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The Holy Roman Empire at Bay: financing the defence against the Ottomans, c. 1560-1610

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Abstract
How did the Holy Roman Empire solve the collective action problem of defending itself against the Ottomans between 1566 and 1606? To answer this question, the article first reassesses the extent to which the imperial estates paid their defence dues. The new approach followed here indicates that with on average 72.5 percent, compliance rates were more than 15 percentage points lower than previously suggested. The article then statistically examines factors that influenced compliance, finding that the perceived legitimacy of the grant of a Turkish Aid by the imperial diet increased the estates' willingness to pay. Also, it finds that several groups of estates were willing to pay larger shares than their respective control groups. It argues that while the emperor used the funds to finance the wars with the Ottomans, the primary motive of these estates for contributing was securing the emperor's support in protecting private property rights.

I.

In 1521, the Ottomans took Belgrade and with it the key to the kingdom of Hungary. Five years later, the forces of Süleyman the Magnificent routed King Louis of Hungary's army at Mohács; another three years later, they invested Vienna.[1] More by good fortune than design the city held out, but the threat remained. In 1532, the sultan called off a second attack on Vienna only when a relief force mobilised by the Holy Roman Empire approached. Imperial troops under Sebastian Schertlin managed to inflict heavy losses on superior Turkish

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[1] János B. Szabó, "The Ottoman Conquest in Hungary: Decisive Events (Belgrade 1521, Mohács 1526, Vienna 1529, Buda 1541) and Results," in *The Battle for Central Europe: The Siege of Szigetvár and the Death of Süleyman the Magnificent and Nicholas Zrínyi (1566)* (Leiden: Brill, 2019).

forces raiding Lower Austria.[2] In effect, a stalemate began to take shape: The Ottomans controlled the central part of Hungary along the Danube and the Habsburgs the regions to the north and west, while the voivode of Transylvania ruled what remained of the country in the east (Figure 1).[3]

Stalemate meant anything but calm, though. Border raids and *Kleinkrieg* remained the order of the day even when truces interrupted major hostilities. Periodically such hostilities did break out, whether motivated by conquest or by the desire to force Charles V and his successors to recognise that the sultan was the only universal monarch of the world.[4] Süleyman launched several more attacks on the Habsburg-dominated parts of Hungary, and in 1593 Ottoman expansion in Bosnia triggered the Long Turkish War that lasted until 1606.[5] During the wars, important fortresses would change hands, but the upshot is that from the 1530s, the Ottoman onslaught on Central Europe ground to a halt.[6] All in all, the frontier in Hungary held.

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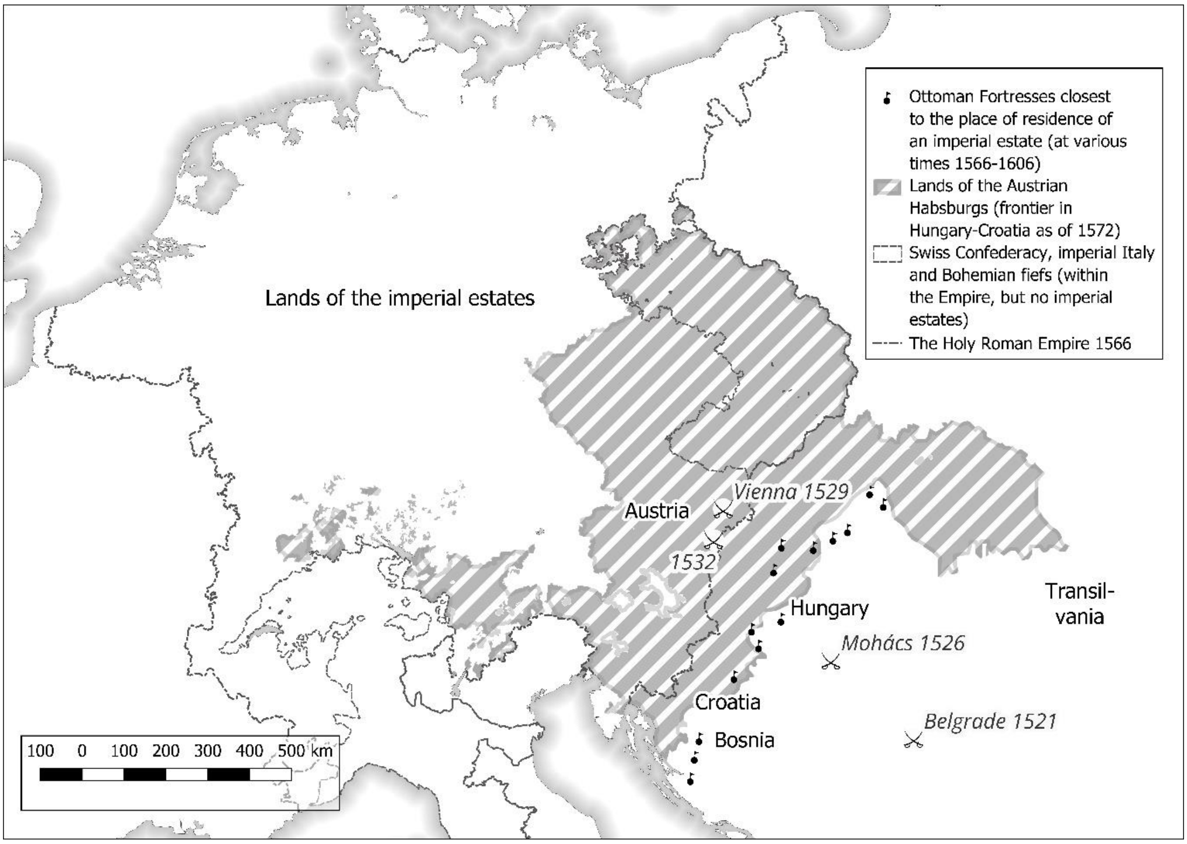
[2] Klaus-Peter Matschke, Das Kreuz und der Halbmond: Die Geschichte der Türkenkriege (Düsseldorf, Zürich: Artemis und Winkler, 2004), pp. 255-7.
[3] Géza Pálffy, "The Habsburg-Ottoman Rivalry in Hungary and the Mediterranean in the Age of Sultan Süleyman the Magnificent," in *The Habsburg Mediterranean 1500–1800* (Vienna: Austrian Academy of Science Press, 2021), p. 154.
[4] Matschke, *Kreuz und Halbmond*, pp. 253-4; Gábor Ágoston, The Last Muslim Conquest: The Ottoman Empire and Its Wars in Europe (Princeton, Oxford: Princeton University Press, 2021), pp. 190-1, 198-200, 247-8.
[5] Pálffy, "Rivalry", p. 156.
[6] Maximilian Lanzinner, Friedenssicherung und politische Einheit des Reiches unter Kaiser Maximilian II. 1564-1576 (Göttingen: Vandenhoeck & Ruprecht, 1993), pp. 449-50.

Figure 1: The Empire, the Austrian Habsburgs and Hungary-Croatia



This is surprising. The literature emphasises that while the Ottoman Empire evolved into a fiscal-military state geared to warfare, the Habsburgs in the Holy Roman Empire were labouring under a host of disadvantages. Most of these stemmed in the first instance from the difficulty of raising money,[7] and ultimately from the Empire's political structure itself. Over the second half of the sixteenth century the problems grew more pressing. In 1577, the Austrian government anticipated costs of about 2 million guldens (fl.) per year for the defence of the Hungarian border (not counting the costs of defending Croatia, ruled in personal union with Hungary); thirty years later, they computed a total of 6.7 million.[8] The figures are not directly comparable, but it is evident that defence became

[7] Erol Özvar, "Transformation of the Ottoman Empire into a Military-Fiscal State: Reconsidering the Financing of War from a Global Perspective," in *The Battle for Central Europe: The Siege of Szigetvár and the Death of Süleyman the Magnificent and Nicholas Zrínyi (1566)* (Leiden: Brill, 2019); Géza Pálffy, "Der Preis für die Verteidigung der Habsburgermonarchie: Die Kosten der Türkenabwehr in der zweiten Hälfte des 16. Jahrhunderts," in *Finanzen und Herrschaft: Materielle Grundlagen fürstlicher Politik in den habsburgischen Ländern und im Heiligen Römischen Reich im 16. Jahrhundert* (Vienna: Oldenbourg, 2003).
[8] Pálffy, "Preis", p. 33; OeStA, HHStA, Reichskanzlei, Reichstagsakten 83a, fol. 144v.

increasingly costly. The Habsburgs were struggling and regularly had to bridge shortfalls by taking up loans from banking and merchant firms, towns and the high nobility.[9] Still, they managed to mobilise the necessary sums. How was this possible?

This article focuses on the contribution of the members of the Holy Roman Empire, that is, of the altogether more than 300 electors, other princes spiritual and temporal, and free cities, collectively known as the imperial estates. Until the 1960s, most historians assumed that they were unwilling to help: Ottoman raids caused widespread devastation in the Austrian lands but were believed to have been of little concern elsewhere.[10] Since then, the picture has changed. One of the main results of Schulze's seminal 1970s research was the finding that the estates proved willing not only to grant financial support for defence, but also to deliver on their commitments.[11] Subsequent research has added nuances. In the 1990s, Lanzinner found that large and wealthy estates were more willing to grant aids, which were a proportionally heavier burden for the many small and poor territories.[12] Earlier in this century, Rauscher stressed that the importance of the imperial estates for the defence of the frontier should not be overstated: Not all the money they paid reached the troops in Hungary.[13] However, in principle, Schulze's core findings concerning the willingness of the estates to pay remain uncontested.

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[9] ibid., "Preis", p. 43.

[10] John W. Bohnstedt, "The Infidel Scourge of God: The Turkish Menace as Seen by German Pamphleteers of the Reformation Era," *Transactions of the American Philosophical Society* 58, no. 9 (1968), pp. 6-7. But see Johannes Müller, "Die Verdienste Zacharias Geizkoflers um die Beschaffung der Geldmittel für den Türkenkrieg Kaiser Rudolfs II.," *Mitteilungen des Instituts für österreichische Geschichtsforschung* 21 (1900), p. 253.

[11] Winfried Schulze, Reich und Türkengefahr im späten 16. Jahrhundert: Studien zu den politischen und gesellschaftlichen Auswirkungen einer äußeren Bedrohung (Munich: Beck, 1978), pp. 360-3; ibid., "Die Erträge der Reichssteuern zwischen 1576 und 1606," *Jahrbuch für die Geschichte Mittel- und Ostdeutschlands* 27 (1978).

[12] Lanzinner, *Friedenssicherung*, pp. 505-6.

