Risk Sharing with the Monarch: Excusable Defaults and Contingent Debt in the Age of Philip II, 1556-1598

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RISK SHARING WITH THE MONARCH:

CONTINGENT DEBT AND EXCUSABLE DEFAULTS IN THE AGE OF PHILIP II, 1556–1598*

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Abstract: Contingent sovereign debt can create important welfare gains. Nonetheless, there is almost no issuance today. Using hand-collected archival data, we examine the first known case of large-scale use of state-contingent sovereign debt in history. Philip II of Spain entered into hundreds of contracts whose value and due date depended on verifiable, exogenous events such as the arrival of silver fleets. We show that this allowed for effective risk-sharing between the king and his bankers. The data also strongly suggest that the defaults that occurred were excusable – they were simply contingencies over which Crown and bankers had not contracted previously.

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I. Introduction

The issuance of non-contingent sovereign debt can be destabilizing. It requires pro-cyclical fiscal policies, which aggravate recessions (Eichengreen 2002). In the extreme, outstanding non-contingent debts can no longer be serviced in bad times. After defaults, GDP typically falls, trade plummets, and banking systems have to be recapitalized.[1] Economists and policy-makers alike have argued that the issuance of debt indexed to GDP (or to export prices) could reduce the risk of bankruptcy and smooth consumption (Borensztein and Mauro 2004; Kletzer et al. 1992; Borensztein et al. 2004). While state-contingent debt is conceptually attractive, few GDP-indexed bonds have actually been issued (Griffith-Jones and Sharma 2006).[2] Most instances – such as Argentina's and Greece's GDP-linked bonds – occurred in the aftermath of defaults.[3] Overall, there is substantial skepticism that the problems of governments issuing state-contingent debt can be overcome.

In this paper, we examine a case of successful, large-scale issuance of state-contingent debt. Philip II of Spain (1556-98) borrowed funds equivalent to approximately 60% of GDP – the first case in history of sovereign debt reaching proportions broadly similar to those in modern economies. A significant share of this debt carried contingency clauses. When invoked, the king benefitted from reductions in interest or from maturity extensions. Bankers and Crown agreed to contingent loan contracts during almost half a century, despite a total of four defaults when all payments were stopped.

Why did a 16th century monarch and his financiers succeed where modern states and investment banks fail? We argue that two factors were key. First, the king's need to

[1] Eaton and Fernandez (1995), Rose (2005).
[2] Some scholars have argued that all sovereign debt is *de facto* contingent (Grossman and van Huyck 1988).
[3] Greece avoided an outright default through a "voluntary" restructuring.

spend ahead of revenue was particularly large. Expenditure – dominated by war financing – fluctuated wildly from year to year; revenue was broadly stable.[4] The need for "intertemporal barter" (Kletzer and Wright 2000) was particularly acute. In this environment, the principal risk for the monarch was a shortfall of liquidity. Risk-sharing was therefore valuable.[5] Second, the sixteenth century fiscal environment generated easily observable, verifiable state variables reflecting the strength of the monarch's finances. For example, the arrival and size of silver fleets from the American colonies, as well as the yield from individual tax streams controlled by third parties, served as a ready reference for payments due.

Using a hand-collected dataset containing 434 loan contracts between Philip II and his bankers, we analyze the market for contingent debt. Bad news were effectively translated into lower payment obligations or later due dates – risk-sharing between borrowers and lenders worked. The arrangement between lenders and king also survived Philip II's famous defaults. The king suspended payments no less than four times during his long reign. We also argue that these defaults were excusable (Grossman and van Huyck 1988), and debt was *de facto* state-contingent even under circumstances not specified in loan contracts. Defaults involved larger shocks than the ones contracted on in individual contingent loans. They also entailed contingencies that were difficult to write into contracts – principally the outbreak and the outcome of wars. Our data show that the pricing of loans did not change adversely after the payment stops; lenders did not update their priors about the type of borrower that Philip II was. This fact, and the prevalence of contingency clauses in loan contracts, offers support for interpretations of sovereign

[4] Silver revenues were highly volatile; we describe them below.
[5] Elsewhere, we have shown that Philip II's famous defaults do not reflect insolvency, but were caused by liquidity crises (Drelichman and Voth 2010).

lending emphasizing implicit risk-sharing in cross-border debt (Grossman and Van Huyck 1988; Tomz and Wright 2007).

Our work relates to the debt sustainability literature.[6] Amongst many, Eaton and Gersovitz (1981) and Tomsz (2007) have argued that reputational concerns – and indirectly, access to future consumption smoothing – are key for why sovereign lending occurs at all in the absence of third-party enforcement. Cole and Kehoe (1995) argue that if bankers cannot enter into credible commitments, reputation alone can sustain a considerable amount of lending. Kletzer and Wright (2000) show how lending can occur under conditions of "anarchy" – that is, in the absence of commitment by both borrower and lender. In contrast, Bulow and Rogoff (1989) emphasize the importance of sanctions – penalties above and beyond the withholding of additional funds in the future.[7] Empirical work on the relevance of these theoretical approaches includes Eichengreen and Portes (1989a), who find that trade sanctions were rare historically. In contrast, Mitchener and Weidenmier (2010) argue that sanctions were important for making Latin American bond markets work in the 19th century.

Scholars working on debt restructuring have highlighted that the process can be long and inefficient (Benjamin and Wright 2009). On the other hand, Kovrijnykh and Szentes (2007) argue that repeated cycles of borrowing and default may be an efficient outcome, with lenders having an incentive to let borrowers escape from debt overhang. Bolton and Jeanne (2009) suggest that contracts that are *ex post* excessively difficult to restructure can be the result of efficient bargaining *ex ante*. Philip II's defaults were

[6] We also contribute to the literature on the hedging of macro risks by new financial instruments (Shiller 1993).

[7] Strictly speaking, both the reputation and the sanctions view imply that defaults should not be observed in equilibrium. This implication can be avoided in models with imperfect information (Atkeson 1991), or when markets are incomplete (Arellano 2008; Yue 2010; Kovrijnykh and Szentes 2007).

restructured unusually quickly and with moderate haircuts, suggesting that the payment suspensions were closer to an implicit contingent contract than to full-scale breakdowns in debt markets.

This paper is part of a larger research project on the debts of Philip II. Elsewhere, we show that Castile's fiscal position was sustainable (Drelichman and Voth 2010), and that lending worked because it was concentrated in the hands of a small, stable group of Genoese bankers (Drelichman and Voth 2011b). We also examine the profitability from the lending contracts over the long run and by lender (Drelichman and Voth 2011a). Finally, we explore the fiscal logic of imperial ambition, comparing Britain and Spain at the height of their power (Drelichman and Voth 2008). Relative to these articles, we make the following contributions: We show that most debt was contingent, that there was effective risk-sharing between Crown and bankers, and that the defaults did not violate the implicit contract between both parties.[8]

We proceed as follows. The next section sets out the historical context and background. Section III presents our data; Section IV discusses contingent lending; and part V analyses the nature of defaults. The conclusion discusses the implications for sustainability of debt at the dawn of sovereign lending.

II. Historical background

During the 16th century, Imperial Spain was at the height of her powers. Philip II ruled territories from Flanders to the Philippines and from Tierra del Fuego to the Caribbean. After borrowing approximately 60% of GDP from Spanish and foreign lenders, Philip II

[8] Cox (2009) argues that, in the absence of third-party commitment, it was not possible to separate insurance from debt contracts. The introduction of ministerial responsibility after the Glorious Revolution would have broken this link in England.

stopped payments to his bankers four times. His bankruptcies have long been interpreted as signs of a hopeless fiscal situation (Thompson 1994). Lending to the Spanish Crown has often been described as irrational (Braudel 1966). An alternative interpretation has stressed the need for sanctions to align the incentives of an absolutist monarch (Conklin 1998). According to this view, Genoese bankers retaliated after Philip II's default by cutting off transfers to Flanders, where Spanish troops were fighting the Dutch insurrection. The Army of Flanders promptly mutinied, weakening Spain's position in the Low Countries substantially. Lending in 16th century Spain took place in what Kletzer and Wright (2000) called an anarchic environment – there was no third party enforcement, and the king could not deposit funds with bankers. Elsewhere, we discuss that no effective transfer stop actually materialized, and that a shortage of funds was not key for the setback in the Low Countries (Drelichman and Voth 2011b).

Lending to the Crown of Castile by foreign bankers began as early as 1519, when Jakob Fugger the Rich financed Charles V's bid for the Holy Roman Crown. Charles continued to rely on the Augsburg house, as well as on the Welser family, to finance his military ventures throughout his reign. The banking families were happy to lend; they knew that the Emperor's credit was based on the fast-growing Castilian economy (Alvarez Nogal and Prados de la Escosura 2007). By the 1550s, however, Charles was forced to abdicate.[9] The Crown of Castile went to his son Philip II, who had to contend with a challenging fiscal situation. One of his first decisions was to stop paying interest and principal on the Fugger and Welser loans in 1557, thus starting the long series of sovereign defaults in Spain. A brief lending resumption ensued, followed by another payment stop in 1560. The Crown eventually settled with the Fuggers, turning over the

[9] The standard source on Charles V's loans is Carande (1987).

administration of royal assets including the profitable masterships of the military orders and the mercury mines at Almadén.

Despite the early default, Philip II continued to borrow substantially in both long and short-term debt markets. Whenever possible, he sought to issue *juros*, which were perpetual or lifetime bonds backed by a specific tax stream. Yearly *juro* payments were collected directly from the administrator of the relevant tax – usually a tax farmer or a city. As long as the revenue source was reasonably healthy, they provided a steady source of income for the owner. *Juros* were transferable after payment of a fee. They were often held by merchants and other investors.[10] *Juros* were generally safe investments; Philip II never defaulted on *juro* payments during his reign. Yields were correspondingly low (5 to 7 percent between 1550 and 1600).

Juros were relatively cheap, but the king faced two major constraints in using them. First, finding buyers for large issues could be challenging. The domestic market eventually became saturated, making it necessary to tap foreign sources of capital. The Crown could not draw on an international distribution network, a service it contracted out to international bankers. Also, *juros* could only be issued against certain revenue streams. Castilian taxes were classified as either ordinary or extraordinary revenues by the Cortes; this limited the amount of long-term debt the king could take on. Increasing this debt ceiling required either higher ordinary taxation or the reclassification of extraordinary taxes. Whenever the king requested either from the Cortes, lengthy negotiations and costly concessions ensued.

