Plantation Mortgage-Backed Securities: Evidence from Surinam in the Eighteenth Century

ABE DE JONG, TIM KOOIJMANS, AND PETER KOUDIJS

In the second half of the eighteenth century, Dutch bankers channeled investors' funds to sugar and coffee plantations in the Caribbean, Surinam in particular. Agency problems between plantation owners, bankers, and investors led to an arrangement called *negotiaties*. Bankers oversaw plantations' cash flows and placed mortgage debt with investors. We demonstrate how this securitization arrangement worked using market-wide data and detailed records from banker F. W. Hudig. During the boom, debt contracts and their securitization were an effective solution for planters, bankers, and investors. However, the market crashed after an oversupply of credit. This led to inefficient restructuring due to debt overhang.

In the eighteenth century, European colonies in the Caribbean featured a slavery-based plantation system, primarily producing sugar and coffee. There existed a strong demand for these products in Europe, and the Atlantic trade offered enormous profit potential for planters and merchants alike. These operations needed funding, and planters were keen to borrow money. The upfront investments were substantial because of minimum scale requirements and the need to purchase enslaved

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workers. Though the European judicial systems and their colonies were well integrated, there were immense information and agency problems: a trip between Europe and the colonies could easily take three months, and local planters could not be trusted to truthfully reveal their state of affairs.

In the Dutch Republic, a unique system featuring long-term debt developed. Merchant-bankers made 20-year plantation mortgages, which they securitized and sold to wealthy investors in the Dutch Republic through highly standardized funds called *negotiaties*. Van de Voort (1973, p. 102) documents that 198 such funds for Caribbean plantation finance were raised between 1753 and 1775, with a total capital of 63 million guilders. This equals 33 percent of the GDP of the province of Holland and 19 percent of the province's government debt in 1775.[1] The financial flows came to a standstill after a gradual implosion of the system in the early 1770s. Recovery only started after 1785.

In this paper, we use economic theory and new data to examine how Dutch merchant-bankers initially managed to overcome information asymmetries and agency problems and channeled large sums to the colonies, what made this system fragile, and what caused credit to be stopped for more than a decade. Our paper provides insights into the organization of the capital flows that enabled the establishment and growth of slave colonies in the Dutch Caribbean. We present the characteristics of the universe of *negotiaties* and detailed information about the characteristics of the mortgages in the funds. The trans-Atlantic payment system revolved around bills of exchange. We used a sample of these bills for which payment was refused to track the start of the crisis. Next, we analyze the financing arrangement through the lens of Ferrand Whaley Hudig, the only merchant-banker whose entire business archive has survived. Hudig started as early as 1759 to finance plantations with mortgage-backed securities (MBS) and expanded his portfolio to 12 plantations. Hudig's records give a detailed overview of all financial flows and the key players in the business, while his correspondence gives unique insight into the relevant developments.

Debt was chosen over equity to incentivize planters to make regular (interest) payments under the threat of liquidation. The mortgages had long-run maturities, giving planters the necessary time to develop their plantations. All parties involved understood that plantation funding was a risky business. The MBS instruments were highly standardized and

[1] Dormans (1991, p. 111) estimates the debt of the province of Holland at *f* 326.7 million in 1775. Van Zanden and Van Leeuwen (2012, Online Appendix, p. 52) estimate the GDP of Holland at *f* 191.6 million in the 1770s.

designed to limit the risks, both for bankers and investors. Bankers limited their risks through the originate-and-distribute model, investors through the industry standard of loan caps at 5/8th of the appraised collateral value, and by diversifying investments over multiple plantations in each MBS or over multiple *negotiaties*. The outcome for the MBS market was an equilibrium with virtually no price discrimination. While all bankers and investors accepted the standard interest rate of 5 to 6 percent, irrespective of banker reputation, bankers had the incentive to maximize fee revenues by increasing their MBS portfolios.

The Dutch approach is strikingly different from alternative arrangements in the eighteenth century, in particular in the British Caribbean (Pares 1960; Price 1980, 1991; Smith 2002, 2006; Radburn 2015; Goodspeed 2016). British bankers were willing to provide only short-term funds through bills of exchange with maturities of around 12 months, while long-term debts were merely offered if unpaid obligations accumulated. Plantations were predominantly funded with equity through retained earnings (De Jong, Kooijmans, and Koudijs (2023) provide an overview).

Until 1770, the MBS market grew because of credit availability, while the quality of mortgages deteriorated (De Jong, Kooijmans, and Koudijs 2022a). Even shocks such as the 1763 financial crisis and the revolts of escaped enslaved workers (maroons) did not limit the market's growth. Investors likely felt protected by the collateral values. Then, in the second half of 1770, bankers refused the payment of a large volume of bills of exchange. The refusal reflected investors and merchant-banks pulling back from the *negotiatie* market. This was followed by more negative shocks—poor harvests, a decline in coffee prices, renewed maroon attacks, and the international financial crisis in 1772/3—that led to a collapse of the *negotiatie* system. Many plantation owners could no longer meet their obligations. While the system was designed to protect bankers and investors from idiosyncratic risk, it could not deal with systematic risk. The Fourth Anglo-Dutch War of 1780–1784 led to a further decline of the system. Using auction price data for all *negotiatie* funds and a set of funds that resemble Hudig's portfolio, we document a large drop in MBS prices.

The bankers' experience is consistent with an underestimation of the risks inherent in the *negotiatie* system. Bankers overestimated plantations' ability to repay. Hudig had to renegotiate a debt restructuring with investors, possibly taking a hit to his reputation. Investors also underestimated the risks. We present the *ex post* returns on investments. With the exception of the earliest *negotiaties*, returns were poor, even in the long

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run. The resolution of the imploded *negotiatie* system was complicated. Due to debt-overhang problems, plantations lacked new investments and lost value. The debt contracts that had been essential in disciplining borrowers crippled them later on.

Our analysis contributes to several literatures. First, we extend the insights in earlier studies in Dutch about the plantation business (Van de Voort 1973; Oostindie 1989; Van Stipriaan 1993). In particular, we use Hudig's accounts and correspondence to paint a detailed picture of the role and decisions of the bankers, the agents around whom the system revolved.

Second, we add to the broader literature on information and agency issues in long-distance trade in the early-modern period (Greif 2006; Kallioinen 2020; Carlos and Nicholas 1996; Carlos and Neal 2011). We show that the Dutch approach was unique because it featured both interactions over very long distances and time horizons of up to 20 years.

Third, we relate to the literature on finance and slavery (e.g., Kilbourne 1995; Martin 2010; González, Marshall, and Naidu 2017; Koudijs and Salisbury 2020). The financing innovations of Dutch *negotiaties* stimulated the slave trade. The enslaved were used as collateral and faced negative consequences after the bust. Our work adds to Radburn (2015) and provides further evidence of how Caribbean slavery was underpinned by European financial markets.

Fourth, our work relates to the analysis of other historical long-distance financing arrangements, in particular, international sovereign debt (Eichengreen 1991; Tomz 2007). Flandreau and Flores (2009) demonstrate that intermediaries were crucial in this market. They find that a different market structure arose for sovereign debt, in particular a separating equilibrium where the most reputable bankers placed the safest bonds against low interest rates. In contrast, peers with a lower reputation placed riskier bonds at higher interest rates, even up to a 16.7 percent yield at issue. This different outcome can likely be explained by the fact that Dutch *negotiatie* bonds were backed by pools of mortgages on similar plantations under virtually identical conditions.

Finally, there are parallels with modern-day developments. MBS were arguably a primary cause of the Financial Crisis in 2007–8 (e.g., Gorton and Metrick 2013). Our work similarly finds weaknesses in the origination of real estate mortgages that are sensitive to the overvaluation of collateral and agency problems (e.g., Piskorski and Seru 2018). Further, there are interesting parallels in how the implosion of the system caused debt overhang problems that hampered recovery (e.g., Melzer 2017; Bernstein 2021).

SOURCES

To describe the market developments, we start with an overview of *negotiaties* provided by Van de Voort (1973), with names of bankers, size of the fund, date of initiation of the fund, and coupon. We adjust and correct this data using prospectuses and other deeds from the Amsterdam notary records and information from MBS auction records.[2] We complement this overview with deed records of plantation mortgages from Surinam and Amsterdam notary records.[3] These deeds provide the date of the mortgage, amount, maturity, interest rate, appraised value of the plantation, and whether it produced sugar or coffee. We calculate the loan-to-value ratio as the mortgage amount over appraised value.

In addition, we collect all protests of dishonored bills of exchange recorded at five Amsterdam notaries who were active in business in Surinam over the period in which we expect the crisis to start, that is, 1770–1774. There are 3,175 such protests, and we consider the amount of the bill and the period between drawing the bill and its presentation at the bank.[4]

Our analysis of the development of prices of *negotiaties* is based on auction prices between 1768 and 1796. These cover all voluntary sales of securities administered by the City of Amsterdam, with information on the date, security characteristics, and price. Our sample has 5,759 transactions for 137 unique securities. We use the periodical *Maandelijkse Nederlandse Mercurius* for transaction overviews and the original auction records for detailed characteristics to link each security to the *negotiatie* and the attributes provided by Van de Voort (1973).[5] From 1773 on, around 200 bonds were traded each year. Van Bochove, Boerner, and Quint (2017, p. 4) argue that the auctions were sufficiently liquid and transparent for prices to be informative about the underlying values.[6]

[2] City Archives Amsterdam, Collection of the Amsterdam Notaries 1578–1915 (5075). City Archives Amsterdam, Archive of the Burgomasters (5068).

[3] Dutch National Archives, Notarial Archives of Surinam 1699–1845 (1.05.11.14), 118–128; 337–394; 716–736; 919. City Archives Amsterdam, Collection of the Amsterdam Notaries 1578–1915 (5075).

[4] If a bank refused to pay a bill of exchange, the holder of the bill would get a notary to record the refusal in a legal act called a "protest," which enabled the holder to demand immediate payment or sue in court (Santarosa 2015, p. 693). We use an older card index to the Amsterdam notary archives with partial coverage to identify the five notaries most active in deeds related to Surinam. Collection of the Amsterdam Notaries 1578–1915, City Archives Amsterdam.

[5] Auction records, period 1768–1794, Archive of the Burgomasters, 134–198, Amsterdam City Archives.

[6] Van Bochove (2013, pp. 253–56) and Van Bochove, Boerner, and Quint (2017, pp. 5–7) discuss the published prices and mention two limitations: (i) the auctions were not the only platform to trade in securities as many private (over-the-counter) sales were conducted; and (ii) many estates were liquidated in the auctions.

