Going for Broke:

Underwriter Reputation and the Performance of Mortgage-Backed Securities*

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Abstract:

Do reputational concerns of financial intermediaries dampen credit booms and busts? Does this hold in the context of mortgage-backed securities? During a credit boom revolving around the securitization of West-Indian plantation-mortgages in the 1760s, high-reputation underwriters virtually stopped issuing new securities towards the end of the boom. Their securities retained 17.5 percent more of their value during the subsequent bust, which is largely explained by better mortgage characteristics at origination. However, this did little to dampen the boom. Investors failed to differentiate between high- and low-reputation underwriters and flocked into lower-quality securities that paid the same yield-at-origination.

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Credit booms and busts are a recurring phenomenon. Booms are associated with falling lending standards, including fraud (e.g. Kindleberger & Aliber 2015; Quinn & Turner 2020), and busts can have substantial negative real consequences (e.g. Mian & Sufi 2009, Jordà, Schularick & Taylor 2013; Rajan & Ramcharan 2015). In this paper, we ask whether financial intermediaries' reputational concerns can help improve lending standards and dampen credit cycles.

Reputational concerns can be especially important for securities that intermediaries do not retain on balance sheet, and that are backed by assets for which the quality is not observable to investors. A combination of the two can create severe agency problems. A prime example are U.S. mortgagebacked securities (MBS) in the 2000s. The limited retention and opacity of the underlying mortgage pools gave originators and underwriters incentives to lower lending standards, misrepresent mortgages, and create securities with substantial hidden risks (e.g. Mayer, Pence & Sherlund 2009, Keys et al. 2010; 2012; Nadauld & Sherlund 2013; Griffin & Maturana 2016).

One might expect that intermediaries' reputational concerns would act as a disciplining device against such problems. Surprisingly, the 2000s provide scant evidence for this. Investment bank underwriters, the gatekeepers of the system, had similar misrepresentation rates regardless of their reputation (Piskorski, Seru & Witkin 2015). High reputation underwriters continued issuing substantial amounts of MBS well into 2007 and, if anything, their MBS performed worse during the bust even though they had the same expected returns (Griffin, Lowery & Saretto 2014). This lends support to the view that agency problems inherent to securities like MBS can only be resolved by stricter retention requirements or regulation, not by underwriter reputation. This is a surprising conclusion since underwriter reputation does appear essential in the issuance of (arguably) less opaque securities such as equities or corporate bonds (e.g. Beatty & Ritter 1986).

In this paper, we revisit the question whether underwriters' reputational concerns can resolve the agency problems inherent in the issuance of opaque securities. We study a credit boom in the 1760s that is strikingly similar to the one in the U.S. during the 2000s. Dutch merchant-banks underwrote securities backed by mortgages on (slave) plantations in the West-Indies, Surinam in particular, with contracts similar to modern MBS. Government regulation was absent. Securities were highly standardized and homogeneous (at least on the face of it) with identical coupon rates and maturities, and a mortgage loan-to-value (LTV) cap of 5/8 (62.5 percent). Merchant banks that participated differed substantially in how established their reputations were. Using detailed data

on plantations, mortgages, MBS and bankers, we test whether reputational concerns dampened the boom. We find that, unlike the 2000s, high-reputation banks underwrote better securities. Their mortgage pools were of higher quality along dimensions not (directly) observable to investors. Further, high-reputation banks gradually withdrew from the market as the boom progressed with their market share falling from 55 to 22 percent. On average, their MBS retained 17.5 percent more of their value when the boom turned to bust.

What can explain the different effect of underwriter reputation on MBS quality and performance in the 1760s and 2000s? One possible explanation is that underwriters valued their reputation differently. In the 1760s, merchant-banks were organized as partnerships. Each partner was vested in the bank's long-run success, which critically depended on its reputation. In the 2000s, investment banks were all publicly listed companies. Managers were not necessarily vested in the long-run (Morrison & Wilhelm 2004, 2008) and even had incentives to focus on the short term in the form of stock-grants and options (Becht, Bolton & Röell 2011; Falato, Favara & Scharfstein 2018). Of course, there could be other explanations, including bankers in the 2000s being (overly) optimistic about future U.S. house prices (Cheng, Raina, & Xiong 2014).

Our results raise the question why investors were willing to purchase plantation MBS from lowreputation underwriters. Securities were not differentiated and yields-at-origination were virtually the same for high- and low reputation underwriters, suggesting investors ignored reputation. Using detailed investor portfolio data, we show that wealthy investors (the top 15% of all people owning non-zero financial wealth) were most likely to own plantation MBS, regardless of the underwriter's reputation. This suggests that demand did not come from inexperienced or unsophisticated investors.

Just like the 2000s (e.g. Adelino, Schoar & Severino 2016; Gennaioli & Shleifer 2018), it seems that investors in the 1760s were (overly) optimistic about future collateral values. There were no ratings. Investors appear to have relied on the industry standard that a plantation's mortgage LTV was capped at 5/8. Further, similar to the "global savings glut" of the 2000s, government debt repayment and falling interest rates in the 1760s appear to have stimulated investors to reach-for-yield. Even though plantation collateral values increased rapidly in the 1760s (with plantation values doubling), investors did not require a higher expected returns. Virtually all MBS were issued at par with a coupon of 6% and this remained so towards the end of the boom in 1770.

Our interpretation of events is as follows. As high-reputation banks largely withdrew from the market during the 1760s, low-reputation banks, "going for broke", took over. Investors, reaching-for-yield and overly optimistic beliefs about collateral values, ignored underwriter reputation and kept buying plantation MBS. Investor beliefs interacted with low-reputation banks' opportunism to cause the boom and bust. We conclude that underwriter reputation can help dampen booms and busts, even if it revolves around the issuance of opaque securities, but only if bankers retain rational beliefs during a boom, and all underwriters have an established reputation that they value.

In this paper, we collect detailed historical data from a host of primary historical sources to construct a uniquely comprehensive dataset of plantation MBS, mortgages, appraisals, and transactions in Surinam, as well as detailed characteristics of plantations, bankers, and investors. This allows us to perform the first statistical analysis of the plantation boom and bust of the 1760s.¹

We first provide a detailed analysis of the boom and bust. The issuance of plantation MBS grew during the 1760s, ending in an unprecedented boom in 1769-70, during which substantial new investments flowed into Surinam. Plantations' assessed values increased substantially – the value of land, in particular, almost quadrupled during the 1760s – and LTVs became based on inflated collateral values. Further, mortgage LTVs started clustering at 5/8, suggesting that bankers increasingly misrepresented the valuations of plantations to supply investors with a steady stream of "confirming" securities. In fact, appraised values increased more than actual transaction values and there were substantial appraisal overstatements. As the boom progressed, investors accepted the same yield-at-origination as before, and they did not differentiate between high- and low-reputation underwriters. The boom ended when a (low-reputation) banker failed to find new investors and refused planters the promised mortgages. At this point, investors in general became reluctant to provide more money and the market slowly grinded to a halt.

Before testing the effect of underwriter reputation on MBS quality, we write down a stylized model to build economic intuition. We derive conditions under which high-reputation bankers have an

¹ Our analysis builds on an impressive body of historical scholarship. Van der Voort (1973) provides a detailed description and overview of the plantation MBS. Oostindie (1989) analyzes the plantation system of the 18th and 19th century based on the detailed histories of two plantations. Stipriaan (1993) provides a broad overview, including a detailed description of the plantation MBS system. Hoonhout (2012) has a recent analysis drawing on qualitative information from the Amsterdam notary archives. In related work, De Jong, Kooijmans & Koudijs (forthcoming) analyze the records of the only merchant-bank whose complete records have survived. They sketch developments from the bankers' point of view and clarify institutional details.

incentive to underwrite MBS of higher unobservable quality. We show that this critically depends on how much they value future reputational rents, and on the initial level of reputation.

Empirically, we show that high-reputation bankers made mortgages with better characteristics at origination that were not (directly) observable to investors, including higher loan-to-fundamental ratios (LTF, defined later) and better borrower and originator quality (both defined later). Further, we find that high-reputation bankers had fewer mortgages in their pools that were originated at the height of the boom, and were less willing to lend against quickly increasing land values.

Next, we show that secondary market prices of MBS underwritten by low and high-reputation banks remained around the same level through 1772. Afterwards, when prices declined, high-reputation MBS retained 17.5 percent more of its value. We use mediation analysis to show that the effect of banker reputation on MBS performance was largely driven by mortgage quality at origination. Since all bankers active in plantation MBS had access to this information, it is unlikely that our results are driven by differences in information sets, skill or experience.

Finally, we use evidence from investor portfolios to evaluate two alternative explanations. First, we show that the partners of low-reputation merchant-banks and their families were **not** more likely to personally own plantation MBS (or other forms of plantation debts), suggesting they did not have more optimistic beliefs (which might have explained their risk-taking behavior). Second, we show that MBS issued by high-reputation bankers were widely held and not rationed to a clique of privileged investors (which might have explained the lack of variation in yields-at-origination).

Related literature. We follow a growing literature that turns to history to provide more insights into credit booms and busts.² In our case, history is useful because it provides a setting in which underwriters all highly value their reputation, but are not all equally established. In addition, the 1760s' reasonably simple setting, with few confounders, allows us to focus on reputation effects. Obviously, apart from its striking similarities, the 1760s also feature a number of differences with today. In the conclusion, we discuss how such differences affect the applicability of our results.

Our paper speaks to recent work on credit booms, securitization and underwriter reputation. There is a large literature on the U.S. credit boom of the 2000s, analyzing whether it was driven by a

 $^{^{2}}$ E.g. Rajan & Ramcharan (2015) show that greater credit availability led to more inflated farmland prices in the U.S. in the 1920s and a stronger subsequent bust.

shift in credit supply coming from lower lending standards³, or optimistic beliefs.⁴ Our results are consistent with optimistic beliefs, in particular those of investors, stimulating a boom. However, in and of itself, this was not sufficient. Only low-reputation bankers were willing to translate investor optimism into an actual shift in credit supply. As low-reputation bankers sought to provide investors with a steady stream of MBS, lending standards declined (and misrepresentation went up). Compared to the existing literature, our results suggest that the interaction between investor beliefs and bankers' reputation and incentives is key for understanding booms and busts.

More specifically, our paper relates to work linking the securitization of U.S. mortgages during the 2000s to agency conflicts, misrepresentation and fraud.⁵ We contribute to this literature by showing that mortgage securitization's agency problems are not unique to the 2000s. Our work speaks to the effects of underwriter reputation on MBS performance (Griffin et al. 2014; Piskorski et al. 2015). Griffin et al. argue that underwriters are less disciplined by reputational concerns if securities are opaque. Under certain conditions, underwriters may even find it optimal to burn their reputation to increase short-run profits. Our results suggest that, as long as underwriters value their reputation highly enough, it is effective in disciplining their behavior.⁶

Our paper's results echo findings in the literature that investors in the 2000s did not (sufficiently) differentiate MBS of different quality.⁷ To some degree, our results are more striking as our

³ E.g. Mian and Sufi (2009, 2018); Dell'Ariccia, Igan & Laeven (2012); Favara & Imbs (2015); Di Maggio & Kermani (2017). Griffin, Kruger & Maturana (2020) explicitly link the expansion of credit to agency conflicts.

⁴ E.g. Cheng, Raina & Xiong (2014); Adelino, Schoar & Severino (2018); Ben-David, Towbin & Weber (2019); Gao, Sockin & Xiong (2020). Justiniano, Primoceri & Tambalotti (2019), Kaplan, Mitman & Violante (2020) and Foote, Lowenstein & Willen (2021) point to the importance of investor beliefs for macro models to fit the data.

⁵ Keys et al. (2010) and Keys et al. (2012) focus on mortgages extended to low-documentation borrowers in the nonagency market with a FICO score just below or above 620. The latter were more likely to be securitized, and defaulted more. Keys et al (2009) show that effects are attenuated if mortgages were originated by commercial banks who were less likely to securitize. Piskorski et al. (2015), Griffin & Maturana (2016), and Kruger & Maturana (2021) provide evidence of widespread misrepresentation and fraud in the securitization process that underwriters must have been aware of. Further, there is evidence that borrowers got away with misreporting information (Jiang, Nelson & Vytlacil 2014; Garmaise 2015; Ambrose, Conklin & Yoshida 2016; Mian & Sufi 2017; Elul, Tilson & Payne 2019). Griffin (2022) provides an extensive overview.

⁶ There is some evidence of reputation and other forms of "skin-in-the-game" mattering in other parts of the securitization chain. Purnanandam (2011) shows that originating banks most active in securitization saw a worse performance of the mortgages remaining on their books, but that this effect is attenuated for banks with higher capital ratios. Demiroglu & James (2012) show that mortgage performance is better if the originator is affiliated with the MBS sponsor (underwriter) and mortgage servicer. Chernenko (2017) shows that CDO collateral managers that were part of a larger, more diversified business arranged better performing CDOs – likely because of reputational concerns. At the same time, Griffin, Kruger & Maturana (2019) show that managers did not face adverse labor market outcomes if they were involved in bad MBS deals.

⁷ For example, Piskorski et al. (2015), Griffin & Maturana (2016) and Kruger & Maturana (2021) show that MBS with higher misrepresentation rates were not sold at a discount. Rajan, Seru & Vig (2015) show that lenders set interest

specific quality measure (underwriter reputation) was easily observable. Griffin (2022) reviews the evidence that investors, especially in AAA securities, were predominantly institutions. It is possible that internal conflicts of interest led to an inflated appetite for high-yield MBS whereby underlying risks were ignored (see, for example, Merrill, Nadauld and Strahan 2019). We contribute to this literature by showing that even sophisticated non-institutional investors may not differentiate between low- and high-quality MBS during a boom.

Our paper relates to a broader literature on underwriter reputation and security issuances (e.g. Beatty & Ritter 1986; Carter & Manaster 1990; Beatty & Welch 1996; Logue, Rogalski, Seward & Foster-Johnson 2002; Fang 2005). Analyzing the 19th century sovereign bond market, Flandreau and Flores (2009, 2012) show a separating equilibrium with high- and low-reputation bankers specializing in safe and riskier countries with different security prices. In the same setting, Indarte (2021) shows that investors continuously updated their beliefs about underwriter reputation and that this had an important impact on prices. Our paper contributes to this literature by showing a strong link between underwriter reputation and security quality in the context of MBS, a different market segment with highly standardized securities with opaque collateral values. In contrast to this literature, we show that investors do not always take underwriter reputation into account during a boom, though our results are consistent with investors paying attention during a bust.⁸

Our findings also speak to a growing literature on the effect of bankers' skin-in-the-game on bank risk. Research on the 2000s finds that, if anything, giving bankers more equity exposure increases risk (Fahlenbrach & Stulz 2011; Berger, Imbierowicz & Rauch 2016). This is likely driven by the fact that bank equity is a highly levered claim with limited liability. Historically, bankers were exposed to additional liability and this reduced risk (e.g. Mitchener & Richardson 2013; Koudijs, Salisbury & Sran 2021; Aldunate el al. 2020). Compared to this literature we show that bank reputation can act as skin-in-the-game and reduce agency problems in mortgage securitization.

Finally, our paper is related to the literature on finance and slavery. Our results are suggestive that the availability of relatively cheap credit stimulated the growth of the slave-plantation system. This

rates only based on variables that are reported to investors and ignore other credit-relevant information. In contrast, Demiroglu & James (2012) show that MBS yields were lower when the originator was affiliated with the sponsor or underwriter. He, Qian & Strahan (2012) show that MBS issued by larger underwriters (who likely received more inflated ratings) had higher yields.

⁸ In line with our findings, Flandreau & Flores (2012) show that the market share of the highest-reputation underwriter during the 19th century (Rothschild) fell during booms, suggesting there was stronger speculative demand.

relates to evidence, primarily for the U.S. antebellum South, that enslaved people served as collateral which allowed owners to borrow in financial markets (e.g. Kilbourne 1995; González, Marshall & Naidu 2017; Koudijs & Salisbury 2020).

The rest of this paper is structured as follows. Section I provides historical background, including a detailed explanation of our measure of underwriter reputation. Section II discusses the sources and data, Section III uses qualitative and quantitative evidence to describe the boom and bust. Section IV presents a simple model, Section V has our main empirical results, and Section VI discusses alternative explanations. Section VII concludes.

I. Historical background

In this section, we provide more historical background. We first discuss general developments in Surinam. We then turn to the details of credit intermediation and mortgage securitization and underwriter reputation.

A. General developments in Surinam

Initially colonized by the English, Surinam became a Dutch colony in 1667. The Dutch organized it as a plantation economy based on the import of enslaved people from Africa who were exploited to work the plantations. Plantation owners often lived in Surinam's central city, Paramaribo, or in the Dutch Republic (in which case they appointed a Paramaribo-based administrator). Day-to-day plantation affairs were managed by the plantation manager (Oostindie 1989, Stipriaan 1993). Slave traders such as the Middelburgse Commercie Compagnie (MCC) transported slaves to Surinam (Postma 1990; Den Heijer 2002). The brutal labor, especially on the sugar plantations, led to a high mortality rate among the enslaved creating a strong demand for slaves.

Initially, Surinam primarily produced sugar; in the 1760s it also started to produce coffee and, to a lesser extent, cacao and cotton. Plantation size depended on the crop. Sugar plantations were reliant on large mills to crush the sugar cane and cooking houses. As a result, they typically had a large scale of on average 752 acres and 148 slaves. Coffee plantations, less reliant on fixed capital goods, usually had a smaller scale, with on average 246 acres and 122 slaves (Stipriaan 1993: 54, 104). The increase in coffee production during the 1760s was, in part, driven by an increase in the coffee price which peaked in 1770 (Online Appendix Figure A.1).

Plantations depended on Dutch merchant-banks to export their crops to Holland and to import necessary inputs such as tools and clothes. Merchant-banks relied on local agents (*agendarissen*) to represent them in business affairs. Communication with the Netherlands was slow – a one-way trip could easily last up to three months – and local agents often had substantial autonomy in making decisions (De Jong, Kooijmans and Koudijs, forthcoming). The colony was integrated in the Dutch legal system and contracts were enforced under Dutch law, meaning that property rights were secure and merchant-banks had full legal recourse against the plantation owners. There were a number of public institutions responsible for managing the colony, in particular the Courts of Police and Justice. Schalkwijk (2011: 158, 268-9) shows that positions in the governing bodies were predominantly filled with the elite of the richest plantation owners and administrators.

B. Credit intermediation and constructing MBS⁹

Initially, plantations were funded with the owners' equity and loans from merchant-bankers in the Dutch republic. In addition, slave traders such as the MCC sold enslaved people on credit. As the 18th century progressed, plantation debts accumulated and merchant-bankers and planters alike sought ways to use the deep Amsterdam capital market to place plantation debts with investors. In 1753, the first such endeavor succeeded when the merchant-bank managed by Amsterdam burgomaster Willem Gideon Deutz, that had almost 100 years of experience with underwriting bonds for the Habsburg Empire, underwrote a large MBS backed with plantation mortgages.

