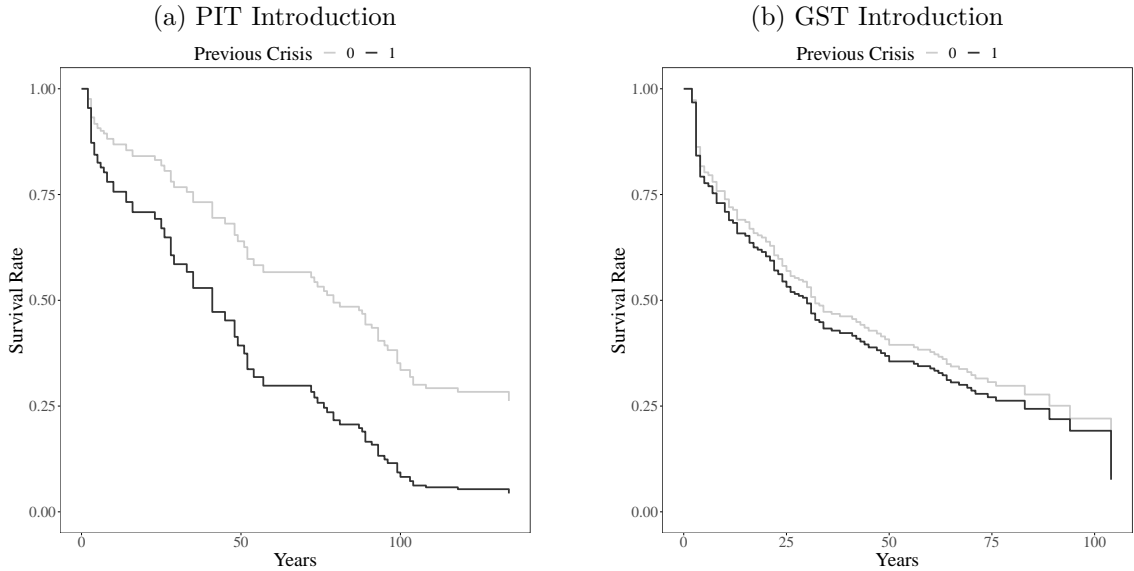
Table 1: Results From Cox PH Models for PIT and GST Introduction

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.7713** (0.3374)	1.0776*** (0.3463)	0.9632*** (0.3509)	0.1125 (0.2891)	0.0328 (0.2963)	0.0941 (0.2943)
Democracy Level		0.0179 (0.0245)	0.0200 (0.0247)		-0.0249 (0.0159)	-0.0218 (0.0164)
War in the Previous 10 Years		0.2869 (0.3669)	0.3092 (0.3663)		0.4921 (0.3135)	0.4979 (0.3174)
GDP per Capita (ln)		0.0219 (0.1779)	0.0297 (0.1752)		0.0062 (0.1331)	0.0119 (0.1346)
Spatial Lag (t-1)		0.1505*** (0.0185)	0.1108*** (0.0325)		0.0922*** (0.0121)	0.0626*** (0.0142)
Communist Successor State			1.5974 (1.0559)			2.1457*** (0.5543)
AIC	506.4178	432.9345	432.5714	963.4125	889.6944	875.5245
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.0048	0.2286	0.2328	0.2506	0.0640	0.5370

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

For GST, the findings look different. Having experienced a banking crisis in the previous decade does not increase the likelihood of GST uptake. This finding holds for all model specifications (Models 4-6). Thus, the results strongly support my argument that banking crises are unlikely to facilitate the introduction of regressive general consumption taxation. Figure 4 visualises these findings. It shows adjusted survival curves based on the estimated Cox PH models 2 and 5. Whereas a previous banking crisis increases the likelihood of PIT introduction markedly, the adjusted survival curves for GST introduction with and without a previous banking crisis are nearly identical.

Figure 4: Effect of Banking Crises on PIT/GST Introduction, Adjusted Survival Curves for Cox PH Models



Regarding the control variables, only the coefficients for the spatial lags are positive and statistically significant. Thus, countries follow their regional peers in introducing PIT and GST. For PIT, the coefficients for democracy and for the communist successor state dummy are positive, but fail to reach conventional levels of statistical significance. Economic prosperity does not have a significant impact on tax introductions either.

Furthermore, the effect of war on PIT and GST uptake is positive, yet statistically insignificant. In some of the robustness checks, however, war does have a significant effect on PIT introduction. These ambiguous results reflect the mixed findings of previous

work (Aidt & Jensen, 2009; Mares & Queralt, 2015; Seelkopf et al., 2019). Why do banking crises lead to fiscal innovations whilst wars mainly expand fiscal capacity via base broadening and rate increases? A potential explanation for this puzzling finding is the nature of the asymmetric shock. Wars are a fundamental threat to the mere existence of a country. Furthermore, fiscal capacity is crucial for winning wars (Zielinski, 2016). However, the immediate revenue performance of completely new fiscal instruments is uncertain. In contrast, the revenue effect of raising existing taxes is more predictable. To minimise risks in times of war, governments might therefore opt for expanding the use of those taxes already in place instead of levying new ones. Banking crises do not pose existential threats to a country's survival. Therefore, tax introductions become more likely.

## 5.2 Robustness Checks

To check my results, I run a series of robustness tests. First, I recalculate my models without region fixed effects (Table A1). The results remain robust to this alternative specification.

