

# Sovereign Collateral

Marc Flandreau<sup>\*</sup>, Stefano Pietrosanti<sup>‡</sup>, Carlotta E. Schuster<sup>†</sup>

April 30, 2023

**Abstract.** *In the 19th century, lending to sovereign borrowers was a blind date. This, we argue, is the reason for collateral pledges frequently found in lending covenants. Sovereign collateral did not serve as a conventional security to be repossessed in case of default. It enabled the production of reliable fiscal data. Lawyers injected collateral clauses in sovereign debt covenants to permit credible disclosure of hard to access numerical evidence on tax harvesting. The study foregrounds the importance of big law firms as financial intermediaries and contributes a new view on the role played by contracts in sovereign debt.*

**Keywords:** Sovereign Debt, Collateral, Enforcement, Information, International Law, State Capacity, Tax Collection, Fiscal Reporting, Financial Innovation, Legal Engineering.

**JEL Classification:** G24, H63, K12

---

<sup>\*</sup> Howard S. Marks Professor of Economic History, University of Pennsylvania, the Wharton School and CEPR (corresponding author) <sup>‡</sup> Economist, Bank of Italy, Rome. <sup>†</sup> Economist, UNCTAD, Geneva. Marc Flandreau acknowledges financial support from the Institute for New Economic Thinking (#INO20-00001). Special thanks are due to Geoffroy Legentilhomme for his help with programming amortization schedules. We thank Vincent Bignon, Carolyn Bilotto, Emilia Bonaccorsi di Patti, Giuseppe Cappelletti, Elena Carletti, Matthieu Chavaz, Whitney Debevoise, Anna Gelper, Tom Ferguson, Rodrigo Garcia-Verdu, Gary Gorton, Harold James, Christine Kadama, Guillermo Ordoñez, Andrea Papadia, Giorgia Piacentino, Stefano Ugolini, Anatoli Segura Velez and Mark Wright for fruitful comments; we also thank participants to the Bank of France Research Seminar, to the DebtCon3 conference in Washington, to the Bank of Italy’s lunch seminar and to the Sixth Associazione per la Storia Economica Annual Meeting for their feedback. The opinions expressed in this paper do not necessarily reflect those of the Bank of Italy, the Eurosystem, the UNCTAD and their staff. We also thank especially editor Eric Hilt and three anonymous referees for thorough input. We are grateful to Alberto Gamboa for exceptional research assistance. All errors are our own. (Note: An early version of this paper “Why Do Sovereign Borrowers Post Collateral? Evidence from the 19<sup>th</sup> Century” was released as INET Working Paper N° 167 in October 2021).

“No firm can take precautions against the repudiation of a hypothecation”

Thomas Baring, 1865

## I. Introduction

In conventional analysis, contracts exist within formal institutional frameworks built on coercive enforcement (North 1990). The posting of collateral in corporate lending provides an egregious instance. Collateral is a vital instrument for ensuring the performance of debt contracts. In standard corporate debt models of collateral provision, collateral is pledged because of a lack of information on the borrower's type or because of monitoring difficulties: Theory interprets collateralization as an institution that can mitigate information asymmetry and moral hazard in credit relationships. The act of posting collateral is a costly signal; as such, it helps borrowers disclose their quality to lenders ex-ante. Moreover, increasing borrowers' stakes ex-post, it limits insider incentives to mismanage resources and protects investors against dilution. A consequence is that, by decreasing the need to investigate the project behind the debt, the posting of collateral makes debt less “information-sensitive” (Berger, Frame, and Ioannidou 2011; Gorton and Ordoñez 2014).

Consistent with the above, private credit markets' reliance on collateral goes far back in time. Economic agents soon understood that the pledging of assets and the creation of automatic repossession mechanisms would support lending. Building on this insight, land registries were developed in Early Modern Britain to identify and mobilize private property as security to assist lending activity (Ito 2013). In today's corporate debt markets, investors achieve collateralization with the help of Central Securities Depositories (CSD). Capturing the essence of this coercive logic, CSDs operate as trustees for the owners of the security, storing collateral and automatically transferring it to secured lenders in case of non-performance. Equally crucially, in case of dispute, courts have jurisdiction. Supporting this, research documents a positive link between the rule of law and collateral performance and credit (Degryse et al. 2020, Calomiris et al. 2017)

Against this backdrop, a puzzling phenomenon is the reliance on collateral in *sovereign* debt contracts, as happens nowadays in the context of Chinese agencies' lending to developing countries (IMF and World Bank 2020). We call this phenomenon puzzling because of how difficult it is to repossess sovereign property. As the design of modern CSDs shows, securing creditors through tangible repossession guarantees requires borrowers to surrender control over their property. In the case of a sovereign asset this amounts to a reduction of sovereignty. Shackling sovereignty is difficult because, while decrees and laws can be made instructing

government agents to transfer to creditors the income from a certain source, decrees and laws can be made to repeal the instruction. What is more, sovereign immunity doctrines and politics place limits on foreign and domestic courts' ability to bind sovereigns.

As Gelpern et al. (2022) emphasize, these complex questions have a fascinating pre-history.<sup>1</sup> The 19<sup>th</sup> century, a period sometimes described as the “first age of financial globalization,” generalized the use of hypothecations (Jenks 1927). As Fishlow (1985) describes it, “customs, land-holdings, and other natural resources” became ubiquitous in foreign government debt prospectuses. A famous instance was the Peruvian loans, which were secured with the help of guano, a bird manure (Mathew 1981; Vizcarra 2009). As the center of sovereign lending shifted to New York in the 20<sup>th</sup> century, sovereign hypothecations migrated to the New York Stock Exchange and were extensively used during the sovereign debt boom of the 1920s (Coleman 1936).<sup>2</sup>

In the existing literature, historical sovereign hypothecations have been understood in three different ways. First and foremost, they have been read against the backdrop of their corporate counterpart, emphasizing the *execution* of the security. For instance, Vizcarra (2009) argues that guano famously pledged in Peruvian bonds was an attractive security because, being an export commodity, it was an easy target for creditor execution in case of default. The threat of foreign interception would have rendered the collateral executable, conferring credibility to Peru's debt, pretty much as would have been the case with a secured corporate loan.

A second idea is that hypothecations might exist because of the willingness of imperial powers to enforce them. Legal scholar W. Mark C. Weidemaier (2010) suggests that clauses in historical sovereign debt covenants were rooted on the implicit understanding that violations of provisions in covenants would trigger the dispatch of British gunboats. In a similar fashion, Ahmed, Alfaro, and Maurer (2010) liken the function of gunboats to those of a court of justice executing a defaulter. If this “contracting for state intervention” view is applied to the case of hypothecations, then maybe hypothecations were written down in contracts because they were enforceable, even as the contracts themselves never said so.

A final interpretation holds instead that hypothecations were a scam, because sovereignty

---

<sup>1</sup> See Gelpern et al. (2022, p. 6).

<sup>2</sup> For predecessors to 19<sup>th</sup> century sovereign collateralizations, see Daru (1821, I, 203-4) and Fratianni and Spinelli (2006), documenting examples involving early borrowing by Italian Republics during the Commercial Revolution. Vührer (1886), Cauwès (1895a, b, 1896), and Vammale-Sabouret (2008), discussing the case of France's King Francis I, who ceded revenues to the City of Paris as security for a loan. Moreover, following the Glorious Revolution, the British Parliament pledged excise duties, levies on East India goods, and wine duties (Hirst 1910), while revolutionary America mortgaged revenue sources when first borrowing abroad (Dewey 1934).

rendered enforcement problematic. In this reading, sovereign hypothecations created with the complicity of law firms had a deceptive intent. The result would have been a misleading likeness with corporate collateral. As Coleman (1936, p. 674) puts it, “lawyers took over from the field of corporation law principles which, although valid in that field, were in no sense applicable to a sovereign nation.” In fact, he says sovereign hypothecations were a “phantom security.” In the words of Allen W. Dulles, speaking before U.S. Securities and Exchange Commission and quoted approvingly by Buchheit and Pam (2004, p. 21), hypothecations were not “worth the paper they are written on.”

Though these interpretations contain elements of truth, they do not fully account for the hypothecation phenomenon. Drawing on the experience of the “hypothecation mania” of the mid-19<sup>th</sup> century (1849-1875), we note that they do not take a sufficiently close look at the legal context. Under then prevailing understandings of absolute sovereign immunity, sovereign assets were privileged, even when located abroad. Second, under the Law of Nations, the British Government was by default committed to intervene eventually on behalf of its nationals. However, fearing moral hazard, Britain developed a doctrine which ruled out enforcement. Finally, we find that investors, educated by well-informed corporate lawyers, had actually a rather good grasp of this legal context, making them unlikely prey to systematic exploitation.

Against this backdrop, this paper elaborates a novel explanation of sovereign hypothecations. We argue that sovereign hypothecations were not at all about repossession. They were about information provision. We show this by gathering and examining one by one the universe of individual sovereign capital calls in the London Stock Exchange during the period 1849-1875, which we identify as a hypothecation mania, more than half of the bond issues including such provisions. There were indeed a few cases where the security could be executed; we will refer to these cases as Type II. But, as we find, such Type IIs were a minority. By contrast, typical hypothecations –Type I – did not even bother to discuss the repossession process, using instead words such as “solemn pledge”.

A heuristic way to distil the logic at play in sovereign hypothecations is to think of modern “Fintech” and “Big Data” lending, which relies on information automation technologies to reduce information asymmetries.<sup>3</sup> Credit scoring offers a case in point. The literature describes how new lenders take advantage of informational externalities in modern tech to organize data harvesting, resulting in what authors describe as a “data for collateral” substitution effect (Gambacorta et al. 2023). Likewise, we argue that in the historical context we consider here,

---

<sup>3</sup> See Vives (2019) for a survey and discussion.

lawyer-structured sovereign hypothecations took advantage of the data which financial intermediaries were coming by, turning information into screening technologies and ultimately facilitating third party lending.<sup>4</sup>

Likewise, we argue that, at a time when fragmentary tax data was the norm (Flandreau 2003), sovereign lending was often a blind date. In such a context, collateralization provided creditors with the opportunity of extracting reliable evidence on tax harvesting activities. In clear, hypothecations were a response to severe statistical information asymmetries. Ex ante, hypothecations mitigated the limited visibility over the country's fiscal process by identifying a fiscal resource and describing its earning capacity. Ex post, collateral clauses set precise progress-to-repayment checklists, allowing bondholders to focus monitoring efforts through their operatives.<sup>5</sup>

To be precise, hypothecations served to construct data observatories that informed investors about the fiscal prospects of the country. This was done through the appointment of monitors who would follow the money: For instance, if custom revenues had been pledged, they would follow the collection of the interest service. Agents posted at the customhouse would provide updates to London via mail, enabling investors to know if the government had transferred the funds as stipulated. These updates enabled to track the funds all the way to the banker's counting house in London, clarifying responsibilities. Conversely, if a diversion occurred, bondholders would learn about it firsthand, providing a signal for mobilization.

The observatory functioned like a data-generating engine or algorithm: The "security" was not a physical asset reassigned automatically by a third party, it was a process instead. This process afforded many advantages. It checked over-borrowing, because a sovereign running out of collateral had to stop borrowing or to re-hypothecate collateral. The move would be observable and impact reputation. It also banded creditors together and, by providing a level playing field, it helped govern their interventions. Finally, by creating checkpoints, the hypothecation observatory system provided for synchronized disclosure of information, limiting the risk that investors would be trading against superior information.

A key insight is that the clauses provided for enforceability of the informational machinery, because the contracts ascribed responsibility to the various agents involved. The legal engineers who crafted sovereign hypothecations exploited creatively the fact that the economic flows that

---

<sup>4</sup> Other studies emphasizing "digital innovation" in 19<sup>th</sup> century finance include: Thakor (2019); Flandreau and Legentilhomme (2021); Flandreau (2003).

<sup>5</sup> In this sense, a corporate counterpart of sovereign hypothecation might be the governance institutions relied upon in corporate finance (Frydman and Hilt 2017).

crisscrossed the burgeoning global economy left measurable traces. As these flows had an impact on tax harvesting, they contained valuable information. The last stage was to assign to the hypothecation machinery the task of collating these numbers. Thus, at a broader level, this paper uncovers a function of lawyers and law firms as designers of legal-financial institutions that contributed in an original and so far overlooked way to the export of capital.

The story we tell here is therefore that of why and how English lawyers made a major contribution to unlock the international capital market through improved data harvesting. The emphasis on financial inclusion as a precondition for development is suggested by accounts of the import of institutions for economic growth. Yet, in classic accounts such as those provided by North and Weingast (1989), the perspective is domestic and aggregate. It focuses on such macro-institutions as State, Parliament or the defense of property rights. Departing from this conventional approach, we document the common law underpinnings of private monitoring and information production *outside* the purview of the sovereign borrower. We do not say that such a regime was without shortcomings. But we do say that its existence has not been recognized before.

## **II. Sovereign Debt Contracts in the Age of Absolute Sovereign Immunity**

### *1) Sovereign Hypothecation Not a Security*

One influential view about sovereign collateral is that, thanks to clever selection of the security, it could operate as corporate collateral. A previous paper published in this Journal by Vizcarra (2009) argues that guano extracted from Peru's state-owned repositories in the Chincha Islands credibly secured Peruvian bonds issued in London after 1849. The reason for the trustworthiness of the instrument would be that *guano could be seized abroad*. According to Vizcarra (2009) the guano security was credible since its handling "did not involve meddling by the Peruvian government. [...] Guano revenues were collected at the point of sale abroad [...] outside the jurisdiction of the Peruvian government."<sup>6</sup> The assumption is that creditors could collect with the help of the courts of justice, but this is incorrect.

Under absolute sovereign immunity as it prevailed in the 19<sup>th</sup> century and early 20<sup>th</sup> century in English courts of justice, there was no way a creditor would have been able to get a court to execute sovereign collateral.<sup>7</sup> In the language of Westlake's influential textbook: "Foreign states, and those persons in them who are called sovereigns, whether their title be emperor,

---

<sup>6</sup> Vizcarra (2009, p. 359; 376).

<sup>7</sup> Modern "qualified sovereign immunity" developed since the 1950s. See Weidemaier (2012) and Schumacher, Trebesch, and Enderlein (2021).

king, grand-duke, or any other, and whether their power in their states be absolute or limited, cannot be sued in England on their obligations” (Westlake 1858, 226). Sovereign possessions being immune, guano was a fortiori immune *even when abroad*. It was immune, too, when handled by a government agent, because states’ agents inherited their principal’s immunity.<sup>8</sup> Under this regime, courts *dismissed creditor attempts at laying their hands on sovereign property*. In fact, they considered that, had verdicts enforcing such clauses been returned, they would have amounted to acts of war against the foreign sovereign.<sup>9</sup>

Several contemporary decisions confirmed it. The most influential one was *Smith v. Weguelin* (1869), a spirited effort to have a court of justice assist repossession.<sup>10</sup> William Smith was a holder of Peruvian securities with guano clauses who claimed that Peru had failed to amortize (reimburse) the amount of bonds stipulated in the contract, depressing prices. He brought a lawsuit in the court of Chancery where he asked the court to direct the agents to use *money from the sale of Peruvian guano held in London* to perform the amortization.<sup>11</sup>

Aware that they were on fragile grounds however, the London sovereign debt law firm representing Smith, Ashurst, Morris & Co, tried a coup. They flashed two fancy authorities: George Jessel, a renowned corporate finance lawyer who later became judge in Chancery, and the famous John Westlake himself. Together, they tried a bold legal theory, that hypothecations amounted to a deed of trust, where agents of the government were trustees and the bondholders’ beneficiaries. The court was asked to enforce the trust.<sup>12</sup> If the court admitted the theory, then a way around sovereign immunity would have been found. Nevertheless, the attempt failed.

In his lengthy opinion, Lord Romilly M.R. called the trust theory the “most singular part of the argument.” If Peru had wanted to establish a deed of trust they should have created one. In no place had the covenant granted creditors “the right of intercepting or dealing with the guano” and so the construction was preposterous.<sup>13</sup> As the judge added, a decision favorable to the plaintiffs would have moreover enabled every bondholder holding hypothecations “by the aid of the Court of Chancery practically to declare war against a foreign country.” Smith was

---

<sup>8</sup> Story (1839, p.306) and Chitty (1841, p.278-9).

<sup>9</sup> Flandreau (2022).

<sup>10</sup> *Smith v. Weguelin*, 1869, L.R. 8 Eq. 198, p. 212-214.

<sup>11</sup> Thomson, Bonar and Co. and the Peruvian company doing the shipping, the *Compañía de Consignación de Guano en la Gran Bretaña*.

<sup>12</sup> As the lawyers put it, “the [hypothecations in the] bonds therefore created a charge on the proceeds in the hands of the [...] agents, who are *trustees* for the Peruvian Government and its *assignees*, the bondholders, and [the trustees] are bound to apply the proceeds *in accordance with the terms of the bonds*.” *Smith v. Weguelin*, (1869) L.R. 8 Eq. 198, p. 204. Our italics. For a previous incomplete discussion of this verdict, see Borchard (1951, p.67).

<sup>13</sup> *Smith v. Weguelin*, L.R. 8 Eq. 198, p. 204.

dismissed with costs.<sup>14</sup> Thus, one should be skeptical of Vizcarra's main point that a Peruvian default would result in "the disruption of the guano trade" (Vizcarra 2009, p. 375) and more generally that hypothecation by means of an export commodity was enforceable.

## 2) *Hypothecations Not a Scam: A Test*

The next possibility is that sovereigns and underwriters devised hypothecations to arouse unwarranted belief in such enforcement (Coleman 1936). Hypothecations "gaslighted" investors: If they added value, it was because of unwarranted beliefs about their role. We argue that this is not a very credible interpretation, because sovereign hypothecations occurred in plain sight and were subjected to intense scrutiny.

Before the verdict, the impossibility to enforce simple hypothecations was frequently emphasized by observers and warning were issued not to misconstrue the clauses. Debates on the subject were not confined to the legal insiders of Lincoln's Inn. The British press often made fun of the hypothecations suggesting they were a ploy. The satirical *Punch* joked about Spain's hypothecation of "Quicksilver" that the country might repay in "slow gold."<sup>15</sup> The more austere Thomas Baring, partner of the famous law firm, declared flatly in 1865 that one could not take "precautions against the repudiation of a hypothecation." This was reprinted in several journals that followed sovereign debt matters.<sup>16</sup> Likewise, *Smith* received large coverage, the *Times* itself printing the Judge's charge on hypothecations. The provincial press waxed on.<sup>17</sup> Tellingly, *The Economist's* coverage of *Smith* consisted in *reminding* readers that the verdict was old news, and that the "*creditors of a foreign government cannot enforce their rights by attaching property hypothecated to them.*"<sup>18</sup>

As a result, *Smith* provides a testing opportunity for the hypothesis that hypothecations amounted to a scam. Given that an English court had stated loud and clear that enforcement of sovereign hypothecation was not an option, either (i) there had been no delusion to begin with, implying that the verdict caused no surprise; or (ii) there had been delusion. In which case, significant *selling* activity ought to have resulted. Moreover, not only should Peruvian bond spreads have increased, but the spreads of *all bonds with clauses* should have increased too, because of the generic value of the verdict.

---

<sup>14</sup> *Smith v. Weguelin*, L.R. 8 Eq. 198, p. 205.

<sup>15</sup> "Beware of Pickpockets" (*Punch*, June 11 1870, p. 234). Also Drummond Wolff (1908, Vol. II, pp. 56-66).

<sup>16</sup> *London Evening Standard*, December 23, 1865. The context was Venezuelan repudiation of a custom security.

<sup>17</sup> *Times*, May 28, 1869.

<sup>18</sup> *Economist*, May 29, 1869, p. 626. Extracts of the *Economist's* article were reprinted in several provincial newspapers such as the *Western Daily Press*, the *Bradford Observer*, etc. (*Western Daily Press*, May 31, 1869; *Bradford Observer*, May 31, 1869). See also *Economist*, Oct 10, 1868, p. 1167-8.



Against this backdrop, we first looked at high frequency price movements around *Smith* (May 27, 1869) but failed to detect anything significant, including commentary.<sup>19</sup> We next applied on monthly data the Bai-Perron procedure, which tests for structural breaks (Bai and Perron 1998).<sup>20</sup> We used the yield-spread against risk-free British consols of a representative Peruvian guano bond. Because the verdict mattered for all hypothecations, we also considered two portfolios, a weighted and an unweighted average of collateralized bonds.<sup>21</sup>

There are two conditions for rejecting the scam theory. The test should *not* single out *Smith* as a significant event *and*, if it does single it out, then spreads should not increase afterwards. Figure 1 plots the time-series of monthly spreads for the Peruvian bond, the two portfolios and the structural breaks. Dashed lines capture Bai-Perron break dates, while shaded grey areas represent confidence intervals. For the Peruvian bond and weighted portfolio, no break is detectable. For the unweighted synthetic bond, a break around *Smith* is identified *but the spread decreases thereafter*, which is the opposite of what should happen under the scam theory. The evidence being incoherent with hypothesis (ii), we conclude that *Smith* was old news, as the *Economist* had put it. The verdict merely confirmed what the marginal investor already knew – that courts would not enforce hypothecations.