[10] The account book of Ambrogio Di Negro, a Genoese merchant in the 1560s, shows investments in six different types of *juros* as part of his overall portfolio (Archivio Doria, Fondo Doria, 143). The letters of another merchant, Giorgio Doria, contain specific instructions to his agent in Spain on how to collect the yearly payments of his *juros* (Archivio Doria, Fondo Doria, 490).

Whenever *juro* issuance reached the limits imposed by the Cortes, or when the king needed to borrow on short notice, he resorted to loans known as *asientos*. These were repaid by extraordinary revenues. Of these, taxes on silver from the American colonies was by far the largest. In a good year, silver taxes amounted to 40% of total revenue. In other years, almost no silver arrived. This also implied that the need for intertemporal smoothing was strong.

Asientos were supplied by both domestic and international financiers; they often involved transfers abroad. The service and repayment of *asientos* was not as automatic as that of *juros*: *Asientos* stipulated the revenue source intended for their repayment, but bankers still needed a royal payment order (*libranza*) to collect. Delays and changes of repayment sources were common, as were renegotiations and consolidation of outstanding debts into new loan contracts.

As New World silver imports increased, Genoese banking families entered the business. After the 1560 suspension, the Genoese approached Philip with a proposal to restart lending. New Genoese loans were collateralized with *juros*.[11] The volume of lending dwarfed the levels reached during Charles' reign (Ulloa 1977; Drelichman and Voth 2011b). Collateralizing short-term sovereign loans with long-term ones seems perplexing, since the same monarch had the power to default on either. While *asientos* were only underwritten by a narrow group of mostly foreign bankers, *juros* were widely held among the Castilian elites. The Genoese knew that defaulting on *juros* would have been very costly for the king. Using the long-term bonds as collateral and marketing them

[11] At first, lending was collateralized with revenues of the *Casa de la Contratación*, which oversaw the assessment and taxation of silver. While the management of the *Casa* was dismal, and the bonds it issued quickly lost up to 50% of their value, collateralization continued with other *juros*. An excellent treatment of the system set up by the Genoese with respect to the *Casa de la Contratación* can be found in Ruiz Martín (1965).

to European investors offered the bankers an additional layer of insurance as well as a profitable business opportunity.[12]

Figure 1 shows the annual issues of short-term debt in constant 1566 ducats. After the Genoese entered the short-term debt market in the early 1560s, the king defaulted two more times. On September 1, 1575 the king suspended principal and interest payments on loans for 14.6 million ducats. A lending moratorium ensued, and a comprehensive settlement (*medio general*) was reached in October 1577. All outstanding *asientos* were canceled. The king repaid his bankers with several types of *juros*, whose present value was, on average, 62% of outstanding debts.[13] Bankers that held collateral *juros* recovered almost 80% of their capital, while uncollateralized loans covered just over 50% of their original value. As part of the settlement, a consortium extended a new loan for 5 million ducats.[14]

[12] In this sense, the incentives that supported collateralization of one type of debt instrument with another are similar to those in Broner, Martín and Ventura (2010).
[13] Alvarez Nogal and Chamley (2011) argue that, because *juros* were callable and prevailing interest rates were falling, the defaults and the subsequent settlements can be interpreted as voluntary debt conversions. Our view is quite opposite – the payment stops were abrupt, and the restructurings involved substantial haircuts. Uncollateralized *asientos* were defaulted upon as well, and their holders received about 50% of their original value in the settlement. These facts are hard to reconcile with a 'voluntary' conversion.
[14] The fact that the bankruptcies were resolved with generous settlements is compatible with interpretations emphasizing the importance of signalling a borrower's type (Cole, Dow and English 1995). We discuss the details of the settlement in depth in the appendix to Drelichman and Voth (2010). The negotiations during the suspension of payments and the mechanism used by the Genoese to enforce the lending moratorium are described in Drelichman and Voth (2011b).

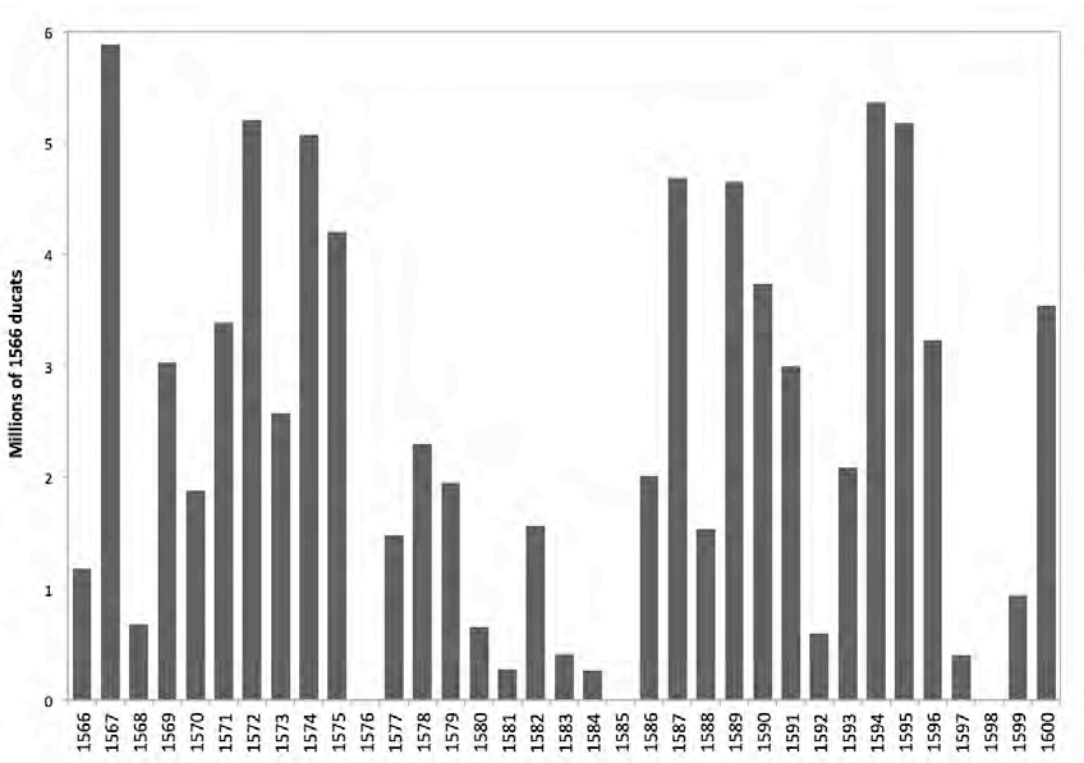


Figure 1: *Asiento* issues

After 1575, the king initially did not carry much short-term debt. Silver income grew quickly; a lull in fighting the Dutch Revolt reduced military expenditure; and the Cortes of 1575 and 1576 granted a large tax increase. Military events eventually changed this situation. As Philip readied the 'Invincible Armada', Spain's ill-fated invasion of England in 1588, short-term borrowing increased. The ensuing disaster caused major expenditures for the rebuilding of the fleet and fortifications, and to deal with renewed fighting in the Netherlands. Despite the introduction of a new excise tax (the *millones*) in 1591, the king once again defaulted on short-term loans in 1596. This bankruptcy was smaller than the previous one, involving only 7 million ducats. Its resolution was also faster and caused milder losses for creditors. After just one year, bankers agreed to a 20% across-the-board reduction of principal; lending resumed at a brisk pace.

The majority of debt consisted of *juros*. Between 1566 and 1596, *asientos* averaged 12% of outstanding loans. Their share peaked in 1575, when short-term debt accounted for one third of the total. This was an anomalous situation, reflecting the large debt run-up of the preceding two years. On the eve of the 1596 bankruptcy, only ten percent of debt was short-term. *Juros* were never defaulted upon during Philip's reign. His famous bankruptcies affected only one part – albeit a significant one – of his obligations.[15]

III. Data

We examine the complete series of 434 *asientos* between the king and his bankers preserved in the Archive of Simancas. Each contains a brief summary of no more than 20-30 words on the first page, reporting the names of the lenders, the date, and the total amount involved. Previous work on this series was based almost exclusively on these abstracts (Ulloa 1977). Terms and conditions of the loans have not been analyzed in any detail prior to our work.[16] Our data are based on the full text of the contracts. In addition, we make use of a comprehensive database on Castile's finances for the period 1566-1598 (Drelichman and Voth 2010).

The full archival series contains 4,997 handwritten pages, with an average of 12 pages per loan. For each contract, we transcribe every single clause. After accounting for the appropriate currency conversions, we reconstruct agreed-upon monthly cash flows. In addition, we code up to 89 variables for each individual *asiento.* These include the date,

[15] Data for total outstanding debt is from Drelichman and Voth (2010).
[16] Many *asientos* were contracted by commanders in the field and then sent to Madrid, where they would be reissued. Both the original and the reissued documents are preserved in the archive; adding up the totals of all contracts therefore results in double counting. The only way of correcting this is by removing the duplicates after a close reading of each document.

the identity of the lenders, the principal of the loan, its maturity, the places and currencies of disbursement and repayment, the intended source of funds to be used for repayment, the value and type of any collateral, the presence of any contingent clauses and the events that would trigger them, and the value of any additional privileges granted to the bankers.

Calculating the rate of return on *asientos* is complicated by a number of factors. Because of rules against usury, the rate as stated in the contract was lower than the compensation received by bankers. Exchange fees, shipping costs, and various other concessions raised the rate of return.[17] To assess the cost of each loan, we reconstruct the contractual cash flows according to the *asiento* clauses. We then calculatethe modified internal rate of return (MIRR):

$$MIRR = \sqrt[n]{\frac{-FV\left(\text{positive cash flows}, r_r\right)}{PV\left(\text{negative cash flows}, r_f\right)}} - 1 \qquad (1)$$

where n is the number of periods in the contract, r_r is the reinvestment rate, and r_f is the finance rate. This requires assumptions about r_r and r_f. We use 7.14% (the long-term bond rate) as our reinvestment rate, and 5% as our finance rate.[18]

Table 1 summarizes our data. The series consists of 434 contracts. Of these, 20 do not contain sufficient information to reconstruct a complete cash flow.[19] For the remaining ones, we calculate the expected rate of return, both under the baseline scenario, and under any contingencies. For a handful of contracts, our rate of return estimate is

[17] Among them were the granting of licenses to export bullion in excess of the amounts required by the contract, life pensions bestowed on the bankers or their relatives, and the conversion of low-yield *juros* into high-yield ones at no cost.