[13] Peter Rauscher, "Kaiser und Reich: Die Reichstürkenhilfen von Ferdinand I. bis zum Beginn des „Langen Türkenkriegs" (1548–1593)," in *Finanzen und Herrschaft: Materielle Grundlagen fürstlicher Politik in den habsburgischen Ländern und im Heiligen Römischen Reich im 16. Jahrhundert* (Vienna: Oldenbourg, 2003), p. 47.

There is one crucial issue that research has never addressed in this context: Defence is a public good, that is, a good from whose benefits, once it has been provided, no one can be excluded. Consequently, no one faces incentives to pay.[14] Freeriding – not contributing to the costs of maintaining troops and fortresses in Hungary while benefiting from protection – clearly occurred. However, it never occurred to an extent that hindered the Empire's ability to defend itself and maintain its glacis in Hungary. Again, this is surprising, especially when viewed through the lens of classical collective action theory. In the form suggested by Olson, this theory argues that in large groups, preventing freeriding requires selective incentives that reward cooperation or punish the lack of it.[15] While we will see that the liabilities of the imperial estates were politically and formally determined, it is not obvious that such incentives existed. To be sure, the imperial fiscal (the emperor's legal representative) did initiate proceedings against estates who failed to pay their dues. However, there seems to have been only a single case where he was successful. When push came to shove, the emperor never tried to use force but rather resorted to talks and persuasion.[16] Interpreting the payments of the estates as voluntary contributions therefore fits the evidence better than viewing them as taxes, which are by definition compulsory and backed by coercion.[17] Hence, the question remains: How did the Empire solve its collective action problem? This is an interesting and relevant question. After all, it is a truth universally acknowledged, that no constitution could function unless actors powerful enough to violate it with impunity accept it voluntarily. Unsurprisingly, therefore, historians have long treated the willingness of the estates to pay their defence dues as an indicator of how well the imperial constitution worked.[18] Answering the question this article is addressing therefore helps to explain *why* it worked as well – or poorly – as it did.

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[14] Joseph E. Stiglitz and Jay K. Rosengard, Economics of the Public Sector (New York: Norton, 2015), pp. 101, 105.
[15] Mancur Olson, The Logic of Collective Action: Public Goods and the Theory of Groups (Cambridge/MA, London: Harvard University Press, 1965/71), p. 51.
[16] Winfried Schulze, Reichskammergericht und Reichsfinanzverfassung im 16. und 17. Jahrhundert (Wetzlar, 1989), pp. 17-8; cf. ibid., *Türkengefahr*, p. 356.
[17] Stiglitz and Rosengard, *Economics*, p. 505. In this context, many historians use the term 'tax' in a looser sense. Cf. Schulze, "Erträge", passim, ibid., *Türkengefahr*, pp. 360-3 and Joachim Whaley, Germany and the Holy Roman Empire, vol. I (Oxford: Oxford University Press, 2012), pp. 34-5, 89.
[18] Schulze, *Türkengefahr*, p. 172; Lanzinner, *Friedenssicherung*, p. 449.

The rest of the article is structured as follows. Section II describes how the Empire financed defence between the 1560s and 1600s. In Section III, the sources for the contributions of the imperial estates are introduced; also, the size of these payments is reassessed. Section IV analyses the factors that influenced the estates' willingness to pay and suggests an explanation of the findings. Section V concludes.

II.

Under the feudal structure of the Holy Roman Empire, the imperial estates were expected to provide military services to the emperor. The extent of these obligations was recorded in the matricular registers compiled from the early fifteenth century onwards. A major update in 1521 – shortly after the election of Charles V – systematically listed how many horse and foot soldiers each estate was to maintain for one month and for the purpose of joining Charles on his journey to Rome, where the Pope was to crown him. This is why the burden defined for each estate came to be known as 'Roman Month.' The span was large: Thus, electoral- Brandenburg was assigned 60 horse and 277 foot, Marchtal Abbey just 1 horse and 4 foot.[19] Early on, the estates agreed on a key to convert these numbers into monetary payments, with each rider being reckoned 12 and each foot soldier 4 fl.[20] After some experimentation with alternative funding methods, the imperial diets from the mid-sixteenth century onward regularly voted specified numbers ('*multipla')* of the basic Roman Months (often called '*simpla*' in this context) to determine estate contributions to the defence of the Empire.[21] Between the 1560s and 1600s, such 'Turkish Aids' were granted in 1566, 1567, 1570, 1576, 1582, 1594, 1598 and 1603. For all these Aids except that of 1570, the contributions of the estates are well-documented.[22]

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[19] Adolf Wrede, ed., *Deutsche Reichstagsakten unter Kaiser Karl V.*, vol. 2 (Gotha: Perthes, 1896), no. 56, pp. 424-42; Peter H. Wilson, The Holy Roman Empire: A Thousand Years of Europe's History (London: Allen Lane, 2016), pp. 446-7.
[20] Heinrich Christian von Senckenberg and Johann Jacob Schmauß, Neue und vollständigere Sammlung der Reichs-Abschiede, vol. 2 (Frankurt: Koch, 1747), p. 324.
[21] Lanzinner, *Friedenssicherung*, pp. 465-6, 470-1.
[22] ibid., *Friedenssicherung*, p. 469.

The diet did not only vote Roman Months but also determined when they were due. Thus, the Aid of 1582 was to be paid in 10 tranches over five years, the one of 1603 in 8 over three years.[23] The emperor, finally, appointed two officials ('penny-masters') to collect the money: one for the north of the country, the other for the south. The penny-masters would notify the estates ('cite' them, as it was called) of how much each had to pay.[24] They were also responsible for rendering accounts to the imperial diet.[25] Many estates reacted to being cited by levying taxes on their subjects;[26] at least some used the chance to collect larger sums than those they would eventually hand over to the penny-masters.[27]

While the focus of this article is on the Roman Months the imperial diet granted, note that the emperors also requested Aids from the assemblies of eight of the ten circles into which the Empire was divided (the Austrian and Burgundian circles, being almost entirely Habsburg lands, were excluded). The circle diets voted multiples of Roman Months, payable by their members, just as the imperial diet did.[28] The other lands of the Austrian Habsburgs within the Empire (Bohemia and its fiefs) also contributed to financing defence, as did Habsburg-controlled Hungary.[29] In addition, the treasury received extraordinary contributions from some imperial estates: from Hamburg, for example, 23,000 fl. in 1599, from Magdeburg 53,300 in 1601. And finally, other governments sent subsidies: Italian fiefs of the emperor such as the grand duchy of Tuscany (75,000 fl. in 1593), and allies like Spain (e.g. 600,000 fl. in 1597).[30]

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[23] OeStA, Finanz- und Hofkammerarchiv SUS RA 85.1.1, fols. 78v.-79r.; StaBi Berlin, Ms.Germ.fol.393, fol. 0r.
[24] See e.g. StaBi Berlin, Ms.Germ.fol.393, fol. 271v.
[25] Schulze, *Türkengefahr*, p. 319.
[26] E.g. Hesse in 1576: Alfons Pausch, Türkensteuer im heiligen Römischen Reich Deutscher Nation (Cologne: Deubner, 1986), pp. 28-30.
[27] Schulze, *Türkengefahr*, p. 256; Whaley, *Germany*, I, p. 515.
[28] Müller, "Verdienste", pp. 267-8.
[29] OeStA, HHStA, Reichskanzlei, Reichstagsakten 83a; István Kenyeres, "Die Kosten der Türkenabwehr und des Langen Türkenkrieges (1593–1606) im Kontext der ungarischen Finanzen des 16. und 17. Jahrhunderts," in *Das „Blut des Staatskörpers": Forschungen zur Finanzgeschichte der Frühen Neuzeit* (Munich: Oldenbourg, 2012), p. 25.
[30] ibid., "Kosten", pp. 34-5.

This brings us to the question of how large the sums the imperial diets granted were not in terms of Roman Months, but of guldens. There are several reasons why answering this question is difficult. First, the matricular register was no modern membership directory but the result of more than 100 years of evolution. By the second half of the sixteenth century, it included rulers whose identity had been forgotten (such as the duke of Mase and the prince of Chalon), abbeys whose locations the penny-masters tried to discover in vain (for instance, Konzlingen and Hynoltshusen), and cities whose feudal bond with the emperor had lapsed or was otherwise dubious or disputed (e.g. Düren and Danzig, Figure 5, p. 21). Simply adding up the horse and foot soldiers listed in the register and converting the sums into guldens thus yields a value that bears an at best tenuous relationship with reality.

The imperial diet probably hoped that the penny-masters would eventually extract some money from doubtful members of the Empire like those mentioned above. This seems to be why they were kept on the register even when it was updated, as in 1545, 1551, 1557, 1567, 1571 and 1577.[31] In most cases, the updates reflected economic change. The estates emphasised this at the diet of Regensburg in 1541, whose concluding document stated that the contributions of some should be reduced 'because of their impoverishment' whereas others, 'whose wealth has obviously increased,' should pay more.[32] While they lacked any information necessary to determine by precisely how much the prosperity of their territories or cities had shrunk or grown, recent estimates suggest that the resulting adjustments – most of which amounted to so-called 'moderations' of the liabilities – were justified. Economically, Germany was doing anything but well. Real wages appear to have declined by around 40 percent between 1500 and 1600, while food consumption fell by approximately 35 percent and GDP per capita by 15 percent.[33]

[31] Adam Cortrejus, Corporis Juris Publici Sacri Romani Imperii Germanici Tomi I Pars Quinta Continens Matriculas Statuum Imperii (Frankfurt: Christian Genschius, 1707), p. 111-44.
[32] Albrecht Luttenberger, ed., *Der Reichstag zu Regensburg 1541* (Munich: de Gruyter Oldenbourg, 2018), no. 941, p. 3620.
[33] Ulrich Pfister, "Economic Growth in Germany, 1500-1850," *The Journal of Economic History* 82, no. 4 (2022), pp. 1085-91.