This result underscores that it is not particularly promising to think of law firms as the handmaids of exploitation. Of course, if bond sellers could pay lawyers to find ways to create deceptive instruments, bondholders could hire the same lawyers to defend their interest. In fact, as extensive anecdotal evidence suggests, the law firms drafting sovereign debt contracts were frequently employed by the buy-side of the market. These were prominent institutions, which often still exist today in the shape of big legal conglomerates. They had a reputation and they were unlikely to favor instruments with which they'd be uncomfortable when they sat on the other end of the table.

A striking case is Baxter, Rose, Norton & Co. (today Norton Rose Fulbright). Its senior partner, Philip Rose, was at one point embedded in Erlanger and Co, a sovereign debt contractor who originated several loans studied in this paper. Rose was at the same time one of the first

---

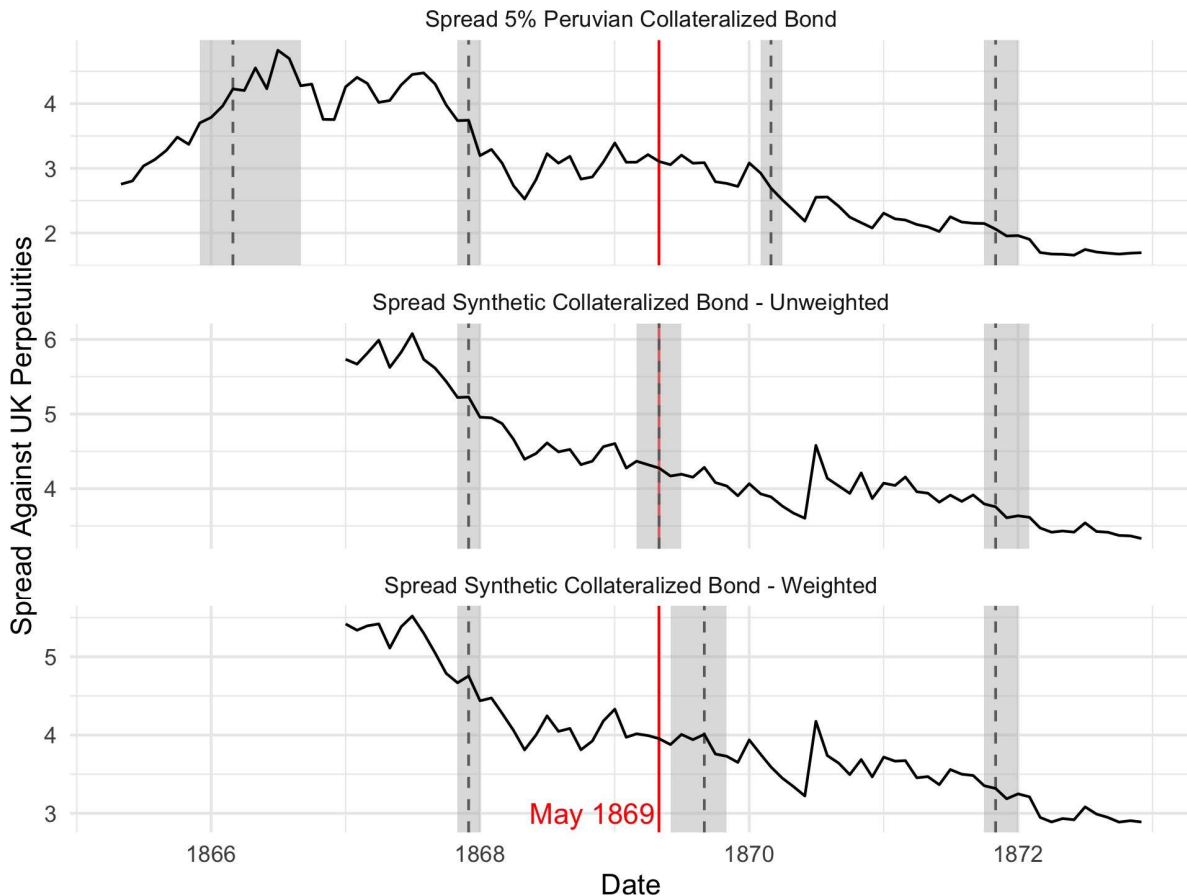
<sup>19</sup> The period is late April to mid-June 1869. For the 1865 5% bond, the single largest weekly price variation was an *increase* of 2.28%. Peruvian weekly bond prices variations around *Smith*, calculated with the help of the *Economist*, are as follows: For the week ending on April 30, +0.16%; week ending May 7: -2.14%; week ending May 14: 1.46%; week ending May 21: 0.64%; week ending May 28 (the day after decision): 2.28%; week ending June 4: 0.31%; week ending June 11: 0.15%.

<sup>20</sup> The same methodology is used by Vizcarra (2009, p. 378, Table 5).

<sup>21</sup> The Peruvian bond is the 5%, 1865. It is more liquid than the alternative instrument, 1862 4.5%. The portfolios include the first bond, plus the Chile 6% 1867 (custom revenues), Danube 7% 1864 (custom revenues), Egypt 7% 1866 (railways), and the Turkey 6% 1862 (tobacco and salt).

promoters of the Council of Foreign Bondholders, a powerful bondholder protective organization launched in 1868.<sup>22</sup> It would be naïve to depict the lawyers who developed the instrument as merely double-faced as done, say, by Pistor (2019). The solutions they conceived had to work for both buyers and sellers, or they’d make no money in the long run.

Figure 1  
Smith v. Weguelin Verdict Did Not Impact Spreads



Notes: From the top, the Figure reports the graphical results of performing the structural break test on, first, the Peruvian 1865 5% bond’s spread series; second, the spread series for the unweighted portfolio composed of the Chilean 6% 1867 (custom revenues), the Romanian (“Danubian”) 7% 1864 (custom revenues), the Egyptian 7% 1866 (railways) and the Turkish 6% 1862 (excise on tobacco and salt); third, the spread series for the same portfolio of bonds, weighted for issuance size. Dashed lines represent break dates; gray areas cover 95% confidence intervals; red solid vertical lines track the month of Smith v Weguelin’s verdict.

### 3) *Deus Ex Machina*

Another reason put forward to explain why sovereign debt contracts existed in the Age of sovereign immunity, pertains to what W. Mark C. Weidemaier (2010) calls “contracting for

<sup>22</sup> St George (1995, p.139). Indeed, Baxter, Rose, Norton & Co was one of two law firms which the CFB kept on a retainer. Simultaneously, Rose was drafting the statutes of the Foreign and Colonial Investment Trust, the first sovereign debt investment fund ever created (McKendrick and Newlands 1999).

state intervention.” This view, also articulated by Ahmed, Alfaro, and Maurer (2010), holds that sovereign debt covenants are written in the expectation of imperial enforcement. Adapted to the case of sovereign collateral (as considered by Borchard 1951, p. 257-60), the argument might look like this: Sovereigns pledged collateral that was enforceable because failure to perform would lead to collateral repossession with the help of the Navy of the creditor power.<sup>23</sup>

However, a closer look reveals a slightly more complicated situation. Under contemporary understandings of the Law of Nations (as international law was known) the creditors of a defaulter were justified to require the assistance of their own sovereign if their efforts had failed. According to Robert Phillimore, who, as Law Officer, was tasked with advising the British Crown on such matters, “the right of interference on the part of a State, for the purpose of enforcing the performance of justice to its citizens from a foreign State, stands upon an unquestionable foundation, when the foreign State has become itself the debtor of these citizens.”<sup>24</sup> At that point was then up to the sovereign of the lending country to bring pressure to bear on the defaulter and enforce the claims of its subjects (war was an option).<sup>25</sup>

But here comes the problem. If interventions could be counted upon, a gigantic moral hazard problem was lurching, first identified in the literature by Platt (1968). And so, against the prognosis of the Law of Nations, the established British policy since the beginning of the sovereign debt market in London was that creditors would be prevented from turning the British Navy into a collection agency (Ziegler 1988). As Platt demonstrates, this policy started under Canning in the 1820s and was turned into an official doctrine by the Palmerston Circular of 1848. The Circular reminded British agents abroad (and foreign governments) that Britain would *not* go to war to enforce foreign debts. One could not count on an implicit British pledge to enforce: The pledge, if there was one, was that it would not.

Note however that the Palmerston doctrine applied to private debts only. Britain reserved the right to intervene in the case of debts owed to, or guaranteed by, the *British government itself*. The same applied to money owed to British investors, but tied to an *international treaty ratified by Britain*, which also committed the British government. While this has led to mix-ups in the literature, this was something which contemporaries fully understood. For instance, describing the case of the Spanish Indemnity Bond of 1828, a debt which was originated in a treaty between Britain and Spain, a leading investment handbook explained that because of this, “power is given to the British government to make reprisals upon Spain in the event of the non-

---

<sup>23</sup> Mitchener and Weidenmeier (2010) speak of imperial powers as contract enforcers.

<sup>24</sup> Phillimore (1871, p. 8).

<sup>25</sup> Vattel (1758), 1. ii. 0. xiv. s. 216.

*payment of the dividends.*”<sup>26</sup>

If British enforcement was expected for treaty debts only, then the theory of implicit enforcement of private debts cannot be valid. This also means that cases where state enforcement could be expected would be clearly identified in the documentation. As a result, the *contents* of the contract mattered. In fact, the British government was weary to float its signature and, as we shall see, it insisted on a clarification that waved the responsibility in cases where there might be ambiguity. Again, British enforcement of the lien was unlikely to be the result of “implicit” language. Language in a contract that is only implicit is no language at all.

### III. Reading from “Type I”: What the Drafters Had in Mind

That hypothecations were primarily a technology ensuring disclosure, monitoring, and ultimately reputation building comes out strongly from examining one by one the clauses and how they were crafted. This is what we do in this section. To begin, we identified the universe of new capital calls in the London Stock Exchange during the second foreign debt boom of the 19<sup>th</sup> century, taking the first guano contract as patient zero (1849-1875).<sup>27</sup> This returned a set of 116 individual issues. We then worked to retrieve the documentation for each bond.<sup>28</sup> The substance of sovereign debt covenants was distilled in the prospectus or “general bond”, but often an extensive documentation elaborated on the covenant.<sup>29</sup> We counted 67 hypothecations, or 58% of the total.<sup>30</sup> The popularity of the instrument warrants our use of the expression “hypothecation mania” to describe the period under study.<sup>31</sup>

#### 1) *What the Contracts Did Not Say*

Legal scholars Buchheit and Pam (2004) complain that repossession provisions’ language in 19<sup>th</sup> century hypothecations was too “vague.” From examining many bonds, the main conclusion we reach instead is that they were *absent*. It is clear that, upon default, creditors

---

<sup>26</sup> Field (1838, p. 166).

<sup>27</sup> Flandreau et al. (2009) for details.

<sup>28</sup> We used the London stock exchange archive at the Guildhall in London as well as the archive of underwriters. For a couple of loans for which other information was lacking, we used as a last resort contemporary investor handbooks (Fenn 1855, 1869; Evans 1856). We also examined the domestic legal context.

<sup>29</sup> When put together, the documentation of the Bolivian loan of 1872, a security designed by Baxter, Rose, Norton & Co., produces a 158 pages’ volume (Anonymous 1873).

<sup>30</sup> We document issuance activity per year and bond type in Appendix Figures A.2.1 and A.2.2.

<sup>31</sup> As already stated, the literature is aware of earlier examples of hypothecations in the 19<sup>th</sup> century (Fishlow 1985). An example is the Portuguese 5% loan of 1823 (Flandreau, 2021). However, these early instances only mentioned the security but did not create a system to observe tax harvesting. More relevant anticipations of the instrument developed in the mid-century might be provided by the Portuguese 5% loan secured by Tobacco issued in 1837 (Fortune 1838, p. 135) and the Spanish 3% loan issued in 1842, secured with Quicksilver (Evans 1856, p. 216) both defaulted without repossession. Clarke (1859) states that Isaac Lyon Goldsmid was the progenitor of the mid-century instrument.

were on their own. In fact, the distinctive trait of what we refer to as Type I hypothecations is that the asset pledged as security was *never transferred under the custody of a third party*. There was no *security*. Yet, Type I hypothecations – identified by the fact that repossession is not described – dominate the hypothecation population, 55 loans out of 67, or 82%.

The general style of Type I hypothecations' language consisted in a solemn though abstract formula whereby sovereigns did "bind" themselves to pledge a designated asset or set of assets as "security" for the "due payment of the interest and amortization of a loan." But that was it: When the loan was described as a first "charge" on a designated source, it only meant what it said, that the money was to be paid from that source. Nonetheless, the source remained under the control of the sovereign: It was not a receivership system. The asset was *not* put in the hands of an independent third party tasked with transferring it to the creditor, or executing it in case of non-performance. In fact, language was sometimes added emphasizing that there were no further guarantees. In the original guano contract of 1849, Art. 7 of the covenant indicated that guano shipped abroad remained the "exclusive property" of the Peruvian government.<sup>32</sup> It is very unlikely, therefore, that hypothecations were written with enforcement in mind.

## 2) *What the Contracts Did Say*

Does that mean that the hypothecations were a mere illusion? No. If repossession was not described, it was because it had never been the intention in the first place. In fact, the data suggests that the pledging of physical securities was an element of *information* that was valuable in contexts fraught with data limitations, for it helped investors form an opinion on credit worthiness. Consistent with this, Type I hypothecations focused on stating the nature of the asset or "security" and describing its relevant features, in particular its earning capacity or worth: The annual cash flow or the capital value and sometimes both. Used in combination with the cost of the loan or its nominal amount, this enabled calculation of a sustainability ratio often mentioned in the documentation. If the debt service/revenue ratio was low, the prospectus would speak of a solid "security."<sup>33</sup> In some cases (such as Peru's guano), revenue time series were appended, enabling to track past performance. In fact, hypothecations documented tax harvesting activities.

Again, the guano contracts epitomize this informational logic. Against the backdrop of a takeoff in the international demand for fertilizers, the state-owned guano deposits emerged in the 1840s as a major fiscal resource. Available numbers suggest that in the early 1860s guano

---

<sup>32</sup> Evans (1851, p. 220).

<sup>33</sup> On the early history of debt sustainability ratios, see Flandreau (2003).

would return about 80% of the income of the Peruvian state.<sup>34</sup> Considered as “security” the value of guano deposits was their transparency. The entire wealth of Peru was sitting in a conspicuous place (the Chincha Islands), which could be approached by ships. Thus, investors had ways to ascertain the “sovereign wealth” of the country and real time knowledge of the depletion rate. That guano turned Peru into a very successful borrower (as Vizcarra correctly notes) should not be surprising. This needs not be put in relation to repossession. Rather, we emphasize increased wealth and transparency reducing information asymmetries.

### 3) *Contracting for Information*

Generalizing inductively on the insight, we argue that the Type I boilerplate aimed at creating a technology to observe tax harvesting, so as to accumulate information on the resources and character of the borrower. Typically, the contract built on pre-existing statistical knowledge, which was then structured in a fashion that ensured reliable reporting. Hypothecations included clauses specifying the roles and responsibilities of the various agents involved. Honest behavior was rendered credible because, as common law instruments, these clauses were enforceable before ordinary jurisdictions. Our so-called “sovereign debt contracts” come across as much more than a commitment by a sovereign to repay a given debt in a certain fashion. In fact, the clauses they contained served to coordinate the private stakeholders who were tasked with operating the resulting fiscal observatory.

This insight sheds light on the distribution of hypothecations’ pledges. As shown in Appendix Figure A.2.2, custom revenues were present in about a third of the population of hypothecations. This makes sense: While customs were a major source of tax income, specialized merchant banks had access to the relevant data through their correspondents and local agents, enabling them to make educated guesses. A supporting institution was the availability of British consuls as certification agents. They came handy in the sovereign debt hypothecation food-chain, because they were experts in their country of residence’s trade data. Moreover, being official, their reports could be trusted. What is more, funds deposited with them or owned by them were protected, because a foreign power mauling diplomatic agents was a *casus belli*.

As illustration, consider the prospectus of the Imperial Moorish Loan 5% (1862). The bond provided for the hypothecation of one half of the country’s annual custom revenues, out of which the annual interest and amortization of the loan would be serviced (Art. 5). These

---

<sup>34</sup> *Statesman’s Year-Book* (1866, p. 568).

numbers were known reliably, because, as Art. 5 also stated, the British consul in Morocco did “certify” the valuation of trade. Art. 6 clarified that custom revenues were “ample security” for the service of the debt, as this would only absorb about one fourth of said revenues. “Special Commissioners” were tasked with receiving from Moroccan officials the dividend money (Art. 2). The transfer of funds worked like this: Each semester, and no later than six weeks before the coupons became due in London, the commissioners were to receive the funds and they would transfer them immediately to the agents of Robinson, Fleming in Morocco, the merchant bank which originated the deal and serviced the coupon in London.<sup>35</sup>

In this case, the contract had drawn opportunistically on British government-appointed Special Commissioners, a byproduct of the role Britain played at the time as mediator between Morocco and Spain. The advantage was that, as soon as it came within the hands of the commissioners, international law protected the money. But since a misleading impression that the responsibility of the British government was involved might have been created, an adjustment of the terms of the contract was required by the British cabinet, specifying that Britain took no liability beyond remitting the funds. As Art. 4 recited: “Her Majesty’s Government are not liable for the payment of a larger sum of money than that which they [will] receive from the custom duties so hypothecated.” In other words, the government agents (both the consul and the Special Commissioners) were involved in a purely *informational* role: Morocco could default without triggering British intervention. To use a modern metaphor, Britain took care of securing SWIFT, not Morocco.

#### 4) *The Hypothecation Algorithm*

Once observability was established, the hypothecation was turned into a transparent “blockchain.” Creditors were provided with initial input (the statistical data) and, simultaneously, with a machinery that enabled to update beliefs. The transparency of the instrument helped creditors to “penetrate” inside the fiscal machinery while at the same time helping borrowers accumulate reputational capital. This was achieved by performing adequate actions upon critical “forks.”

If the intermediate target was met, the action and behavior were validated until the next stage. By the very nature of the system, information on debtor performance was disclosed in a coordinated fashion. Evoking parallels with Bloomberg, “collateral news” (intelligence, for instance, that the money for next dividends’ payment had been received by correspondents)

---

<sup>35</sup> *Morning Post*, January 13, 1862.

were disclosed simultaneously to all creditors through postings inside the London Stock Exchange and announcements in the press, typically paid by the underwriters. This limited the risk for individual operators to trade against superior information.<sup>36</sup>

One way to think of this dynamic function of hypothecations is therefore to relate it to modern theoretical interpretations of contracts as “reference points” when coercive enforcement is not the principal goal. For example, Hart and Moore (2008) analyze the role of contractual stipulations in the management of behavioral expectations. Against this backdrop, the structuring of information provision assisted creditors in the case of default. This system enabled a more precise identification of default, while joint ownership of the instrument facilitated creditor cooperation.<sup>37</sup>

What is more, the creation of a multiplicity of sequential reference points helped issuing advance warning signals. If one step in the algorithm was aborted, creditors could ask for adjustment. In the previous example of the Moorish loan, failure to provide the dividend money six weeks before the coupons became due was turned into a credit event. Likewise, if a country ran out of collateral and started reassigning existing collateral, this was an indication of impending troubles. Creditors were given an opportunity to organize and start bringing pressure to bear preemptively.

We note finally that other institutional modules meant to assist creditor coordination could benefit from the precise information afforded by hypothecations. One case in point is the London stock exchange committee, whose rules provided that sovereign defaulters would not be able to issue new loans (Flandreau 2013). Initially, default was identified with dividends in arrears, but in 1870 a restatement of the rule provided that any violation of any clause in the contract could be construed as default (Flandreau 2022, pp. 48-51). Against this backdrop, failure to segregate hypothecated revenues (Chabot and Santarosa 2017, p. 25 n. 79) or collateral reallocation (Flandreau 2022, p. 51-53) were invoked as a motive to interfere. This was yet another channel whereby hypothecations created value.

#### **IV. Information and Hypothecation: Empirical Evidence**

In the previous section, a crucial prediction was that Type I collateral emerged in information poor environments – when fiscal data was incomplete. In this section we support this claim by demonstrating that hypothecations emerged in contexts of fiscal opacity and when other

---

<sup>36</sup> See e.g. *London Evening Standard*, March 2, 1864.

<sup>37</sup> In one case (Costa Rica 1872) the mode of appointing representatives that would govern the creditor body in case of default was specified in the instrument.



signaling devices, such as underwriting by a prestigious intermediary, were not available.