[18] One important reason for choosing the MIRR over the standard internal rate of return (IRR) is that the latter is unsuitable for cash flows that swing from positive to negative multiple times, a very common scenario in our data. In Drelichman and Voth (2011a) we explore in detail the benefits of our rate of return measure and our parameter choices. We also perform extensive sensitivity analysis.

[19] This is mostly due to material damage to the documents. In a few cases, the clauses were too vague to allow an accurate estimation of cash flows and rates of return.

very high. These are typically small loans with very short-term maturities and high fixed costs. To mitigate the impact of these outliers, we drop those loans for which the rate of return exceeded 100% (21 observations accounting for 1.8% of total lending). We thus work with 393 observations. Among these, the average loan rate was 20 percent, and roughly half of all loans involved transfers abroad. The mean return rates did not vary when contingent clauses were triggered, while median rates increased by one percent. There was nonetheless substantial variation in contingent rates of return, which we explore below. The duration of loans was normally around two years, but could be much longer.

Table 1: Summary statistics

	mean	median	sd	N	min	max
Rate of return (MIRR)	0.20	0.136	0.17	393	- 0.18	0.95
Foreign exchange dummy	0.41	0	0.49	393	0	1
Transfer dummy	0.62	1	0.48	393	0	1
Contingency dummy	0.69	1	0.46	393	0	1
MIRR under contingency*	0.20	0.146	0.18	408	- 0.06	1.51
Duration	28.75	22	22.63	393	0	140

* 268 contracts had contingency clauses, and several had more than one. We report summary statistics on the MIRR for each of the 408 individual contingent scenarios.

Types of contingencies

Of the 393 contracts we analyze, 270 have at least one contingency clause; many contain several. In total, there are 408 contingent scenarios. Five broad categories can be distinguished. The first two are associated with events outside the control of the king or the bankers: the arrival of the fleet, and the performance of specific tax streams. Two more types are actually options, given to either the king or the bankers. In some cases, the king can delay payments, usually in exchange for some penalty. In others, the banker can request to be paid in juros ahead of the loan maturity date. We call these options "king's discretion" and "banker's discretion". Finally, those contracts that carry collateral also

have an "execution" clause. This specifies under what conditions the banker may seize and sell the collateral.

Figure 2 plots the type of the main contingency for each contract, showing both the frequency and the principal-weighted distribution.

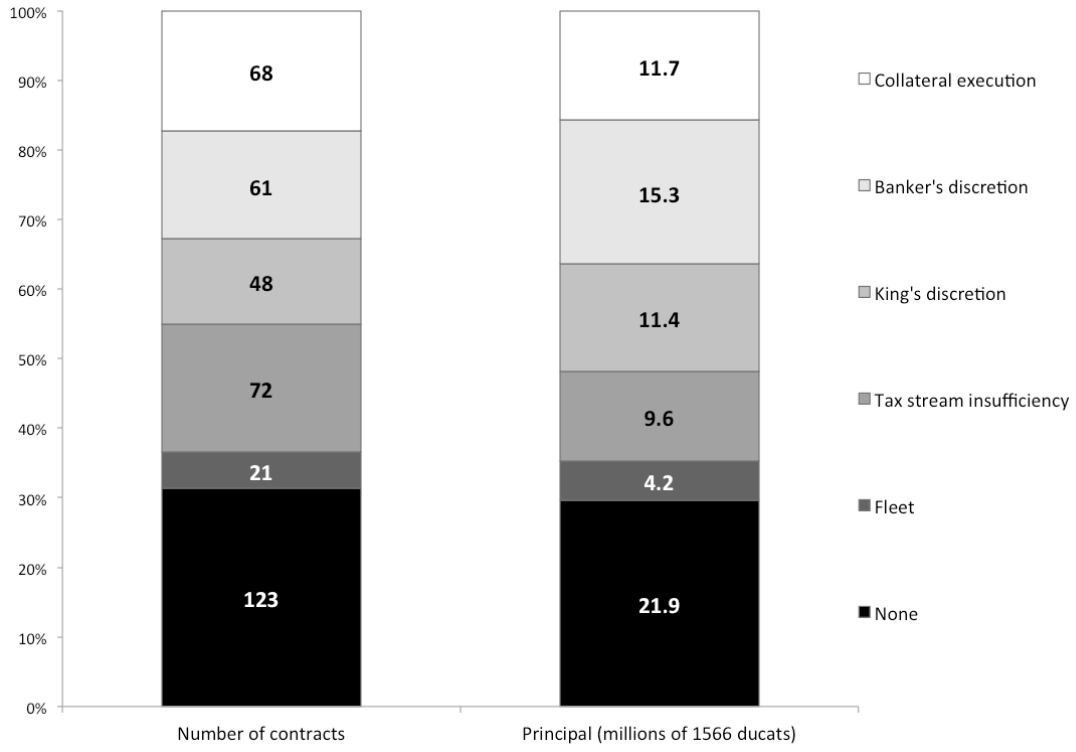


Figure 2: Distribution of the major contingent scenario, by number of contracts and by principal

Less than a third of contracts were issued without a contingency clause. About 31% of contingent scenarios refer to insufficient revenue for the Crown – either because some taxes fall short, or because the treasure fleets do not arrive on time or in sufficient size. Slightly over 40% of contingent clauses give either the banker or the king discretion to

change the timing or the nature of payments. The remaining ones give the banker the right to seize and sell collateral if the king fails to repay.

The use of collateral clauses was not constant over time. As figure 3 shows, it fluctuated heavily from quinquennium to quinquennium. While a dominant feature during the entire time period, the use of contingency clauses was curtailed during the period 1576-1585. In both the run-up to the 1575 and 1596 bankruptcies, in contrast, contingencies were quite common.

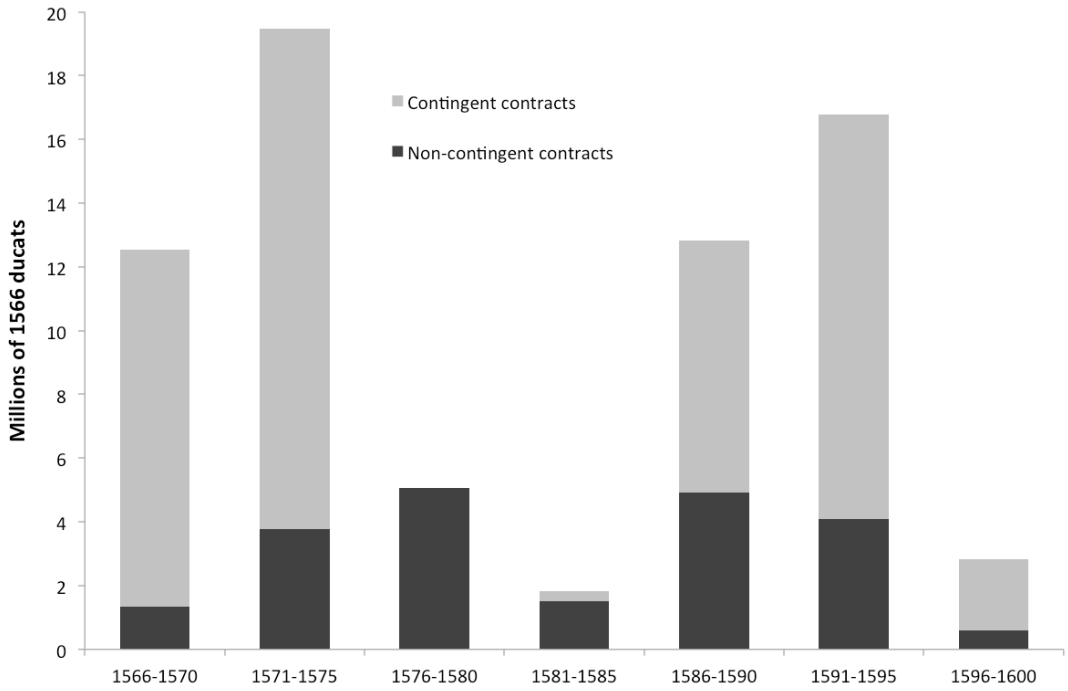


Figure 3: Contingent and non-contingent borrowing over time.

We now illustrate the working of contingency clauses using specific examples from the primary sources. In 1566, the king enters into a contract with Lucian Centurion and Agustin Spinola. They disburse 38,000 and 57,000 ducats in Flanders in May and September of that year, and are meant to receive one payment in August, using the

proceeds from the first silver fleet.[20] If the fleet does not arrive by the end of July, the king promises to pay a penalty rate of 1% per month until full repayment is made. The bankers also receive a *juro* that covers the full value of the contract, which they are allowed to sell in case the king fails to meet his obligations. The original contract without contingency clauses produced an annualized MIRR of 24.1%. If the contingency clauses are invoked, this falls to 15.6%. Thus, the king can insure part of the income risk that comes from the highly volatile silver revenue stream. At the same time, the bankers' financial position is largely safeguarded against the risk that the king could not or would not pay through the use of collateral *juros*.[21]

Another *asiento* shows how variable tax revenue could also trigger contingency clauses. In October 1581, Juan Ortega de la Torre lent 60,000 ducats to the king. He was to be repaid from the second payment of the *excusado*.[22] De la Torre was not to be first in line – the contract specifies that Baltasar Cattaneo should collect his money first. Importantly, the banker will have to do the collecting himself, to which end the king provided him with the necessary documentation. Should the revenue from the *excusado* be insufficient, the banker has the right to be repaid from the *prelados y cabildos* (a minor revenue stream levied on municipalities). Other contracts in this category specify that, if

[20] This *asiento* also shows how loans were combined with transfers. The bankers first disburse 38,000 ducats; the king next repays principal and interest on 95,000 ducats; and only afterwards do the bankers disburse the final 57,000 ducats in Flanders. The latter disbursement is therefore a transfer rather than a loan, since the bankers had already received the money from the king.
[21] The deeper reason for collateralizing with *juros* is that fiscal centralization in Castile was limited – the king could sometimes not pay the bankers directly, but the City of Seville, say, would still pay holders of *juros*. Thus, the fragmentation of fiscal authority facilitated the continuation of lending.
[22] A tax levied on Church revenue, one of the so-called Three Graces, introduced in 1567.

the tax revenue in one year is insufficient, the king will pay a penalty interest rate until he can repay with the following year's taxes.[23]

We now turn to a more complex *asiento*. It showcases how multiple contingent clauses could be used to provide insurance for both king and bankers under a variety of scenarios. In 1591, Thomas Fiesco, a Genoese banker, agreed to provide 300,000 Flemish ecus.[24] 200,000 ecus were paid out to the military commander in Flanders, the Duke of Parma, while the rest were delivered at the Italian payment fairs of Besançon. The king paid 75,000 ducats at the signing of the contract, and hence the actual loan was for 218,000 ducats (the rest was a mere transfer of funds). The first disbursement by the banker, also in April, was for 61,500 ecus. It was followed by 9 equal monthly payments of 26,500 ecus each.