Second, I rerun all models by adding the year in which a country enters the risk set as a covariate (Table A2). The main findings hold: whilst banking crises do increase the likelihood of PIT introduction, they have no effect on GST introduction. The coefficients for the entry variable are positive and highly significant for all models. Thus, the later a country becomes independent, the quicker it introduces a PIT and a GST. Most remarkably, the regional diffusion effect disappears when we control for the year a country enters the risk set. This finding indicates that the diffusion effect mainly stems from countries that become independent at a later point in time and henceforth follow the fiscal path of their peers.

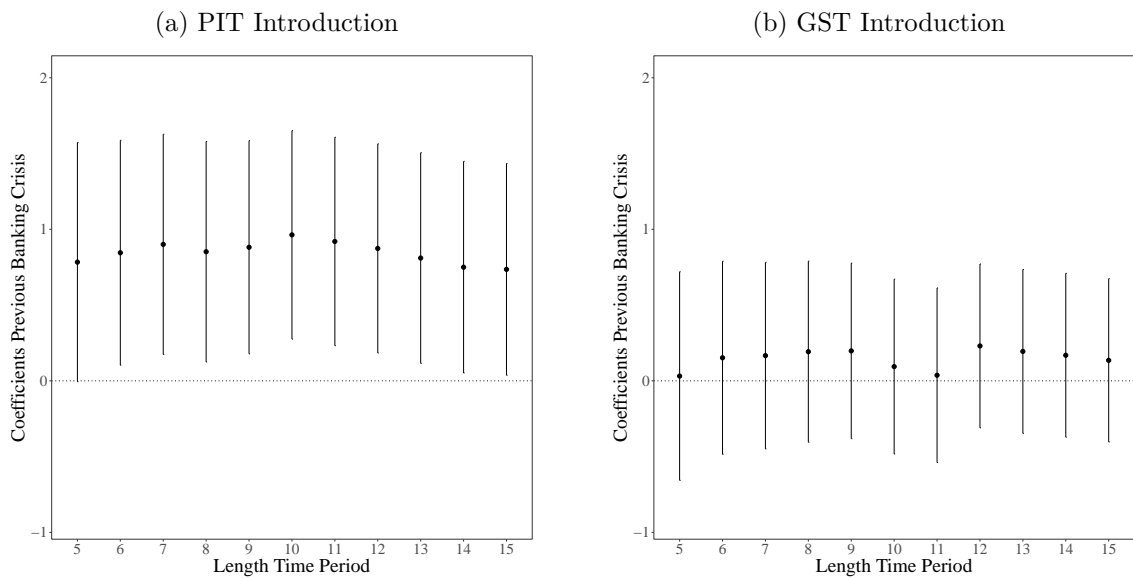
Third, I use logit models instead of Cox PH Models. I follow Carter and Signorino (2010) by using a cubic polynomial approximation ( $t$ ,  $t^2$ , and  $t^3$ ) to model the time dependence of the data (Table A3). Again, banking crises have a positive and highly significant impact on PIT uptake why their effect on GST introduction is indistinguishable from

zero. Furthermore, I run linear probability models with country fixed effects to control for potential unobserved heterogeneity. The main results hold (Table A4).

Fourth, instead of using the absolute number of countries that have previously introduced a PIT/GST, I use the regional share of adopters. Effectively, this is a row standardisation of the temporarily lagged spatial lag (Neumayer & Plümper, 2016). Results are presented in Table A5 and support my main findings. Furthermore, the positive and significant effect of the spatial lag is robust to this row standardisation.

Fifth, some countries could be more likely to experience banking crises than others. In particular, Figure 2b shows that many countries in the Middle East & North Africa (MENA) region have not experienced any banking crisis over the long run of history. Thus, I rerun my models excluding the MENA states (Table A6). The results hold. In addition, I run placebo models that lead the start of all banking crises by 15 years. If the effect of banking crises is not substantially biased by country characteristics that affect selection into treatment, the leaded banking crises variable should not have an effect on tax introductions. And indeed, the placebo variable is statistically insignificant across all models (Table A7). Furthermore, one might argue that OECD countries, with their more sizeable and complex financial systems, had a higher risk of experiencing a crisis (Kindleberger, 1989). To deal with this issue, I perform a subset analysis of 22 core OECD countries.<sup>7</sup> Using this reduced country sample also allows me to look at the impact of political institutions and party politics on fiscal innovations. First, electoral systems might influence tax policies (Iversen & Soskice, 2006). Therefore, I include a binary variable which equals ‘1’ when a country has a majoritarian electoral system on the national level. Second, power resource theory stresses the importance of partisan politics for redistributive policies (Korpi, 1983). I use a dummy that takes the value ‘1’ when a country has a left head of government in a respective year. Data for both variables come from Scheve and Stasavage (2016).<sup>8</sup> The findings for this reduced sample are in line with the previous ones for the global sample: whereas countries are more likely to introduce a PIT after banking crises, the likelihood of introducing a GST remains unaffected (Table A8). Furthermore, countries are more likely to introduce a PIT under a leftist head of government.

Figure 5: Effect of Banking Crises on PIT/GST Introduction for Varying Time Intervals



*Note:* Graphs show point estimates and 95% confidence intervals. Model specification based on Table 1, Models 2 & 5.

This finding is in line with partisanship theories that expect leftist governments to levy more redistributive policies. In contrast, the type of electoral system neither facilitates PIT nor GST introduction.

