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The costs and benefits of microfinance. The market for Dutch East India Company transportbriefven in 18th-century Amsterdam

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MIKOŁAJ MALINOWSKI

THE COSTS AND BENEFITS OF MICROFINANCE
THE MARKET FOR DUTCH EAST INDIA COMPANY
TRANSPORTBRIEVEN IN 18TH-CENTURY AMSTERDAM***Introduction**

Access to credit is widely regarded as a prerequisite for economic growth and development. It is believed that a lump sum, once raised, has the capacity to elevate the poor by investing in one's own business or human capital. This idea is known as a "microfinance promise". Unfortunately, poor people lack the financial assets required to put up collateral when applying for a loan, as well as the human capital allowing them to make a credible commitment in the eyes of the creditors, thereby locking the underprivileged in a so-called "poverty trap". Since, at present, the poor can rarely offer any guarantee, modern microfinance institutions need to find alternative solutions to the problems concerning lack of credibility/collateral. A potential solution could be to make use of a claim to future remuneration as collateral. This, however, gives rise to many problems related to unpredictability about the future and general mistrust. Despite these odds, Amsterdam's financial market in the 17th and 18th centuries was able to create a sustainable microfinance instrument working as a salary loan, i.e. a loan against future remuneration, known as a transportbrief. To explain in further detail, with the use of such document, employees of the Dutch East India Company (hereinafter VOC) were given the

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opportunity to sell their future income before having actually earned it, i.e. to obtain a salary loan without needing to use physical assets as collateral. The market created a system of lending using a secondary market acting as an intermediary; in the majority of cases, the transportbrieven were sold not to the person who would be collecting the future remuneration, but to an intermediary who, often on the same day, sold the asset to a professional buyer/creditor.¹ Both the development of the salary loans and the creation of a secondary market were exceptional by early modern standards.²

What makes the case of the transportbrieven even more interesting is the fact of engaging in trade without the use of financial journalism. Amsterdam was one of the cradles of this kind of journalism, which is crucial for the development of any market as it provides merchants with reliable and accessible information about prices.³ As every employee differed, for example regarding his occupation, the risks attached to these instruments differed, which resulted in their being non fungible. It was thus impossible to create consistent information relating to their price that would be publishable in a journal. This suggests that traders in the market were able to price the instruments correctly by themselves.

The transportbrieven were popular instruments that could be exchanged without the need for physical collateral and financial journalism, as well as developed a secondary market. This paper is intended to explain this phenomenon by answering the research question: 'how was it possible for a system of salary loans obtained by trading in VOC transportbrieven based on the intermediation of a secondary market to work sustainably?' In order to address this issue, several problems require investigation. The first sub-question is: 'how was a primary market for these instruments possible, i.e. how could they create a credible commitment in the eyes of the buyer of a transportbrief?' The second sub-question is: 'how were the asymmetries of information

¹ C. van Bochove, T. van Velzen, *Loans for Salaried Employees. The Case of the Dutch East India Company, 1602–1795*, Paper presented at EHA Conference, Boston, 2011.

² M. Easterly, "Your Job is Your Credit. Creating a Market for Loans to Salaried Employees in New York City 1885–1920", *Enterprise & Society*, 10, 2009; P. Dickson, *The Financial Revolution in England. A Study in the Development of Public Credit, 1688–1756*, London, 1967; A.L. Murphy, *The Origins of English Financial Markets*, Cambridge, 2009.

³ J.J. McCusker, *The Beginnings of Commercial and Financial Journalism. The Commodity Price Currents, Exchange Rate Currents, and Money Currents of Early Modern Europe*, Amsterdam, 1991.

overcome in the secondary market?' The third sub-question that needs answering concerns the system's long-term sustainability: 'how could the buyers, given the lack of relevant financial journalism, assess the risk correctly and purchase the instruments at the right price?'

There are many ideas grouped around contract theory and information economics that provide theoretical insights as to how such a system could have existed. According to Avner Greif, "a possibility of an ex-ante commitment to being able and willing to fulfil contractual obligations ex-post" is a precondition for any deal to be signed. In his view, institutional developments can explain changes in the markets. This is because they have the power to mitigate the risks and allow debtors to make a credible commitment in the eyes of sceptical creditors.⁴

This paper argues that the instrument (i.e. the transportbrief) worked despite the problems mentioned because: (1) there were institutions which mitigated the possible asymmetries of information and risks, thus allowing employees to make a credible commitment, as well as allowing the traders to exchange the transportbrieven; (2) due to specialisation of the buyers of the transportbrieven and their domination in the market, the system was sustainable; despite the lack of financial journalism providing them with ready information, large portfolios allowed the lenders to gain knowledge and assess the risk correctly.