For a detailed analysis of developments, we turn to Ferrand Whaley Hudig. Based in Rotterdam, Hudig started his business in 1756, at the age of 21. Hudig was a descendant of a family of merchants and was by blood related to both partners of the prominent Rotterdam merchant house Coopstad and Rochussen, which was involved in the Caribbean and slave trade and the financing of plantations. His family fulfilled important political positions (Hudig 1933; De Groot-Teunissen 2005). In 1759, Hudig started to finance plantations with MBS, initially for two plantations, later expanding to 12. He had minor interests in Surinam shipping and insurance.[7]

Hudig is the only merchant-banker active in the plantation *negotiatie* business whose business archives have completely survived, including his correspondence, contracts, transactions, payments, and detailed overviews of the development of specific plantations and *negotiaties*.[8] The key sources for our analysis are: (i) the incoming and outgoing correspondence with, among others, his agents and plantation owners; (ii) financial accounts and payments of each plantation; and (iii) legal documents, such as *negotiatie* contracts, appraisal reports, mortgage contracts, and plantation sale transactions.

In terms of total *negotiatie* volume, Hudig was in the 19th percentile of about 90 banks active in plantation financing before 1780. There were a limited number of merchant banks that set up large *negotiatie* funds, such that Hudig's total *negotiatie* position amounts to 2 percent of the market. Hudig is more representative of the majority of (smaller) merchant-banks that set up *negotiatie* funds backed by one or two plantations (Van de Voort 1973, pp. 269–323). We discuss Hudig's representativeness later.[9]

FINANCING AND INTERMEDIATION IN THE DUTCH ATLANTIC TRADE

Dutch slave-plantations were mainly located in Surinam, but also in present-day Guyana, primarily producing sugar and coffee. Van Stipriaan (1993) provides a detailed account of the Surinam plantation colony and estimates that Surinam produced about 3 percent of all Caribbean sugar and 14 percent of all coffee in 1775.

[7] Although our study relies on primary sources, we also accessed Oostindie (1989), providing a detailed account of two plantations in Hudig's portfolio (Roosenburg and Mon Bijoux, for the description of Hudig's involvement, see Oostindie (1989, pp. 341–47)), the biography of Hudig's grandson, with an early and incomplete description based on the Hudig family archives (Hudig 1933), and Rademakers (2015), with a description of Hudig's business and his relations with *negotiatie* investors.

[8] Available in the Rotterdam City Archives, inventory 68.

[9] A replication kit is found at De Jong, Kooijmans, and Koudijs (2022b).

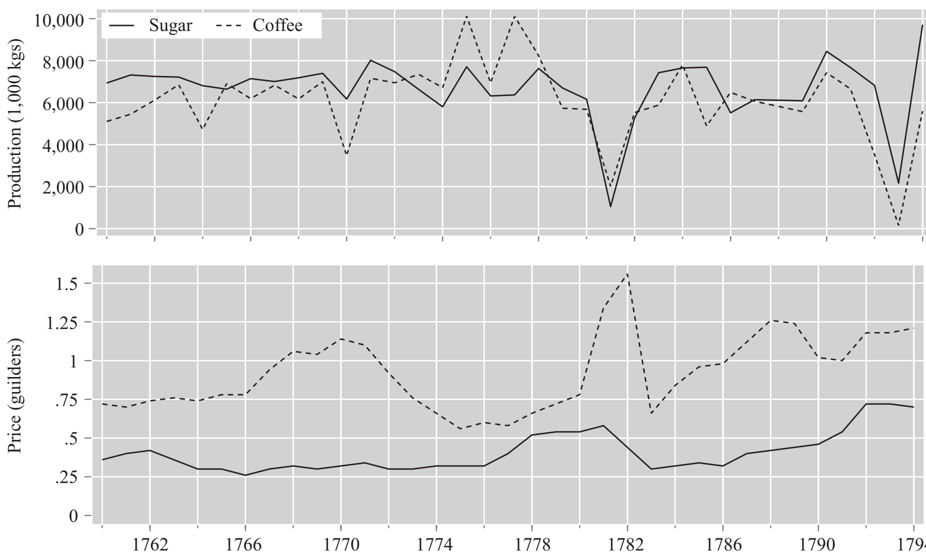

FIGURE 1
COMMODITY PRODUCTION AND PRICES

Note: Data is available up to 1794.
Source: Van Stipriaan (1993).

There were differences in investments and risks between growing sugar and coffee. To produce sugar, planters needed milling and cooking houses, which meant the minimum feasible scale was larger than for coffee. Growing sugar cane itself was relatively cheap, because among other reasons, canes can already be harvested 16 months after being first planted and normally last for 10 to 15 years. In contrast, coffee trees only start to yield beans after five to six years, and the grounds are exhausted much later. Thus, because of the production costs, the longer time horizon, and the volatility in prices, coffee was a riskier crop than sugar. Nevertheless, the minimum feasible scale was smaller, and entry was easier.

Figure 1 provides an overview of prices and production in Surinam. Coffee prices rose substantially in the second half of the 1760s, which appears to have stimulated investment in coffee plantations (Van Stipriaan 1993). Coffee prices fell again after 1770. Sugar prices were more stable. Both commodities saw price increases after 1776 with the American War of Independence and subsequent wars between England, France, and the Dutch Republic. After falling back to peacetime levels in 1783, both commodities saw price increases, especially during the French revolutionary wars of the 1790s. Production in Surinam was stationary during the period, with substantial temporary drops due to war hostilities in 1781 and 1793.

The main production factor on plantations were enslaved people, transported to Surinam from Africa (Van Stipriaan 1993, p. 100). Enslaved labor was not only responsible for the production of the crops, but also for the necessary infrastructure, such as embankments, irrigation, and drainage systems. The planters' legal property rights over the enslaved turned them into financial collateral, which helped to fund the expansion of the plantation.

The plantations were largely funded with mortgages provided by bankers from cities such as Amsterdam, Middelburg, and Rotterdam. Mortgages were securitized and sold on to investors in the form of *negotiatie* funds in certificates of 1,000 guilders. The first *negotiatie* was initiated by Willem Gideon Deutz in 1754, who initially raised more than one million guilders (Van de Voort 1973). Later funds followed this structure closely, leading to highly standardized financial instruments in the 1760s. Investors could get a diversified portfolio of plantation MBS. Moreover, many *negotiaties* involved a diversified pool of multiple mortgages. Investors were promised a fixed annual interest rate of 5 to 6 percent (substantially above the government yield at the time of about 2.5 percent), while the bankers held an account for each plantation-owner, which allowed payments to investors to be smoothed over time. The maturity period was normally 20 years. Interest payments were due annually from the start of the contract, but amortization only started after ten years. In practice, amortization was rare, and many mortgages were rolled over. A board of commissioners represented investors in an MBS. These appear to have only started playing a role when the *negotiatie* got into trouble.

The bankers kept complete oversight of all cash and information flows. As in Diamond's (1984) classical banking model, they played a key role in reducing information and agency issues. They marketed the plantations' products, supplied building materials, insurance, etc., and provided short-term credit so the planters could purchase local goods. The choice to securitize through *negotiatie* funds, rather than keeping mortgages on their balance sheets, was presumably driven by the small size of banks and the lack of deposit banking. The securitization allowed merchant-bankers to reduce their on-balance sheet exposure. As in DeMarzo's (2005) seminal model of security securitization, this allowed them to maximize the profits from their expertise without being capital-constrained. However, securitization likely weakened intermediaries' incentives to properly screen and monitor (Keys et al. 2010). Bank reputation functioned as a substitute for skin-in-the-game, which, as we will show for Hudig, was limited (for a theoretical treatment, see Hartman-Glaser, Piskorski, and Tchistyi (2012)).

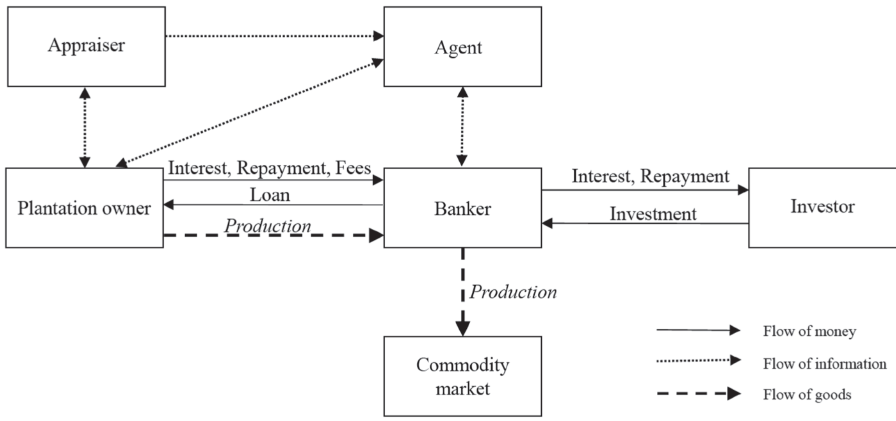

FIGURE 2
FLOW CHART *NEGOTIATIE* PROCESS

Source: Authors' illustration.

Starting in the early 1750s, the Amsterdam market was flooded with capital as the Dutch government started to repay substantial debts, and interest rates were low. The economically most important Dutch province, Holland, reduced its debt from 360 to 320 million guilders between 1750 and 1780 (De Vries and Van der Woude 1997). Dutch financial markets had been familiar with secured bonds since the introduction of so-called quicksilver bonds in 1695, which were backed by the revenues of an Austrian quicksilver mine (Elias 1905, part 2, pp. 1047–49).[10]

Figure 2 illustrates a *negotiatie's* structure. Mortgages originated through the bankers' agents. In Surinam, many of these so-called *agendarissen* were active, often in associations. These men would screen suitable candidates and then send paperwork to the bankers in the Dutch Republic. They played a crucial role in limiting the agency problems induced by the long distance between the investors and bankers in the Dutch Republic, and the plantations in the colonies. The agents would typically receive a fixed annual payment and a percentage of the new mortgages, which gave them an incentive to overextend credit. Many agents were plantation owners themselves and often worked for multiple banks.

Bankers relied on appraisers (*priseurs*) appointed by the local government to determine the value of a plantation based on market prices

[10] Covered bonds were used in other parts of Europe as well. Wandschneider (2015) describes the use of covered mortgage bonds in Prussia raised by the King in eighteenth-century Germany. Most likely the initiator of the *Landschaften*, Bühring based his instrument on Dutch examples (Hagedorn 1978, pp. 45–46).

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of land, enslaved workers, etc. The local government set rules for the appraisal process. Mortgages could cover up to a maximum of 5/8th of the appraised value. In theory, the equity stake of the planter (at least 3/8th of the appraised value) provided a sufficient buffer if the plantation was liquidated. Also, the standardization of lending standards might have been a way for bankers to signal quality, although an over-reliance on such signals could have stimulated fraud. At multiple points in time, usually in response to a credit boom, rules were tightened after financiers complained about lax appraisal standards (Wolbers 1861, pp. 234, 261–2, 303–4; Hudig 1933, p. 36).

Bills of exchange were important, but unlike the English system, they were primarily a means of payment rather than a credit instrument. Plantations commonly used bills to access their *negotiatie* mortgage credit, or the "overdraft facility" attached to that mortgage. Most bills would be sent to the Dutch Republic immediately to be presented for payment at the merchant-bank. Typically, the banker's local agent had to approve the bill for the bank to accept it. In case of refusal, the holder of the bill would file a formal protest with a notary and send the bill back to the colony. Refusal was costly, and bankers tried to avoid it. The plantation would, apart from reputation damage, have to pay a fine of 25 percent of the bill's value, which hurt the plantation, the banker, and the *negotiatie* investors.