Using each currently valid version of the matricular register may sound straightforward, but there are more complications. Often, the imperial diet granted fixed-term remissions, and many estates thus favoured tried to tacitly perpetuate this lower rate. Conversely, estates whose *simplum* was increased ignored this decision and continued to pay according to their old, lower assessment.[34] The emperor might also intervene, entering into talks with recalcitrant estates. Sometimes, the result would be that he ordered the imperial fiscal to discontinue proceedings against estates who had fallen into arrears; in other cases, he would agree to remissions when the payment was already overdue. Thus, concerning the Aid of 1598 a survey of the penny-master accounts notes that by April 1602, count Ludwig of Hanau-Münzenberg (in modern Hesse) had paid a mere 600 fl.:

> 'And this count raised serious complaints concerning the passage of Spanish troops, the poverty of his subjects and other troubles, wherefore an agreement with his majesty was concluded that he should pay 5,000 fl. instead of the outstanding sum of the Aid *de anno* 98 (which outstanding sum amounted to 13,800 fl.). He did so on 4 October 1603.'[35]

The loans taken up by the Habsburgs cause further difficulties. For instance, the survey quoted above notes that in 1606, the penny-master informed the imperial fiscal of the intention of the elector of Trier to withhold half a tranche of the Aid of 1603 as compensation for a decades-old loan to Emperor Maximilian II: 'This had not yet been approved by his majesty. However, he' – the penny-master – 'believed that at the forthcoming imperial diet his majesty would not raise many objections.'[36] Similarly, in 1575 the elector of Saxony had lent the emperor 200,000 talers, which he offset against the Aids of 1576 and 1582.[37] Repeated updates of the matricular register, fixed-term remissions and backroom deals like these ones were not only challenging for the penny-masters who had to keep track of all this, but also created considerable uncertainty for the estates. Mistakes were

[34] StaBi Berlin, M.S.germ.fol.393, fols. 254v., 256r.
[35] StaBi Berlin, M.S.germ.fol.393, fol. 263v.
[36] StaBi Berlin, M.S.germ.fol.393, fol. 1r.
[37] StaBi Berlin, M.S.germ.fol.393, fol. 246r.

unavoidable: Count Everwin III of Tecklenburg in Westphalia, for example, paid 1,824 instead of 1,440 fl. towards the Aid of 1566.[38]

III.

The remarks above suggest that several if not all penny-masters were highly conscientious bookkeepers. Most of the material they left was compiled in preparation of the accounts they rendered to the imperial diet. Zacharias Geizkofler for example, Upper-German penny-master from 1589 to 1603, did not only register the sums he received from the estates, but also the types of coins they used to pay their dues.[39] His colleague Damian von Sebottendorf left a detailed register of when which estate had paid how much toward the Aid of 1582.[40] While his table lists North German estates only, the penny-master accounts of the Aids of 1566 and 1567 cover the entire Empire.[41] So does the survey quoted above. It is contained in a handwritten volume of around 650 pages whose introduction calls it 'the imperial fiscal's register of all imperial estates, how they are liable to contribute to the Roman Months, … as much as may be extracted from the payment registers and the fiscal minutes.'[42] The first c. 270 pages of the volume contain a matricular register, annotated with messy marginal notes concerning the payment of the Aid of 1603 (Figure 2). Another, more compressed section (c. 60 pages) covers the Aids of 1594 and 1598, with slightly less messy notes in the margins that concern the Aids of 1576 and 1582. The notes frequently reference the registers of the penny-masters from which the information was drawn and include additional details: which estates were not cited, which were granted remissions etc. The last dated entry related to a Roman Month payment is from 1611.[43]

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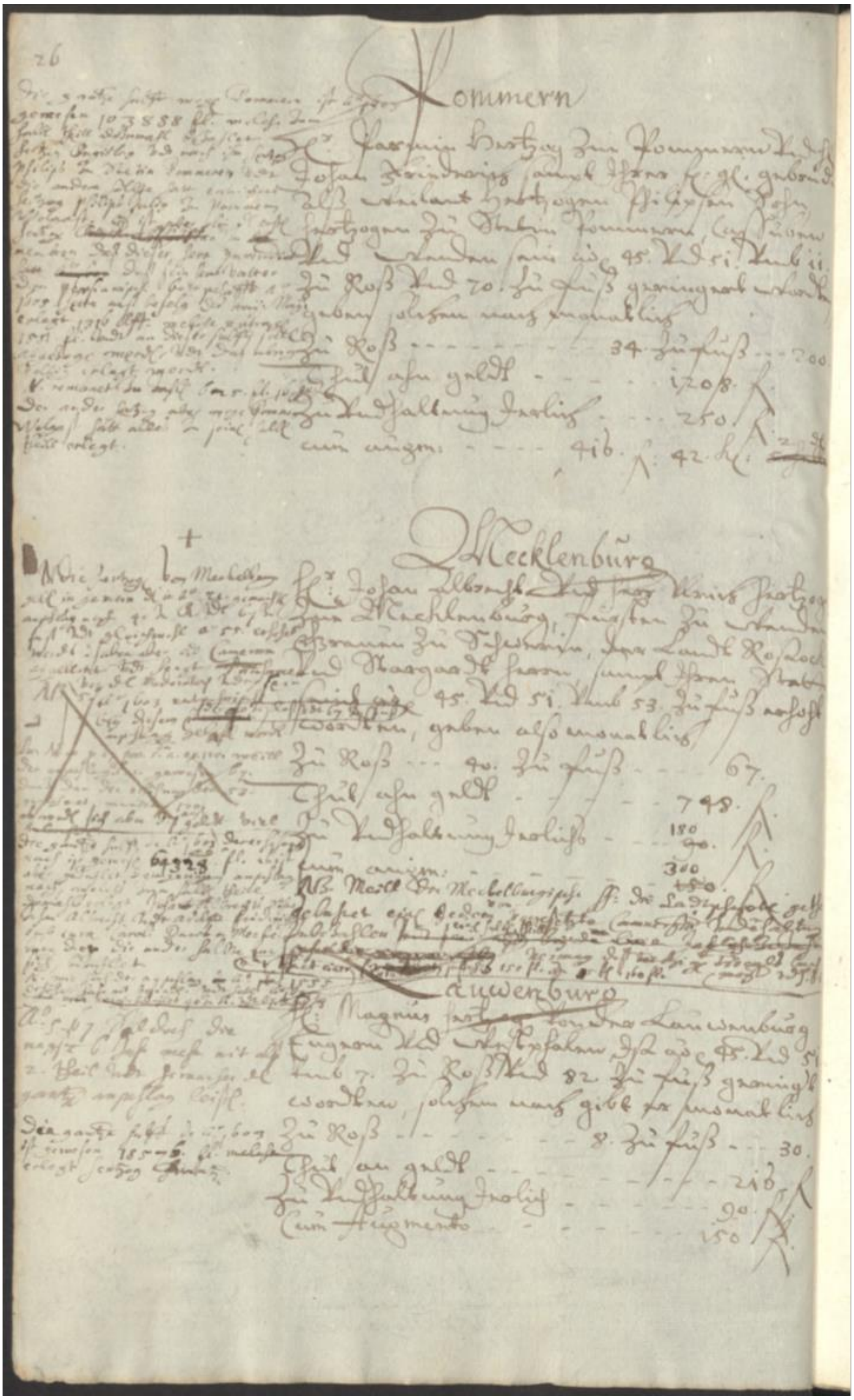
[38] Maximilian Lanzinner, ed., *Der Reichstag zu Speyer 1570*, vol. 2 (Göttingen: Vandenhoeck & Ruprecht, 1988), no. 339, p. 777. For the penny-masters see Schulze, *Türkengefahr*, p. 319.
[39] StAL Bü 436.
[40] OeStA, Finanz- und Hofkammerarchiv SUS RA 85.1.1, fols. 78v.-96r.
[41] Lanzinner, *Reichstag zu Speyer*, no. 339, pp. 765-82, no. 340, pp. 783-99.
[42] StaBi Berlin, M.S.germ.fol.393, fol. 5r.; cf. Schulze, "Erträge", pp. 174-6.
[43] StaBi Berlin, M.S.germ.fol.393, fol. 98r.

Figure 2: A page from the survey of the imperial fiscal[44]



[44] StaBi Berlin, M.S.germ.fol.393, fol. 29v.

Based on these sources, we can tell how much of their liabilities the imperial estates paid. Still, to do so accurately we need to make three preliminary decisions about what data to use. First, as noted above, the matricular registers also listed estates whose membership in the Empire was doubtful. To avoid arbitrariness, the decision about whom to include in the analysis follows that made by the penny-masters themselves: Everyone they cited is covered. This concerns, for example, Savoy, Hamburg and Danzig – estates that earlier research believed had been struck off the register when it was updated in 1545, but that in fact were still listed (and cited).[45]

Second, regarding the sums that the estates were to pay we again take the point of view of the penny-masters: The Roman Month-value they listed is the one on whose *multiplum* the analysis is based, rather than the figure which the estates themselves applied when they tried, for example, to perpetuate temporary remissions. Similarly, arrangements with the emperor agreed after the imperial diet had voted an Aid are disregarded. Take the case of Hanau-Münzenberg: In 1602, the emperor reduced the count's liability from 14,400 to 5,600 fl., which the penny-master eventually received. If we accept this *ex post*-remission, we must conclude that the count paid 100 percent of his dues. However, if we take the point of view of the penny-masters, his payment amounts to a mere 39 percent.

Third, the few estates that paid more than what they owed (on average 0.6 percent of those cited) are here assumed to have fulfilled 100 percent of their obligations. The variable to be explained by the analysis below – the compliance rate of the estates – is thus bounded by 0 and 1.

This approach leads to a minimalist estimate of the compliance rate which contrasts with the widely accepted result of Schulze's 1970s research. According

[45] Schulze, *Türkengefahr*, p. 340; cf. Johannes Müller, "Veränderungen im Reichsmatrikelwesen um die Mitte des 16. Jahrhunderts," *Zeitschrift des Historischen Vereins für Schwaben und Neuburg* 23 (1896), pp. 129-30; Rosemarie Aulinger, ed., *Der Reichstag zu Worms 1545*, vol. 1 (Munich: Oldenbourg, 2003), no. 113B, pp. 1088, 1097-8.

to Schulze, the estates paid on average c. 88 percent of their liabilities.[46] If we exclude certain estates from the outset and accept *ex post*-arrangements with the emperor, this value looks plausible. However, if we apply contemporary standards, the picture changes.

