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The Thirty Years' War and the Decline of Urban Germany

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Abstract

This paper estimates the impact of the Thirty Years' War (1618-1648) on urban economies in the Holy Roman Empire. It presents further evidence for Germany's economic decline in the early modern period. Based on two novel datasets comprising data on civic wealth, public revenues, public expenditure and debt levels for 17 cities it shows that civic wealth declined by 34 percent on average. Urban communities contributed substantially to the financing of the Thirty Years' War: Local contributions exceeded Imperial war-financing by at least a factor of five. Over 50 percent of this expenditure came from direct wealth taxation and debt issue. This means extraction plays a substantial role in explaining the urban wealth decline during this period.

Keywords: Little Divergence, urban economy, fiscal capacity, warfare

JEL Codes: N33, N93, N23, H20, H40

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1 Introduction

How did Germany transform from a dynamic urban economy in the sixteenth century to a 'stagnant and conservative backwater' (Ogilvie 1996, p. 265) by the eighteenth century? This paper aims to answer this question by evaluating the impact of the Thirty Years' War (1618-1648) on urban Germany. The existing literature has established that GDP per capita levels declined from 1500 onwards and by 1700 Germany was substantially poorer than other economies (Pfister 2022). Data on urbanization and real wages (Pfister 2017) tell a very similar story. Several explanations have been offered to account for Germany's poor economic performance between 1500 and 1800. Pfister (2022) emphasizes the role of Malthusian forces that dominate in a pre-modern society. Substantial population growth during the sixteenth century was hence accompanied by a decline in GDP per capita. The demographic shock of the Thirty Years' War (1618-1648) and its accompanying famines and plagues led to a partial recovery of GDP per capita. However, in a purely Malthusian world, we would expect to see a stronger rebounding of GDP. The most conservative estimates of the War's death toll come in at 20 percent (Wilson 2008, p. 787). This would reduce the estimated population of 16 million in 1600 to about 12.8 million in 1650 – not far from the estimated 12 million in 1500. Most estimates suggest even higher mortality rates between 30 to 40 percent (Franz 1960; Pfister 2020). Despite this catastrophic demographic shock, GDP per capita does not recover its pre-war level until well into the eighteenth century – demography cannot be the sole explanatory factor here.

Other explanations have focused on the shift in Europe's centre of economic gravity away from the Mediterranean to the Atlantic (Allen 2003; Pfister 2017). The two regions benefitting from this shift were England and the Netherlands, whereas Germany with its connection to Italy and France was on the losing side of the equation (Friedrichs 1979, p. 84). However, recent research has added more nuance to this story: Northern Germany – in particular Hamburg – benefitted from its connections to the Atlantic trade, while central and southern Germany fell behind (Hakon & Pfister 2021). More importantly, the authors

note that while grain prices convergence in Northern Germany seemed relatively unaffected by the Thirty Years' War, it did lead to an increase in price gaps in continental Germany. This suggests that the emergence of the Atlantic economy might have mitigated some of the impact of the Thirty Years' War in northern Germany, but it definitely did not do so in continental Germany. In order to disentangle these forces further, we need a direct assessment of the impact of the War on urban economies across Germany.

Lastly, another explanation for Germany's post-war decline has focused on the role of labour market institutions such as guilds and the proliferation of privileges granted to certain social groups (Ogilvie 1992, 1996). These were indirect consequences of the War which saw an increase in princely powers and aspirations to directly control the economy. This affected urban communities in particular, as guilds were able to protect local monopolies and limit competition within the urban perimeter. Hence, rural proto-industry grew faster. This is also visible in Germany's urbanization rate which only matched its 10 percent level achieved in 1500 by about 1760 (Pfister 2022). While these factors certainly explain part of the continuing post-war decline, they do not tell us anything about the War's direct impact.

In sum, to get closer to an explanation of the economic decline of urban Germany between 1500 and 1700, we need better estimates of the Thirty Years' War's direct effects on the economy. Only then will we be able to disentangle the various factors – demography, Atlantic trade, institutions – at play. This paper sets out to do this. It presents first estimates of real average household wealth, real public revenues and expenditure as well as debt for the period between 1550 and 1700. The paper draws on two novel datasets consisting of 17 towns in the Holy Roman Empire. The datasets comprise over 100 city-year estimates of real average household wealth and over 1,000 annual observations of public revenues and expenditure.

This paper contributes to two strands of the literature. First, it provides additional evidence for situating Germany on the losing side of the 'Little Divergence' debate (Allen 2001, 2003; Broadberry 2013; De Pleijt & van Zanden 2016). It suggests that Germany's place on the losing side was not only related to its worsening institutions and lack of participation

in the Atlantic economy, but also due to the negative impact of the Thirty Years' War. It precipitated the decline of many of its Imperial Cities – in particular the large trading cities of the South. Second, it contributes to the literature on fiscal capacity and warfare (Alfani & Di Tullio 2019; Ogilvie 2022). In the pre-industrial era, warfare was a major driver of fiscal capacity but both the local level and expenditure-side of public finance have received little attention (Costa *et al.* 2022). This paper provides new local estimates of public revenue and expenditure in the context of the largest military conflict pre-industrial Germany experienced. It adds nuance to the key tenet that "The state made war and war made the state" by showing that the Thirty Years' War was financed in substantial part from local contributions and that these contributions hampered local economies in the long-run.

This paper proceeds as follows: Section 2 briefly explores the urban economies prior to the Thirty Years' War showing that they were highly commercial, home to merchants and bankers with international connections and had active debt markets. Section 3 notes what we know about the economic impact of the Thirty Years' War and how it was financed. Section 4 describes the sources and dataset construction. Section 5 presents first estimates of the War's demographic and economic impact on urban communities in Germany. It focuses not only on aggregate revenues per capita, but decomposes revenues and looks at expenditure and debt markets as well. Section 6 discusses the results in light of the Little Divergence and state capacity debates.

2 The urban economy before the Thirty Years' War

In 1500, GDP per capita in England, Sweden, the Netherlands and Germany was at similar levels – around 1,125 International Dollars (see figure 1 panel I). Germany's urbanization rates was also at comparable levels (see figure 1 panel II). At that time, urban Germany was a dynamic economy that produced many innovations. Among these were the printing press in Mainz, a process for wire-drawing in Southern Germany (Epstein 2000, p. 66) and a new

method for separating silver from black copper ore (the *Saigerverfahren*) in Franconia, to name a few. These innovations were economically relevant and were adopted widely: there was a tremendous growth in the number of pamphlets and books produced (Buringh & van Zanden 2009). The new processes for wire-drawing tripled productivity (Epstein 2000, p. 66) and led to the expansion of the metal-industry in Thuringia, making it a leading region for copper and silver production with involvement from early capitalists such as the Fugger family (North 2012, p. 70-73).

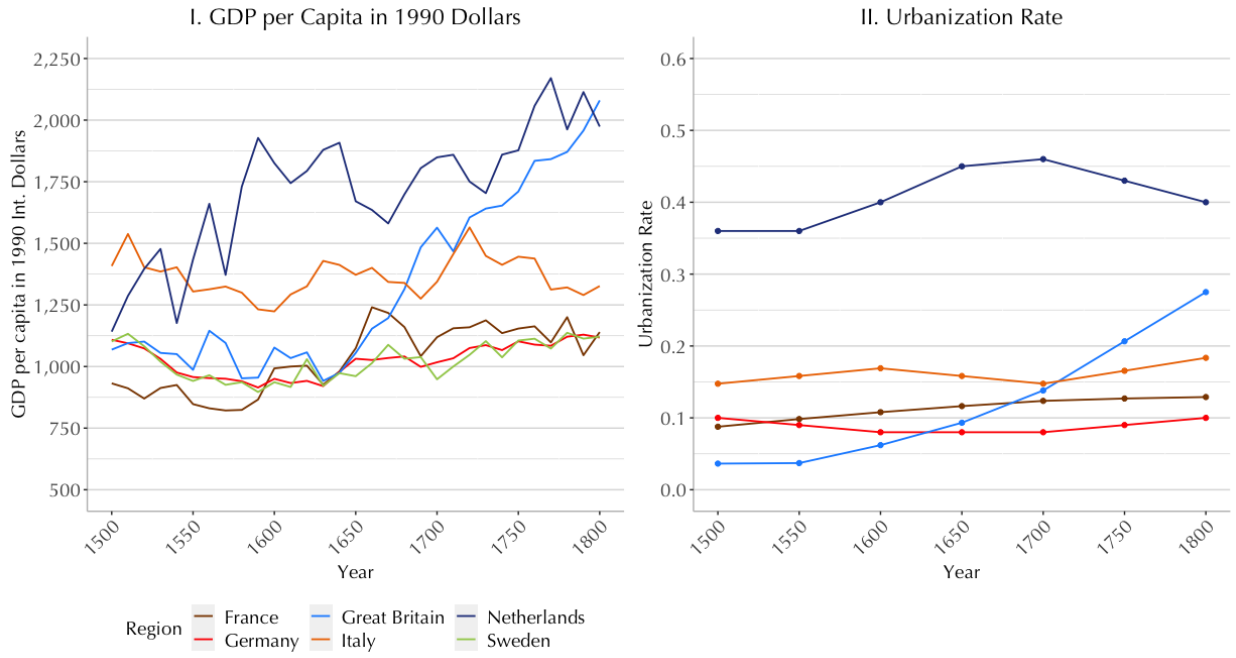

Figure 1: GDP per capita and urbanization rates for selected European economies, 1500-1800
Data: France: Ridolfi & Nuvolari (2021), Germany: Pfister (2022), Pfister & Fertig (2010), Britain: Broadberry (2015), Italy: Chilosi & Ciccarelli (2022), Malanima (2011), the Netherlands: van Zanden & van Leeuwen 2012, Paping (2014), Sweden: Schön & Krantz (2012).

But urban Germany was also a centre for humanist intellectuals such as Georg Hartmann, Albrecht Dürer and Peter Apian in Nürnberg. They made important advances in mathematics, astronomy, painting and cartography. The city also saw the development of an international market for state loans (Epstein 2000, p. 66). In fact, public debt markets existed in all large and many smaller German cities. Germany also had a thriving com-

munity of international merchants and financiers such as the Fugger, the Welser and the Hochstetter who counted among the richest families in early modern Europe and financed Emperor Charles V election campaign. They participated in early colonial trade and the Welser family governed the Province of Venezuela for 30 years (Montenegro 2023). While the shift of trade from the Mediterranean to the Atlantic and the growing population pressure certainly affected the German economy and in particular its Southern trading cities with links to Italy, it did not fall behind immediately and instead "followed a middle path" between England and Italy (Pfister 2017, 2022).

Furthermore, the Protestant Reformation, which started with Luther's 95 theses in 1517, has been understood as contributing to secularization and reallocation of resources towards construction beneficial to economic growth (Cantoni *et al.* 2018). Capital markets were also better integrated in Germany than in Italy and interest rate differentials further narrowed in the sixteenth century – this development was helped not hindered by the Empire's institutions (Chilosi *et al.* 2018). Considering all this evidence, it seems surprising that by 1700 and even more so by 1800, Germany is described as a 'stagnant and conservative backwater' (Ogilvie 1996: 265). In particular, its cities are characterized as 'Home Towns' which exude a 'quiet localism' that relies on stability and separateness (Walker 1970). What can explain this decline of the urban economy in Germany? This paper suggests that the Thirty Years' War and its impact on urban communities via extraction plays a major factor in their decline.