This article is divided into seven parts: Part I presents the transportbrieven and their market; Part II describes the sources used; Part III discusses contract theory the contract and information economics, while Parts IV and V deal with the problem of asymmetry of information on the primary market, namely adverse selection and moral hazard respectively. Part VI addresses the problem of the asymmetry of information on the secondary market and Part VII deals with the problem of creating knowledge about the correct pricing of the transportbrieven by specialised buyers, and finally come the summary and conclusions.

Part I What is a Transportbrief and Who Trades in it?

The VOC, alongside the Navy, was the largest employer in the Republic of the Seven United Provinces.⁵ It was created in 1602, when

⁴ A. Greif, "The Fundamental Problem of Exchange. A Research Agenda in Historical Institutional Analysis", *European Review of Economic History*, 4, 2000.

⁵ J. De Vries, A. van Der Woude, *The First Modern Economy. Success, Failure, and Perseverance of the Dutch Economy, 1500–1815*, Cambridge, 1997.

competition among numerous independent companies trading with the East-Indies was so stiff and the profit margin so greatly diminished that it threatened the very existence of many independent companies.⁶ Promoting the presence of Dutch merchants in the East-Indies was politically justified since the young Republic was interested in cutting the economic bases of its enemies—Portugal and Spain, which were also engaged in colonial trade in the region.⁷ To ensure its success, the States-General gave the company many economic and political privileges.⁸ The company, subdivided into six chambers located in Amsterdam, Middelburg, Enkhuizen, Delft, Hoorn and Rotterdam, developed so rapidly that it required an ever-increasing number of employees. In the 18th century, it was sending between four and seven thousand people each year to the East-Indies.⁹ It was forced to find ways of attracting new people to serve with them, which was difficult due to the very long duration of such service. Traditionally, the labour force was accustomed to shorter periods of employment, counted in months rather than years. Therefore, shipping to the East-Indies put the employee in a very different position to joining a crew on a traditional transport or fishing vessel.¹⁰

The extended duration of service created novel problems for employees with respect to their cash flow. The sailor's anticipated prolonged absence required providing a form of sustainable provision for his family; as an employee of the VOC sailing to the East-Indies, he would no longer be capable of providing for his family on a regular basis.¹¹ Furthermore, employees from outside the city would need money to finance their stay in Amsterdam, while awaiting departure on one of the ships.¹² To address these needs, the VOC offered many ways in which an employee or his family could obtain money. Before commencing employment, upon signing a contract, an employee could receive

⁶ A. Carlos, S. Nicholas, "Giants of an Earlier Capitalism. The Chartered Trading Companies as Modern Multinationals", *Business History Review*, 62, 1988, no. 3.

⁷ F.S. Gaastra, *The Dutch East India Company. Expansion and Decline*, Walburg, 2003.

⁸ *VOC 1602–2002: 400 Years of Company Law*, ed. by E. Gepken-Jager, G. van Solinge, L. Timmerman, Deventer, 2005.

⁹ F.S. Gaastra, op. cit.

¹⁰ C. van Bochove, T. van Velzen, op. cit.

¹¹ M. Van Der Heijden, D. Van Den Heuvel, "Sailors' Families and the Urban Institutional Framework in Early Modern Holland", *The History of the Family*, 12, 2007.

¹² M. van Alphen, *Handel en Wandel van de Transportkoper: Opkopers van VOC transportbrieven in Enkhuizen (1700–1725)*, unpublished MA thesis, University of Amsterdam, 1988.

two months' salary in advance. This was known as *handgeld*. The second option was a *maandbrief*; with the use of this instrument, a sailor could allow a member of his family to collect three months' salary from his account each year. Even if an employee did not request such instrument, a wife was able to claim a portion of her husband's income.¹³ An employee could also withdraw six months' salary each year from his account, while in the East-Indies. Of course, he could also take out all the savings he had accumulated on his account upon his return to the Netherlands, once his employment contract had been fulfilled.

The *handgeld* was often insufficient to cover all the expenses of a low-ranking employee in Amsterdam. Furthermore, the *maandbrief* could only be used for the first time after several months, i.e. once the first piece of information about the employee's cash flow had been received from Batavia.¹⁴ Therefore, it did not instantly provide money for the family. Moreover, due to the high mortality rates on the VOC ships, there was a substantial risk that the family would be unable to collect the money at all due to the sailor dying before earning any money.