We collect information on 3,175 dishonored bills from 1770 onward. We use this data to investigate the maturity distribution of bills of exchange (see Figure A.1 of the Online Appendix).[11] The distribution of the time between the issuance of the bill in Surinam and the moment it was first presented at the merchant-bank in the Dutch Republic shows a spike at three to four months, corresponding to the usual travel time between Surinam and the Dutch Republic. The median, average, and 75th percentile are five, seven, and eight months, respectively. This means that the majority of bills were paid well within 12 months, which is considerably faster than was common in the British West Indies (Radburn 2015).[12]

The management and supervision of the plantations were in the hands of administrators if the owners of the plantations did not reside in the

[11] Since accepted bills of exchange were not recorded in the notary archives, it is impossible to check how representative the maturity distribution of refused bills is for the universe of bills. Assuming that credit risks increased over time, we expect that refused bills would have a relatively long maturity.

[12] Only an estimated 12 percent of bills in our sample had additional credit terms, which can be understood as a credit instrument rather than a means of payment. These bills were required to remain in the colony for a period of three, six, 12, or even 24 months before they could be presented at the merchant-bank in the Dutch Republic.

colony. By custom, they received 10 percent of the plantations' revenues. Administrators and bankers' agents had separate roles. However, the two were often the same if the plantation had a mortgage. At least in theory, this improved oversight and minimized information and incentive problems. Administrators often oversaw multiple plantations, often in associations. They resided in Paramaribo, the colony's administrative center, and visited plantations if needed. Day-to-day affairs on the plantations were supervised by plantation directors, who typically received a flat salary.

The long development times of plantations required a long-term commitment of funds, either in the form of long-term debt or outside equity funding.[13] Theory suggests that due to agency costs, the latter would have been costly (Jensen and Meckling 1976). If outside equity owners are unable to (perfectly) monitor, insiders always have an incentive to report that affairs are in a bad state and thereby embezzle plantation revenues. In this scenario, debt contracts can be optimal, even if they limit flexibility (Townsend 1979). In the eighteenth-century Atlantic trade, information problems were severe, and financiers could not verify the true state a capital recipient was in. The fixed interest schemes of debt contracts (under the threat of liquidation) help enforce the truthful verification of the plantation's state of affairs.

Table 1 and Figure 3 present the development of the *negotiatie* market using a new combination of sources. Panel A of Table 1 provides information about the different *negotiaties*. In the early years until 1765, there were 15 *negotiaties*, raising a sum of 8.9 million guilders. The median size is 106,000 guilders, and the mean coupon for investors is 5.4 percent (with a median of 6 percent). Panel B provides information about the underlying mortgages. On average, mortgage size was 34,721 guilders, while the appraised values were much higher. The median loan-to-value (LTV) ratio is 44 percent, which is well below the maximum in the funds' prospectuses of 5/8th (i.e., 62.5 percent). The median interest paid is 6 percent (with an average of 5.78 percent). The markup between the MBS coupon and mortgage interest rates is small. The bankers must have derived most of their profits from origination fees and commissions on commodities. Panel C shows that there were a total of 12 bankers involved in the early years.

The years 1766–1768 show a steep increase in the number of new *negotiaties* to 27. The average mortgage size doubles to 64,921 guilders

[13] The use of equity contracts was well known in the Dutch Republic. Already in the sixteenth century, shipping companies were funded by issuing equity capital to outside investors (De Jong, Jonker, and Röell 2013, p. 74).

TABLE 1
OVERVIEW OF *NEGOTIATIES* MARKET

	1750–1765	1766–1768	1769–1770	1771–1773
Panel A: Negotiaties				
Number of new *Negotiaties*	15	27	36	48
Value, total	8,974,000	7,187,624	14,809,638	6,445,862
Value, average	641,000	266,208	435,577	143,241
Value, median	106,000	115,000	193,750	127,000
Coupon %, average	5.4	5.8	6.0	5.8
Coupon %, median	6.0	6.0	6.0	6.0
Pooled %	33	22	33	2
Panel B: Mortgages				
Loan size, average	34,721	64,921	107,292	98,078
Loan size, median	27,036	50,312	100,086	85,180
Interest rate, average	5.78	5.94	5.96	5.99
Interest rate, median	6.00	6.00	6.00	6.00
Appraised value, average	110,315	134,532	186,664	191,287
Appraised value, median	98,087	120,037	188,283	171,708
Loan-to-value (%), average	42.8	58.03	58.39	54.63
Loan-to-value (%), median	44.06	62.5	62.5	62.23
Sugar (%)	14	19	24	19
Panel C: Merchant-banks				
Number of banks	12	20	19	29
Negotiatie value, mean	815,818	359,381	779,455	247,918
Negotiatie value, median	248,000	154,000	680,000	172,500

Notes: Pooled negotiaties are based on multiple mortgages. The *loan-to-value* ratio is the mortgage sum divided by the appraised value. The number of banks indicates the number of banks issuing a new negotiatie. Amounts are in guilders. This table covers the period 1750–1773. Beyond 1773 the volume of newly issued negotiatie is very small, as illustrated in Figure 3.
Sources: Van der Voort (1973). City Archives Amsterdam, Collection of the Amsterdam Notaries 1578–1915 (5075). Dutch National Archives, Notarial Archives of Surinam 1699–1845 (1.05.11.14). City Archives Amsterdam, Archive of the Burgomasters (5068), with authors' calculations.

in this period. Strikingly, the median LTV ratio is exactly the maximum of 5/8. In these years, the mean MBS coupon increases to 5.8 percent, and the markup is compressed to virtually zero. The number of bankers increases to 20. The years 1769–1770 can be considered the boom period for plantation MBS. *Negotiatie* volume and mortgage size roughly doubled compared to three years before. Although the same number of bankers are active, the size of their *negotiaties* increases dramatically. Appraisals also increase, and the mean LTV creeps close to the maximum of 5/8. Strikingly, the median coupon and interest rates were 6 percent throughout all three periods, including the boom.

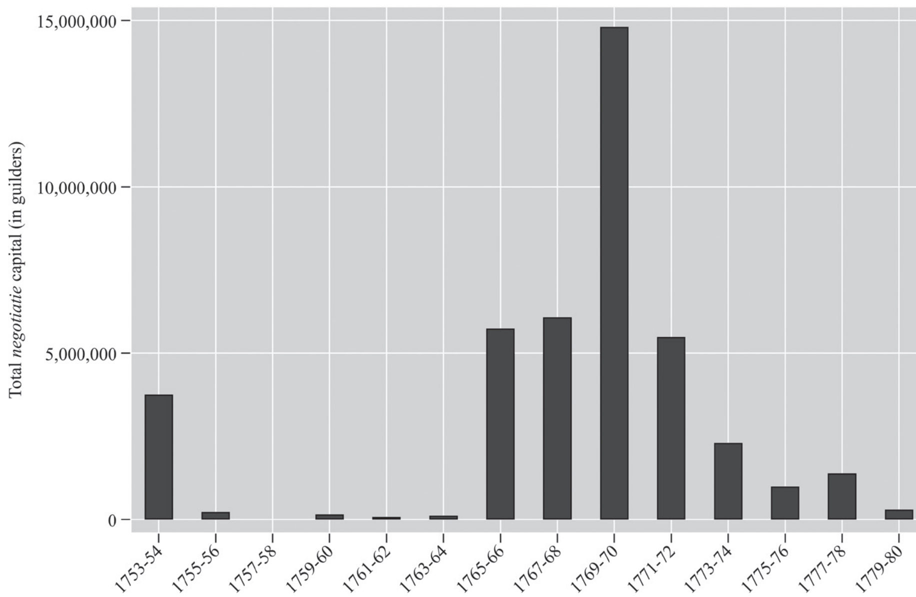

FIGURE 3
GROWTH AND DECLINE OF *NEGOTIATIE* MARKET

Sources: Van der Voort (1973). We have adjusted the figures of Van der Voort using information from two main sources: (1) Prospectuses and other deeds of Amsterdam notaries, City Archives Amsterdam, Collection of the Amsterdam Notaries 1578–1915 (5075). (2) *Negotiatie* details from the MBS auction records, Archive of the Burgomasters, City Archives Amsterdam.

THE BUILD-UP OF A PLANTATION BUSINESS: HUDIG'S *NEGOTIATIES*

Table 2 provides an overview of all *negotiaties* issued by Hudig and the underlying plantations (the locations of the plantations are in Figure A.2 of the Online Appendix). Hudig built up his portfolio over the years 1759 to 1778. He set up his first *negotiatie* in 1759, backed by a 100,000-guilder mortgage on sugar plantation Roosenburg and coffee plantation Mon Bijoux. The mortgage had a maturity of 20 years, with annual principal repayments of 5,000 guilders and an interest rate of 5 percent that was fully passed on to investors. Hudig received a fee of 0.5 percent of the principal value at origination, and a 2 percent commission on sales of the plantation products over the life of the mortgage (Oostindie 1989, p. 346). The owner resided in the Dutch Republic, while three administrators in the colony supervised the plantations. Hudig appointed one of the administrators, Dirk van der Mey, as his agent (in partnership with Adriaan Gootenaar). The *negotiaties* were sold among Rotterdam elites, including Hudig's relatives.

In 1764/5, five years after Hudig's first *negotiatie*, he initiated two more *negotiaties* on the plantations of Annaszorg and Somerszorg. The

TABLE 2
HUDIG'S *NEGOTIATIES*

Negotiatie	Date	New or Amendment	Mortgage (Guilders)	Total Mortgage Outstanding (Guilders)	Appraised Plantation Value (Guilders)	Total Mortgage/ Appraised Plantation Value (%)	Interest Rate (%)	Interest Rate for Investors (%)	Loan Term (Years)	Redemption Free Period (Years)	Annual Redemption (Guilders)
Roosenburg and Mon Bijoux	28/11/59	new	100,000	100,000			5	5	20	0	5,000
	15/02/60	new	12,000								
	21/04/67	new	86,000	168,000	368,811	46	6	5	20	10	5,000
	25/07/77	new	20,000	136,000			5	5			
Somerszorg	30/05/64	new	56,000	56,000	126,188	44	5	5	28	0	2,000
	07/02/65	new	4,000	60,000	126,188	48	5		4	0	1,000
	24/11/66	amend.	98,627	101,627	157,805	64					
	01/04/69	amend.	146,722	146,722	234,755	63	6		20	10	14,672
	01/03/78	amend.	202,860	202,860	280,597	72					
Annaszorg	01/03/65	new	70,000	70,000	153,914	45	5	5	27	3	3,000
	01/03/68	amend.	100,000	100,000	207,834	48	5	5			
Janslust and Blockenbosch	04/10/66	new	90,000	90,000	120,739	75	6	5	20	10	9,000
	01/03/74	amend.	100,000	100,000	177,552	56					
La Confiance	08/05/68	new	50,355	50,355	80,568	63	6	5	20	10	5,035
Venetia Nova and Ma Resource	13/07/68	new	52,156	52,156	83,449	63	6	5	20	10	5,215
Duringen	30/03/70	new	131,196	131,196	209,913	63	6	5	20	10	13,119
Driesveld	05/10/71	new	192,500	192,500	271,230	71	6	5	20	10	19,250
Bijgeleegen	10/09/73	new	15,571	15,571	24,915	62	6	5	20	10	1,557

Note: This table gives an overview of the different mortgages contracted on the plantations for which Hudig issued and managed *Negotiatie* funds.
Sources: City Archives Rotterdam, Collection Coopstad and Rochussen, 68, with authors' calculations.

mortgage contracts were similar, although with an extended maturity (both 28 years) and lower annual amortization. For the Annaszorg mortgage, Hudig claimed an additional 0.5 percent fee for the arrangement of shipping insurance. The mortgage sums of Hudig's early *negotiaties* were all well below 50 percent of the appraised plantation values.