The initial size of Deutz' MBS was 1.0 million guilders, but this grew in the following decade. After Deutz, other bankers started to underwrite plantation MBS, financing plantations in Surinam, the other Dutch West-Indian colonies, and the Danish-American Islands as well. The merchant-banks involved often had experience with the trade on the West-Indies and were the natural intermediaries to underwrite the MBS (Van der Voort 1973, p. 90-98). MBS could be on a pool of mortgages (like Deutz's MBS) or on (large) individual plantations. Formally, each MBS had a board of (usually) three governors, but these do not appear to have had an active role during the boom (during the bust they were frequently replaced and new appointees were more active).

Planters could borrow up to 5/8 of the appraised value of their plantations. This included the value of the enslaved individuals on the plantation, the unimproved value of the land, all improvements

⁹ Sources, unless noted otherwise: Van der Voort (1973); Stipriaan (1993); Hoonhout (2012); De Jong, Kooijmans & Koudijs (forthcoming).

(acres of sugar cane, coffee trees, cotton and cacao plants, levees, ditches, etc.) and buildings. The local colonial government appointed formal appraisers, but since these positions were filled by other planters, there was always a risk of an overappraisal. In 1764, and again in 1771, appraisal rules were tightened (Wolbers 1861: 261, Schiltkamp and De Smit 1973: 834, Stipriaan 1993: 208, 217). Typically, the first ten years of the mortgage were interest-only; the subsequent ten years the mortgage was supposed to linearly amortize, though in practice mortgages were usually renewed before the first ten years were up. Often, a different merchant-bank would take over the old mortgage whereby the total mortgage sum would be increased to match 5/8 of the (newly) appraised value. The standard interest rate was 6% which was passed on to the holders of the MBS.

Underwriters earned a fee at origination that ranged between 1.5 to 2% of the MBS sum. They did not share any of the credit risk of the MBS, except for the securities that remained on their books. Data on this is unavailable for most banks. De Jong et al. (forthcoming) analyze the detailed records of the established Rotterdam merchant-bank F.W. Hudig that had been active in plantation MBS since 1759 and that issued multiple new MBS between 1766 and 1772. Of the total MBS sum, 3.6% remained on the bank's books between 1766 and 1770. This mainly reflected warehousing. For example, at the end of the MBS boom in 1771-1772, Hudig only held 0.5% of the total MBS sum on its books.

Merchant-banks could also provide plantations with unsecured credit on their own account. The plantation could use it to fund the purchase of slaves and other necessary inputs. This "overdraft facility" was junior to the MBS. If the plantation was ever liquidated for a value less than its total debts, the merchant-banks would be forced to take a loss. Data on unsecured credit is not available for most banks. For Hudig, unsecured credit was on average 0.75% of the total MBS sum between 1766 and 1770. In some cases, Hudig ended up securing these debts by formally contracting a mortgage that initially remained on its books, but that could be securitized later on (if the appraised value of the plantation had increased). This amounted to a similar 0.75% of the total MBS sum between 1766 and 1770.

Unsecured debts could increase substantially if a plantation got into financial trouble and was unable to pay interest. At this point, the merchant-bank could (voluntarily) decide to advance coupon payments to investors. This could amount to substantial sums. At his death in 1757, Deutz had 0.9 million guilders in debt outstanding to the planters in his MBS, although the composition

between the unsecured overdraft facility and additional mortgages that were not yet securitized is unclear. Hudig's extension of unsecured credit was at most 9% of the total MBS sum in 1775, after which part of it was secured in the form of additional mortgages on the planters, which, after some intense discussions with investors, became pari-passu with the MBS.

The underwriters also arranged the export, shipping, insurance and marketing of plantation goods, and the import of goods from the Netherlands. This was part of the agreement with the planters, and the bankers charged fees: 2% for shipping and marketing exports, 0.5% for insurance, and 1% for imports (Stipriaan 1993, p. 208).

The process underlying the creation and underwriting of a MBS was as follows. In the Dutch Republic, a merchant-bank would open up a *negotiatie* (MBS venture), soliciting interest from investors (similar to the book building phase of an IPO). Once the merchant-bank had a reasonable estimate of demand, he would instruct his agent in Surinam to originate mortgages under the condition that the mortgage sum could not exceed 5/8 of the appraised sum (determined by an official appraiser). The agent would send the mortgage contract, appraisal and other paperwork to the banker in the Dutch Republic. If all paperwork satisfied the official requirements of the MBS, the mortgage sum would be made available in the forms of bills of exchange the planter could draw on the bank.

The agent also serviced the mortgage, and arranged for the export of the plantations' production. On top of that, he had the autonomy to allow a planter to draw on the banker's overdraft facility, although this often was a topic of contention between agent and banker. The agent typically earned a fixed annual fee for his services and a flexible fee at origination of 0.5-1% of the mortgage sum.

From the beginning, it was well-understood that the plantation MBS were risky investments. The typical interest rate of 6% was substantially higher than the government bond yield of 2-2.5%. It seems that investors did not expect the 6% coupon to be always fully paid. For a number of MBS, investors only received 5%, with 1% added to a reserve account which would be used in years when plantations' production was insufficient to pay the 5%. The earlier experience with plantation MBS confirmed there were inherent risks. When Deutz died in 1757, the financial position of many planters was precarious. Jan and Theodoor van Marselis, who took over the MBS' management, had to seize and sell a number of plantations before they were able to put the business back on track (Van der Voort 1973, p. 99-100).

C. Underwriter reputation

Even though the terms of the MBS did not materially vary between different issues, the merchantbanks that underwrote the issues often had very different reputations.

In the theoretical model, we will define reputation as investors' prior that a bank is a "commitment type" that always acts in investors' best interests. Empirically, we consider how well-established a merchant-bank was. The more activities a bank was involved in, the higher its apparent trustworthiness. We quantify this with the value of a bank's office premises. This is likely correlated with its prominence, and is comparable to modern reputation measures.¹⁰ Compared to other potential measures this has the benefit that it was easily observable to investors who had to physically collect the MBS certificates from the banks' offices.

Well-established merchant-banks highly valued their reputation. They were often involved in trading activities unrelated to the MBS business. The future profits from this business depended critically on their trustworthiness as a counterparty, which gave them access to new business opportunities and cheap short-term debt financing in the forms of bills of exchange (De Jong-Keesing 1939, Ch. 2).¹¹ Bad performance of their MBS would tarnish their reputation and could lead to a decline in future profits. Less-established banks had less to lose, though they may have had a strong incentive to signal their trustworthiness and build their reputation.

There were 37 Amsterdam merchant-banks underwriting plantation MBS up to 1772. We exclude banks that only had underwriting activities after 1772. For each bank we know the (approximate) location of their office in 1768: typically the street or canal, the side of the street or canal the property was located on (north/south/west/east), and the adjacent cross-streets or canals.¹² This information pins down the location to a set of typically 5-10 properties. Based on a 1742 census, we know the assessed value of all properties in Amsterdam with inhabitants with an income of 600 guilders per year or more (Oldewelt 1945). Values are expressed by their (inferred or estimated) annual rental value and are available for both owner-occupied and rented properties. The

¹⁰ In the modern literature, underwriter reputation is measured either as the prominence of an underwriter's name on IPO tombstones (Carter and Manaster 1990) or an underwriter's market share.

¹¹ See also Schnabel & Shin (2004) and Quinn & Roberds (2015).

¹² This information is based on *Naamregister van alle de Heeren Kooplieden der Stad Amstelredam* (1768).

advantage of using this source is that it provides a uniform valuation of all relevant properties in the same year, enabling us to compare like-with-like.

Figure 1 gives an overview of the merchant banks in our sample, ordering them by the average 1742 rental values of the set of properties that included the merchant bank's office. The minimum average rental value in the sample is 250, the maximum 1700 guilders, while the 25th and 75th percentiles are 670 and 1084, meaning there was a substantial spread. We divide the sample into merchant banks with an average rental value above or below the median, which we indicate as high or low reputation, respectively.¹³

The average rental value primarily depended on location (alongside a prestigious canal or in a lessprestigious street). Table 1 shows that it correlates strongly with other measures of how wellestablished a bank was. We consider four dimensions. The first is membership of the local city government, which was only available to the highest echelons of the economic elite (De Vries and Van der Woude 1995: 678-680). Of the high-reputation banks, 47% had a partner with a position in the city government, compared to 0% for low-reputation banks.¹⁴ The second is whether a merchant-bank had activities other than underwriting plantation MBS (effectively increasing their charter value). Of the high-reputation banks, 74% had outside activities, compared to 33% for lowreputation banks.¹⁵ The third is the size of the overall business (also indicative of charter value), which we capture with the volume of transactions in the Amsterdam Bank of Exchange during the first half of 1769 for which the records are complete.¹⁶ Most merchants had checking accounts in the bank to settle transactions with each other. This gives an indication of the size of their mercantile activities (Koudijs & Voth 2016). Roughly two-thirds of high- and low-reputation bankers had an account. On average, high-reputation bankers' transaction volume was three to four times higher. Finally, we compare characteristics of the bank partners and their families (individuals with the same last name, including widows whose husband had the same last name) in the 1742 census. In particular, we consider whether individuals were designated as "capitalists" (an estimated wealth of more than 10,000 and annual income of more than 1,000 guilders), their annual income, and the annual rental value of the property they lived in. Of the high-reputation

¹³ Although our final sample does not include a security for each of these banks due to missing data, we base our reputation measure on all 37 banks in the full set of banks to avoid any selection issues.

¹⁴ This information is based on Elias (1905).

¹⁵ This information is based on *Naamregister van alle de Heeren Kooplieden der Stad Amstelredam* (1768).

¹⁶ City Archives Amsterdam, Archive of the Wisselbank (5077), 475-477

bank families, 33% were a capitalist, compared to 19% for low-reputation bank families. Average income and rental values were 60 and 33% higher, respectively. For all four dimensions, differences are statistically significant.

D. Underwriter reputation - examples

As an example of a high-reputation merchant-bank, Harmanus van de Poll & Co., underwrote two large plantation MBS, one in March 1765, one in September 1769, totaling 4.4 million guilders based on 30 plantations (Van der Voort 1973: 309-10). The Van de Poll family had a wellestablished reputation. Father Harman Hendrik van de Poll had been an Amsterdam burgomaster - a powerful position in the 18th century - and director of the Sociëteit van Suriname. In 1742, he had an estimated annual income of 10-12,000 guilders, 7 servants and 4 horses. The firm was set up by the younger son Harmanus in 1749, and, after his death in 1751, was headed by the oldest son Jan van de Poll. Before issuing plantation MBS, they underwrote a large bond for Denmark and Norway in 1762. The firm was very active in trade, with an annual volume in the Bank of Exchange of 1.3 million guilders in the first half of 1769.¹⁷ Jan van de Poll also had an independent trading firm. Among a host of other government positions, he became an Amsterdam alderman in 1747, and minister of state in negotiations with the British in 1759. The firm was located in a stately city mansion on the Herengracht, one of Amsterdam's most prestigious canals, next to a church yard, with a separate building facing the canal that housed the chariot and horses (Elias 1905: 752-6). The property itself had an annual rental value of 1,850 guilders in 1742; the average rental value of the relevant row of buildings was 1,150 guilders (around the 70th percentile in the office value distribution in Figure 1).

As an example of a low-reputation bank, Lever & de Bruine underwrote two large MBS on Surinam, the first in March 1769 for 410,000 guilders (initially projected for 1 million) and the second in November 1770 for 420,000 guilders. In addition, they underwrote two large MBS on the Danish-American islands totaling 1.7 million guilders, and multiple small MBS on individual plantations totaling 564,000 guilders (Van der Voort 1973: 298-300). Senior partner Cornelis Lever Sr. had been a plantation owner and agent in Surinam in the 1730s. He returned to Amsterdam and, in 1742, he had an estimated annual income of 4,000 guilders, 2 servants and no horses. His firm did not have an account with the Bank of Exchange and its mercantile activities

¹⁷ City Archives Amsterdam, Archive of the Wisselbank (5077), 475-477.

other than underwriting MBS appear to have been limited. Lever Sr.'s lack of a prestigious job in the city government signaled he was not part of the elite. In 1768, the bank's office was located at a less prominent canal (the *Singel*) with an annual rental value of 840 guilders; the average rental value of the relevant row of buildings was 770 guilders (around the 45th percentile in the office value distribution in Figure 1). His son, Cornelis Lever Jr., stayed behind in Surinam as an agent for the firm and, as member of the Court of Justice, was well-connected and likely part of the local economic elite there.

In line with its well-established reputation, Harmanus van den Poll & Co. largely maintained an unblemished record. Even though their MBS also suffered during the 1770s, and there was some conflict with investors about the level of interest payments, they retained the faith of investors and the management over their MBS. Jan van de Poll even became burgomaster in 1787 (Van der Meulen 1904: 536, Elias 1905: 752-6). In contrast, Lever & De Bruine's record is full of controversy. They were eager to expand their plantation business and took substantial risks to achieve their goals, in some cases resorting to outright fraud. Hoonhout (2012: 30-31) documents that Lever & De Bruyne provided mortgages without verifying the necessary documentation (these only had to be submitted 18 months later). In May 1771, notary Isaac Pool reviewed the documents for plantation *La Felicité* which had recently changed ownership. He observed that the recently appraised value of the plantation was substantially higher than what the new owner had paid for it. He concluded that

"upon purchase the value of the plantation must have instantly increased by 25%. It is evident that this appraisal had only one purpose: to obtain a loan to almost fully fund the purchase of the plantation. This mortgage does not fit the requirements of the fund under the direction of Messrs. Lever & De Bruine".¹⁸

This alarming signal was ignored, and the mortgage ended up in their MBS. This behavior foreshadowed what would happen during the bust – investors quickly became dissatisfied with the MBS's performance and Lever & De Bruine were relieved from the management of their MBS, and in 1793, the firm failed.

¹⁸ City Archives Amsterdam, Collection of the Amsterdam Notaries 1578-1915 (5075), 12728-15.

II. Sources, data and summary statistics

For our analysis, we collected data from a wide range of sources. We discuss the main sources for the data underpinning our statistical analysis, and explain the construction of our two central datasets: the dataset of mortgages and their characteristics, and the sample of security prices and security characteristics. We mention other sources of supporting material in relevant parts of the text.

A. Mortgage deeds

The basis for our mortgage dataset are (hand-written) deed records for plantation mortgages that we manually collected from Surinam and Amsterdam notary records.¹⁹ The deeds include information about the date of the mortgage, the name and location of the plantation, the names of the borrower and lender (typically the merchant-bank or the legal entity behind an MBS), the name of the mortgage originator (typically the agent representing the merchant-bank), the mortgage sum, maturity and interest rate of the mortgage, and the appraised value of the plantation. We use the mortgage sum and the appraised value to calculate the loan-to-value (LTV) ratio. The deed also provides information whether it is a new mortgage or a refinancing (possibly with an increase of the mortgage sum). If the borrower had a position in the colonial administration, the mortgage deed commonly included this position as a name suffix to signal that the borrower was relatively wealthy, well-connected and part of the colonial elite. Additionally, we link the names of the borrowers and originators to published sources that list all individuals with a position in the colonial administration, or the city government if the borrower resided in Amsterdam.²⁰ An example of a mortgage deed is in Online Appendix Figure A.2.

For the statistical analysis, we restrict the sample to mortgages extended between 1750 and 1770 by Amsterdam merchant-banks who underwrote an MBS. We exclude mortgages after 1770 since the aim of this paper is to explain choices of merchant-banks during the boom which ended after 1770. Mortgages after the boom were often part of debt restructurings, or reflected the merchant-bank increasing the sum of an existing mortgage to formally secure missed interest payments. We

¹⁹ 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).

²⁰ Lists of all individuals with a position in the colonial administration were published in the yearly *De Hooge Regeering, Mindere Collegien en Bediendens der Provincie van Suriname,* which was published as a supplement to the *Naamboekje van de Wel. Ed. Heeren der Hooge Indische Regeeringe, Gequalificeerde Persoonen, enz. op Batavia.* Elias (1905) provides an overview of the city government of Amsterdam.

exclude mortgages extended by non-Amsterdam merchant-banks (we do not have a comparable reputation measure for these banks), and mortgages that were not extended by merchant-banks.

In total we have 545 mortgages, extended over the period 1750-1770. Details about the sample selection are in Online Appendix B. Our final sample has 307 mortgage deeds extended by 26 merchants banks, which corresponds to about 69% of all mortgages extended in this period, and 87% of all merchant-bank mortgages (both in terms of guilder volume). Information is not always complete. Summary statistics are in Online Appendix Table A.1. The median mortgage was for 55,000 guilders (this has the same purchasing power as \in 572,000 today), and 77% of mortgages were new contracts (the rest were refinancings). The median mortgage ran for 20 years, with the first ten years interest-only. Mortgage interest rates were almost invariably 6%. Around 49% of mortgages were extended during the boom (the period 1769-1770). The average LTV was 0.56, while the median was exactly the industry standard of 5/8 (0.625). Around 44 and 57% of originators and borrowers, respectively, did not have a position in the colonial administration.

B. Appraisal reports

We manually link a large number of mortgage deeds to the original (hand-written) appraisal reports. If the mortgage deed does not explicitly refer to an appraisal report, or we have not been able to find this report, we link the mortgage to the closest appraisal report within two years.²¹ The appraisal reports include detailed information about the different assets on a plantation. The assets can be divided into four subcategories. The first was the unimproved value of the land of the plantation. The second was the value of the improvements that had been made to the land, including the number of acres used for sugar cane, the number (and age and quality) of coffee trees and cacao and cotton plants, and the levees, ditches, and locks constructed on the property. The third was the value of the slave-population on the plantations, with a value assigned to each individual enslaved person. The fourth was the value of all buildings on the plantation, including the facilities to process the raw sugar and coffee.

We use this data to construct a set of plantations' "fundamental" components that we can compare across plantations and across time. This includes the number of total acres, acres used for sugar cane, coffee trees, cotton and cacao plants, and slaves (males, females and minors). We do not use

²¹ Dutch National Archives, Notarial Archives of Surinam 1699-1845 (1.05.11.14), 205–253; 692-708. City Archives Amsterdam, Collection of the Amsterdam Notaries 1578-1915 (5075).

other information about land improvements and buildings as these were not sufficiently uniform to make them comparable across plantations and time. We use the appraisal reports between 1750 and 1765 to calculate the average valuation of each fundamental component in that period. For the total acres we take the average value for each district separately. The idea is that this gives an objective valuation of the plantations' fundamentals that has not been affected by the liberal availability of mortgage credit. Each time we observe an appraisal report, we use these valuations to calculate the fundamental value of a plantation and the corresponding appraisal-to-fundamental (ATF) ratio. Using the size of the mortgage, we also calculate the loan-to-fundamental (LTF) ratio. Finally, we use the appraisal data to calculate the average appraised value of each fundamental component for all years between 1760 and 1775. This allows us to calculate how appraised values evolved over time. An example of an appraisal report is in Online Appendix Figure A.3.