### 1) *Measuring Opacity*

To demonstrate that Type I hypothecations emerged when there was a dearth of data we need to measure fiscal opacity. We rely on the *Statesman's Yearbook*, a statistical annual published from 1864 onwards by journalist Frederick Martin. At a time when government numbers were still very scattered, the *Yearbook* was a breakthrough for the unique way it documented fiscal data, and in particular budgets (i.e. forecasted revenue and expenditures), realized accounts, and debts. The editor worked with official sources, his ultimate goal being to report such information as it stood for the current year. According to stock exchange member Lionel Cohen (1876, p. 691), it was pointless to try and second guess the *Statesman's*. According to Steinberg (1966), Martin never tried to make guesses. If he could not find what he wanted in already accessible sources, he would write to embassies and seek the support of correspondents, but if this could not address the lacunae, he simply reported the last available figure.<sup>38</sup>

Thus, the *Statesman's Yearbook* provides us with a precious instrument to quantify fiscal opacity. The method works as follows: Because each year provided Martin with an opportunity to update tax revenue figures, and because we can reasonably assume that he did his best, we can infer that failure to update captures missing data.<sup>39</sup> The *Yearbook* can thus be exploited to produce indicators of the quality of publicly available fiscal information. Going volume by volume, we construct a country specific transparency index. So, for instance, calling  $t$  the year of the *Yearbook* edition and  $l(i)$  the information lag for country  $i$  at date  $t$ , we first generate the information lag series. In the ideal situation of perfect fiscal transparency, the information lag is zero: The most recent figures for country  $i$  in volume 1864 correspond to 1864, and so on.

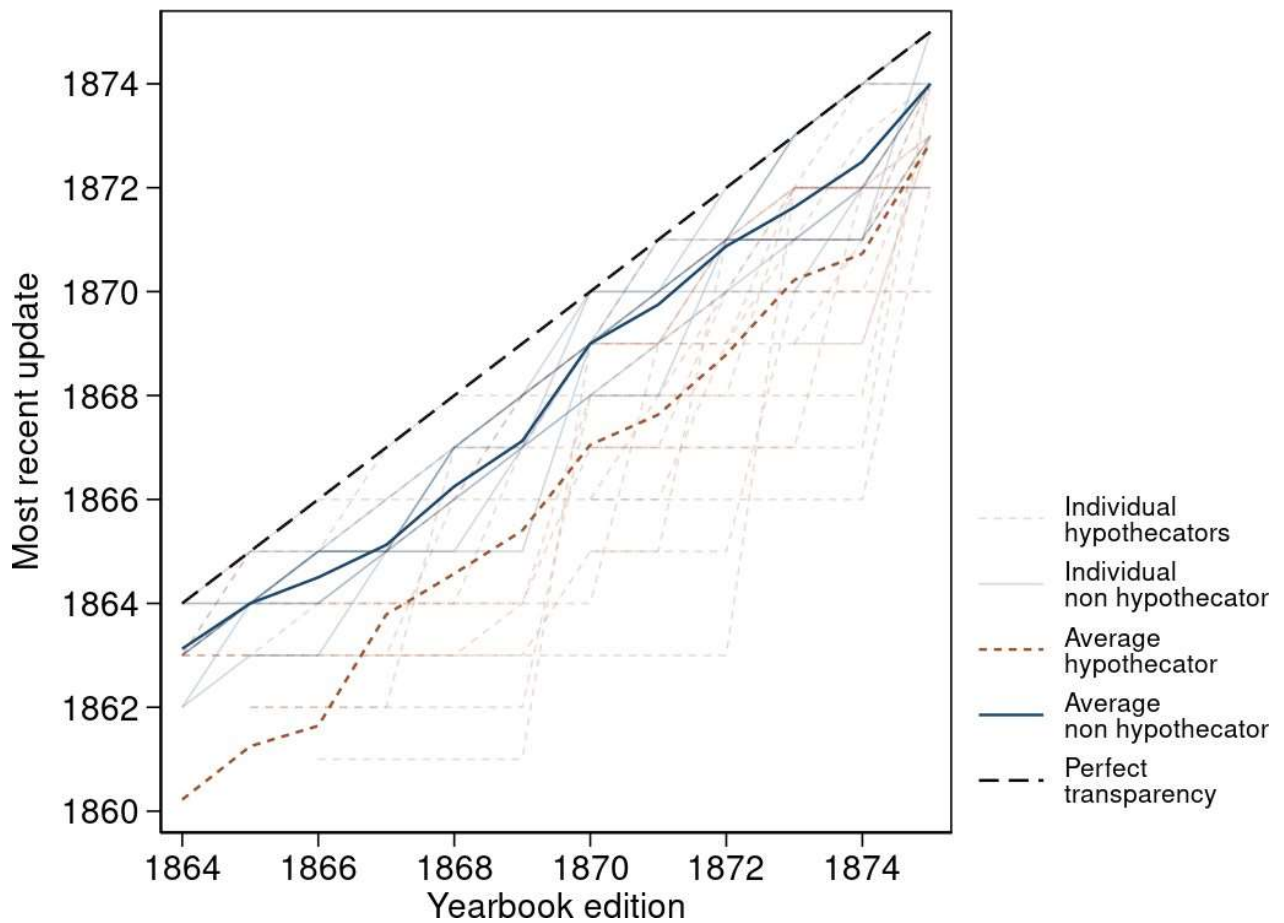
If we are to plot on the  $x$ -axis the year of the *Yearbook* edition and on the  $y$ -axis the year of the most recent budget available, the 45-degree line corresponds to full transparency. Any delay in collecting/releasing new figures leads to the curve falling below the 45-degree line. The further below, the less transparent the country. Figure 2 plots actual transparency lines. "Dashed" countries issue at least one Type I hypothecation. "Solid" countries did never hypothecate. The Figure underscores that if information was not perfect overall, arriving with an average lag of 1.5-2 years, it was particularly bad for hypothecating countries.

---

<sup>38</sup> On 19<sup>th</sup> century macro-financial analysis techniques, see Flandreau (2003); Flandreau and Zumer (2004).

<sup>39</sup> For an example of how difficult it could be to retrieve information, this is how a Venezuelan official described the data situation in 1865 (at a time when the country relied on hypothecations): "In the actual situation, after five years of civil war, without [...] an account of the Treasury, the Government can only offer what the last official data anterior to the war permit, and it requires at least the completion of one fiscal year to know approximately what is the real amount of the revenue." (*London Standard*, 22 December 1865).

Figure 2  
Collateral Clauses and Transparency



Notes: The Figure summarizes the availability of revenue data in the *Statesman's Yearbook*, distinguishing between sovereigns that issued Type I collateralized bonds (red, short-dashed lines) and sovereigns that did not issue any hypothecation (blue, solid lines). On the x-axis, we list the year of publishing of each issue of the Yearbook. On the y-axis, we list the year of the most recent update for each sovereign's revenue figures. We represent perfect transparency as continuously updated and current figures available each year, i.e. the dark, dashed line. Type II is not shown in the chart.

## 2) Correlates of Opacity

From the *Statesman's*, we can extract three alternative opacity indexes. "Recent Data" is a dummy taking value one if fiscal revenue information for sovereign  $c$  reported in *Yearbook* volume  $t$  is less than two years old. "Updated Data" is a dummy taking value one if revenue information for a given sovereign in *Yearbook* volume  $t$  is different from the same sovereign's entry in volume  $t-1$ . "Age of the Data" is a discrete variable recording how old is the latest revenue information regarding each sovereign published in volume  $t$  of the *Yearbook*.

We now use these measures of opacity to study the incidence of collateralization. The explanatory variable is the *Statesman's Yearbook's* updating speed and the explained variable is the sovereign's decision to hypothecate. We predict that the more recent the data, the better

it is updated, and the more recent the update, the smaller the incentive to hypothecate. The main confounder is country risk, because less transparent sovereigns were likely to be riskier too, and so we include a variable capturing it. Another confounder is Frederick Martin’s zeal. Anecdotal evidence suggests that the editor of the *Yearbook* intensified data collection efforts when a loan took place, because there was more interest in the country. Thus, we include another dummy controlling for whether a recent issue occurred.

The equation is:

$$(1) \quad \textit{Currently Hypothecating}_{ct} = \alpha_t + \beta \textit{Opacity Measure}_{ct} + \delta \textit{Risk}_{ct} \dots \\ + \gamma \textit{Recent Issuance}_{ct} + \epsilon_{ct}$$

*Currently Hypothecating*<sub>ct</sub> is a dummy equal to one if sovereign *c*’s last bond issued up to current year *t* is a Type I hypothecation.  $\alpha_t$  is a year-of-issuance fixed effect, accounting for systematic patterns across editions of the *Yearbook*. *Opacity Measure*<sub>ct</sub> is one of the three proxies for information quality. *Risk*<sub>ct</sub> is one of two country-risk controls: The lagged volume-weighted country spread for sovereign *c*, computed with yield data we collected (we introduce them in Section VIII), or the country’s lagged GDP per capita in 2011 \$ as documented by the Maddison Project, which we treat as a proxy of then known country’s resources (Bolt and van Zanden 2020). Finally, *Recent Issuance*<sub>ct</sub> is a dummy equal to one if country *c* issued bonds in the last two years.

Table 1 shows the result: The less opaque the country, the less likely it was to hypothecate. In particular, Opacity is measured by Recent Data in columns (1) and (2), Updated Data in (3) and (4), and Age of Data in (5) and (6). Columns (1) and (2) show that a drop in the speed of data updates below “at most two years old” implies an increase by approximately 30% in the probability that the last bond issued is a Type I. Columns (3) and (4) show that failure to update increases the probability that the last bond issued by the country is a Type I by about 20%. Finally, in columns (5) and (6), we show that an additional one-year lag in the information disclosed correlates with a 5 to 14% greater likelihood of tapping the market with a Type I bond. A 5-year lag increases the probability by 25% to 70%. In other words, for “absolutely opaque” countries, as a few were, hypothecations were a *sine qua non*.

Table 1  
Countries Issuing Type I bonds Were Less Transparent  
*Dependent Variable: Currently Hypothecating*

	(1)	(2)	(3)	(4)	(5)	(6)
Opacity Measure	-.3019*** (-6.11)	-.3303*** (-4.05)	-.2311*** (-4.98)	-.2218*** (-2.65)	.0521*** (5.29)	.1448*** (6.22)
Recent issuance	-.0894* (-1.82)	.0123 (0.16)	-.0862* (-1.72)	.0261 (0.33)	-.0785 (-1.38)	.0039 (0.05)
Lag Wgt. Spread	.0255*** (4.67)		.0296*** (5.42)		.0271*** (4.45)	
Lag GDPPC		-.1031*** (-2.78)		-.1215*** (-3.23)		-.0626* (-1.75)
Opacity Measure:	Recent Data		Updated Data		Age of the Data	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	.3788	.1206	.3567	.0644	.3188	.2269
Observations	341	154	341	154	280	153

*Notes:* The Table presents results from the estimation of Equation (1) using different information availability proxies as controls. The dependent variable “Currently Hypothecating” is a dummy taking value one if the last bond issued by sovereign  $c$  is a Type I hypothecation. Opacity measures: “Recent Data” is a dummy taking value one if the revenue information for sovereign  $c$  reported in Yearbook volume  $t$  is less than two years old; “Updated Data” is a dummy taking value one if revenue information for sovereign  $c$  in Yearbook volume  $t$  is different from information for the same sovereign in volume  $t-1$  (second two columns); “Age of the Data” is a discrete variable recording how old is the revenue information published in volume  $t$  of the Yearbook regarding each sovereign  $c$ . Each pair of columns alternatively controls for country risk with the lag of volume-weighted spreads, or with lag GDP per capita. Errors are heteroscedasticity robust; t-statistics are in parenthesis.

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

### 3) *Hypothecation as Substitute for Prestige*

Next, we propose yet another way to test for our interpretation of hypothecations. If hypothecations carried information, then they must have been an alternative to another well-documented instrument to reduce information asymmetries, namely recourse to prestigious underwriters. By attaching their name to an issue, prestigious underwriters such as Rothschilds or Barings signaled its creditworthiness, in fact rendering the security “information insensitive.” As a result, for a country banking with a prestigious intermediary, there was no need to produce information: Opacity was not a problem. The underwriters managed to extract the information for themselves and that was it. Note that the role played by prestigious banks may have created a case of informational holdout, whereby sovereigns may have been unable to signal their creditworthiness.

Against this backdrop, we posit a substitution effect between prestigious underwriters and hypothecations. Countries that could not secure the seal of approval of prestigious lenders, or countries that sought to break the informational holdout, should have been more likely to display their “facts” by relying on Type I hypothecations. If this is true, then Type I hypothecations offered an alternative monitoring technique to issuers whose loans prestigious intermediaries would reject, or in cases the prestigious intermediaries would impose exacting conditions. Conversely, Type I hypothecations enabled less capacious bankers to participate in the sovereign debt market. That such pressures existed in the market is consistent with Flandreau et al. (2009), documenting a declining market share for prestigious banks during 1845-1875, precisely as hypothecations became widespread.<sup>40</sup>

To test whether this substitutability effect holds we add to Equation (1) a “Currently Prestigious” dummy, equal to one if the current underwriter is either Rothschild or Barings.<sup>41</sup> If Type I bonds do substitute for prestige, then this dummy’s coefficient should be negative. Other controls are as in Equation (1). Table 2 shows across all specifications a robust *negative* correlation between prestigious underwriting and issuance of Type I hypothecations. The effect is large: Holding fixed other characteristics, a sovereign that issued its most recent bond with the help of a prestigious underwriter was 50 to 35 percent less likely to have employed Type I clauses in that same bond. This confirms that hypothecations helped ordinary (i.e. “non-prestigious”) banks break-in the sovereign debt market.

## V. Encounters of the Second Kind

As suggested, Type I hypothecations were the predominant type but not the only one. We now consider the alternative type, or Type II, a minority instrument that is only present in 12 out of 67 sovereign bonds contracts with collateral. As we show, its goal was replicating the desirable features of corporate collateral, that is, to give creditors tangible control over the security.<sup>42</sup> Type II is interesting because it demonstrates that, should they apply their mind to it, contract drafters were capable of building an instrument focused on enforcement. But conversely, this

---

<sup>40</sup> Anecdotal evidence of substitution between prestigious underwriters and hypothecations can be garnered from the history of Italian borrowing. Following the First War of Italian Independence (1848-1849) Piedmont (a predecessor state of Italy) was looking for an external loan. Working with Rothschilds was attractive, but the Rothschilds were using their political leverage on the country (Cavour 1962). As a result, Piedmont switched in 1851 to an ordinary underwriter, Hambro, which arranged a hypothecated loan, pledging state railway lines under construction (Hearder 1994). Hambro had previously arranged a hypothecation for Denmark.

<sup>41</sup> They were the two dominant intermediaries according to 19<sup>th</sup> century league tables in Flandreau et al. (2009).

<sup>42</sup> The number 12 is likely an upper bound, because, to avoid the risk of contaminating pure *sans* repossession Type I bonds with Type II, we have erred on the side of caution, and marked as Type II any bond containing traces of executability.

demonstrates that if enforcement was not provided for in Type I hypothecations, it was because it was not the point to begin with.

Table 2  
Hypothecation and Prestigious Underwriters Were Substitutes  
*Dependent Variable: Currently Hypothecating*

	(1)	(2)	(3)	(4)	(5)	(6)
Currently Prestigious	-.4858*** (-8.16)	-.3801*** (-3.83)	-.5025*** (-8.35)	-.4161*** (-4.13)	-.4437*** (-7.03)	-.3463*** (-3.73)
Opacity Measure	-.2173*** (-4.70)	-.2692*** (-3.39)	-.1541*** (-3.57)	-.1738** (-2.17)	.041*** (4.45)	.1289*** (5.68)
Recent issuance	-.0587 (-1.30)	.0383 (0.52)	-.0555 (-1.22)	.0517 (0.69)	-.057 (-1.09)	.0283 (0.41)
Lag Wgt. Spread	.017*** (3.35)		.0198*** (3.88)		.0183*** (3.19)	
Lag GDPPC		-.1101*** (-3.11)		-.1258*** (-3.52)		-.0712** (-2.07)
Opacity Measure:	Recent Data		Updated Data		Age of the Data	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	.483	.1987	.4687	.1609	.424	.2925
Observations	341	154	341	154	280	153

*Note:* The Table presents results from the estimation of Equation (1) adding as independent variable a dummy tracking whether a prestigious bank (Rothschild or Barings) underwrote the bond, and using different information availability proxies as controls. The dependent variable “Currently Hypothecating” is a dummy taking value one if the last bond issued by sovereign  $c$  is a Type I hypothecation. Opacity measures: “Recent Data” is a dummy taking value one if the revenue information for sovereign  $c$  reported in Yearbook volume  $t$  is less than two years old; “Updated Data” is a dummy taking value one if revenue information for sovereign  $c$  in Yearbook volume  $t$  is different from information for the same sovereign in volume  $t-1$  (second two columns); “Age of the Data” is a discrete variable recording how old is the revenue information published in volume  $t$  of the Yearbook regarding each sovereign  $c$ . Each pair of columns alternatively controls for country risk with the lag of volume-weighted spreads, or with lag GDP per capita. Errors are heteroscedasticity robust; t-statistics are in parenthesis.

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

We list the Type II bonds we picked out, along with their characteristics, in Table 3. Type II hypothecations may be characterized as contracting for repossession. We identify two alternative strategies to achieve this. In the first variant, lawyers sought to “lower” sovereign collateral to the level of private property so as to enable execution. Government assets could then be handled as corporate assets.<sup>43</sup> The other tactic exploited a symmetrical logic: It

<sup>43</sup> Reflecting this, in the stock exchange list, several Type II hypothecations were listed not under “foreign loans” (where sovereign bonds were normally found) but under so-called “Miscellaneous” securities.

“elevated” enforcement into the diplomatic sphere. As we have seen, the Law of Nations provided for state enforcement when the contract was tied to a sovereign act. Such a backdrop allowed to contract for state enforcement by taking advantage of diplomatic contexts.

The first strategy foresaw the crafting of a mechanism to put the asset beyond the reach of the sovereign. For instance, some loans to Spain (Quicksilver Loan) and Italy (Tobacco Loan) relied on mortgages that were executable under the respective countries’ domestic laws. To ensure execution, a publicly owned company pledged its assets to the lenders who were given a right to repossess in case of non-performance. A most interesting case is provided by the Bolivian loan of 1872, a state-sponsored railway and navigation project. The contract – in fact a system of contracts – had been designed by Baxter, Rose, Norton & Co, who were specialists in the law of trust. They introduced a formal deed of trust, whereby trustees were appointed by the Bolivian government to receive the proceeds of the loan and administer them on behalf of the bondholders (the *cestui que* or beneficiaries of the trust). The money was put in a strongbox at the Bank of England and the trustees tasked with releasing the funds upon evidence that the project proceeded according to plan. It was understood that British courts of justice had jurisdiction because *Smith* had suggested that judges would recognize a deed of trust if they saw one.<sup>44</sup>

Under the other logic, enforcement was provided by enlisting state support. This could be done formally, against the backdrop of peculiar diplomatic circumstances. A characteristic case is the loan to the Commission of the Danube in 1869. The commission was a multilateral body, the result of the Treaty of Paris of 1856, which settled the Crimean War. The loan gave as collateral the “tolls and duties” levied at the mouth of the Danube on the Black Sea, while granting bondholders “full powers of receivership in case of default.”<sup>45</sup> Because France, Italy, the North German Confederation (Prussia), Turkey and the United Kingdom guaranteed the loan, all had an incentive to provoke execution. A related case is the Ottoman loan of 1855, which, unusually, had a full British guarantee. Default would turn the loan into an official debt from Turkey to Britain, providing grounds for the British government to execute.

In other cases, the lien was created in a more surreptitious manner, contract drafters having sought to “piggyback” on diplomatic opportunities. An example is the pledging of the so-called Egyptian Tribute in several Ottoman loans, a rent the ruler of Egypt paid to its overlord (the Ottoman Sultan). Because the Tribute had been set as part of an international convention which

---

<sup>44</sup> See Anonymous (1873). One of the trustees was Horatio Lloyd, the inventor of the eponymous smart contracts. On the eventual enforcement of the lien, which took significant effort, see Flandreau (2016, p. 113-117).

<sup>45</sup> Prospectus for the European Commission of the Danube, 4% loan, *London Standard*, March 8, 1869.

Britain ratified, Britain was interested in the performance of the contract, giving it oblique jurisdiction in case of diversion. A factor often mentioned at the time was that the money was paid through London. This did not prevent the Turks from instructing Egypt to pay the money over to them and Britain had never made any formal pledge in this respect. Still, the lien had a recognized significance. As was later admitted, the Egyptian Tribute loans enjoyed an “exceptional position.”<sup>46</sup>

Table 3: Mechanics of Type II Securities

Nb	Loan	Security	Instrument	Court/Enforcer
“MORTGAGES”				
1	Republic of Bolivia 6% 1872	Money in trust	Deed of Trust	British Court of Chancery
3	Khedive’s Private Loans of 1866, 1867, 1870	Personal property of Khedive	Recovery against Khedive	Mixed Courts (not created until 1875)
1	Italian State Domain Loan of 1865	Real estate	Mortgage	Italian courts
1	Italian Tobacco Loan of 1868	Tobacco Monopoly	Mortgage	Italian courts
1	Spanish Quicksilver Mortgage Loan 5% 1870	Quicksilver mines incl. equipment &c.	Mortgage	Spanish courts
1	Swedish Provincial Mortgage Loan	Landed estates	Mortgage	Swedish courts
“STATE INTERVENTIONS”				
1	Commission of the Danube, 4% 1869	Tolls on Danube	Receivership of company	Any court of justice of signatories
2	Ottoman Egyptian Tribute Loan, 6% 1854 Ottoman Egyptian Tribute Loan, 6% 1871	Portions of the Egyptian Tribute	International Treaty	British gov.? (no formal guarantee)
1	Ottoman Egyptian Tribute Loan, 4% 1855	Portion of the Egyptian Tribute Custom duties of Syria and Smyrna	British gov. guarantee	British gov.