In 1766, Hudig raised a *negotiatie* collateralized by a mortgage on a coffee plantation, Janslust, and its corresponding woodlands, Blockenbosch, and two more *negotiaties* in 1768: one with a mortgage on coffee plantation La Confiance, and one with a mortgage on plantation Venetia Nova and its wood grounds, Ma Resource. By then, the *negotiatie* market was growing rapidly, and the surging number of investors and banks in the market had led to increasingly standardized mortgage contracts (Van de Voort 1973). The mortgages of La Confiance, Venetia Nova, and Ma Resource followed the mortgage blueprint with mortgage sums equal to 5/8 of the appraised plantation value, interest rates of 6 percent, and a 20-year maturity starting with a ten-year interest-only period. The mortgage contract for plantation Janslust looked similar, only with an even higher sum of ¾ of the appraised plantation value. Adding these plantations to his portfolio, Hudig displayed a certain bullishness about the *negotiatie* market. Due to the abundant supply of capital, investors were not compensated for the increased risks in these new mortgage contracts, as they still received the 5 percent interest on their bonds. Hudig, however, charged 6 percent to the plantation owners and generated a 1 percent interest markup.

Plantation revenues were boosted by a surge in coffee prices in the late 1760s. Although there had been considerable price volatility in the first half of the eighteenth century, by 1766, the coffee price had been relatively stable for a decade between 0.70 and 0.82 guilders per kilo and was moving upwards from 1766 onward. The higher commodity prices facilitated additional funding. The plantations under Hudig's *negotiaties* that were issued before 1766 renewed and increased their mortgages. Hardly any amortization took place. Planters used new and higher plantation appraisals to justify the additional debts, which Hudig funded by enlarging the *negotiaties* and issuing more securities to investors.

Somerszorg is an informative example. Initially, Hudig declined to pay the plantation's outstanding bills of exchange because the plantation had already drawn credit up to the maximum mortgage sum. However, when the planter provided a new appraisal report in 1766, which listed an increased number of enslaved people and a higher appraised value of 157,805 guilders, the mortgage was increased to 98,627 guilders, equal to 5/8th of the newly appraised value of the plantation. Three years later, Hudig received a new appraisal report of Somerszorg valued at 234,755 guilders (a 49 percent increase), although the number of enslaved people had decreased since the previous appraisal report.

The increase in appraised values reflects the boom in plantation prices, but also points to the possibility of overappraisals. Just five days after the new appraisal, Somerszorg was sold for 202,500 guilders, about 15 percent below the appraised value. Such cases should have been a warning signal. However, there was fierce competition between bankers. For example, in 1768, Hudig lost out to a competing Amsterdam banker with regard to the mortgage on plantation Purmerend that Hudig was in the process of securitizing.[14] Bankers wishing to impose stricter credit terms would have a hard time finding borrowers.

During the height of the boom, Hudig added the plantations of Duringen, Driesveld, and Bijgeleegen to his portfolio. Duringen was an established plantation and had the same owner as Somerszorg. Its interest coverage ratio was higher than that of La Confiance and Venetia Nova (Table A.1, Online Appendix), indicating that Hudig became slightly more conservative. The coffee plantations of Driesveld and Bijgeleegen were both owned by Bernard Texier, the future governor of the colony. Texier agreed with Coopstad and Rochussen in 1770 that they would accept a mortgage on his plantation, Driesveld (and later the adjoining grounds Bijgeleegen), if his current bankers, Hermael and Van den Bosch, declined to do so.[15] When Hermael and Van den Bosch declined, Coopstad and Rochussen made a deal with Hudig to establish a *negotiatie* collateralized by Texier's extended mortgage on plantation Driesveld in Hudig's name. Hudig was bound by this agreement, even though he was no longer keen to provide new plantation mortgages after 1770.[16] The mortgage terms were standard. The Duringen and Bijgeleegen mortgage sums both equaled 5/8th of the appraised plantation values, while Driesveld obtained the credit of 192,500 guilders on an appraised value of 271.230 guilders, equaling as much as 71 percent of the appraised plantation value.

How did Hudig manage the cash flows and debts of his portfolio over time? Table 3 provides a summary of the financial accounts, aggregated over all *negotiaties* and plantations from 1766 to 1780. We start with the plantation owners' debts to Hudig's *negotiatie* funds. The total *negotiatie* funds increased from 226,000 to 868,000 guilders between 1766

[14] Letters to Van der Meij and Gootenaar, dated 8 June 1768; 29 July 1768; 18 January 1769; and 29 August 1769, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[15] Collection Coopstad & Rochussen, 113, City Archives Rotterdam.

[16] Letter to Bernhard Texier, dated 29 March 1770, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

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TABLE 3
HUDIG'S FINANCIAL ACCOUNTS

	1766	1767	1768	1769	1770	1771	1772	1773	1774	1775	1776	1777	1778	1779	1780
Negotiaties and interest															
Number of *negotiaties*	2	4	4	6	6	7	8	7	7	8	8	8	7	7	7
Negotiatie debt	226,000	385,000	451,000	546,000	567,000	679,000	868,000	823,500	823,500	844,000	866,500	886,500	871,000	871,000	869,000
Plantation gross revenues	33,210	40,858	73,852	73,215	59,981	81,526	82,396	99,288	75,176	56,960	74,784	46,532	110,836	83,593	58,999
Gross revenues to *negotiatie* debt	0.15	0.11	0.16	0.13	0.11	0.12	0.09	0.12	0.09	0.07	0.09	0.05	0.13	0.10	0.07
Interest – payable	10,460	17,230	25,181	24,785	31,831	39,577	40,275	48,506	51,516	54,076	56,761	56,192	57,372	56,543	55,399
Interest coverage ratio	3.17	2.37	2.93	2.95	1.88	2.06	2.05	2.05	1.46	1.05	1.32	0.83	1.93	1.48	1.06
Interest – actual payments	12,723	17,759	24,302	23,700	34,200	39,102	40,508	49,840	51,513	53,791	35,740	40,887	61,397	18,752	26,551
Gross earnings accruing to Hudig															
Interest markup	0	2,170	2,720	3,720	4,220	5,420	7,220	6,965	7,065	7,080	6,013	5,763	5,608	4,343	4,343
Interest from debt on balance sheet	269	753	1,180	1,764	2,489	629	1,867	2,660	3,460	6,178	7,074	6,405	7,065	5,221	4,838
Transport and insurance fees	1,131	1,420	2,421	2,320	1,977	2,052	2,937	2,754	2,403	2,341	2,350	1,164	3,029	2,422	2,587
Total gross earnings Hudig	1,400	4,343	6,321	7,804	8,686	8,101	12,024	12,379	12,928	15,599	15,436	13,331	15,701	11,986	11,767
Planters' debt position with Hudig															
Current account debt	2,386	1,734	0	5,540	6,994	19,158	30,063	41,669	77,989	80,113	76,694	67,852	53,134	29,208	26,208
Mortgage debt on balance sheet	0	6,663	1,406	6,857	2,491	9,952	13,687	13,678	14,991	42,361	36,523	42,551	44,828	61,209	60,470
Negotiatie debt on balance sheet	3,000	20,000	28,000	28,000	1,000	1,000	7,000	6,000	6,000	25,000	47,500	47,500	47,500	47,500	47,500
Total debt Hudig	5,386	28,397	29,406	41,696	10,485	30,110	45,750	56,347	98,980	147,474	160,717	157,903	145,462	135,429	132,921
Hudig's debt to *negotiatie* debt	0.02	0.07	0.07	0.08	0.02	0.04	0.05	0.07	0.12	0.17	0.19	0.18	0.17	0.16	0.15

Notes: The *Number of negotiaties* is the total number of *negotiaties* outstanding and *Negotiatie debt* is the total value of *negotiatie*s under direction of Hudig outstanding, both at the end of the book year. *Plantation revenues* are the revenues from commodity sales, net of Hudig's administrator fees and shipping costs. The *Interest – payable* and *Interest – actual payments* are the contractual interest obligations and the actual payments, respectively. *Total Income Hudig* consists of the *Interest markup* arising from the *negotiaties*, the *Interest from debt on balance sheet* the planters owed Hudig directly, and *Transport and insurance fees*. *Total debt Hudig* is the sum of *Long-term debt* held by Hudig, the *Current account debt* the planters owed Hudig on short-term advances, and the *Negotiatie debt on balance sheet*, all measured at the end of the book year. Amounts are in guilders. The detailed analysis of Hudig's accounts covers the period 1766–1780. This period includes the build-up of Hudig's *negotiatie* portfolio during the second half of the 1760s, and the growth of plantation debts during the 1770s.
Sources: City Archives Rotterdam, Collection Coopstad and Rochussen, 68, with authors' calculations.

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and 1772, when Hudig's business grew from two to eight funds. Next, we present the gross revenues net of Hudig's administration fees and shipping and insurance costs, scaled by total *negotiatie* debts. For example, in 1768, the revenues were 73,852 guilders, or about 16 percent of the *negotiatie* debts. Interest to bondholders held the primary claim on revenues. Until 1775, plantation revenues were sufficient to cover interest payments—Table 3 shows that the actual interest payments were close to the contractual obligations. Remaining revenues were used for plantation expenses and investment. Plantation owners were the residual claimants.

As Hudig issued more funds between 1766 and 1773, his gross earnings increased steadily. About half came from the interest markup, that is, the 1 percent difference between the 6 percent mortgage interest rate and the 5 percent paid on *negotiate* bonds. The other half came from interest on planation credit on Hudig's balance sheet and transport and insurance fees. Over 1766–1771, Hudig's total gross earnings amounted to 36,655 guilders.[17]

Finally, we present the total debts on Hudig's balance sheet. These consist of the current account debts of the plantation owners with Hudig, direct (long-term) positions in plantation mortgages, and Hudig's own position in the *negotiatie* funds. The current account debt reflects the junior (unsecured) short-term debt that the planters had with Hudig. Before 1771, these reflected relatively small amounts (between 1766 and 1770, 0.75 percent of the total *negotiatie* sums). From 1771 onward, this position started to increase as Hudig allowed the planters to draw bills of exchange on him. In 1772, this amounted to 3.5 percent of the total *negotiatie* sums. Hudig's direct (long-term) positions in plantations originated from converting existing unsecured short-term debt into secure, long-term mortgage debt. This was a way for Hudig to secure the advances to planters with a formal mortgage. Later, this would become a source of contention with investors, who now saw the emergence of a claim on equal standing with theirs. Finally, Hudig's own position in the *negotiatie* funds, at least up to 1775/1776, mainly reflected the warehousing of *negotiatie* bonds between formal issuance and sale to investors. In 1773, when Hudig stopped issuing new MBS, virtually all *negotiatie* debt had been placed (see row "Negotiatie debt on balance sheet"). Hudig only kept a MBS position of 6,000 guilders.