3 The Thirty Years' War: economic impact and wartime finance

The role of the Thirty Years' War on the urban economy at large and its impact on public institutions such as credit markets has remained understudied (Theibault 2014). We know the War was one of the most lethal conflicts in Europe in the seventeenth century. Estimated

population losses for the German lands vary between 30 to 40 percent (Pfister 2020; Franz 1960). We also know it was unique in terms of troop size which reached "an unprecedented 250,000" soldiers at its peak in 1632 (Wilson 2008, p. 783). At an aggregate level, we know that GDP per capita rose in the aftermath of the War while total GDP declined. This was driven by the heavy population losses and is certainly not related to increased Smithian growth (Pfister 2022). Furthermore, we know that inequality declined during the War (Alfani *et al.* 2022) and that this might have been due to its destructive nature (Schaff 2023). However, it still remains unclear how substantial the loss both in private and public wealth actually was. Individual case studies of Munich, Augsburg (Roeck 1989, 1991), Nördlingen (Friedrichs 1979), Schwäbisch Hall (Riegler 1911; McIntosh 1997) and a group of southern Imperial Cities (Kellenbenz 1965) detail how the War affected these urban economies: international trade suffered, taxation and debt increased, and disease and migration led to large fluctuations in urban inhabitants. While not evaluated in detail, some suggest that Imperial Cities lost out to territorial cities – particularly those that were the seat of territorial lords (i.e. *Residenzstädte*) – after the War had ended (Kellenbenz 1965, p. 132) (McIntosh 1997, p. 1-4). This paper offers a systematic evaluation of urban wartime economies and finance, presenting the first comparable estimates of private wealth losses and public budgets, thereby also making it possible to evaluate the claim that there was a shift from Imperial to territorial cities in terms of economic might. Sustaining a conflict of this size for three decades - with almost constant military deployment[1] - requires a substantial amount of resources. How was this possible for an Emperor who lacked the administrative and fiscal structures to raise these revenues himself?

[1]In comparison to other pre-modern wars, such as the Dutch Revolt, the French Wars of Religion or the Hundred Years War, the Thirty Years' War saw near constant military activity (Theibault 2014, p. 245)

3.1 How to raise an army: letters patents, protection warrants and contributions

In the decades before the Thirty Years' War, the way a ruler raised an army was to issue a patent to a military entrepreneur for a specific number of troops (Theibault 2014, p. 249). The patent gave the entrepreneur the ability to muster recruits. While the patents included a promise of payment for recruitment and maintenance, the entrepreneur commonly had to use his own resources to raise the forces until the ruler could deliver (Theibault 2014, p. 249). Hence, most military entrepreneurs were noblemen (Parrott 2014, p. 65) who used their own assets and worked with financiers to generate the initial sums required. For example, Ott Heinrich Fugger, Count of Kirchberg and Weissenhorn, related on his father's side to the Fugger merchant family and on his mother's side to the noble family of Schwarzenberg, funded his regiment mostly through loans provided by Fugger relatives, wealthy citizens of Augsburg and loans from Cologne and Antwerp (Parrott 2014, p. 71). When rulers were unable to fulfil their financial obligations, they mortgaged some of their lands or rights to the military entrepreneur. This provided opportunities for lower noblemen to "make it big".

No one is as famous for "making it big" during the War as Albrecht von Wallenstein, the commander of the Imperial troops between 1628 and his death in 1634. However, Wallenstein did not solely rely on the above method to raise armies. He introduced "two important innovations" (Theibault 2014, p. 250): first, he used his own properties not just to finance initial recruitment, he instead turned them into supply hubs of war materials; and secondly, and more important for this paper, he introduced a new way of paying for armies in the field: war taxation. Wallenstein is seen as the 'perfecter' of 'a system of military funding known as contributions – sometimes called 'taxes of violence' (Wilson 2008, p. 399). By making local communities pay for the maintenance of the armies stationed within their midst, even an Emperor without a sophisticated fiscal apparatus could wage a war of unprecedented scale in Europe. Wallenstein forced such payments from many of the wealthy south German trading cities – extracting at least 440,000 Rhenish Guilder from Nuremberg alone (Wilson

2008, p. 402). By paying off Wallenstein and his armies, these cities escaped occupation and destruction – at least most of the time. In addition to contributions, military entrepreneurs also resorted to selling protection warrants (known as *salva guardias*) to extract resources from towns in exchange for the promise of good behaviour, temporary quarters and limited billeting (Theibault 2014, p. 250). Contributions were more systematic and often consisted of billeting; they relied less on the negotiation required for *salva guardias*. Both types of instruments were employed throughout the war and an exact distinction between the two is sometimes difficult to make. This paper therefore considers contributions and protection warrants along the same line as they both consisted of monetary extractions from the local populace. Examples, there are plenty. In 1626, Erfurt paid Imperial commander Johann von Merode 50,000 Taler to avoid ransacking (Richter 2011, p. 52) . Similarly, while the Bavarian Elector's residence in Munich was sacked in 1632, the city itself averted this fate by paying 300,000 Reichstaler to the Swedish Army (Roeck 1991, p. 438). Evidence for the purchasing of salva guardias also exist for Ingolstadt (Schönauer 2007, p. 203), Graupen (Kilian 2019, p. 192) and many other towns (Wilson 2008, p. 402).

In contrast, plunder – although it did occur – was not the preferred way of financing armies (Wilson 2008, p. 208) (Theibault 2014, p. 255). As generals and soldiers were outsiders they relied on local officials to procure money and billets, especially in the long run. Payments of contributions – both to the Imperial Army, the Protestant Union and the Swedish Army – can be found in nearly all city account books of the time. However, the total size of these contributions – particularly in relation the city's revenue streams and debt levels – has not been estimated yet. (Theibault 2014, p. 251) suggests that these levies amounted to tens of millions of Rhenish Guilders – but that this must only be "the tip of the iceberg"[2]. This paper will provide first representative estimates of the level of extraction and also evaluate the impact this had on the urban economies themselves.

[2]There were two other contributors to the Imperial Army: the Imperial Treasury and the wealth generated by the confiscation of the property of the Bohemian rebels (Wilson 2008, p. 406) (Theibault 2014, p. 254). Wilson (2008) estimates that the Treasury contributed 1.2 million Rhenish Guilders directly and another 4 million Guilders to Wallenstein.

4 Sources and Dataset Construction

4.1 Sources & Dataset Compilation

This paper introduces two novel datasets. The first dataset, hereafter labelled the "*Public Finance Dataset*", consists of more than 1,000 annual observations of revenues and expenditure data across 17 urban communities in Germany between 1550 and 1700. It also contains new population data at a very granular level. The second dataset, hereafter labelled "*Real Wealth Dataset*", combines information from wealth tax registers employed in Alfani *et al.* (2022) with information on currency exchange rates and their silver content to arrive at estimates of real household wealth.

The data compiled for the *Public Finance Dataset* is drawn from over 50 monographs and studies (see appendix A for full list). These included detailed accounts of city treasury accounts from which the data have been carefully extracted to ensure the compilation of comparable data. Close attention has been paid to town-specific details, such as variations in accounting procedures (*fiskalische Kasseneinheit*), the recording of income from debt issue and local currencies of account. A more detailed description of these city account books can be found in appendix A. To my knowledge, this is the most comprehensive and detailed database of urban public finance in the Holy Roman Empire to date. Regarding sample size, the sample employed here is comparable to those samples used in the real wage literature, which often features between 10 to 18 towns (see for example Pfister (2017)). Data on tax rates has been collected in the same manner and contains more than 525 observations of annual wealth tax rates across 23 cities between 1550 and 1700.

4.2 Converting currencies into silver

The data compiled for the *Real Wealth Dataset* uses the wealth tax payments collected for Alfani *et al.* (2022) and combines them with information on tax rates, currency exchange rates and currency valuation to estimate mean and median wealth. During the period of

this study, the German Empire used more than 70 local currencies (Boerner & Volckart 2011). However, there are three leading currencies which are employed across the Empire for trade and financial transactions. These are the Rhenish guilder, the *Lübische Mark* and later on the *Reichstaler* (North 2009; Chilosi & Volckart 2011). Some wealth tax registers already record tax payments in one of these leading currencies. Others contain notes about the exchange rate between the local currency (of account) and one of the leading currencies. Where any such information is missing, other reliable sources were used to find exchange rates between local currencies and one of the leading currencies (see appendix C for a detailed list of those sources). Note also that wealth tax payments are recorded in moneys of account. This means that while tax payments might have been made in various types of coins, the clerks registering these payments record them in the city's currency of account – taking care of the complicated procedure of valuing different kinds of currencies. This also means that conversion into the Rhenish guilder have to take into account the declining value of these currencies of account.

Figure 2: Silver Content of three main currencies.
Data: Author's calculation.

On average, this decline starts in the 16th century when, in several cities, the Rhenish guilder as a currency of account is worth only four fifths of the actual gold Rhenish guilder in circulation. Concrete evidence for this is found for example for Augsburg, Freiburg and Frankfurt (Hartung 1898; Bothe 1906; Ohler 1977). If a city's currency of account was the Rhenish guilder but no information about its depreciation for that specific city and period was available, I used the depreciation rates of cities nearby. Lastly, I convert all leading currencies into their equivalent in grams of silver. This is straight-forward for the *Lübische Mark* and the *Reichstaler* as these are silver currencies. The conversion of the Rhenish guilder into silver equivalents relies on (Pfister 2017). Figure 2 plots the silver content of the three leading currencies used in this paper.

4.3 Definition of Imperial City

Broadly speaking, there were two types of cities in the Empire: Imperial Cities and territorial cities (for a more detailed exploration of city types and legal distinctions see (Isenmann 2014, pp. 281). While Imperial Cities only recognized the Emperor as their immediate overlord, territorial cities were under the control of a territorial lord, such as a prince, baron or bishop. Imperial cities had greater autonomy and could function like city-states with little interference from outside (Isenmann 2014, pp. 300). No authoritative list of Imperial Cities exists (Rabe 1991, p. 140). However, their number is estimated to be between 65 and 105 in the 16th century (Rabe 1991, p. 140) (Maschke 1974, p. 2). A common reference point is the Imperial Register (*Reichsmatrikel*) of 1521 which lists 85 cities as Imperial or Free Cities. Taking the Imperial Register as the guideline, the *Public Finance Dataset* consists of 10 Imperial Cities and 7 territorial cities, whereas the *Real Wealth Dataset* consists of 8 Imperial Cities and 9 territorial cities.

4.4 Geographic Distribution

Figure 2 shows the geographic extent of the two samples analysed in this paper compared to the entirety of towns in the *Deutsche Städtebuch*. The 17 towns in the *Public Finance Dataset* cover all regions within the Empire with a slight over-representation of towns in the south. The 17 towns in the *Real Wealth Dataset* cover the southern and central regions of the Empire very well, whereas the north is only represented by Lübeck. However, it should be noted that the North is generally less urban as can be seen by distribution of the towns in the *Städtebuch*. Therefore, this should not bias the results substantially. With regards to the sample's representativeness in terms of other demographic, institutional and religious variables refer to Appendix B. In general, regarding sample size and selection, this paper follows the parameters of other published accounts of this nature (Allen 2001; Pfister 2017; Costa *et al.* 2022). The nature of the source material and its availability mean it can never be fully representative, but the sample is not majorly biased. For comprising data on 17 pre-industrial towns over a period of more than one hundred years at this level of granularity, this sample is indeed sizeable.