Our sample includes 202 appraisal reports that we can link to mortgages extended between 1750 and 1770 by Amsterdam merchant-banks who underwrote an MBS. Summary statistics are in Online Appendix Table A.1. Average ATF and LTF ratios were 1.30 and 1.04, with medians of 1.25 and 1.00, respectively.

C. MBS details

We obtain an overview of all outstanding MBS and their underwriters from Van der Voort (1973) and auction lists. We link individual mortgages to the specific MBS in two ways. First, Van der Voort (1973), the auction lists and other historical records (in particular, original prospectuses and Amsterdam notary documents) often give detailed information about the underlying mortgages in an MBS. Second, we use the identity of the mortgage lender, the date of the mortgage, and the timing of MBS issuance to link mortgages to the appropriate MBS. We use the MBS for which we have detailed information to validate this procedure. Online Appendix C has details. An example of an MBS prospectus is in Online Appendix Figure A.4.

Our complete sample includes 113 MBS underwritten by merchant-banks up to 1772. The boom had ended in 1770 and little new mortgages were extended beyond that point. However it could take some time for MBS to be formally established – most MBS issued in 1771 and 1772 contained mortgages extended in 1770. MBS issued beyond that point often reflected debt restructurings.²²

²² In other cases, issues were meant to provide liquidity to existing MBS. Investors in these funds would approve the issuance of a series of senior securities at a lower interest rate, effectively creating a senior "tranche", to raise cash.

Again, we exclude MBS underwritten by non-Amsterdam merchant-banks because we do not have a comparable reputation measure for these banks. Details about the sample selection are in Online Appendix B. There were a total of 87 MBS underwritten up to 1772 by a total of 37 Amsterdam merchant-banks. This corresponds to 75% of total market capitalization. We have underlying mortgage and appraisal data and auction prices for 46 MBS (underwritten by a total of 23 merchant-banks), corresponding to 67% of total market capitalization. Online Appendix Table A.1 provides summary statistics. The median MBS started in 1769. Around 61% of MBS were based on a pool of mortgages. The rest consisted of individual mortgages on large plantations. The average MBS had an initial size of 407,000 guilders with a median of 206,000 guilders. Some MBS increased in size over time (by 44% on average) as more mortgages entered the pool and more securities were issued. Of the underlying mortgages, 55% was originated during the boom (1769-1770), 50% through non-elite originators, and 60% to non-elite borrowers. The average LTF was 1.27, close to the median of 1.23. Panel C provides summary statistics for the underwriters. The median merchant-bank started underwriting MBS in 1768 and underwrote two MBS, with a total of 1.3 million guilders, of which one represented a pool of mortgages.

D. Auction prices

We link each MBS to secondary market prices from security auctions organized in Amsterdam (Van Bochove 2013). Auction prices were published in the periodical *Maandelijkse Nederlandse Mercurius*.²³ The data is available between 1768 and 1796. We located each MBS transaction in the original (hand-written) auction records.²⁴ This allows us to correctly infer which specific MBS was sold on a given day and verify the price. An example of an original auction price list is in Online Appendix Figure A.5.

The auctions gave investors and brokers an opportunity to sell securities publicly, rather than overthe-counter to specialized brokers. This was the preferred course of action in certain situations, such as realizing a deceased person's private estate. The auction data does not cover forced, courtordered liquidations. The auctions only represent part of the secondary market. We make the

²³ We thank Christiaan van Bochhove, Joost Jonker, and Oscar Gelderblom for generously sharing this data with us.

²⁴ Amsterdam City Archives, Archief van Burgemeesters; Willige verkopingen (veilingen van huizen, erven en obligaties (5068), 70-129.

assumption that the auction prices were representative, which should hold as long as there was active arbitrage between different parts of the secondary market.

The nature of the auction data means that there are stretches of time when specific MBS were not traded and it is impossible to have an overview of all MBS prices on the exact same date. In order to compare MBS prices, we therefore need to estimate an empirical model that takes this into account. We explain this in more detail below.

E. Bills of Exchange Protests

We use the Amsterdam notary archives to construct a series of protests of bills of exchange for the merchant-banks in our sample.²⁵ A bill of exchange was an instrument by which somebody in the colony (usually a planter) drew money on their bank in Amsterdam. The bill stated that its final holder would be paid a certain amount of money in Amsterdam at a given point in time (usually 6 weeks or 3 months after presenting the bill at the bank). If a plantation purchase was funded with a mortgage, bills of exchange were used to pay for the purchase. The bank could always refuse payment. Usually this indicated that the bank had not approved the bill in the first place, the drawer did not have sufficient credit, or that the bank simply lacked the money. If this were to happen, the holder of the bill would file a "protest" with an Amsterdam notary and the protested bill would be sent back to the colony where the original drawer would have to pay a 25% penalty. We identify all Surinam-related deeds over the period 1760-1780 from Amsterdam notaries who regularly recorded colonial business. We collect data for all bill protests from the five most active notaries. An example of a bill of exchange protest is in Online Appendix Figure A.6.

F. Investor portfolios

Finally, we use information from estate tax records to construct investor portfolios. During the 18th century, Dutch authorities raised a tax on estates that did not pass in the direct line ("collateral" descendants, Kooiman 2016). In these cases, approximately 30% of the total, the authorities recorded a detailed list of all real property and financial assets including plantation MBS. We have basic portfolio data (including total wealth-at-death) for all records.²⁶ We collected additional detailed data for records between 1755 and 1796 that include plantation MBS. Estates without real

²⁵ Amsterdam City Archives, Collection of the Amsterdam Notaries, 1578-1915 (5075).

²⁶ Amsterdam City Archives, Inventaris van het Archief van de Secretaris: stukken betreffende de ontvangst van de twintigste penning op de Collaterale Successie, 1658-1820 (5046). We thank Matthijs Korevaar for generously providing us with the data.

property or financial assets were not recorded. All information is therefore conditional on estates containing at least some real or financial wealth.

This portfolio information allows us to study who held plantation debt. In Figure A.7 in the Online Appendix, we divide the estates up in 20 bins based on the total wealth recorded. For each of those bins, we calculate the fraction of estates that held any form of plantation debt (predominantly in the form of MBS, but sometimes in the form of direct mortgages or other types of plantation debts). We differentiate between estates left by men and women. The figure shows that plantation MBS were predominantly held by wealthier individuals (roughly the top 15% of the distribution), presumably as an addition to their already well-diversified portfolios. There is no clear difference between men and women.

III. Credit boom and bust

In this section we use quantitative and qualitative evidence to describe the boom in plantation MBS and subsequent bust.

A. The boom

The first plantation MBS was issued in 1753 and in the 1760s more followed. Since 1748, the Dutch Republic had successfully stayed out of expensive wars and had started to repay its debt. This led to a fall in bond yields (Fritschy 1988; Gelderblom & Jonker 2006). Figure 2, Panel A shows that debt levels and yields had started to decline in the early 1750s, with further reductions after the end of the Seven Years' War (in which the Dutch Republic stayed neutral) in 1763. Together with an increase in coffee prices (Online Appendix, Figure A.1), this seems to have stimulated the issuance of new plantation MBS in the second half of the 1760s, culminating in the boom of 1769-70 (Stipriaan 1993: 207).

Figure 2, Panels B and C show the flow of mortgage credit extended by low- and high-reputation banks between 1745 and 1785. We divide this into three categories: (1) new mortgages, (2) increases of existing mortgages, and (3) the rollover of existing mortgages at a different bank (usually accompanied by an increase in the mortgage sum). We also show (4) the cashing-in of mortgages rolled over to a different bank (defined as a negative number).²⁷ The light-green and

²⁷ Because merchant-banks outside Amsterdam (not shown in Figure 2) also cashed-in some mortgages, total "rollovers" do not always equal total "rollovers cashed."

light-gray bars represent new mortgages and rollovers that agents in Surinam had agreed to, but for which the Amsterdam bankers refused payment (see discussion below).²⁸ The sum of the different vertical bars in Panels B and C give the total mortgage sum that low- and high-reputation merchant-banks extended (aimed to extend) in a given year.

Figure 2, Panels B and C show that high-reputation merchant-banks initially dominated the MBS market, but low-reputation banks took over when the boom heated up in 1769. In 1770, low-reputation banks provided over 6 million guilders of credit through their MBS, whereas high-reputation banks only provided just over 2 million guilders. Furthermore, many mortgages that were extended during the boom were rollovers from high- to low-reputation merchant-banks. High-reputation cashed out large sums such that, on net, they extended little new mortgage credit. In contrast, low-reputation banks greatly increased the net origination of mortgage credit. Roughly half of all mortgages they extended were to borrowers who did not have a mortgage before.

As low-reputation merchant-banks started to dominate, the market started to show signs of overheating. Figure 3, Panel A first aggregates total mortgage sums which includes all mortgages, including rollovers within the same bank. This captures all newly contracted mortgages that supported the MBS that the merchant-banks issued. Low-reputation bankers increased their market share from 45% in the pre-boom (1760-1768) to 78% in the boom (1769-1770) period. Panel B shows that this went hand in hand with LTVs increasingly clustering at 5/8. Only 43% of mortgages had an LTV of exactly 5/8 before the boom; this increased to 74% during the boom. Online Appendix Figure A.8 provides estimates from a repeat-sales model (not correcting for changes in fundamentals) indicating a doubling in plantation prices. Figure 4 shows that appraised collateral values also increased: land valuations quadrupled between 1760 and 1770 and the appraised values of slaves (for both males and females) doubled. The appraised value of coffee trees rose more moderately and the appraised value of acres of sugar cane initially dropped and then rose quickly from 1769 to 1771.²⁹ The fact that land values increased the most is consistent with Rajan and Ramcharan (2015) who find that looser credit conditions in the U.S. in the 1920s

²⁸ This is a lower bound because we collected protested bills of exchange from the top-5 of Amsterdam notaries and not the universe.

²⁹ These developments only loosely follow commodity prices. The price of coffee increased by about 60% during the period 1760-1770, while the sugar price fell (see Online Appendix Figure A.1). We omit the appraised values of cacao and cotton plants as these contributed to only a small proportion of total valuations.

lead to substantially higher land values and with Nathanson and Zwick (2018) who argue that land is especially prone to speculation.

Investors appear to have been comfortable with these developments. Figure 3, Panels C and D show that mortgage interest rates and MBS coupons remained at 6%. The MBS were all issued at par and yields-at-origination did not change during the boom. This also means that there was no differentiation between securities issued by low and high-reputation bankers.

B. Anecdotal evidence

According to Wolbers (1861: 301-5), investors had developed optimistic views about Surinam: there had been two years of large coffee harvests, world coffee and sugar prices had been high in recent years, and after several successful military campaigns against the maroons (resulting in two peace treaties), the authorities had (over-optimistically) declared victory on that front.³⁰

A 1778 memorandum to the Amsterdam burgomasters explaining the developments of 1769-1770 placed low-reputation bankers' behavior and investor beliefs center-stage:

"The colony's increasing prosperity and the resulting increase in shipping led people to view it in a completely different light. Without proper thought and consideration, new MBS plans were developed for which it was easy to find investors, and new money flowed into the colony. These were followed by a multitude of other plantation MBS whose underwriters were driven by greed, on the one hand, and envy, on the other, for the high-reputation merchant-banks who had underwritten the existing MBS and who continued to blossom and benefit from the commerce and navigation on the colony. [The low-reputation underwriters] had little regard for the consequences of their actions."

"The general tranquility in Europe created an excess of money. The tempting interest rate of 6%, the remarkable situation in the colony (caused, in part, by the liberal flow of credit), the tranquility and imperturbability there, and the continuously increasing coffee price encouraged every investor to offer the new merchant-banks their money.³¹"

³⁰ The maroons were a group of people who had escaped slavery (or who descended from escapees) who had settled in the jungle. In certain periods, they actively attacked plantations for supplies and sometimes to free more people.

³¹ SAA 5028: 542P. The memorandum was most likely written by two prominent plantation owners and agents in Surinam, Graafland en Gootenaar (Stipriaan 1993: 211). "High-reputation": literally, the memorandum speaks of "particular and accredited" merchant-banks.

Further, the memorandum stated that investors had lacked "knowledge or experience with the trade on Surinam and the state of the plantations there", but still lined up to "overwhelm" merchantbanks with funds to invest in plantation MBS.

In the process, due diligence was lost and lending standards declined. According to the memorandum, low-reputation merchant banks started to appoint inexperienced agents to originate mortgages, who "lacked the necessary qualities and made many missteps," and pressured them to originate new mortgages, "complaining if this did not happen fast enough." Some low-reputation merchant-banks went as far to appoint unscrupulous agents who "extended credit indiscriminately." For example, Schouten & Valentz (around the 25th percentile in the office value distribution in Figure 1) appointed Isaac de la Croix – "the most cunning agent of all" – who purposefully originated mortgages that substantially exceeded 5/8 of their true value.³² In addition, inexperienced and less-established individuals started to obtain mortgages to purchase plantations. According to the memorandum, "some from the lower classes, artisans even, underwent a metamorphosis into planters." De la Croix reportedly originated mortgages to "cobblers, rakes, and butchers alike" (Wolbers 1861: 303).

C. Appraisal overstatements

These descriptions of declining lending standards, and the increased clustering of LTVs at 5/8, raise the suspicion that bankers started to misrepresent the numbers to have mortgages just qualify for the LTV rule. This is supported by the quantitative evidence in Figure 5. Panel A provides hedonic price indices for a (limited) set of 85 available plantation transactions and our full set of 883 appraisal reports. It shows that appraised values (+55%) increased faster than transaction prices (+36%). Since the underlying sets of plantations are not the same, this difference might be driven by selection. For a (limited) set of 44 plantation transactions between 1761 and 1770, the date of the appraisal report is within 12 months before or three months after the transaction date and we can infer whether any actual appraisal overstatements took place. Panel B shows that before the boom, the median appraisal report overstated the plantation value by about 14%. During the boom, the overstatement distribution shifted to the right, with the median around 25% and the 75th percentile around 41%. The mean overstatement rose from 17% to 34% and is statistically

³² Dutch National Archives, Archive of the Sociëteit van Suriname, 1650-1796 (1.05.03), 64 and 342.

significant at the 5% level (t-stat 2.05).³³ This suggests that the new owners put down little equity in their plantations. Not only did this reduce the buffer for MBS investors in case the plantation would have to be liquidated, it also gave planters skewed incentives to take more risk.

D. The bust

The boom turned to bust in 1770. According to the aforementioned 1778 memorandum, one low-reputation merchant-bank (most likely Schouten & Valentz) had extended mortgages on the premise that it had sufficient indications of interest from investors. However, these never turned into actual investments, or even never existed in the first place. The merchant-bank refused to fund the mortgages and protested the bills of exchange the planters had drawn on them. This event seems to have led to a general reassessment of plantation MBS in the Dutch republic. Either it signaled that a particular group of investors had decided to withdraw, or that investor enthusiasm in plantation MBS had been (purposefully) overstated. In any case, investors in other MBS started to refuse to convert their expressed interest into actual investments as well. This was especially the case for low-reputation merchant-banks, who were unable to fund the most recent batch of mortgages they had instructed their agents to originate. Online Appendix Figure A.9 shows that low-reputation banks refused to honor a large volume of bills of exchange the planters had drawn on them. In comparison, the volume of protested bills by high-reputation bankers remained flat.³⁴

The bust was amplified by adverse economic conditions. According to the memorandum, a drought in 1769 led to substantially lower sugar, coffee and cacao crops in 1770, maroons renewed their attacks on the plantations in 1771, and, finally, the coffee price declined (Online Appendix, Figure A.1). The production on many plantations turned out to be insufficient to cover interest payments, let alone scheduled amortizations. Figure 2, Panels B and C show that the origination of plantation mortgages dropped dramatically after 1770. On net, low-reputation banks stopped extending new credit to the plantations. High-reputation banks continued extending mortgages up to 1773, but virtually stopped thereafter. In 1777, there was a final batch of mortgage increases. These largely

³³ These overstatement statistics are not driven by rapidly appreciating valuations during the boom. For the subset of boom observations that had the appraisal report drafted before the plantation sale (N=15), the mean overstatement is 37%, the median 28% and the 75th percentile 41%.

³⁴ See also Dutch National Archives, Archive of the Sociëteit van Suriname, 1650-1796 (1.05.03), 64 and 342, and Wolbers (1861: 305) who states that there were 240 cases in the Surinam Court of Justice in Spring 1771 dealing with these protests. According to Wolbers, the normal load was 60-80 cases which likely dealt with amounts that were substantially smaller than a mortgage sum.

reflected merchant-banks increasing the mortgage sum in the deeds registry to secure planters' missed interest payments. Figure 5, Panel B shows that (hedonic) plantation prices fell more than 25% below 1761-65 levels. Figures 4 and 5, Panel A show that the appraised values of plantations also fell,³⁵ though not as much as transaction prices (either appraisals remained too optimistic, or transaction prices were depressed due to fire sales). In the second half of the 1770s, many plantations became financially distressed, MBS prices declined, and many (low-reputation) merchant-banks, such as Lever & de Bruine, lost the control over their MBS (Stipriaan 1993: 218-20). Dutch financiers would be dealing with the overhang from this episode far into the 19th century.³⁶

IV. Model

To formalize our economic intuition of the effects of underwriter reputation on MBS performance, we write down a stylized model in the vein of Kreps and Wilson (1982) and Milgrom and Roberts (1982). We derive conditions under which underwriters with a more established reputation will behave less opportunistically and create better MBS. In short, a higher reputation will discipline underwriters if they sufficiently value future reputational rents, and if their existing level of reputation is not too high. All proofs are in the Online Appendix.

There are two groups of otherwise identical strategic and risk-neutral agents with type H or L. Investors in the market have some prior beliefs, given by probabilities μ_0^j for $j \in \{H, L\}$, that the agents are "commitment" (C) types who always act in investors' best interests. We refer to μ_0^j as "reputation". Strategic agents can copy the behavior of the type C agents to increase μ_0^j . Agents of type H are more established and have a longer track record of (successfully) copying type C agents. Therefore, $\mu_0^H > \mu_0^L$.

The model has three periods. In final Period 2, agents of type H and L can sell q units of a financial product to investors who are willing to pay 1 for a product that performs, which depends on agents' (costly) effort. A type C agent would provide sufficient effort to guarantee performance, while agents of type H and L provide no effort since this is the last period of the model. Investors are

³⁵ Data on appraised collateral values ends in 1775 because, as the market for plantation mortgages dried up, there are too few appraisals to confidently estimate average appraisal values thereafter.

³⁶ See, for example, Van der Meulen (1904).

thus willing to pay μ_1^j (the probability of buying it from a type C agent) for each product. The higher a seller's reputation, the higher its profit $q\mu_1^j$.