In summary, the development of the overall market and Hudig's experience demonstrate how the *negotiatie* system reduced plantation

[17] There is no information on Hudig's expenses or any money he may have borrowed to fund his business.

owners' financial constraints. In combination with a well-informed intermediary and the availability of collateral in the form of a plantation, debt contracts appear to have been an effective solution to the information problems inherent to the plantation business. The opportunities for investors to diversify over several *negotiaties*, and the institutional "plumbing" involving bankers, local agents, and appraisers allowed Dutch investors to fund many colonial enterprises. The market developed as a pooling equilibrium, where the instruments were perceived to be homogenous and, as a consequence, saw limited price discrimination.

However, as the boom progressed and more capital became available, bankers like Hudig, relying on inflated appraisal reports, provided too much debt to the planters. The underlying dynamics are consistent with the model of Povel, Singh, and Winton (2007). As in their model, toward the end of the boom, bankers appear to have primarily based their lending decisions on public signals and information provided by the borrowers, in particular coffee prices, aggregate credit flows, and (overly optimistic) appraisal reports, rather than due diligence. Furthermore, there was strong competitive pressure at the height of the boom, which forced bankers to play along or drop out of the game entirely (Ruckes 2004).

COLLAPSE OF THE PLANTATION CREDIT MARKET, 1770–1773

In early 1770, Jan Nepveu, Surinam's governor, expressed his concerns to his principals back in the Dutch Republic about the "exorbitant" amounts of credit leading to surging plantation prices. According to the governor, the price of some plantations had risen by more than 100,000 guilders in six months.[18] He also expressed concerns about "speculative" plantation buyers' limited wealth and their inability to pay for plantation maintenance in a downturn.[19]

In 1770, the problems in the *negotiatie* system started to become apparent. First, there was a spike in the refusal of bills of exchange. Figure 4 shows the guilder amount of dishonored bills per quarter for our sample of 3,175 refused bills from 1770 onward. In the third and fourth quarters of 1770, around one million guilders in bills were refused, indicating that, on many occasions, bankers (and their investors) refused to accept a mortgage and were unwilling to transfer the promised sums. Van der Meulen (1904, p. 517) provides anecdotal evidence that the Surinam

[18] Letter to the directors of the Sociëteit van Suriname, dated 21 April 1770, Collection of the Sociëteit van Suriname, 340, National Archives The Hague.

[19] Letter to the directors of the Sociëteit van Suriname, dated 3 February 1770, Collection of the Sociëteit van Suriname, 340, National Archives The Hague.

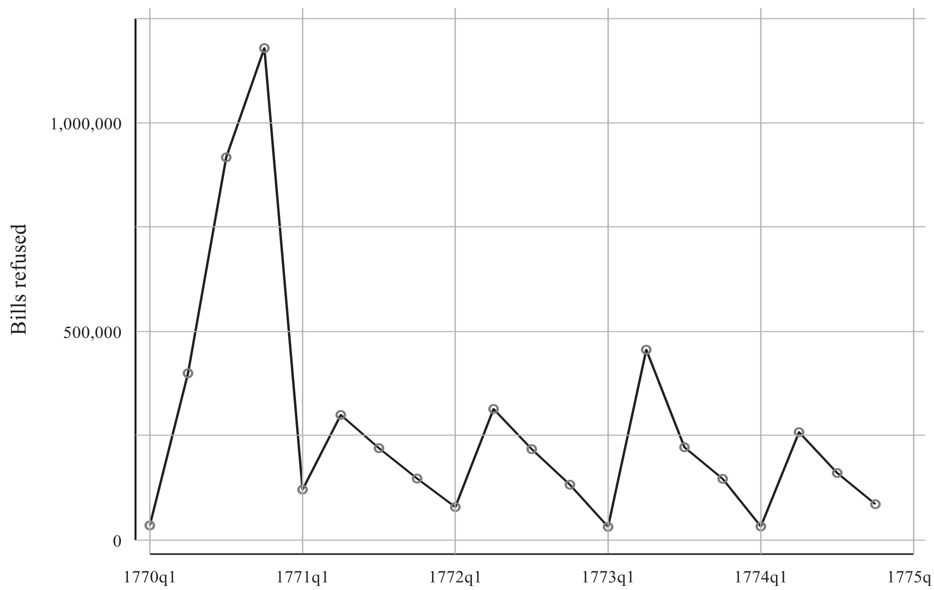


FIGURE 4
BILL OF EXCHANGE REFUSALS

Notaries: De Wilde 14319–14333; Pool 12724–12742; Van den Brink 10582–10618; Van Heel, 12880–12884; Van Homrich, 12390–12421.
Source: City Archives Amsterdam, Collection of the Amsterdam Notaries 1578–1915.

agent La Croix had offered mortgages to fund a plantation's entire purchase price. When prospective buyers tried to access the *negotiatie* credit in Amsterdam, their bills of exchange were refused. This shocked the market, triggering a herding reaction with more investors pulling out.

The spike in bill refusals was followed by severe problems for the planters. On his arrival in Paramaribo on 22 October 1770 from a trip inland, Governor Nepveu found "very big perplexity" in the town. The ships that had just arrived from Holland had returned a great number of dishonored bills of exchange.[20] Nepveu now feared that the majority of the bills that still circulated (estimated at 1.5 million guilders) would also be refused. The Surinam planters had already suffered from a drought in 1769, reducing revenues in 1770. A stop in credit would lead to a further deterioration of the plantation economy.

Afterward, Surinam was hit by a number of other shocks, aggravating the crisis. In 1771, there were renewed attacks from maroons (Van der Meulen 1904, pp. 506–507). Coffee prices declined as competition from

[20] Letter to the directors of the Sociëteit van Suriname, dated 22 October 1770, Collection of the Sociëteit van Suriname, 342, National Archives The Hague.

the French colonies increased (Combrink 2021). Further, the financial crisis of 1772/3 in London and Amsterdam likely reduced the availability of credit when a number of prominent Amsterdam merchant-banks, such as Clifford and Sons and Pels and Sons, failed. Moreover, two houses heavily involved in the *negotiatie* business, Abraham ter Borch and Sons and Clifford and Chevalier, did not survive the crisis either (Kosmetatos 2014, 2018a, 2018b; Goodspeed 2016; Koudijs and Voth 2016). Finally, in 1780, war broke out between the Dutch and English, further aggravating Surinam's problems. The English invaded the adjoining Dutch colonies of Demerara and Essequibo, and there was a substantial risk the same would happen to Surinam (Wolbers 1861). Moreover, the war restricted Dutch transatlantic trade, and colonial products had trouble reaching the Dutch ports. Slave imports were also affected (Van de Voort 1973, p. 5; Oostindie 1989, pp. 366–7).

Figure 3 shows that the origination of new *negotiaties* declined substantially after 1770, presumably due to a combination of tightening credit in Amsterdam and worse plantation fundamentals. The system did not implode from one day to the next. Table 1 shows that there was still a non-negligible amount of new *negotiaties* in 1771–1773 (predominantly in 1771 and 1772). The average loan-to-value ratio was lower than during the 1766–1770 period, indicating that only (somewhat) safer mortgages found their way to the market. In 1773–1774, there were still 2 million in *negotiaties* placed with investors. A closer inspection reveals that many of these were not newly placed issues with investors, but restructurings of existing *negotiaties* under new management.

In Figure 5, we present an index of *negotiatie* prices from Amsterdam auctions. We report the average yearly price of all securities traded (full sample) as a dashed line. While prices remain around par value until 1771 and even into 1772, they spiral downward afterward. In 1780, the average bond traded at 30 percent of its original value. At this point, the *negotiatie* system had virtually collapsed.

HUDIG: INTERMEDIARY IN A PROBLEMATIC POSITION

To better understand the developments after 1770, we turn to Hudig, who also started to experience problems. First, we show that Hudig's experience was broadly representative of market-wide developments using an entropy balancing approach (Hainmueller 2012). We construct a sample of *negotiaties* for which the average characteristics resemble Hudig's portfolio (details are in Table A.2 of the Online Appendix). We start with 101 non-Hudig *negotiaties* for which we have complete data on

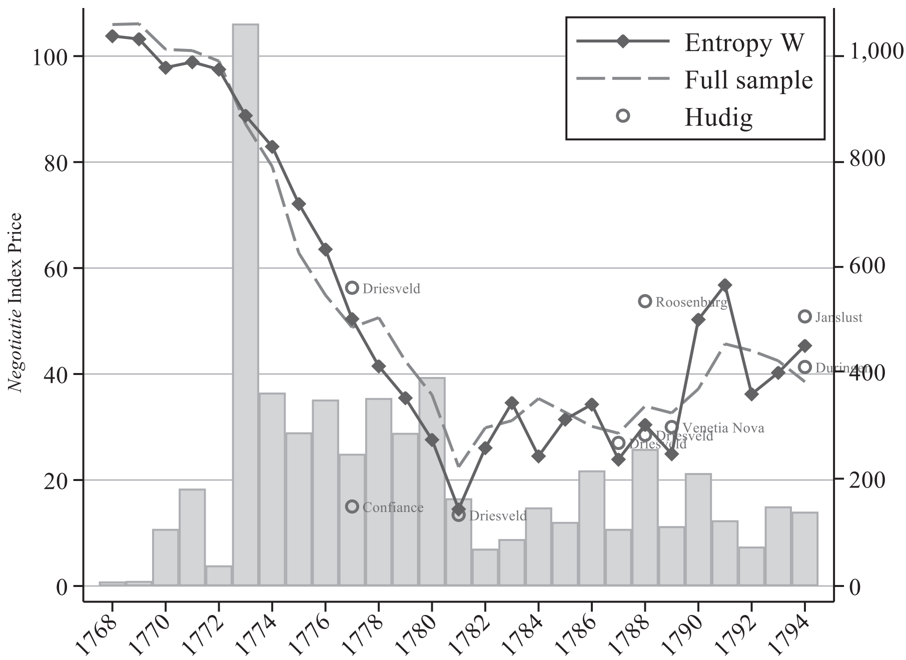


FIGURE 5
NEGOTIATIE PRICES

Notes: The dashed (solid) black line shows an (entropy balance-corrected) index price of all *negotiaties* sold in auctions. We report the average yearly price of all securities traded. Auction prices of Hudig's negotiaties are in red. The gray bars are the number of sales per year.
Sources: *Maandelykse Nederlandische Mercurius*, Auction records, period 1768–1795, Archive of the Burgomasters, 70134–12198, City Archives Amsterdam.

their characteristics. Comparing Hudig to this larger sample shows that he had a somewhat smaller *negotiatie* portfolio than the average banker. Further, Hudig was not involved in any activities other than the *negotiatie* business, had relatively more exposure to sugar plantations, and was relatively early in its *negotiatie* issues, with most being issued between 1766 and 1768. Next, we give each of the 101 non-Hudig *negotiaties* a weight such that, on average, the weighted group resembles Hudig's portfolio.[21] The average characteristics of this synthetic portfolio are presented in the column *balanced control.* Using the balancing weights, we construct a weighted price index that gives average prices for the synthetic portfolio. This is presented in Figure 5, together with actual transaction prices for

[21] We use the following balancing variables: the total size of the bank's negotiatie business in guilders; whether a merchant-bank had any activities outside the *negotiatie* business; whether the *negotiatie* was collateralized by multiple plantations; the fraction of sugar plantations in a *negotiatie*; and three period indicator variables.