Sixth, PIT and GST introductions might not be entirely independent of one another. For example, a country that already has a PIT might simply raise income tax rates in the wake of a crisis instead of introducing a GST. Therefore, I include a dummy into my models that measures whether a country already has a GST (respectively a PIT). The effect of banking crises stays robust (Table A9). Moreover, countries which already levy a GST (PIT) have a higher likelihood of introducing a PIT (GST).

Finally, I check whether the length of the time interval which is chosen for the banking crisis dummy influences the results. I do this by rerunning the original Cox PH models (Table 1, Models 3 & 6) and using varying time intervals, ranging from five to fifteen years. The results are very robust (Figure 5). For PIT, the banking crisis dummy has a positive, statistically significant coefficient for all time intervals. As we would expect, the distribution of the coefficients has a slightly concave shape. This indicates that the effect of the variable is smaller when much shorter/longer time intervals are chosen. To the contrary, the variable for a previous banking crisis has no significant effect

on GST introduction. The coefficients are close to zero for all time intervals and show slight random variation. Therefore, these results also strongly support my theoretical argument.

## 6 The Introduction of Income Taxation in the United States and in Argentina

The previous analysis has shown that banking crises have facilitated the uptake of progressive income taxation whilst they have had no effect on regressive general consumption taxation. This historical and geographical macro perspective possesses several advantages. Most importantly, the global country sample allows to statistically test the general effect of banking crises on fiscal innovations. Yet, such a broad approach also comes at costs. In particular, a detailed investigation of the link between banking crises and tax introductions is difficult from a bird's eye view. Do revenue needs and fiscal fairness claims account for the effect of banking crises on PIT uptake? In this section, I investigate the introduction of PIT in the US and in Argentina to answer this question. The case selection is motivated by two rationales.

First and foremost, warfare is the most dominant competing explanation. Therefore, we have to look at cases of PIT introduction during peacetime. The US (PIT introduction in 1913) and Argentina (PIT introduction in 1932) fulfil this criterion. In both cases, PIT was neither introduced during wartime nor after a war. Second, the global country sample of this study is extremely diverse. Only looking at a single case or comparing two most similar cases would reduce representativeness. Hence, findings might not be generalisable ([Seawright & Gerring, 2008](#)). In other words, such a strategy would run danger of solely detecting subgroup effects which do not hold under different circumstances. Therefore, I choose a strategy that looks at two diverse cases by comparing the introduction of PIT in a rich democracy like the US with the introduction in a poorer autocracy like Argentina ([Gerring, 2008](#)). This approach helps to substantiate the claim that the effect of banking crises is a general one and not driven by specific scope conditions (e.g. democratic



institutions).

## 6.1 The United States

In the US, revenue needs induced by the Panic of 1857 as well as the start of American Civil war led to the first legislation of a federal income tax in 1861 (Dingley, 1899, p. 301). However, the tax was never collected. One year later, it was repealed by the Revenue Act of 1862 which introduced a federal income tax as a temporary war finance measure (Scheve & Stasavage, 2016, p. 151). The US federal government repealed the 1862 income tax again in 1872 a few years after the American Civil War. In the years that followed, the US finances mostly relied on tariffs and excises (Taussig, 1894). Thus, the revenue system was built on regressive taxes which put a higher burden on lower income groups.

In the 1890s, demand for reforming public finances by introducing a progressive federal tax on income became stronger ((Blakey & Blakey, 1940, p. 559), (Seligman, 1914a, p. 495)). The crucial event for this development was the Panic of 1893 (Scheve & Stasavage, 2016; Steeples & Whitten, 1998). The 1893 banking crisis resulted in a deep recession with disastrous consequences for millions of workers. From 1892 to 1893, public receipts dropped by 8% and expenditures increased by 4% (Hoffmann, 1956; Joseph, 2004). Furthermore, long-run economic growth slowed down considerably (Ramírez, 2009), and unemployment rates tripled from 3.7% in 1892 to 12.3% in 1894 (Romer, 1986). In other words, "[t]he panic of 1893 left a trail of closed factories, defunct banks, lost fortunes, labor wars, and hungry people" (Blakey & Blakey, 1940, p. 13). As a result, the Panic of 1893 increased public inequity aversion and strengthened claims for a PIT ((Lepore, 2018, p. 347), Mehrota (2013)).

Soon after, the crisis-induced demand for an income tax found its way into the political process as "the issue of tax reform moved from the panic-stricken streets of the nation to the lofty chambers of Congress" (Joseph, 2004, p. 51). According to Mehrota (2013), "[t]he Panic of 1893 precipitated a deep and unprecedented economic depression – arguably the nineteenth century's worst economic downturn – that, in turn, unleashed

a torrent of social and political pressure for reform." (Mehrota, 2013, p. 87). As a consequence, "[p]olitical economists, social activists, and lawmakers seized on the economic crisis to enact a federal income tax in 1894" (Mehrota, 2013, p. 87). Congressman Benton McMillin (Democrats) drew a direct connection between the Panic of 1893 and demand for a more progressive tax system. The income tax was intended to shift the fiscal burden from regressive tariffs, which mainly fall on consumption, towards taxes on the rich: "My friends, are we going to put all of this burden on the things men eat and wear and leave out those vast accumulations of wealth?" (cited in Seligman (1914a, p. 498)). The Panic of 1893 also provided fertile ground for the populist movement of the 1890s with its critical stance towards banks and big businesses (Mehrota, 2013, p. 121.). The populists strongly supported the idea of income taxation. In turn, Democrats spoke out in favour of the income tax in order to react to populist political pressure (Blakey & Blakey, 1940, p. 15).