The king promised to repay from a variety of sources. Several of these payments are not contingent: 84,700 ducats from the new *millones* excises in November 1591 and May 1592; another 60,000 from the *Cruzada* ecclesiastical tax, in October and November 1592; 12,000 ducats from the sales of vacant lands; and 30,000 ducats from the extraordinary service. The single largest payment, for 90,100 ducats, was to come from the proceeds of the silver fleet of 1591, which was expected in late summer or early fall. This was followed by a fleet contingency clause: if the silver did not arrive by October, a penalty of 1% per month would apply until the banker was repaid from alternative tax streams –specifically the *subsidio, excusado*, and the ordinary and extraordinary services. Payments from these sources were disbursed by the treasury every four months, in March, July and November.

[23] This example also shows the importance of weak tax collecting powers in determining lending arrangements, with the king effectively outsourcing the right to access taxes already collected.
[24] Archivo General de Simancas (AGS), Contadurias Generales, Legajo 90.

Even if the fleet arrived on time, the king could unilaterally choose to delay repayment until the maturity of the loan, twelve months later. This is what we have labeled "king's discretion". It came at a steep cost: if the contingency was invoked, the banker had the right to stop the remaining disbursements (for a total of 53,000 ecus) while still being entitled to collect all the promised repayments on earlier disbursements.

Finally, from January 1592, the banker had the right to request repayment of up to 100,000 ducats of principal and interest in perpetual *juros* – a banker's discretion clause. This contingency allowed the banker to receive safe bonds instead of promised cash payments.

Table 2 shows the cash flows for the Fiesco contract under the baseline scenario, and under each of the fleet and king's discretion contingencies. Because the banker's discretion contingency only affects the payment instruments but not the actual timing or values, we do not report it in a separate column.

Table 2: Net cash flows from the Fiesco contract under three repayment scenarios

	Baseline scenario	Fleet contingency	King's discretion
Apr-91	14,931	14,931	14,931
May-91	-25,884	-25,884	-25,884
Jun-91	-25,884	-25,884	-25,884
Jul-91	-25,884	-25,884	-25,884
Aug-91	-25,884	-25,884	-25,884
Sep-91	-25,884	-25,884	-25,884
Oct-91	-25,884	-25,884	-25,884
Nov-91	124,283	34,183	34,183
Dec-91	-25,884	-25,884	0
Jan-92	-13,948	-13,948	0
Feb-92	0	0	0
Mar-92	0	31,535	0
Apr-92	0	0	0
May-92	54,767	54,767	54,767
Jun-92	0	0	0
Jul-92	0	32,736	0
Aug-92	0	0	0
Sep-92	0	0	0
Oct-92	30,033	30,033	30,033
Nov-92	30,033	63,971	120,133
Yearly MIRR	23.2%	24.0%	39.8%

Note: figures are in ducats. 1 ducat = 1.023 ecus.

The baseline scenario yields a 23.2% return for the banker. While higher than average, this was not an unusual cost for a contract that included transfers to multiple locations, deliveries in several currencies, and repayments sourced from many different tax streams. Under the fleet contingency scenario, the king misses the largest part of the November payment (some 90,100 ducats) in 1591, and makes up the shortfall in March, July, and November of 1592 with 1% monthly interest. The rate of return of the contract increases slightly, to 24%.

The king's discretion scenario is markedly different. The king also misses the 90,100 ducat payment in November of 1591, causing the banker to cancel the December and January disbursements. The king is still obliged to make all promised repayments, including the 90,100 ducat one, which is now due in November 1592. The banker gets paid much later than promised, but since he skips two disbursements totaling over 50,000 ducats, his rate of return increases to 39.8%

It is useful to contrast the two contingencies: The cash flows are identical up to and including November 1591. The missed payment is exactly the same. In one case, however, the reason is an exogenous, verifiable event: The fleet has not arrived. The banker continues to make disbursements as scheduled, while repayments are delayed. The cost of the contract rises marginally. In the second case, however, the fleet has arrived. If the king fails to pay in this particular case, he has much less of an excuse. The cost of the contract in this scenario goes up substantially.

The fleet contingency insures the king against factors outside his control – adverse Caribbean weather and disruptions to silver production. Because these factors are self-equilibrating in the medium term, the bankers do not charge high insurance premia.

The king's discretion contingency is different. It gives the king the option to extend the maturity of his debts without having to borrow new funds, even if the fleet arrived in time. The king is now protected against an unexpected need for liquidity, or the prospect of a rollover crisis. Because these situations would signal mounting pressure on the king's finances (or a lower willingness to use available funds for repayments), the banker demands a hefty premium in exchange for providing that insurance. Finally, the banker's discretion contingency insures the lender against a downturn in the king's ability to pay. After the first eight months of the contract, the banker can swap almost all of his remaining claims for relatively safe long-term bonds of the same present value.

IV. The Economic Impact of Contingency Clauses

What is the economic purpose (and impact) of the different contingencies? In this section, we examine the effect of contingent clauses on cash flows. We also analyze cost and maturity modifications as a function of the Crown's and bankers' interests and in response to the arrival of new information. Contingent clauses provided ample, bi-directional risk sharing between the king and his bankers. Their use is interesting because they reveal a strong preference to deal with eventualities ex ante, before they materialize, instead of having to renegotiate ex post. This implies that frequent recontracting (in the spirit of Bulow and Rogoff 1989) was not costless in the eyes of Crown and financiers.

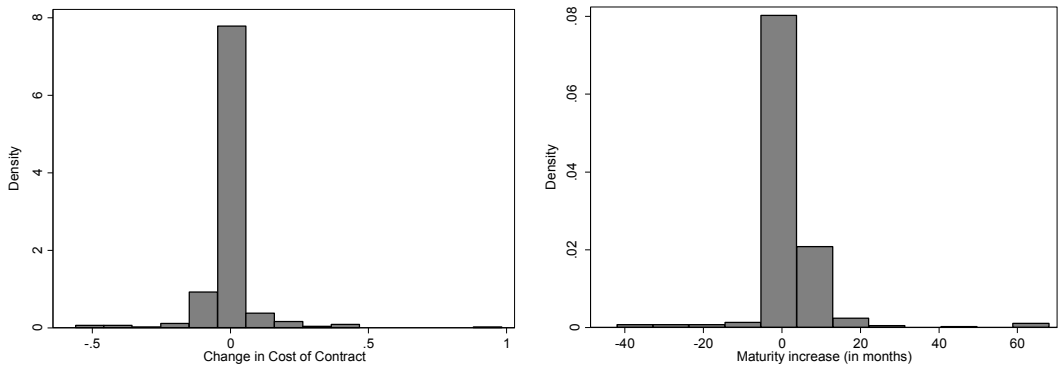


Figure 4: Changes in the Cost of Contracts and in Maturity (after conditionality clause is invoked)

How exactly did contingencies influence cash flows? For each contingent scenario, we compare its MIRR to that of the non-contingent cash flow scenario. Loans that feature contingent scenarios have a baseline return of 20.5%. In aggregate, contingencies do not affect the returns substantially. The median change in the cost of a contract is exactly zero under the average contingent scenario.[25] The left panel in Figure 4 plots the distribution of cost changes. While some contracts saw their cost rise or fall by 20% p.a. or more, most changes are much smaller – the bulk of observations envisage changes of 5% p.a. or so.

Contingent scenarios also affected the maturity of the loans. On average, the maturity of loans changed little – an increase of two months with a standard deviation of nine. One hundred and twenty one scenarios allow for a longer maturity, giving the king an average of 9.7 additional months to repay. In 18 cases, there is an early termination date, either because the king could exercise an early repayment clause, or because a missed payment allowed bankers to cancel future disbursements. In these cases, the average termination date precedes the originally scheduled one by 17.6 months. The

[25] By comparison, the median return of loans that do not have contingent clauses is 19 percent.

remaining 269 scenarios do not affect the maturity date, either because they shuffle intermediate repayments, or because they specify a swap of payment instruments.

Table 3: Baseline MIRR, differential MIRR and maturity (in months) by type of contingency.

Contingency type	Frequency	MIRR Differentials		Maturity Differential
		baseline minus non contingent average*	contingency minus baseline	contingency minus baseline
Fleet	26	4.1%	0.4%	2.6
		(0.72)	(0.75)	(0.00)
Tax stream insufficiency	100	-1.6%	-1.7%	4.6
		(0.10)	(0.06)	(0.00)
King's discretion	63	4.3%	4.1%	1.6
		(0.03)	(0.06)	(0.30)
Banker's discretion	102	1.6%	1.5%	-0.2
		(0.08)	(0.04)	(0.84)
Collateral execution	118	-2.1%	-2.3%	2.1
		(0.03)	(0.01)	(0.00)
Total / Average	408	0.0%	-0.1%	2.1

P-values in parentheses.