In Period 0, agents of type H and L underwrite loans and their behavior affects their future reputation. Each agent is randomly matched to a borrower *i*, who owns assets with fundamental value $f_i \in (\underline{m}, \overline{m})$. We assume that the assets have an (inflated) market value in Period 0 of $m_0 = \overline{m}$ for all borrowers. An agent underwrites a loan of size ℓ_i , which it distributes to investors for a proportional fee ε . For simplicity, we require that $\ell_i \in [0, f_i)$. In Period 1, the loan is supposed to be repaid. If it performs, it promises a fixed (abnormal) interest payment *R* to investors. If it fails, its assets are worth $m_1 = \underline{m}$, which will be liquidated at a fraction $\lambda \in (0,1)$.

Investors do not observe f_i and do not know its distribution. They (incorrectly) believe that, in case of failure, the borrower's assets will be liquidated at the Period 0 market value $\lambda \overline{m}$. We assume that underwriting agents adhere to the industry standard

$$\ell_i/\overline{m} \le \lambda/R \tag{1}$$

such that investors always expect to be made whole, even if the loan fails. This means that, in investors' view, it does not matter whether a loan performs. Investors will not spend any (costly) effort to uncover f_i , and accept all loans satisfying (1).

The probability that the loan performs, ρ , depends on ℓ_i/f_i . In particular, $\rho(0) = 1$, $\rho(1) = 0$, $\rho'(0) = 0$, $\rho'(1) = -\infty$ and $\rho'' < 0$. In words, the loan will fail with certainty if $\ell_i/f_i = 1$ and the probability of failure becomes highly sensitive to ℓ_i/f_i as it approaches 1. To guarantee that all loans satisfy (1), we assume that $-\rho'(\lambda/R) \ge \varphi^j$ (defined in the Online Appendix).

Agents do observe f_i and (correctly) realize that if a loan fails, it will be liquidated at $\lambda \underline{m}$, exposing investors to losses. A type C agent would underwrite a loan with ℓ_i^*/f_i and ρ^* , which balances the (abnormal) returns investors could get on a loan with the probability of failure. Agents of type H and L have an incentive to copy this behavior to maintain or build their reputation. They trade this off against making more fees in Period 0 by underwriting a loan with $\ell_i^j/f_i > \ell_i^*/f_i$.

After pay-offs have been realized in Period 1, investors will realize that $m_1 = \underline{m}$. At this point, they will update their beliefs about whether agents H and L are of type C. Given our assumptions,

they will only update their beliefs based on whether the loan performs or not (P = 1, 0). Suppressing subscript *i*, Bayes rule implies that

$$\mu_{1,P=1}^{j} = \frac{\mu_{0}^{j} \rho^{*}}{\mu_{0}^{j} \rho^{*} + (1 - \mu_{0}^{j}) \hat{\rho}^{j}}$$
(2)

$$\mu_{1,P=0}^{j} = \frac{\mu_{0}^{j}(1-\rho^{*})}{\mu_{0}^{j}(1-\rho^{*}) + (1-\mu_{0}^{j})(1-\hat{\rho}^{j})}$$
(3)

where $\hat{\rho}^{j}$ is the inferred probability of loan performance picked by agent of type *j*. Given this updating, agents face the following optimization problem in Period 0:

$$\max_{\ell f} \ell^{j} \varepsilon + \delta q \left[\rho^{j} (\ell^{j}/f) \mu_{1,P=1}^{j} + \left(1 - \rho^{j} (\ell^{j}/f) \right) \mu_{1,P=0}^{j} \right]$$
(4)

where the agent takes $\hat{\rho}^{j}$ as given.

The first order condition is given by

$$\underbrace{-\rho^{j}(\ell^{j}/f)'}_{>0} = \underbrace{\frac{\varepsilon n}{\underbrace{\delta q(\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j})}_{>0}}}_{>0}$$
(5)

which critically depends on how $\mu_{1,P=1}^j - \mu_{1,P=0}^j$ varies with ℓ^j / f .

Lemma 1:
$$\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j} \in \left[0, \frac{1-\mu_{0}^{j}}{(1-\mu_{0}^{j})+\mu_{0}^{j}(1-\rho^{*})}\right) and \frac{\partial \left(\mu_{1,P=1}^{j}-\mu_{1,P=0}^{j}\right)}{\partial (\ell^{j}/f)} > 0$$

Lemma 1 determines the shape of the RHS of (5). Figure M1 below represents (5) visually. For an equilibrium to exist, we need that $\hat{\rho}^j = \rho^j (\ell^j / f)$. This is pinned down by the intersection of the two lines. The figure shows that this equilibrium is unique. An agent of type *j* picks a $\ell^j / f > \ell^* / f$ (or $\rho^j < \rho^*$) that balances the profits from fees in Period 0 and reputational rents from Period 2.

Figure M1: Equilibrium



Corollary 1: A decrease in strategic agents' discount rate δ will lead to a lower ρ^j or higher ℓ^j/n . If agents discount the future more heavily, the value of Period 2 reputational rents declines and the agents will act more opportunistically in Period 1. This is a standard result in this class of models.

Corollary 2: ρ^j is increasing in μ_0^j for lower values of μ_0^j , and decreasing for higher values of μ_0^j .

Intuitively, agents may want to either protect or build their reputation. Therefore, the effect of an existing reputation on behavior is ambiguous. The model shows that, with Bayesian updating, agents with a higher existing reputation (μ_0^H) will behave less opportunistically than agents with a lower existing reputation (μ_0^L), but only if their reputation is not too high to begin with.

V. Empirical results

A. Hypotheses

The main purpose of our empirical analysis is to test whether merchant-banks with a lower reputation underwrote worse MBS by providing worse mortgages. In particular, we evaluate the following hypotheses:

Hypothesis 1: mortgage characteristics were worse for merchant-banks with a lower reputation.

We consider four important mortgage characteristics. First, we consider whether a merchant bank used a well-established or lesser-known agent in Surinam to originate mortgages. We measure this by whether the agent was member of the colonial administration, indicating he was well-connected and likely belonged to the colonial elite. This did not always guarantee high quality origination – Lever & de Bruine's agent was a member of the Surinam Court of Justice – but was likely better than using an agent that was not established at all. Second, by the same metric, we consider whether the borrower was a member of the colonial elite. Third, for each mortgage we construct an appraisal-to-fundamental (ATF) ratio based on the number of total acres, acres used for sugar cane, coffee trees, cotton and cacao plants, and slaves (males, females and minors). For each plantation we calculate the "fundamental" value of a plantation based on 1750-1765 appraised values. We relate this to the actual appraised value of the mortgage. This measure captures both the time-series and cross-sectional variation of how plantation components were appraised. Fourth, we construct a loan-to-fundamental (LTF) ratio where we relate a plantation's fundamental value based on 1750-1765 appraised values to the size of the mortgage.

Though these four variables were observable to each merchant-bank active in plantation MBS, they were not directly observable to investors. In principle, all detailed information was present in the records of the (\sim 10) different notaries involved in this business. However, it would have taken considerable time and effort for an individual investor to collect the information.

We take our sample of mortgage contracts and appraisal records and analyze whether mortgages extended by low-reputation bankers were worse on these four dimensions. We also test whether quality differences widened during the boom.

Hypothesis 2: the performance of MBS underwritten by merchant-banks with a lower reputation was worse.

To test this hypothesis, we take the MBS price data from the auctions and estimate the regression

$$P_{i,t} = \beta R_i + \eta_t + \varepsilon_{i,t},\tag{6}$$

where $P_{i,t}$ is the price of MBS *i* as a percentage of par value sold in year *t*, R_i is a measure of the reputation of the underwriter of MBS *i*, and η_t are auction-year fixed effects. Standard errors are clustered at the MBS level. As a baseline, we use a dummy for a below median office value as a

measure of low-reputation. In alternative specifications, we use dummies for the terciles of the office value distribution, the continuous office value, and dummies for whether merchant-bank partners were members of the Amsterdam city government, or had activities outside the MBS business. As explained earlier, we restrict the sample to MBS issued by Amsterdam merchant-banks up to 1772.

We want coefficient β to capture how much money investors would have lost if they had invested a hypothetical guilder with a low- rather than a high-reputation merchant-bank. To arrive at this interpretation, we estimate the regression with weights such that each MBS receives a weight proportional to its size (in guilders). Technically, each observation associated with MBS *i* is weighted by the product of that MBS' size times the inverse of the number of transactions we observe for that MBS.

Because of the special nature of the auction data there are stretches of time when particular MBS were not traded, and it is not possible to compare prices for all MBS within one narrow period. We therefore use all available years with auction data (1768-1796) to estimate β . We include auction-year fixed effects to ensure that coefficient β does not capture any underlying time effects. Given that each MBS is given a weight proportional to its size, we do not overweight the MBS that have more transactions. In the online appendix, we redo the analysis letting the sample end every year between 1778 and 1796.

We also construct average annual prices for MBS underwritten by low- and high-reputation merchant-banks to visually present price differences over time. In particular, we estimate the regression,

$$P_{i,t,r} = \eta_{t,r} + \varepsilon_{i,t,r},\tag{7}$$

for $r \in \{L, H\}$ separately, where *L* and *H* indicate low- or high-reputation merchant banks. We implement the same weights as for equation (6). The coefficients on $\eta_{t,r}$ give average MBS prices in a given year. The caveat here is that the $\eta_{t,r}$ are not necessarily based on the same MBS securities.

The regressions analyze differences in prices, not necessarily returns. After 1773, certain MBS started to reduce or even miss coupon payments, but there is no complete information about this and we cannot directly take it into account in the analysis. Typically, the MBS with the lowest

prices were most likely to have reduced or missed coupons. Therefore, coefficient β gives a lower bound on the difference in returns between MBS of underwriters with different reputations.

Hypothesis 3: the worse performance of low-reputation MBS can be explained by worse mortgage characteristics at origination.

To test this hypothesis, we take regression equation (1) and apply mediation analysis (Baron & Kenny 1986; Imai, Keele, Tingley & Yamamoto 2011). We gradually introduce a number of control variables that capture the quality of mortgages in an MBS at origination (the "mediators"). We then evaluate how much coefficient β falls after the inclusion of the control(s) – the so-called average causal mediation effect (ACME).

First, we calculate the fraction of mortgages backing a specific MBS that were originated during the boom (1769-1770). This is an indication of whether the value of the underlying collateral was inflated. Moreover, those borrowers obtaining a mortgage later in the credit cycle may have been of lesser quality as many have been declined a mortgage at an earlier stage. Second and third, we calculate the fraction of mortgages originated through agents, and to borrowers, who were not members of the colonial elite. Fourth, we calculate the average LTF ratio (weighted by the size of the mortgage) within an MBS. If information on one or more mortgages in the portfolio is missing, we report the average characteristics of the mortgages for which information is available. This introduces classical measurement error that will attenuate the coefficient on this variable.

All four mediators were observable to merchant-banks active in plantation MBS in real time. If they explain a large fraction of the reputation effect, this suggests that reputation captures risktaking decisions rather than different information sets, skill or experience.

B. Reputation and mortgage characteristics

Figure 6 compares the four key mortgage characteristics at origination between low- and highreputation bankers. Panel A shows that low-reputation banks were 21 percentage points more likely to employ non-elite agents to originate mortgages than high-reputation banks. The proportion of mortgages extended to non-elite borrowers was 22 percentage points higher. Further, panel B shows that low-reputation merchant-banks extended mortgages with substantially higher ATFs and LTFs. On average, these ratios were 35 to 40 percentage points higher. In Table 2, we split up the comparison for mortgages originated before or during the boom. The table first shows that the mortgage sum-weighted average LTV for low-reputation merchant-banks crept very close to the 5/8 limit during the boom. In contrast, the average LTV for high-reputation banks was initially above 5/8 and dropped below 5/8 during the boom. This means that, differentially, the average LTV increased for low-reputation merchant banks. At the same time, mortgage interest rates did not change.

Next, the table shows that the use of non-elite agents to originate mortgages was already higher for low-reputation merchant-banks before the boom. During the boom it increased for all banks, but especially for those with a low reputation, and the difference between the two types of banks became 21.6 percentage points, statistically significant at the 5% level. The proportion of non-elite borrowers also started off higher for low-reputation merchant-banks. During the boom this fell for all banks, but especially for those with a high reputation, and the difference between the two types of banks became 34.9 percentage points, statistically significant at the 1% level.

The table also shows that, as the boom progressed, high-reputation banks increased the proportion of sugar plantations in MBS. Since these were less exposed to the coffee boom, this indicates that high-reputation banks sought to diversify their MBS portfolios and reduce the risk. There is no such change for low-reputation banks. The diff-in-diff effect is statistically significant at the 5% level. Initially, we do not include the proportion of sugar plantations in the mediation analysis. There are heterogeneous effects between low- and high-reputation bankers that we discuss separately in Section V.E.

Further, the table compares ATFs. These increased substantially during the boom, but not differentially so. This suggests that, on average, low- and high-reputation bankers used the same methods to appraise plantations. Results are different when we look at LTFs. Before the boom, LTFs were similar, but during the boom they increased much more for low-reputation merchant-banks. The difference with high-reputation merchant-banks during that period is 27.1 percentage points, statistically significant at the 5% level. This difference does not appear to be driven by low-reputation merchant banks extending more of their mortgages in 1770, the final year of the boom. We subtract out year and location fixed effects to arrive at a "corrected" LTF measure, which captures whether a plantation's LTF is high compared to other plantations getting a mortgage in the same year or location (one of seven districts). The table shows that the corrected LTF increased

differentially for low-reputation bankers, meaning that this group extended disproportionately large mortgages given fundamentals during the boom. The differential effect is economically large (24.5 percentage points) but statistically not significant.

In sum, the mortgages extended by low-reputation merchant-banks look worse at origination.

C. Reputation and MBS prices

Table 3 looks at the effect of merchant-bank reputation on MBS prices. We restrict the sample to MBS extended by Amsterdam merchant banks up to 1772 and estimate equation (6) for the period 1768-1796. In column (1), the baseline, we measure reputation with a dummy for below-median office values. Low-reputation merchant-banks underwrote MBS that underperformed by 17.5 percentage points. The effect is statistically significant at the 1% level. In Online Appendix Figure A.10 we replicate the analysis using different bank samples. Step-by-step we shrink the sample by dropping the bank with the highest number of security transaction observations from the sample. The effect of low-reputation remains the same.

Figure 7 provides a graphical representation where we estimate average annual prices of MBS underwritten by low- and high-reputation bankers following equation (7). Up to 1772, prices for the two groups were roughly the same, although investors did value high-reputation MBS slightly higher. After 1772, prices of the two groups diverged. Prices dropped substantially for both, but substantially more so for low-reputation bankers. In 1778, the price difference was around 35 percentage points and prices for high-reputation MBS were more than twice as high. Between 1779 and 1784 and after 1795 the Dutch Republic was involved in military conflict with England. This resulted in a blockade of Surinam and the threat of invasion (Wolbers 1861: 369), and led to price declines for low and high-reputation MBS alike. Between the two conflicts, price differences between the two groups of MBS were substantial (around 27 percentage points in 1792).

In Table 3, column (2), we include dummies for the two bottom terciles of the office value distribution. These estimates show that both terciles exhibit significant under-performance, between 16 and 19.5 percentage points, compared to the highest tercile. In other words, the high-reputation banks that outperformed the rest of the market come from the top of the distribution. In column (3) we include the continuous version of the office value. The coefficient is highly statistically significant and indicates that moving from the 25th to the 75th percentile of the office value distribution leads to a 10 percentage points drop in MBS prices. In column (4), we include a

dummy indicating if a banker had a position in the Amsterdam government. The estimates show that securities underwritten by these banks outperformed the rest of the MBS market by 14.7 percentage points. Finally, column (5) shows that the plantation MBS of banks with any substantial activities outside of the plantation business outperformed those of the other banks by 9.4 percentage points. In sum, plantation MBS underwritten by low-reputation banks lost substantially more of their value after 1772.

D. Mediation analysis

Next, we use mediation analysis to estimate whether the underperformance of MBS underwritten by low-reputation merchant-banks can be explained by mortgage characteristics at origination. Summary statistics of the four mediator variables at the MBS level are reported in Online Appendix Table A.2. The number of observations equals the number of MBS in our sample times the number of years with data on MBS prices. The table confirms that characteristics look worse for MBS underwritten by low-reputation bankers.

In Table 4, we perform the mediation analysis. Panel A includes each mediator on its own or jointly with our baseline measure of low-reputation. Column (1) replicates the baseline effect of lowreputation on MBS performance from Table 4, column (1). Column (2) only includes the proportion of mortgages in an MBS extended during the boom. This depresses subsequent MBS prices: a one standard deviation increase (from Online Appendix Table A.1) is associated with a 9.13 percentage points lower MBS price. Column (3) includes both the mortgage boom and lowreputation variables. The difference between the coefficients on the low-reputation dummy in Columns (1) and (3) gives the average causal mediation effect (ACME) of the mortgage boom variable. Compared to Column (1), the coefficient on the low-reputation dummy drops by 3.02 which is equivalent to 17% of the reputation effect. Columns (4)-(5) do the same for the proportion of mortgages originated by non-elite agents. On its own, a one standard deviation increase is associated with a 6.07 percentage points lower MBS price. The ACME is equivalent to 7% of the reputation effect. Columns (6)-(7) consider the proportion of mortgages extended to non-elite borrowers. On its own, a one standard deviation increase is associated with a 6.44 percentage points lower MBS price. However, its ACME is close to zero. The variable is highly correlated with the low-reputation dummy and, presumably because it is noisier, adds little explanatory power to the regression. Finally, columns (8)-(9) include the average LTF in an MBS. On its own, a one standard deviation increase is associated with an 8.94 percentage points lower MBS price. The ACME is equivalent to 26% of the reputation effect. We evaluate statistical significance with a block bootstrap where we resample the 46 MBS in our data.³⁷ Only the average LTF's ACME is statistically significant at 4%.

Panel B gradually adds all mediation variables to the specification. The ordering is determined by the sequence of economic decisions made by a merchant-bank: (i) does it extend credit during the boom, (ii) does it use a non-elite agent to originate mortgages, (iii) does it approve a non-elite borrower, and (iv) what mortgage size does it offer given fundamentals? The coefficient on the low-reputation dummy drops by an economically meaningful amount after the inclusion of each additional mediator. The biggest effect comes from adding the average LTF. Conditional on the proportion of mortgages originated by non-elite agents, the proportion of mortgages extended to non-elite borrowers now becomes an economically meaningful mediator. Its multivariate ACME is 15% of the reputation effect. Jointly, the mediators can explain 70% of the effect of the low reputation dummy in column (1), this is statistically significant at the 2% level. The remaining coefficient on the low-reputation dummy in the final column is not statistically significant.

In sum, mortgage characteristics at origination largely explain the reputation effect on MBS prices. The residual may capture more intangible differences between bankers in terms of information, skill and experience, but our results suggest they were second order.