Source: Authors. Notes: See Appendix C for full details and references on each Type II loan and its legal design.

An interesting aspect of Type II securities is that they often paved the way for subsequent state interventions. This is logical, because some were by construction inviting diplomatic mingling. The way the “Khedive Loans” ended up serving as justification for British intervention provides an example. In this case, the trick used to render collateral executable was that the loans were extended not to Egypt but to the ruler of Egypt (the Khedive) in his *private* capacity, against the pledging of his personal estates. To enable enforcement of the security, Mixed Courts under joint Egyptian and international authority were given jurisdiction over disputes involving the Khedive’s properties “so long as no question of acts of sovereignty arose.”<sup>47</sup> The result was that the Khedive really broke an international *treaty* when he refused to comply with the Mixed Courts rulings, giving Britain legal grounds to intervene.<sup>48</sup>

As already emphasized, Type II hypothecations remained rare. One way to make sense of

<sup>46</sup> Appendix C. Office of the Egyptian Tribute’s Bondholders League (1876). Rose and Staniforth (1876, p. 11).

<sup>47</sup> Hoyle (1986, 1987, p. 437).

<sup>48</sup> Wynne (1951, p. 600 ff.).



this scarcity is to say that, except under the unusual circumstances we have discussed above, the instrument was not easy to implement. If “shackling” sovereigns through legal ingenuity was not credible, markets would fail to reward the instrument. The financially proficient lawyers who drafted the contracts realized that the effort was futile and this nipped in the bud further attempts. Although they demonstrate the ingenuity of their architects, Type II hypothecations are therefore a side-show. Studying them brings us back to our central point that very few hypothecations were about collateral enforcement. And so, even as 19<sup>th</sup> century lawyers did toy with the idea of turning sovereign collateral into something like its corporate “counterpart”, enforcement was simply not the point in the majority of the cases.

## **VI. Proof-Of-Stake**

A final way to show that hypothecations were about information provision is to observe the attitude of investors and regulators tasked with protecting them. Had hypothecations been a scam, regulators ought to have set their head against them. However, the evidence suggests otherwise. After a “hypothecation crisis” exposed the risk of underwriters manipulating the information content of hypothecations, regulatory authorities inspired by activist bondholders reacted by creating penalties against mendacious prospectuses. This is inconsistent with the view that hypothecations were meant to secure repossession, that they were inherently a scam, or that they relied on imperial enforcement. But this is consistent with the view that hypothecations were information.

We show this by drawing on the controversy that developed in the mid-1870s regarding whether hypothecations ought to be outlawed. Critics charged that hypothecations were a red herring and that they created opportunities for manipulation. Parliament was asked to regulate them. The trigger was investigative work by Walter Bagehot, the editor of *The Economist*, exposing doctored information in a Honduras Government “Ship Railway” Loan. On paper, this infrastructure projects would have transported vessels across the Central American Isthmus by train. The general bond gave as security the railway line and, accordingly, it quantified its earning potential. By compiling international trade statistics, *The Economist* demonstrated that the contractors had massively inflated the gross amount of trade through Cape Horn, so as to exaggerate the trade diversion and, therefore, freight revenues.<sup>49</sup>

The project was shelved amidst the outcry and hypothecations at large came under attack.<sup>50</sup> The Honduras scandal certainly exposed a weakness with Type I hypothecations. As critics

---

<sup>49</sup> *The Economist*, May 25, 1872, p. 639. On Bagehot as investigative journalist, see Grant, (2019).

<sup>50</sup> On the episode, see Flandreau (2016); Miranda, (2017); Flandreau and Legentilhomme (2021).

started looking more carefully at the contracts, they found that clauses had been added in some bonds where the contractors of foreign loans described themselves as agents of foreign governments in order to benefit of immunities.<sup>51</sup> The prospectus of the Costa Rica loan of 1872, pledging a railway, had an article lifting “responsibility, liability, or trust whatever” for the contractor.<sup>52</sup> The language used in covenants became suspect, threatening the whole economic logic of hypothecations.

Parliament was besieged by requests to legislate. But while some proposed the abolition of hypothecation, the discussion soon gravitated towards reinforcing incentives for truthful disclosures. Corporate lawyer H.B. Sheridan tabled in March 1875 a “Foreign Loans Registration Bill” that would have compelled contractors to register the data in government loans with the so-called Registrar of Joint Stock Companies.<sup>53</sup> Created as part of the Joint Stock Companies Act of 1844, the Registrar held available to investors basic company information. This information included the statutes, the name of the company promoters, and the annual shareholder lists. Under the provisions of the Act, when registering a new company with the Registrar, the promoters signed a statutory declaration that the information was accurate to the best of their knowledge.<sup>54</sup> If it later surfaced they had been dishonest, they could be held responsible in court for investors’ losses.<sup>55</sup>

By placing sovereign debt data under the authority of the Registrar, Sheridan was borrowing a page from the corporate regulation playbook. His Bill imposed disclosures and provided that intermediaries who would have falsified such disclosures, especially the “particulars of revenue and taxes”, would be made liable in case investors suffered losses subsequently. In clear, promoters attempting a Honduras would face penalties. When asked about the economic logic underpinning the Bill, Sheridan responded that if investors could be sure that all the hypothecations were accurately stated in the prospectuses “states would find it much easier to raise money here.”<sup>56</sup> Not coincidentally Sheridan was a sovereign debt activist, in fact the former Chairman of the Mexican Bondholders organization. This demonstrates that creditors valued sovereign hypothecations because of the intelligence they contained.

---

<sup>51</sup> Clarke (1879).

<sup>52</sup> *London Evening Standard*, May 4, 1872, art. 15.

<sup>53</sup> PP 1875 (60) (94): “A bill to provide for the compulsory registration of foreign loans.”

<sup>54</sup> It had been amended by the Joint Stock Companies Act 1856. See Taylor (2013) for a discussion.

<sup>55</sup> See *Solicitors’ Journal*, Nov 3, 1877: “Where false or untrue in any material particular, the person willfully making such a false declaration would be deemed guilty of misdemeanor.”

<sup>56</sup> Select Committee (1875, p. 274).

Though Sheridan's concerns were widely shared, involving the registrar in the business of certifying foreign data was not uncontroversial.<sup>57</sup> In particular, one issue was that it might signal wrongly that H.M.'s Government vouched for the numbers, creating a liability. A prudent Chancellor of the Exchequer committed the Bill to a parliamentary committee, the Select Committee on Loans to Foreign States, which was assigned the broader task of examining the experience of sovereign debt origination and the role played by hypothecations in the process. It was also tasked with coming up with suggestions for regulation.<sup>58</sup>

The *Report* of the Select Committee, released after extensive hearings, admitted that indeed hypothecations were not enforced after default.<sup>59</sup> Yet, showing an awareness that they were not about enforcement, it did not recommend to abolish them. The *Report* harnessed instead the logic of the Sheridan Bill, suggesting that contractors should be required to provide in the prospectus a full statement of the "revenues, lands, forests, public works, or other property upon which the proposed loan is secured, and of prior charges, if any, upon such security."<sup>60</sup> Truthfulness of disclosures would be secured through a sworn statement that would expose contractors to charges of perjury. Again, the recommendation aimed not at the *extinction* of hypothecations, but at the *improvement* of their informational content.

The epilogue is found in the archive of the stock exchange committee, where the matter circled back, since, as governing body of the London stock exchange, it controlled listing requirements. As sources indicate, lawmakers had encouraged the stock exchange to implement the Select Committee's recommendations.<sup>61</sup> On January 21 1876, a special meeting of the stock exchange's sub-Committee for Rules and Regulations recommended that "a statutory declaration be required from Contractors & Agents [of foreign government loans]."<sup>62</sup> The recommendation was subsequently adopted by the stock exchange committee, which made it part of the market's *Rules and Regulations*. After that, no application for any sovereign debt issue could be received without the underwriters filling up an affidavit with a sworn declaration before a notary public that they were submitting the data "conscientiously believing the same

---

<sup>57</sup> Cohen (1876, p. 692) speaks of hurdles involved in the creation a "Certifying Tribunal for Foreign Loans."

<sup>58</sup> The Chancellor was Sir Stafford Northcote. See Select Committee (1875). On the episode, Marichal (1989); Flandreau (2016).

<sup>59</sup> See Select Committee 1875; p. xlv, p. 151

<sup>60</sup> Select Committee (1875, xlix).

<sup>61</sup> See the interview of Herman de Zoete, Chairman of the Stock Exchange (Select Committee 1875, p. 29). The suggestion is made clearly, too, in the interview of George Webb Medley who recommended that "all statements of agents, contractors, brokers, on [prospectuses ought] to be made by statutory declarations, and the parties making them to be held civilly and criminally responsible for them" (Select Committee 1875, p. 277-8).

<sup>62</sup> Archive LSE, MS14612/1, Minutes of the Committee for rules and regulations. Showing the import of the Select Committee's suggestion, the regulations were said to be established "with special reference to the recommendation in the Report of the Select Committee of the House of Commons."

to be true.”<sup>63</sup> The mechanism discouraged information manipulation, because underwriters and contractors making wrongful disclosures could be sued for the full extent of the losses incurred by investors.<sup>64</sup>

## VII. The Economic Value of Unenforceable Collateral

We now show that despite the absence of repossession upon sovereign default, investors still appreciated hypothecation clauses. To show this we establish that Type I hypothecations lowered yields compared to what the *same sovereign* would have paid at the *same time* on a loan without collateral clauses. The model we use is the familiar panel regression with fixed effects employed in the literature. It enables to capture the Type I *premium* (Type I hypothecations enjoy a lower yield) in the following way:

$$(2) \quad \text{Yield Spread}_{bcyt} = \beta \text{Type } I_{bcy} + \eta_{ct} + \Gamma X_{bcyt} + \epsilon_{bcyt}$$

$\text{Yield Spread}_{bcyt}$  is the spread over British consols for bond  $b$  issued by sovereign  $c$  in year  $y$  and measured in year  $t$ . The independent variable of interest,  $\text{Type } I_{bcy}$ , is a dummy variable taking value one if the bond includes Type I collateral clauses and zero otherwise.  $\eta_{ct}$  are fixed effects.  $X_{bcyt}$  is a matrix of covariates, it includes the log of the total issue size (to control for liquidity); the log of maturity (to control for bond and time specific ex-ante risk born by the bondholders); a dummy for bonds that were perpetuities;<sup>65</sup> a dummy for bonds whose documentation contained a detailed statement of the project’s purpose; a dummy for the prestige of the underwriter. Finally,  $\epsilon_{bcyt}$  is the standard error, clustered at the country and year-of-bond-issuance ( $cy$ ) level.<sup>66</sup>

In order to estimate Equation (2), we assembled a panel of yields for the 116 bonds in our library of contracts by collecting end-of-year prices in the *Course of Exchange*. Next, we computed each bond’s yield using the exact amortization profile. This important adjustment is typically not done in the current literature (at best, authors take maturity alone into consideration). It is made possible here because we obtained the original documentation, enabling us to calculate rigorous yield-to-maturity.<sup>67</sup> Last, we computed spreads using Klovland (1994) for returns on British consols. Since liquidity effects can have severe impact on prices,

---

<sup>63</sup> Slaughter (1880).

<sup>64</sup> The text used in those declarations derived from the Declarations Act of 1835 (1835 c. 62).

<sup>65</sup> To avoid losing information, we replaced perpetuities’ infinite maturity by an arbitrary number higher than the highest maturity recorded. We also include a perpetuity dummy to account for perpetuity-specific characteristics.

<sup>66</sup> Results are robust under multiple clustering schemes, as we show in the Appendix, Figure A.4.1.

<sup>67</sup> See Flandreau and Legentilhomme (2021) for detail.

we only focus on the period between 1864 to 1875, when sovereign lending gained momentum resulting in greater trading activity.<sup>68</sup> Note that, since bond issues intensified at that point, 70% of the complete data is located in this timeframe.

There are reasons to believe that this empirical strategy underestimates the true effect of hypothecations. By its very nature, an identification approach relying on countries that issued simultaneously both hypothecated and non-hypothecated bonds is bound to focus on “borderline” cases, for whom non-hypothecation was a possibility. Very opaque countries had no alternative but to select into hypothecations, so that the (high) price they would have paid had they issued a non-hypothecated bond is not observed. Second, there is the problem of information spillover. Although holders of hypothecated bonds enjoyed a set of excludable services such as the appointment of trustees, non-hypothecated loans benefited from the informational spillover from hypothecated ones. If this is the case, then our estimate of the value of hypothecations provides a lower bound.

After elimination of the unusable data, the cleaned up dataset has 85 bonds and 640 observations.<sup>69</sup> Results are shown in Table 4. Columns (1) and (2) do not include any country fixed effect. They show that sovereigns issuing Type I securities were riskier: yield spreads were 350 to 476 basis points higher for Type I bonds. Next, columns (3) to (6) introduce country fixed effects. Comparing bonds with and without Type I clauses issued by the same sovereign in columns (3) and (4), we find that, on average, spreads on Type I bonds stood at 76 to 108 basis points below non-hypothecated counterparts. Columns (5) and (6) display the most demanding test’s result, because they control for country-year fixed effects, thus capturing the pure effect of hypothecations for countries whose Type I and non-hypothecated bonds traded simultaneously. We find that hypothecations produced a yield reduction of 57 to 85 basis points, a highly statistically significant result.

To give a sense of economic significance, the above numbers may be compared to average unconditional yield spreads. The average spread for countries employing at least one Type I bond stood around 679 basis points, while the average spread for countries not employing any hypothecation whatsoever was 253 basis points. Comparing the estimated average Type I premium to the difference between the two, or 426 basis points, we find that it ranges between 13 and 25 percent of the hypothecators’ disadvantage. This amounts to a sizable saving on

---

<sup>68</sup> See Chavaz and Flandreau (2017).

<sup>69</sup> Missing observations reduced the sample to 106 bonds. We further dropped 10 loans for which data could not be used (8 because of too short maturity and 2 because they were duplicated observations). We also excluded from the baseline regression the 11 usable Type II hypothecations because of idiosyncratic behavior.

borrowing costs, especially given that, as we suggested, it's a lower bound estimate. To sum up, our lower bound estimate of the value of unenforceable hypothecations points to the fact that Type I clauses were an effective tool to decrease the cost of capital, regardless of the fact that they were not enforceable.

Table 4  
Type I Hypothecations Helped Lower Cost of Debt for Risky Sovereign  
*Dependent Variable: Yield Spread*

	(1)	(2)	(3)	(4)	(5)	(6)
Type I	4.761*** (3.62)	3.504*** (2.69)	-.7631*** (-3.33)	-1.083*** (-3.16)	-.5698*** (-2.85)	-.8513*** (-3.36)
Perpetuities	2.534** (2.62)	4.58*** (3.43)	.2875 (0.65)	.9064** (2.07)	.5474 (0.98)	1.073** (2.36)
Prestige	.1171 (0.09)	.0625 (0.05)	-.523 (-1.03)	-.5885 (-1.24)	-.5448 (-0.82)	-.6352 (-1.10)
Log of Volume		.1003 (0.29)		.1823** (2.46)		.186** (2.39)
Log of Maturity		-2.328** (-2.07)		-.9852*** (-3.66)		-.8381*** (-3.57)
Purpose		.7482 (0.79)		.4051** (2.60)		.3341** (2.24)
Year FE	Yes	Yes	Yes	Yes		
Country FE			Yes	Yes		
C.try*Year FE					Yes	Yes
Adj. R2	.2132	.2438	.7608	.7633	.9729	.9767
Observations	640	640	640	640	544	544
Type I Obs.			192	192	135	135

*Notes:* The Table presents results from the estimation of Equation (2). The first two columns report estimates that only absorb common year of trade fixed effects; the second two columns add country fixed effects; the last two columns absorb all country-year specific variation via country-year fixed effects. The last line (Type I Obs.) records the number of observations that identify the Type I parameter in the country and country-time fixed effects regressions. Namely, the number of observations belonging to countries floating both Type I and non-hypothecated bonds (column (3) and (4)), and those belonging to countries floating both Type I and non-hypothecated bonds at the same time (column (5) and (6)). Errors are clustered at the country-year of bond issuance level, with 80 country-year clusters over the first four columns and 72 country-year clusters over the last two columns; t-statistics are in parenthesis.

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

In the previous exercise, we identified Type I hypothecations effect with the help of countries that had Type I and non-hypothecated bonds simultaneously outstanding. This represents five

usable borrowing entities out of 32. They account together for 25 bonds, a little below a third of the library of covenants.<sup>70</sup> These bonds contribute 192 individual spread observations in the country effects specifications (out of 640 observations), and 135 observations in the country-time fixed effects specification (which uses 544 observations). In case one were to worry about the relatively limited number of identifying observations, an alternative is to run the same model while including now Type II hypothecations.

Doing this is interesting in itself. Although our discussion has suggested that each Type II hypothecation was *sui generis*, so that all performed differently, on average they were executable, thus we expect this to reduce the yields of bonds enjoying this security (compared to alternatives). In particular, a Type II hypothecation that would closely replicate the features of a genuine mortgage would be expected to reduce the yield below counterfactual unsecured loans and Type I loans of the same country (since the latter have an informational value only).<sup>71</sup> In what follows, we include Type II in the population and control for them with a common Type II dummy, expecting a bigger effect than that for Type I.

Including Type IIs in the regression has another advantage: Injection of the Type II data in the analysis provides a way to increase the number of observations used to identify the effect of Type I hypothecations. For instance, some countries issued Type I and Type II, but no unsecured bonds. The information in the corresponding bond prices was thus “thrown out” in the baseline model, while it can be exploited in the specification considered now. In practice, by including Type II hypothecations, the number of individual spread observations belonging to countries serving to identify Type I rises from 192 (country FE) and 135 (country-time FE) to 311 and 296 respectively, while the number of bonds goes from 25 to 38.<sup>72</sup>

Results, shown in Table 5, reveal three relevant facts: First, the estimated Type I premium remains consistent across all specifications: if anything it shows up a bit larger than in the baseline (column (3) through (6), first line). Second, the Type II premium is large and significant ranging from 180 to 210 basis points: Such a large premium, which shows that on average Type II bonds had much lower yields (higher bond prices), demonstrates that the security was, at least for some such bonds, credible. Third, the implied pecking order across the alternative instruments is the one which one would expect: Other things being equal, and

---

<sup>70</sup> There were in fact 6 (Argentina, Chile, Denmark, Hungary, Italy, Turkey), but because Hungary’s only Type I hypothecation had a very short maturity, it could not be used.

<sup>71</sup> Al (2012) has shown that the 1855 Turkish Bond, whose security was “executable” by Britain, traded at a much higher price than all other Turkish bonds.

<sup>72</sup> The additional observations come from Italy, Egypt, and Turkey. Moreover, the regression uses 60 observations from Type II bonds by Sweden and Spain, which only issue Type II and non-hypothecated bonds.

subject to feasibility constraints and other political opportunity costs, it was better to have Type II hypothecation than a Type I hypothecation, and better to have a Type I hypothecation than nothing. The story of Type I hypothecations is that of the invention of a second best.

Table 5  
Effects of Type I and Type II Hypothecations  
*Dependent Variable: Yield Spread*

	(1)	(2)	(3)	(4)	(5)	(6)
Type I	4.431*** (3.54)	3.395*** (2.99)	-.8574** (-2.50)	-1.112** (-2.42)	-.6675** (-2.11)	-.9338** (-2.27)
Type II	1.413 (1.55)	.8075 (0.87)	-2.016*** (-3.81)	-2.303*** (-3.81)	-1.833*** (-3.31)	-2.123*** (-3.55)
Perpetuities	2.326** (2.47)	4.084*** (3.40)	1.407** (2.11)	2.258*** (3.26)	1.551** (2.01)	2.353*** (3.12)
Prestige	-.3783 (-0.33)	-.3175 (-0.29)	-1.744*** (-2.67)	-1.728*** (-2.86)	-1.776** (-2.30)	-1.776** (-2.57)
Log of Volume		.0027 (0.01)		.166* (1.68)		.1831** (2.04)
Log of Maturity		-1.929** (-2.40)		-.9508*** (-3.71)		-.915*** (-3.57)
Purpose		.7079 (0.92)		.4431** (2.01)		.427* (1.73)
Year FE	Yes	Yes	Yes	Yes		
Country FE			Yes	Yes		
C.try*Y.r FE					Yes	Yes
Adj. R2	.2129	.2456	.7479	.7533	.9423	.9507
Observations	726	726	726	726	627	627
Type I Obs.			311	311	296	296

*Notes:* The Table presents results from the estimation of Equation (2) adding back the observations due to Type II bonds, while singling them out with a Type II dummy. The first two columns present the results that only absorb common year of trade fixed effects; the second two columns, add country fixed effects; the last two columns, absorb all country-year specific variation via country-year fixed effects. The last line (Type I Obs.) records the number of observations that identify the Type I parameter in the country and country-time fixed effects regressions. Namely, the number of observations belonging to countries floating both Type I and other bond types (column (3) and (4)), and those belonging to countries floating both Type I and other bond types at the same time (column (5) and (6)). Errors are clustered at the country-year of bond issuance level, with 91 country-year clusters over the first four columns and 82 country-year clusters over the last two columns; t-statistics are in parenthesis.