Finally, the 1894 Revenue Act introduced an income tax with a top rate of 2% on income over \$4000. The main idea behind PIT adoption was to increase the progressivity of the tax system by replacing regressive tariffs with "a tax on the well-to-do alone [...] to moderate the unequal distribution of wealth" (Taussig, 1894, p. 599). However, the tax was only short lived as the Supreme Court of the United States ruled the PIT as unconstitutional in the *Pollock v. Farmers' Loan & Trust Company* case. It was only in 1909, shortly after the Panic of 1907, that legislative procedures to rule over the Supreme Court ruling via a constitutional amendment started. First and foremost, the Panic of 1907 caused a fiscal crisis. In 1909, the treasury reported reductions in revenues from customs and internal revenues of more than \$64,000,000 and expenditures that had increased by \$100,000,000 (Blakey & Blakey, 1940, p. 24). Second, demands which called for shifting the tax burden away from consumption regained strength (Lepore, 2018). Just like after the 1893 crisis, it was argued that the income tax would be a fair correction to a tax system that overwhelmingly relied on regressive tariffs and excises (Pollack, 2012). The PIT was expected to create most bountiful revenue in the rich financial centres on the east coast (Blakey, 1914, p. 36). Thus, the PIT was seen as a fair correction to the previous

revenue system by shifting parts of the tax burden onto the rich (Seligman, 1914b, p. 57). For example, Congressman William H. Murray (Democrats) argued that "[t]he purpose of this tax is nothing more than to levy a tribute upon that surplus wealth which requires extra expense, and in doing so, it is nothing more than meting out even-handed justice" (cited in Pollack (2012, p. 325)).

In his address to Congress, President William Howard Taft argued that the PIT "might be indispensable to the nation's life in great crises" (Taft, 1909). Congress passed the proposal for the Sixteenth Amendment in July 1909. Yet, it took another four years until 1913 when the required 75% of the states ratified the amendment and enabled the legislation of the Revenue Act of 1913 which introduced a PIT. In the end, a progressive tax scale ranging from 1% for income above the allowance of \$3,000 annually to a marginal top tax rate of 7% for annual income exceeding \$500,000 was agreed upon (Seligman, 1914b). The high exemptions meant that only 2-3% of households had to pay income tax at all in 1913 ((Pollack, 2012, p. 328), (Buenker, 1985, p. 338)). Therefore, the PIT was almost exclusively levied on the rich (Blakey, 1914). According to Buenker (1985, p.14), nearly 80 % of those who had to pay PIT consisted of "bankers, brokers, capitalists, manufacturers, merchants, and corporate officials."

The case of the US illustrates the importance of banking crises for PIT introductions. Fiscal needs called for new revenue instruments whilst fairness demands for tax progressivity pushed the idea of replacing regressive tariffs and excises with progressive taxes on income (Buenker, 1985, p. 396). The income taxes of 1894 and 1913 were preceded by a banking crisis and a deep recession. Both times, this resulted in eroded trust in financial institutions and an increased demand for progressive income taxation (Mehrota, 2013, p. 247 ff.).

## 6.2 Argentina

In Argentina, income taxation was considered for the first time after a severe banking crisis in 1890 – the so called Baring Crisis (Ford, 1956). Revenue needs were not the sole reason for this new interest in progressive direct taxation. Instead, political and social

pressure to raise tax progressivity in order to "solve social problems" (Román, 2012, p. 13) increased substantially in the wake of the crisis. However, the first legislative act to introduce an income tax was initiated almost three decades later in 1918 (Solberg, 1973). Previously, World War I and a severe banking crisis starting in 1913 had led to a deep recession (Nakamura & Zarazaga, 2001). This economic slump "opened a window of opportunity for tax reform" (Román, 2012, p. 14) since the PIT was seen as "an instrument of social justice" ((Román, 2012, p. 16). Even liberals perceived the PIT as the "fairest and most equitable" (REA, 1918, p. 295) tax. In other words, the income tax "gained the sympathy of Argentine public opinion" (Román, 2012, p. 16). However, the bill that included the income tax proposal did not reach a legislative majority and was therefore never implemented. Later attempts (in 1922, 1924, 1928) were not successful either as local economic elites successfully blocked all proposals by utilising their veto power in the Argentine Senate (Herrera & Ferraro, 2013).

It was only in 1932 when the PIT was introduced (Platt & di Tella, 1985, p. 163). Importantly, the Argentine income tax was passed by an autocratic government. A coup d'état led by Lieutenant General José Félix Uriburu against President Hipólito Yrigoyen put an end to nearly two decades of democratic rule in 1930 (Boix, Miller, & Rosato, 2013). The subsequent time period until 1943 became known as the so-called 'Infamous Decade' which was characterised by electoral fraud, a strong political involvement of the army, and high levels of corruption (Alston & Gallo, 2010; Cantú & Saiegh, 2011).