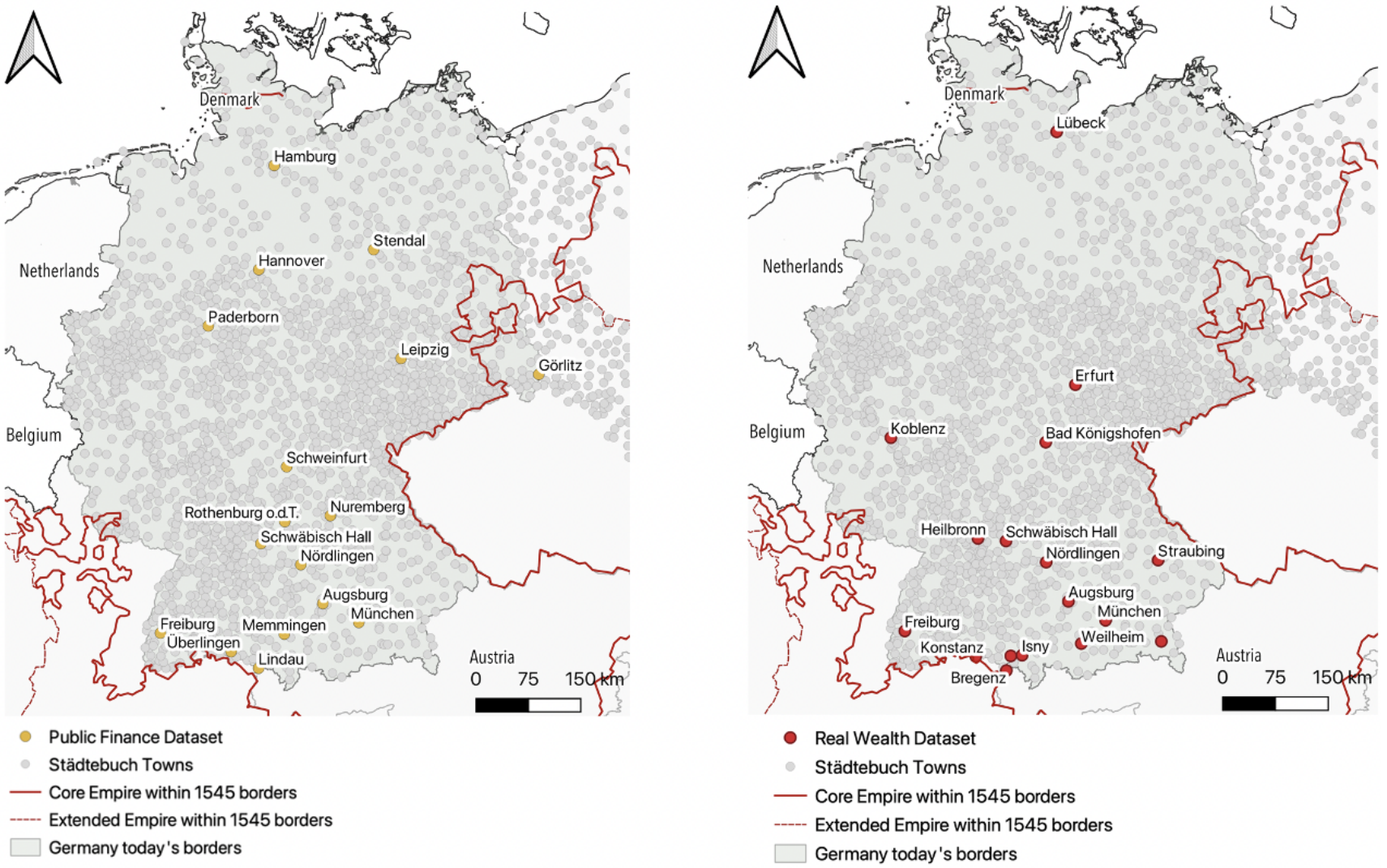

Figure 3: Geographic sample representativeness. Left: Public Finance sample, Right: Real Wealth sample.

5 Results

5.1 The war's impact on urban population

The state of the urban economy is traced via three key variables: population size, civic wealth and public finance. The latter two variables will be analysed in detail, while the impact on urban population will be covered briefly. Previous estimates of population losses in urban communities conclude that around one third of inhabitants died during the Thirty Years' War but that geographical variation was substantial (Franz 1960, p. 47) (Pfister 2020, p. 8). Kellenbenz (1965) suggests that of the large towns, those at the "edges" of the Empire fared better than those in its central regions. Based on my extended sample, which is, to my knowledge, the most comprehensive for this period [3], the average decline in urban population is 25 percent. However, this hides marked differences in population decline between Imperial Cities and territorial cities. Imperial Cities (excluding Hamburg) saw a population decline of 31 percent on average, whereas territorial cities only saw a decline of 25 percent. Excluding Hamburg is justified for two reasons: first, it managed to remain essentially neutral throughout the War despite the fact that it was surrounded by large armies twice (Kellenbenz 1965, p. 84) and second, because its population follows a very atypical path: by 1662 at the latest, it emerges as Germany's largest city by far with a population of 75,000 inhabitants – twice as large as the second biggest city which was Cologne with 37,000 inhabitants.

Population losses of this magnitude are slightly lower but comparable to the Black Death where an estimated 33 to 58 percent of the population died Benedictow (2004) and are much higher than for other pre-industrial wars (Schaff 2023, p. 5-6). This was not primarily driven by direct battle casualties but by the common handmaidens of war: disease and famine (Wilson 2008, p. 840). Famine had multiple causes, among those being army requisitioning,

[3] My sample contains population data for 111 cities (36 Imperial and 75 territorial cities) for which a balanced panel of at least two datapoints could be constructed for the period 1600 to 1674. (Pfister 2020, p. 8) finds a decline of 34 percent in urban population for a slightly smaller sample of 58 towns for the same period. Note that he focuses on cities larger than 5,000 inhabitants at least once before 1800.

destruction of farms and farmland (Roeck 1989, pp. 531) as well as bad harvests (Roeck 1989, p. 635). All of these increased prices for basic foodstuffs. The coin depreciation of the 1620s (*Kipper- & Wipperzeit*) and the resulting spike in food prices are further signs that the War severely impacted the economy. However, evaluating population losses only goes so far in understanding the War's impact on the urban economy. Therefore, the next section looks at private wealth loss directly.

5.2 The war's impact on private wealth

Given the substantial population losses outlined above, how did the urban economy fare? Almost all cities in the sample experienced a decline in mean wealth – see figure 4. Across the entire sample, mean real wealth declined by 34 percent. Excluding Bregenz, which saw a wealth gain from 1634 to 1660, the decline is even steeper at 38 percent. In Imperial Cities the decline in mean wealth is slightly greater, at 39 percent (35 percent excluding Augsburg), compared to 29 percent in territorial cities including Bregenz (but 41 percent excluding Bregenz).

Real wealth is measured in annual consumption baskets to capture changes in the prices of daily consumption goods. This price data comes from (Pfister 2017, 2022). The graphs should be interpreted the following way: For example, in 1618 the first year in the Schwäbisch Hall data series, mean household wealth is worth 42 annual consumption baskets – if all wealth could be liquidated immediately at its assessed value. That means this household – after liquidating all its assets and assuming it has on average four to five members, (Minns *et al.* 2019) – could purchase enough food, clothing and heating for each household member for the next 8 to 10 years.

Note however, that none of these consumption baskets include the cost of housing [4] and purchasing housing would reduce the number of years the household could live off its assets. Note also that (Pfister 2017) cautions uncertainty as to how well the annual consumption

[4]This is not a particularity of the German case but how consumption baskets are commonly constructed – see (Pfister 2017) and (Allen 2001)

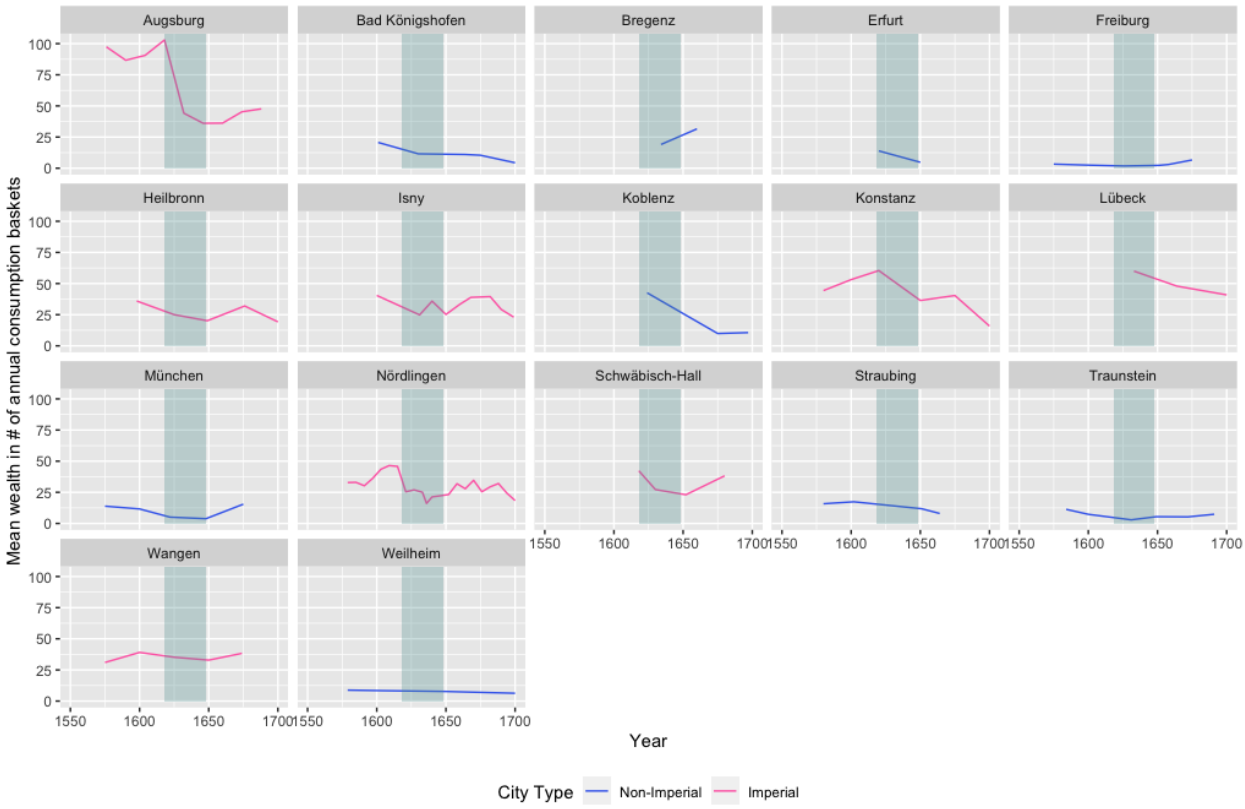

Figure 4: Real mean wealth in 17 cities as number of affordable annual consumption baskets, 1550-1700.
Data: wealth data are author's own calculations, CPI from Pfister (2022)

basket can capture the inflationary period from 1619 to 1622. By 1652, mean household wealth in Schwäbisch Hall is only 23 consumption baskets – a reduction in mean wealth by 45 percent. While 23 baskets might sound surprisingly comfortable at first, this is mean household wealth (median wealth was between 8 to 12 baskets). Given the high mortality due to disease and famine, many poor households vanished during the War (Roeck 1989, p. 538 details this for Augsburg), whereas extraction through direct taxation squeezed those with assets (see below). These results fit with evidence that inequality decreased during the War (Alfani *et al.* 2022; Schaff 2023).