\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## VIII. Conclusions

Why did 19<sup>th</sup> century sovereigns hypothecate their assets when the lien could not be enforced or with much difficulty? Departing from previous claims in the literature, this paper proposes a new view. Inclusion of descriptions of sovereign assets, of their location, value and earning potential served to document individual countries' fiscal prospects in contexts where fiscal data was fragmentary. The case of the guano contracts captured the underlying logic very well, explaining the interest they have received in the literature and that they came to epitomize the hypothecation process. Though the security could not be executed because of absolute sovereign immunity, state-owned guano deposits in the Chincha Island served to document sovereign wealth. Hypothecations provided valuable information on individual countries' tax bases, and the circulation of this information served to grease the wheels of international finance.

A critical contribution of the paper moving forward is to draw the attention of students of international macroeconomic history to the contexts of fiscal data production. This paper points to a new take on the meaning of sovereign contracts and the “mysterious” clauses they contain. We interpret this kind of contract as a data generating machine, foregrounding the role played by law firms in structuring financial flows and “building” creditworthiness. The legal “biology” of the international numerical order is a topic in its own right and ought to be the object of future consideration.

We do not claim that sovereign hypothecations did not have significant downsides, as our discussion of the Honduras “hack” suggests.<sup>73</sup> What we claim is that they did matter in ways not yet identified in previous research. In our work, we also came across suggestions that the externalization of fiscal data could have adverse effects for state capacity. In Venezuela, because the custom house was the security given to foreign lenders, it became the target of raids by rival “Caudillos” (Latin American warlords). Likewise, Peruvian guano attracted the envy of neighbors and led Peru to become embroiled in the “guano wars.” In the future, it would be interesting to examine the interaction between hypothecation and state building.<sup>74</sup>

Circling back to the modern case of Chinese agencies lending to the governments of

---

<sup>73</sup> This also means that we take no side in the ongoing debate on the efficiency of Fintech and ability at including borrowers. At present, empirical evidence hints to both challenges (e.g. Buchak et al. 2020) and opportunities (e.g. Gambacorta et al. 2023).

<sup>74</sup> On Venezuela, Eastwick (1868). On the relation between civil war, debt and state making in Latin America, a good introduction is Centeno (2002). See also Mazzuca (2021), for a recent discussion that has echoes in our findings.

developing countries in Africa and elsewhere, we suggest that it is useful to resituate the phenomenon in the *longue durée* of sovereign hypothecation studied here. We do not mean to imply that present sovereign hypothecations are similar to the institution that developed in the 19<sup>th</sup> century, as some legal scholars have suggested. We have shown that in such matters, the devil is in the detail. Yet one possible interpretation of the modern reliance on what seems to be, once again, a rather elusive kind of “collateral”, may be that Chinese agencies have rediscovered an axiom which 19<sup>th</sup> century investors and their legal experts had already grasped: That knowledge is a form of ownership.

## References

- Ahmed, Faisal, Laura Alfaro, and Noel Naurer. “Lawsuits and Empire: On the enforcement of sovereign debt in Latin America.” *Law & Contemporary Problems* 73, no. 4 (2010): 39-46.
- Al, Huseyin. “Was there a guarantee effect for the Ottoman loans in the 19<sup>th</sup> century?” *Australian Economic History Review* 52, no. 2 (2012): 191-208.
- Anonymous. *Papers and Documents Relation to the Bolivian Loan*. London: Dunlop, 1873.
- Bai, Jushan and Pierre Perron. “Estimating and testing linear models with multiple structural changes.” *Econometrica*, (1998): 47–78.
- Berger, Allen N., W. Scott Frame, and Vasso Ioannidou. “Tests of ex ante versus ex post theories of collateral using private and public information.” *Journal of Financial Economics* 100, no. 1 (2011): 85–97.
- Bolt, Jutta and Jan L. van Zanden. “Maddison style estimates of the evolution of the world economy. A new 2020 update.” *University of Groningen, Groningen Growth and Development Centre, Maddison Project Working Paper* no. 15, (2020).
- Borchard, Edwin. *State Insolvency and Foreign Bondholders. 1. General Principles*. Yale University Press, 1951.
- British Newspaper Archive.
- Buchak, Gregory, Gregor Matvos, Tomasz Piskorski, and Amit Seru. “Why is intermediating houses so difficult? Evidence from iBuyers.” NBER Working Paper No. 28252, Cambridge, MA, 2020.
- Buchheit, Lee C., and Jeremiah S. Pam. “The *pari passu* clause in sovereign debt instruments.” *Emory Law Journal* 53, no. 869 (2004).

- Calomiris, Charles W., Mauricio Larrain, José Liberti, and Jason Sturgess. “How collateral laws shape lending and sectoral activity.” *Journal of Financial Economics* 123, no. 1 (2017):163–188.
- Cauwès, Paul. "Commencements du crédit public en France. Les rentes sur l’Hôtel-de-Ville au XVIème siècle (1522-1547)." *Revue d’Economie Politique*, no. 9 (1895a): 97-123.
- Cauwès, Paul. "Commencements du crédit public en France. Les rentes sur l’Hôtel-de-Ville de Paris au XVIème siècle (1547 à 1561)." *Revue d’Economie Politique*, no. 9 (1895b): 825-865.
- Cauwès, Paul. "Commencements du crédit public en France. Les rentes sur l’Hôtel-de-Ville au XVIème siècle (1561 à 1588)." *Revue d’Economie Politique*, no. 10 (1896): 411-479.
- Cavour, Camillo B. Edited by Delio Cantimori. *Discorsi Parlamentari*. Torino: Einaudi, 1962.
- Centeno, Miguel Angel. *Blood and Debt War and the Nation-State in Latin America*, Philadelphia: Penn State University Press, 2002.
- Chabot, Benjamin and Veronica Santarosa. “Don’t cry for Argentina (or other sovereign borrowers): Lessons from a previous era of sovereign debt contract enforcement.” *Capital Markets Law Journal* 12, no. 1 (2017): 9–37.
- Chavaz, Matthieu and Marc Flandreau. ““High & dry”: The liquidity and credit of colonial and foreign government debt and the London Stock Exchange (1880–1910).” *The Journal of Economic History* 77, no. 3 (2017): 653–691.
- Chitty, Joseph. *A Practical Treatise on the Law of Contracts*. London: Sweet, 1841.
- Clarke, Hyde. “Memoir of Sir Isaac Goldsmid.” *Banker’s Magazine*, (July 1859): 449–57.
- Clarke, Hyde. *Sovereign and Quasi Sovereign States: Their Debts to Foreign Countries*, London: E. Wilson, 1879.
- Cohen, Lionel L. “Foreign loans: Their introduction to the public, and admission to the stock exchange in connection with the recent report of the committee on foreign loans.” In *Transactions of the National Association for the Promotion of Social Science, Brighton Meeting*, edited by Charles W. Ryalls. National Association for the Promotion of Social Science, 691 (1876).
- Coleman, Raymond W. “Pledged revenue as security for government bonds.” *American*

- Economic Review* 26, no. 4 (1936): 667–682.
- Daru, Pierre. *Histoire de la Republique de Venise*. Paris: F. Didot, 2 vols, 1821.
- Degrype, Hans, Vasso Ioannidou, José María Liberti, and Jason Sturgess. “How do laws and institutions affect recovery rates for collateral?” *The Review of Corporate Finance Studies* 9, no. 1 (2020): 1–43.
- Dewey, David R. *Financial History of the United States*, New York: Longmans, 1934.
- Drummond Wolff, Henry. *Rambling Recollections*. London: Macmillan, 1908.
- Eastwick, Edward Backhouse. *Venezuela: or, Sketches of life in a South American republic: with the history of the loan of 1864*, 2nd ed., London: Chapman & Hall, 1868.
- Evans, D. Morier. *Fortune's Epitome of the Stocks & Public Funds*. London: Letts, Son and Co, 1851.
- Evans, D. Morier. *Fortune's Epitome of the Stocks & Public Funds*. London: Letts, Son and Co, 1856.
- Fenn, Charles. *Compendium of the English and Foreign Funds*. London: Effingham Wilson, 1855.
- Fenn, Charles. *Compendium of the English and Foreign Funds*. London: Effingham Wilson, 1869.
- Fishlow, Albert. “Lessons from the past: Capital markets during the 19<sup>th</sup> century and the interwar period.” *International Organization* 39, no. 3 (1985): 383–439.
- Flandreau, Marc. “Caveat emptor—Coping with sovereign risk under the international gold standard, 1871-1913.” In *The International Financial History in the Twentieth Century: System and Anarchy*. Cambridge, 17–50, 2003.
- Flandreau, Marc. “Sovereign states, bondholder committees, and the London Stock Exchange in the nineteenth-century (1827-68): New facts and old fiction.” *Oxford Review of Economic Policy* 29, no. 4 (2013): 668–696.
- Flandreau, Marc. *Anthropologists in the Stock Exchange: A Financial History of Victorian Science*. University of Chicago Press, 2016.
- Flandreau, Marc. “What is in a bond? The value of Portugal or the financial origins of the portuguese civil war.” In *Economic Globalization and Governance*, edited by Maria E. Mata, Miguel Rocha de Sousa, and Luis Brites Pereira. Springer, 35–50, 2021.
- Flandreau, Marc. “Pari passu lost and found: An essay on the origins of sovereign

- bankruptcy.” INET Working Paper No. 186, June 2022.
- Flandreau, Marc and Geoffroy Legentilhomme. “Cyberpunk Victoria: The credibility of computers and the first digital revolution, 1848–83,” *The Economic History Review* 75, no. 4 (2021): 1083-1119.
- Flandreau, Marc, Juan H. Flores, Norbert Gaillard, and Sebastián Nieto-Parra. “The end of gatekeeping: Underwriters and the quality of sovereign bond markets, 1815-2007.” NBER Working Paper No. 15128, Cambridge, MA, 2009.
- Flandreau, Marc and Frederic Zumer. *The Making of Global Finance*. Paris: OECD, 2004.
- Fратиани, Michele and Franco Spinelli. "Italian city-states and financial evolution." *European Review of Economic History* 10, no. 3 (2006): 257-278.
- Frydman, Carola and Eric Hilt. “Investment banks as corporate monitors in the early twentieth century United States.” *American Economic Review* 107, no.7 (2017): 1938-1970
- Gambacorta, Leonardo, Yiping Huang, Zenhua Li, Hang Qiu, and Shu Chen. “Data versus Collateral”. *Review of Finance* 27, no. 3 (2023): 369-398
- Gelpern, Anna, Sebastian Horn, Scott Morris, Brad Parks, and Cristoph Trebesch. “How China lends: A rare look into 100 debt contracts with foreign governments”. *Economic Policy* (2022).
- Gorton, Gary and Guillermo Ordonez. “Collateral crises.” *American Economic Review* 104, no.2 (2014):343–78.
- Grant, James. *Bagehot: The Life and Times of the Greatest Victorian*. New York: W.W. Norton, 2019.
- Hart, Oliver and John Moore. “Contracts as reference points.” *The Quarterly Journal of Economics* 123, no. 1 (2008): 1–48.
- Header, Harry. *Cavour*. London: Routledge, 1994.
- Hirst, F. W. *The Credit of Nations*. U. S. Senate, 61st Congress, 2nd Session, Document No. 579, 1910.
- Hoyle, Mark S. W. “The origins of the Mixed Courts of Egypt.” *Arab Law Quarterly* 1, no.2 (1986): 220–230.
- Hoyle, Mark S. W. “The Mixed Courts of Egypt 1896-1905.” *Arab Law Quarterly* 2, no.1 (1987): 57–74.
- House of Commons. *Report from the Select Committee on Loans to Foreign States, Together with the Proceedings of the Committee, Minutes of Evidence, Appendix and*

- Index*. London: HMSO, 1875.
- Ito, Seiichiro. “Registration and credit in seventeenth-century England.” *Financial History Review* 20, no. 2 (2013): 137–162.
- IMF and World Bank. “Collateralized transactions: Key considerations for public lenders and borrowers.” Policy Paper No. 20/010, Washington: IMF and World Bank, 2020.
- Jenks, Leland H. *The Migration of British Capital to 1875*. Alfred A. Knopf, New York, 1927.
- Klovland, Jan Tore. “Pitfalls in the estimation of the yield on British consols, 1850-1914.” *The Journal of Economic History* 54, no.1 (1994): 164–187.
- Marichal, Carlos. 1989. *A Century of Debt Crises: From Independence to the Great Depression, 1820-1930*. Princeton University Press.
- Mathew, William M. *The House of Gibbs and the Peruvian Guano Monopoly*. Royal Statistical Society, 1981.
- Mazucca, Sebastian. *Latecomer State Formation. Political Geography and Capacity Failure in Latin America*, New Haven: Yale University Press, 2021.
- McKendrick, Neil and John Newlands. 1999. *F&C: A History of Foreign & Colonial*. London: Foreign & Colonial Investment Trust.
- Miranda, José A. R. “Small money, big problems: how an investigation on small Latin American republics shaped the financial market for sovereign debt in the 19<sup>th</sup> century.” *Estudios Históricos* 30, (2017): 55–70.
- Mitchener, Kris James and Marc D. Weidenmier. “Supersanctions and sovereign debt repayment”, *Journal of International Money and Finance* 29, no.1 (2010): 19-36.
- North, Douglass C. and Barry R. Weingast. “Constitutions and commitment: The evolution of institutions governing public choice in seventeenth-century England.” *The Journal of Economic History* 49, no. 4 (1989): 803–82.
- North, Douglass C. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, 1990.
- Office of the Egyptian Tribute’s Bondholders League. *The Egyptian Tribute. A Short History of the Tribute Loans, 1854, 1855, 1871*, London: s.n, 1876.
- Phillimore, Robert. *Commentaries Upon International Law*. Volume II, 2nd Edition, London: Butterworths, 1871.
- Platt, Donald C. M. *Finance, Trade, and Politics in British Foreign Policy, 1815-1914*. London: Clarendon, 1968.

- Pistor, Katharina, *The Code of Capital: How the Law Creates Wealth and Inequality*, Princeton: Princeton University Press, 2019.
- Rose, Philip and John Staniforth. *Turkish Debt; Report of Sir Philip Rose and Mr. John Staniforth, on the Results of their Mission to Constantinople*. London: Harrison, 1876.
- Schumacher, Julian, Christoph Trebesch, Henrik Enderlein. “Sovereign defaults in court.” *Journal of International Economics* 131, (2021).
- Slaughter, Mihill. *Rules and Regulations for the Conduct of Business on the Stock Exchange*, London: Published under the authority of the Committee for General Purposes, 1880.
- Steinberg, Sigfrid H. “Statesman’s Year-Book: Martin to Epstein.” *The Journal of Library History* 1, no. 3 (1966): 153–166.
- St George, Andrew. *A History of Norton Rose.*, Chesterton: Granta Editions, 1995.
- Story, Joseph. *Commentaries on the Law of Agency: As a Branch of Commercial and Maritime Jurisprudence, With Occasional Illustrations from the Civil and Foreign Law*. Boston: Little, 1839.
- Taylor, James. “Privacy, publicity, and reputation: How the press regulated the market in nineteenth-century England.” *Business History Review* 87, no. 4 (2013): 679-701.
- Thakor, Anjan V. “Fintech and banking: What do we know?” *Journal of Financial Intermediation* 41, (2020): 100833.
- The Times Digital Archive, [www.gale.com](http://www.gale.com).
- Vammale-Sabouret, Camila. *De la Naissance de la Dette Publique au Plafond Souverain: Rôle des Gouvernements Régionaux dans l'Évolution de la Dette Publique*. Unpublished Dissertation, Institut d’Etudes Politiques, Paris, 2008.
- Vattel, Emmeric de. *Le Droit des Gens ou Principes de la Loi Naturelle Appliqués à la Conduite et aux Affaires des Nations et des Souverains*. Leyde: s.n. 1758
- Vives, Xavier. “Digital disruption in banking.” *Annual Review of Financial Economics* 11, (2019): 243-272.
- Vizcarra, Catalina. “Guano, credible commitments, and sovereign debt repayment in nineteenth-century Peru.” *The Journal of Economic History* 69, no.2 (2009): 358–387.
- Vührer, A. *Histoire de la Dette Publique en France*. Paris: Berger-Levrault, 1886.
- Westlake, John. *A Treatise on Private International Law: Or the Conflict of Laws, with Principal Reference to Its Practice in the English and Other Cognate Systems of*

- Jurisprudence*. W. Maxwell, 1858.
- Weidemaier, Mark C. “Contracting for state intervention: The origins of sovereign debt arbitration.” *Law and Contemporary Problems* 73, no.4 (2010): 335–355.
- Weidemaier, Mark C. “Reforming sovereign lending practices: Modern initiatives in historical context.” No. 1996763. *UNC Legal Studies Research Paper*, (2012).
- Wynne, William H. *State Insolvency and Foreign Bondholders: Selected Case Histories of Governmental Foreign Bond Defaults and Debt Readjustments*. New Heaven: Yale University Press, 1951.
- Ziegler, Ph. *The Sixth Great Power. Barings, 1762-1929*. London: Collins, 1988



## Appendices

### A) DESCRIPTIVE STATISTICS AND ROBUSTNESS TESTS

#### A.1) The Data

Table A.1.1 provides summary statistics of loan characteristics, comparing Type I, Type II and non-hypothecated bonds. Type I hypothecations provided more information on the object of the loan. They also displayed a higher yield spread over British consols at issuance.<sup>75</sup> Finally, Type I hypothecations involved smaller deals (5 million pounds on average compared to 9 million pounds for non-hypothecated), shorter maturities (28 years versus 44 years), and defaulted more often (a 54 percent default rate against the 8.2 percent of non-hypothecated bonds). Furthermore, from the Table we notice that ordinary underwriters made a stronger show amidst Type I hypothecations than among non-hypothecated loans.

Table A.1.1

Descriptive Statistics for the 116 Bonds List

#### **Non-Hypothecated**

	Mean	S.D.	Min	Max	N.
Purpose	0.449	0.503	0	1	49
Sinking Fund	0.633	0.487	0	1	49
Spread at Issuance	2.999	1.54	1.557	8.254	41
Prestige	0.531	0.504	0	1	49
Bond Volume	9.065	19.775	0.358	120	49
Maturity	44.23	23.649	4	100	37
Bond Default	0.082	0.277	0	1	49

#### **Type I Hypothecations**

	Mean	S.D.	Min	Max	N.
Purpose	0.673	0.474	0	1	55
Sinking Fund	0.873	0.336	0	1	55
Spread at Issuance	4.642	1.812	1.609	9.33	48
Prestige	0.055	0.229	0	1	55
Bond Volume	5.198	8.608	0.2	36.8	55
Maturity	27.873	20.476	1.5	100	55
Bond Default	0.545	0.502	0	1	55

<sup>75</sup> British Consols' yields are from Klovland (1994)'s Appendix Table 1.