All in all, the *transportbrief* was designed for two main reasons, i.e. (1) to finance a sailor's stay in Amsterdam before his departure, and (2) to provide the sailors' households with money, before they were able to make use of the *maandbrief*.¹⁵ In principle, by using such instrument an employee could entitle someone to collect a specific sum of money from his VOC account. This instrument could be sold by the employee to someone at a discount, i.e. for a price below its face value stating the amount of the claim on the sailor's as yet unearned income. In a practical sense, the money paid to the sailor for the letter was a loan, and the discount, i.e. the difference between the face value and the received money, was the cost of this loan. The *transportbrief* was, therefore, a form of salary loan. The holder of this instrument, i.e. the person who bought the instrument, could collect the money from the employee's account directly.¹⁶ The holder of a *transportbrief* could only collect the claim if there was some money remaining in the account. Holders of *maandbrieven* were allowed to collect money before holders of *transportbrieven*. In the event of the sailor's death, the remaining payment obligation was not inherited by the family.¹⁷

¹³ M. Van Der Heijden, D. Van Den Heuvel, *op. cit.*

¹⁴ C. van Bochove, T. van Velzen, *op. cit.*

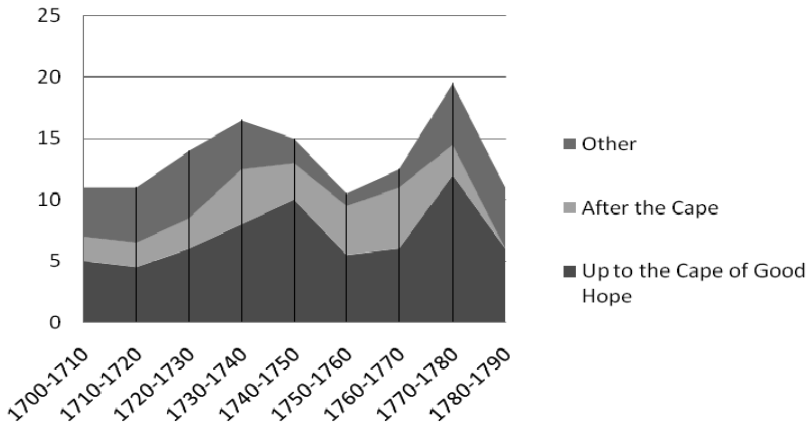
¹⁵ *Ibid.*

¹⁶ *Ibid.*

¹⁷ *Ibid.*

There were numerous problems related to the collection of the claim, the key one being the strong possibility of the employee's death while in service with the company. Figure 1 plots the on-board mortality of VOC employees. The journey to the East-Indies was the most hazardous part of the sailors' employment. A typical voyage between the Netherlands (Patria) and Asia (Batavia) took between 238 and 257 days.¹⁸ Moreover, in the 18th century, more than 10% of employees died after they had arrived to the East-Indies. As the Patria never knew whether an employee was still alive, i.e. if he was actually earning money, it only gave out money from his account after a ship carrying information about his cash flow had arrived from Batavia.¹⁹ A fleet usually sailed to Amsterdam twice a year.²⁰

Figure 1. On-board mortality of VOC employees, represented as percentages of the total crew



Source: J.R. Bruijn, F.S. Gaastra, L. Schöffer, *Dutch-Asiatic Shipping in the 17th and 18th Centuries*, The Hague, 1987.

Having described the basic principles underlying the transport-brievens, it is worth taking a closer look at the people active in the market, namely the employees, intermediaries and professional buyers, as well as the scenarios typical for this market. The employees were a very diversified group. There were 67 possible occupations someone

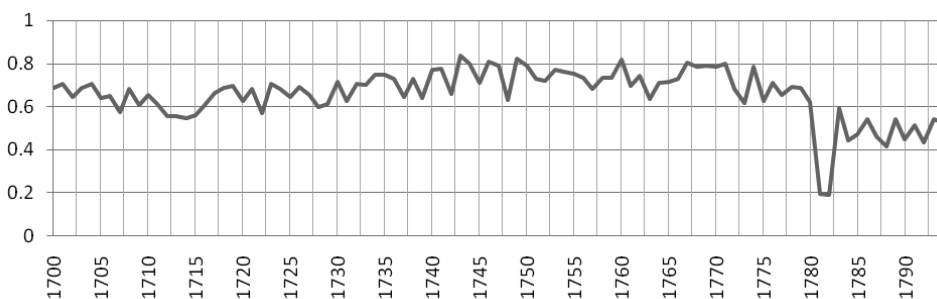
¹⁸ J.R. Bruijn, F.S. Gaastra, "The Dutch East India Shipping, 1602–1795, in a comparative perspective" in: *Ships, sailors and spices. East India Companies and their Shipping in the Sixteenth, Seventeenth and Eighteenth Centuries*, ed by J.R. Bruijn, F.S. Gaastra, Amsterdam, 1993.

¹⁹ C. van Bochove, T. van Velzen, op. cit.