In sum, these estimates show that during the Thirty Years' War private urban wealth declined substantially in real terms – by about 34 percent overall. For comparison, during the American Civil War (1861-65) farm values in counties affected by Sherman's March declined

by 20 percent (Feigenbaum *et al.* 2022). However, while physical destruction played a large role in Sherman's March, the case of wealth loss in urban communities in the Thirty Years' War is more complex. While destruction certainly occurred in a number of cities, they were still relative harbours of safety compared to the countryside – the destruction armies caused was often in the form of forced extraction via contributions and billeting as the next section shows.

5.3 The war's impact on public revenues

Finally, data on public revenue and expenditure lets us investigate the War's impact on urban economies even more clearly. The fact that many cities kept detailed account books throughout the War is a sign that the public sector did not collapse as is sometimes suggested. While records for the period between 1630 to 1636 – which was marked by plague and an increasing number of sieges and occupations – are among the most spotty, the consistency in bookkeeping is remarkable. Indeed, per capita revenues rose in most cities as figures 5 and 6 show and as the literature on warfare and fiscal capacity would predict.

At the city-level, two facts are immediately obvious: First, real revenue per capita was higher in Imperial cities than in territorial cities – with the exception of Leipzig, a territorial city reporting a spike in revenue per capita. Second, real revenue mostly peaked early on in the war and declined thereafter. This is interesting because evidence from other regions in Europe suggests that once a war has increased the level of extraction does not return to its pre-war levels but stays at more elevated levels than before (Brewer 1989; Karaman & Pamuk 2013). This is sometimes called 'the ratchet effect' (Peacock & Wiseman 1961) and is known for furthering the development of a true fiscal state. I will discuss the reasons for the decline in revenues towards the end and after the War and its implications below. While revenue per capita is an important measure to understand the state of urban finance during wartime, it is a relatively blunt sword. How were these revenues generated and how did this affect the urban economies?

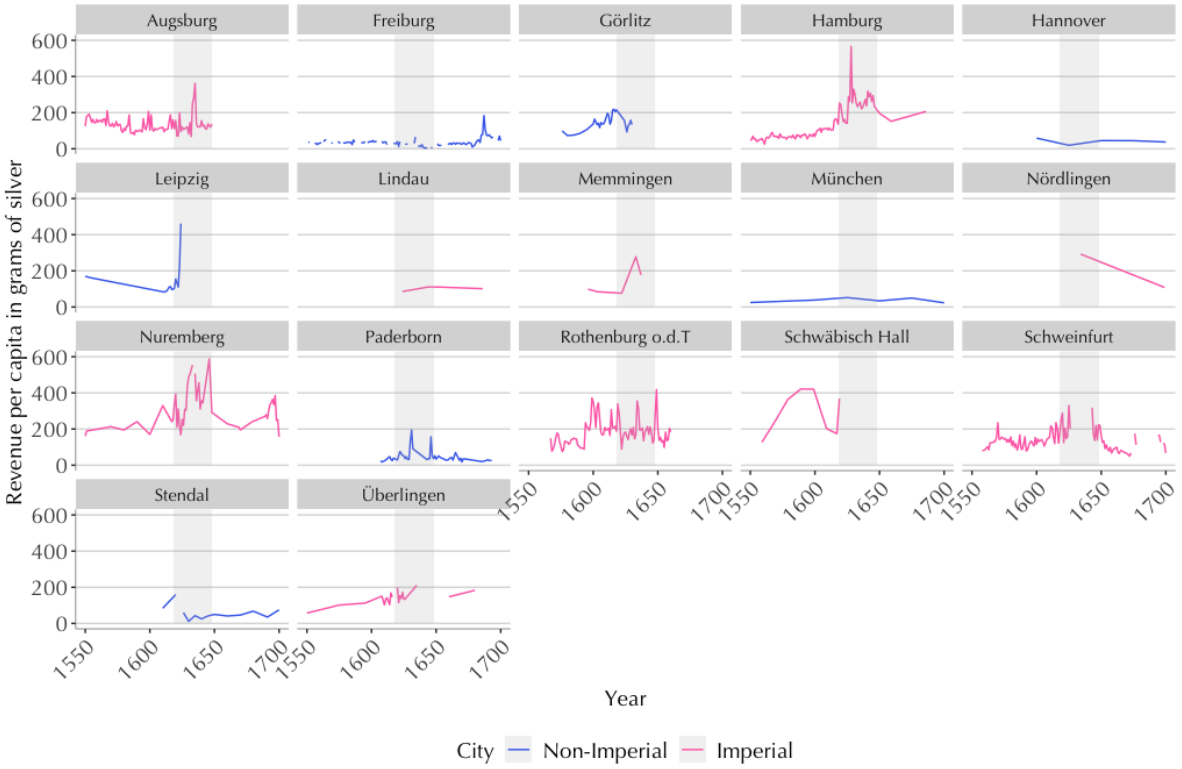

Figure 5: Per capita revenue in grams of silver in 17 cities, 1550-1700.
Data: author's calculations.

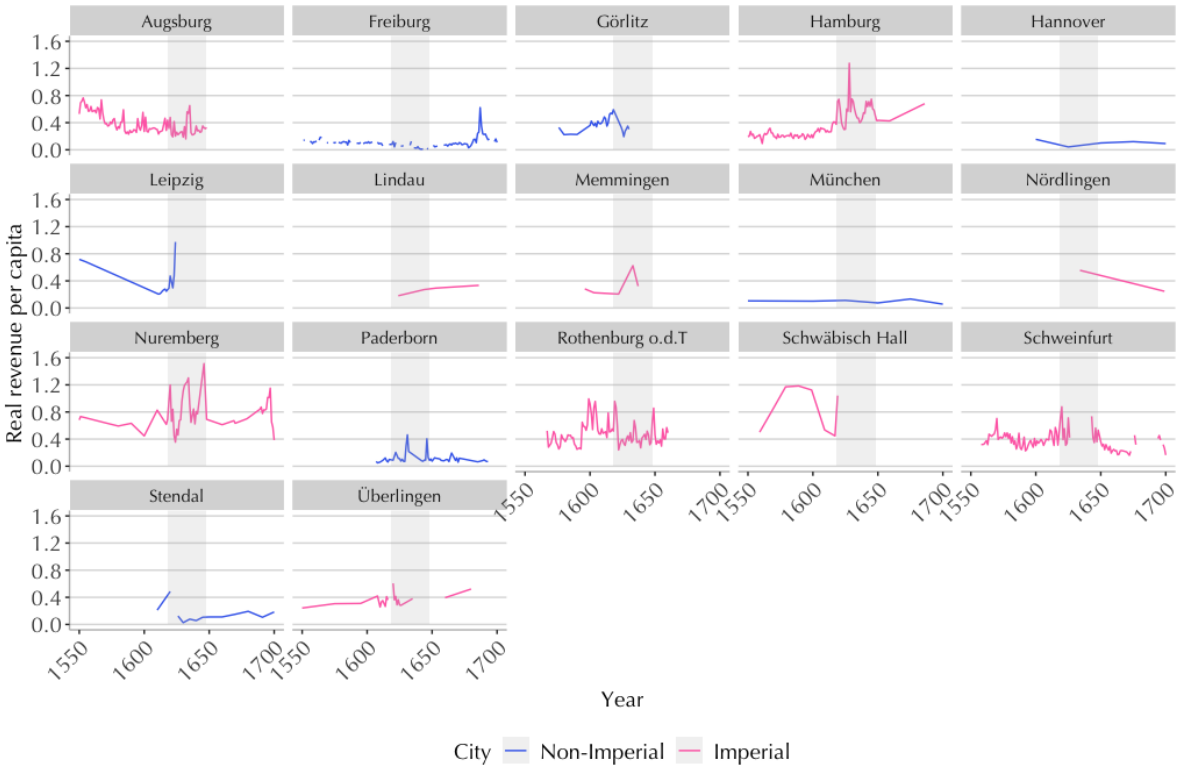

Figure 6: Per capita revenue as number of affordable annual consumption baskets in 17 cities, 1550-1700.

Data: author's calculations.

In general, cities raised revenues mainly through three channels: direct taxation, indirect taxation and debt issue. Other smaller sources of incomes were fees and fines of all kind, income from rent and "entrepreneurial" income such as revenues from the city's own mills, wine cellars and other commercial enterprises. Direct taxation here includes both regular, sophisticated wealth taxation as well as any kind of wealth- or per capita-based war tax. Indirect taxation includes taxes on consumption goods (wine, beer, flour, etc.) as well as customs. Debt issue is any kind [5] of public debt the city raised. During the Thirty Years' War the revenue share from direct taxation nearly doubled, on average, from 20 to 40 percent. This happened in both imperial and territorial cities as figure 7 panel I shows. In contrast, the share from indirect taxation stayed flat in Imperial cities at around 22 percent whereas it increased from a secular low-point of 10 percent to almost 20 percent in territorial cities (see figure 7 panel II). Tlusty (2014) suggests consumption taxes made up around 30 to 50 percent of total revenues – but that is excluding income from credit. Moreover, her study covers four cities only.

Figure 7: Share of direct and indirect taxation in total revenues, 1550-1700. Each point represents a city-decade average.
Data: author's calculations.

[5] Cities commonly issued both annuities and perpetuities at interest rates varying between 4 to 6 percent. These were sold to locals and non-locals alike. The identity of creditors is explored further below.

The implications of this are clear: the increase in revenues per capita came predominantly from direct taxation, i.e. were extracted from private citizens' wealth. Together with taxes on consumption goods, between 50 to 60 percent of total urban revenues came from taxes. The high share of wealth taxation is remarkable for a pre-industrial community – for comparison, in fifteenth century Siena more than two thirds of revenues came from consumption taxes and less than 10 percent came from direct taxation (Fochesato 201) . The Republic of Venice reports similar shares with 80 percent of revenues coming from indirect taxation (Alfani & Di Tullio 2019, p. 154). The fact that indirect taxation stayed flat in Imperial but declined in territorial cities is likely a reflection of the fact that in Imperial cities the decline in available household wealth from local citizens was counterbalanced by the increase in the number of soldiers who consumed beer and other local goods (Tlusty 2014).