What explains the sudden introduction of the income tax under undemocratic rule? Many scholars have identified the Great Depression starting in 1929 as the main cause for the Argentine PIT uptake (Alvaredo, 2007; Biehl & Labarca, 2018; Herrera & Ferraro, 2013; Patterson, 1952): "The fact remains that it was only under the impact of the Depression that those long-delayed reforms were introduced" (Diaz Alejandro, 1984, p. 202). Two effects of this crisis stand out. First, it put enormous pressure on public finances. Central government revenue as a share of GDP fell from 6.24% in 1928 to 5.72% in 1930. Falling public income from trade taxes and excises created additional revenue needs for the state (Frankema & Visker, 2011; Paolera & Taylor, 1999a). Furthermore,

public expenses increased from 1928 to 1930 due to expensive bank bailout programmes (Mitchell, 2007; Nakamura & Zarazaga, 2001; Paolera & Taylor, 1999b). The Argentine government reacted with large scale expenditure cuts but was still in dire need of additional revenue (Paolera & Taylor, 1999a). Therefore, the income tax was a useful tool to improve the fiscal situation of the Argentine state after the crisis.

Second, the income tax was popular as it was perceived as a fair fiscal instrument (Román, 2005). A broad consensus among societal groups supported the introduction of the tax in the wake of the crisis (Biehl & Labarca, 2018, p. 106). Even rural elites which had previously opposed the income tax largely consented with it after the Great Depression (Román, 2008). The main opposition against the tax came from parts of the working class which wanted to increase its progressivity and exclude wages from being taxed. In the end, the PIT strongly resembled the class tax that was favoured by working class representatives as only the richest 2% of the population had to pay it at all (Biehl & Labarca, 2018, p. 103). Hence, the tax had broad-based support and "actual acts of resistance were scarce" (Román, 2008, p. 52). Why did the autocratic regime consent to popular demand by introducing a progressive income tax? Most importantly, the PIT was seen as a useful policy to achieve legitimacy for the new autocratic regime: "Despite its fiscal goals, the symbolism of the new tax was clear. The income tax was associated with a fairer distribution of wealth. This was an important point for a government whose democratic credentials were at the least, dubious" (Román, 2012, p. 49).

Overall, although revenue needs were a central factor for the Argentine PIT introduction after the Great Depression, the tax became "nominally geared up to modernize the state and achieve social equality" (Biehl & Labarca, 2018, p. 103). However, Argentina also introduced a sales tax in 1931 (Genschel & Seelkopf, 2019). Yet, whereas PIT introduction gained broad public support and was perceived as a reform that increased fiscal fairness, the sales tax "was highly criticized" (Patterson, 1952, p. 268). As a consequence, the tax was introduced on a very limited scale and public resistance restricted the use of the sales tax as a fiscal instrument: whilst the income tax accounted for more than 7% of overall government revenue in 1935, the sales tax only raised 2% (Patterson,

1952, p. 263). To satisfy popular demand, the sales tax was reformed fundamentally in 1934. Small business were exempted, cumulative effects were reduced, and the standard rate was lowered from 3% to 1.25%. The fact that "the tax continued to be unpopular" (Patterson, 1952, p. 268) also restricted the use of the sales tax as a fiscal instrument in the subsequent years. In contrast, "[u]nlike what happened in the case of the transaction tax, the income tax was finally accepted" (Román, 2013, p. 428). As a consequence, the overall tax system became substantially more progressive due to "a dramatic increase in direct taxes" (Paolera & Taylor, 1999a, p. 575). Thus, the case of the Argentine sales tax shows how popular demand for progressive taxation put constraints on the usage of regressive fiscal instruments in the wake of a crisis.

## 7 Conclusion

Have banking crises boosted fiscal innovations? Drawing on the large body of literature that looks at warfare and state capacity, I have argued that banking crises can facilitate fiscal innovations because of revenue needs and demands for fiscal fairness. However, it is important to closely differentiate between tax types. Whilst revenue needs may lead to the introduction of all kinds of new taxes, fiscal fairness claims in the wake of banking crises only push for taxes on the rich. Fairness arguments can expand progressive taxation and decrease the likelihood of introducing new regressive tax instruments. Event history analyses of new data on tax legislation worldwide support my argument. Whilst countries are more likely to introduce a progressive PIT in the wake of a banking crisis, I do not find a general effect of crises on GST introduction. An examination of tax legislation in the US and in Argentina has provided further support for these findings. Revenue needs and fiscal fairness claims led to the introduction of progressive income taxation. In contrast, an expansion of regressive taxation has been a hard political sell after banking crises – despite dire fiscal situations.

In sum, this article has shown that shocks other than mass warfare can lead to an expansion of fiscal capacity. Over the long run of history, banking crises have facilitated the rise of progressive taxation. These findings generate two broad follow-up questions

that could be addressed in future work. The first question asks about the potential of banking crises to revive progressive taxation nowadays. Whilst tax progressivity has declined massively in the last decades (Kiser & Karceski, 2017; Scheve & Stasavage, 2017), inequality has become one of the major challenges for the 21<sup>st</sup> century (Atkinson, 2015). Progressive taxation is the most effective policy tool at hand to tackle inequality. As I have shown in this article, banking crises have paved the way for progressive taxation over the long run of history. Analysing whether such crises have a similar potential today is therefore a promising approach for further research.