Hudig's *negotiaties* reported in his archives. The figure shows that the *negotiatie* price indices for the whole market and the synthetic Hudig portfolio are strikingly similar. In addition, the actual transaction prices for Hudig's negotiaties are generally in line with the two indices.[22] In other words, Hudig's experience is similar to the overall market.

Next, we delve into Hudig's detailed records to better understand the position bankers found themselves in. On the eve of the crisis, Hudig noticed that the tide was turning. In May 1770, the owner of La Confiance sold the plantation to a, in Hudig's eyes, "speculative buyer." To finance the purchase, the buyer requested that the mortgage be increased from around 50,000 guilders to 60,000 guilders. Hudig refused, as this would exceed 5/8 of the appraised value. However, his agents, Van der Mey and Gootenaar, had already signed off on the mortgage request. Hudig was forced to take the plantation into receivership and bring it up for auction. In the summer of 1770, the owner of Venetia Nova and Ma Resource passed away, and Van der Mey and Gootenaar brought the plantations to auction in August 1770. Due to low demand, Van der Mey himself purchased the plantations for 80,916 guilders (appraised for 83,449 guilders two years earlier).[23] This example shows that, already in the summer of 1770, prices had fallen below those of 1768. Moreover, the pool of potential buyers was starting to shrink in response to a decline in the availability of mortgage credit. Going forward, it would be harder to liquidate plantations.

Hudig wrote Van der Mey and Gootenaar in October 1770 that the intended auction of plantation La Confiance would need to be canceled—no one would be willing to extend credit to Surinam.[24] The credit crisis hit before they could sell. An execution price far below fair value would damage Hudig's reputation and access to credit.[25] Moreover, Hudig would be forced to incur a substantial loss as his short-term credit was junior to the mortgages backing the *negotiatie* bonds.[26] Hudig was critical of his

[22] There are two exceptions: the price of la Confiance bonds in 1777 was surprisingly low, and the price of Roosenburg bonds in 1788 was surprisingly high. The former reflects the worst *negotiatie* in Hudig's portfolio, where a new buyer absconded and left Hudig with a run-down plantation. The latter reflects Hudig's oldest and arguably best *negotiatie* based on a profitable sugar plantation.

[23] Letter to Dirk van der Mey and Adriaan Gootenaar, dated 2 November 1770, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[24] Letter to Dirk van der Mey and Adriaan Gootenaar, dated 20 October 1770, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[25] Letter to Dirk van der Mey and Adriaan Gootenaar, dated 2 November 1770, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[26] Eventually the plantation was brought to auction in October 1773, and due to a lack of bidders, Hudig was forced to purchase the plantation himself for 12.500 guilders (including the mortgage), equal to the plantation's outstanding current account debt.

colleagues in Amsterdam. He blamed the credit crisis in 1770 on their indiscriminate acceptance of mortgages before 1770 and their equally indiscriminate refusal of bills of exchange afterward.[27]

After the events of 1770, Hudig became dissatisfied with his agents. He got into direct conflict with Van der Mey over his purchase of Venetia Nova and Ma Resource and subsequent request for an additional mortgage.[28] In response, he replaced his agents with Jean Rocheteau, who was heading to Surinam from the Republic to administer his family's plantations, Janslust and Blockenbosch, after the passing of his father-in-law. Hudig also appointed Rocheteau as administrator of most other plantations in his portfolio (except for Annaszorg and Duringen). After his arrival in Surinam, Rocheteau wrote to Hudig that he was not selling Janslust and Blockenbosch just yet—due to the scarcity of credit, he expected the current sale price to be less than half of the mortgage amount.[29] He added that only selling the plantations' enslaved workers would not be advisable either, because slave sales would generate little revenue in such depressed times.[30]

In Table 4, we present yearly averages of each plantation's revenues and expenses, interest coverage ratio (earnings/interest), and interest arrears for five-year periods. For seven plantations, we have data for both 1766–1770 and 1771–1775. For at least three of these plantations, revenues and the interest coverage ratio fell, indicating that the plantations' economic prospects deteriorated. For two newer plantations, we only have data from 1771–1775 onward. For one of these, Driesveld, the interest coverage ratio was below one between 1771 and 1775, indicating that this plantation was unable to pay its interest payments.

Hudig kept the plantations afloat by extending short-term credit. Table 3 shows that up to 1775, the plantations' actual interest payments equaled the interest payable even though revenues fell. Between 1771 and 1775, the plantations' current account debts with Hudig increased dramatically from about 7,000 to 80,000 guilders, while the total plantation debt on Hudig's balance sheet (including the mortgage debt and *negotiatie* debt

[27] Letter to Dirk van der Mey and Adriaan Gootenaar. Dated 17 May 1771, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[28] After Hudig declined to give the additional mortgage, Van der Mey sold Ma Resource without Hudig's consent. This was the proverbial straw. (Negotiatie overview by Hudig for investors. Dated 1780, Collection Coopstad & Rochussen (supplement), Box 6, folder HV918, City Archives Rotterdam. Letter to Rocheteau, dated September 11, 1773, Collection Coopstad & Rochussen, 461, City Archives Rotterdam.)

[29] Letter to Hudig, dated 23 January 1773, Collection Coopstad & Rochussen, 461, City Archives Rotterdam.

[30] Letter to Hudig, dated 20 April 1773, Collection Coopstad & Rochussen, 530, City Archives Rotterdam.

TABLE 4
HUDIG'S PLANTATIONS: PRODUCTION, REVENUES, AND EXPENSES

	1766–1770	1771–1775	1776–1780	1781–1785	1786–1790	1791–1795
Roosenburg						
Sugar (hogshead)	300	172	179	186	174	124
Revenues	14,193	9,961	15,737	9,048	16,546	19,384
Expenses	8,154	5,480	7,848	4,571	9,107	6,071
Expenses (enslaved workers)				0	2,300	1,751
Number of enslaved workers	186	168	150	136	126	88
Mon Bijoux						
Coffee (bales)	185	133	152	89	185	191
Revenues	8,137	6,602	7,094	5,165	14,260	10,724
Expenses	5,164	4,236	4,059	4,502	6,714	8,630
Expenses (enslaved workers)			895	0	1,200	1,500
Number of enslaved workers	80	73	73	76	76	80
Roosenburg and Mon Bijoux						
Interest coverage	2.69	2.10	2.76	1.72	3.72	3.64
Interest arrears	0	0	0	28,200	0	0
Somerszorg						
Coffee (bales)	260	385	408	125	178	103
Revenues	15,807	17,291	12,666	4,305	12,584	10,376
Expenses (total)	35,858	17,714	7,694	3,718	6,541	6,826
Expenses (enslaved workers)				0	0	2,000
Number of enslaved workers	107	96	65	45	41	56
Interest coverage	2.45	1.97	1.06	0.36	1.05	0.86
Interest arrears	0	0	10,500	43,500	72,000	96,000
Annaszorg						
Coffee (bales)	185	304	371	276	465	180
Revenues	13,496	16,659	13,690	12,210	37,579	15,654
Expenses	13,193	12,700	6,767	3,996	31,494	9,345
Number of enslaved workers	131	128	118	91	102	108
Interest coverage	3.33	4.36	3.29	3.75	18.79	9.55
Interest arrears	0	0	0	0	0	0
Janslust						
Coffee (bales)	216	59	136	60	131	87
Revenues (total)	13,364	9,305	5,005	3,720	9,748	6,940
Expenses	10,287	6,444	2,578	2,795	5,582	5,021
Expenses (enslaved workers)			0	0	1,220	1,120
Number of enslaved workers	73	85	75	69	55	57
Interest coverage	2.47	1.33	0.74	0.55	1.45	1.03
Interest arrears	0	0	16,000	39,000	51,000	60,000

TABLE 4 (CONTINUED)
HUDIG'S PLANTATIONS: PRODUCTION, REVENUES AND EXPENSES

	1766–1770	1771–1775	1776–1780	1781–1785	1786–1790	1791–1795
Duringen						
Coffee (bales)		294	303	75	124	33
Cotton (bales)		0	0	0	4	33
Revenues (coffee)		12,999	9,686	3,340	8,427	2,448
Revenues (cotton)		0	0	0	572	4,934
Revenues (total)		12,999	9,686	3,340	8,999	7,382
Expenses		9,627	4,349	3,255	5,825	4,132
Expenses (slave rent)				0	290	0
Expenses (enslaved workers)				0	0	500
Number of enslaved workers		101	70	49	45	38
Interest coverage		1.62	1.21	0.42	1.13	0.93
Interest arrears			13,300	43,225	69,825	89,775
Driesveld						
Coffee (bales)		134	275	147	138	87
Cotton (bales)		0	0	13	48	37
Revenues (coffee)		6,683	9,999	9,295	11,264	6,757
Revenues (cotton)				2,144	7,266	6,570
Revenues (total)		6,683	9,999	11,439	18,530	13,351
Expenses		6,906	2,922	4,568	7,301	7,768
Expenses (enslaved workers)			710	360	0	1,656
Number of enslaved workers		170	137	129	124	132
Interest coverage		0.58	0.80	0.92	1.48	1.07
Interest arrears		0	21,687	47,712	60,725	82,412

Notes: The *Revenues* are the value of commodity sales net of administration fees and shipping costs. *Expenses* are the bills of the plantation owner paid by Hudig: they cover local expenses (most importantly slave purchases, taxes, director salaries, building materials, labor hire, and food), and imported goods from the Dutch Republic (most importantly building materials, tools, and clothes). Coffee, cotton, and sugar production are estimates in bales or hogsheads. Amounts are in guilders. We have no information on slave investments over 1766–1775. We have no information on plantations La Confiance, Venetia Nova, and Bijgelegen.
Sources: City Archives Rotterdam, Collection Coopstad and Rochussen, 68, with authors' calculations.

Hudig kept on the balance sheet) rose to 147,474 guilders, or 17.5 percent of the *negotiatie* debt. The only alternative to extending credit was liquidating the underlying plantations and using the proceeds to repay investors. Selling at a discount would have damaged Hudig's reputation. This behavior is consistent with Rajan's (1994) model of bank credit policies. Toward the end of a boom cycle, banks will keep lending to insolvent borrowers to keep up the pretense that the existing loans are current. Only when the entire market turns (and the bank cannot be singled out for mismanagement) will the bank admit to the problems in its loan portfolio. If all banks follow this policy, this will prolong the boom and deepen the bust.