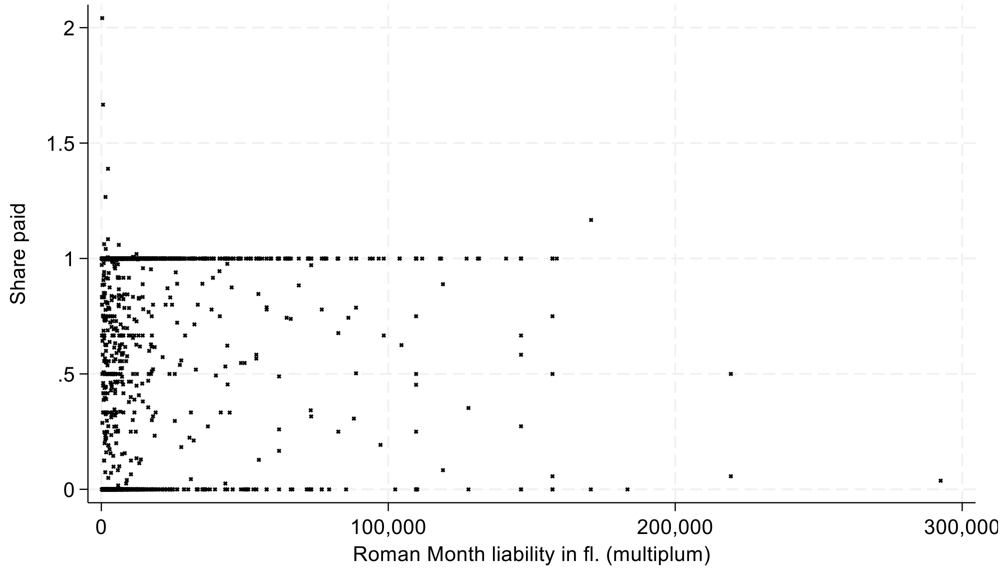
Table 1: Turkish Aids, 1566-1603[47]

Year	Granting assembly	Grant	Total collected	Mean compliance rate
1566	Diet of Augsburg	24 Roman Months	1.62 million fl.	0.85
1567	Diet of Regensburg	24 Roman Months	0.63 million fl.	0.67
1570	Diet of Speyer	12 Roman Months	-	-
1576	Diet of Regensburg	60 Roman Months	3.59 million fl.	0.72
1582	Diet of Augsburg	40 Roman Months	2.27 million fl.	0.72
1594	Diet of Regensburg	80 Roman Months	4.50 million fl.	0.72
1598	Diet of Regensburg	60 Roman Months	3.06 million fl.	0.66
1603	Diet of Regensburg	86 Roman Months	4.76 million fl.	0.69

The overall mean compliance rate is 72.5 percent (cf. Table 2, p. 17), which matches the average of 70-75 percent that Lanzinner found for the period 1548-76.[48] Dropping the estates which earlier research believed had been struck off the matricular register in 1545 raises the rate to 74.1 percent. Figure 3 shows how the shares paid by the estates were distributed in the decades between 1567 and 1611 (when the last payments towards the Aid of 1603 were registered).

[46] Schulze, *Türkengefahr*, pp. 360-3. Cf. e.g. Alfred Kohler, Das Reich im Kampf um die Hegemonie in Europa 1521-1648 (Munich: Oldenbourg, 2010), p. 90; Wilson, *Empire*, pp. 449-50.
[47] Own dataset and Cortrejus, *Corporis Juris ... Tomi I Pars Quinta*, p. 161.
[48] Lanzinner, *Friedenssicherung*, p. 469.

Figure 3: Roman Month liabilities vs. shares paid, 1567-1611[49]



How can we explain Roman Month-compliance? Gaining a clearer idea of which factors were associated how strongly with the willingness of the estates to pay helps answering this question. Earlier research suggested that the political status of the estates influenced compliance, with electors and princes being less willing to pay than prelates and imperial cities.[50] In the analysis below, estate categories are captured by binary variables: one for cities, another for prelates ('spiritual'), and a 'viril vote' dummy for estates holding an individual vote at the imperial diet (that is, electors and spiritual and temporal princes). The control group comprises counts, barons, abbots, abbesses, and imperial cities, whose representatives either shared a limited number of joint votes or, like the cities, held a non-binding *votum consultativum* only.[51]

Schulze found evidence indicating that the estates considered the Ottoman threat less dangerous the farther they were located from the Turkish frontier.[52] A variable that represents the distance between an estate's place of residence and the closest Ottoman fortress in Hungary allows examining whether this affected

[49] Own dataset.
[50] Schulze, *Türkengefahr*, p. 363.
[51] Wilson, *Empire*, pp. 411, 416.
[52] Schulze, *Türkengefahr*, p. 133.

their willingness to contribute to defence. As fortresses occasionally changed hands, distance varied over time for many estates.[53] By contrast, Schulze saw no difference in how seriously Catholic and Protestant princes took the Ottoman threat.[54] In the analysis below, this aspect is captured by two dummies: one for Lutheran and another for Calvinist estates. Catholics form the control group. With the spread of the Reformation, the values of these dummies change over time.[55]

We can include several additional factors. First, consider that while the estates were summoned by the emperor to attend a diet, those whose rulers did not appear in person or send delegations were not penalised. There were strong incentives not to come. Beyond the costs of travel and participation, attendance signalled acceptance of the diet's procedures – and, by extension, their outcomes – as legitimate. Hence, any estate fearing that the diet might make decisions against its interests had good reasons to stay away: Absence allowed it to claim such decisions were illegitimate and therefore invalid.[56] Modern analyses of collective action have shown that members of groups with diffuse interests may succeed in acting collectively when their aim is perceived as legitimate.[57] Regarding tax compliance, earlier research has demonstrated the importance of the perception that taxes were legitimate for example in the context of eighteenth-century British-North America.[58] If Roman Month-compliance was an analogous case, the perceived legitimacy of the diet's decision-making procedures and their outcomes should have motivated those who had been represented to pay larger shares of

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[53] Klára Hegyi, "The Ottoman Network of Fortresses in Hungary," in *Ottomans, Hungarians, and Habsburgs in Central Europe: The Military Confines in the Era of Ottoman Conquest* (Leiden: Brill, 2000), pp. 164-172; Hans H.A. Hötte, Atlas of Southeast Europe: Geopolitics and History, vol. 1 (Leiden: Brill, 2015), pp. 69-86.

[54] Schulze, *Türkengefahr*, p. 133.

[55] Cf. Eike Wolgast, "Calvinismus und Reformiertentum im Heiligen Römischen Reich," in *Calvin und Calvinismus: Europäische Perspektiven* (Göttingen: Vandenhoeck & Ruprecht, 2011), pp. 24-33; Gerhard Köbler, Historisches Lexikon der deutschen Länder: Die deutschen Territorien vom Mittelalter bis zur Gegenwart (Munich: Beck, 2007); Erich Keyser and Heinz Stoob, eds., *Deutsches Städtebuch*, vols. 1-5.2 (Stuttgart, Berlin, Cologne, Mainz: Kohlhammer, 1939-74).

[56] Oliver Volckart, The Silver Empire: How Germany Created Its First Common Currency (Oxford: Oxford University Press, 2024), pp. 83-5.

[57] Cf. Gunnar Trumbull, Strength in Numbers: The Political Power of Weak Interests (Cambridge, MA, London: Harvard University Press, 2012), pp. 22-6, 205-6.

[58] John Brewer, The Sinews of Power: War, Money and the English State, 1688-1783 (London et al.: Unwin Hyman, 1989), p. 107.

their defence burdens. As the concluding document of each diet was signed by all attending estates, we are well-informed about who was present either in person or was represented by delegates.[59] We can therefore include two further dummies ('represented' and 'personally present') that capture attendance. The coefficients of these dummies will reflect the Roman Month-compliance of *all* attending estates, regardless of whether they had supported or opposed the Aid. Hence, the compliance differential between them and the non-attending estates allows us for the first time in a premodern context to estimate how strongly the perceived legitimacy of fiscal demands influenced the willingness to pay for a public good.

Second, poor estates may have been less willing than wealthier ones to hand over part of their revenues, which they could spend on private goods, to help supply a public good like defence. The problem is that revenue data from the mid-1560s to the 1610s are unevenly preserved, with a few large and influential principalities being overrepresented.[60] Concerning the income of smaller estates, many of whom managed their territories like extended manors rather than ruling them like emerging states, we are almost entirely in the dark. However, the Roman Month *simplum* with which the estates were assessed can serve as a proxy for their wealth. While imperfect, it offers two advantages: the data are comprehensive, with values being available for all estates, and the estates themselves intended their *simplum* to reflect their wealth, with the frequent changes suggesting that it did so reasonably accurately.

Finally, we can use a binary variable to control for whether a Turkish Aid was granted in periods of open war (1566, 1593-1606). It seems reasonable to expect that during such periods, compliance was stronger than when the frontier was

[59] For the concluding documents of the of the diets of 1566, 1567, 1576 and 1594, modern critical editions have been used: Maximilian Lanzinner and Dietmar Heil, eds., *Der Reichstag zu Augsburg 1566*, vol. 2 (Munich: Oldenbourg, 2002); Wolfgang Wagner, Arno Strohmeyer, and Josef Leeb, eds., *Der Reichstag zu Regensburg 1567 und der Reichskreistag zu Erfurt 1567* (Munich: Oldenbourg, 2007); Josef Leeb et al., eds., *Der Regensburger Reichstag von 1576. Digitale Edition* (2023); Josef Leeb, ed., *Der Reichstag zu Regensburg 1594*, vol. 3 (Munich: De Gruyter Oldenbourg, 2024). For the other diets, see Heinrich Christian von Senckenberg and Johann Jacob Schmauß, Neue und vollständigere Sammlung der Reichs-Abschiede, vol. 3: Reichs-Abschiede von dem Jahr 1552. bis 1654. inclusive (Frankfurt: Koch, 1747).

[60] Volckart, *Silver Empire*, pp. 170-1.

comparatively calm, that is, when warfare consisted of skirmishes and border raids only. Table 2 summarises the descriptive statistics of the variables discussed above.

Table 2: Descriptive statistics

Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Compliance rate	2146	0.725	0.409	0	1
Imperial city	2059	0.249	0.432	0	1
Viril vote	2146	0.241	0.428	0	1
Spiritual	2146	0.351	0.478	0	1
Lutheran	2146	0.462	0.499	0	1
Calvinist	2146	0.023	0.151	0	1
Represented	2146	0.582	0.493	0	1
Personally present	2146	0.108	0.310	0	1
Distance (kilometres)	2059	923.000	195.000	152.00	1,530.00
Simplum (fl.)	2146	269.719	451.472	6.38	5,484.04
Open war	2146	0.569	0.495	0	1

IV.

As the dependent variable is a fraction, the analysis uses a fractional logit model similar to the one introduced by Papke and Wooldridge.[61] A fractional probit model serves as a robustness check. Period fixed effects account for unobserved time-specific factors that may have influenced compliance. Given the virtual absence of multicollinearity, a full model with all explanatory variables gives an accurate picture of the factors driving compliance.[62] The basic equation is

$$(1)\ Y_{it} = c_1 X_{it} + c_2 Y_i + FE_t + C_0 + \varepsilon_{it},$$

where Y_{it} is the censored compliance rate for estate i in period t. X_{it} denotes the set of time-varying variables discussed above while Y_i represents the time-invariant variables. FE_t are period-fixed effects, C_0 a constant and ε_{it} an error term. Table 5, column 1 (appendix) reports the results of a regression that covers the whole sample and period. They are largely confirmed by the robustness check (Table 5,

[61] Leslie E. Papke and Jeffrey M. Wooldridge, "Econometric Methods for Fractional Response Variables With an Application to 401 (k) Plan Participation Rates," *Journal of Applied Econometrics* 11, no. 6 (1996).
[62] The variance inflation factor lies between 1.01and 1.62.

column 1c). Using a 'reduced' dataset where observations concerning dubious estates are dropped does not substantially change the results either (Table 5, column 1d). As the coefficients produced by fractional logit models represent log-odds, the discussion below focuses on the marginal effects whose interpretation is intuitive. They are shown in Table 3.