Second, future work could examine how circumstances and timing of fiscal innovations impact the development of fiscal capacity. As I have shown, taking banking crises into account can help us to understand differences in fiscal capacity around the world. Looking at the first major step in the evolution of fiscal systems – the introduction of bath-breaking fiscal innovations – is therefore only the start. Finding out whether the mode and the circumstances of introduction still matter for outcomes nowadays is an important task for future research. Moreover, an early introduction of the PIT might cause legacy effects. For instance, the possibility to expand state capacity quicker than other countries could be a competitive advantage and may increase fiscal capacity even further in the long run. Whilst these questions are beyond the scope of this article, they stress the importance of analysing the historical roots of fiscal systems. As this article has shown, financial and economic crises are of central importance for our understanding of the fiscal origins of the modern nation state.

# Notes

<sup>1</sup>In the following, I use the abbreviation GST to refer to classical general sales taxes (single-staged sales taxes or multi-staged turnover taxes) as well as to modern value-added taxes that allow business to claim a deduction for previously paid sales taxes on inputs.

<sup>2</sup>Here, I refer to the first general tax on consumption – irrespective of whether this first tax was a classical GST or a VAT.

<sup>3</sup>I take the median to ensure that the results are robust to outliers. However, the findings remain similar when the arithmetic mean is used instead of the median.

<sup>4</sup>Furthermore, I have expanded their updated dataset by using information from [Laeven and Valencia \(2018\)](#) for recent banking crises in non-OECD countries.

<sup>5</sup>Major wars are defined as inter-state wars with more than 1000 battle-related deaths. Data come from [Sarkees and Wayman \(2010\)](#).

<sup>6</sup>Polity2 value is missing for Greece for the time of PIT introduction in 1918. I interpolate the Greek data for this year to keep the Greek case in the sample.

<sup>7</sup>These countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States of America. Finland, Ireland, and Norway are excluded in the PIT models because these countries were under Russian/British/Danish rule at time of introduction.

<sup>8</sup>Data is missing for Greece, Luxembourg and Portugal.



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# Online Appendix

Table A1: Robustness Check I: Cox PH Models for PIT and GST Introduction Without Region FE

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.7115** (0.3272)	0.9479*** (0.3311)	0.9010*** (0.3390)	0.3045 (0.2783)	0.1766 (0.2957)	0.1377 (0.2929)
Democracy Level		0.0084 (0.0204)	0.0083 (0.0205)		-0.0038 (0.0141)	-0.0029 (0.0145)
War in the Previous 10 Years		0.4131 (0.3477)	0.4182 (0.3476)		0.4798 (0.3062)	0.4300 (0.3101)
GDP per Capita (ln)		-0.0388 (0.1499)	-0.0391 (0.1506)		-0.0746 (0.0952)	-0.1786* (0.1027)
Spatial Lag (t-1)		0.1249*** (0.0157)	0.1090*** (0.0304)		0.0965*** (0.0091)	0.0771*** (0.0105)
Communist Successor State			0.5990 (0.9731)			2.1094*** (0.4911)
AIC	509.0987	441.2401	442.8556	1000.9042	892.7012	875.0714
Region FE	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.7631	0.1281	0.0621	0.9236	0.0533	0.3410

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A2: Robustness Check II: Cox PH Models for PIT and GST Introduction With Sample Entry Year Covariate

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.9305*** (0.3372)	0.9078*** (0.3436)	0.8770** (0.3495)	0.3308 (0.2926)	0.3402 (0.3029)	0.3221 (0.3008)
Democracy Level		0.0298 (0.0249)	0.0306 (0.0251)		-0.0226 (0.0159)	-0.0185 (0.0162)
War in the Previous 10 Years		0.3147 (0.3664)	0.3255 (0.3669)		0.6478** (0.3255)	0.6062* (0.3267)
GDP per Capita (ln)		-0.2460 (0.2053)	-0.2388 (0.2054)		-0.2152 (0.1410)	-0.1865 (0.1428)
Spatial Lag (t-1)		0.0275 (0.0407)	0.0201 (0.0441)		-0.0021 (0.0219)	-0.0065 (0.0221)
Communist Successor State			0.5003 (1.1083)			1.3885** (0.5766)
Year Sample Entry	0.0316*** (0.0040)	0.0287*** (0.0086)	0.0275*** (0.0089)	0.0357*** (0.0040)	0.0419*** (0.0084)	0.0360*** (0.0088)
AIC	421.1153	422.3321	424.1260	881.8039	863.6183	859.4357
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.9337	0.2700	0.2007	0.2206	0.1528	0.4981

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A3: Robustness Check III: Cubic Polynomial Approximation for PIT and GST Introduction

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.8203** (0.3299)	1.2695*** (0.3520)	1.1448*** (0.3588)	0.0911 (0.2897)	0.0613 (0.3021)	0.1165 (0.3047)
Democracy Level		0.0269 (0.0249)	0.0297 (0.0256)		-0.0228 (0.0157)	-0.0158 (0.0165)
War in the Previous 10 Years		0.6523* (0.3617)	0.6954* (0.3620)		0.5429* (0.3219)	0.5578* (0.3236)
GDP per Capita (ln)		-0.0559 (0.1829)	-0.0413 (0.1817)		0.0149 (0.1304)	0.0168 (0.1330)
Spatial Lag (t-1)		0.1954*** (0.0227)	0.1518*** (0.0364)		0.1019*** (0.0127)	0.0651*** (0.0145)
Communist Successor State			1.6558 (1.0544)			2.7640*** (0.5791)
t	-0.1094*** (0.0263)	-0.0488 (0.0309)	-0.0284 (0.0344)	-0.0013 (0.0255)	-0.0244 (0.0267)	0.0438 (0.0320)
t <sup>2</sup>	0.0019*** (0.0006)	0.0011* (0.0006)	0.0008 (0.0006)	0.0000 (0.0007)	0.0001 (0.0007)	-0.0012 (0.0008)
t <sup>3</sup>	-0.0000** (0.0000)	-0.0000* (0.0000)	-0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000* (0.0000)
AIC	691.2922	590.0457	589.5038	1077.3295	993.0168	971.7626
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A4: Robustness Check IV: Linear Probability Models With Country Fixed Effects