Our results are confirmed by a number of robustness tests. In Table 6, Panel C we use a variance decomposition based on Shapley values to pin down the importance of the low-reputation dummy and each mediator. The advantage of this approach is that it is invariant to the order by which mediator variables are included. The most important result is in column (5), which shows that of the additional R-squared that can be explained by the low-reputation dummy and the mediators together, only 18.4% can be attributed to reputation. Consistent with Panel B, the remaining 81.6% is primarily explained by the LTF and mortgage boom variables (42.2 and 26.8%, respectively). The non-elite borrower and agent variables, respectively, explain the remaining 9.0 and 3.7%.

³⁷ We thank Teppei Yamamoto for this suggestion. We cannot implement Imai, Keele, Tingley & Yamamoto's (2011) quasi-Bayesian Monte Carlo approach as this cannot simultaneously accommodate regression weights and clustered standard errors.
In Online Appendix Figure A.11, we replicate the analysis using different end-years between 1778 and 1796. The fewer years we use, the fewer observations we have for particular MBS, and the noisier our estimates get. Nevertheless, empirical patterns are quantitatively similar. On its own, the effect of low-reputation varies between -17.5 and -20 percentage points, and the relative effect of each of the mediators is similar. The shorter the sample, the less we can explain of the reputation effect. In particular, the effect of the average LTF becomes less important. This might be driven by increased noise in the estimation or by the fact that the average LTF is less important for the MBS traded earlier in the sample. Alternatively, during the first years after 1772, which effectively get more weight the shorter the sample, high-reputation banks used their capital to advance interest payments. This may have increased the difference in MBS prices between low- and high-reputation merchant-banks unrelated to plantation fundamentals. Over time, high-reputation banks stopped doing this and MBS prices became more aligned with fundamentals.

In Online Appendix Tables A.3-A.6, we repeat the analysis for alternative reputation measures: terciles of the office value distribution, office value as a continuous variable, and dummies for if a banker had a position in the Amsterdam government, or if it had any substantial activities outside of the plantation MBS business. In Online Appendix Table A.7, we perform k-means clustering using the office value and other merchant-bank characteristics to divide bankers up into low or high-reputation. Panel A shows that the two reputation clusters are composed of exactly the same banks regardless of how many characteristics we add (as they are highly correlated). In Online Appendix Table A.8, we show results dropping MBS issued in 1770 or by including MBS vintage-year fixed effects. Results are all quantitatively similar to Table 4.

E. The role of sugar plantations and land values

In this section, we explore the importance of the proportion of mortgages extended to sugar rather than coffee plantations. Providing mortgages to sugar plantations may have improved or worsened MBS performance, depending on the mortgage sum. On the one hand, the boom in plantation MBS was partly driven by an increase in coffee prices and extending mortgages to sugar plantations would have led to diversification. On the other hand, sugar plantations had larger plots than coffee plantations (752 vs 246 acres, Stipriaan 1993: 54, 104), and appraised land values increased dramatically during the 1760s and fell substantially afterwards (illustrated in Figure 4). If a banker had lent against the full value of a sugar plantation's land, this could have led to problems later on.

The evidence indicates that low-reputation bankers provided larger mortgages to sugar plantations. Over the entire period, the average LTF for sugar plantations was 1.687 for low- and 1.317 for high-reputation bankers (this difference is similar before and during the boom). The difference of 0.370 is sizeable and is substantially larger than the difference in coffee plantation LTFs of 0.287 over the entire period.

The different LTFs are reflected in the MBS prices. In Online Appendix Table A.9, we regress MBS prices on the mediator variables for MBS underwritten by low- and high-reputation bankers separately. In columns 1 and 2, we include the key mediators from Table 6; in columns 4 and 5 we add the proportion of sugar plantations (with t-tests on differences in column 3 and 6). Columns 1 through 3 show that all mediator variables, including the LTF, have approximately the same effect on MBS prices for both types of bankers. Columns 4 through 6 show that the proportion of sugar plantations has very different effects. In particular, it leads to higher MBS prices for high-reputation and lower prices for low-reputation bankers. The latter is economically and statistically significant. An increase in the proportion of sugar plantations in a low-reputation MBS of one standard deviation (0.219) is associated with an additional price decline of 6.42 percentage points. In column 6, the effect of the LTF for low-reputation bankers declines because the proportion of sugar plantations and the average LTF in an MBS are highly correlated for this group of bankers.

Overall, the evidence suggests that low-reputation bankers provided large mortgages to sugar plantations on the collateral of (overvalued) land, while high-reputation bankers were more conservative. This had a substantial effect on subsequent MBS prices.

VI. Robustness

A. Banker beliefs

We document that low-reputation bankers underwrote worse plantation MBS. It is possible that this reflected more optimistic beliefs rather than worse incentives. To test this alternative, we turn to portfolio holdings we observe in the estate tax records. We consider the estates from bank partners and their family members (individuals with the same last name, including widows whose husband had the same last name). Following the logic in Cheng, Raina & Xiong (2014), we would expect the partners in low-reptation banks and their families to be more heavily invested in plantation debt if they were more optimistic.

The data runs from 1753 (when the first plantation MBS came on the market) to 1796. Of the 16,710 estates in our data, we link 115 and 111 to low and high-reputation bank families, respectively. In Table 5, we present regressions with the dependent variable a dummy for whether an estate has any plantation debt, or the log of the value of that plantation debt (plus 1 guilder to deal with zeros). We control for log(wealth) and gender.³⁸ The table shows low-reputation bank families were not more likely to own plantation debt (or own more of it). This holds both for the full 1753-1796 period and the years up to 1772, when the MBS market had not collapsed yet. This suggests that low-reputation bankers were not more optimistic about plantations' prospects.

B. Investor clienteles

We document that plantation MBS underwritten by low-reputation bankers offered investors the same yield-at-origination, but substantially underperformed during the bust. This is consistent with investors ignoring underwriters' reputation when making their investment decisions. An alternative explanation is that investors did differentiate between underwriters, but simply did not have the same access to MBS underwritten by high-reputation bankers. These banks may have rationed their securities to a clique of privileged investors, possibly to capture benefits outside the plantation MBS market. We use information from estate tax records to test for this. We us wealth-at-death as a measure of privilege.

We focus on estates that include at least one plantation MBS that is in our sample (i.e. issued by an Amsterdam banker up to 1772) and restrict the analysis to the period 1768-1796 so that we observe sufficient estates that include MBS underwritten by low-reputation bankers. This yields a total of 889 estates. For each estate, we determine the total wealth-at-death and the fraction of plantation MBS in the portfolio that were underwritten by a low or high-reputation banker. This fraction has a bi-modal distribution with most values at 0 or 1. We transform this information into a dummy variable indicating whether the fraction of low-reputation MBS is higher or lower than 0.5.

Figure 8 shows the distribution of log(wealth-at-death) for investors predominantly investing in plantation MBS issued by bankers of low or high reputation. The figure shows that the distributions are similar. If anything, high-reputation plantation MBS are more frequently held by poorer, not

³⁸ Controlling for 5, 10, or 20 wealth bin dummies rather than log(wealth) gives similar results.

wealthier, investors. This holds both for the full 1768-1796 period and the years up to 1772, when the MBS market had not collapsed yet. This does not suggest only privileged cliques of investors had access to high reputation plantation MBS issues.

VII. Conclusion

In this paper, we document and analyze the boom and bust of plantation MBS in the Dutch colony of Surinam during the 1760s and early 1770s. We show that low-reputation merchant-banks aggressively increased market share during the boom years of 1769 and 1770 and started to extend worse mortgages. MBS underwritten by low- and high-reputation banks had the same yields-at-origination during the boom, but low-reputation MBS suffered an additional 17.5 percentage points price decline during the subsequent bust, which can be largely explained by worse mortgage characteristics at origination. Though investors could not (directly) observe characteristics, merchant-banks could. This suggests that the effect of reputation on MBS performance captures risk-taking decisions rather than different information sets, skill or experience.

Our paper first of all shows that underwriter reputation was effective in disciplining bank behavior. Established banks, out of fear of losing their highly valued reputation, underwrote better MBS and reduced participation during the boom. However, this was not sufficient to prevent the boom and subsequent bust. Opportunistic low-reputation merchant-banks underwrote MBS that, on the face it, looked to be of the same quality, but turned out to contain worse mortgages. Investors, facing a low-interest rate environment and likely reaching-for-yield, ignored underwriter reputation and kept investing in an asset class they believed to be generally attractive. Investor beliefs turned out to be fragile. When it became apparent that some underwriters had tried to inflate the boom, the market came to a standstill. Only at that point did the earlier misrepresentation and fraud started to come to light.

Our findings suggest that underwriter discipline can be effective in attenuating "bad" credit booms, but only if all underwriters have a high reputation they want to protect. Competition from lowreputation underwriters can drive high-reputation underwriters out of the market and, if investors do not pay sufficient attention, can allow the boom to continue unabated.

There are a number of important differences between now and then. In today's world, there are distortions from government regulation, bank supervision and bail-outs that potentially have

important effects on financial markets. Such distortions were in absent the 18th century. Further, in today's banks, the decision makers are employees with performance-based compensation often focused on the short run. This is different from the 18th century, when merchant-banks operated as partnerships in which individual partners had good reasons to value the long run. Even though these differences are important, this does not mean that our results are irrelevant. In fact, the different institutional environment of the 18th century provides a unique and clean testing ground to study how high-powered incentives for bankers affect mortgage origination in an environment without distortions. This provides fundamental insights into how bankers' incentives shape outcomes, and has important implications for the optimal design of the financial system. In short, forcing all bankers to have more skin-in-the-game would be one way to enable mortgage securitization to work without close government intervention.

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Figures and tables





This graph provides the distribution of the average value of the row of (5-10) buildings where a merchantbank's office was located. Building values are expressed as annual rental values and come from the 1742 census. The sample includes all Amsterdam underwriters who issued a MBS up to 1772 (N=37). The horizontal axis has abbreviations of merchant-banks mentioned in the text in red boxes: "shou" = Schouten & Valentz, "lever" = Lever & de Bruine, "vdpol" = Harmanus van de Poll & Co, "marsl" = Jan & Theodoor van Marselis.



Figure 2. Government debt levels, yields and MBS issuance by low- and high-reputation bankers

Panel A shows 2-year moving average changes in outstanding sovereign debt of Holland, and sovereign debt yields. Panel B and C show yearly mortgage issuance of low- and high-reputation Amsterdam merchant-banks, respectively. *Mortgage increase* reflect an increase in the mortgage sum. *Rollover* reflects mortgage sums previously extended by a different bank, and *Rollover cashed* represents mortgage repayments due to rollovers. If the exact date of the mortgage is missing, we impute it with the date of the relevant appraisal report. If the mortgage sum is missing, we estimate it at 5/8 of the appraised value. If no appraisal report is available, we impute the mortgage date to be the same as the opening date of the MBS, and the mortgage sum as the previous or next mortgage on this plantation, whichever is closest. The light-green and light-gray bars represent new mortgages and rollovers that agents in Surinam had agreed to, but for which the corresponding bills of exchange were refused by the bankers in Amsterdam.



Figure 3. Investor perspective: pre-boom vs boom

This figure compares MBS and mortgage characteristics over time that were clearly observable to investors. *Pre-boom*: 1750-1768. *Boom*: 1769-1770. Panel A has the proportion of total mortgage volume issued by low- and high-reputation merchant-banks. Panel B has LTV values (mortgage sum / appraised plantation value). Panels C and D have mortgage interest rate and MBS coupons, respectively. The sample includes all mortgages extended between 1750 and 1770 by Amsterdam merchant-banks who underwrote an MBS (N=307, by 26 banks – panels A, B and C), and all MBS underwritten by the same banks (N=46, by 26 banks – panel D).



Figure 4. Appraised collateral values

This graph illustrates the yearly mean appraised value of the primary plantation production factors: total acres, coffee trees, acres of sugar cane, and adult male and female slaves. Estimates are based on our full sample of appraisal reports in the period 1760-1775 (N=789).

Figure 5. Transaction prices and appraisals



Panel A: Plantation prices and valuations

Panel A: This figure compares changes of plantation transaction prices and appraisal valuations. The five periods are based on dynamics in appraised values shown in Figure 4, and the number of transactions we can match to an appraisal or inventory report within a given period. Transaction price levels are estimated using a hedonic model including plantation characteristic variables from appraisal (N=59) or inventory reports (N=26) within 12 months before, or three months after the transaction date. We regress the log of the transaction price on the number of slaves, number of coffee trees, number of sugar acres and period fixed effects (displayed in the figure). We normalize 1761-1765 to 1. The panel shows the 95% confidence intervals, and has the number of transaction observations on the right vertical axis. Appraisal valuation levels are estimated using the same hedonic model using the full sample of appraisal reports in the period 1761-1780 (N=883). (If were to restrict this to the 59 appraisal reports that are linked to a transaction, we do not have enough observations to estimate the individual period fixed effects). Panel B: This figure illustrates the shift in the distribution of appraisal overstatements at the height of the plantation boom. Appraisal overstatement: the appraised value of the plantation divided by the transaction price. We match each plantation transaction to the closest appraisal report, within one year before the date of the plantation sale, or 3 months after the transaction (N=44). Pre-boom: 1761-1768. Boom: 1769-1770. The shift in appraisal overstatements from pre-boom to boom is consistent with the divergence of transaction prices and appraisal values between 1761 and 1770 in Panel A.

Figure 6. Mortgage characteristics: low- vs high-reputation merchant-banks









This figure compares mortgage characteristics, which were (not) directly observable to investors, between low and high-reputation merchant-banks. The sample includes all mortgages extended between 1750 and 1770 by Amsterdam merchant-banks who underwrote an MBS (N=307, by 26 merchant-banks). Panel A has the proportion of total mortgage volume up to 1770 that was originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). Panel B has the distributions of the ATFs and LTFs – the appraisal or loan-to-fundamental ratios. Appraisal: the appraised value of a plantation. Loan: mortgage sum. Fundamentals: the value of each primary production factor: total acres, coffee trees, cacao and cotton plants, acres of sugar cane and slaves (males, females and minors) on the plantation, where the fundamental value is each factor's average appraised value in the period 1750-1765. For total acres we calculate the fundamental value for each district separately.



Figure 7. Average annual MBS prices: low- vs high-reputation merchant-banks

This graph has average annual prices for MBS underwritten by low- and high-reputation merchant-banks. In particular, we present the coefficients on the year fixed effects from the following regression:

$$P_{i,t,r} = \eta_{t,r} + \varepsilon_{i,t,r},$$

for $r \in \{L, H\}$ separately, where L and H indicate low- or high-reputation merchant banks. Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. The sample includes all MBS underwritten by Amsterdam merchant banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). The years 1780-1784 and 1795-1796 were characterized by military conflict between the Dutch Republic and England, which resulted in a blockade of Surinam and the threat of invasion.

Figure 8. Portfolio analysis: are investors in high-reputation plantation MBS richer?



These figures compare the wealth profiles of investors in the estate records that predominantly hold plantation MBS underwritten by high or low-reputation bankers. The ratio of high-reputation MBS equals the number of plantation securities of high-reputation banks over the total number of plantation securities from both high and low-reputation banks. The sample includes all estates that include at least one plantation MBS that is our sample (i.e. underwritten by Amsterdam bankers up to 1772). Panel A shows all estates over the period 1768-1796 (N=889), Panel B shows all estates over period 1768-1772 (N=62). Epanechnikov kernel estimates with optimal bandwidth.

	Low-reputation Hi				High	ligh-reputation				Difference				
	N	mean	Sd	p25	Med.	<i>p</i> 75	N	mean	Sd	p25	Med.	p75	Mean dif.	t-stat
City government	18	0.00					19	0.47					-0.47***	-3.91
Outside activities	18	0.33					19	0.74					-0.40**	-2.62
ABE vol.	18	122	342	0	9	48	19	472	600	0	299	708	-350**	-2.09
ABE account (1/0)	18	0.61					19	0.68					-0.07	-0.45
ABE vol. ABE account	11	200	426	10	46	112	13	689	614	299	673	766	-490***	-3.68
Family high wealth	83	0.23					91	0.43					-0.19***	-2.66
Family income	84	2.5	3.8	0.8	1.2	3.0	112	4.0	4.0	1.2	2.5	5.0	-1.5***	-2.68
Family house value	83	0.58	0.46	0.28	0.40	0.77	91	0.77	0.56	0.30	0.60	1.33	-0.20**	-2.43

Table 1. Merchant-bank reputation

This table compares characteristics of low- and high-reputation underwriters. The table is based on our sample of Amsterdam merchant-banks that underwrote plantation MBS up to 1772 (N=37). Low or high-reputation is based on whether the office value of a merchant-bank is below or above the median. Office values are based on the average value of the row of (5-10) buildings (as of 1742) where the merchant-bank's office was located. *City Government* is a dummy variable indicating if a banker had a position in the Amsterdam government, suggesting he was part of the elite. *Outside activities* is a dummy variable indicating whether the bank had other business outside underwriting plantation MBS. *ABE vol.* is the bank's trading volume in the Amsterdam Bank of Exchange (ABE) during the first half of 1769 in 000s. We assign a zero if the bank had no account. *ABE (1/0)* is a dummy variable indicating whether a bank had an account or not. *ABE vol.* | *ABE account* is trading volume for all banks that did have an account. The t-values on *ABE Vol.* (| *ABE account*) correspond to the mean differences in $\log(1+ ABE Vol.)$ | *ABE account*). *Family high wealth* indicates bank partners and family members with an estimated wealth of at least 10,000 guilders and a yearly income of at least 1,000 guilders. *Family income* is the yearly income of the bank partners and family members in 1742 in 000s. *Family house value* is the assessed yearly rental value of the houses of the bank partners and family members in 1742 in 000s. All statistics on family characteristics are weighted by the inverse of the number of observations per family. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