²⁰ F.S. Gaastra, op. cit.

could be assigned to when enlisting with the company.²¹ All employees of the company were male. The employees' salaries²² varied greatly and were strictly related to their occupation.²³ The VOC's demand for employees throughout the early modern period was so high that employees increasingly came from abroad. In 1607 only five percent of those travelling to Asia were foreigners, but the number gradually increased reaching around 32 percent by 1635. In 1780 nearly half the employees came from outside the Republic.²⁴ Service with the company usually lasted approximately five years.²⁵ Figure 2 shows that in the 18th century 60–80% of the Amsterdam Chamber's employees were issued a transportbrief, with a decline towards the end of the century.

Figure 2. Share of employees signing a transportbrief in selected years, 18th century (Amsterdam Chamber)



Sources: VOC Sea Voyagers project database, <http://vocopvarenden.nationaalarchief.nl> (5 X 2011).

Innkeepers and brokers were the people for whom the original transportbrief was usually drawn. In practice, these two groups served as intermediaries between the debtors (the employees) and the creditors (specialised buyers of transportbrieven). For this reason these people were known as the soul-traders.²⁶ Innkeepers and brokers were in need of liquidity; they had to pay retailers for goods and were, therefore,

²¹ VOC Sea Voyagers project database, <http://vocopvarenden.nationaalarchief.nl> (5 X 2011).

²² In the early modern period unskilled labour typically received remuneration in the form of weekly or daily wages. Due to the unique character of the VOC's operations, the longer duration of employment, the company was forced to pay its employees with the use of monthly salaries.

²³ C. van Bochove, T. van Velzen, op. cit.

²⁴ J. van Lottum, *Across the North Sea. The Impact of the Dutch Republic on International Labour Migration, c. 1550–1850*, Amsterdam, 2007.

²⁵ M. Van Der Heijden, D. Van Den Heuvel, op. cit.

²⁶ M. van Alphen, op. cit.

always in need of cash.²⁷ As regards the brokers, trading in the securities was one of their many occupations as they lacked sufficient capital to purchase many instruments which they could hold. They first had to sell the old instruments before being able to buy new ones. Therefore, both the innkeepers and brokers were likely to sell the instruments to specialised buyers in the secondary market soon after having obtained them.

This last group, defined as specialised buyers, collectors or creditors, usually bought large amounts of transportbrieven, thus making their living out of this trade (see part VII). Christiaan van Bochove and Ton van Velzen present a case of the Carstens family, who acquired knowledge about this trade over many generations and combined collecting the claims on the future incomes of the sailors with running an inn.²⁸ This group needed, therefore, to activate significant funds in order to purchase the instruments. Figure 3 presents the inflow of new obligations in selected years. The values oscillated between two hundred and five hundred thousand guilders. This money usually came from the financial market rather than the individuals' personal savings.²⁹

Figure 3. Face value of all new transportbrieven issued in Amsterdam in selected years (in guilders)



Source: C. van Bochove, T. van Velzen, *Loans for Salaried Employees. The Case of the Dutch East India Company, 1602–1795*, Paper Presented at EHA Conference, Boston, 2011.

In his study, Marc van Alphen presented a group of financiers in Amsterdam who financed the big buyers by using transportbrieven as collateral for loans. The interest on these loans at the end of the 18th

²⁷ C. van Bochove, T. van Velzen, op. cit.

²⁸ Ibid.

²⁹ M. van Alphen, op. cit.

century was high, at around six percent, i.e. twice the coupon on Holland's public debt bonds.³⁰

Moreover, Christiaan van Bochove and Ton van Velzen argue that it was a very difficult trade. Not only did it require mobilising significant funds to purchase the instruments and then await repayment, it also required the ability to price the value of all the instruments. If the specialised buyers purchased them too cheaply they would go bankrupt but if they were priced too high they would be crushed by stiff competition (see part VII).³¹

There were several possible scenarios for trading in such security (see Table 1). The transportbrief could be used as an extension of the maandbrief. For example, if a husband wanted to allow his wife to take more money from his account than just three-month's remuneration, he could only do so by having a transportbrief drawn and presenting it to her. In such a situation, the wife could either refrain from selling the instrument and gradually collect its full face value herself, or she could keep the instrument in order to sell it later (scenario A).³² She could also immediately sell the instrument to a broker at a proper discount, to get part of the money up front and transfer the risk related to her husband's death (scenario B). In addition, Christiaan van Bochove and Ton van Velzen describe situations in which employees sold the transportbrief directly to a specialised buyer to obtain credit (scenario C).³³ In both these situations (B and C), we can talk about households obtaining a salary loan on the primary market.