Table 3: Determinants of compliance 1566-1603 (marginal effects)[63]

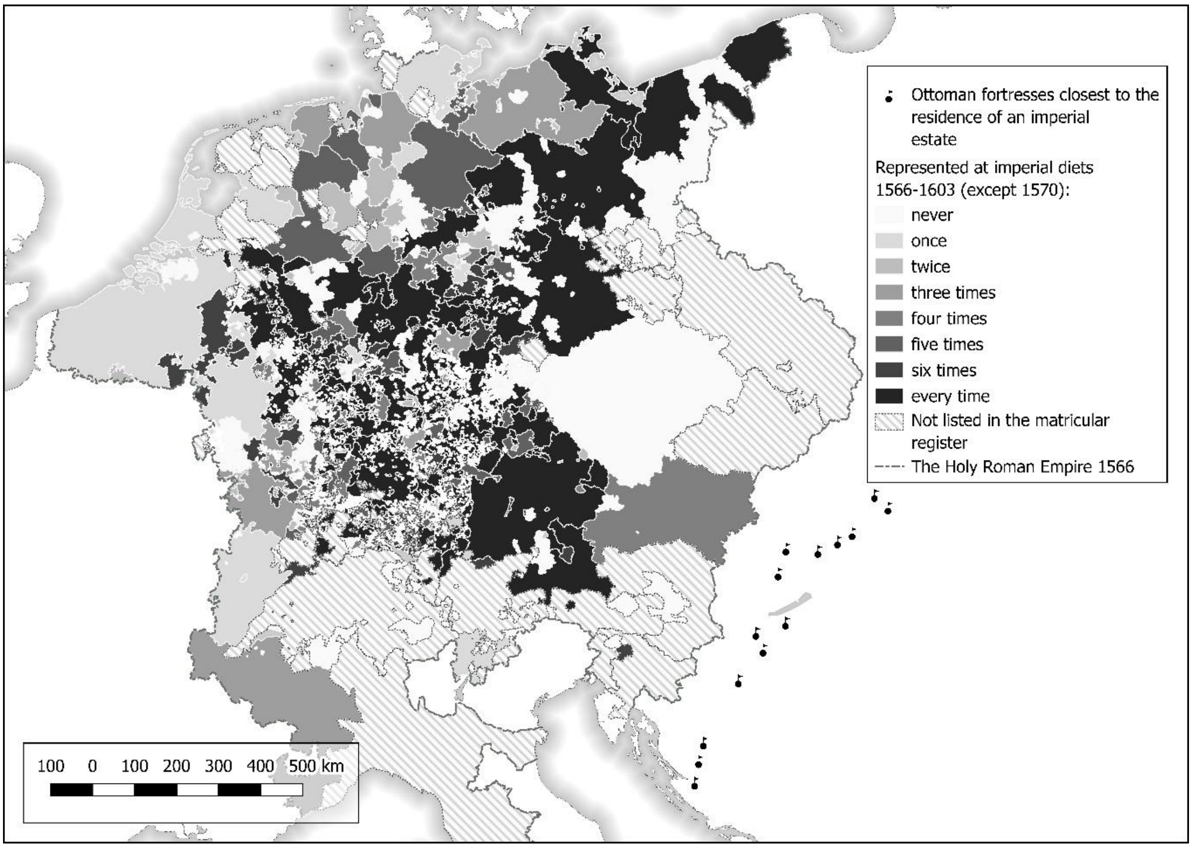
Variables	(1) *Full model*	(1b) *Full model, no simplum*	(2) *Imperial cities*	(3) *Spiritual estates*	(4) *Lutheran estates*	(5) *Represented estates*
Imperial city	0.0692*	0.0512			0.0487	0.1935***
	(0.0387)	(0.0377)			(0.0555)	(0.0409)
Viril vote	-0.0528	-0.0953**		-0.0488	0.0122	-0.0200
	(0.0448)	(0.0388)		(0.0607)	(0.0631)	(0.0394)
Spiritual	0.0680*	0.0693*			0.0492	0.0668*
	(0.0371)	(0.0376)			(0.0590)	(0.0371)
Lutheran	0.0878***	0.0832***	-0.0127	0.0902		0.0409
	(0.0296)	(0.0296)	(0.0373)	(0.0650)		(0.0314)
Calvinist	-0.0580	-0.0830	0.0034			-0.0456
	(0.0643)	(0.0601)	(0.0590)			(0.0562)
Distance (log)	-0.4106***	-0.4271***	-0.5110***	-0.5937***	-0.1526	-0.3017**
	(0.0969)	(0.0979)	(0.1301)	(0.1242)	(0.1211)	(0.1291)
Represented	0.2099***	0.1974***	0.2280***	0.1696***	0.1939***	
	(0.0267)	(0.0265)	(0.0363)	(0.0528)	(0.0409)	
Personally present	0.0109	-0.0015	0.0472	0.0311	0.0022	0.0225
	(0.0387)	(0.0374)	(0.0646)	(0.0602)	(0.0538)	(0.0334)
Simplum (log)	-0.0273*		-0.0197	-0.0103	-0.0166	-0.0208
	(0.0149)		(0.0175)	(0.0252)	(0.0220)	(0.0149)
Open war	0.1157***	0.1173***	0.0856*	0.0913*	0.1076**	0.0427
	(0.0321)	(0.0320)	(0.0503)	(0.0510)	(0.0479)	(0.0328)
Period fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,059	2,059	512	667	992	1,227

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[63] Own dataset.

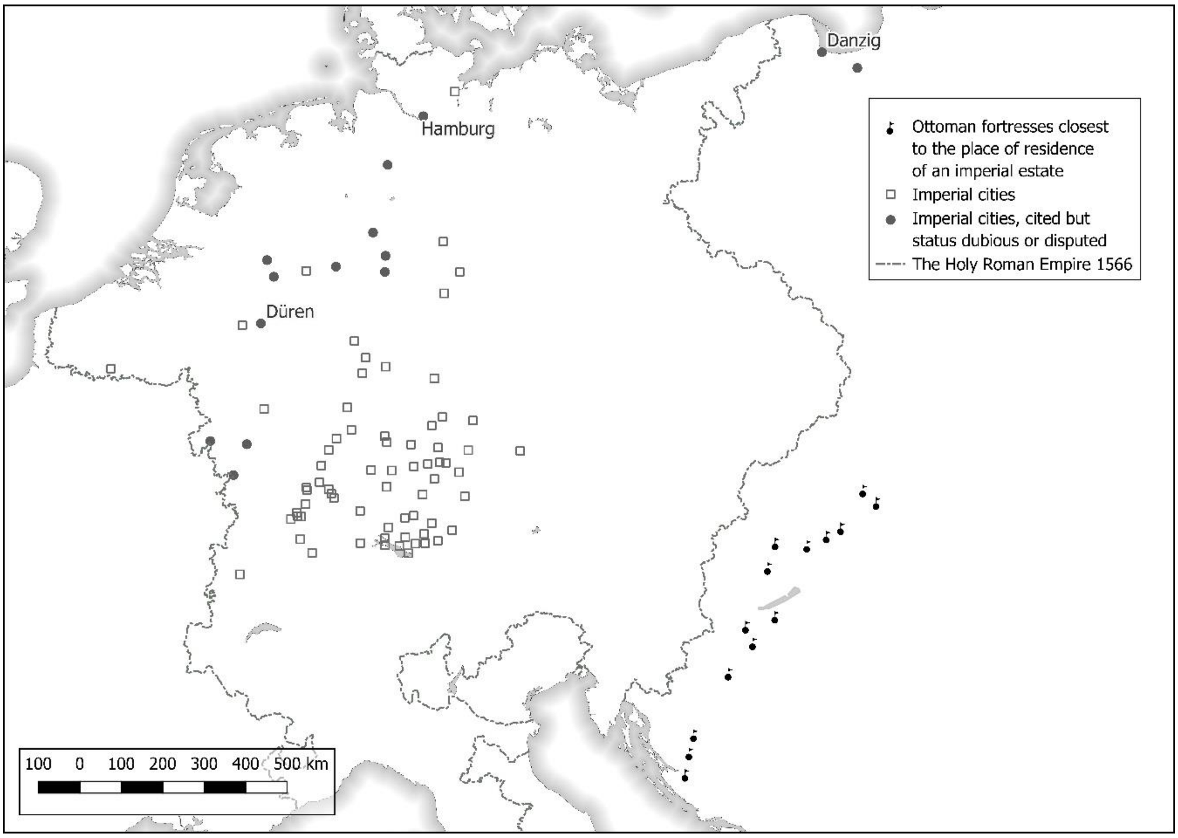
While it was to be expected that representation at the imperial diet would be associated with higher compliance rates, it turns out that this factor was by far the most influential (Table 3, column 1). As the marginal value of 0.2099 (p<0.01) indicates, the Roman Month-shares that represented estates paid were on average (i.e. across all seven Aids) almost 21 percentage points larger than those of not-represented estates (Figure 4). The differential is testament to the importance of the perception that the fiscal demands of the diet were legitimate. Open war likewise had a very strong effect: During such periods the estates were on average willing to pay about 11.6 percentage points larger shares of their defence dues than during times that were comparatively quiet.