## Type II Hypothecations

	Mean	S.D.	Min	Max	N.
Purpose	0.500	0.522	0	1	12
Sinking Fund	1	0	1	1	12
Spread at Issuance	3.689	2.113	0.608	6.83	11
Prestige	0.167	0.389	0	1	12
Bond Volume	11.072	26.235	0.135	94.005	12
Maturity	35.167	31.550	13	100	12
Bond Default	0.500	0.522	0	1	12

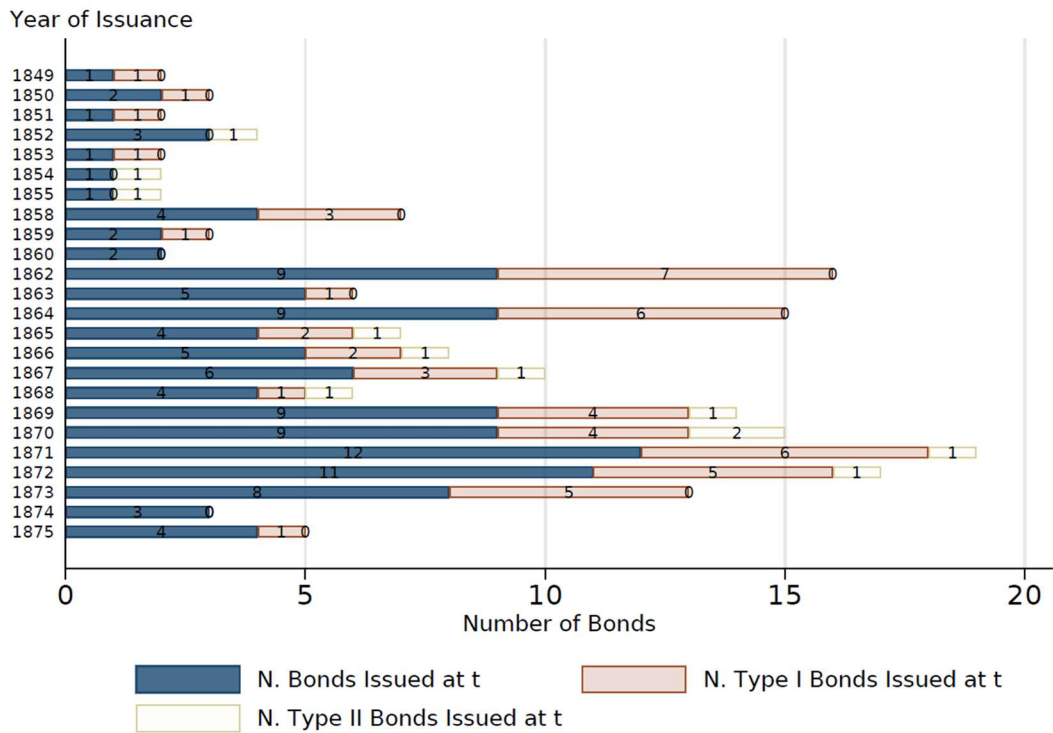
*Notes:* This Table presents descriptive statistics for the cross-section of bonds, broken down by hypothecation status of the bond. Purpose is a dummy taking value one if the bond's prospect includes a description of the purpose for which the debt is underwritten; Spread at Issuance records the yield spread at which the bond is presented to the market by the underwriter, the benchmark being the British consols; Prestigious Underwriter is a dummy taking value one if the bond is underwritten by either Rothschild or Baring; Bond Volume records the issuance in millions of pounds; Maturity records the maturity in years, with missing Maturity observations in the "Non-Hypothecated" panel due to perpetuities. Bond Default is a dummy recording whether the bond ever defaults between its issuance and 1880, based on the account in Lucas Nash (1881).

### A.2) Bond Issuance over Time and Type

Figure A.2.1 gives time series evidence on the hypothecation mania (1849-1875). It shows the number of issues under Type I, Type II and non-hypothecated bonds. Figure A.2.2 shows the incidence of the various revenues pledged in hypothecations. Pledging the income of the customhouse was a favorite, which makes sense given the importance they had in the tax system of many sovereign borrowers (see Mazzuca 2021).

Figure A.2.1

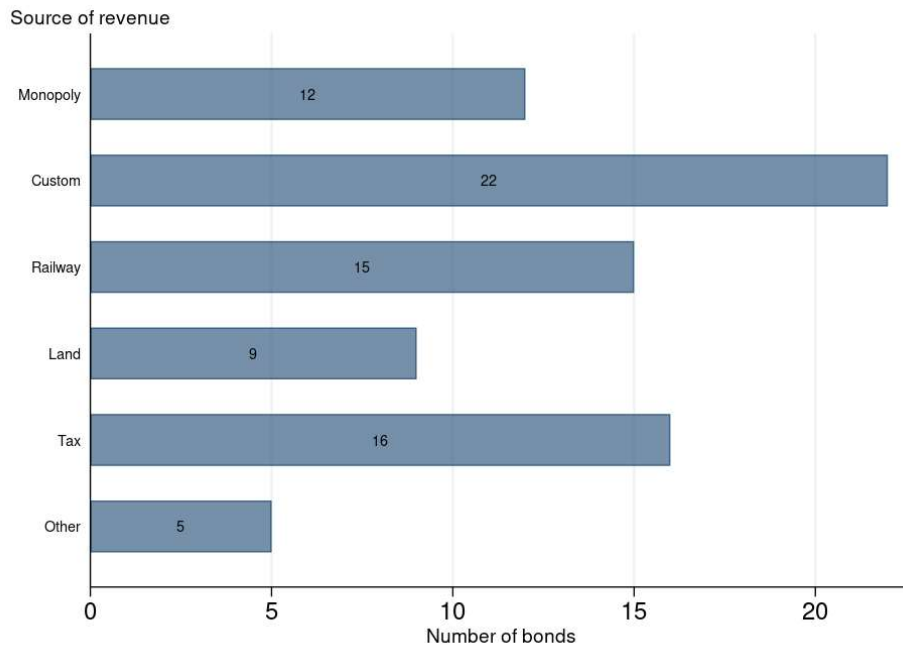
Bond Issuance over Time and Bond Type



Notes: This Figure documents the distribution of bonds over year of issuance. From the left, darker bars count the number of non-hypothecated bonds issued that year, lighter bars count Type I bonds, and transparent bars count Type II bonds.

Figure A.2.2

Type I Collateral Clauses Description



*Notes:* This Figure presents summaries of prospectus characteristics for the fifty-five Type I bonds, focusing on the sources of revenue behind the pledges. The “Monopoly” category includes all pledges backed by guano revenues; tobacco revenues; revenues from salt; revenues from coal and mahogany; from mercury; from fish and locks; from a navigation company. The “Custom” category includes all revenues from custom houses, pledged in the majority of Type I prospectuses. The “Railway” category includes all pledges of railways and revenues from railways, while the “Land” category includes pledges of land or of revenues from land. The “Tax” category includes all pledges of revenues from provincial taxes; “octrois”, taxes on the movement of goods for sale within a state; taxes on the sale of small animals and the manufacture of oil; taxes on liquor and coffee; personal (income) tax; taxes on slaughterhouses; the sale of stamps and licenses. The “Other” category includes pledges of a reserve fund, company shares, rice, and a compensation payment from Russia to Denmark, for Denmark’s renunciation to imposing tolls on navigation in the Oresund. The number on each bar counts how many bonds pledge that specific revenue or physical asset. Categories are not mutually exclusive, as each bond may pledge multiple items.

A.3) Estimating the Value of Type I Hypothecations: Alternative Method

Here we consider an alternative strategy to estimate the effect of Type I hypothecations. It builds on the intuition that unobservable factors are essentially “country risk”, itself captured by sovereign spreads. If we stack each country’s average spread in a single variable, we can use it as a control for risk in place of one dummy variable per country, or country-time. Including this variable in a regression, we can then compare yields on Type I and non-hypothecated bonds not only for those countries that issued both Type I and non-hypothecated bonds, but across different countries that have similar spreads and issued *either or both* Type I or non-hypothecated bonds. Such conditional comparison is arguably inferior in purity to the approach in the text. But it allows to use almost all observations in our dataset and it offers a way to test the robustness of the effect of hypothecation. In particular, if the Type I

premium estimated in the text is just due to fixed effects imposed restrictions, we should expect this framework to return a very different estimate.

In Table A.3.1, column (1), we measure country risk with average volume-weighted spreads for each sovereign. We find that the yield on Type I bonds by countries with similar average yield-spreads stood at 71 basis points below non-hypothecated ones. This number is to be compared to the result of the country fixed effect regression in Table 4, column (4). Performing this comparison, we see that the estimated premium is 30 basis points less than what obtained with country fixed effects, but still statistically and economically significant and well within the range of Table 4 estimates.

In column (2), we instead measure country risk with the lag of the average volume-weighted spread for each sovereign. The result shows that the spread on Type I bonds issued by sovereigns of similar risk was 55 basis points below the spread for non-hypothecated bonds. This number is to be compared to the one obtained in the country-time fixed effect regression displayed in Table 4 column (6), it is 30 basis points smaller, but still negative, within Table 4's estimates range, and significant.

Finally, to mitigate endogeneity concerns, we modify the risk measure by excluding each bond's own spread from the sovereign-level averaging described for column (2). Column (3) shows that the spread of Type Is by sovereigns whose *other* bonds' spread last year was similar was 72 basis points lower than their non-hypothecated counterparts. This number should be again compared to Table 4 column (6), and it is only 13 basis points smaller.

In conclusion, this alternative approach to measuring the Type I premium returns estimates that are economically and statistically close to what we find employing fixed effects methods.

Table A.3.1  
Alternative Controls for Country-Risk  
*Dependent Variable: Yield Spread*

	(1)	(2)	(3)
Type I	-.7108** (-2.31)	-.5562* (-1.94)	-.7223** (-2.33)
Perpetuities	.628* (1.75)	.476 (1.38)	.5293 (1.38)
Log of Volume	.1225* (1.88)	.1359* (1.73)	.1874** (2.32)
Log of Maturity	-.5495*** (-2.88)	-.7533*** (-3.93)	-.7525*** (-3.49)
Prestige	-.4786 (-1.35)	-.4936 (-1.34)	-.5735 (-1.53)
Purpose	.3181** (2.24)	.5033*** (2.90)	.5513*** (2.84)
Vol. Wgt Yield $c$	Yes		
Vol. Wgt Yield $c,t-1$		Yes	
Adj. Vol. Wgt Yield $c,t-1$			Yes
Year FE	Yes	Yes	Yes
Adj. R2	.7677	.9163	.9316
Observations	640	594	507

*Notes:* The Table presents results from the estimation of Equation (2) controlling for country-risk with average yields instead of fixed effects. The first column presents the results that use the average country yield-spreads over the whole sample, in place of the country FEs; the second column employs the lag yearly averages of each country bonds' yield-spreads in place of the country-year FE; the last column employs the lag of yearly averages of each country's bonds yield-spreads computed excluding each time the bond related to the *bcyt* observation, in place of the country-year FE. The number of observations changes across column-blocks with the risk proxy employed. It works as follows: When using sovereign average yield (column 1) all observations are included, as all such observations belong to sovereigns with more than one yield data recorded. When using the yearly lag of sovereign yield, we lose 46 observations (column 2). These observations are due to bonds belonging to sovereigns that lacked other priced bonds the year before. Finally, when computing yearly lag of sovereign yields excluding for each bond its own lagged data point, we lose 133 observations (column 3) due to bonds by sovereigns without at least two priced bonds last year. Errors are clustered at the country-year of bond issuance level, with 80 country-year clusters over the first column and 72 country-year clusters over the last two columns; t-statistics are in parenthesis.

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

#### A.4) Alternative Type II Allocations

In this final robustness exercise, we examine the sensitivity of our estimates to alternative definitions of what counts as Type I or Type II bond.<sup>76</sup> The coding of collateral clauses as Type I or II carries a degree of subjectivity because archival material has to be interpreted by the researcher. In this section we use the Specification Curve approach and experiment with changes in allocations of Type I/Type II securities (Simonsohn, Simmons, and Nelson 2020). A Specification Curve plots many estimates of the same parameter under alternative specifications and can be a useful tool to distil the sensitivity of results to modelling choices. In what follows we use it to gauge the effect of re-allocating individual securities in the other group.<sup>77</sup>

Figure A.3.1 plots point estimates and confidence intervals for estimates of the effect of Type I hypothecations, always including all controls but modifying the allocation of bonds across the Type I/Type II classes each time. At the bottom of the graph, we record with black dots allocation modifications. To each black dot corresponds a different estimation of the Type I premium in Equation (2), each time including the yield observations belonging to a different Type II bond, which we reclassify as Type I only for the purpose of this robustness. The Figure shows that results are robust to perturbations. Hypothecated bond spreads range at about 350 basis points above the average non-hypothecated bond yield. At the same time, we always detect a statistically and economically significant within-country Type I premium against non-hypothecated bonds of about 100 basis points.

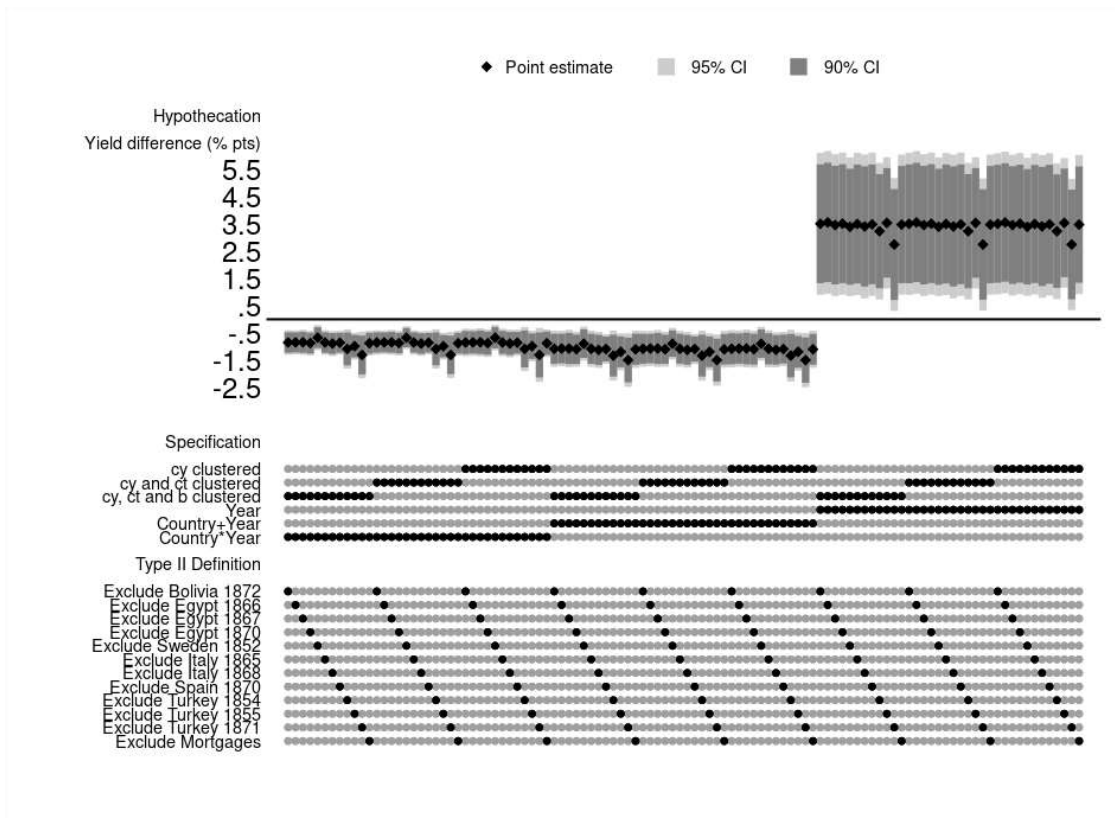
---

<sup>76</sup> Robustness to clustering is “mechanical”, thus we do not comment it, but we limit to notice that our standard errors do not change. We remind the reader that the baseline clustering scheme, marked as *cy* in Figure A.4.1, counts as belonging to the same cluster all observations belonging to bonds issued in the same year by the same sovereign, or issued in multiple years through multiple tranches of the same bond.

<sup>77</sup> The code employed to obtain the graphs builds on the code made available by Hans H. Sieversten at <https://github.com/hhsievertsen/speccurve>.

Figure A.4.1

Specification Curve for Table 4 – Results are Robust to Type II Allocations



*Notes:* The Figure presents a specification curve for the estimation of Type I hypothecation’s effect on yield spreads in Equation (2). We record estimates as black diamonds and 95% confidence intervals as grey shaded areas. Black dots below the plot mark the combination of clustering scheme, fixed effect and definition of Type II hypothecations under which we obtain each estimate. Under “Specification”, the first three lines record the clustering scheme. “cy clustered” stands for the country-year of issuance of the bond scheme we adopt in Table 4. “cy and ct clustered” stands for doubly clustered errors at the country-year of bond’s issuance level, and at the country-year of yield observation’s level. “cy, ct and b clustered” adds a further clustering layer at the bond level. The second three lines record the fixed effect scheme. A black dot to the right of “Year” signifies that we obtained the estimate only absorbing fixed effects for the year in which the yield spread observation was recorded; “Country + Year” that we absorbed country and year fixed effects separately; “Country\*Year” that we absorbed joint country-year fixed effects. Under “Type II Definition”, we record which bonds or group of bonds we stopped counting as a Type II. For example, a black dot to the right of “Exclude Italy 1868” implies that we did not count the Italian Tobacco loan as a Type II hypothecation, but only as a Type I. We thus only dropped observations relative to the other 10 Type II hypothecations with yield-spread observations and proceeded estimating Equation (2) including the Italian Tobacco bond’s observations.



## B) NEW CAPITAL CALLS 1849-1875: A LIST

Table B.1: The Bond Sample

<b>Bond</b>	<b>Hypothecation</b>	<b>Pledge</b>	<b>Yield Observations</b>	<b>Public Source</b> mm/dd/yyyy
Argentine 1866 I (First issue)	Not Hypothecated		5	<i>Times</i> , 01/04/1866
Argentine 1868 II (Second issue of 1866)	Not Hypothecated		8	<i>The London Standard</i> , 06/16/1868; <i>Times</i> , 06/16/1868
Argentine 1871 (6% Public Works)	Type I Hypothecation	Custom	5	<i>The London Standard</i> , 04/03/1871 and 04/04/1871; <i>The Morning Post</i> , 04/03/1871 and 04/04/1871
Argentine 1872 a (7% Entre Rios)	Type I Hypothecation	Land, Tax	4	<i>Times</i> , 01/24/1872
Argentine 1872 b (6% Hard dollar)	Not Hypothecated		4	<i>Times</i> , 02/06/1872
Argentine 1873 (Buenos Ayres)	Not Hypothecated		2	<i>Times</i> , 12/13/1873
Argentine 1874	Not Hypothecated		0	<i>Times</i> , 07/27/1874; <i>The Globe</i> , 07/27/1874
Austria 1852 5%	Not Hypothecated		6	<i>The Morning Chronicle</i> , 05/25/1852
Belgium 1874 (3% Public Works)	Not Hypothecated		2	<i>The London Standard</i> , 03/06/1874
Bolivia 1872	Type II Hypothecation	Money in trust	4	<i>Times</i> , 01/20/1872
Brazil 1852	Not Hypothecated		12	<i>The London Daily News</i> , 08/02/1852; <i>The Manchester Courier</i> , 08/07/1852
Brazil 1858 (Imperial Brazilian 4.5%)	Not Hypothecated		12	<i>The London Daily News</i> , 05/26/1858
Brazil 1860	Not Hypothecated		12	<i>Times</i> , 03/21/1860
Brazil 1863	Not Hypothecated		12	<i>Times</i> , 10/08/1863
Brazil 1865	Not Hypothecated		11	<i>Times</i> , 09/14/1865
Brazil 1871	Not Hypothecated		5	<i>Times</i> , 02/24/1871
Brazil 1875	Not Hypothecated		1	<i>Times</i> , 01/20/1875
Chile 1858	Type I Hypothecation	Other	12	<i>The London Daily News</i> , 11/26/1858
Chile 1866 (A&B)	Type I Hypothecation	Monopoly	2	<i>The London Standard</i> , 02/27/1866; <i>The Morning Post</i> , 02/28/1866; <i>Times</i> , 02/28/1866
Chile 1867 A	Type I Hypothecation	Custom	9	<i>Times</i> , 01/17/1867 and 01/18/1867
Chile 1867 B	Not Hypothecated		9	<i>Times</i> , 06/29/1867
Chile 1870	Type I Hypothecation	Railway	6	<i>Times</i> , 01/31/1870
Chile 1873	Type I Hypothecation	Railway	3	<i>Times</i> , 03/29/1873
Chile 1875	Type I Hypothecation	Railway	1	<i>Times</i> , 04/02/1875
Colombia 1863 (New Grenada)	Type I Hypothecation	Monopoly, Railway	12	<i>The Morning Post</i> , 09/22/1863
Costa Rica 1871 I	Type I Hypothecation	Custom	5	<i>Times</i> , 05/09/1871
Costa Rica 1872	Type I Hypothecation	Monopoly, Railway,	4	<i>Times</i> , 05/04/1872