* Coefficient from a regression of MIRR on contingency type dummy, use of foreign exchange clause, duration, and loan size. Standard errors are clustered at the contract level.

Table 3 summarizes contingent changes in the MIRR and the maturity of loans. Modifications reflect changes in the king's fiscal position associated with each contingency type. In case of a fleet-related event, the maturity of the loan was extended for an average of 2.6 months. The cost increased only by a small amount.[26] On average the bankers received a some compensation, reflecting only a minor increase in risk. Fleets would eventually arrive, and delays did not convey new information about the solvency of the king. At the same time, bankers on average required some additional compensation *entering* into contracts that had a fleet contingency written into them – on average, the

[26] The increase is a mere 0.4%; the difference in cost compared to the baseline is not statistically significant.

baseline cost was 4.1 percent higher (even if variability was high, and the difference is not statistically significant).

Tax revenue shortfalls were a different matter. Most taxes were collected directly by cities or tax farmers, which had an incentive to maximize revenue. Their performance was independently verifiable by the lenders. The incentives of bankers and those of tax collectors were compatible, and there was no possibility for the king to manipulate the total yields.[27] Tax stream insufficiencies were bad news on the fiscal front, but they did not convey information about what type of borrower the king was. The associated contingent scenarios gave the king an extra 4.6 months to repay, while reducing rates of return by 1.7 percentage points. Consistent with a risk-sharing arrangement, a negative shock in terms of fiscal revenue resulted in a reduction of borrowing costs. The baseline cost of loan agreements with a tax shortfall clause was 1.6 percentage points below the average; bankers were willing to offer this type of "insurance" without a premium.

"King's discretion" scenarios involve non-payment without an externally verifiable trigger. This was followed by a rearrangement of cash flows. The arbitrary postponement of payments by the king was undoubtedly bad news, either because of new, urgent spending needs or because other loans were receiving priority for repayment. Unlike the case of tax stream insufficiencies, the cause of the need for extra liquidity was uncertain, and moral hazard could not be ruled out. The risk to the bankers was increasing compared to the original contract. Risk-sharing implies that this additional risk should be associated with a transfer to the bankers. The large increase in returns – 4.1% on average

[27] The king could, however, manipulate the order in which lenders were paid. Contracts were therefore quite specific in establishing the collection priority of individual lenders with respect to specific tax revenues.

– is consistent with this interpretation. Contracts with a postponement option for the king were also more expensive in the baseline scenario, by an average of 4.3%.

The effect of "banker's discretion" is more difficult to evaluate, as there are liquidity considerations to take into account. These clauses typically allowed bankers to collect part or all repayments in *juros* instead of cash. There was often no reduction in the amount payable, and bankers were allowed to collect the entire current-term interest of the *juros*.[28] This accounts for the increase of 1.5% in the rate of return. In practice this accounting profit probably did not translate into an actual cash-flow advantage. Bankers would have had to sell *juros* on the secondary market, a costly operation that could nullify the 1.5% gain. If they chose to keep the bonds, they would have had to wait for and oversee the collection of the coupon payments. A reasonable guess is that "banker's discretion" clauses allowed lenders to switch their repayments to safer assets without a substantial impact on their cash flow. Bankers typically entered into these contracts when they had reason to be concerned about the future yield of extraordinary revenues.[29] Whenever *asientos* contained banker discretion clauses, they were on average 1.6% more expensive initially for the king.

The final contingency type was collateral executions. These were triggered by the king missing the final payment of the loan. Because the event was pre-defined in the contractual clauses, it was not considered a default. When it was exercised, the cost of the contract fell. Sometimes the contracts specified that the bankers had to wait before being able to sell collateral *juros* – hence the two month average maturity increase, which

[28] *Juro* interest was paid twice yearly. If the banker received juros in October, he would be allowed to collect the entire December interest payment, rather than the portion corresponding to the three months he had held the bond. This increases the profitability of the contract relative to a cash payout in December.
[29] The maturity of the loan for the king changed differently from the one for the bankers. The king will now only repay through tax revenue foregone, which means at a very slow pace.

reduced profitability. Bankers also lost because collateral was not always sufficient to cover the last repayment. When bankers and the king's representatives entered into contracts with a collateral execution clause, the cost was on average 2.1 percentage points lower. This reflects the additional security of holding a collateralized loan.

Our findings suggest that the king was mainly concerned with the risk of a liquidity shortfall; the cost of borrowing mattered relatively less. The majority of short-term loan contracts envisaged the option to postpone payment or to swap payment instruments. Return differences by type of contingency strongly suggest that these options allowed for effective risk sharing arrangements. Instead of having to find fresh funds to redeem maturing debt, the king had the right to extend the maturity of his borrowing, either by delaying payments or by swapping short term debt for perpetual bonds. At the same time, the bankers reduced the risks from the king changing his spending priorities. The most costly eventualities – looking at the combined effect of the higher baseline cost and the cost of the contingency cost – were those triggered at the king's discretion. Here, bankers received an extra 8.4% in interest. In other words, when the Crown postponed payments without "just cause" in the form of late fleet arrivals or tax insufficiencies, the increase in borrowing costs was particularly large. Bankers realized that writing an option on such eventualities did not contain good news about the king's financial position and priorities, and demanded to be compensated accordingly.

We now take a closer look at the effect of contingent clauses on loan maturities. In table 4, we regress the change in the due date of the loan (in months) on its original maturity, plus a host of controls.

Table 4: Loan duration modifications in case of contingency

	Maturity increase
Constant	-1.97 (-2.31)**
Fleet	2.14 (2.19)**
Tax stream insufficiency	4.07 (6.19)***
King's discretion	0.44 (0.28)
Banker's discretion	-1.03 (-0.97)
Collateral execution	1.19 (2.02)**
Principal (real)	-1.13 (-0.96)
Duration	0.07 (1.72)*
FX	1.58 (1.88)*
R^2	0.09
N	531

Standard errors clustered at the contract level; t-statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Longer duration loans do not substantially affect maturity extensions in case a contingency clause is invoked – the coefficient is significant, but small. When contingency clauses are invoked, contracts with a foreign exchange component (FX) are associated with extensions of over a month and a half . Fleet contingencies extend the due date by two months on average – typically the time it took to tap an alternative repayment source. Tax stream shortfalls are associated with even longer extensions – four months on average. Collateral executions add only one month. King and banker discretion clauses

mainly reshuffled payments before the maturity of the loan, and hence are not significantly associated with changes in the due date.

When was each particular type of contingency clause used? In figure 5, we examine the evolution of contingency clauses by five-year intervals. In the beginning, for the years before the 1575 bankruptcy, over 50% of clauses are associated with collateral executions. At the same time, almost 25% refer to shocks that reduce the Crown's revenue, such as fleet arrival and revenue shortfalls. Collateral execution clauses vanish as a category after the 1575 default. There is little borrowing – and hence few contingencies – up to 1585, when the preparations for the attempted invasion of England trigger a new round of *asientos*. In the last fifteen years of the sample, banker discretion clauses become the top category, followed by revenue shortfalls.

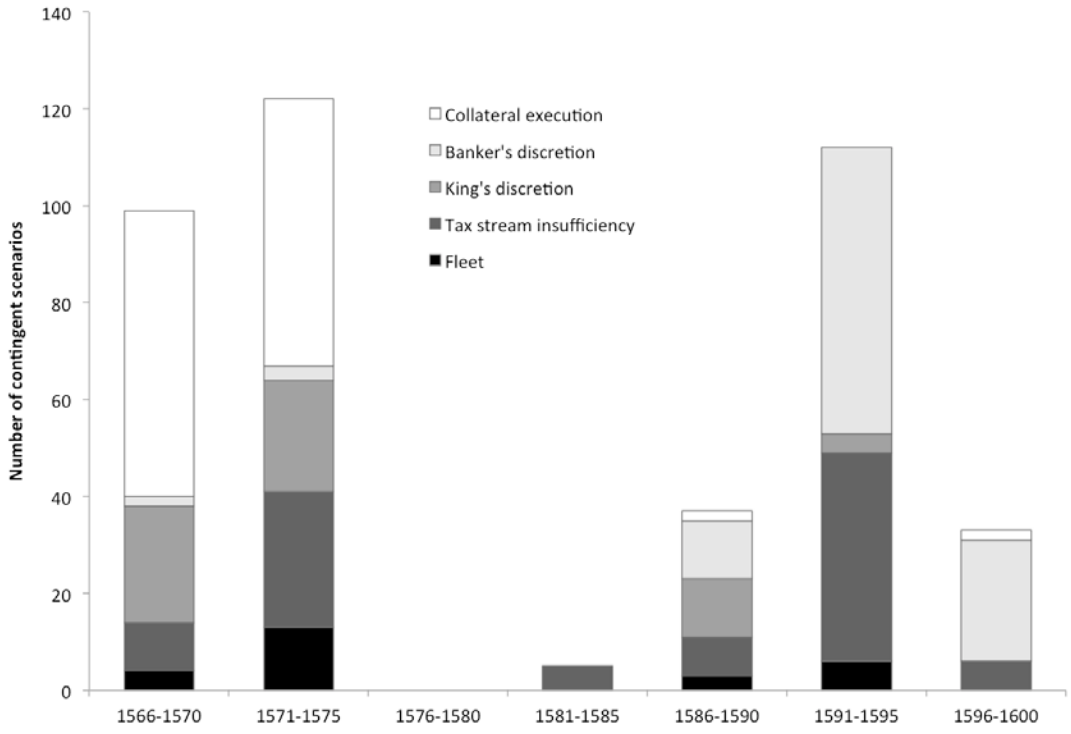


Figure 5: Number of contingent scenarios by type and by period

The use of contingent loans was not affected by the 1575 default – their share is roughly constant before and after.[30] Their composition, however, was significantly altered. Before 1575, most contingent contracts had collateral clauses. During the 1575 bankruptcy, the Crown declared that *asientos* had been illegal, and payments on the collateral bonds were suspended. Bankers were prevented from selling them in the secondary market. Eventually, these juros were reinstated with the 1575 settlement. Nonetheless, few bankers were interested in collateral execution clauses afterwards. They instead used "banker's discretion" clauses, which allowed for *juros* to be obtained and sold off at their will in advance of the maturity of the contract. Banker's discretion clauses were also priced to offset the cost of collecting and transferring the *juros*. In essence, bankers learnt how to better protect themselves – if before they had to wait for the king to miss a payment to switch to safe assets, now they could do it at the slightest hint of trouble.