To better understand the impact of wealth taxation, a brief account of its assessment and collection is necessary. Wealth taxation was a common feature in almost all German towns regardless of size or status. By the sixteenth century, wealth taxes were collected across two installments each year, around Easter and after harvest-time. Contrary to wealth taxes in Italy (Alfani 2015), wealth taxes in Germany were not levied on real estate alone but also on mobile goods (such as household items, merchant inventory, provisions, etc.) and even financial assets (such as annuities). In some instances, authorities even taxed an estimated income – often called *"Nahrung"* or *"Hantierung"* [6]. Total assessed wealth was taxed at an equal rate across the population, i.e. it was not progressive. However, given its broad definition of wealth – including mobile and financial wealth – it was still less regressive or "unfair" than consumption taxation. As consumption taxes were levied on staples, they affected the poor more than the rich. This was also perceived as such by contemporaries as this line from Burckhard Zink, an Augsburg citizen keeping a diary, shows: *"Oh dear god, protect us through your kindness!... the common people do not want to pay consumption*

[6]This was for example the case in Koblenz and Trier in 1624 where I can clearly trace it in the archival sources. It also appears as "*Hantierung*" in the Wildberg tax registers. (Heimes 2007, p. 42-44), (Etienne 1982, p. 61), (Laufer 1973, p. 48) an (Hartwig 1903, p. 44-45) also report income estimates as taxable wealth in various cities.

taxes and instead want to tax the wealth of the rich and those who have some property..." [7]. Nevertheless, it was difficult to raise tax rates of any kind without stirring resentment amongst citizens. Therefore, some of the revenue from direct taxation came from new war-taxes instead of raising existing tax rates. But these war taxes were raised very much in the same manner as existing taxes. Even so, wealth tax rates did increase on average during the Thirty Years' War as figure 8 shows. If we were able to include the tax rates on newly-introduced war taxes, we would see an even bigger increase.

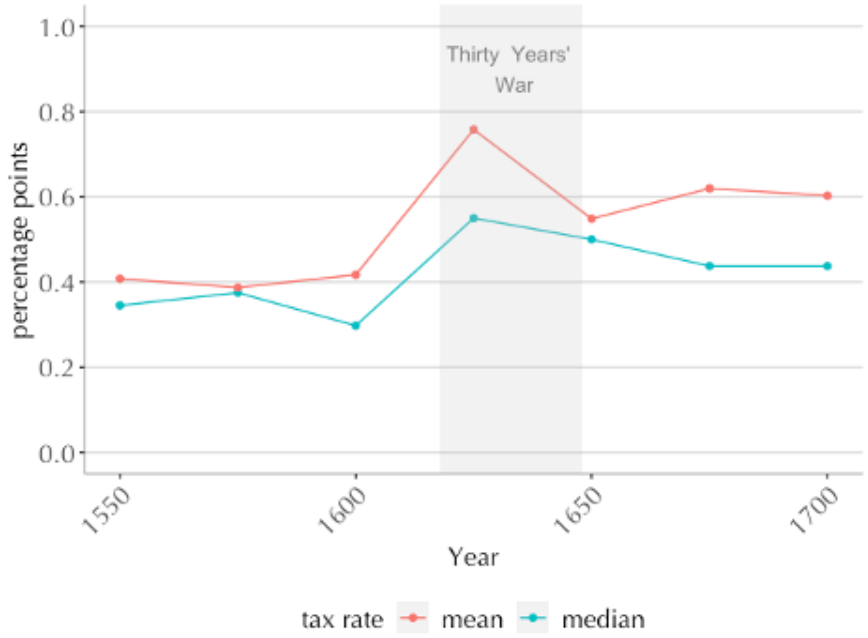

Figure 8: Average and median wealth tax rate in percentage points, 1550-1700, based on data for 22 cities across the period.
Data: author's calculations.

The third largest source of income for urban communities was debt issue. Cities issued debt in the form of annuities and perpetuities to locals and non-locals alike. Debt issue made up around 20 percent of total revenues in both Imperial and territorial cities before and at the beginning of the War, but declined to only around 5 percent in territorial cities and to 12 percent in Imperial cities by the end of the war – see figure 9. Given how sparse the data

[7] Translated by author. The original reads: "O lebendiger gott, behüet uns durch dein güetigkait vor unrat! ... das gemain volk will nit ungelt [d. h. Verbrauchssteuern] geben und wollen gross steur [d. h. Vermögenssteuern] auf die reichen und auf die setzen, die etwas hand, damit werden die reichen als armen, dass sie nit vermügen zu geben."

on revenues from debt are, this should be interpreted with care. Nevertheless, these trends fit with accounts from (Kaphahn 1912) and (Fuhrmann 2003) on public credit in Germany before the War and throughout.

Even Hamburg, characterized as a fiscal-military hub (Klerk & Wilson 2022) and one of the "winners" of the War due to its quasi-neutral position and its role as an important port and meeting place for diplomats, agents and brokers (Kellenbenz 1965), showed a very similar trajectory of a declining share of debt in overall revenue (figure 9). Therefore, while credit played a role for the urban financing of the War early on, it did not do so for period after 1630 [8]. The consequences of raising debt to finance a long and economically detrimental conflict will be explored further below.

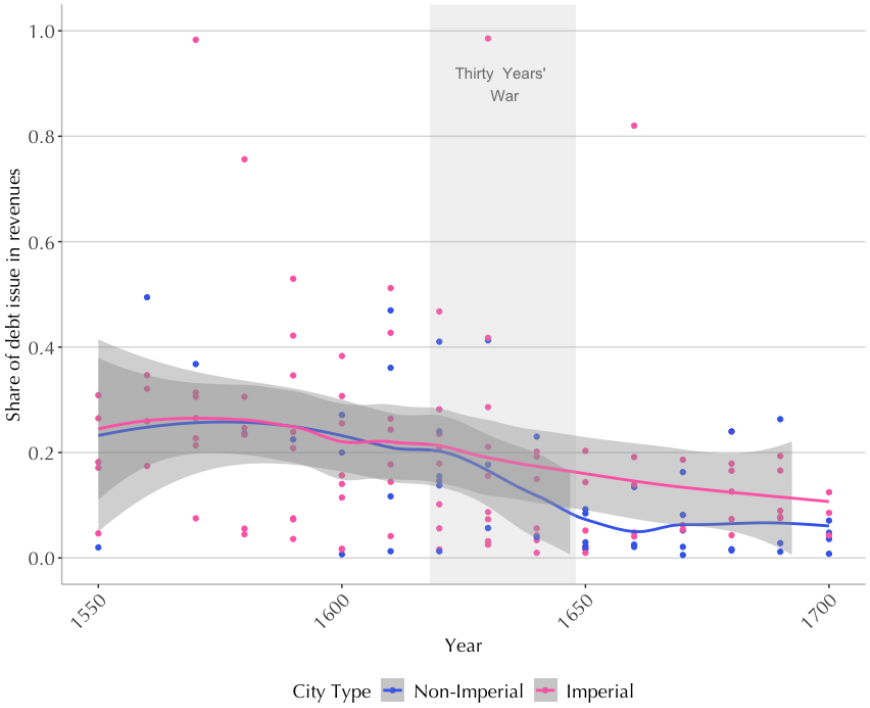

Figure 9: Share of debt issue in revenues, 1550-1700. Each point represents a city-decade average.
Data: author's calculations.

[8] Wilson (2008)'s broader perspective on debt as a tool of war-financing looks not only at urban communities but territories (p.802-805). However, he highlights similar trends of debt playing a larger role prior to and early in the War.

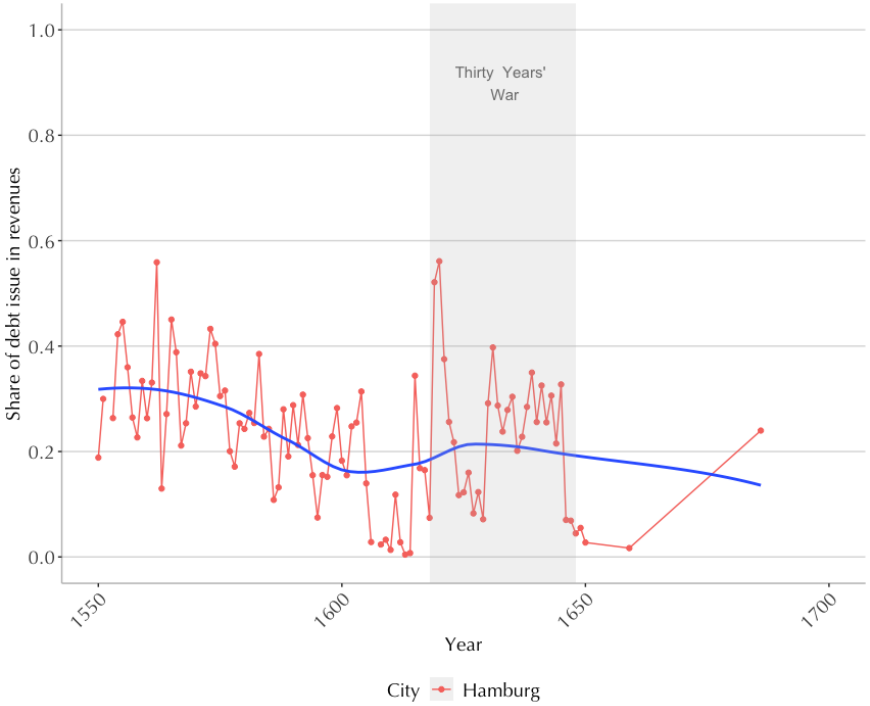

Figure 10: Share of debt issue in revenues, 1550-1700. Each point represents the yearly share of debt in total revenues; the blue line is a smoothed average.

Data: author's calculations.

5.4 Assessing the relative importance of extraction and destruction

This section seeks to disentangle how much of the decline in private wealth was due to extraction; with the assumption that what was not due to extraction was likely due to destruction (with some caveats see below). To do this, I calculate the average annual amount of real extraction (in terms of consumption baskets) from direct and indirect taxation over the period of the War. This number tells us how much was extracted on average per annum. I then multiply this value by the average number of years between the first pre-war and the first post-war observation of the sample cities for which I have data on wealth decline [9] (see section 5.2 for this sample). I begin with an overall estimate for average extraction and wealth decline across the entire sample, and then follow up for a subsample of Imperial Cities

[9] Ideally, these would be 1617 and 1649, however this is rarely the case.

and in territorial cities each. The assumption here is that, although the sample for which I have data on extraction is different from the sample for which I have data on wealth decline, they can be seen as similar enough to justify this approach. Lastly, I present estimates for those cities where there is a direct overlap between the samples: Augsburg, Nördlingen, München and Freiburg.

Across the sample of cities [10] for which data on private wealth was available, average real wealth declined by ca. 14 annual consumption baskets. The average number of years between the first pre-war and the first post-war observation was 44.5 years. The average annual extraction via direct and indirect taxes amounts to 0.14 consumption baskets. This implies that, total extraction over this period was around 6.2 consumption baskets (see table 1). That means, extraction via taxation can account for ca. 44 percent of the total decline in wealth observed. In Imperial Cities, this was slightly higher at 47 percent, and in territorial cities slightly lower at 41 percent.

	Total	**Imperial**	**Territorial**
Average wealth decline in consumption baskets	-13.98	-21.84	-5.00
Average number of years between first and last observation	44.53	41.38	48.14
Average extraction in consumption baskets	6.16	10.27	2.06
Extraction as % of total decline	44.1	47.0	41.2
Assumed destruction as % of total decline	55.9	53.0	58.8

Table 1: The role of extraction in explaining total wealth decline

If we assume that the decline in wealth that is unaccounted for is caused by destruction, this would come to between 53 and 58 percent. This would fit with Schaff (2023) who has

[10] Excluding Bregenz here as the first available year is 1634.

argued that wealth destruction was a substantial force for inequality reduction during the War. In general, no detailed assessments of the War's destructiveness with regards to physical capital exists at the local level. Taking into account Wilson (2008)'s cautionary remarks on the "myth of absolute destruction", we might conclude that not all of the remaining wealth decline can be explained by destruction. The interruption of trade and the closure of large merchant firms such as the Fugger's in 1657 (Ehrenberg 1896), certainly also explain part of the decline in wealth, which cannot be estimated here.