Hudig tried to limit the amount of short-term credit given to the plantations, but did not always succeed. On several occasions, Hudig refused to honor bills of exchange that his agents had not approved.[31] However, Hudig often felt forced to accept problematic bills. In 1767, he urgently asked his agents in multiple letters to stop drawing bills of exchange on behalf of Somerszorg as the outstanding debt had already greatly exceeded the mortgage amount.[32] Nevertheless, Hudig kept accepting new bills and only threatened to refuse them next time, which would lead to "excessive damage and shame."[33] Refusing a bill meant a fine for the plantation of 25 percent of the value of the bill, which would aggravate the solvency problems. Hudig also realized that the planters might try to find other means to generate income in the future, possibly by selling products illegally. This gave the planters and Hudig's agents an incentive to overdraw, hoping Hudig would accept.[34] As debts increased and plantation values fell, the planters became increasingly levered and thus prone to risk-shifting.

Table 4 has no information about La Confiance or Venetia Nova. The former simply had no revenues. After Hudig took La Confiance into receivership, the plantation remained unproductive in the absence of a new owner. When Hudig finally managed to sell it, the new owner absconded. The plantation fell into disrepair and was sold in 1780 at a fraction of its initial value. In the end, investors received only 20 guilders per bond with an initial value of 1,000 guilders.[35] Venetia Nova also fell into disrepair, and revenues were small. The number of enslaved workers dropped from 61 in 1773 to 37 in 1779. Debtholders continued to receive interest payments (reduced to 2.5 percent) in about half of the years. In

[31] Letter to Hudig, dated 27 November 1767; dated 12 July 1778, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[32] Letter to Adriaan Gootenaar, 30 June 1767, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[33] Letter to Dirk van der Mey and Adriaan Gootenaar, dated 30 April 1767, Collection Coopstad & Rochussen, 153, City Archives Rotterdam.

[34] For example, on 12 May 1769, Van der Meij and Gootenaar ask Hudig to accept f. 13,000 in bills of exchange, even though earlier Hudig indicated he would refuse. The agents argue that "the state is solvent, the bills will be repaid, and the 25% non-acceptance penalty will be painful and will derange our plans." Letter to Hudig, dated 12 May 1769, Collection Coopstad & Rochussen, 497, City Archives Rotterdam.

On 11 September 1773, Rocheteau argues it is unavoidable to draw bills of exchange: "the plantation director needs to be paid his salary." Letter to Hudig, dated 11 September 1773, Collection Coopstad & Rochussen, 461, City Archives Rotterdam.

[35] Letter to Hudig, dated 1777, Collection Coopstad & Rochussen, 68, City Archives Rotterdam.

1791, planter Van der Mey bought out the outstanding debt for 25 percent of its face value.[36]

LONG-RUN RETURNS TO INVESTORS

As the *negotiatie* system collapsed and bankers such as Hudig experienced severe problems with their plantation portfolios, investors started losing money. Figure 5 shows a drop in plantation MBS prices, but this ignores coupon payments. We use more detailed data to calculate actual long-run returns. We take 1795 as the end-year, when the Dutch Republic became a French client-state and Dutch financial markets started to undergo dramatic changes.

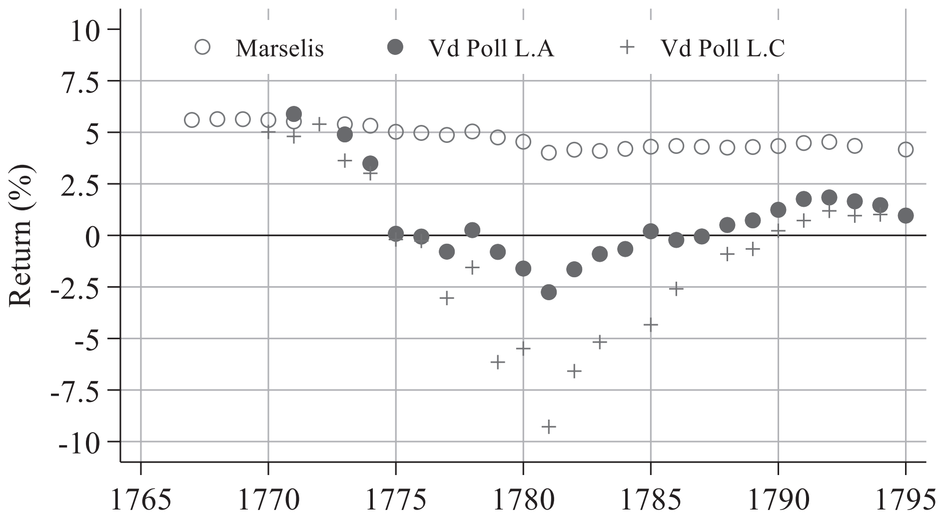
There are three *negotiatie* funds with sufficiently detailed information to calculate long-run returns. This includes the very first *negotiatie* initially set up by Willem Gideon Deutz in 1753, later taken over by Jan and Theodoor van Marselis, and two *negotiatie*s (Letters "A" and "C") issued by Harmanus van de Poll & Co in 1765 and 1769, respectively (see De Jong, Kooijmans, and Koudijs (2023) for information about these funds). All three bankers had a high reputation; Elias (1905, table VII) lists Marselis and Van de Poll as two of Amsterdam's "most prominent merchant houses," and returns likely provide an upper bound for the plantation MBS market as a whole. In terms of size, the three *negotiaties* were the first, third, and fourth largest ones in the market, accounting for 22 percent of total *negotiatie* volume up to 1773. The Deutz *negotiatie* initially had a coupon of 6 percent, which was lowered to 5 percent when Marselis took over. Van de Poll's Letters "A" and "C" *negotiaties* had coupons of 5 and 5.5 percent, respectively. We use Van der Meulen (1904) and Van Stipriaan (1993) to reconstruct actual annual interest and amortization payments and the *Maandelijkse Nederlandsche Mercurius* for secondary market prices from auctions.

Results are in Figure 6, Panel A. We calculate the annualized return for investors between the issuance of the MBS and a sale in the secondary market, taking all intermediate coupon payments into account.[37] Since we observe multiple transactions for each *negotiatie*, this gives us a set of returns over time, allowing us to look at short- and long-run returns.

[36] Minutes of meeting directors and Hudig, period 1776–1791, Collection Coopstad & Rochussen, 497, City Archives Rotterdam.

[37] Specifically, we calculate returns as annualized effective compounded returns, at which the net present value of all cash flows of the investment is equal to zero (internal rate of return). We solve $0 = \Sigma_{t=0}^{\tau} C_t/(1 + R_{0,\tau})^t + P_\tau/(1 + R_{0,\tau})^\tau - P_0$ for the annual return $R_{0,\tau}$, where P_τ is the secondary market price or final payout in year τ, C_t are coupon payments in intermediate years t and P_0 is the price at issuance.

Panel A: Returns on negotiaties *of Deutz/Marselis and Van de Poll*



Panel B: Returns on negotiaties *of Hudig*

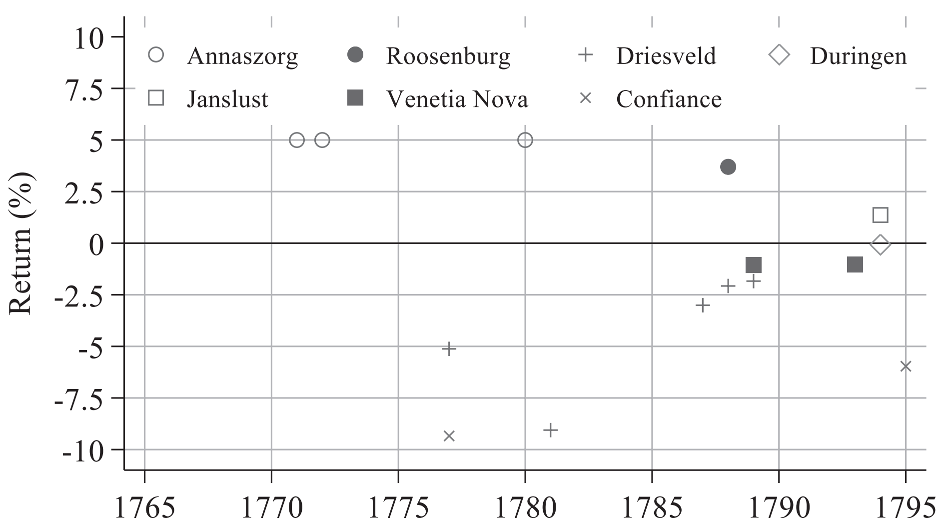


FIGURE 6
LONG-TERM RETURNS

Notes: We calculate the annualized effective compounded returns for each year in which we can observe the closing of a position. If we observe multiple closings in the same year we take the average rate of return.
Sources: Van der Meulen (1904), Van Stipriaan (1993), *Maandelykse Nederlandische Mercurius*, Auction records, period 1768–1795, Archive of the Burgomasters, 70134–12198, City Archives Amsterdam. City Archives Rotterdam, Collection Coopstad and Rochussen, 68, with author’s calculations.

Results show that, initially, the Deutz/Marselis *negotiatie* offered investors returns of around 5 percent. This started to drop after 1780. Marselis lowered the coupon to 3 percent but continued to pay interest every year. In 1796, long-run returns fell to around 4 percent. The two Van de Poll *negotiaties* saw a much earlier and stronger decline in investor returns. Van de Poll reduced coupon payments much more aggressively than Marselis, leading to large price declines. Around 1780, investors faced an annualized *loss* of 2.5 percent on Letter "A" and 6 percent on Letter "C." Afterward, as Van de Poll stabilized its annual coupon payments, prices recovered somewhat and investor returns improved, converging to about 1 percent in 1795.

These results help us understand developments from investors' perspective. Coupons were 5 to 6 percent. Given the risks inherent to the plantation business, investors likely expected to make less than that, but still earn a "risk premium" over the 2.5 percent coupon offered on Holland government bonds. *Ex post*, however, returns hardly exceeded 2.5 percent. Only the Deutz/Marselis *negotiatie* offered an *ex post* risk-premium of about 1.5 percent. However, this was the oldest *negotiatie* with most mortgages extended before the start of the boom and subsequent increase in plantation valuations. Moreover, its plantations had a comparatively long period to generate high returns before the system imploded. The Van de Poll *negotiaties* were placed later and performed substantially worse. Results, therefore, suggest that investors substantially overvalued plantation MBS during the boom of the late 1760s.

Figure 6, Panel B, presents the long-term returns on Hudig's *negotiaties* using the same approach. Secondary market prices come from Hudig's records and are sparser than the *negotiatie* prices discussed previously. Similar to Panel A, older *negotiaties* performed better. In fact, returns for Annaszorg (issued in 1765) are close to the coupon of 5 percent until at least 1780. Roosenburg & Mon Bijoux (issued in 1759) yielded around 3.75 percent for investors holding the bonds until 1788. Other, newer *negotiaties* returned substantially less than 2.5 percent. The lower bound was –9 percent (Driesveld) in 1777. In sum, the returns on Hudig's *negotiaties* are in line with what we find for the Deutz/Marselis and Van de Poll *negotiaties* and point to generally poor returns, though older *negotiaties*, issued before the boom, performed better.