		Low	reputation		High reputation			
		N	Mean	Sd	N	Mean	Sd	Mean dif.
LTV	Pre-Boom	51	0.594	0.141	37	0.666	0.282	-0.072 (-1.52)
	Boom	102	0.619	0.088	18	0.595	0.098	0.024 (1.13)
	Dif.	-	0.026	-		-0.071	_	0.096**
	Ū		(1.22)			(-1.24)		(2.04)
Interest	Pre-Boom	55	0.060	0.001	38	0.060	0.003	0.000 (-0.67)
	Boom	103	0.060	0.003	15	0.060	0.000	0.000 (-0.12)
	Dif.		0.000			0.000		0.000
			(0.15)			(-0.25)		(0.24)
Non-elite agent	Pre-Boom	49	0.404		66	0.296		0.108 (1.19)
	Boom	112	0.542	_	26	0.326	_	$0.216^{**}(2.08)$
	Dif.		0.138			0.030		0.108
			(1.28)			(0.30)		(0.72)
Non-elite borrower	Pre-Boom	64	0.634		77	0.510		0.124 (1.48)
	Boom	113	0.609	-	29	0.261	_	0.349*** (3.58)
	Dif.		-0.025			-0.250***		0.225^{*}
			(-0.27)			(-2.70)		(1.68)
G	D D	(0)	0.040		0.4	0.176		0.070 (1.00)
Sugar	Pre-Boom	69	0.248		84	0.176		0.072 (1.08)
	Boom	113	0.246	-	29	0.376	-	-0.130 (-1.44)
	Dif.		-0.002			0.200		-0.202
			(-0.02)			(2.43)		(-1.73)
	Dea Daam	4.4	1 1 2 5	0.282	41	1.002	0.255	0.044 (0.80)
АГГ	Pre-Boom	44 07	1.155	0.282	41	1.092	0.233	0.044(0.89)
	Dif	97	0.270***	0.303	10	0.424***	0.272	-0.010 (-0.14)
	Dij.		(5.65)			(6.00)		-0.034
			(3.03)			(0.09)		(-0.34)
I TF	Pre-Boom	49	0.957	0 341	40	0.901	0 379	0.056 (0.73)
	Boom	98	1 463	0.541	15	1 101	0.377	0.030(0.73) $0.271^{**}(1.91)$
	Dif	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0.506***	0.557	15	0.201***	0.111	0.215
	Dij.		(4.56)			(2.64)		(1.22)
			(1.50)			(2.07)		(1.22)
LTF corrected	Pre-Boom	49	0.777	0.307	40	0.858	0.343	-0.080 (-1.17)
	Boom	98	0.868	0.508	15	0.704	0.378	0.164 (1.28)
	Dif.	-	0.091			-0.154		0.245
	-J -		(0.90)			(-1.59)		(1.54)

Table 2. Mortgage characteristics: low vs high-reputation merchant-banks, pre-boom vs boom

This table compares the characteristics of mortgages extended by low and high-reputation merchant-banks before (1750-1768) and during the boom (1769-1770). The sample includes all mortgages extended between 1750 and 1770 by Amsterdam merchant banks who underwrote an MBS (N=307, by 26 merchant-banks). Each observation is weighted by the mortgage sum. *LTV*: mortgage amount over appraised value. *Interest*: mortgage interest rate. *Sugar*: sugar plantation. *Non-elite agent (borrower)*: mortgage originated through an agent (extended to a borrower) who was not part of the colonial administration (which signaled membership of the economic elite). *ATF*: appraisal-to-fundamental – the appraised value over the fundamental value of each primary production factor on the plantation: total acres, coffee trees, cacao and cotton plants, acres of sugar cane and slaves (males, females and minors) on the plantation, where the fundamental value is each factor's average appraised value in the period 1750-1765. For total acres we calculate the fundamental value for each district separately. *LTF*: loan-to-fundamental – mortgage amount over the fundamental value of the primary production factors. *LTF corrected*: the LTF corrected for year and district fixed effects, adding back the sample mean. In parentheses, we report t-statistics on (double) differences. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Low-reputation	-17.46***				
(Office value < median)	(-3.42)				
Office value – 1 st tercile		-16.08 ^{***} (-2.79)			
Office value – 2 nd tercile		-19.47 ^{***} (-3.70)			
Office value – cont. (in 000s)			24.25 ^{***} (4.72)		
City government				14.17 ^{**} (2.42)	
Outside activities					9.39* (1.80)
<i>F</i> -stat. $1^{st} = 2^{nd}$ terc.		0.97			
Interquartile range			0.41		
Auction Year FE	Yes	Yes	Yes	Yes	Yes
Ν	4605	4605	4605	4605	4605
<u>R²</u>	0.72	0.74	0.68	0.68	0.66

Table 3. MBS prices and merchant-bank reputation

This table present estimates of the following regression equation explaining plantation MBS prices:

 $P_{i,t} = \beta R_i + \eta_t + \varepsilon_{i,t},$

where $P_{i,t}$ is the price of MBS *i* (as a percentage of par value) sold in year *t*, R_i is a measure of the reputation of the underwriter of MBS *i*, and η_t are year fixed effects. As a baseline, we use a simple dummy for a below median office value as a measure of low-reputation. We also include dummies for the terciles of the office value distribution, the continuous office value (in 000s; interquartile range 1.08 - 0.67 = 0.41), a dummy variable indicating if a banker had a position in the Amsterdam government, and a dummy that indicates whether a merchant-bank had any activities outside of underwriting plantation MBS. Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Standard errors are clustered at the MBS level (46 clusters). t-statistics are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 4. Mediation analysis

Panel A: Individual media	tors								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
Low-reputation	-17.46***		-14.44***		-16.16***		-17.19***		-12.84**
(Office value < median)	(-3.42)		(-4.68)		(-3.14)		(-2.83)		(-2.68)
Mediator		-19.44***	-14.87***	-12.64**	-4.17	-14.30***	-0.83	-21.84***	-12.63**
		(-2.83)	(-3.22)	(-2.30)	(-1.07)	(-3.12)	(-0.14)	(-3.17)	(-2.12)
Mediator		Bo	om	Non-eli	ite agent	Non-elite	borrower	LT	TF
ACME		-3.	.02	-1	.30	-0.	27	-4.6	2**
[p-value]		[0.2	22]	[0.	21]	[0.4	44]	[0.0)4]
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605	4605	4605	4605	4605
\mathbb{R}^2	0.72	0.70	0.76	0.66	0.72	0.66	0.72	0.70	0.74

Panel B: Multiple mediators							
	(1)	(2)	(3)	(4)	(5)		
	Price	Price	Price	Price	Price		
Low-reputation	-17.46***	-14.44***	-13.07***	-10.45**	-5.22		
(Off. val. < median)	(-3.42)	(-4.68)	(-3.60)	(-2.40)	(-1.17)		
Boom		-14.87***	-14.92***	-16.22***	-14.77***		
		(-3.22)	(-3.22)	(-3.24)	(-3.45)		
Non-elite agent			-4.36	-4.66	-4.84		
			(-1.14)	(-1.19)	(-1.20)		
Non-elite borrower				-7.00	-10.83*		
				(-1.24)	(-1.87)		
LTF					-11.57*		
					(-1.96)		
Joint ACME					-12.23**		
[p-value]					[0.02]		
ACME		-3.02	-1.37	-2.63	-5.20***		
[p-value]		[0.21]	[0.18]	[0.18]	[0.05]		
Auction Year FE	Yes	Yes	Yes	Yes	Yes		
N	4605	4605	4605	4605	4605		
\mathbb{R}^2	0.72	0.76	0.76	0.76	0.77		
Panel C: Variance deco	omposition						
	(1)	(2)	(3)	(4)	(5)		
	Price	Price	Price	Price	Price		
Low-reputation	1.000	0.557	0.491	0.383	0.184		
Boom		0.443	0.443	0.459	0.268		
Non-elite agent			0.067	0.059	0.037		
Non-elite borrower				0.100	0.090		
LTF					0.422		

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. Low-reputation: office value < median. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). tstatistic are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel A includes the potential mediators one by one, while Panel B includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME) which captures what part of the effect of the Low-reputation dummy can be explained by an individual mediator. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel C performs a variance decomposition on the additional R^2 explained by the Low-reputation dummy and mediator variable(s) (compared to a specification that only includes fixed effects).

	(1)	(2)	(3)	(4)
	Plantation	Log(1+Plantation	Plantation	Log(1+Plantation
	(1/0)	MV)	(1/0)	MV)
Low-	0.03	0.10	0.05	0.17
reputation	(0.63)	(0.94)	(0.72)	(1.11)
Log(Wealth)	0.12***	0.28***	0.05**	0.12***
	(7.14)	(8.64)	$(2 \ 47)$	(2.68)
	(7.14)	(0.04)	(2.77)	(2.00)
Female	-0.05	-0.05	-0.06	-0.06
1 emaie	(-0.98)	(-0.50)	(-1.08)	(-0.46)
	(019 0)	(0.00)	(1100)	(0.10)
Sample	17	753 - 1796	17	753 - 1772
Year	Yes	Yes	Yes	Yes
N	226	226	91	91
\mathbb{R}^2	0.41	0.43	0.24	0.24

Table 5. Portfolio holdings low and high-reputation bankers' families – determinants of plantation debt holdings

This table shows estimates explaining investment in plantation loans. Sample: estate records of all partners and family members of merchant-banks active in plantation MBS underwriting. *Plantation (1/0)* indicates any investment in plantation debt. *Plantation MV* is the assessed market value of plantation debt investment in guilders. *Low-reputation* indicates low-reputation merchant-bank partners and family members. OLS estimates throughout, t-statistics are reported in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Online Appendix

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A. Additional figures and tables





Commodity prices in Amsterdam. Source: Stipriaan (1993).

Figure A.2 Example mortgage deed (first page)

De hunden fom pareorde Din Hove van firiele que titie der folom hiriname the ter Jan Houtthing Provensen vor John Andre in 11 D Brunstein, in qualchit al. Agendariopen van het fomptoir van atie onder de directie van Mi fan De Pole, hig scheyvende Starman van de Pollen Jomp. Te Amoterdam, requiranten ter cener DO 9 Amedie Sugness, Se in prive in den nog in qualitiest over Modean Quinan Gorguiteerdens in sodem for the andere En prafecturde Den woornormde Around nom fue fupra, den Hore acte van Hype. theere Jobs don governiver de prive in gt om a seen leflerez, ten overstaan van D Hearen Inr H. J. A. De Sover earc_ in Q. P. Bronelle, Readen in dia Ed. Hove van fiviele Institue, ten behreven het opgen Imptoir Son Negotiatie op huden doubinaal esteeden in gapaviers, verdockende nigt hragte Der Speciale procuratie op him verlieden op Den Jahonde van Dien Willige forden natie 1

Source: Dutch National Archives, Notarial Archives of Surinam 1699-1845 (1.05.11.14) 366, 559.

Jr. / 221927. O Wyren A: 1. Sibilea Kohen & Master. 2. Sellona J. Nayotin 3. Livia Aulatin J. Nayotin 925- 1000 4. Slora Wroed prouw 850. 5. Chartina part op de Quech. 650 at 15 0 18: Sorothea

Figure A.3 Example appraisal report (one page showing enslaved females)

Source: Dutch National Archives, Notarial Archives of Surinam 1699-1845 (1.05.11.14) 698, 188.

Figure A.4 Example plantation MBS prospectus



Source: Amsterdam City Archives, Collection of the Amsterdam Notaries 1578-1915 (5075) 14148, 877B.

Figure A.5 Example of and auction price list

Ale ten Comptoine rande Mess Heren Liver, in de Intoni Abras Bruine Staenolein Loopystyn Blanco gedateert 31 Job December 1767. N.6. 1000-N. 9 Con dito in alles 1000_-dese lue Allo Condito in alles als_ 1000____ Moren N.g. Joren N.g. N. SI. Cundito in Alles als / 1000_-

Source: Amsterdam City Archives, Archive of the Burgomasters (5068) 138, 162.

Figure A.6 Example of a bill protest

Juriname Ven 16 May 17 70 Poor X 1250 four ditt Ses weeken naar Sigt betaalt beese mynelewte With Selbrief aan don Heer VSaac de la Gria 19 ads dy in Paris van De Meeren of houten in Berry & Blanty of Whry Colf duysend the housent in Wift ig ful dens in Hay vers fourant gelt de Maande alheer genoo ben van Gjinddele voor ne in berlig van de plantage Boren unt, dedato 4 x5 Mui deser Juars 180. Alt of Tchening par femelde Plantage Solar Verderadies van Ansterdam H. J. Gordora Hende Vander Phy Voor mign betaald aan Te Marin Lisendellon TAmsterdam of ord rege Haard a Jansten Parum & den 20 Jun " 173? Dr. He Safriese Peese widel niet terderte Vers enden aldung neer approbation ngt den Paderlanden Mp 300 Acken Arterland Doorden Verkepers ME Wel privering Maij 1770 . Handen itere Gouronneur jan Sigven Geolineers en by Velant . Beeren tust verhogt Sad Sin harge komen en als san gem. Wisfed handen Cador feug in Frekker te vertonne omme daar van Advijs te kunne geven

Source: Amsterdam City Archives, Collection of the Amsterdam Notaries 1578-1915 (5075) 12732, 83.





Proportion of population holding plantation loans over Wealth bins

This chart shows the proportion of all estates in different wealth categories that hold plantation debt (MBS and any other form of plantation debt). Period: 1753-1796. Bin 1 represents the bottom 5% of all estates in terms of total wealth, bin 20 represents the top 5%. We differentiate between men and women.



Figure A.8. Plantation transaction prices - repeat sales

This graph shows estimates of plantation transaction price levels. The six periods are based on the dynamics in appraised values shown in Figure 4 and the number of transactions in each period. Prices are estimated using a repeat sales model, and the price level in period 1761-1765 set to 1. The panel shows the 95% confidence interval around the price point estimate, and the number of plantation (re-)sale observations on the right vertical axis.

Figure A.9. Refused bills of exchange



This graph illustrates the volume of protested bills of exchange from Surinam in guilders, split up by lowand high-reputation merchant-banks. Bill protests were recorded in the notary archives. This data is for a set of five notaries and therefore provides a lower bound on the total amount of protested bills.

Figure A.10. Low-reputation underperformance



This graph illustrates the consistent underperformance of plantation MBS of Low-reputation banks in different samples. The line shows the coefficient of the indicator for plantation MBS of Low-reputation banks, estimated by the model presented in Table 3, Column (1). The OLS model regresses MBS prices on the low-reputation dummy and year dummies. Step-by-step we shrink the sample by dropping the bank with the highest number of security transaction observations from the sample. The dashed lines indicate the 95% confidence interval. The bars show the number of observations on the right vertical axis.



Figure A.11. Mediation analysis: different end-years

This figure replicates the results from Table 4, Panel B, using different end-years between 1778 and 1796. The total size of the bar gives the effect of the low-reputation merchant-bank dummy on MBS prices. The allocation of this effect over different mediators is based on adding these mediators step-by-step to the regression: boom, non-elite agent, non-elite borrower, and LTF. The top green bar indicates the remaining (unexplained) effect of the low-reputation dummy after including all these mediators.

Figure A.12. Bank characteristics



These figures present histograms of bank characteristics. *Office value* is based on the average assessed yearly rental value of the row of (5-10) buildings (as of 1742) where the merchant-bank's office was located in 000s. *ABE vol.* is the bank's trading volume in the Amsterdam Bank of Exchange (ABE) during the first half of 1769 in 000s.
Panel A: Mortgages	Ν	Mean	Sd	p25	Median	p75
Year	307	1767.0	3.9	1766.0	1769.0	1770.0
Sum	307	76	63	27	55	117
Mortgage new	307	0.77				
Term	186	17.0	5.2	15.0	20.0	20.0
Term 1	186	8.9	2.5	9.0	10.0	10.0
Term 2	186	8.1	3.9	8.0	10.0	10.0
Interest	211	0.060	0.003	0.060	0.060	0.060
LTV	208	0.56	0.19	0.50	0.63	0.63
Boom	307	0.49				
Non-elite agent	253	0.44				
Non-elite borrower	283	0.57				
ATF	198	1.30	0.32	1.06	1.25	1.54
LTF	202	1.04	0.54	0.67	1.00	1.34
LTF - corrected	202	0.68	0.42	0.42	0.62	0.89
Panel B: MBS	N	Mean	Sd	p25	Median	p75
Time-invariant:						
Year	46	1768.8	3.0	1768.0	1769.0	1770.0
Pooled	46	0.61				
Size initial	46	407	495	100	206	500
Size max	46	578	754	150	250	700
Size increase	46	1.44	0.87	1.00	1.00	1.53
Time-variant:						
Boom	1275	0.55				
Non-elite agent	1267	0.50	0.47	0.00	0.51	1.00
Non-elite borrower	1275	0.60	0.42	0.00	0.75	1.00
LTF	1153	1.27	0.39	1.02	1.23	1.47
Panel C: Underwriters	Ν	Mean	Sd	p25	Median	p75
MBS first year	23	1766.8	3.5	1766.0	1768.0	1769.0
MBS volume	23	1781	2079	361	1301	2177
MBS N	23	4.2	4.3	1.0	2.0	5.0
Pooled MBS N	23	2.3	2.3	1.0	1.0	4.0

Table A.1. Summary statistics

This table shows summary statistics of our sample. Panel A lists plantation mortgage statistics. The sample includes all mortgages extended between 1750 and 1770 by merchant-banks who underwrote an MBS (N=307, by 26 merchant-banks). *Year*: year of issuance. *Sum*: the mortgage sum in '000 guilders. *Mortgage New*: an indicator variable equal to one for a new mortgage contract, or zero when a previous mortgage is refinanced. *Term*: the total mortgage term in years with *Term 1* the length of the interest-only period, and *Term 2* the length of the subsequent period during which the mortgage was supposed to linearly amortize. *Interest*: mortgage interest rate. *LTV*: mortgage amount over appraised value. *Boom*: dummy whether a mortgage was extended during the boom (1769-1770). *Non-elite agent (borrower)*: mortgage originated through an agent (extended to a borrower) who was not part of the colonial administration (which signaled membership of the economic elite). *ATF*: appraisal-to-fundamental – the appraised value of primary production factors over the fundamental value of each primary production factor on the plantation: total acres, coffee trees, cacao and cotton plants, acres of sugar cane and slaves (males, females and minors) on

the plantation, where the fundamental value is each factor's average appraised value in the period 1750-1765. For total acres we calculate the fundamental value for each district separately. *LTF*: loan-to-fundamental – mortgage amount over the fundamental value of the primary production factors. *LTF corrected*: the LTF corrected for year and district fixed effects, adding back the sample mean.

Panel B shows summary statistics of the plantation MBS in our sample. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). The first set of rows have time-invariant characteristics. *Pooled*: dummy variable equal to one when an MBS was based on multiple mortgages, and zero if based on a single mortgage. *Size initial (maximum)*: the initial (maximum) MBS sum in '000 guilders, where *Size increase* is equal to the ratio of the two. The next rows show time-variant MBS characteristics, in which the unit of observation is a security-year over the period 1768-1796. *Boom*: proportion of total mortgage volume extended in 1769-1770. *Non-elite agent (borrower)*: proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). *LTF*: the average loan-to-fundamental ratio (defined above) of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available.

Panel C shows summary statistics for the corresponding merchant-banks. *MBS first year*: the year of the bank's first MBS issue. *MBS volume*: the bank's total volume of MBS issued in the period 1753-1780 in '000 guilders. *MBS N*: the bank's total number of issued MBS. *Pooled MBS N*: the number of MBS based on multiple plantation mortgages.