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.0295*** (0.0097)	0.0393*** (0.0096)	0.0393*** (0.0096)	0.0112 (0.0108)	0.0019 (0.0109)	0.0019 (0.0109)
Democracy Level		-0.0004 (0.0007)	-0.0004 (0.0007)		-0.0003 (0.0008)	-0.0003 (0.0008)
War in the Previous 10 Years		0.0213*** (0.0081)	0.0213*** (0.0081)		0.0127 (0.0101)	0.0127 (0.0101)
GDP per Capita (log)		0.0148 (0.0128)	0.0148 (0.0128)		-0.0049 (0.0083)	-0.0049 (0.0083)
Spatial Lag (t-1)		0.0057*** (0.0013)	0.0057*** (0.0013)		0.0054*** (0.0008)	0.0054*** (0.0008)
Communist Successor State			0.3136*** (0.1005)			0.4938*** (0.1201)
t	0.0016*** (0.0006)	0.0007 (0.0006)	0.0007 (0.0006)	0.0044*** (0.0008)	0.0031*** (0.0008)	0.0031*** (0.0008)
t <sup>2</sup>	-0.0000** (0.0000)	-0.0000 (0.0000)	-0.0000 (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)	-0.0001*** (0.0000)
t <sup>3</sup>	0.0000*** (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)
Adj. R <sup>2</sup>	0.1070	0.1889	0.1889	0.0807	0.1340	0.1340
Country FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A5: Robustness Check V: Cox PH Models for PIT and GST Introduction With Share of Regional Adopters

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.7713** (0.3374)	1.0990*** (0.3460)	0.9176*** (0.3457)	0.1125 (0.2891)	0.1288 (0.2969)	0.1552 (0.2945)
Democracy Level		0.0434* (0.0240)	0.0376 (0.0249)		-0.0253 (0.0156)	-0.0218 (0.0162)
War in the Previous 10 Years		0.2186 (0.3611)	0.2868 (0.3622)		0.4749 (0.3133)	0.4872 (0.3180)
GDP per Capita (ln)		-0.0130 (0.1864)	-0.0466 (0.1812)		-0.0252 (0.1327)	-0.0229 (0.1344)
Spatial Lag Share (t-1)		3.6791*** (0.4578)	2.3129*** (0.6235)		3.0299*** (0.4092)	2.0781*** (0.4504)
Communist Successor State			2.5873*** (0.8210)			2.3753*** (0.5282)
AIC	506.4178	438.5521	429.9431	963.4125	893.2078	873.6410
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.0099	0.3340	0.7029	0.4556	0.1133	0.6155

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A6: Robustness Check VI: Cox PH Models for PIT and GST Introduction Without MENA Region

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.7412** (0.3482)	1.2212*** (0.3644)	1.1020*** (0.3683)	-0.0258 (0.2980)	-0.0763 (0.3037)	-0.0094 (0.3020)
Democracy Level		-0.0085 (0.0251)	-0.0065 (0.0253)		-0.0393** (0.0165)	-0.0370** (0.0169)
War in the Previous 10 Years		0.4813 (0.3727)	0.5034 (0.3727)		0.4570 (0.3232)	0.4800 (0.3267)
GDP per Capita (log)		0.6769*** (0.2380)	0.6759*** (0.2355)		0.1237 (0.1446)	0.1339 (0.1455)
Spatial Lag (t-1)		0.1491*** (0.0206)	0.1071*** (0.0327)		0.0903*** (0.0122)	0.0597*** (0.0143)
Communist Successor State			1.9360* (1.1430)			2.2471*** (0.5698)
AIC	455.0788	371.9450	370.9266	909.0604	833.0012	818.1015
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	70	70	70	121	121	121
Num. events	70	70	70	119	118	118
Num. obs.	3301	3210	3210	3320	3184	3184
PH test	0.0063	0.4840	0.4545	0.4475	0.0448	0.4555

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A7: Robustness Check VII: Cox PH Models With Crisis Placebo

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis Placebo	-0.2874 (0.3923)	0.0686 (0.4041)	-0.0354 (0.4034)	0.0525 (0.2861)	0.1036 (0.2918)	0.0934 (0.2912)
Democracy Level		0.0188 (0.0239)	0.0218 (0.0242)		-0.0245 (0.0159)	-0.0211 (0.0163)
War in the Previous 10 Years		0.3352 (0.3642)	0.3553 (0.3632)		0.4809 (0.3151)	0.4921 (0.3188)
GDP per Capita (log)		-0.0041 (0.1722)	0.0069 (0.1695)		-0.0008 (0.1336)	0.0024 (0.1352)
Spatial Lag (t-1)		0.1452*** (0.0183)	0.0942*** (0.0322)		0.0926*** (0.0121)	0.0631*** (0.0142)
Communist Successor State			2.0586** (1.0445)			2.1368*** (0.5535)
AIC	510.6219	441.4551	439.3994	963.5276	889.5829	875.5238
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.0060	0.4333	0.4315	0.4594	0.0931	0.5499