Table 1. Various scenarios in the market for salary loans using a transportbrief

Scenario	Type	Comment on primary transaction	Intermediary holder	Collector
A	no loan	no cash	family	family
B	primary market	no cash	family	collector
C	primary market	no intermediation, cash/credit transaction	none, bought directly by a collector	collector
D	intermediation of secondary market	no cash/instrument as payment	innkeeper	collector
E	intermediation of secondary market	cash/credit transaction	broker	collector

Source: see the text.

³⁰ Ibid.; O. Gelderblom, J. Jonker, "Public Finance and Economic Growth. The Case of Holland in the 17th Century", *The Journal of Economic History*, 71, 2011, no. 1.

³¹ C. van Bochove, T. van Velzen, op. cit.

³² See: VOC *scheepssoldijboek*, Dutch Nationaal Archief, 1.04.02.5481, folio 91.

³³ C. van Bochove, T. van Velzen, op. cit.

Instead of giving it to his spouse, the employee could give the document to an intermediary who could then sell it to a specialised buyer. There were two main scenarios possible. In the first, the employee could use the document as a means of payment and give it to the innkeeper with whom he would be staying before commencing his employment. The innkeeper would “cash” the document by selling it to a professional creditor (scenario D). The employee could also sell the document to a broker at a discount, in order to get the money up front. The broker would then sell the instrument to a professional buyer (scenario E). Scenarios D and E were the most commonly used ones in the market (see part VI).

Part II Sources

The study of the market for transportbrieven is based on data obtained from the VOC ledgers (*scheepssoldijboek*). Every VOC ship had its own book, recording the cash flow on the salary accounts of its crewmen. Two copies of each book were kept, one being used in the Patria and the second in the East-Indies. Updates were sent to the Republic each year so that both copies would be identical.³⁴ The books contained a lot of information, namely: the name of the ship, its origin, the year of departure, destination, the name of the sailor, his origin, his occupation, his salary, the existence of a *maandbrief* or *transportbrief*, cause of termination of employment and time of termination of the employment. This information was gathered by the VOC Sea Voyages project conducted by the Dutch National Archive. The project resulted in a database containing approximately 740,000 observations from the 17th and 18th centuries.

Unfortunately, the database does not present any information about the size of the payment obligation, nor the actual payments made from individual accounts, which were also recorded. For this reason, additional data was collected for the benchmark years 1700 and 1780. One large and a few smaller ships were chosen to make the sample representative. Additionally, data on one ship from 1740 were also collected to gain further insight into the period falling between these observations.

The new database is broader than the original one as it also includes: the name of the original creditor(s), the possible relationship of the original creditor(s) to the employee, the size of the debt(s), the

³⁴ *Ibid.*

name of the collector(s), the possible relationship of the collector to the employee, the collection dates and size of the instalments. In total, data was collected regarding 1,313 debt contracts that were successful, i.e. someone managed to collect money from an account by using the transportbrief as a claim. There were records concerning 2,594 individual payments collected. This subset of collected data is the core of the empirical analysis. It should be underlined that debt contracts that were not successful, i.e. no money was collected with their use, were not taken into account in the analysis as little trace of them remains in the sources. Table 2 presents the basic descriptive statistics concerning the collected data. The very low percentage of repaid debts from the *Held Woltemade* was due to the fact that two English frigates took the ship on the 1 July 1781.³⁵

Table 2. Basic descriptive statistics of the collected data

Ship	Year	Number crewmen	Number transportbriefen	Number with any debt collected	Number repayment	% repayment
Amsterdam	1740	285	220	187	72	32.7
Generale Vrede	1700	333	269	254	142	52.8
Groenendaal	1780	359	274	248	92	33.6
Held Woltemade	1780	292	169	157	10	5.9
Herstelder	1780	61	50	50	37	74.0
Kattendijk	1700	211	163	142	82	50.3
Mercuur	1780	206	164	158	91	55.5
Overnes	1700	161	130	117	71	54.6
Total	x	1908	1439	1313	597	x

Source: see the text.

There were numerous problems related to collecting data. First, the person listed as being the original creditor was not necessarily the person who purchased the transportbrief. Christiaan van Bochove and Ton van Velzen give an example of a sailor who sold his letter to a professional buyer while his innkeeper was still listed as the creditor.³⁶ Using the available data, it is impossible to tell how common such a practice was. Therefore, for the purpose of this study, all people listed as original creditors will be considered as such.

³⁵ Dutch Asiatic Shipping project database, <http://www.historici.nl/Onderzoek/Projecten/DAS> (23 X 2011).

³⁶ C. van Bochove, T. van Velzen, op. cit.