Taking a look at those four cities where we can match the decline in private wealth with data on extraction precisely, shows that extraction varied widely (see table 2). Whereas, in Nördlingen extraction can explain nearly 70 percent of the total decline in wealth, in Augsburg it can explain only 10 percent [11]. This fits with a detailed study of Nördlingen from (Friedrichs 1979, p. 115) who argues that "the loss of cash, jewels, plate and other movable property rendered to Swedish and then imperial soldiers as payment of military taxes [...] would account for by far the largest part of the decline in wealth". He also asserts that "there is little evidence of destruction of real property within the city walls" (Friedrichs 1979, p. 115). Similarly, the evidence on Augsburg is in line with a detailed account from Roeck (1989) . The city was occupied by the Swedish army between 1632 and 1635, and among the casualties was the city's infrastructure for drinking water (the *Lechwerk*) which was destroyed during a siege in 1634/35 (Roeck 1989, p. 531). Between 1618 and 1646, at least 20% of private dwelling were destroyed (Roeck 1989, p. 887). Therefore, destruction seems to have played a substantial role in Augsburg. In Freiburg, total extraction through taxation between 1600 and 1651 is larger than the observed decline in average wealth by a factor of five. This implies that either individual households were driven into debt or that a large part of the indirect taxation income actually came from non-residents such as soldiers.

[11]Note however, that while data on indirect taxation in Augsburg is available for the entire period of the Thirty Years' War, direct wealth taxation is not and had to be estimated. This estimation is very conservative. It is based on the amount of direct taxation in 1618 (which is likely much lower than its actual level in the 1620s and 1630s) and what we know about total extraction through taxation from (Roeck 1989, p. 875)

Lastly, in Munich extraction accounted for at least 13 percent of total wealth decline. In sum, I conclude that extraction via direct and indirect taxation can explain about 40 percent of the decline in wealth, although with large variation between cities.

	Nördlingen	**Augsburg**	**Freiburg**	**München**
wealth decline in consumption baskets	-22.55	-66.86	-0.19	-7.83
extraction in consumption baskets	15.71	6.56	1.00	1.07
extraction as % of total decline	69.6%	9.8%		13.7%
destruction as % of total decline	30.4%	90.2%		86.3%

Table 2: Case study of four cities: extraction as explanation for wealth decline

5.5 The war's impact on public expenditure

Looking at the revenue-side to understand the impact of the Thirty Years' War on the urban economy is not enough. To understand the full impact of an increase in revenue generation, we need to understand how these revenues were spent. This has hardly been done at all, but given that fiscal capacity can be allocated to economically harmful as well as beneficial purposes it is essential to understanding the economic effects extraction has on the urban economies. Figure 11 shows that expenditure per capita increased roughly at the same level as revenue per capita. This means cities revenues were used for immediate expenditure and not to build up reserves.

There were two main sources of expenditure during the War: defense payments and interest and debt repayments as figure 12 shows. Together, these make up around 60 to 70 percent of total expenditure. Both types of cities spent roughly the same share of their

overall expenses on defense. Defense here includes both spending on city militias, defensive infrastructure, weapons as well as contributions made to the Catholic League, the Protestant Union and payments to other armies made by cities. While such spending was minimal in both Imperial and territorial cities in 1550, already by 1600 these had increased to around 20 percent of expenditure. This implies that preparations for war seem to have begun earlier than the War itself. In general, these estimates represent very much lower bound estimates as the dataset only contains military expenditure that could be dated to a particular year. Below, I present an estimate of total defense expenditure where I take into account information about wartime expenditure not linked to a particular year.

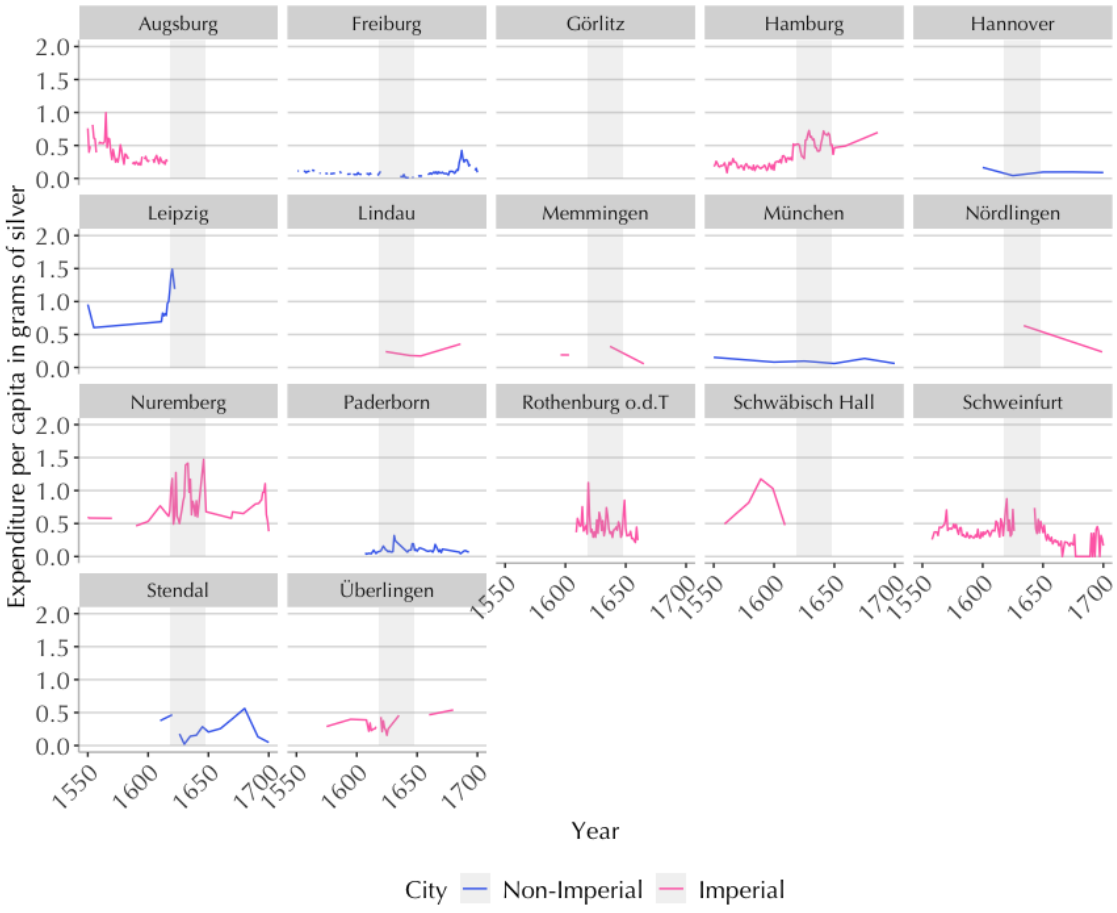

Figure 11: Per capita expenditure as number of affordable annual consumption baskets in 17 cities, 1550-1700.

Lastly, the share of defense spending in expenditure does not fall immediately after the war. In fact, in Imperial Cities it stays at high levels around 30 percent of total expenditure well into the 1700s. Only territorial cities show a downward trend from about 1660 onwards.

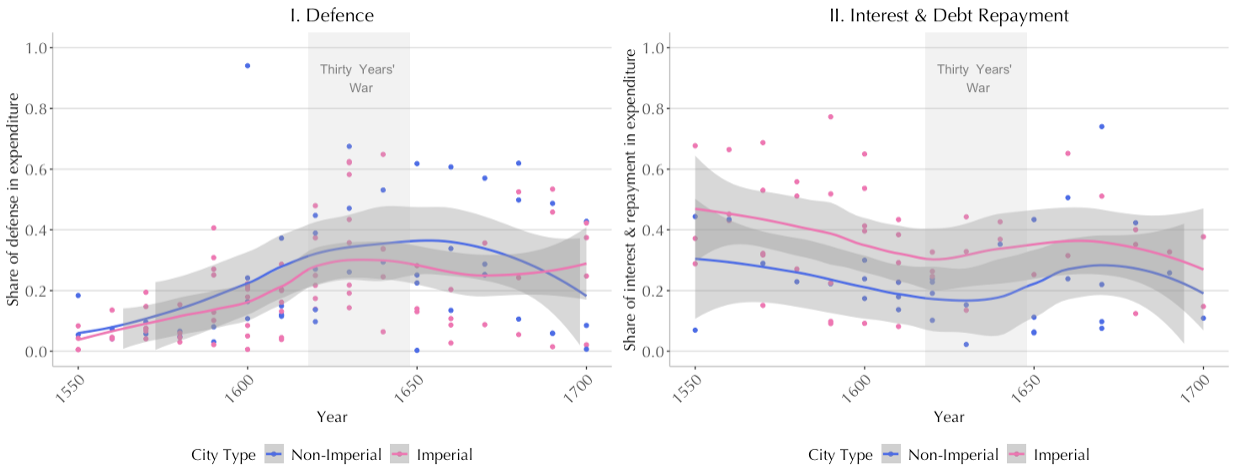

Figure 12: Share of defense payments and interest and debt repayments in total expenditure, 1550-1700. Each point represents a city-decade average.

Data: author's calculations.

Regarding the total amount of contributions and military spending by towns during the conflict, can we improve upon Theibault (2014)'s claim that these were "in the tens of millions of fl." (p.251)? Indeed, I find that for a sample of 24 towns[12] alone (for which information on wartime expenditure exists), an estimated 27.5 million Rhenish Guilders were spent on defense expenditure (again including both direct military spending as well as contributions to armies). Given that the Empire comprised between 200 to 300 broadly similar towns in this period and if we assumed their contributions to be similar, we would look at a total of ca. 270 million Rhenish Guilders. This is obviously a very daring speculation and should be taken as a ball park figure that requires further investigation and in particular data collection at best. But even if we only compare the contributions of those 24 towns at 27.5 million Guilders to Wilson (2008)'s estimates that the Imperial Treasury contributed

[12]These towns include both those investigated in detail in the previous section as well as 7 additional ones. The sample of 24 towns includes: Augsburg, Dinkelsbühl, Esslingen, Frankfurt, Freiburg, Görlitz, Hamburg, Hannover, Ingolstadt, Isny, Marburg, Memmingen, Mühlhausen, München, Nuremberg, Nördlingen, Paderborn, Rothenburg o.d.T, Schweinfurt, Schwäbisch Hall, Stendal, Ulm, Weilheim and Überlingen.

1.2 million Rhenish Guilders to the war effort directly and another 4 million Guilders to Wallenstein (p.406), the substantial contribution of urban Germany becomes evident. Those 24 towns alone contributed more than five times the amount the Emperor could raise. More importantly, the fact that these resources went to military purposes that did not benefit the towns beyond mere survival means that this was a large transfer from towns to territorial and imperial powers.

The other major expenditure was interest and debt repayments. These make up around 20 to 30 percent of total expenditure during wartime. In both types of cities, Imperial and territorial, there is a decline in the share spent on interest and debt repayments between 1550 and 1630 and a slight resurgence thereafter. Does this reflect a real decline in interest and repayment obligations during this period or is this a sign of an inability to pay? Many cities fell behind their interest payments towards the end of the war and could only make partial payments. The next section will explore this in further detail. Hence, the share of interest in expenditure should be understood as a lower benchmark estimate of the share interest payments obligations tied up in cities' expenditures. It reflects actual payments made – not interest and repayment obligations outstanding.