Tuore The Summary Statistics me									
	Low-re	eputation	High-	reputation	Difference				
Panel A: Unweighted	N	mean	N	mean	Meandif.	t-stat.			
MBS size (000s guilders)	819	496	456	884	-388.3	-1.10			
Boom	819	0.641	456	0.383	0.258^{*}	1.88			
Non-elite agent	816	0.527	451	0.440	0.087	0.63			
Non-elite borrower	819	0.723	456	0.391	0.332***	2.68			
LTF	755	1.339	398	1.153	0.186	1.40			
Panel B: Weighted by MBS size									
Boom	819	0.724	456	0.385	0.340^{*}	1.67			
Non-elite agent	816	0.466	451	0.233	0.233**	2.17			
Non-elite borrower	819	0.649	456	0.373	0.276^{***}	2.51			
LTF	755	1.433	398	1.001	0.432***	3.20			

Table A.2. Summary statistics mediators at the MBS level

This table shows statistics on potential mediators based on security-year observations of 46 MBS between 1768 (or the starting year of the MBS) and 1796. Given that the composition of MBS could change over time, all variables are potentially time-varying, in particular in the first years of an MBS. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). In Panel A, each MBS has equal weight; in Panel B, each MBS is weighted by its size. *Boom*: proportion of total mortgage volume extended in 1769-1770. *Non-elite agent (borrower)*: proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). *LTF*: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in the portfolio is missing, we report the average characteristics of the mortgages for which information is available. *t*-statistics, based on standard errors clustered at the MBS level (46 clusters) are reported in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Individual mediators									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
Office value -1^{st} tercile	-16.08***		-12.54***		-15.53**		-15.21**		-11.78^{*}
	(-2.79)		(-3.91)		(-2.34)		(-2.47)		(-2.01)
Office value -2^{nd} tercile	-19.47***		-16.65***		-19.01***		-18.39***		-14.27***
	(-3.70)		(-4.64)		(-3.43)		(-3.18)		(-2.70)
Mediator		-19.44***	-14.95***	-12.64**	-1.20	-14.30***	-3.65	-21.84***	-11.41*
		(-2.83)	(-3.56)	(-2.30)	(-0.27)	(-3.12)	(-0.74)	(-3.17)	(-1.87)
Mediator		Bo	om	Non-eli	te agent	Non-elite	borrower	L	ſF
ACME		-3.	15	-0	.38	-1.	06	-4.9	00^{**}
[p-value]		[0.2	26]	[0.	44]	[0.]	23]	[0.0	05]
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605	4605	4605	4605	4605
R ²	0.72	0.70	0.76	0.66	0.72	0.66	0.72	0.70	0.73
<i>F</i> -stat. $1^{st} = 2^{nd}$ terc.	0.97		1.04		0.93		0.86		0.45

Table A.3 Mediation analysis using terciles of the office value distribution

Panel B: Multiple mediators									
	(1)	(2)	(3)	(4)	(5)				
	Price	Price	Price	Price	Price				
Office value – 1 st	-16.08***	-12.54***	-11.46**	-8.81*	-3.51				
tercile	(-2.79)	(-3.91)	(-2.58)	(-1.92)	(-0.62)				
Office value – 2 nd	-19.47***	-16.65***	-15.74***	-12.68**	-6.35				
tercile	(-3.70)	(-4.64)	(-3.67)	(-2.59)	(-1.30)				
Boom		-14.95***	-15.08***	-16.54***	-15.21***				
		(-3.56)	(-3.54)	(-3.69)	(-3.83)				
Non-elite agent			-2.34	-2.94	-4.39				
			(-0.51)	(-0.62)	(-0.90)				
Non-elite borrower				-8.62*	-11.80**				
				(-1.72)	(-2.19)				
LTF					-11.16*				
					(-1.85)				
Joint ACME					-11.73**				
[p-value]					[0.02]				
ACME		-3.15	-0.81	-2.97^{*}	-6.07*				
[p-value]		[0.26]	[0.37]	[0.07]	[0.06]				
Auction year FE	Yes	Yes	Yes	Yes	Yes				
N	4605	4605	4605	4605	4605				
\mathbb{R}^2	0.72	0.76	0.76	0.77	0.78				
F-stat. T2 = T3	0.97	1.04	1.11	0.92	0.56				
Panel C: Variance dec	omposition								
	(1)	(2)	(3)	(4)	(5)				
	Price	Price	Price	Price	Price				
Office value	1.000	0.498	0.448	0.366	0.220				
Boom		0.502	0.463	0.447	0.262				
Non-elite agent			0.090	0.068	0.043				
Non-elite borrower				0.120	0.102				
LTF					0.371				

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. Office value – 1^{st} tercile (2^{nd} tercile): bottom (middle) tercile of office values. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). t-statistic are reported in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel A includes the potential mediators one by one, while Panel B includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME), which captures what part of the effects of the 1st and 2nd Office value tercile dummies can be explained by an individual mediator. The ACME is estimated using a treatment variable that indicates an office value in the 1st or 2nd tercile. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel C performs a variance decomposition on the additional R² explained by the office value dummies and mediator variable(s) (compared to a specification that only includes fixed effects).

Panel A: Individual mediators									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
Office value - cont.	24.25***		18.54^{***}		22.55***		22.62***		18.31**
(000s)	(4.72)		(3.49)		(3.71)		(4.02)		(2.60)
Mediator		-19.44***	-11.25**	-12.64**	-4.35	-14.30***	-8.30*	-21.84***	-10.99*
		(-2.83)	(-2.23)	(-2.30)	(-0.95)	(-3.12)	(-1.72)	(-3.17)	(-1.71)
Mediator		Boo	om	Non-elite agent		Non-elite borrower		LTF	
ACME		5.7	72	1.1	70	1.6	3*	5.9	3*
[p-value]		[0.2	22]	[0.2	22]	[0.0	9]	[0.0	7]
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605	4605	4605	4605	4605
\mathbb{R}^2	0.73	0.70	0.74	0.66	0.73	0.66	0.73	0.70	0.74

Table A.4 Mediation analysis using the continuous office value

Panel B: Multiple me	Panel B: Multiple mediators									
	(1)	(2)	(3)	(4)	(5)					
	Price	Price	Price	Price	Price					
Office value –	24.25***	18.54***	16.03**	12.87**	6.38					
cont. (000s)	(4.72)	(3.49)	(2.47)	(2.07)	(0.94)					
		``								
Boom		-11.25**	-11.86**	-14.12***	-13.65***					
		(-2.23)	(-2.25)	(-2.79)	(-3.24)					
		· · · ·		· · · ·						
Non-elite agent			-5.60	-5.00	-4.97					
0			(-1.23)	(-1.18)	(-1.18)					
Non-elite				-11.47**	-13.07***					
borrower				(-2.43)	(-2.73)					
				(2000)	(=					
LTF					-11 90*					
					(-1.93)					
Joint ACME					17.87					
[n-value]					[0 01]					
ACME		5 72	2 50	3 16**	6 49**					
[n-value]		[0 22]	[0.16]	[0.05]	[0.05]					
Auction Vear FF	Ves	Ves	Ves	Ves	[0.05] Ves					
N	4605	1605	1605	1605	4605					
\mathbf{P}^2	4005	4005	4005	4005	4003					
R Danal C: Varianaa da	0.00	0.74	0.74	0.75	0.77					
Funer C. Variance de		(2)	(2)	(4)	(5)					
	(1)	(2)	(3)	(4) Dui a	(5) Duine					
T D (/'	Price	Price	Price	Price	Price					
Low-Reputation	1.000	0.623	0.552	0.437	0.218					
Boom		0.377	0.373	0.365	0.226					
Non-elite agent			0.075	0.058	0.037					
Non-elite borrower				0.141	0.117					
LTF					0.401					

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. Office value - cont.: Office value in 000s. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). tstatistic are reported in parentheses. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel A includes the potential mediators one by one, while Panel B includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME) which captures what part of the effect of the Low-reputation dummy can be explained by an individual mediator. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel C performs a variance decomposition on the additional R² explained by the Office value and mediator variable(s) (compared to a specification that only includes fixed effects).

Panel A: Individual mediators									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
City government	14.17^{**}		11.06***		12.15^{*}		12.42^{*}		8.14
	(2.42)		(3.63)		(1.94)		(1.83)		(1.60)
Mediator		-19.44***	-16.28***	-12.64**	-6.14	-14.31***	-6.74	-22.19***	-16.40**
		(-2.83)	(-3.47)	(-2.30)	(-1.35)	(-3.12)	(-1.09)	(-3.18)	(-2.69)
Mediator		Bo	om	Non-elite agent Non-		Non-elite b	orrower	LT	F
ACME		3.	09	2.0)5	1.7	7	6.03	5**
[p-value]		[0.	30]	[0.1	7]	[0.1]	8]	[0.0)4]
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605	4605	4605	4605	4605
\mathbb{R}^2	0.68	0.70	0.73	0.66	0.69	0.65	0.69	0.70	0.71

Table A.5 Mediation analysis using the City Government dummy

Panel B: Multiple med	iators				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
City government	14.17^{**}	11.06***	8.96**	5.51	-0.51
	(2.42)	(3.63)	(2.35)	(1.44)	(-0.13)
Boom		-16.28***	-16.32***	-18.13***	-15.67***
		(-3.47)	(-3.45)	(-3.74)	(-3.75)
Non-elite agent			-6.29	-6.37	-6.55
			(-1.45)	(-1.53)	(-1.53)
Non-elite borrower				-11.71**	-14.99***
				(-2.33)	(-3.09)
LTF					-15.12**
					(-2.49)
Joint ACME					14.68***
[p-value]					[0.01]
ACME		3.12	2.10	3.44*	6.02^{**}
[p-value]		[0.30]	[0.14]	[0.06]	[0.03]
Auction Year FE	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605
\mathbb{R}^2	0.69	0.73	0.74	0.75	0.77
Panel C: Variance dec	omposition				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
City Government	1.000	0.461	0.389	0.282	0.128
Boom		0.539	0.526	0.513	0.278
Non-elite agent			0.084	0.069	0.043
Non-elite borrower				0.136	0.117
LTF					0.434

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. City Government: dummy variable indicating if a banker had a position in the Amsterdam government. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). t-statistic are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel A includes the potential mediators one by one, while Panel B includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME) which captures what part of the effect of the Low-reputation dummy can be explained by an individual mediator. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel C performs a variance decomposition on the additional R² explained by the City-government dummy and mediator variable(s) (compared to a specification that only includes fixed effects).

Panel A: Individual m	Panel A: Individual mediators								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
Outside activities	9.39 [*]		7.14^{*}		6.85		7.37		2.92
	(1.80)		(1.88)		(1.35)		(1.37)		(0.65)
Mediator		-19.44***	-18.05***	-12.64**	-9.59*	-14.30***	-11.03**	-22.19***	-20.31***
		(-2.83)	(-3.17)	(-2.30)	(-1.92)	(-3.12)	(-2.36)	(-3.18)	(-2.82)
Mediator		Bo	om	Non-elite agent		Non-elite borrower		LTF	
ACME		2.	25	2.5	4^*	2.0	2^{*}	6.4	.7**
[p-value]		[0.]	29]	[0.0)8]	[0.0)7]	[0.	02]
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605	4605	4605	4605	4605
\mathbb{R}^2	0.67	0.70	0.72	0.66	0.68	0.66	0.68	0.70	0.71

Table A.6 Mediation analysis using the Outside Activities dummy

Panel B: Multiple mediate	Drs				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Outside activities	9.39*	7.14*	4.85	2.37	-2.47
	(1.80)	(1.88)	(1.14)	(0.60)	(-0.59)
Boom		-18.05***	-17.71***	-19.26***	-15.68***
		(-3.17)	(-3.26)	(-3.63)	(-3.63)
Nonelite Agent			-8.78*	-7.86*	-7.08*
			(-1.94)	(-1.86)	(-1.69)
Nonelite Borrower				-13 84***	-15 67***
				(-3.06)	(-3.34)
LTF					-16.22*** (-2 71)
Joint ACME					11.86***
[p-value]					[0.00]
ACME		2.25	2.29^{*}	2.49^{*}	4.84**
[p-value]		[0.29]	[0.10]	[0.06]	[0.03]
Auction Year FE	Yes	Yes	Yes	Yes	Yes
Ν	4605	4605	4605	4605	4605
R ²	0.66	0.72	0.73	0.75	0.77
Panel C: Variance decom	position				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Low-Reputation	1.000	0.208	0.143	0.083	0.040
Boom		0.791	0.724	0.630	0.291
Non-elite agent			0.132	0.092	0.048
Non-elite borrower				0.194	0.140
LTF					0.481

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. Outside activities: merchant-bank has activities other than underwriting plantation MBS. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). t-statistic are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel A includes the potential mediators one by one, while Panel B includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME) which captures what part of the effect of the Low-reputation dummy can be explained by an individual mediator. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel C performs a variance decomposition on the additional R² explained by the *Outside activities* dummy and mediator variable(s) (compared to a specification that only includes fixed effects).

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Panel A: Cluster mo	Panel A: Cluster models								
	Cluster dimensions:								
	D=1	D=2	D=3	D=4					
Erection of hontrong	- Office value	- Office value	- Office value	- Office value					
Fraction of bankers		- City government	- City government	- City government					
in same cluster.			- Outside activities	- Outside activities					
				- log(ABE vol)					
Compared to D=1	n/a								
Compared to D=2	1	n/a							
Compared to D=3	1	1	n/a						
Compared to D=4	1	1	1	n/a					

Panel B: Summary statistics													
	Cluster 1		Cluster 2					Difference					
	N mean	Sd	p25	Med.	p75	Ν	mean	Sd	p25	Med.	p75	Mean dif.	t-stat
Office value	20 0.63	0.18	0.54	0.67	0.75	17	1.20	0.24	1.00	1.09	1.32	-0.57***	-8.07
City government	20 0.05					17	0.47					-0.42***	-3.31
Outside activities	20 0.35					17	0.77					-0.42***	-2.70
ABE vol.	20 299	715	0	18	127	17	962	1240	0	597	1373	-663**	-2.03
ABE account (1/0)	20 0.60					17	0.71					-0.106	-0.66
ABE vol. ABE account	12 498	881	27	94	529	12	1362	1281	429	1237	1474	-864*	-1.93
Family high wealth	86 0.20					88	0.49					-0.29***	-4.31
Family income	87 2.4	3.6	0.8	1.2	3.0	109	4.3	4.1	2.0	3.0	6.0	-1.9***	-3.35
Family house value	86 0.52	0.44	0.23	0.40	0.69	88	0.85	0.56	0.50	0.60	1.42	-0.33***	-4.34

Panel C: Individual m	nediators									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
	Price	Price	Price	Price	Price	Price	Price	Price	Price	
Cluster 1	-17.79***		-14.89***		-17.16***		-16.95***		-13.14**	
	(-3.46)		(-5.04)		(-3.14)		(-2.99)		(-2.55)	
Mediator		-19.44***	-14.96***	-12.64**	-1.63	-14.31***	-3.05	-22.19***	-11.64*	
		(-2.83)	(-3.38)	(-2.30)	(-0.40)	(-3.12)	(-0.60)	(-3.18)	(-1.80)	
Mediator		Boom		Non-elite agent		Non-elite	borrower	LTF		
ACME		-2.	90	-0.62		-0.	84	-4.65*		
[p-value]		[0.2	25]	[0.	[0.44]		29]	[0.06]		
Auction Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
N	4605	4605	4605	4605	4605	4605	4605	4605	4605	
\mathbb{R}^2	0.72	0.70	0.76	0.66	0.72	0.65	0.72	0.70	0.73	

Panel D: Multiple med	diators				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Cluster 1	-17.79***	-14.89***	-14.04***	-11.39***	-6.07
	(-3.46)	(-5.04)	(-3.74)	(-2.76)	(-1.32)
Boom		-14.96***	-15.02***	-16.35***	-14.93***
		(-3.38)	(-3.35)	(-3.45)	(-3.53)
Non-elite agent			-2.19	-2.68	-3.79
5			(-0.53)	(-0.63)	(-0.87)
Non-elite borrower				-8.02	-11.13**
				(-1.59)	(-2.06)
LTF					-10 79*
					(-1.69)
Joint ACME					-10.42**
[p-value]					[0.02]
ACME		-2.90	-0.85	-2.65*	-5.32*
[p-value]		[0.25]	[0.36]	[0.10]	[0.10]
Auction Year FE	Yes	Yes	Yes	Yes	Yes
N	4605	4605	4605	4605	4605
\mathbb{R}^2	0.72	0.76	0.76	0.77	0.78
Panel E: Variance dec	composition				
	(1)	(2)	(3)	(4)	(5)
	Price	Price	Price	Price	Price
Cluster 1	1.000	0.581	0.522	0.418	0.209
Boom		0.419	0.419	0.432	0.268
Non-elite agent			0.058	0.050	0.033
Non-elite borrower				0.010	0.092
LTF					0.396

This table presents tests explaining plantation security pricing over the period 1768-1796. Underwriters in our sample of Amsterdam merchant-banks that underwrote plantation MBS up to 1772 (N=37) are divided in two groups using K-means cluster analysis (K=2). Panel A provides statistics on cluster overlap between four different cluster models. Each column list the bank characteristic variables used in the cluster model. Office value is based on the average assessed yearly rental value of the row of (5-10) buildings (as of 1742) where the merchant-bank's office was located in 000s. City Government is a dummy variable indicating if a banker had a position in the Amsterdam government, suggesting he was part of the elite. Outside activities is a dummy variable indicating whether the bank had other business outside underwriting plantation MBS. ABE vol. is the bank's trading volume in the Amsterdam Bank of Exchange (ABE) during the first half of 1769 in 000s. We assign a zero if the bank had no account. We use the log of ABE vol. due to the nonnormal distribution of this variable illustrated in Online Appendix Figure A.12. Panel B compares characteristics of the two clusters of underwriters identified in each of the K-means cluster models. ABE (1/0) is a dummy variable indicating whether a bank had an account or not. ABE vol. | ABE account is trading volume for all banks that did have an account. The t-values on ABE Vol. (| ABE account) correspond to the mean differences in log(1+ ABoE Vol.((ABE account)). Family high wealth indicates the proportion of bank partners and family members with an estimated wealth of at least 10,000 guilders and a yearly

income of at least 1,000 guilders. Family income is the average yearly income of the bank partners and family members in 1742 in 000s. Family house value is the average assessed yearly rental value of the houses of the bank partners and family members in 1742 in 000s. All statistics on family characteristics are weighted by the inverse of the number of observations per family. *, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Panel C and D present tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations - this way each MBS gets a weight in the regression in line with its size. Cluster 1: MBS of banks in K-means cluster 1, shown in Panel A. Boom: proportion of total mortgage volume extended in 1769-1770. Non-elite agent (borrower): proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). LTF: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level (46 clusters). t-statistic are reported in parentheses. Panel C includes the potential mediators one by one, while Panel D includes them stepwise in the order in which economic decisions were made. The two panels present the average causal mediation effect (ACME) which captures what part of the effect of the Low-reputation dummy can be explained by an individual mediator. The ACME p-values are based on a block-bootstrap (10,000 resamples of the 46 MBS) and indicate what fraction of the resamples gives a positive ACME. Panel E performs a variance decomposition on the additional R² explained by the Kmeans cluster 1 dummy and mediator variable(s) (compared to a specification that only includes fixed effects).