DEBT OVERHANG, RESTRUCTURING, AND THE LONG-RUN EFFECTS OF THE CREDIT CRISIS

The poor investor returns went hand in hand with economic stagnation in Surinam. Figure 1 shows that the credit boom of the late 1760s was initially associated with an increase in commodity production. Sugar and coffee production peaked in 1771 and 1775/7, respectively. By 1780, a number of shocks, including the credit crisis of 1770/1, had brought the *negotiatie* system to its knees. Figure 1 shows that total sugar and coffee production in Surinam stopped growing or even declined. Sugar production only reached its earlier peak in 1790. Coffee production, which had relied more on credit expansion, never reached its earlier peak (at least not before 1794, when the data ends). In other words, the plantation economy in Surinam recovered only partially and slowly.

One potential reason for this slow recovery is debt overhang (Myers 1977). In a situation of distress, the claims of existing debtholders on future profits deter equity and debt infusions for new investments. This means that plantations with large debt burdens, lacking new investments in slave labor and the maintenance of buildings, sugar fields, and coffee trees, may have recovered more slowly or not at all. To test this hypothesis, we turn to Hudig's experience. We first describe his attempts after 1775 to keep the plantations afloat and restructure their debt positions. Next, we study whether *negotiaties* with higher relative debt burdens saw a worse economic performance.

Hudig's cash flow position was greatly impaired in 1776, and he was unable to provide more funding to the plantations. On paper, Hudig had greatly benefited from the *negotiatie* boom. Table 3 shows that the *negotiatie* business provided Hudig with gross earnings totaling 89,585 guilders over 1766–1775. However, these earnings took the form of an increase in planters' current account debts, not actual cash flows. The revenues from selling the plantations' coffee and sugar were hardly enough to cover interest payments to the *negotiatie* investors, let alone Hudig's fees. Further, Hudig had paid some of the investors' interest payments out of his own pocket, again through an increase in the planters' current account debts. To improve his cash flow position, Hudig had to borrow 26,399 guilders from his brother in July 1774.[38] In the following year, Hudig stopped granting additional credit to the plantation owners and refused several bills of exchange the plantations had drawn on him.

The plantations faced substantial debt burdens. Table 5 compares each plantation's total debt position at the end of 1775 (*negotiatie* debt plus any debt owed directly to Hudig) to its most recent appraised value. All plantations' debt levels were well above 5/8th of the last appraised value, with the exception of Roosenburg, Mon Bijoux, and Annaszorg. These

[38] Promissory note, 30 dated July 1774, Family archive Hudig 1633–1992 32, City Archives Rotterdam.

TABLE 5
HUDIG'S PLANTATIONS: DEBT TO APPRAISED VALUE

	Last Appraisal Year	Appraised Value	Total Debt 1775	Debt / Appraised Value
Roosenburg and Mon Bijoux	1767	368,811	135,523	**0.37**
Somerszorg	1769	234,755	175,610	0.75
Annaszorg	1768	207,834	86,804	**0.42**
Janslust	1774	177,552	118,923	0.67
Confiance	1768	80,568	60,746	0.75
Venetia Nova	1768	83,449	65,845	0.79
Duringen	1770	209,913	149,127	0.71
Driesveld	1771	271,230	215,129	0.79

Note: "Low-debt" plantations in bold.
Sources: City Archives Rotterdam, Collection Coopstad and Rochussen, 68, with authors' calculations.

appraised values presumably exceeded realistic 1775 market values. When Venetia Nova and La Confiance were sold in 1770 and 1773, respectively, transaction prices were 3 percent and 22 percent below the last appraisal values from 1768. Between 1773 and 1775, plantations' market values fell even further.

This situation was unsustainable. The plantations' high debt burdens and low revenues led to interest arrears and necessitated debt restructuring. On 8 March 1776, Hudig called a first general meeting with his investors and proposed to appoint six men as directors (*commissarissen*) to represent the investors in the future co-management of the *negotiaties*. All directors were prominent Rotterdam citizens; many had large stakes in the *negotiaties*, and one was a former Surinam official.

The process was slow and fraught with conflict. A key point of contention was the status of planters' current account debts with Hudig, which had been used to advance interest payments to investors. Depending on the *negotiatie*, discussions took two to three years. In the end, Hudig's claims were largely converted into mortgages on the plantations that came on equal footing with the original *negotiatie* mortgages (see Table 3).

Little progress was made in the restructuring of debts. Hudig and the directors disagreed on how much new credit should become available to the planters to make the necessary investments and who should provide it. Hudig's capacity to provide new credit was limited. The new directors were usually only willing to forego interest payments to support urgent needs. Investors were typically unwilling to provide new funding. In the

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absence of additional credit, most of the plantations did not have sufficient funds for maintenance or to replace old and deceased enslaved workers. Pleas from Rocheteau, Hudig's agent in the colony, for new investment were often to no avail. Even if Hudig proposed to follow Rocheteau's advice, directors often called investor meetings, where votes often fell in favor of interest payments rather than investments.[39]

The economic effects were detrimental. Table 4 presents the plantations' production, gross revenues, expenses, and interest arrears for five-year periods. Expenses cover local costs (purchase of new enslaved labor, taxes, director salaries, building materials, and food) and imported goods from the Dutch Republic (building materials, tools, and clothes).[40] Over the decade 1776–1785, low coffee prices, combined with a lack of credit, led to strongly reduced expenses, likely driven by a dramatic fall in investment in enslaved labor. At the same time, production fell and interest arrears increased.

We can differentiate between plantations that, according to Table 5, had relatively high (Somerszorg, Janslust, Duringen, and Driesveld) or low (Roosenburg, Mon Bijoux, and Annaszorg) debt burdens in 1775. Problems were more severe for the high-debt plantations. For example, at Janslust, the number of enslaved fell from 85 in 1771–1775 to 69 in 1781–1785. Mortality exceeded fertility (Van Stipriaan 1993, p. 316), and hardly any new enslaved workers were purchased. At the same time, coffee production declined from 159 to 60 bales, a much larger decline than at other (lower-debt) plantations. By 1785, interest arrears had increased to 39,000 guilders, 39 percent of the original mortgage sum. Rocheteau continuously requested investment in new enslaved labor and other necessities. There was a shortage of everything. The enslaved workers likely suffered. Many walked around half-naked, and Rocheteau begged for clothes, in part to avoid fines by the local colonial government.[41] These patterns are consistent with two other high-debt plantations, Somerszorg and Duringen. Investors received full interest payments from both plantations until 1778, which left no room for investments in enslaved workers, whose number fell dramatically. Expenses were brought down to a minimum over 1776–1785, while production fell. After 1778, interest in arrears mounted. Again, Rocheteau pleaded

[39] Minutes of meetings directors and Hudig, period 1776–79, Collection Coopstad & Rochussen, 494, 633; Collection Coopstad & Rochussen (supplement), folders HV176-8, HV197, HV918, City Archives Rotterdam.

[40] Since gross revenues are already net of administrative and shipping costs, these are not part of expenses.

[41] Letter to Hudig, 14 March 1778, Collection Coopstad & Rochussen, 128, City Archives Rotterdam.

for using the plantation's cash flows to buy enslaved labor instead of paying interest, but to no avail.[42]

For the low-debt plantations of Roosenburg, Mon Bijoux, and Annaszorg, the situation was less problematic. For example, Roosenburg and Mon Bijoux did receive new credit. In 1776, the combined *negotiatie* ran a current account deficit of 4,500 guilders. To cover the payment of bills of exchange and interest due, and investments in the sugar cooking facility and new enslaved labor, Hudig and the directors decided to raise an additional *negotiatie* of 20,000 guilders, which would be senior to the old mortgages. The plantations were able to preserve the number of enslaved workers and stabilize production over 1771–1785. This example suggests that plantations that had not dramatically increased their debt levels during the boom retained access to funds and were able to sustain production.

From 1785 onward, the coffee price recovered, and Table 4 shows that all plantations' revenues increased.[43] This provided the funds for necessary maintenance expenses. High-debt plantations' prospects improved. Somerszorg and Duringen used funds to deal with labor shortages first by renting slave labor in 1785–1790 (a relatively rare phenomenon) and then, in 1790–1795, by buying additional enslaved workers that stabilized the size of the workforce. Driesveld made significant purchases of enslaved labor between 1790 and 1795, which brought the size of the workforce back to the same level as in 1779. Still, the high-debt plantations were unable to meet these expenses without the willingness of the debtholders to forgo interest payments, and interest arrears kept mounting. Low-debt plantations also saw improved conditions. The number of enslaved workers on Annaszorg grew after 1785. Roosenburg and Mon Bijoux acquired new enslaved labor, though this was not sufficient to stop the decline in enslaved labor on Roosenburg. Their interest arrears remained minimal.

In summary, the overextension of credit during the late 1760s could not easily be reverted. Hudig's experience shows that restructuring was problematic. In line with Myers's (1977) model of debt overhang, this had large negative real consequences. The debt contracts that were efficient at the beginning of the *negotiatie* system crippled it later on.

CONCLUSIONS

In this paper, we discuss how Dutch investors channeled funds to slave-colonies in the Caribbean, and Surinam in particular, in the second half

[42] Letter to Hudig, 5 August 1782, Collection Coopstad & Rochussen, 128, City Archives Rotterdam.

[43] Duringen and Driesveld started to develop cotton in addition to coffee.

of the eighteenth century. The system centered on the use of *negotiaties*: merchant-banks provided mortgages to plantations that were repackaged and sold to investors in the form of highly standardized mortgage-backed securities (MBS). The *negotiatie* system aimed to solve complicated trans-Atlantic agency and information problems. Long-term debt contracts gave planters enough time to develop their plantations, while the fixed annual interest payments forced them to reveal their financial conditions honestly. By imposing a lending cap of 5/8 of the plantations' appraised value, mortgage contracts sought to reduce (idiosyncratic) default risk. The Dutch bankers employed agents in the colony to select planters to lend money to. By securitizing the mortgages, they freed up their own balance sheets and could expand their activities. Investors could diversify across multiple plantations, which facilitated the flow of credit. The *negotiatie* system relaxed plantations' financial constraints and likely contributed to the growth of slavery in Surinam.

The collapse of the credit boom of the late 1760s laid bare the risks and weaknesses of the system. Bankers and investors alike appear to have underestimated the risks, in particular relying too much on overly optimistic appraisal reports during the boom. When credit stopped and the colony was hit by a number of other shocks, bankers experienced large problems and investors faced poor returns, especially on plantation MBS issued during the boom. Plantations faced real negative consequences, especially those with high debt burdens that were unable to attract new investments due to debt overhang problems. The enslaved workers likely suffered; in some instances, there was not even enough money to clothe them. Recovery only started after 1785, when commodity prices increased.

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