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$



Table A8: Robustness Check VIII: Cox PH Models for PIT and GST Introduction With Reduced Country Sample

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	1.3628** (0.6362)	1.4844** (0.6723)	1.5261* (0.8183)	-0.3493 (0.5510)	-0.4244 (0.6219)	-1.5098 (0.9408)
Democracy Level		-0.1244 (0.0795)	-0.1670 (0.1075)		0.0310 (0.0594)	0.0287 (0.0826)
War in the Previous 10 Years		0.5456 (0.6421)	-0.3211 (0.8697)		1.6625** (0.7302)	3.0794*** (0.9812)
GDP per Capita (ln)		1.5424** (0.7776)	1.3286 (0.9038)		0.9489 (0.7550)	0.8531 (0.9867)
Spatial Lag (t-1)		0.0550 (0.1119)	-0.0628 (0.1756)		0.0598 (0.0802)	0.0289 (0.0866)
Majoritarian System			-0.9725 (0.9899)			-1.9271 (1.1979)
Left Head of Government			3.1140** (1.5601)			0.1138 (0.7625)
AIC	74.8892	76.0900	62.2212	99.5147	98.2023	77.4946
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	19	19	16	22	22	19
Num. events	19	19	16	21	21	18
Num. obs.	1263	1245	1001	927	912	786
PH test	0.6511	0.9154	0.7483	0.1178	0.3171	0.4645

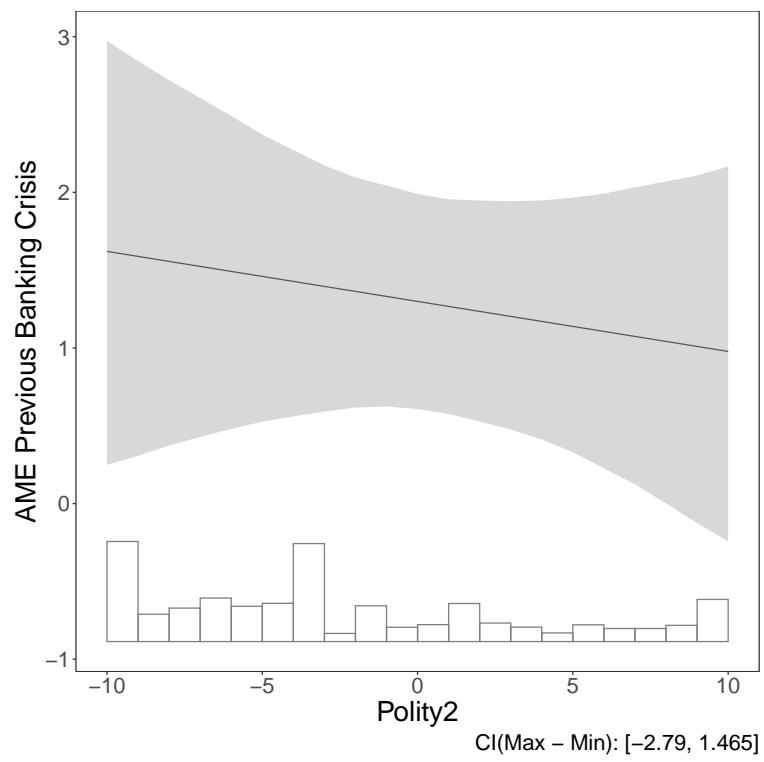
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Table A9: Robustness Check IX: Cox PH Models With Controls for PIT/GST in Place

	PIT Introduction			GST Introduction		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Banking Crisis in the Previous 10 Years	0.6889** (0.3353)	0.9610*** (0.3427)	0.8562** (0.3471)	0.0154 (0.2914)	-0.0938 (0.2982)	0.0143 (0.2982)
Democracy Level		0.0288 (0.0246)	0.0319 (0.0250)		-0.0225 (0.0159)	-0.0216 (0.0162)
War in the Previous 10 Years		0.3038 (0.3690)	0.3323 (0.3688)		0.3729 (0.3165)	0.4126 (0.3192)
GDP per Capita (log)		0.0985 (0.1776)	0.0959 (0.1749)		-0.0707 (0.1373)	-0.0485 (0.1389)
Spatial Lag (t-1)		0.1110*** (0.0239)	0.0730** (0.0360)		0.0964*** (0.0122)	0.0699*** (0.0147)
Communist Successor State			1.5384 (1.0621)			1.7756*** (0.5765)
GST in Place	2.4447*** (0.3028)	1.0844*** (0.4145)	1.0773*** (0.4182)			
PIT in Place				0.5657** (0.2218)	0.7478*** (0.2281)	0.5199** (0.2425)
AIC	453.8851	428.3867	428.2341	958.9735	881.0859	872.9711
Region FE	✓	✓	✓	✓	✓	✓
Num. countries	80	80	80	134	134	134
Num. events	75	75	75	124	123	123
Num. obs.	3685	3585	3585	4074	3918	3918
PH test	0.7075	0.5007	0.2533	0.2914	0.4454	0.7983

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$

Figure A1: Interaction Effect Banking Crisis – Polity2



*Note:* 95% CI.