Moreover, it was possible for an employee to have requested an issue of a number of transportbrievens. If there were several collectors, it could prove hard to find information as to which one was collecting money using a particular transportbrief. If a few collectors were visible, it was hard to tell whether the instruments had been sold to one person who later sold it to someone else in the secondary market, or if there were multiple instruments. Fortunately, there were only 67 cases of multiple transportbrievens drawn on one individual in the database. In many cases there was incomplete information about either the date or the name of the collector with information only about the amount of money collected from an account. Fortunately, this was marginal and occurred only 85 times, mostly in 1780 and among soldiers and sailors.

Part III Relevant Theory

The intention of this paper is to address three research questions: (1) 'how was a primary market for these instruments possible?'; (2) 'how were the asymmetries of information overcome in the secondary market?'; (3) 'how could the buyers, given the lack of relevant financial journalism, assess the risk correctly and purchase the instruments at the right price?' As has already been mentioned, according to Avner Greif, a possibility of an ex-ante commitment to being able and willing to fulfil contractual obligations ex-post' is a precondition for any deal to be signed. The lack of any guarantee that this can and will happen prevents people from engaging in business deals. The author, therefore, calls this problem the Fundamental Problem of Exchange (hereafter the FPOE). The idea that information and confidence in the future are crucial preconditions for any deal to be made is widely used in economics. It is the basis of information economics and contract theory.³⁷

According to the theory of information economics, the key component, i.e. information, can be symmetrical or asymmetrical, perfect or imperfect. The actors in the market, i.e. the creditors and debtors, are known in literature as the principals and agents, respectively. The imperfect/perfect dimension of the information deals with the problem of the very existence of the information on the market. In a perfect situation, both sides are aware of all the factors influencing the terms of the contract. In an imperfect situation, one of the parties may have no knowledge about a factor that could impact the fulfilment of the

³⁷ A. Greif, *op. cit.*

contract. The asymmetry of information problem deals with the question of the distribution of information on the market. If the information is symmetrical, both the principal and agent are equally aware of all the factors that can influence the terms of the exchange. If the information is asymmetrical, one of the players, usually the agent, can use this fact to his advantage by concealing some important piece of information that could have a negative effect on his utility. Conversely, agents who compete among each other for contracts/loans are interested in making the principal aware of their positive qualities. Usually, information on the market is asymmetrical. These features of the markets are connected to two problems known in the literature as adverse selection and moral hazard. In principle, the adverse selection problem stems from asymmetry of information upon signing a contract, whereby the principal attracts the wrong group of agents. There are things the agent may know about himself that are unknown to the principal at the time of signing the contract. To mitigate this risk he increases the price of his services. By setting the price too high, the principal risks attracting only those agents who do not intend to hold to their contractual obligations and, therefore, are indifferent towards the price.³⁸ Asymmetry of information and adverse selection in particular are problematic for several reasons. First and foremost, due to a lack of full trust and complete information about the agent, the principal has a tendency not to believe that he is going to honour his obligations. Asymmetry of information decreases the utility of one of the parties, thereby preventing the principal from assessing the risk correctly and forcing him to buy the contract for too high a price (thereby decreasing the agent's utility) or too cheaply (thus decreasing his). The principals do not trust strangers as they lack reliable information about their financial situation and willingness to honour the commitment.

The second problem related to asymmetry of information involves moral hazard. Put simply, this concerns the credibility of the agent's commitment and his willingness to honour his obligations, after the principal has honoured his. Once the agent's needs have been satisfied, he can selfishly choose to rebel and not honour his promise. The adverse selection problem, however, consists of there being lack of knowledge about the agent at the time of signing the contract, moral hazard relates to a lack of control/information over the agent's future actions, as well as perfect or imperfect information about the conditions

³⁸ G.A. Akerlof, "The Market for 'Lemons'. Quality Uncertainty and the Market Mechanism", *The Quarterly Journal of Economics*, 84, 1970, no. 3.

that could influence his behaviour after signing the contract. Moral hazard is problematic in many ways. If the agent's effort to meet the contractual obligations is not observable once he has signed the contract, he will exert the effort level that is most beneficial for him, not the principal. Due to the lack of knowledge and surety, as in the case of adverse selection, imperfect information and uncertainty results in bad pricing.

Part IV Overcoming the Problem of Adverse Selection in the Primary Market

The adverse selection problem in the case of the 18th century primary market for salary loans making use of the transportbrievens could, potentially, have been a major obstacle. There were numerous things an employee may have been eager to conceal from the creditor which would have influenced his evaluation of the risks involved. For example, in order to increase his utility, the employee could have lied to the principal about his real occupation. An employee's salary was dependent on his rank. Therefore, the pace of repayment was a function of the occupation. Table 3 shows that the mean payment, i.e. the money collected by a collector differed among the various occupations. This was also crucial since mortality decreased among the higher ranks, i.e. the higher the rank the greater the chance the employee would survive. Empirical studies show that the chance of dying among low-ranking employees, especially sailors and soldiers, was much greater than in the case of high-ranking personnel.