		Tax		
Denmark 1849 5%	Type I Hypothecation	Land	0	Fenn (1855)
Denmark 1850 5%	Type I Hypothecation	Land	0	<i>The London Standard</i> , 03/18/1850
Denmark 1863 (A.B.C.)	Not Hypothecated		11	<i>The London (Evening) Standard</i> , 02/26/1863; <i>Times</i> , 02/27/1863
Denmark 1864 (A.B.C.)	Not Hypothecated		11	<i>Times</i> , 01/13/1864; <i>The London Standard</i> , 01/13/1864; Fenn (1869)
Denmark 1864 (Debentures)	Type I Hypothecation	Other	11	<i>Times</i> , 11/30/1864
Egypt 1862 a II	Type I Hypothecation	Tax	12	<i>Times</i> , 08/01/1862
Egypt 1862 b I	Type I Hypothecation	Tax	12	<i>Times</i> , 04/07/1862
Egypt 1864	Type I Hypothecation	Tax	12	<i>Times</i> , 11/15/1864
Egypt 1866 a (Railway Debentures)	Type I Hypothecation	Railway	8	<i>Times</i> , 01/17/1866 and 01/18/1866
Egypt 1866 b (Viceroy Ismael Pasha)	Type II Hypothecation	Personal property of Khedive	10	<i>Times</i> , 03/21/1866
Egypt 1867 (Viceroy Mustapha Pascha's)	Type II Hypothecation	Personal property of Khedive	8	<i>Times</i> , 11/21/1867
Egypt 1868	Type I Hypothecation	Monopoly, Custom, Tax	8	<i>Times</i> , 07/16/1868
Egypt 1870 (Daira Sanieh)	Type II Hypothecation	Personal property of Khedive	6	<i>Times</i> , 04/26/1870
Egypt 1873	Type I Hypothecation	Railway, Land, Tax	3	<i>Times</i> , 07/26/1873
European Commission of the Danube 1869	Type II Hypothecation	Tolls on Danube	0	<i>The London Standard</i> , 03/08/1869
France 1870	Not Hypothecated		5	<i>Times</i> , 10/25/1870
France 1871	Not Hypothecated		5	<i>Times</i> , 06/28/1871
France 1872	Not Hypothecated		4	<i>Times</i> , 07/27/1872
Germany 1870	Not Hypothecated		1	<i>Times</i> , 12/14/1870
Germany 1871 (Second emission)	Not Hypothecated		1	<i>Times</i> , 01/26/1871
Guatemala 1869	Type I Hypothecation	Custom	7	<i>Times</i> , 04/05/1869
Honduras 1867 (Railway loan)	Type I Hypothecation	Railway, Other	8	<i>Times</i> , 11/11/1867
Honduras 1870 (Railway loan)	Type I Hypothecation	Railway	6	<i>Times</i> , 06/21/1870
Hungary 1872	Not Hypothecated		0	<i>Pall Mall Gazette</i> , 01/02/1872; <i>Times</i> , 01/02/1872
Hungary 1873 (Government loan)	Not Hypothecated		3	<i>Times</i> , 01/21/1873
Hungary 1873 (Treasury Bond)	Type I Hypothecation	Land	2	<i>The London Standard</i> , 12/11/1873
Italy 1851 (Sardinian 5%)	Type I Hypothecation	Railway	12	<i>The Morning Post</i> , 07/01/1851
Italy 1862 (Maremmna Railway)	Type I Hypothecation	Railway	12	<i>The Morning Chronicle</i> , 02/20/1862; <i>Times</i> , 02/20/1862
Italy 1863 (5% Rentes)	Not Hypothecated		12	<i>Times</i> , 03/17/1863
Italy 1865 (State-Domain)	Type II Hypothecation	Real estate	11	<i>Times</i> , 01/17/1865
Italy 1868 Tobacco	Type II Hypothecation	Tobacco Monopoly	8	<i>The London Standard</i> , 10/06/1868; <i>The Globe</i> , 10/07/1868
Italy 1869 (Anglo-Italian)	Not Hypothecated		0	<i>Times</i> , 10/09/1869
Japan 1870 (Customs loan)	Type I Hypothecation	Custom, Railway	6	<i>Times</i> , 04/26/1870

Japan 1873	Type I Hypothecation	Other	3	<i>Times</i> , 01/14/1873
Liberia 1871	Type I Hypothecation	Custom	5	<i>Times</i> , 08/08/1871
Mexico 1864 (Anglo-French)	Type I Hypothecation		12	<i>Times</i> , 04/12/1864
Morocco 1862 (Imperial Moorish)	Type I Hypothecation	Custom	12	<i>The Morning Post</i> , 01/13/1862
Paraguay 1871 (Public Works)	Type I Hypothecation	Custom, Railway, Land	5	<i>Times</i> , 11/23/1871
Paraguay 1872 (Public Works)	Type I Hypothecation	Land	4	<i>The London Standard</i> , 06/01/1872
Peru 1853 4.5%	Type I Hypothecation	Monopoly	0	Fenn (1855)
Peru 1862	Type I Hypothecation	Monopoly	6	<i>Times</i> , 01/08/1862
Peru 1865 (Consolidates 5%)	Type I Hypothecation	Monopoly	8	<i>Times</i> , 02/23/1865
Peru 1870	Type I Hypothecation	Monopoly, Custom, Railway, Land	6	<i>Times</i> , 06/04/1870
Peru 1872	Type I Hypothecation	Monopoly, Custom, Railway	4	<i>Times</i> , 03/20/1872
Portugal 1862	Not Hypothecated		12	<i>Times</i> , 07/21/1862
Portugal 1867	Not Hypothecated		8	<i>Times</i> , 12/19/1867
Portugal 1869	Not Hypothecated		7	<i>Times</i> , 11/03/1869
Romania 1864 (Danubian)	Type I Hypothecation	Custom	12	<i>Times</i> , 11/28/1864
Romania 1867 (Danubian)	Type I Hypothecation	Land, Custom	8	<i>Times</i> , 02/20/1867
Russia 1850 4.5%	Not Hypothecated		12	<i>The Morning Chronicle</i> , 01/15/1850
Russia 1859 (Imperial Russian)	Not Hypothecated		12	Fenn (1869)
Russia 1860	Not Hypothecated		12	<i>Times</i> , 06/26/1860
Russia 1862	Not Hypothecated		12	<i>Times</i> , 04/29/1862; <i>The Morning Post</i> , 04/29/1862
Russia 1864 (Anglo-Dutch)	Not Hypothecated		12	<i>Times</i> , 04/19/1864
Russia 1866 (Anglo-Dutch)	Not Hypothecated		10	<i>Times</i> , 11/19/1866; <i>The London (Evening) Standard</i> , 11/20/1866
Russia 1869 (Government)	Not Hypothecated		6	<i>Times</i> , 04/13/1869
Russia 1870	Not Hypothecated		6	<i>Times</i> , 01/26/1870
Russia 1871	Not Hypothecated		5	<i>Times</i> , 03/09/1871
Russia 1872 (consolidated)	Not Hypothecated		4	<i>Times</i> , 03/20/1872
Russia 1873 (consolidated)	Not Hypothecated		3	<i>Times</i> , 11/28/1873
Russia 1875	Not Hypothecated		1	<i>Times</i> , 04/13/1875
San Domingo 1869	Type I Hypothecation	Monopoly, Custom	7	<i>Times</i> , 07/27/1869
Spain 1869 (Dollar)	Not Hypothecated		7	<i>Times</i> , 04/22/1869; <i>The London Standard</i> , 04/22/1869
Spain 1870 (Quicksilver Mortgage)	Type II Hypothecation	Quicksilver mines including equipment &c.	6	<i>Times</i> , 05/31/1870
Spain 1871 (Consolidated External debt)	Not Hypothecated		4	<i>The Morning Post</i> , 09/01/1871
Spain 1872 (Consolidated External debt)	Not Hypothecated		4	<i>Times</i> , 12/10/1872
Sweden 1852 (4% Mortgage Loan)	Type II Hypothecation	Landed estates	4	<i>The Evening Mail</i> , 10/04/1852; <i>The Shipping and Mercantile Gazette</i> , 10/05/1852; <i>The London Daily News</i> , 10/06/1852
Sweden 1864	Not Hypothecated		8	<i>Times</i> , 04/12/1864
Sweden 1868	Not Hypothecated		8	<i>Times</i> , 07/13/1868; <i>The London Standard</i> ,

				07/13/1868
Sweden 1875	Not Hypothecated		0	<i>Times</i> , 06/28/1875
Turkey 1854 (6%)	Type II Hypothecation	Portions of the Egyptian Tribute	12	Fenn (1855); <i>The London Daily News</i> , 08/12/1854 and 08/15/1854; <i>Times</i> , 08/16/1854; <i>The Morning Advertiser</i> , 08/17/1854
Turkey 1855 (4% Guaranteed)	Type II Hypothecation	Portion of the Egyptian Tribute; Custom duties of Syria and Smyrna	12	Ayres (1873); <i>The Evening Mail</i> , 08/13/1855; <i>The London Daily News</i> , 08/16/1855
Turkey 1858 I (Imperial 6%)	Type I Hypothecation	Custom, Tax	12	<i>The London Daily News</i> , 08/30/1858;
Turkey 1858 II (Imperial 6%)	Type I Hypothecation	Custom, Tax	12	<i>The London Daily News</i> , 10/06/1858
Turkey 1859 (Imperial 6%) (III 1858)	Type I Hypothecation	Custom, Tax	0	<i>The London Daily News</i> , 12/06/1859
Turkey 1862	Type I Hypothecation	Monopoly, Tax	12	<i>The Morning Post</i> , 03/25/1862; <i>Times</i> , 03/25/1862
Turkey 1865	Type I Hypothecation	Tax, Other	10	<i>Times</i> , 05/01/1865
Turkey 1869	Type I Hypothecation	Tax	6	<i>The London Standard</i> , 03/04/1869
Turkey 1869 (Treasury bond)	Type I Hypothecation	Tax	0	<i>The London Standard</i> , 12/14/1869
Turkey 1871 (Egyptain Tribute Loan)	Type II Hypothecation	Portions of the Egyptian Tribute	5	<i>Times</i> , 09/05/1871
Turkey 1872 (A.B.C.)	Type I Hypothecation	Tax	3	<i>The Belfast News-Letter</i> , 06/06/1872
Turkey 1873	Type I Hypothecation	Monopoly, Tax	2	<i>Times</i> , 10/8/1873
Turkey 1874 (General debt)	Not Hypothecated		1	<i>Times</i> , 09/16/1874
Uruguay 1864 (Montevideo - European loan)	Type I Hypothecation	Custom	7	<i>Times</i> , 12/12/1864
Uruguay 1871	Type I Hypothecation	Custom	5	<i>Times</i> , 10/21/1871
Venezuela 1862	Type I Hypothecation	Custom	12	<i>The Morning Post</i> , 08/01/1862
Venezuela 1864	Type I Hypothecation	Custom	12	<i>Times</i> , 04/07/1864

*Source:* Authors, from sources marked in Table. *Notes:* In the third column (Pledge) we document all items mentioned in each hypothecated bond's collateral clauses. For Type I Hypothecations, we report the source of revenue classification we also employ in Figure A.2.2, while we follow Table 3's classification for Type IIs' pledged items. In the fourth column (Yield Observations) we record the number of valorized yield entries per bond, from the yield panel we use to estimate Equation (2). The reference for the prospectus in the media or in the investors' handbook is given to the reader for ease of reference, as it can be easily retrieved from conventional newspaper databases. In practice, additional documentation was typically secured.

### **C) TYPE II HYPOTHECATIONS: A STUDY**

In this Appendix, we provide discussion of each Type II hypothecation. Type II bonds distinguished themselves from the rest in that they made some effort at creating a template enabling some form of repossession of the collateral. Accordingly, the following discussions identifies in what respect it may be argued that such a template was created and emphasizes the mechanism, which could a priori secure that effect, leading us to classify the instrument as Type II. Though Table 5 in the text shows that on *average* Type II hypothecations could be a powerful instrument, we do not report *individual* performance but we offer comments on some bonds which appeared to have almost completely eliminated default risk through the instrument. An example is the Ottoman bond of 1855, studied also in AI (2012) dealing with. We go by alphabetical order.

#### *C.1) Bolivian Loan, 6 %, 1872*

The Bolivian loan of 1872 is one of the most complex piece of legal-financial engineering in our population of sovereign debt contracts. The project that gave rise to the loan was an attempt to throw Bolivia open to trade via the Amazon River with the help of the construction of a waterway through tributaries of the Amazon and a railway line. A group of promoters acting as agents for the government of Bolivia received navigation and construction rights and launched three companies: A navigation company (the National Bolivian Navigation Company or NBNC), a railway company (the Madeira and Mamoré Railway Company) and a construction company (Public Works Construction Company) to build the road (Flandreau 2016). The plan foresaw the division of custom revenues accruing from the trade this would create between the government (one-fourth) and the navigation company (three-fourth). Both revenue streams were pledged as special security to the bondholders. In particular, should the government fail to service the loan, the three-fourth of the custom revenues collected by the company would be paid over to the bondholders.

A unique feature of the arrangement was the setting up of two detailed deeds of trust (Anonymous 1873). The first granted bondholders, through the agency of trustees, the right to inspect the books of the navigation company and, in case profits enabling to cover the creditors were being withheld, the trustees had the right to enter “at once as receivers into possession of all property and assets of the company.” In clear, in case of sovereign default, the bondholders would become the owners of the company. However, this had to involve the cooperation of local authorities. The second trust, was the more powerful element: It provided that the trustees to “retain out of the proceeds of the loan [...] a sum equal to the contract price of the railway, and temporarily invest and apply the same from time to time in payment for the works as they proceeded.”<sup>78</sup>

---

<sup>78</sup> Prospectus, *The Times*, January 20, 1872.

Since most of the money remained within the control of the bondholders, the security was material. Some observers rationalized that given the limited credit Bolivia enjoyed and the fairly reasonable price of the issue, the trust was the reason for the success met by the Bolivian loan at launch: According to the opinion of the Lord Chancellor Hugh Cairns: “I think it is obvious that if the money had not been placed in the hands of the trustees the loan would not have been obtained.”<sup>79</sup> In the end, the project itself collapsed on the back of flawed calculations. The Bolivian government suspended the payment of the interest on the loan, and since the road had not been completed, no revenues could be paid over to creditors. There was no receivership created but the trustees were able to safeguard the money. They suspended the construction in order to avoid the dilapidation of the trust. As the funds at the Bank of England had been wisely invested in then booming US securities, the deposit kept increasing in value. Eventually, British courts declared themselves competent and eventually ordered the release of the funds to the bondholders (Flandreau, 2016). While this was rather messy, the epilogue does confirm that through the help of a deed of trust, assets could be detached from a sovereign’s reach and plausible collateralization could be achieved.

*C.2) Commission of the Danube Loan, 4% 1869: International Law and International Receiverships*

This loan gave as collateral the “tolls and duties” levied at the Sulina mouth of the Danube on the Black Sea by the European Commission of the Danube. The Commission was an international administrative entity established by the Treaty of Paris that settled the Crimean War in 1856. Austria, France, Prussia, Russia, Sardinia, Turkey and the United Kingdom supervised the supra-national entity, vested with the authority to manage and improve the circumstances of international navigation on the Danube river. In November 1865, a public act signed by Austria, France, Italy, Prussia, Russia, Turkey and the United Kingdom placed the Commission, its officers, works and establishments “under the protection of international law.” This meant that the stakeholders would abide by the *droit des gens* to settle differences. In 1869, the Commission raised £135,000 on the London stock exchange offering as security to creditors the tolls on the Danube river and “full powers of receivership in case of default.”<sup>80</sup>

To understand how this would play out, and why we are dealing here with a plausibly enforceable lien, the important element is that the loan was guaranteed by France, Italy, the North German Confederation (Prussia), Turkey and the United Kingdom. In the event of a default, these countries, which had a majority stake in the Commission, would be called in to make up for the difference and simultaneously they would take care of implementing the receivership system. In other words, a group of sovereigns would manage the collateral, acting collectively and abiding in their intercourse with one another by the rules of international law. The issue spread stood at 75 basis points above British Consols. Since trading of this instrument was limited, the premium likely reflected illiquidity. This spread is among the lowest extant for a Type II hypothecation.

---

<sup>79</sup> See Flandreau (2016, p.114 and 359).

<sup>80</sup> Prospectus for the European Commission of the Danube, 4% loan, *London Standard*, March 8, 1869.

### C.3) Egypt: The Khedive's Private Loans of 1866, 1867, 1870

The Egyptian loans of 1866 “Loan of the Viceroy of Egypt” (7%), 1867 “Egyptian 9% Vice Roy loan”, and 1870 “Mortgage loan of His Highness the Khedive of Egypt (7%)” pledged, not the revenues of Egypt but various forms of private property belonging to the ruler of Egypt. This created grounds, in theory at least, for repossession. In fact, albeit they are listed under “Egypt” in contemporary sources, the official price list of the London stock exchange was careful to list them under “miscellaneous” rather than “Foreign stocks.”<sup>81</sup> An open question was what would be the treatment of such claims in case of default. As it turned out, the relevant jurisdiction was Mixed Courts, whose jurisdiction encompassed matters that had to do with the “Khedive’s land and that of his family, so long as no question of acts of sovereignty arose” Hoyle (1986, 1987). Note that at the time the Khedive loans, the Mixed Courts were only a vague project and they did not come into being until 1875. The important point is that a formal repossession mechanism was at least contemplated.

- “Daira” Loans of 1866 and 1870

The loan of 1866 (also known as the “Viceroy’s Private Domains Mortgage Loan”) was, according to the terms of the prospectus, guaranteed by the “immense private property of his Highness Ismael Pasha, Viceroy of Egypt”. The prospectus especially pledged a “mortgage of 364,930 *feddans* (about 375,000 acres) of cultivated lands, hypothecated in due legal form to that effect by His Highness.” A deed of hypothecation (or “*Kachf*”) was deposited at the Bank of England, enabling the creditors to secure it in case of non-performance. In effect, the grantor of the security was the Daira, the administrator of the private domains of the Khedive. The prospectus recited the merit of the security vested in the reputation of the Daira, stating that the Daira’s “acceptances or obligations” have always been “taken up by capitalists in preference to all other negotiable securities in Egypt.”<sup>82</sup>

The Khedive loan of 1870 (also known as the “Daira Sanieh Loan”) was similar in legal/financial design to the 7% 1866 Viceroy Loan. It likewise involved the Daira and a deed of hypothecation was deposited at the Bank of England. Rather than being for land managed by the Daira as in 1866, the pledge was both for “the whole of the free revenues” of the Daira and for 150,000 *feddans* of land to be devoted to the cultivation of cane sugar (an estimate of the expected value of the total production of sugar was provided).<sup>83</sup> Because of the involvement of a private company, the Daira loans evoke parallels with the company mortgages put together in the Italian and Spanish government loans discussed below.

---

<sup>81</sup> For instance, the *Investor’s Monthly Manual* (December 30, 1871, p. 398) lists the Egyptian loans of 1866 and 1870 under “Egypt”, but marked them as “secured on private domains”. But the journal did not identify the loan of 1867 in the similar way, perhaps because as we explain below the deed of hypothecation was not in the hands of the bondholders but in the hands of the Egyptian government.

<sup>82</sup> *The Times*, March 21, 1866. The Daira ran the Khedive’s own possession and especially his cotton plantations (see Landes, 1958).

<sup>83</sup> *Times*, April 26, 1870.

- *Mortgage Loan of His Highness the Khedive of Egypt, 9% 1867*

Also known as Mustapha Pasha's Domains Loan of 1867, it had served to purchase land for Royal Prince Mustapha Pasha (Landes, 1958, p.106). The loan, signed by the Khedive, gave as security the Khedive's personal "free revenues" plus a guarantee by the Egyptian government. In this case, unlike with the two loans previously discussed, there was no deed of hypothecation for the creditors. Instead, the Egyptian government kept the title deeds of the property purchased for Royal Prince Mustapha Pasha as security, so that the Egyptian government would seize the collateral and take up the service in case of non-performance by the Khedive.

#### *C.4) Italian Government: Loans through Private Companies*

Unlike other Italian or Sardinian loans (the predecessor state of unified Italy), such as the Maremmana railway 5% bond of 1862, which had a Type I hypothecations, two Italian loans – the State Domain Loan of 1865 and the Italian Tobacco Loan of 1870 – were found to have created a genuine repossession mechanism. In both cases, they achieved this goal by creating a private entity, owned by a combination of domestic and foreign investors and responsible for servicing the loan. The chosen route was an Act of Parliament, which formally recognized the repossession right. For that reason, though they were understood to be government loans, the two loans ended up like under the "miscellaneous" section of the London stock exchange official price list rather than under "foreign funds", just like the the Khedive loans, because technically, the actual borrower was private.

- *State Domain Loan, 5%, 1865*

The goal of the Italian minister of finances Q. Sella in crafting with his international financial advisors the State Domain loan had been to externalize to a private company – the Italian Land Company – the liquidation of state domains to obtain cash for the Government. The result was the creation of a financial entity that would supervise the sale of land. That entity would be owned by banks and other financial intermediaries who advanced money to the government against the security of a mortgage on state lands held by the Italian Land Company.