Figure 4: Representation at imperial diets, 1566-1603



In some respects, the political status of an estate also played a significant role: Spiritual rulers and imperial cities were especially likely to meet their obligations. Spiritual rulers paid on average around 6.8 percentage points more than other estates with similar characteristics, all else equal (Figure 7, p. 27). Thus, if the count of Montfort in Swabia paid 70 percent of what he owed, the abbot of nearby Kempten Abbey would likely pay 76.8 percent. Imperial cities paid on average c. 6.9 percentage points more of their dues than other estates did.[64] Interestingly, the effect becomes insignificant when the *Simplum*-variable is dropped (Table 3, column 1b). This is a typical case of an omitted variable bias in reverse. As the coefficient of *Simplum* in the full model reveals, wealth has a negative effect on Roman Month-compliance. When *Simplum* is not controlled for, this negative wealth effect partially cancels out the positive effect of being an imperial city. What remains is an insignificant net-effect. The results achieved when controlling for wealth unambiguously support the hypothesis that prelates and imperial cities were more conscientious contributors than other estates.[65]

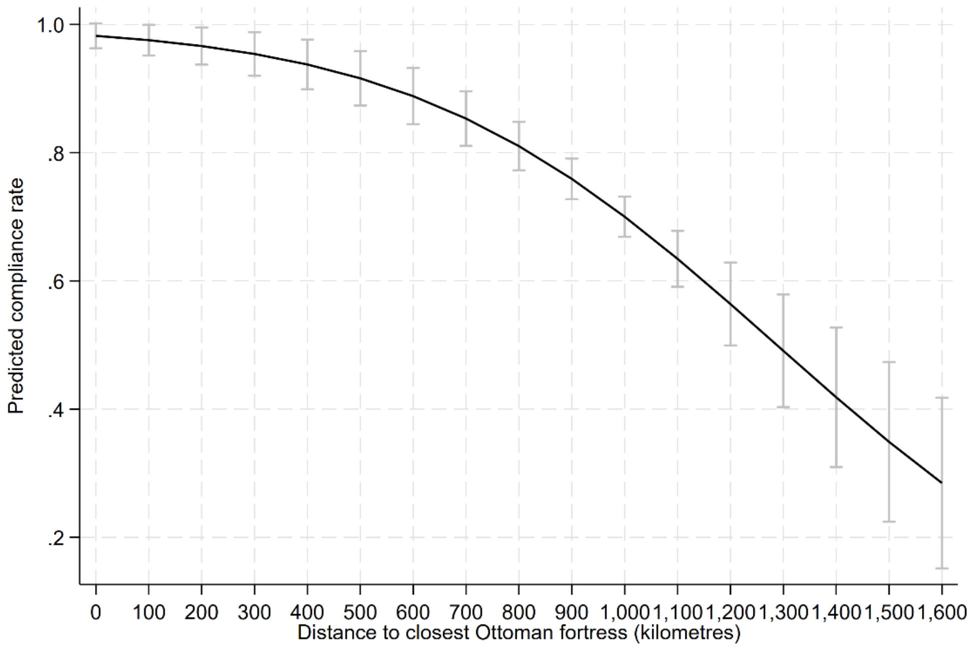
Figure 5: Imperial cities



[64] The upper bound was of course 100 percent.
[65] Schulze, *Türkengefahr*, p. 363.

The highly significant distance coefficient reinforces the idea that freeriding increased with distance from the Hungarian frontier. The marginal effect of -0.411 indicates that each 1 percent increase in distance reduced the share of Roman Months paid by 0.411 percentage points. In practical terms: if an estate 300 kilometres from the Ottoman frontier (e.g. the archbishopric of Salzburg) paid on average 90 percent, a comparable estate twice as far (say, Fulda Abbey) would pay 61.5 percent (Figure 6).[66]

Figure 6: Distance and Roman Month-Compliance



Unlike the results above, other variables yield unexpected findings. Thus, the personal attendance of rulers had no significant effect. At least regarding the payment of Roman Months, the fall in attendance historians have detected over the sixteenth century did not adversely affect the Empire.[67] Also, earlier research found that electors and princes –captured by the viril vote-dummy – paid less of their dues than others. If they did, the difference was not significant. Like that of

[66] If the distance grew by 100 percent, i.e. if it became twice as large, compliance dropped by about 28.5 percentage points (-0.411 * ln(2) = -0.411 * 0.693 = -0.285).
[67] Wilson, *Empire*, pp. 418-9.

the cities, this coefficient is sensitive to wealth controls (Table 3, column 1b): When *Simplum* is dropped, viril vote captures both the direct effect of princely status *and* the indirect effect through wealth. The impression of earlier research that electors and princes were less Roman Month-compliant than other estates therefore reflects an omitted variable-bias: Once wealth is controlled for, it is evident that estates with a viril vote were as willing to pay as those without.

Also, as noted above, Schulze claimed that religion was irrelevant for how seriously the estates took the risk of an Ottoman conquest.[68] In fact it did matter, at least for their Roman Month-compliance: The marginal effect of the Lutheran-dummy indicates that Lutheran estates paid on average 8.8 percentage points more of their dues than otherwise similar Catholic estates did (Figure 8, p. 28). By contrast, an increase in wealth, captured by the *simplum*-variable, was associated with weaker compliance, indicating that the burden of defence lay proportionally more heavily on poorer estates than on wealthier ones.

The analysis of four sub-groups of estates yields more insights (Table 3, columns 2-5). Thus, it turns out that for the willingness of imperial cities to pay their dues, being Lutheran did not matter (column 2): Cities were always more compliant. Also, they were comparatively little affected by open war. Spiritual estates show a similar compliance pattern (column 3). Examining the Lutheran sub-group separately suggests that for their willingness to pay, having been represented at the diet that granted the Aid and the imminence of warfare were the only factors that mattered (column 4). Examining the sub-group of estates which had been represented at the diet that granted the Aid shows that urban governments were particularly strongly influenced by this factor (column 5). It also had a significant effect on spiritual rulers but did not matter for temporal electors and princes. For estates that had been represented at the diet, the effect of distance was weaker than for most other groups, suggesting that representation was a compelling reason for paying one's dues even for estates located, for example, in the distant north-west of the Empire.

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[68] Schulze, *Türkengefahr*, p. 133.

Finally, we examine changes over time. Table 6 (appendix) summarises the results of the analysis of seven subsamples, each of which covers the Aid collected following one of the grants of the imperial diet. To avoid the risk that results are driven by changes in sample composition, only those estates that the penny-masters cited in response to all seven Turkish Aid grants were included. Due to the much smaller size of the subsamples, some lack of consistency with the results reported in Table 5 is expected. For ease of interpretation, the discussion again focuses on the marginal effects, listed in Table 4.

Table 4: Determinants of compliance, collection period samples (marginal effects)[69]

	(1) 1566	(2) 1567	(3) 1576	(4) 1582	(5) 1594	(6) 1598	(7) 1603
Imperial cities	0.1197**	0.2344***	0.0935	0.1409**	0.1402**	0.2622***	0.1664**
	(0.0582)	(0.0817)	(0.0610)	(0.0681)	(0.0565)	(0.0561)	(0.0695)
Viril vote	0.0128	-0.0321	-0.0522	-0.0063	-0.1121*	0.0345	-0.0510
	(0.0531)	(0.0752)	(0.0600)	(0.0648)	(0.0625)	(0.0655)	(0.0594)
Spiritual rulers	0.0541	0.0625	0.0523	0.0768	0.1397***	0.0963*	0.0988**
	(0.0435)	(0.0577)	(0.0482)	(0.0517)	(0.0489)	(0.0534)	(0.0485)
Lutheran estates	-0.0074	0.0459	0.0770*	0.1074**	0.1403***	0.1070**	0.1502***
	(0.0377)	(0.0525)	(0.0414)	(0.0433)	(0.0394)	(0.0466)	(0.0439)
Calvinist estates	0.1257	-0.3790***	0.0520	0.0666	0.0164	-0.2568**	0.0480
	(0.1289)	(0.0872)	(0.1256)	(0.1571)	(0.1319)	(0.1205)	(0.0933)
Log of distance (km)	-0.2527**	-0.1853	-0.5140***	-0.5661***	-0.5232***	-0.5227***	-0.3218***
	(0.1085)	(0.1140)	(0.1125)	(0.1310)	(0.1182)	(0.1184)	(0.1129)
Represented estates	0.0254	0.2184***	0.0603	0.0456	0.0995**	0.1438***	0.1811***
	(0.0440)	(0.0614)	(0.0444)	(0.0454)	(0.0499)	(0.0445)	(0.0454)
Personally present rulers	0.0373	0.3131*	0.0050	-0.0110	-0.0115	-0.0787	-0.0009
	(0.0493)	(0.1744)	(0.0690)	(0.0495)	(0.0620)	(0.1449)	(0.1383)
Log of simplum (fl.)	-0.0136	-0.0301	-0.0238	-0.0348	-0.0141	-0.0378*	-0.0500**
	(0.0151)	(0.0265)	(0.0208)	(0.0238)	(0.0205)	(0.0201)	(0.0198)
Open war	0.8383	0.0000	0.0000	0.0000	1.5317*	1.4814*	0.9739
	(0.7303)	(.)	(.)	(.)	(0.9029)	(0.8825)	(0.8168)
Observations	248	248	248	248	248	248	248

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[69] Own dataset.

No factor is consistently significant across all periods. Still, distance comes close: Except for 1567, each 1 percent increase in the distance from the Ottoman frontier was associated with a drop in compliance of between 0.2 and 0.6 percentage points. Except following the grant of 1576, the shares paid by cities were 12-26 percentage points higher than those of other estates. Religion became consistently relevant only from 1576 onwards, when Lutheran estates began to pay 7-15 percentage points more than comparable Catholic authorities did. Interestingly, the change occurred when emperor Maximilian II, whose religious attitude was highly ambiguous, was replaced by Rudolf II, who was a far more strident Catholic.[70] Spiritual princes began even later to pay larger shares than their temporal colleagues: They did so from 1594, that is, after the 'Cologne War', when Rudolf II used Papal ideological and Spanish military support to prevent the Protestant takeover of the archbishopric of Cologne.[71] At the same time, having been represented began to positively affect Roman Month compliance, though in this case, it had already been significant in 1567.

How can we explain these results? As mentioned above, at least some estates used the Turkish Aid grants of the diet as a chance to impose taxes at the territorial level – taxes only part of which they passed on to the penny-masters. Not being allocated as a reward for cooperation, the revenues they retained were no selective incentives in the sense of Olson, but their effect was similar. Still, many estates – especially smaller ones – lacked the infrastructure needed to collect such taxes,[72] and even those that taxed their subjects used part of the revenues to pay for defence. Why?