Taken together, spending on defense and debt are the biggest items in urban expenditure during wartime and afterwards. This is similar to what we observe for other early modern city-republics, e.g. Siena before 1450 (Fochesato 201), Venice (Alfani & Di Tullio 2019, p. 167) and territorial states (Ogilvie 2022, p. 15). Other spending on public construction, administration, entrepreneurial endeavours [13] and spending that can be classified as social spending, such as poor relief and schooling, made up a much smaller part of a city's budget during and after the war as figure 13 shows. This again is very characteristic of pre-modern states (Ogilvie 2022).

[13] As on the income-side this relates to spending on the city's own mills, wine cellars, trading rooms, etc. While cities partly ran them to generate profit, they were not always profitable in practice.

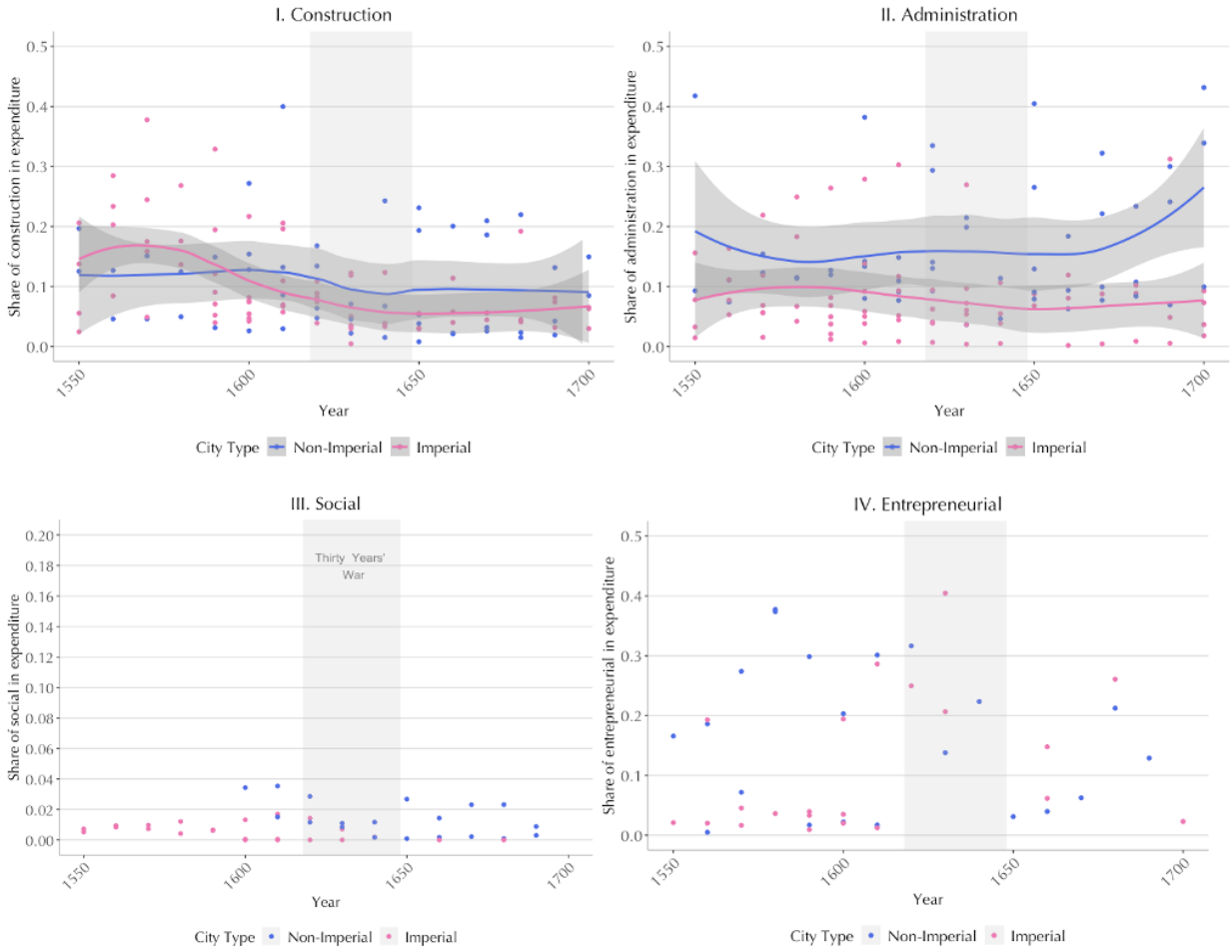

Figure 13: Share of construction, administration, social and entrepreneurial spending. Each point represents a city-decade. No trend-line estimates for panel III and IV due to insufficient data

Data: author's calculations.

There seems to be a slight downward trend in public construction – particularly in Imperial Cities – that starts around 1600. Before that, close to 20 percent of expenditure was spent on construction, while afterwards only 10 percent is spent in such a way. Anecdotal evidence further supports this: Augsburg boasted of many public construction projects that were still underway when the War broke out (Roeck 1989, p. 200) but which ended in the 1630s at the latest. These included a large city gate (*Rotes Tor*) which proved an effective fortification for the city, as well as a hospital for the poor (*Heiliger Geist Spital*). On a larger scale, this is also confirmed by data from Cantoni (2020) who extracted information

on building activity in all 2,300 towns listed in the *Deutsche Städtebuch*. As figure 14 shows, building activity on administrative, private, economic, social and even military buildings declined substantially during the war. While administrative and private building start rebounding in 1650, economic, social and military building activity remains at low levels until 1700. Private building activity surpasses pre-war levels by 1700, but none of the other types of building (except religious buildings) reach pre-war levels by 1700.

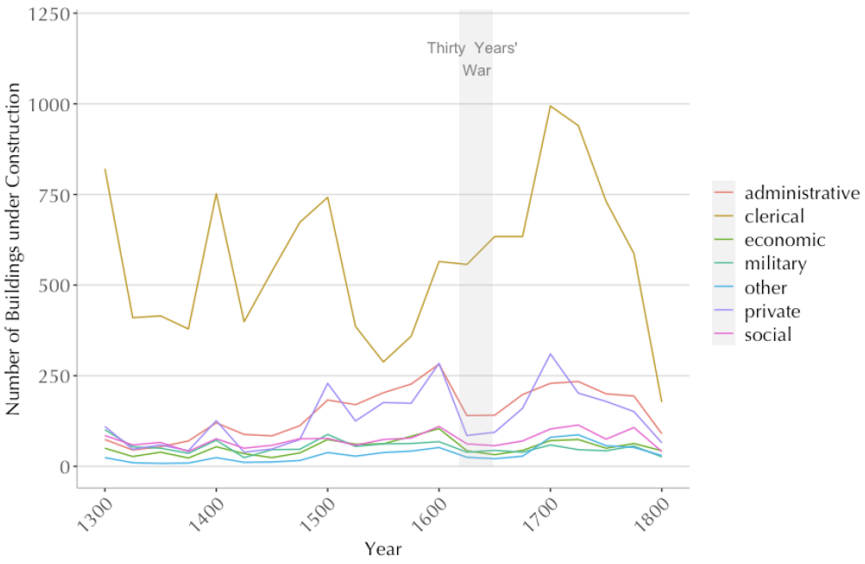

Figure 14: Construction in 2,300 Cities in the Holy Roman Empire, 1300-1800.
Data: Cantoni (2020)

With regards to administrative spending, territorial cities spend slightly more than Imperial Cities. This could be due to larger administrative apparatuses dictated by territorial overlords, but this must remain speculative for now. Public social expenditure is very low in both types of cities – never more than 5 percent of total spending. This does not take into account spending by the church or other institutions, such as hospitals and foundations, which might have been of a similar magnitude. Nevertheless, it can be said that social spending in early modern cities was minimal. Lastly, entrepreneurial spending seems to be higher prior to the war than afterwards – although data is limited here. In sum, defense and interest repayment were the main expenses of urban communities during and after war.

5.6 The war's impact on public debt

Cities recorded their total outstanding debts only in a few cases. However, annual interest and debt repayments were recorded faithfully. This means, we can back-calculate the amount of outstanding debt based on two assumptions: the interest rate and tenor (i.e. the time remaining until maturity). Based on a large body of evidence, I assume an interest rate of 5 percent and a tenor of 30 years. Comparing my estimates with those cases for which outstanding debt was actually recorded, I conclude that this approximates outstanding debt well. Now, given this caveat – what can we say about debt levels in urban communities before, during and after the War?

First, average debt levels were much higher in Imperial Cities than in territorial cities – by a factor between 12 and 29 as table 3 shows. Second, average debt more than doubled in real terms in both types of cities between 1600 and 1675 as figure 15 shows. Third, the average increase hides large variation across cities – particularly among the territorial cities. Most Imperial Cities saw their real debt at least double, while territorial cities had less drastic increases with the exception of Paderborn which saw the most drastic increase of all – its debt increasing nearly tenfold. As mentioned above, towards the end of the War cities struggled to pay the full amount of interest owed. That means a) the debt estimates presented here are lower benchmark estimates and b) debt levels for 1675 are a more accurate reflection of real outstanding debt than those for 1650 because immediately after the War cities struggled more with paying their full interest on time. Note that, wherever possible, I included information on missing interest payments to arrive at the most accurate debt estimates possible.

Year	Imperial without Hamburg	Imperial with Hamburg	Territorial
1550	324,237	373,858	27,328
1575	491,156	521,393	26,778
1600	591,094	620,725	31,023
1625	682,536	848,710	29,984
1650	818,253	1,049,848	41,404
1675	1,240,593	1,894,563	43,657
1700	855,160	855,160	33,229

Table 3: Average outstanding debt in grams of silver, 1550-1700

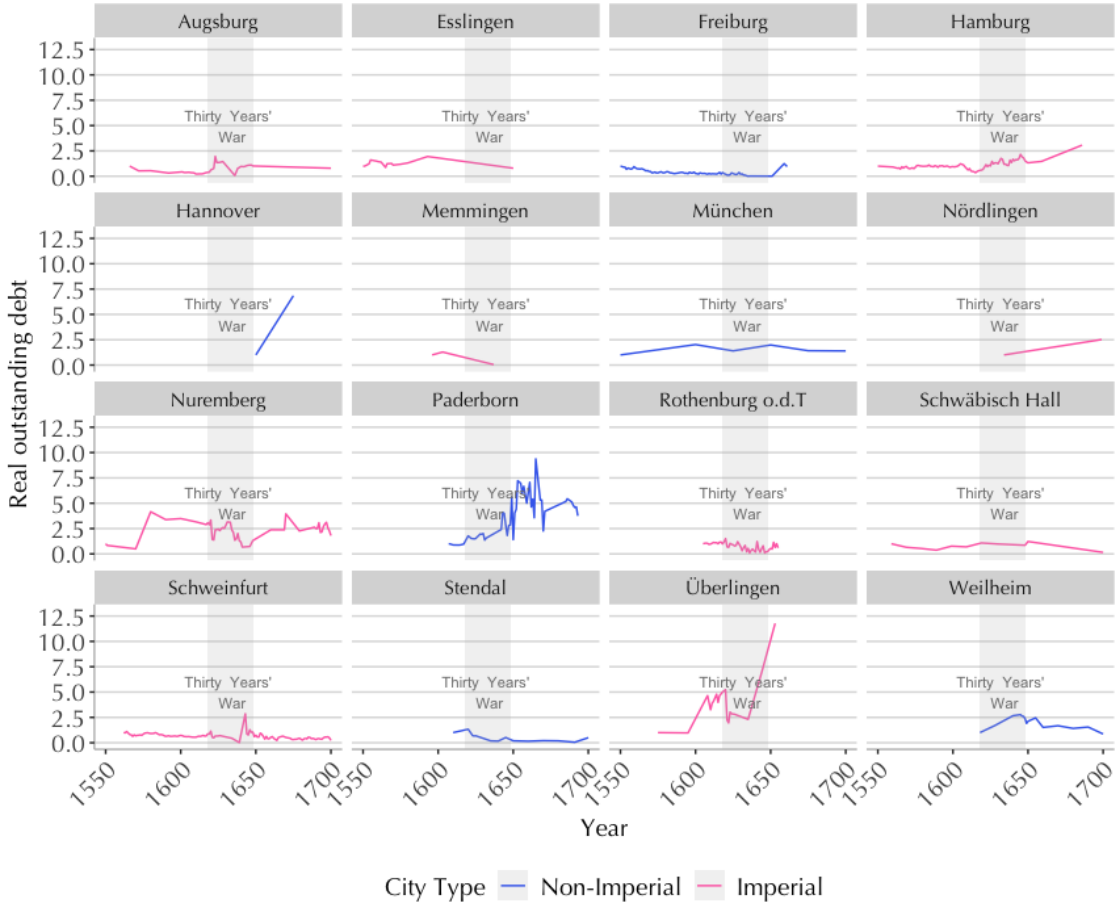

Figure 15: Real outstanding debt, index = 1 at first available pre-war year

Data: author's calculations.