Why was it in the interest of bankers and the king to write these contracts? We emphasize three key facts: First, the absence of asymmetric information as a result of primitive means of communication, and the extraordinary opportunities for intertemporal barter at a time of urgent, sudden spending needs and variable revenue. Second, the pricing of loans and the effect of duration on interest cost suggests that the Crown principally struggled with liquidity issues, not solvency problems.[31] Third, the fragmented nature of fiscal authority ensured that the Crown's borrowing could be effectively collateralized by other debts.

Both silver revenue and tax farming facilitated the writing of contingent contracts. Silver taxes were a major source of revenue for servicing *asientos*. Since news from the

[30] The exception was the 1576-1580 period, when most lending came from the 1577 settlement.
[31] In Drelichman and Voth (2010) we also show that the king's fiscal position was sustainable in the long run.

New World about the production of the mines travelled at the same speed as the galleons laden with bullion, the king had no informational advantage vis-à-vis his bankers. There was also no way to hide the arrival of a fleet from the Indies. The time of fleet arrival varied considerably (figure 6).

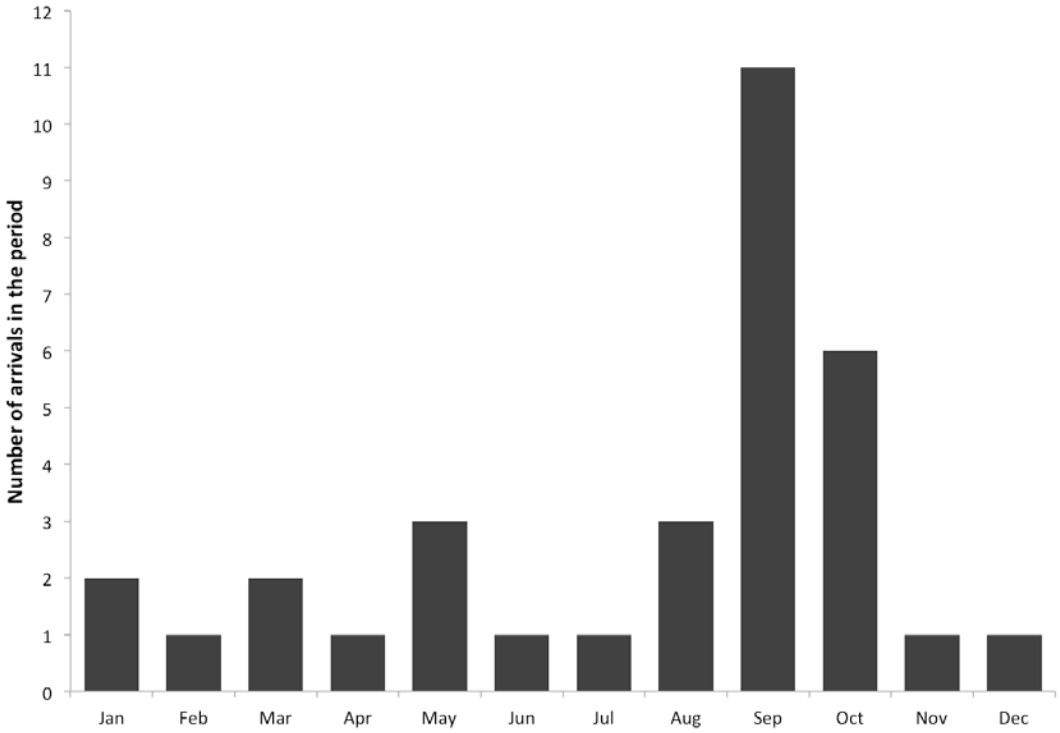


Figure 6: Frequency of fleet arrivals

The key reasons why conditional contracts could be written on fleet revenues – new information about the king's fiscal position was independently verifiable, and that neither party had advance knowledge – also favored tax farming. Tax farmers had strong incentives to maximize revenue, and were not in the employ of the king. Relevant news might have been obtained from them ahead of time, but it is highly unlikely that there was much scope for manipulation. Overall, the existence of tax farming (combined with

typically low volatility in non-silver revenue) will have made it much more likely that shortfalls reflected genuine adverse shocks to the king's fiscal position.

V. Contingent Debt and Excusable Defaults

Having analyzed the conditional nature of many loans to Philip II, we now shed light on sovereign lending and the nature of defaults. King and bankers contracted over a large number of different states of the world; they found an effective way to share risks. Nonetheless, some eventualities could not be written into loan covenants.[32] Default under these conditions was a form of risk-sharing, but it did not differ fundamentally from the contingencies foreseen in loan documents; it simply extended the sharing arrangements already in place to a different situation. We argue that the famous defaults of Philip II were excusable (in the sense of Grossman and van Huyck 1988).[33] While violations of the letter of lending contracts occurred, these were anticipated by both sides, and did not violate lenders' original expectations. To support this argument, we need to demonstrate that defaults occurred in times of exogenous, independently verifiable adverse shocks, and that there were no significant negative changes in loan conditions after an actual default.[34]

Modern-day sovereign bonds issued in New York or London are said to be in default when the borrower has missed a single contractual payment. No such definition was agreed ex ante in sixteenth century dealings between Crown and bankers. At the

[32] Shocks arising from military defeat are an obvious case in point – it would be hard for the Crown to contract on the possibility of the Armada sinking, say.
[33] In Drelichman and Voth (2011), we surmise that defaults were excusable; here, we argue the case based on a close reading of loan conditions and fiscal conditions.
[34] If there had been changes in actual loan conditions, these could also be rationalized by Bayesian updating (about, say, the strength of the Spanish navy). In this sense, demonstrating that rates did not change is requires the 'strong' version of our hypothesis to hold.

time, neither side could firmly commit to servicing debts or to taking deposits. Actual outcomes could fall somewhere on a spectrum between full compliance and default. There are five possibilities: 1) full compliance with the baseline scenario, as detailed in the original contract, 2) use of one or more of the contingency clauses, 3) violation of one or more of the clauses, followed by a rescheduling, 4) full suspension of payments to all creditors, followed by a general settlement, 5) outright repudiation.

We argue that because contracts already considered a wide range of states of the world, both parties were aware that repayment according to the original agreement was not always possible. At the same time, the very fact that contingencies were being written into loan documents suggests that the Crown attached considerable importance to not violating explicit loan conditions. If defaults are excusable, financial outcomes for the lenders should reflect the borrower's fiscal position. Importantly, differences in outcomes should be driven by exogenous shocks, i.e. events that are beyond the control of the borrower. In normal times, the king should live up to the letter of his obligations. When some minor shocks occur, he will invoke some of the emergency clauses in the contracts, which we document extensively. Larger shocks will see him violate some of these clauses, only to compensate lenders later. Full-blown moratoria reflect even larger negative shocks, and in this sense are driven by events that cannot be contracted over ex ante. Finally, for defaults to be excusable, (5) should never be observed, unless it was preceded by a negative shock so large that no further payments can occur. This is the easiest part of the argument – there is no single case of outright debt repudiation in our database.

We first demonstrate that payment stops occurred in poor states of the world for Philip II, which were caused by exogenous shocks. Excusable defaults also imply that the (unobserved) expectations of lenders are not disappointed. Since we do not observe expectations of lenders directly, we analyze how the pricing of loans changed after the 1575 default.

Default in Verifiably Bad States of the World

For the Grossman-van Huyck interpretation to be correct, defaults have to occur in verifiably bad states of the world. This was true in the case of Philip II. Twin shocks hit the Spanish monarch's finances in both 1575 and 1596 – military expenditures surged, and revenue from the New World was below trend.