Table A.8. MBS vintage year

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Price	Price	Price	Price	Price	Price	Price	Price	Price
Low-reputation	-16.96***	-12.12***	-8.06**	-5.90	-3.92	-9.43***	-8.65***	-4.30	-0.79
	(-3.29)	(-4.45)	(-2.35)	(-1.49)	(-0.84)	(-3.75)	(-3.04)	(-1.14)	(-0.17)
Boom		-17.44***	-18.46***	-19.33***	-17.71***				
		(-4.03)	(-4.58)	(-4.56)	(-3.64)				
Nonelite Agent			-9.89**	-9.92**	-9.31**		-3.26	-3.62	-3.43
			(-2.26)	(-2.24)	(-2.09)		(-0.75)	(-0.82)	(-0.79)
Nonelite Borrower				-616	-8 48			-9 30	-11 60**
				(-1.17)	(-1.55)			(-1.68)	(-2.16)
LTF					-5 75				-8 63
211					(-0.95)				(-1.57)
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MBS vintage year	No	No	No	No	No	Yes	Yes	Yes	Yes
N MBS clusters	39	39	39	39	39	46	46	46	46
Ν	4274	4274	4274	4274	4274	4605	4605	4605	4605
\mathbb{R}^2	0.71	0.76	0.77	0.78	0.78	0.77	0.77	0.78	0.79

This table presents tests explaining plantation security pricing over the period 1768-1796. Columns (1)-(5) omit MBS issued in 1770. Columns (6)-(9) include MBS vintage-year fixed effects. Since these are highly correlated with the *Boom* variable, the latter is omitted from these specifications. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. *Low-reputation*: office value < median. *Boom*: proportion of total mortgage volume extended in 1769-1770. *Non-elite agent (borrower)*: proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). *LTF*: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Standard errors are clustered at the MBS level. *t*-statistic are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Price	Price	Difference	Price	Price	Difference
Boom	-9.24	-19.04***	9.80	-10.93**	-16.44**	5.51
	(-1.63)	(-3.23)	(1.21)	(-2.72)	(-2.26)	(0.68)
Nonelite	-2.53	-5.71	3.18	-5.86	-4.52	-1.34
Agent	(-0.50)	(-1.03)	(0.43)	(-1.41)	(-0.90)	(-0.21)
C	``´´	~ /	. ,	× ,		~ /
Nonelite	-6.55	-15.27	8.72	-10.10^{*}	-10.89	0.79
Borrower	(-0.88)	(-1.67)	(0.75)	(-1.74)	(-0.96)	(0.06)
	× ,				~ /	· · · ·
LTF	-9.44	-10.60	1.16	-2.66	-13.46	10.8
	(-1.33)	(-1.10)	(0.10)	(-0.51)	(-1.42)	(1.02)
	()	()			× ,	
Sugar				-29.32***	7.01	-36.33***
U				(-4.55)	(0.72)	(-3.18)
Sample	Low-	High-		Low-	High-	
1	reputation	reputation		reputation	reputation	
Auction Year	Yes	Yes		Yes	Yes	
N clusters	30	16		30	16	
Ν	2981	1624		2981	1624	
\mathbb{R}^2	0.77	0.82		0.80	0.82	

Table A.9. Sugar

This table presents tests explaining plantation security pricing over the period 1768-1796. The sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). Each observation is weighted by the size of the MBS in guilders times the inverse of the number of security transaction observations – this way each MBS gets a weight in the regression in line with its size. *Boom*: proportion of total mortgage volume extended in 1769-1770. *Non-elite agent (borrower)*: proportion of total mortgage volume originated by agents (extended to borrowers) who were not part of the colonial administration (which signals membership of the economic elite). *LTF*: the average loan-to-fundamental ratio of mortgages in an MBS, weighted by mortgage size. *Sugar*: proportion of total mortgage volume extended to sugar plantations. If information on one or more mortgages in a MBS portfolio is missing, we report the average characteristics of the mortgages for which information is available. Columns 1 and 4 show results for securities. Columns 3 and 6 compare the differences in estimates between the Low-reputation and High-reputation models in Columns 1 and 2, and Columns 4 and 5, respectively. Standard errors are clustered at the MBS level. *t*-statistic are reported in parentheses. *, **and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

B. Proofs Definition of φ

We require that the agent only underwrites loans that satisfy (1) in the main text. Suppose an agent *j* were to underwrite the largest possible loan satisfying (1) with $\ell^j/\overline{m} = \lambda/R$. Since

$$\frac{\ell^j}{f} > \frac{\ell^j}{\overline{m}} = \frac{\lambda}{R},\tag{OA1}$$

for all loans to satisfy (1), we need that

$$-\rho'\left(\frac{\lambda}{R}\right) \ge \frac{\varepsilon n}{\delta q\left(\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j}\right)} \bigg|_{\frac{\ell^{j}}{f} = \frac{\lambda}{R}} = \varphi^{j} \tag{OA2}$$

Proof of Lemma 1

First, note that, from (2) and (3) in the main text, the denominator of $\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j}$ is strictly positive while we can write the numerator as:

$$\mu_0^j (1 - \mu_0^j) (\rho^* - \hat{\rho}^j)$$
 (OA3)

Since the strategic agents have no incentive to be more conservative than the type C agent ($\rho^* \ge \hat{\rho}^j$), the numerator is always weakly positive.

Second, note that, at the extremes, $\mu_{1,P=1}^j - \mu_{1,P=0}^j$ is given by:

$$\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j} = 0$$
 if $\hat{\rho}^{j} = \rho^{*}$ and $\ell^{j}/f = \ell^{*}/f$ (OA4)

$$\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j} = \frac{1 - \mu_{0}^{j}}{\left(1 - \mu_{0}^{j}\right) + \mu_{0}^{j}(1 - \rho^{*})} \qquad \text{if } \hat{\rho}^{j} = 0 \text{ and } \ell^{j}/f = 1 \qquad (\text{OA5})$$

Third, from (1) and (2) in the main text it can be easily shown that $\partial (\mu_{1,P=1}^j - \mu_{1,P=0}^j) / \partial \hat{\rho}^j < 0$, and therefore that

$$\frac{\partial \left(\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j}\right)}{\partial (\ell^{j}/f)} > 0 \tag{OA6}$$

Proof of Corollary 1:

The proof follows directly from the figure in the main text. A decline in δ pushes up the RHS of (5) in the main text and leads to a higher ℓ^j/f .

Proof of Corollary 2:

It is straightforward to show that the derivatives of $\mu_{1,P=1}^{j}$ and $\mu_{1,P=0}^{j}$ wrt μ_{0}^{j} are given by

$$\frac{\partial \mu_{1,P=1}^{j}}{\partial \mu_{0}^{j}} = \frac{\rho^{*} \rho^{j}}{\left[\mu_{0}^{j} \rho^{*} + (1 - \mu_{0}^{j}) \rho^{j}\right]^{2}}$$
(OA7)

$$\frac{\partial \mu_{1,P=0}^{j}}{\partial \mu_{0}^{j}} = \frac{(1-\rho^{*})(1-\rho^{j})}{\left[\mu_{0}^{j}(1-\rho^{*}) + (1-\mu_{0}^{j})(1-\rho^{j})\right]^{2}}$$
(OA8)

Define

$$\frac{\partial \left(\mu_{1,P=1}^{j} - \mu_{1,P=0}^{j}\right)}{\partial \mu_{0}^{j}} = \frac{\mathcal{N}^{j}(\mu_{0}^{j})}{\mathcal{D}^{j}(\mu_{0}^{j})} \tag{OA9}$$

It follows directly from (OA7) and (OA8) that $\mathcal{D}^{j}(\mu_{0}^{j}) > 0$. Further,

$$\mathcal{N}^{j}(\mu_{0}^{j}=0) = \rho^{j}(1-\rho^{j})(\rho^{*}-\rho^{j}) > 0 \tag{OA10}$$

$$\mathcal{N}^{j}(\mu_{0}^{j}=1) = -\rho^{*}(1-\rho^{*})(\rho^{*}-\rho^{j}) < 0$$
(OA11)

and

$$\frac{\partial \mathcal{N}^{j}(\mu_{0}^{j})}{\partial \mu_{0}^{j}} = -2\left(\rho^{*}-\rho^{j}\right)\left[\rho^{*}\rho^{j}A+(1-\rho^{*})\left(1-\rho^{j}\right)B\right] < 0$$
(OA12)

with

$$A = \mu_0^j (1 - \rho^*) + (1 - \mu_0^j) (1 - \rho^j)$$
(OA13)

$$B = \mu_0^j \rho^* + (1 - \mu_0^j) \rho^j$$
(OA14)

Taken together, (OA10) – (OA12) imply that $\partial (\mu_{1,P=1}^j - \mu_{1,P=0}^j) / \partial \mu_0^j$ is positive for relatively small values of μ_0^j and negative for relatively larges values.

Combining this with (5) and the corresponding figure in the main text, this means that for lower values of μ_0^j , an increase in μ_0^j pushes the RHS of (5) down, leading to a lower ℓ^j/f . For higher values of μ_0^j , the opposite happens.

C. Sample selection

Mortgages

The basis for our mortgage dataset are (hand-written) deed records for plantation mortgages extended between 1750 and 1770 and recorded in Surinam or Amsterdam that we manually collected. The full set includes 545 mortgage contracts. In our sample we include all mortgages extended by Amsterdam merchant-banks (N=307, by 26 intermediaries). Table A.8, panel A shows, step-by-step how many mortgages remain in our sample and the corresponding mortgage volume. Our sample includes 86% of all mortgage volume extended by merchant-banks, and 69% of total mortgage volume.

Table A.9, Panel A compares the characteristics of mortgages in and outside of our final sample. More than two thirds of the out-of-sample mortgages were not extended through merchant banks. The panel shows that these mortgages were issued relatively early in the period (the median is 1765 vs 1769 for our sample), for smaller amounts (on average 44,000 vs 76,000 guilders) and for shorter maturities (a median of 6 vs 20 years). The average interest rate was marginally lower (5.7 vs 6%), but the same at the median (6%). Differences reflect that the standards and scope of the merchant-bank-organized MBS market were different from the earlier non-MBS market.

Securities

Using Van der Voort (1973) and the auction lists described in Section II.D., we identify 120 unique Surinam plantation MBS issued in the period 1753-1772. Table A.8, panel B shows step-by-step how many MBS remain in our sample and their market capitalization. In our final sample, we include all securities underwritten by Amsterdam merchant-banks. This results in 87 unique MBS (corresponding to 37 merchant-banks), in total equaling about 77% of the total market capitalization. We are able to obtain underlying mortgage and appraisal data and auction prices for 46 of those securities (corresponding to 23 merchant-banks), or about 89% of those in terms of market capitalization. This corresponds to 67% of total market capitalization.

Table A.9, Panels B compares the characteristics of MBS in and outside of our final sample. Outof-sample MBS are relatively small (on average 169,000 guilders vs 407,000 for the MBS in our sample) and based on a single plantation (the average fraction pooled is 0.33 vs 0.61). This reflects the fact that MBS were typically smaller if they were not issued by a merchant-bank, if they were issued outside of Amsterdam, or if we could not link the MBS to mortgage or appraisal data or auction prices. The median starting year for MBS in and outside of our sample is similar (1769).

Table A.9, Panel C compares the characteristics of merchant-banks in and outside of our final sample. Out-of-sample merchant-banks have a smaller total MBS volume (an average of 712,000 vs 1.6 million guilders for in-sample banks), issue fewer individual MBS (an average of 3.2 vs 4), and are less likely to issue an MBS based on a pool of mortgages (on average 1.1 vs 2). Again, this reflects the fact that MBS were typically smaller if they were not issued by a merchant-bank, if they were issued outside of Amsterdam, or if we could not link the MBS to mortgage or appraisal data or auction prices. The median start year of the first MBS of the merchant-banks in our sample was 1768 compared to 1769 for merchant-banks outside the sample.

Table A.10 Sample selection

	Extended	Proportion
N banks	volume (fl)	of total (%)
	33,807,058	100
33	26,944,694	80
26	23,393,771	69
	Market Cap	Market Cap
N banks	(fl.)	(%)
	39,648,342	100
44	38,737,342	98
37	29,699,047	75
23	26,603,233	67
	<u>N banks</u> 33 26 <u>N banks</u> 44 37 23	N banks Extended volume (fl) 33,807,058 33,26,944,694 26 23,393,771 26 23,393,771 Market Cap Market Cap N banks (fl.) 39,648,342 38,737,342 37 29,699,047 23 26,603,233

This table shows step-by-step which observations in our database remain in our sample and their market capitalization. Panel A shows our sample selection of mortgages. The extended volume is shown in guilders and %. Panel B shows the sample selection of MBS. The market capitalization is shown in guilders and %.

Panel A: Mortgages															
	Final sample						Out	Out of sample						Difference	
	N	mean	Sd	p25	Med.	p75	N	mean	Sd	p25	Med.	p75	Meandif.	t-stat	
Year	307	67.0	3.9	66.0	69.0	70.0	238	64.0	4.9	61.0	65.0	68.0	3.0	7.82	
Sum	307	76	63	27	55	117	238	44	44	14	30	56	32	6.75	
Mortgage new	307	0.77					238	0.82					-0.05	-1.44	
Term	186	17.0	5.2	15.0	20.0	20.0	140	9.0	7.1	3.5	6.0	12.5	8.1	11.83	
Term 1	186	8.9	2.5	9.0	10.0	10.0	140	4.4	4.3	0.0	4.0	8.0	4.5	11.88	
Term 2	186	8.1	3.9	8.0	10.0	10.0	141	4.5	5.9	0.0	2.0	8.0	3.6	6.62	
Interest	211	0.060	0.003	0.060	0.060	0.060	173	0.057	0.015	0.050	0.060	0.060	0.003	2.52	
Panel B: Securities															
	Final sample						Out of sample					Difference			
	N	mean	Sd	p25	Med.	p75	N	mean	Sd	p25	Med.	p75	Meandif.	t-stat	
Year	46	68.8	3.0	68.0	69.0	70.0	73	68.2	4.3	67.0	69.0	72.0	0.6	0.81	
Pooled	46	0.61					73	0.33					0.28	3.09	
Size initial	46	407	495	100	206	500	67	169	218	64	106	170	238	3.48	
Size max	46	578	754	150	250	700	67	194	233	80	125	200	384	3.92	
Size increase	46	1.44	0.87	1.00	1.00	1.53	67	1.25	0.62	1.00	1.00	1.13	0.19	1.38	
Panel C: Merchant-	banks	5													
	Fina	al sample	e				Out of sample						Difference	e	
	N	mean	Sd	p25	Med.	p75	N	mean	Sd	p25	Med.	<i>p</i> 75	Meandif.	t-stat	
MBS first year	26	67.3	3.7	66.0	68.0	69.0	18	66.2	6.0	61.0	69.0	71.0	1.1	0.78	
MBS volume	26	1600	2017	360	1058	1988	18	712	878	104	275	992	889	1.75	
Negotiatie N	26	4.0	4.1	1.0	2.0	5.0	18	3.2	3.2	1.0	2.0	4.0	0.7	0.64	
Pooled negotiatie N	26	2.0	2.3	1.0	1.0	3.0	18	1.1	1.5	0.0	1.0	1.0	1.0	1.59	

Table A.11 Sample selection – summary statistics

This table compares summary statistics of our final sample with the observations out of our sample. Panel A lists plantation mortgage statistics. Our final sample includes all mortgages extended between 1750 and 1770 by Amsterdam merchant-banks who underwrote an MBS (N=307, by 26 merchant-banks). *Year*: year of issuance, where 70 is 1770. *Sum*: the mortgage sum in '000 guilders. *Mortgage New*: an indicator variable equal to one for a new mortgage contract, or zero when a previous mortgage is refinanced. *Term*: the total mortgage term in years with *Term 1* the length of the interest-only period, and *Term 2* the length of the subsequent period during which the mortgage was supposed to linearly amortize. *Interest*:

mortgage interest rate. Panel B shows summary statistics of the plantation MBS in our sample. Our final sample includes all MBS underwritten by Amsterdam merchant-banks up to 1772 for which we have mortgage and appraisal data and auction prices (N=46, by 23 merchant-banks). *Year*: year of issuance, where 70 is 1770. *Pooled*: dummy variable equal to one when an MBS was based on multiple mortgages, and zero if based on a single mortgage. *Size initial (maximum)*: the initial (maximum) MBS sum in '000 guilders, where *Size increase* is equal to the ratio of the two. Panel C shows summary statistics for the merchant-banks that underwrote an MBS and extended mortgages between 1750 and 1770. *MBS first year*: the year of the bank's first MBS issue. *MBS volume*: the bank's total volume of MBS issued in the period 1753-1780 in '000 guilders. *MBS N*: the bank's total number of issued MBS. *Pooled MBS N*: the number of MBS based on multiple plantation mortgages.

D. Reconstructing MBS mortgage portfolios

We obtain an overview of all outstanding MBS and their underwriters over the period 1753-1780 from Van der Voort (1973) and the auction lists described in Section II.D. We start out with all mortgage contracts that list one of the merchant-banks that issued MBS as lender. We link individual mortgages to the specific MBS in three steps. First, Van der Voort (1973), the auction lists and other historical records (in particular, the original prospectuses and documents from the Amsterdam notary archives) often give detailed information about the underlying mortgages in an MBS. An example is an overview of all debts of the plantations in a MBS of Lever & de Bruine, which the bank registered with Amsterdam notary Pool in 1774.³⁹ We are able to link about 65% of mortgages in our sample to a particular MBS. Second, we use the identity of the mortgage lender, the date of the mortgage, and the timing of MBS issuance to link mortgages to the appropriate MBS. For all banks in our sample which issued only one pooled MBS, we assume that all mortgages extended by this bank were part of their pooled MBS's portfolio. After this step, we are able to link 88% of mortgages in our sample to a particular MBS. The remaining mortgages that we are unable to link are from three banks that had underwritten more than one pooled MBS: Harman Van de Poll & Co., Jan & Theodoor Marselis and Hermael & Van den Bosch. For these cases, we use the timing of the MBS and mortgage issuance to link mortgages to the appropriate MBS. For example, Van de Poll underwrote two pooled MBS, the first in 1765 and the second in 1769. In step 1, we were able to link 23 mortgage contracts to the appropriate MBS, and 7 mortgages remain unlinked. Using the information of the linked mortgages we confirm that all newly extended mortgages prior to 1769 where placed in the portfolio of the first (1765) MBS while the mortgages extended after that were allocated in the second (1769) MBS. We assume the same holds for the unlinked mortgages. Under this assumption, we link all remaining mortgages to the appropriate MBS for all three bankers.

³⁹ City Archives Amsterdam, Collection of the Amsterdam Notaries 1578-1915 (5075), 12739-99.