So far, it is fair to conclude that debt increased substantially throughout the war, but that – bar a few exceptions – Imperial Cities saw a larger increase in their debt levels than territorial cities. Increasing debt levels can be a sign of a successful polity North & Weingast (1989); Stasavage (2011) – in particular if the money raised is put to economically beneficial endeavors with pay-offs that outstrip interest rates. Moreover, a city's debt should be compared to its assets to assess its financial position. How can we be sure this increase in debt is not a sign of a flourishing urban economy?

First, I will examine the available evidence on cities selling assets to finance interest and debt repayment as a sign that debt levels were unsustainable[14]. This happened for example in the town of Neubrandenburg in 1671 where all public assets were pledged to the city's creditors (Boll 1856, p. 656-657). One of its largest creditors was in fact a former city magistrate. By 1700, when the citizens raised their concerns about the city's finances to the council again, these assets were still pawned. Similar evidence is found for Ravensburg, which sold four of its bailiwicks to finance interest payments in 1649 (Wolf 1991, p. 93). Again, as was the case in Neubrandenburg, the beneficiaries of these sales were the city's current mayor Andreas Hyrus von Honburg and its former mayor Niklaus von Deuring who purchased these bailiwicks. In 1650, the city sold a further two mills and two farms, and a few years later a village and a castle (Wolf 1991, p. 93). In 1677, the city pledged its most lucrative asset, the bailiwick of Schmalegg, to a monastery for twenty years. In addition to this, the city regularly exerted its influence on one of the local foundations to cover holes in the budget (Wolf 1991, p. 126) – even as late as 1692 the city urged the foundation to sell assets to finance its debts. In contrast to this, the situation looked slightly better in Nördlingen. Nördlingen was able to reduce its wartime debts by two-thirds until 1670. However, from then on, the outstanding debts combined with renewed warfare (War of the Spanish Succession) led to another increase in debt levels. The city also resorted to asset

[14]vidence on public assets directly is hard to come by. Only for the period 1790-1800 did I find statistics on public assets for Wangen, Leutkirch, Buchau and Nuremberg. Except for Leutkirch, all cities had more debts than assets. Their debt ratios varied between 1.1 (Nuremberg) and 2.5 (Wangen).

sales beginning in 1709 and culminating with the sale of the entire village of Lierheim in 1739 (Friedrichs 1979, p. 166). Lastly, the city of Schwäbisch Hall already started selling its assets to finance wartime expenditure and interest and debt repayments in 1629. By 1649, it had sold a total real assets worth 78,827 Rhenish Guilders (Riegler 1911, p. 101). Between 1618 and 1648, it pledged another 740,848 Rhenish Guilders worth of public real estate. To put this into perspective, it's annual revenues between 1600 and 1619 were only around 75,000 Guilders. While this evidence remains anecdotal, it strongly suggests that rising debt levels were not corresponding to rising asset levels. Therefore, debt cannot be understood as a sign of a flourishing urban economy.

Figure 16: Pamphlet with the title 'Sad complaint about the deplorable farewell of the well-known Mr. Credit, who in these days is found dead in every town.' The original reads: *"Trawrige Klag über den erbärmlichen Abschied des wolbekandten Herrn Credits welcher heutigs Tags schier an allen Orten tod gefunden wird."*

Source: Paulus Fürst Publishing House, ca. 1650.

Second, I will examine the evidence on cities' (in)ability to pay interest and accruing unpaid interest debt which had to be paid off later. Again, the only evidence available so far is anecdotal. A pamphlet published around 1650 (see figure 16) however laments the "death

of Mr. Credit everywhere" which suggests that the examples listed here were a common experience across urban Germany. While interest payments in the 1640s in Ravensburg hover around 20 percent of total expenditure, by 1662 they amount to 61 percent of expenditure without any evidence that additional debt had been taken on in this period (Wolf 1991, p. 92). This suggests that interest paid during the war years does not reflect actual interest obligations, but rather minimum payments the city could afford. In Stendal, the accounts explicitly record interest payments in arrear and in 1700, about 23 percent of debts and unpaid arrears were either waived or restructured (Fischer 1913, p. 54-55). In Überlingen, between 1618 and 1653 debt increased by 50 percent in real terms – but if interest arrears are included real debt actually increased by 70 percent at least (based on (Möllenberg 1956, p. 59-61)). Similarly, Leipzig already had accumulated 290,000 Rhenish Guilder worth of interest arrears by 1623 – that is 7-8 percent of its total debt (Hattenhauer 1998, p. 28).

A final approach to assessing indebtedness is through the evidence on city bankruptcies and imperial commissions sent out to re-organize public finances. I will also look at who the creditors were and how this might have influenced decisions on debt forgiveness. In general, governments and rulers wanted to avoid debt forgiveness and protect creditor's interests (Wilson 2008, p. 803). The Imperial Cities, which had their own representation at the *Reichstag* after the War, published a memorandum in 1644 in which they demanded the temporary suspension of debt repayment claims (Hattenhauer 1998, p. 40). The issue of debts became a major concern across the Empire and the Reichstag issued a "landmark ruling" in 1654 [15] (Wilson 2008, p. 804) that decreed "a three-year moratorium on capital repayments" and "allowed debtors to set their own level of payment for the following seven years" (Wilson 2008, p. 804). Moreover, a quarter of interest arrears up to 1654 were written off. Despite these concessions, there was no general repudiation of debt. As I have shown above, interest and debt repayments still made up more than 20 percent of territorial and more than 30 percent of Imperial Cities' expenditures, on average, by 1700 – see figure 12.

[15]This assumes imperial superiority over territorial autonomy and the decision was passed without the consent of the territorial lords of Brandenburg and Bavaria (Wilson 2008, p. 804)

In fact, the town of Werl only cleared its debts from the Thirty Years' War in 1897 (Wilson 2008, p. 805). In addition, many cities were visited by Imperial Commissions with the aim to re-organize their troubled finances and prevent bankruptcies outright. Between 1618 and 1700, I have found evidence for serious town-versus-council conflict related to fiscal and administrative issues (sometimes intwined with issues of public representation on councils) in seventeen cities [16]. In many of these an Imperial Commission intervened.

Who were the creditors that had bought all this public debt? Most cities sold their annuities and perpetuities widely, both to locals and non-locals alike. But it was not only urban citizens who bought public debt, we also find noblemen and -women, religious institutions and other cities among the creditors. For example, in 1631 Isny, at least 25 percent of interest payments flowed to creditors who were local citizens, while 9 percent flowed to citizens of one of three neighboring towns (Memmingen, Überlingen, Ravensburg). Unfortunately, the identity of the remaining creditors is unknown. By 1659, only 16 percent of interest went to local creditors, while 20 percent went to Swiss creditors and another 7 went to other foreign creditors. The share of Swiss creditors seems to have shrunk in 1680 but even so, in 1775, 33 percent of creditors were classified as foreign with their share in outstanding debt being 44 percent. Memmingen shows similar trends, in 1622, 67 percent of total debt was bought by two local citizens, one being a mayor of the town. In 1708, interest payment flows show that 18 percent flowed to Swiss creditors and another 25 percent flowed to other non-Swiss foreigners. That is, 43 percent of interest payments go to non-locals. Another 16 percent go to noblemen and women and 7 percent to religious institutions. Only 26 percent go to local citizens. The rest goes to imperial institutions, territorial rulers or is of unknown ownership (Wolf 1991, p. 88-90). While two datapoints don't make a trend, it seems that the creditors of urban communities shifted from a broader citizen-base before the War to a more dispersed base afterwards. This also fits with the results above which show that private

[16] These are Basel, Braunschweig, Bremen, Danzig, Erfurt, Greifswald, Halle, Hamburg, Heilbronn, Köln, Lübeck, Lüneburg, Magdeburg, Mühlhausen, Neubrandenburg, Schwäbisch Hall and Weissenburg. This is based on preliminary work on town-versus-council conflict for which I have surveyed much of the available literature on social conflict in early modern Germany (see Friedrichs (1982) for an overview).

wealth declined – when cities could not raise debt from their own citizens they had to find creditors elsewhere.

6 Conclusion

This paper has examined the impact of the Thirty Years' War on urban communities in Germany and the role they played in financing this War. Based on novel data it showed that civic wealth in urban communities declined by 34 percent on average. It also showed that the Thirty Years' War was largely financed through extraction at the local level – using existing fiscal capacity in urban communities – which hurt these communities economically. In comparison with the Imperial Treasury, urban communities provided at least five times the amount of financial resources to armies involved in the conflict. These resources were mainly raised through taxation and debt issue. On average, extraction via taxation might account for about 40 percent of the wealth decline. In this way, the key tenet that "The state made war and war made the state" does not describe very aptly what happened during one of pre-industrial Europe's largest wars. Instead of imperial centralization, war-financing is contracted to military entrepreneurs who rely on pre-existing local administrations to provide the financial resources needed to fund the war. After the war, fiscal capacity accelerates at the level of the medium and larger principalities which incorporate cities and their fiscal administrations into their own and suppress urban autonomy more strongly than before.

Lastly, the paper shows that public debt doubled between pre- and post-war period in most cities. These increasing debt levels were not matched by increasing asset levels. In fact, many cities were struggling to pay interest and repay debts. Several communities resorted to selling public assets to finance interest payments. Taken together, the decline in civic wealth through extraction and the consequences of unsustainable levels of urban public debt, are part of the explanation of urban Germany's decline during the early modern period. The Thirty Years' War constituted a large, negative shock to urban wealth that persisted via

high public debt levels. These results are also relevant to recent work which suggests that improved long-run economic performance has occurred through a decline in the rate and frequency of shrinking, rather than through an increase in the rate of growing (Broadberry & Wallis 2017). Therefore, it should feature in explanations of Germany's urban economic decline within the Little Divergence Debate.

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