Table 3. Mean payments by category of occupation, data for 1700 and 1780

Occupation	% of all employees	Number of payments	Mean payment in fl.
high-rank = entitled to 300 fl. Debt	9.24	173	104
Bosschiter (gunner)	23.8	577	54
Matroos (sailor)	29.38	530	73
Jongmatroos (deck hand)	2.66	37	54
Hooploper (low ranking sailor)	4.97	102	41
Soldaat (soldier)	19.09	508	40
Other	10.39	236	66

Source: see the text.

The second problem was the employee's family situation. The employee's closest family was entitled to collect the money before the owner of the transportbrief through the use of a maandbrief, thereby collecting money that would otherwise have been collected by the holder of the transportbrief. In order to study the impact of the maandbrieven on the dealings of the holders of transportbrieven, several OLS (ordinary least squares) regressions were made. The results of the empirical analysis show that the simultaneous issue of a maandbrief decreased the probability of full repayment of the obligation by 36%. This is because, in the case of people whose families had a maandbrief, an average of nearly eight guilders (fl.) was deducted from their accounts with each payment. Given the high mortality rate, the pace of repayment was crucial. The empirical analysis shows that those of the studied employees who had both a maandbrief and transportbrief issued, as well as repaid their loan in full, did so on average half a year later. All this proves that the traders in transportbrieven could have indeed been reluctant to buy claims on those who were also issued with a maandbrief. Yet another problem was the employee's other obligations. He could have potentially issued several transportbrieven, sold them and let the creditors worry about the order of the claims. Moreover, he could have taken out a loan far beyond his actual repayment potential. Additionally, a sailor may have been aware of his poor health or even a terminal condition and yet still have asked for a loan.

The institutional arrangements present on the market mitigated the above-mentioned problems. The clerks of the VOC solved the issues of uncertain occupation and salary. The company issued the transportbrieven, stipulating the need for specific information about the employee, including his name, origin, rank, salary and name of the ship on which he served. Information concerning occupation and salary was, therefore, clearly specified on the document and certified by the VOC. The maandbrieven were more complicated since the document did not inform the principal about the family's situation or the existence of the people entitled to collect money using a maandbrief. The information could be found in the VOC ledgers to which only the clerk of the VOC had access. The transportbrief, however, provided information about the employee's origins. If the employee came from Amsterdam, there was no problem for someone from his family to collect money from the VOC's headquarters, therefore it was more likely that he would request a maandbrief. However, families living outside Amsterdam may still have been interested in occasionally collecting three months' salary. They could also have hired a specialist, for example a ship's captain,

to collect the money on their behalf.³⁹ In the case of the foreigners, the transport costs were likely too high for their spouses to travel in order to claim money, with the possibility of intermediation also being much smaller. Therefore, the information that was available to the principal concerning the employee's origins could be used as an (imperfect) indication of the existence of a maandbrief. This intuition is supported by the findings presented in Table 4. Employees from outside the Republic were far less likely to allow someone to collect money with the use of a maandbrief.

Table 4. Prevalence of maandbrieven among the studied sailors coming from the cities, which appear in the database more than five times

Place of origin	No letter	Letter	% letter	Dutch/foreign city
Sardam	3	3	50	Dutch
Amsterdam	301	113	27	Dutch
Haarlem	17	6	26	Dutch
Rotterdam	11	3	21	Dutch
Utrecht	13	3	19	Dutch
Königsberg	6	1	14	Foreign
Hamburg	19	3	14	Foreign
Stockholm	13	2	13	Foreign
Leiden	19	2	10	Dutch
Bergen	6	0	0	Foreign
Berlin	7	0	0	Foreign
Copenhagen	8	0	0	Foreign
Paterboorn	8	0	0	Foreign
Bremen	10	0	0	Foreign
Gdańsk	10	0	0	Foreign
Other	670	55	8	primarily foreign
All cities	1121	191	15	

Source: see the text.

The third problem was the potential existence of many other creditors and the employee selling more future income than he would be able to earn. A credit ceiling imposed by the VOC resolved this problem. There were a few levels of restriction. Most employees were not allowed more than 150 guilders of their future income. High-ranking

³⁹ See: Utrecht's Archive, U083b027.

employees, however, such as officers, were allowed debt obligations of up to 300 guilders.⁴⁰ In addition, the employee could divide the debt, and sell it to a few people. Since the credit ceiling was a function of the occupation, known to the principal, he was also aware of the credit ceiling. Therefore, if the principal decided to buy a transportbrief allowing him to collect an amount of money equal to the credit ceiling, he could be certain there were no other collectors. This was the case in the majority of situations.