First, diet attendance and the resulting perception of legitimacy played a key role in Roman Month compliance. On average, only 58 percent of the estates cited by

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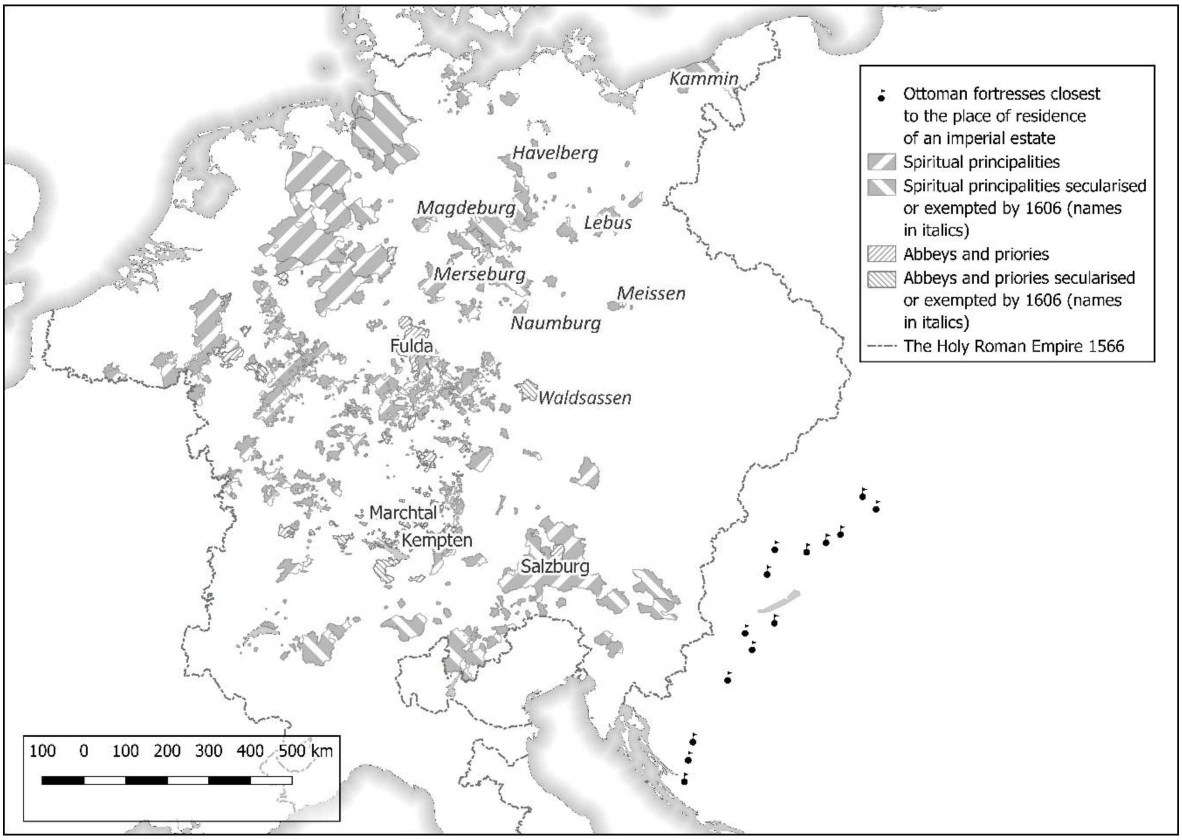
[70] Manfred Rudersdorf, "Maximilian II.," in *Die Kaiser der Neuzeit 1519-1918: Heiliges Römisches Reich, Österreich, Deutschland* (Munich: Beck, 1990), pp. 83-5; Volker Press, "Rudolf II.," in *Die Kaiser der Neuzeit 1519-1918: Heiliges Römisches Reich, Österreich, Deutschland* (Munich: Beck, 1990), p. 101.
[71] Whaley, *Germany*, I, pp. 401-3.
[72] For Hohenlohe see Thomas Robisheaux, Rural Society and the Search for Order in Early Modern Germany (Cambridge: Cambridge University Press, 1989), p. 36.

the penny-masters had been represented at the relevant diet (Table 2); these estates contributed 81 percent of the funds collected. Furthermore, the regression results suggest that cities, spiritual rulers and Lutherans shared a common incentive for stronger compliance. Thus, the political standing of cities and spiritual estates was less well-established than that of, for example, temporal princes: Cities held only consultative votes in the diet, and spiritual estates were vulnerable to Protestant secularisation or Catholic 'exemption' (being forced to accept a temporal prince as feudal overlord, Figure 7).[73] By demonstrating Roman Month compliance, cities likely sought to bolster their standing in the diet through imperial favour. Spiritual rulers, meanwhile, aimed to secure the emperor's protection against Protestant encroachment – as had proved decisive in the case of Cologne.

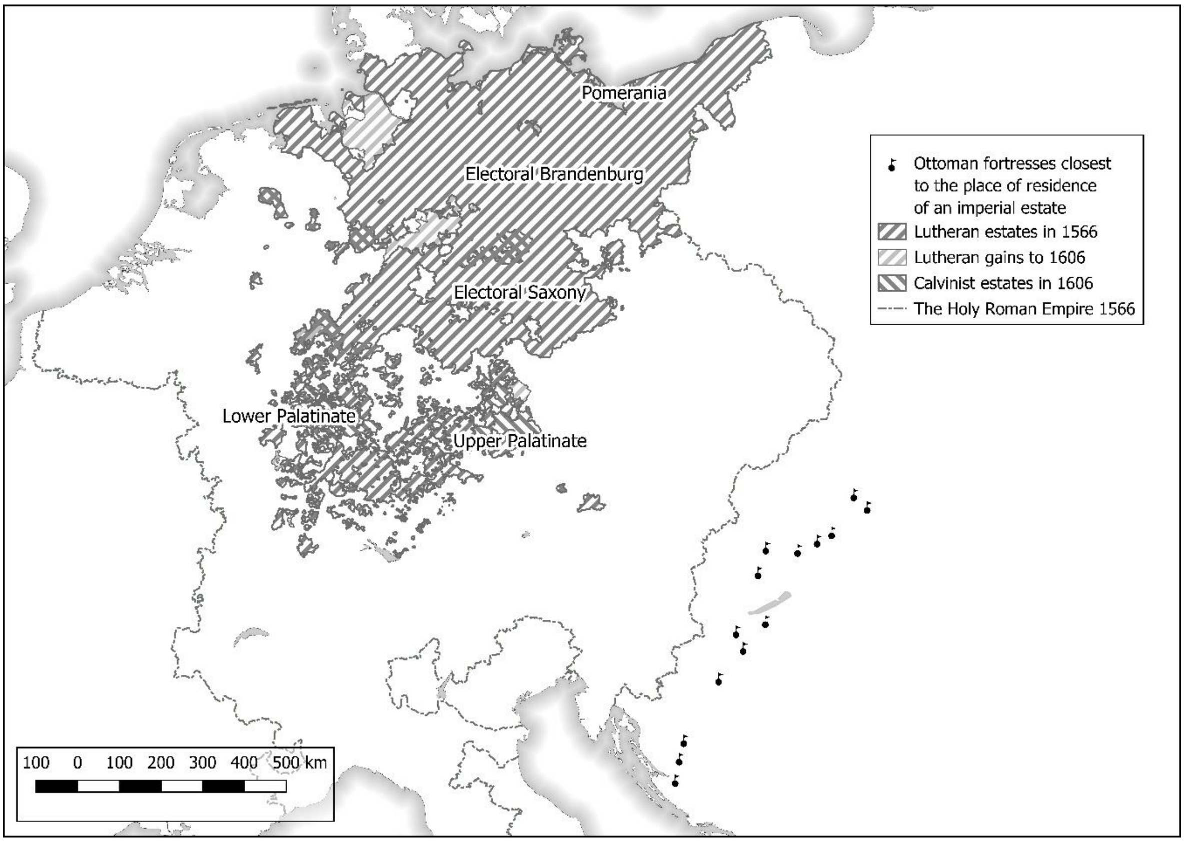
Figure 7: Spiritual estates



[73] See Zacharias Geizkofler's detailed comments on the matricular register that indicate which estates had been exempted by whom. Cortrejus, *Corporis Juris ... Tomi I Pars Quinta*, pp. 50-101.

Lutheran estates were in a broadly similar situation. Research has so far stressed their attempts to use the emperors' need for Turkish Aids as a lever to extract political or religious concessions.[74] In most cases this did not work. Pressuring the emperor required the Protestants to cooperate, but from about 1560 the group of estates that had subscribed to the Lutheran *Confessio Augustana* of 1530 began to fractur: The elector Palatine turned Calvinist; other estates followed (Figure 8).[75] Moreover, the remaining Lutherans did not all sing from the same sheet either. Especially electoral-Saxony was ostentatiously loyal to the emperor.[76]

Figure 8: Lutheran and Calvinist estates



To justify Saxony's position, electoral councillors asserted that all Europe envied the Empire's harmony – a harmony rooted in the emperor, 'by whom not only Germany is governed, but who enjoys the particular respect of all Christendom,

[74] Schulze, *Türkengefahr*, p. 142; Rauscher, "Kaiser", pp. 50-1.
[75] Wolgast, "Calvinismus", p. 25.
[76] Axel Gotthard, "„Politice seint wir bäpstisch": Kursachsen und der deutsche Protestantismus im frühen 17. Jahrhundert," *Zeitschrift für historische Forschung* 20, no. 3 (1993), pp. 281-2.

and as all this derives from the support of the electors, the electors' own pre-eminence and majesty have increased accordingly.'[77] In fact, it was not only pre-eminence and majesty that had increased. Like other Lutheran estates, Saxony had materially gained from the Reformation, absorbing the bishoprics of Merseburg, Naumburg, and Meissen. Electoral-Brandenburg secularised Lebus, Havelberg and Brandenburg, the duchy of Pomerania took Kammin, and so on (Figure 7).[78] To the Catholic estates, these actions violated the Religious Peace of Augsburg (1555).[79] Lutheran estates therefore had to ensure that the emperor did not insist on enforcing the letter of the law as in the 'Cologne War'. Their Roman Month payments were accordingly not exclusively intended to finance defence; they also served to dissuade imperial intervention against their secularisations. This had been unnecessary under Maximilian II, whom anyone who wished could regard as a closet Protestant. Under Rudolf II, it became essential. The Empire's defence benefited: Lutheran estates – always a minority – regularly paid 51-55 percent of the collected Aids.

V.

This article examines how the Holy Roman Empire raised the funds to defend itself against the Ottomans, with the underlying aim of assessing how well the imperial constitution functioned. Defence is a public good from whose benefits, once it has been provided, no one can be excluded. The estates therefore faced incentives to freeride. Some did, but the Empire proved still able to raise increasingly large sums. The fact that this happened at a time of growing economic hardship appears nothing short of remarkable.

To understand why freeriding never seriously undermined the defence of the Empire, the study first assesses how much the estates contributed in response to the Roman Month *multipla* the imperial diets granted. It assumes all estates cited

[77] ibid., "„Politice“", p. 280.
[78] Cortrejus, *Corporis Juris ... Tomi I Pars Quinta*, pp. 50-101.
[79] Whaley, *Germany*, I, p. 334.

by the penny-masters are relevant and excludes any post-diet imperial interventions: The amount for which the penny-masters cited the estates is that which they should have paid, rather than any lower sums to which the emperors might agree in retrospect. This approach yields a minimalist estimate of average compliance of 72.5 percent – over 15 percentage points lower than the figure accepted in earlier research. If Roman Month-compliance is an indicator of the functionality of the imperial constitution, this seems to have worked less well than previously believed.