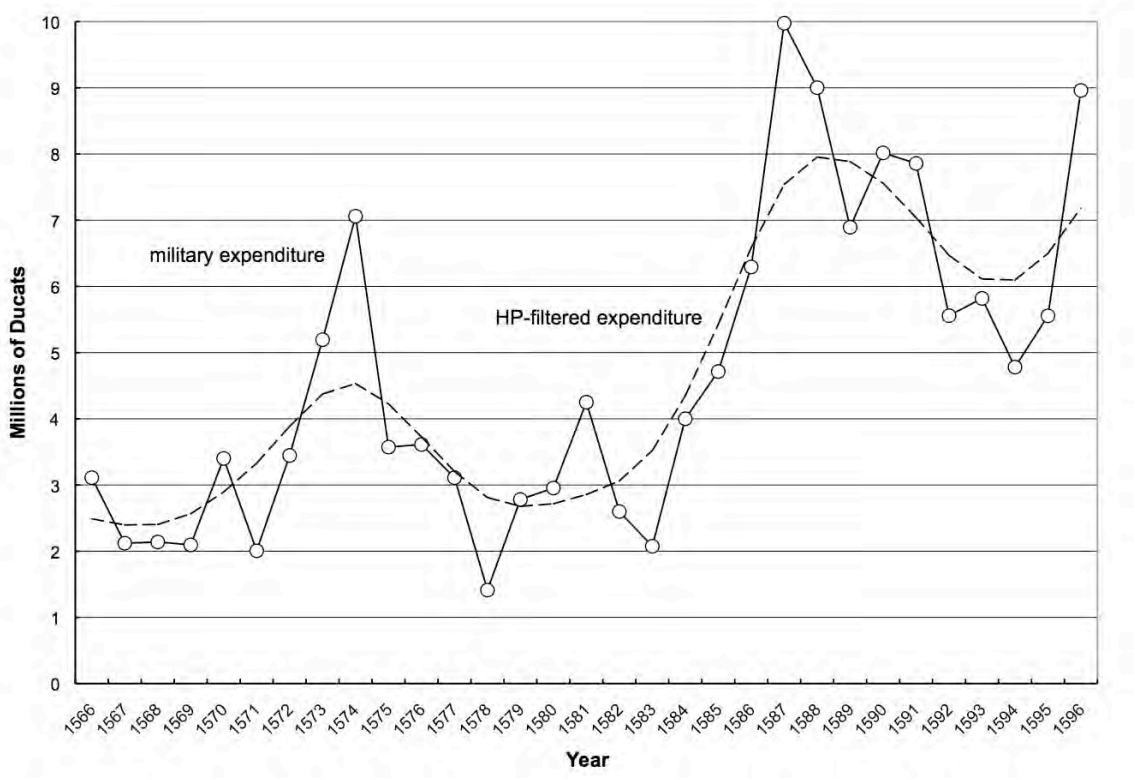


Figure 7: Military expenditure, actual and HP-filtered, 1566-1596

In Figure 7, we show military expenditure during the period 1566-96. From year to year, expenditure on armies and fleets varied considerably. Three spikes are clearly visible – 1572-75, 1587-88, and 1596. These reflect the escalation of the Dutch revolt, the Armada, and the outbreak of war with Britain. In two of these cases, the king defaulted. The exogeneity of these shocks varied. The Dutch revolt had been simmering for a few years, and responding to it was a deliberate policy choice. Its escalation into a full blown – and costly – war of independence, however, was beyond the imagination of Spain's ruler (and arguably, among European observers). Retreat was not a realistic option, as control over important revenue-generating territories was at stake.[35] The Armada was a deliberate choice, planned and budgeted for over a period of years. Its failure was always a possibility and, in line with the requirements of the excusable defaults literature, it did not lead to a payment stop. The 1596 escalation of the Anglo-Spanish war was initiated by Britain; it required a major military effort on the part of Spain. The expenditure shocks were also large. In 1574, military spending accounted for 93 percent of all expenditure (without debt servicing costs); it exceeded Crown revenue by 25 percent. In 1588, it also exceeded revenue, by 16 percent (while staying below total revenue in 1596).[36]

Figure 8 shows revenues compared to an HP-filtered trend during the final 30 years of Philip II's reign.

[35] See Parker (1998) for a detailed analysis of Philip's military strategy.
[36] All figures are from Drelichman and Voth (2010).

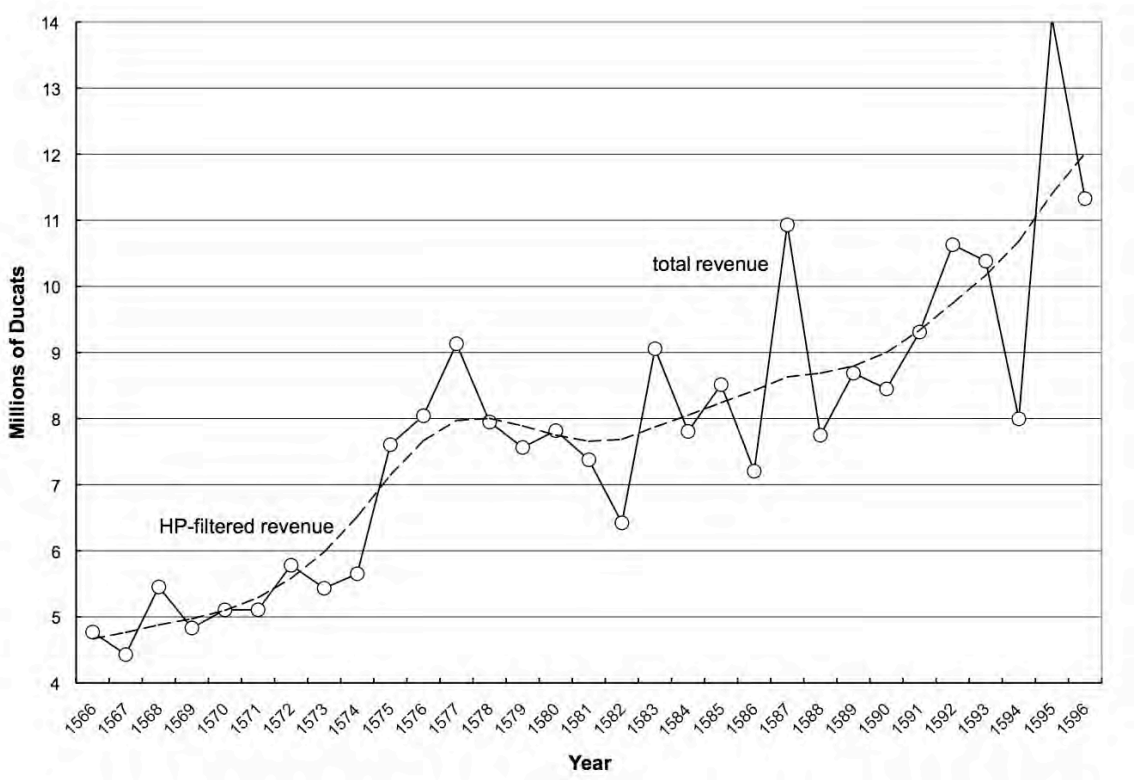


Figure 8: Crown revenue, actual and HP-filtered, 1566-1596

Revenue did not fluctuate as much as military expenditure. The king only defaulted in those years when revenue was markedly below trend and expenditures were simultaneously above trend. This confluence of expenditure and revenue shocks occurred in the mid-1570s, for several years in a row. As Figure 8 shows, there were also many years when revenue was significantly below trend, and the king did *not* default. This does not contradict our hypothesis that the king's defaults were excusable because they occurred in bad states of the world. For it to be correct, the king does not have to default in *all* bad states; it is enough that he never defaults in good times. The observation is also easy to rationalize – silver revenues contributed importantly to volatility in the 1580s. Years of low revenue typically alternated with years of high revenue. Normal fluctuations

were smoothed by extra *asiento* borrowing. Combined with risk-sharing elements in the loan contracts (such as the one with Tomas Fiesco), the Crown coped with most fluctuations. In years of extraordinary pressure, a payment stop was declared and a general renegotiation became necessary.

The events that caused fiscal difficulties were easy enough to confirm and identify. Only one or two silver fleets reached Spain every year. The cargo of the arriving ships was a key determinant of Crown revenue. Once the ships had arrived, it proved impossible to suppress information on the size and value of the fleet.[37] Commercial gazettes all over Europe carried details on the value of treasure brought from the Indies – a major determinant of the king's fiscal position became public knowledge almost instantly. Military events such as the escalation of fighting in the Netherlands after 1568 were also simple to verify. While not all years of high military expenditure or of revenue shortfalls led to payment stops, every default during Philip II's reign occurred when the king's fiscal position was poor. Importantly, strained finances reflected exogenous events, and not poor fiscal policy – they were caused by the Dutch rebellion flaring up and by Caribbean storms.

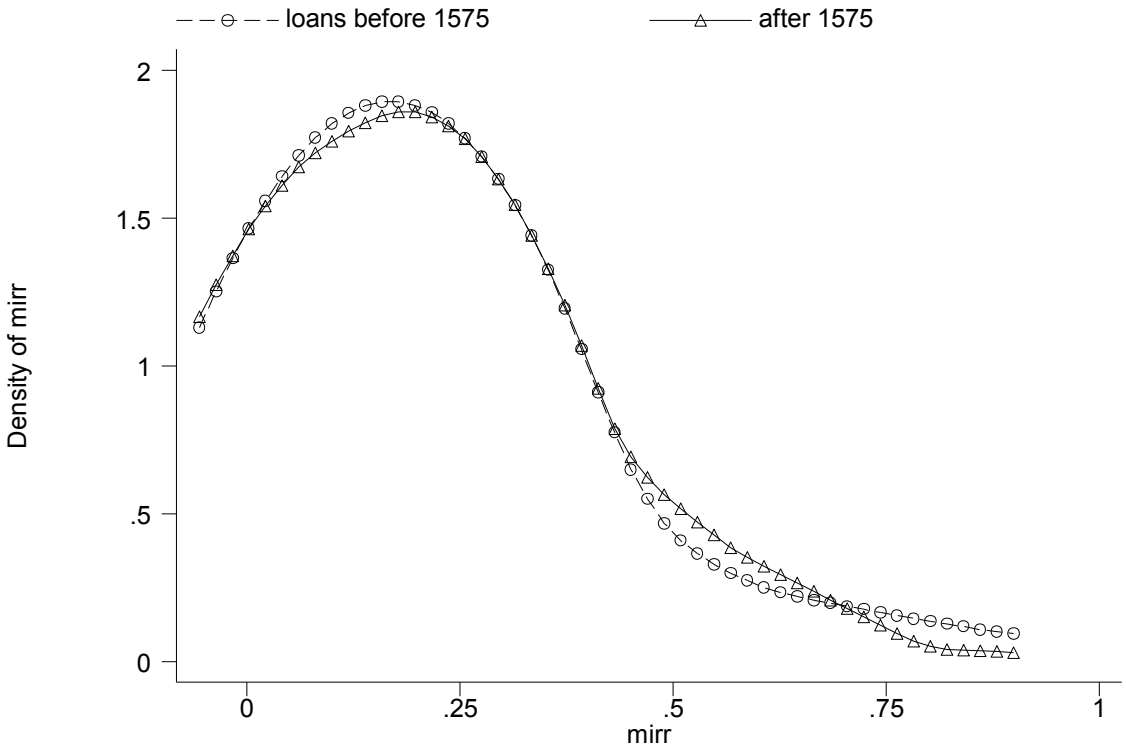
No adverse change in loan conditions

The previous sections established that defaults occurred in 'bad times', and that bankers to Philip II shouldered some fiscal risks that the monarch was exposed to, thus effectively providing insurance. In interpreting the defaults, the key question is the extent to which these were *de facto* anticipated. If so, they were simply another instance of claims falling due on an insurance policy – with the Crown's finances stretched due to a lack of

[37] See Morineau (1985).

liquidity, contracts could not be honored to the letter. This section demonstrates that this is what happened.