As said the arrangement, which led to the adoption of a convention between the Italian government and the Italian Land Company, was ratified by the Parliament.<sup>84</sup> The agreement placed the Company under the supervision of a royal commissioner and tasked it with issuing the loan (Art. 15). The proceeds of the loan would enable the company to make an advance of a countervailing value to the Italian state (Art. 7-11). Italian treasury bills registered under the name of the Company secured the bonds, and a mortgage on the lands to be sold secured the bills in turn. The convention stipulated that a law would substitute for the inscription of the security in the mortgage registries (Art. 12). As the liquidation of the state lands proceeded, the outstanding debt was progressively reimbursed and the mortgages cancelled. Because of this peculiar arrangement, and although in the last analysis this was evidently a

---

<sup>84</sup> Anonymous (1865).



government loan, it was not listed under foreign stocks in the official stock exchange price list. Just like the Khedive Loans, this loan was listed under “miscellaneous”.<sup>85</sup>

- *Italian Tobacco Loan, 6%, 1870*

The Tobacco Loan is reminiscent in several respects of the State Domains loan. On July 26, 1868 a convention was signed between the Italian government, the *Regia Cointeressata* (a partnership of Italian and foreign capitalists who acquired the right to farm the country’s state monopoly over tobacco) and, finally, representatives of Stern brothers, the contractors of the loan.<sup>86</sup> The convention stipulated that the capitalists were pledging to provide the Italian treasury with 180 millions of gold lire in effective capital. Article 5 of the convention stipulated that a share of the company’s profits would be set aside annually to fund interest and amortization charges of a loan. Article 23 described instead the money transfer process.<sup>87</sup>

The convention did not detail what would happen in the event of a default, but the legal material shows the logic. It trickled down from the fact that the *Regia*, rather than the Italian Treasury, was responsible vis-à-vis creditors. The profits of the *Regia* earmarked to pay creditors were sent each year to the *Cassa dei Depositi e Prestiti* (an institutional investor with custodian responsibilities) or to the *Banca d’Italia* (the Bank of Italy), which assumed trusteeship functions. These institutions acted as assignees of the revenues of the *Regia* for the benefit of creditors. The Treasury was then to take care of paying the bondholders from these funds. If the money was diverted, then creditors would be able to secure a freeze of the funds in the future. As a result, the arrangement created a repossession system.

#### *C.5) Ottoman Loans of 1854, 1855 and 1871: International Treaties*

Three Ottoman Loans pledged separate portions of the so-called “Egyptian Tribute” an annual payment to the Turks by Egypt, formerly a possession of the Ottoman Empire, which had to pay for its freedom. The Tribute arose from a series of international treaties backed by foreign powers, giving them some authority to monitor the use of the money by Egypt. In one of them (the 4% Ottoman Loan of 1855), the resulting mechanism came closest to giving creditors formal repossession rights. This was because it empowered the British and French governments, who guaranteed the loan, to take over the collateral.

- *Ottoman Egyptian Tribute Loan, 6% 1854*

The Turkish loan of 1854, issued on the eve of the Crimean War, was backed by an assignment from the Egyptian Tribute. Multiple statements in the media, both at the time and afterwards emphasized the unique character of the hypothecation.<sup>88</sup> Such statements stressed two aspects. First, observers argued

---

<sup>85</sup> But the *Investor’s Monthly Manual*, puts it under Italian government debts.

<sup>86</sup> The leader of the syndicate was the *Credito Mobiliare Italiano*.

<sup>87</sup> Ceci (2015) for details on the history of the tobacco monopoly. The Convention of July 25, 1868 and the text of the law that approved it are in *Regno d’Italia* (1868, p. 445 ff.).

<sup>88</sup> For examples of strongly partisan views on the responsibility of the British government, see Office of the Egyptian Tribute’s Bondholders League (1876) and Shee (1876).

that there was an instruction from the Sultan to the Khedive to direct a portion of the money from the Tribute to the bondholders via the Bank of England. Second, the *firman* (Ottoman decree) providing for the rights of creditors was deposited at the Bank of England.<sup>89</sup>

Our reading is that, per se, this did not achieve anything beyond what existed under Type I hypothecation. Could the borrower, at will, redirect the funds before they would reach the reliable agent (such as the Bank of England)? The answer is that of course she could. Rose and Staniforth (1876, p.12) report that at one point in 1876 the Turkish government was “determined upon issuing an order to the Khedive to remit the Tribute direct to Constantinople” (as opposed to the Bank of England). This shows that issuing a new decree was always possible. Similarly, depositing of the *firman* for the loan in the Bank of England has been described by Anderson (1964, p.50) as ensuring that it would be safe “from all risks of emendation” (a view shared by Du Velay, 1903, p. 140). However, of course, a new decree could be issued.<sup>90</sup>

In our understanding, what made (or might have made) the hypothecation unusual was its status under international law. This had to do not with the hypothecation mechanism per se, which was generic, but with the nature of the asset hypothecated. The Egyptian Tribute was the product of an international treaty, of which Britain had been part, giving partial authority to the British government. Such obligation resulted from the London Convention of 15 July 1840 and of the Treaty of London of 1840, followed by the *firman* of February 1841 that granted the Khedive hereditary government of Egypt in return for the payment of a tribute.<sup>91</sup>

Unlike the enforcement of private claims, the enforcement of intergovernmental claims was as we explained a rule by which the British state did abide. Here, we speculate, the reasoning of supporters of the view that the pledging of the Egyptian Tribute created special rights may have been that the British government had grounds to bring pressure to bear on the Khedive of Egypt. The prospectus nodded at this by emphasizing that the loan had been “negotiated with the knowledge of the English Government; that her Majesty’s Government is satisfied that the loan and the appropriation of the above-mentioned 30 million piasters, £282,000 per annum, of the Egyptian tribute are duly authorized by his Majesty the Sultan.”<sup>92</sup> The media and subsequent discussion by bondholders amplified the meaning of the endorsement.<sup>93</sup> We should remain circumspect. Still, some form of imperial enforcement was conceivable.

---

<sup>89</sup> Fenn (1855, p.265) and Du Velay (1903, p.140).

<sup>90</sup> Modern authors who have been impressed by such views include Dyson (2014).

<sup>91</sup> The *firman* stipulating the terms of the tribute was itself dated May 1841. For the text of the decree, see Shee (1874, p.548).

<sup>92</sup> Fenn (1855, p. 266). The initial amount of the loan had been £5,000,000, the interest being 6% and the amortization 1%, the annual sum that was initially necessary to meet annual charges was 350,000£, and the security pledged, or 282,000£ produced an 80% coverage ratio. In the end, as only £3 million were raised and the annual charge came to 210,000£. This left a margin of about £75,000 that would be pledged for Ottoman “Egyptian Tribute” Loan, 4% 1855.

<sup>93</sup> A little before the loan was launched, the *The Times* claimed that the “English government will likewise give a formal intimation that the claims of the subscribers will always be regarded as entitled particularly to their

Our examination of the evidence suggests that markets favored the Egyptian Tribute loan of 1854 compared to other Ottoman loans. For instance, it traded at an average 20% premium compared to another similar 6% Turkish loan, made in 1858, a Type I hypothecation, secured by custom duties and the “*octroi*” (internal custom) in Constantinople.<sup>94</sup> Another piece of evidence is that when the Ottoman default took place in the 1870s, it was stated that all the creditors of Turkey were to be treated equally “the only exceptions being in the case of the Loans of 1854, which, owing to the political and legal questions involved, it was desirable to deal with exceptionally.”<sup>95</sup> A similar claim was made for the loan of 1871 discussed below. As a result, Rose and Staniforth (1876) noted that “His Highness [the Grand Vizier] understands the exceptional position of the Loans of 1854 and 1871, guaranteed by the Tribute of Egypt, and the legal and moral considerations which gave to the holders in those Loans rights which they would not hesitate to enforce.”<sup>96</sup> For its part, the British government remained willing to remind to the Porte the special status of the Tribute Loans at large, thus vindicating expectations.<sup>97</sup> This gives a semblance of plausibility to repossession, unlike what happened under Type I hypothecations.

- *Ottoman Guaranteed Loan, 4% 1855*

The background of the loan was also the Crimean war and more specifically, the June 27, 1855 convention between Britain, France and Turkey providing for the joint guarantee by France and Britain of a loan of up to 5,000,000£ to fight Russia. According to Art. 3, the two guarantors were secured by a) the available balance of the Egyptian Tribute (the “Egyptian Tribute” Loan of 1854 not having been fully subscribed, there was a balance of 75,000£ available as security), as well as b) the custom duties of Syria and Smyrna.<sup>98</sup> These securities were designated in the Ottoman “Egyptian Tribute” Loan issued in August 1855 (Ayres, 1873, p.371). Because of the international guarantee, Britain had a right over these instruments.

Against this backdrop, the spread-at-issue of this loan, compared to consols, was very low (60 basis points). The high price which the loan commanded in capital markets has been mentioned by previous writers who generally emphasize the guarantee alone (Al, 2012; Esteves and Tunçer, 2016). Ayres (1873) describes the stock as affording a “secure investment in the market” because of the joint guarantee. Nevertheless, from a legal point of view, an important aspect was the presence of an

---

support.” *The Times*, August 12, 1854; The Chronicle read the prospectus as meaning that the English government gave its “assurance that the hypothecation of the Egyptian tribute [. . .] is properly secured to the subscribers of the loan.” *Morning Chronicle*, August 17, 1854.

<sup>94</sup> The loan of 1858 had a shorter maturity, which should have favored it, yet our evidence suggests that the Egyptian Tribute traded at a premium of about 20% on average. The inference we make is that the security raised its value. Data available from authors.

<sup>95</sup> Rose and Staniforth (1876, p.21).

<sup>96</sup> Rose and Staniforth (1876, p.11)

<sup>97</sup> See response to the Chancellor of the Exchequer, Sir Stafford Henry Northcote, to a parliamentary question: “As I mentioned yesterday, the Governments of England and France have made a joint representation to the Government of the Porte on the subject of the Tribute Loans generally.” House of Commons, Hansard, “Turkey—Loans of 1854 And 1855—Explanation—Question”, March 9 1877 Volume 232, Columns 1652.

<sup>98</sup> Shee (1874, p.529). For details, see Ayres (1873).

international treaty because it interested Britain in the outcome and thus involved it in receivership activities. Combined with the guarantee, it turned Britain into the assignee of the security in case of default. According to lawyer Lord St Leonard (later a Lord Chancellor): “By the Convention [of June 1855] we became, with France, assignees of [the Egyptian] Tribute [and of the Customs of Smyrna]” pledged in the loan”.<sup>99</sup>

Contemporary debates both in the Commons and House of Lords underscore existing understandings of, and concerns vis-à-vis, the legal and political implications of the lien created. In the same speech, Lord St Leonard emphasized that the pledges in the loan of 1855 ought to be considered from the vantage point of the political consequences in case of non-performance. On the one hand, the British government was eager not to take any financial responsibility upon itself, which required the pledges be maintained, because, as Lord Clarendon put it “the obligations [...] might possibly be evaded.”<sup>100</sup> On the other hand concerns were voiced that France would use the pretext of a lapse of payment by the Turks to invade Egypt or seize Syria, which further demonstrates that the existence of international treaties was understood as enabling repossession of the collateral.<sup>101</sup>

In conclusion, if the bondholders felt secure, it was because the British and French government were themselves secured through a right to repossess the assets pledged. Formally, the hypothecation created a valid trust under international law, whose beneficiaries were the bondholders and whose assignees and trustees were the guarantor government(s).

- *Ottoman Egyptian Tribute Loan, 1871*

The Ottoman 6% loan of 1871, initially for £5,700,000, was the last loan issued with the security of the Tribute of Egypt. On top of the general revenues of the Turkish Empire, it pledged “the portion of the Tribute now payable to the Porte [Ottoman Empire] by the Khedive of Egypt not applicable” to the loans of 1854 and 1855 (*Times*, September 5, 1871).<sup>102</sup> Like the two other Khedive Loans, the Tribute Loan of 1871 offered a guarantee that had a peculiar status in international law. Unlike the loan of 1854 and 1855, this loan did not include any mention of the role of the British government, opening questions as to its relative standing (see Office of the Egyptian Tribute’s Bondholders League, 1876, p.11 ff).<sup>103</sup>

---

<sup>99</sup> Hansard, House of Lords, August 6, 1855, Column 1857.

<sup>100</sup> Hansard, House of Lords, August 6, 1855, Column 1865.

<sup>101</sup> See Anderson (1964).

<sup>102</sup> The mechanism was the same as the one used before, that is, the interest and sinking fund was to be channeled through the Bank of England and from there paid to the bondholders via the intermediaries for the loan. The reason why there was a still room for using the Tribute was that it had been raised in 1866 to 150,000 purses or £705,000, after the Sultan “sold” to the Khedive of Egypt various privileges. After deducting the amount that was sent out for the service and amortization of the two previous loans, £422,000 remained as available balance, of which £399,000 were to be directed for the annuity of the new loan (£5,700,000 times 6 percent interest and 1 percent accumulative sinking fund = £399,000).

<sup>103</sup> Following the Ottoman default, efforts were made to secure the official support for this loan, through a parliamentary bill (see *Truth*, January 18, 1877).

Summarizing, we have, a) The Loan of 1854 with British “recommendation” and the Egyptian Tribute as security; b) The Loan of 1855, with international guarantee along with Tribute and custom receivership enforceable by international action; c) The Loan of 1871, with only the Egyptian Tribute. As inspection of the parliamentary debates after the Turkish default suggests, there was a hierarchy in the British government mind, between the Loan of 1855 on the one hand, and the loans of 1854 and 1871 on the other hand.

#### *C.6) Swedish 4% Mortgage Loan, 1852*

We rank this loan (also loan as the “Provincial Loan”) under Type II because the documentation speaks of the loan being backed by a registered mortgage and designates the district courts as the relevant legal venue. We were not able to secure detailed information on the legal significance of such mortgages before Swedish law and so the characterization remains tentative. While this loan is treated as a Type II in the baseline regression, we admit the possibility that it was a Type I and conduct robustness test below, estimating the model under the alternative sorting assumption.

#### *C.7) Spanish Quicksilver Mortgage Loan, 5% 1870*

This famous loan gave as collateral the quicksilver mines of Almaden, which belonged to the Spanish government.<sup>104</sup> It belongs to the Type II genus, because in the event of a Spanish default, Rothschilds, who acted as agents and trustees for the bondholders would have become receivers of the mines. As explained by Martín (1980) on the basis of the contract between the House of Rothschild and the Spanish government, which the prospectus only summarized, the loan and the security were to be “legally registered.”<sup>105</sup> This harnessed the Spanish Law of 1861, which enabled to mortgage a designated physical property to secure lenders.<sup>106</sup> The security was inscribed in a publicly accessible national registry, preventing re-hypothecation of the security.<sup>107</sup> In case of non-performance, creditors owned the right, upheld by Spanish courts, to seize the asset. So, had the Spanish government missed a payment on the quicksilver loan, the House of Rothschild would have been able (in principle at least) to seize the mines of Almadén along with all the “machinery, buildings, works belonging to the Spanish State” which had been hypothecated too.

If the Spanish government had disputed the appropriation, it would have had to battle Rothschilds in Spanish courts. Possibly, the government would have been able to weigh on judges. On the other hand, Rothschilds, with many investments in the country and connections in the political and business

---

<sup>104</sup> We are extremely grateful to Alberto Gamboa for help clarifying this entry. Compare to Chabot and Santarosa (2017, p.32) saying that this loan “established the legal machinery to assure the mine’s output was under the control of the bondholders.”

<sup>105</sup> The text of the contract with Rothschilds (Art. 1) began with declaring that the loan would be accounted for in the “Property Registry.”

<sup>106</sup> For the text and a contemporary discussion of the Spanish law of 1861, see Pantoja and Lloret (1861).

<sup>107</sup> Indeed, the prospectus indicated that the loan was “secured by a mortgage deed legally registered at Madrid and Almadén; all the machinery, buildings, works, belonging to the State, forming part of the stated property, being hypothecated as well as the mines” (Quicksilver loan prospectus, *The Times*, May 31, 1870).

elites, were themselves formidable adversaries (see López-Morell, 2016, p.179). In other words, the bankers certified the arrangement, which they could do either because they knew that the legal process was robust enough to protect them or because they were confident in their ability to litigate successfully. This provides an interpretation for why the Quicksilver loan of 1870 was spared when other Spanish loans were defaulted upon in 1872. This was also anticipated because the Quicksilver loan traded above other obligations. To sum up, while significant uncertainties must have existed, the quicksilver collateralization did create a genuine repossession mechanism. Comparing the yield on “secured” Spanish debt and on “risk-free” British Consols, we see a spread is 330 basis points (6.5% when British Consols yielded about 3.2%). This is large but on the other hand, an even larger spread is observed if we now look at unsecured Spanish debt. For instance, the perpetual 3% 1869, yielded 9.70% at the time of the Quicksilver issue, a 640 basis points premium over Consols.<sup>108</sup>

## Appendix References

Al, Huseyin. “Was there a guarantee effect for the Ottoman loans in the 19<sup>th</sup> century?”  
*Australian Economic History Review*, 52, no.2 (2012): 191-208.

Anonymous. *Vendita di Beni Demaniali*, Firenze: Stamperia Reale, 1865.

Anonymous. *Papers and Documents Relation to the Bolivian Loan*. London: Dunlop, 1873.

Ayres, Henry. *Ayres’s Financial Register of British and Foreign Funds, Banks, etc., etc., for 1857, etc.* London: Richardson Brothers, 1873.

Anderson, Olive. “Great Britain and the Beginnings of the Ottoman Public Debt, 1854 - 55.” *The Historical Journal* 7, no.1 (1964): 47-63.

Ceci, Antonio. “Il monopolio del tabacco in Italia: Ascesa e declino di una industria di Stato.” *Historia et Ius*, no. 8 (2015): December, Paper 16.

Chabot, Benjamin and Veronica Santarosa. “Don’t cry for Argentina (or other sovereign borrowers): Lessons from a previous era of sovereign debt contract enforcement.” *Capital Markets Law Journal*, 12, no. 1 (2017): 9–37.

Dyson, Kenneth. *States, Debt, and Power: “Saints” and “Sinners” in European History*

---

<sup>108</sup> On the capacity of such legal arrangements to protect against government predatory behavior, see Peña-Mir (2019).

- and Integration*. Oxford: Oxford University Press, 2014.
- Du Velay, A. *Essai sur L'Histoire Financière de la Turquie: Depuis le Règne du Sultan Mahmoud II jusqu'à Nos Jours*. Paris: A. Rousseau, 1903.
- Esteves, Rui P. and Ali Coşkun Tunçer. "Eurobonds past and present: A comparative review on debt mutualization in Europe." *Review of Law & Economics*, 12, no. 3 (2016): 659–688.
- Fenn, Charles. *Compendium of the English and Foreign Funds*. London: Effingham Wilson, 1855.
- Fenn, Charles. *Compendium of the English and Foreign Funds*. London: Effingham Wilson, 1869.
- Flandreau, Marc. *Anthropologists in the Stock Exchange: A Financial History of Victorian Science*. University of Chicago Press, 2016.
- Hoyle, Mark S. W. "The origins of the Mixed Courts of Egypt." *Arab Law Quarterly*, 1, no. 2 (2016): 220–230.
- Hoyle, Mark S. W. "The Mixed Courts of Egypt 1896-1905." *Arab Law Quarterly*, 2, no. 1 (1987): 57–74.
- Klovland, Jan Tore. "Pitfalls in the estimation of the yield on British consols, 1850-1914." *The Journal of Economic History* 54, no.1 (1994): 164–187.
- Landes, David S. *Bankers and Pashas: International Finance and Economic Imperialism in Egypt*. Harvard University Press, 1958.
- López-Morell, Miguel A. *The House of Rothschild in Spain, 1812–1941*. Routledge, 2016.
- Lucas Nash, Robert. *A Short Inquiry into the Profitable Nature of Our Investments With a Record of More Than Five Hundred of Our Most Important Public Securities During the Ten Years 1870 to 1880*. London: Effingham Wilson, 1881.
- Martín, Victoriano M. *Los Rothschild y las minas de Almadén: El servicio de la deuda pública española y la comercialización del mercurio de Almadén*. Universidad Complutense de Madrid (Spain), 1980.

- Mazzuca, Sebastian. *Latecomer State Formation. Political Geography and Capacity Failure in Latin America*, New Haven: Yale University Press, 2021.
- Office of the Egyptian Tribute's Bondholders League. *The Egyptian Tribute. A Short History of the Tribute Loans*, 1854, 1855, 1871, London: s.n, 1876.
- Pantoja, José María and Antonio M. Lloret. *Ley Hipotecaria, Comentada y Explicada*, vol. 1. L. López, 1861.
- Peña-Mir, José Luis. "Financiación y especialización productiva: el mercado de crédito malagueno a finales del siglo XVIII." *Investigaciones De Historia Económica*, 12, no. 3 (2019): 133-143.
- Regno d'Italia. *Collezione delle leggi ed atti del governo del Regno d'Italia*, Naples: Stamperia governativa, 1868.
- Rose, Philip and John Staniforth. *Turkish Debt; Report of Sir Philip Rose and Mr. John Staniforth, on the Results of their Mission to Constantinople*. London: Harrison, 1876.
- Shee, M. A. "British and Foreign State Papers, Vol. 59." s.n., 1874. Available from JSTOR/Bristol Selected Pamphlets.
- Shee, M. A. "The Turkish loan of 1854." s.n., 1876. Available from JSTOR/Bristol Selected Pamphlets.
- Simonsohn, Uri, Joseph P. Simmons, and Leif D. Nelson. "Specification curve analysis." *Nature Human Behaviour*, 4, no. 11 (2020): 1208–1214.