The analysis then examines factors influencing compliance. Many coefficients show the expected signs and significance. Thus, having attended the diet emerges as the strongest single factor motivating the estates to pay more of what they owed. Confirming the findings of earlier research, an estate's status as imperial city or spiritual ruler was associated with payment shares that were higher than those of other members of the Empire. Expectably, in periods of open war payments were larger; increasing distance from the Ottoman frontier reduced them. By contrast, the effect of Lutheranism is a surprise. An estate's allegiance to this denomination was associated with significantly stronger Roman Month-compliance compared to Catholic members of the Empire.

The findings suggest that the Empire solved the public goods problem of military security in a way traditional collective action theory does not anticipate. The perceived legitimacy of an Aid increased compliance throughout: It explains why estates represented at the diet that had granted the Roman Months paid more than others. On top of this, the lack of security of the rights of the more compliant estates played a key role. Imperial cities needed the emperor to improve their voting rights at the imperial diet, spiritual rulers, to protect their rights to the territories they governed against the encroachment of secular neighbours. In each case, these were rights from which the estates could be excluded, that is, in the economic definition, rights to private goods. Accordingly, incentives to pay – i.e., to purchase the support of the emperor with Roman Month-payments – were strong. Many Lutheran estates had acquired private property rights when they secularised possessions of the Catholic Church. When they paid larger shares of their liabilities than their non-Lutheran fellow estates did, they aimed at persuading the emperor to recognise their secularisations. Hence, the Aids Lutheran estates paid were not primarily intended to finance defence but rather as a payment to secure their property rights in former Church possessions.

In short, the Holy Roman Empire solved the collective action problem of providing military security as a public good by generating the perception that the Turkish Aids were legitimate and because many estates essentially paid for private goods. Hence, while the Empire's constitution worked sufficiently well to ensure the defence of the country, at least in the period examined here it did not work because it was well-designed. Instead, it worked at least in part for unrelated reasons: by accident, as we might say.

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Appendix

Table 5: Determinants of compliance, 1566-1603[80]

	Full model			
	(1)	(1b)	(1c)	(1d)
VARIABLES	All variables, all obs., fractional logit	All obs., no simplum, fractional logit	Rob. check, fractional probit	Reduced sample, fractional logit
Imperial cities	0.419*	0.308	0.0598	0.620**
	(0.232)	(0.225)	(0.0385)	(0.252)
Viril vote	-0.320	-0.574**	-0.0582	-0.268
	(0.272)	(0.235)	(0.0486)	(0.287)
Spiritual rulers	0.412*	0.417*	0.0754*	0.437*
	(0.225)	(0.226)	(0.0402)	(0.233)
Lutheran estates	0.531***	0.501***	0.0969***	0.448**
	(0.181)	(0.181)	(0.0325)	(0.190)
Calvinist estates	-0.351	-0.499	-0.0761	-0.427
	(0.389)	(0.362)	(0.0807)	(0.385)
Log of distance (km)	-2.485***	-2.571***	-0.395***	-2.420***
	(0.641)	(0.649)	(0.0966)	(0.675)
Represented estates	1.271***	1.188***	0.237***	1.135***
	(0.164)	(0.163)	(0.0300)	(0.171)
Personally present rulers	0.0660	-0.00909	0.0362	0.0284
	(0.234)	(0.225)	(0.0296)	(0.236)
Log of simplum (fl.)	-0.165*		-0.0312**	-0.114
	(0.0894)		(0.0147)	(0.0954)
Open war	0.700***	0.706***	-0.0175	0.631***
	(0.195)	(0.192)	(0.0146)	(0.199)
Constant	17.72***	17.67***	3.357***	17.20***
	(4.356)	(4.486)	(0.656)	(4.577)
Period fixed effects	yes	yes	yes	yes
Pseudo-R2	0.1427	0.1389	0.1338	0.1293
Observations	2,059	2,059	2,059	1,983

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[80] Own dataset.

Table 5 (Continued)

	Imperial cities			Spiritual rulers		
	(2)	(2b)	(2c)	(3)	(3b)	(3c)
VARIABLES	All variables, all obs., fractional logit	Rob. check, fractional probit	Reduced sample, fractional logit	All variables, all obs., fractional logit	Rob. check, fractional probit	Reduced sample, fractional logit
Imperial cities	-	-	-	-	-	-
Viril vote	-	-	-	-0.316	-0.201	-0.133
				(0.396)	(0.229)	(0.421)
Spiritual rulers	-	-	-	-	-	-
Lutheran estates	-0.142	-0.123	-0.331	0.584	0.341	0.339
	(0.416)	(0.229)	(0.463)	(0.426)	(0.239)	(0.433)
Calvinist estates	0.0380	-0.168	-0.712	-	-	-
	(0.656)	(0.307)	(0.792)			
Log of distance (km)	-5.702***	-3.009***	-8.251***	-3.844***	-2.070***	-3.579***
	(1.767)	(0.773)	(1.589)	(0.954)	(0.473)	(1.002)
Represented estates	2.544***	1.473***	2.138***	1.098***	0.659***	1.010***
	(0.400)	(0.216)	(0.390)	(0.335)	(0.191)	(0.359)
Personally present rulers	0.527	0.319	0.309	0.201	0.120	0.0892
	(0.720)	(0.364)	(0.708)	(0.390)	(0.222)	(0.377)
Log of simplum (fl.)	-0.219	-0.122	0.0147	-0.0667	-0.0480	-0.0903
	(0.191)	(0.0976)	(0.180)	(0.163)	(0.0940)	(0.176)
Open war	0.956*	0.434	0.513	0.591*	0.313*	0.504
	(0.573)	(0.286)	(0.524)	(0.329)	(0.185)	(0.347)
Constant	39.98***	21.15***	57.15***	27.17***	14.75***	25.66***
	(11.88)	(5.217)	(10.76)	(6.447)	(3.194)	(6.737)
Period fixed effects	yes	yes	yes	yes	yes	yes
Pseudo-R2	0.4162	0.4111	0.1293	0.1758	0.1722	0.1523
Observations	512	512	483	667	667	627

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 (Continued)

	Lutheran estates			Represented estates		
	(4)	(4b)	(4c)	(5)	(5b)	(5c)
VARIABLES	All variables, all obs., fractional logit	Rob. check, fractional probit	Reduced sample, fractional logit	All variables, all obs., fractional logit	Rob. check, fractional probit	Reduced sample, fractional logit
Imperial cities	0.283	0.203	0.447	1.532***	0.849***	1.599***
	(0.322)	(0.179)	(0.356)	(0.298)	(0.150)	(0.306)
Viril vote	0.0708	0.0483	-0.00390	-0.158	-0.0995	-0.0446
	(0.367)	(0.204)	(0.381)	(0.312)	(0.174)	(0.332)
Spiritual rulers	0.286	0.173	0.286	0.529*	0.322**	0.555*
	(0.344)	(0.201)	(0.344)	(0.292)	(0.162)	(0.315)
Lutheran estates	-	-	-	0.324	0.155	0.260
				(0.248)	(0.136)	(0.262)
Calvinist estates	-	-	-	-0.361	-0.247	-0.396
				(0.445)	(0.258)	(0.454)
Log of distance (km)	-0.888	-0.521	-1.078	-2.389**	-1.107**	-2.167*
	(0.713)	(0.389)	(0.775)	(1.089)	(0.458)	(1.115)
Represented estates	1.128***	0.654***	0.961***	-	-	-
	(0.237)	(0.134)	(0.247)			
Personally present rulers	0.0128	0.0148	0.000624	0.178	0.132	0.156
	(0.313)	(0.174)	(0.316)	(0.263)	(0.146)	(0.266)
Log of simplum (fl.)	-0.0968	-0.0563	-0.0217	-0.165	-0.104*	-0.174
	(0.128)	(0.0701)	(0.138)	(0.116)	(0.0612)	(0.121)
Open war	0.626**	0.314**	0.501*	0.338	0.169	0.353
	(0.279)	(0.150)	(0.283)	(0.258)	(0.136)	(0.261)
Constant	6.881	4.053	8.023	18.16**	8.698***	16.71**
	(4.870)	(2.672)	(5.291)	(7.410)	(3.130)	(7.567)
Period fixed effects	yes	yes	yes	yes	yes	yes
Pseudo-R2	0.0686	0.0685	0.0670	0.1131	0.1093	0.1073
Observations	992	992	967	1,227	1,227	1,203

Table 6: Determinants of compliance, period samples[81]

VARIABLES	(1) 1566	(2) 1567	(3) 1576	(4) 1582	(5) 1594	(6) 1598	(7) 1603
Imperial cities	1.169**	1.483***	0.771	1.214**	1.037**	1.644***	1.179**
	(0.556)	(0.515)	(0.500)	(0.580)	(0.434)	(0.358)	(0.500)
Viril vote	0.125	-0.203	-0.431	-0.0545	-0.829*	0.216	-0.361
	(0.519)	(0.478)	(0.497)	(0.558)	(0.459)	(0.410)	(0.423)
Spiritual rulers	0.528	0.395	0.431	0.662	1.034***	0.604*	0.700**
	(0.423)	(0.367)	(0.398)	(0.434)	(0.373)	(0.344)	(0.347)
Lutheran estates	-0.0719	0.291	0.635*	0.926**	1.038***	0.671**	1.064***
	(0.367)	(0.337)	(0.356)	(0.395)	(0.322)	(0.303)	(0.337)
Calvinist estates	1.227	-2.398***	0.429	0.574	0.121	-1.611**	0.340
	(1.244)	(0.584)	(1.034)	(1.357)	(0.979)	(0.751)	(0.661)
Log of distance (km)	-2.468**	-1.172	-4.238***	-4.879***	-3.871***	-3.278***	-2.280***
	(1.051)	(0.737)	(1.014)	(1.341)	(1.022)	(0.868)	(0.884)
Represented estates	0.248	1.382***	0.497	0.393	0.736**	0.902***	1.283***
	(0.427)	(0.405)	(0.369)	(0.390)	(0.367)	(0.279)	(0.352)
Personally present rulers	0.364	1.981*	0.0414	-0.0947	-0.0848	-0.494	-0.00605
	(0.482)	(1.083)	(0.569)	(0.424)	(0.457)	(0.912)	(0.980)
Log of simplum (fl.)	-0.133	-0.190	-0.196	-0.300	-0.105	-0.237*	-0.354**
	(0.147)	(0.168)	(0.172)	(0.206)	(0.153)	(0.126)	(0.147)
Open war	8.187	0	0	0	11.33	9.291	6.899
	(7.192)	(0)	(0)	(0)	(7.192)	(5.922)	(6.090)
Constant	10.65	9.067*	30.78***	35.42***	15.64	13.78	10.02
	(0)	(5.009)	(6.864)	(9.190)	(0)	(0)	(0)
Pseudo-R2	0.0783	0.1504	0.1454	0.1859	0.1823	0.1959	0.1729
Observations	248	248	248	248	248	248	248

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

[81] Own dataset.