If lenders did not understand that they were *de facto* holding contingent debt, and if the defaults were not excusable, then loan conditions after 1575 should have changed for the worse.[38] This is the null hypothesis that we examine. Figure 9 presents the distribution of interest rate (MIRR) on *asientos* before and after the 1575 default. As is readily apparent, there is no evidence of a systematic shift in the cost of loans. The range, means, and medians of both distributions are virtually identical. A t-test finds no evidence that the king's access to credit became any more expensive.[39]



[38] In Alfaro and Kanczuk (2005), rising interest rates after a default act as a punishment for borrowers that violated the original loan contract in a context of contingent lending.
[39] We obtain a value of 0.68 [p-value 0.49]

Figure 9: Rate of return on short-term loans, before and after 1575

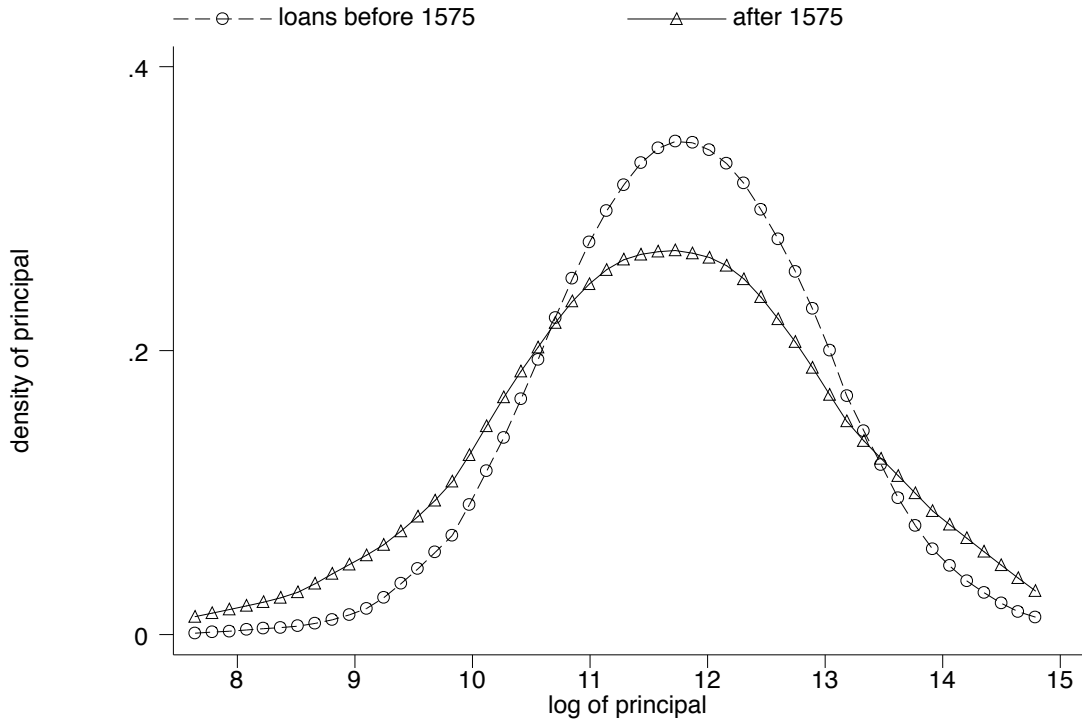


Figure 10: Size of loans, before and after 1575

Alternatively, the quantity lent could have gone down, even while the cost stayed the same. This is not what we find. The principal of loans made did not decline. In figure 10, we plot the log size of loans before and after 1575. The average dropped from a log value of 11.86 to 11.83 (p-value 0.78). While the distributions are not identical, there is no systematic difference in the size of loans; nor is there any evidence that loans are systematically smaller.[40]

Next, we examine the cost of borrowing more systematically. In the first column of table 5, we regress rates of return on principal lent, foreign exchange clauses, and duration, as well as a dummy for lending after 1575. We find that longer-duration lending, on average, was less expensive, a result that is consistent with the fixed cost of

[40] A t-test has a value of 0.48 [p-value 0.63]

underwriting *asientos* and the relatively cheaper alternatives available to the king for long-term borrowing. The size of a loan was not a significant determinant of its cost. Foreign exchange transactions raised the cost of borrowing by over 6% on average, a result of both the cost of operating overseas and of the use of foreign exchange transactions as a way to circumvent usury laws. Lending became 5% cheaper on average after the 1575 default. If we estimate with banker fixed effects (column 2), we find that the dummy variable for post-1575 loses its significance. This implies that the same bankers lent at the same rates at before; but that the number of bankers willing to only provide "dear" credit now played a smaller role. The post-1575 dummy becomes significant if we use robust regression estimation instead, and the size and significance of the coefficient is similar to simple OLS (column 3). The results so far do not suggest that the default caused bankers to suddenly update their beliefs about the riskiness of lending to Philip II: They did not begin charging him more to compensate for higher perceived risk. If anything, the cost of borrowing dropped substantially after the resolution of the bankruptcy.

Table 5: Correlates of borrowing costs (dependent variable: MIRR)

	(1) OLS	(2) OLS	(3) Robust regression	(4) OLS	(5) OLS	(6) OLS	(7) OLS
	All years	All years	All years	< 1576	>1575	All years	All years
Duration	-0.0025***	-0.0027***	-0.0006***	-0.0023***	-0.0035**	-0.0025***	-0.0025***
	(-6.65)	(-6.03)	(-3.27)	(-3.93)	(-4.39)	(-6.35)	(-4.10)
FX clause	0.066***	0.048**	0.024***	0.029	0.071**	0.059**	0.040
	(3.82)	(2.35)	(2.63)	(0.99)	(2.34)	(2.40)	(1.05)
Principal	0.035	0.065	0.026	-0.145	0.150**	0.372	0.048
	(1.05)	(1.58)	(1.44)	(-1.56)	(2.69)	(1.30)	(1.20)
after 1575 dummy	-0.050***	-0.089	-0.066***			-0.051***	-0.067*
	(-3.01)	(-1.62)	(-2.69)			(-3.08)	(-1.82)
Debt/revenue ratio						0.010**	0.008
						(2.21)	(1.09)
Fiscal balance						0.001	-0.001
						(0.26)	(-0.21)
Constant	0.264***	0.461***	0.212***	0.403***	0.359***	0.206***	0.206***
	(14.45)	(4.30)	(4.42)	(4.65)	(3.98)	(5.18)	(4.06)
Banker fixed effects	no	yes	yes	yes	yes	no	yes
N	393	393	383	181	212	381	381
Prob > F	0.000	0.000	0.000	0.010	0.012	0.000	0.001
adj. R^2	0.137	0.130		0.133	0.146	0.149	0.155

t-statistics in parenthesis
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Standard errors clustered at the year level in columns (6) and (7).

In specifications (4) and (5), we estimate the basic regression for the period before and after 1575. In both periods, lending for a longer period was associated with significantly lower cost of financing. Before 1575, extending the duration of the contract by one year (roughly one standard deviation) was associated with a 2.4% fall in the cost of borrowing; thereafter, the predicted decline was by 4%.[41] If we test for the significance of the difference in the two coefficients by estimating jointly, and interacting the duration variable with the post-1575 dummy, we find a strong and significant result (beta coefficient -0.015, t-statistic -3.05). Column 5 also shows a significant coefficient for

principal, the size of a loan. This is in contrast to the result prior to 1575. At the same time, if we interact the post-1575 dummy with the size of principal offered, we do not find a statistically significant shift in terms of loan pricing in response to lending volume. Overall, the only major changes in loan pricing after 1575 favored the Crown.

In columns (6) and (7), we add two fiscal indicators as explanatory variables –the debt-to-revenue ratio and the fiscal balance.[42] In column (6), the debt-to-revenue ratio is significant at the 5% confidence level, indicating that a unit rise of the ratio resulted in an additional 1% in borrowing costs for the king. Once banker fixed-effects are added, however, the coefficient is no longer significant. This implies that, as debts mounted, only a subset of "premium" bankers continued to operate in the short-term debt market. The fiscal balance, in contrast, is never significant, suggesting that bankers did not take year-to-year fluctuations in the budget into account when pricing loans.[43]

In sum, we find that 16th century Spanish defaults occurred in "bad times"; that they did not adversely influence the pricing of loans, and that the Crown's ability to borrow did not suffer. Combined with the evidence on the extensive use of contingency clauses, this makes it likely that the defaults were "excusable" in the sense of Grossman-van Huyck (1988).

VI. Conclusions

Over the last 800 years periods of debt accumulation have often been followed by default (Reinhart and Rogoff 2010). Despite these disruptions, the market for sovereign

[42] Data from Drelichman and Voth (2010).
[43] It should be noted that neither the debt stock nor the revenue ratio were readily available statistics. Oft he two, estimating the fiscal balance is substantially more difficult (today, as it must have been for contemporaries – Drelichman and Voth 2010).

debt did not simply disappear. What accounts for this resilience? We use a unique case study of serial defaults by a single sovereign to argue that excusable defaults are an important factor. Analyzing data on loan covenants, hand-collected from over 400 sixteenth-century contracts in the Spanish Archives, we show that a significant share of short-term loans contained contingency clauses. We analyze the different types of loan modifications and their impact on cash flows and loan maturity. These modifications allowed effective risk-sharing between king and bankers – an institutional solution that offered many of the desirable properties that contingent debt would have today (Borensztein and Mauro 2004).

The data on debt covenants allows us to argue that contingent clauses and defaults were simply different points in the same spectrum of outcomes tied to uncertain realizations of the state of the world – while the loans are contracted over many possible scenarios, some could not be included or foreseen. When large, negative uncontracted-for events materialized, the king suspended payments: contracting over the possibility of military shocks, for example, was not feasible. There is every reason to assume that these events did not surprise lenders. We show – based on a detailed analysis of nearly 5,000 pages of loan documents – that bankers did not adjust their terms and conditions in a major way after the most severe default of Philip II's reign, in 1575. Lending continued along similar lines as before, and resulted in relatively generous rates of return for creditors. Because a strikingly high proportion of loans contained contingent repayment clauses, we argue that sovereign debt at the dawn of government borrowing was *de facto* contingent. We also show that defaults occurred in verifiably bad states of the world. These results offer strong support for Grossman's and van Huyck's (1988) view that

certain defaults are excusable. Our findings favor the view that sovereign lending can be sustained even in an 'anarchic' environment without effective punishments (Kletzer and Wright 2000).[44]

[44] We provide further detail on the difficulties in punishing Philip II in Drelichman and Voth (2011b).

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