The last problem was related to the agent's health. The transportbrief contained information concerning the employee's occupation, which translated into health conditions on a ship. In the primary market this problem could have also been solved by a phenomenon known in the literature as signalling, i.e. conveying credible information. The principal bought the transportbrief from the agent directly, thus being able to get his own impression regarding that person's health.

To sum up, the actors in the market were able to overcome imperfection and asymmetry of information. The principals were able to design different contracts for different types of buyers and distinguish, which employee fit into which category. This was possible thanks to the appropriate design of the transportbrief which stipulated the relevant information, the VOC placing limits on borrowing as well as personal contacts between the principal and agent.

Part V Overcoming the Moral Hazard Problem in the Primary Market

The moral hazard problem might have been relevant to the transportbrieven market for several reasons. Firstly, the employee signed a contract with the VOC for possibly months before actually commencing employment. He was, however, able to sell a transportbrief immediately after signing the contract. Therefore, since he was already in possession of the money due to having sold the document, he could have been tempted to not actually start employment, simply fleeing the city, never to return. The second problem was related to the sailor's ability to spend money while in service. Since the employee had already taken the money for his future earnings, why should he have limited his consumption when in Batavia? In addition, any health expenses or penalties were also deducted from the sailor's account.

⁴⁰ C. van Bochove, T. van Velzen, op. cit.

The VOC created a list of rules to secure the creditors' interest and the company's credibility. The employee could spend his remuneration on consumption in the East-Indies. In order to protect holders of the *maand- and transportbrieven* and ensure some funds would remain to pay for medical treatment or punishments for disregarding VOC rules, which the employee had to cover himself, the VOC allowed employees to take a maximum of six month's income from his account each year,⁴¹ thereby resolving the problem of potential frivolous consumption. Moreover, the employee could not return to *Patria* if one year's worth of remuneration was not saved on his account. This was to ensure that all claims on his account would be satisfied.⁴² In general, the sailors' independent mobility was very restricted.

As already described, the employee could choose to flee Amsterdam before boarding the ship, but after having obtained the money. According to Marc van Alphen, the innkeepers, known as *soul-traders*, made sure their 'guests' were unable to escape.⁴³ This was in their best interests, as they were usually the original buyers of the *transportbrieven* and were therefore interested in repayment of the loans. They were also allowed to take *handgeld*, which they were obliged to return to the VOC, should the employee run away.⁴⁴ Christiaan van Bochove and Ton van Velzen, however, cast some doubt on this traditional belief and give examples of situations in which the employees could enjoy freedom of movement while still staying with an innkeeper.⁴⁵ There was no (known) regulation and control over sailors who came to Amsterdam as they did not stay with the innkeepers. In their case, however, there may have been a reputation mechanism to discourage them from breaking their deals with people in Amsterdam.

A study of those sailors who did not board a ship (Figure 4) indicates that the number of people who escaped and were issued a debt obligation was limited, and was nearly always less than 50. Moreover, bearing in mind that more than half the employees were signing a debt obligation, it is important to notice that the number of the people signing the instrument and escaping was minimal compared to those who did not (660 to 7,088). Clearly, there was a mechanism in place which prevented people with loans from escaping. In addition, out of the 660

⁴¹ VOC Sea Voyagers project database, <http://vocopvarenden.nationaalarchief.nl> (5 X 2011).

⁴² C. van Bochove, T. van Velzen, *op. cit.*

⁴³ M. van Alphen, *op. cit.*

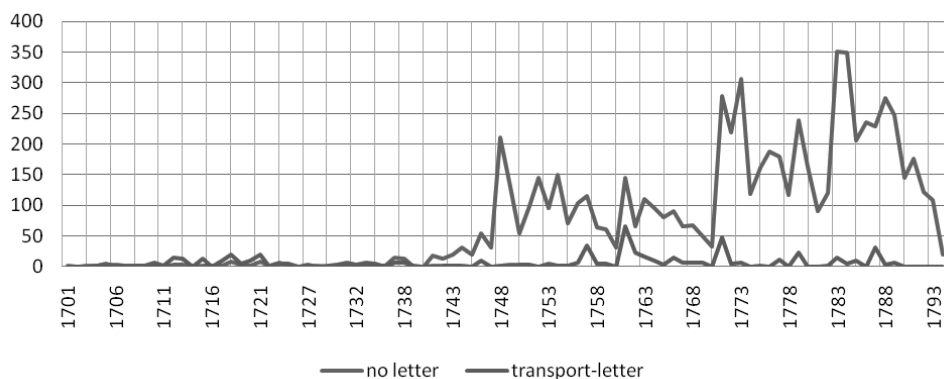
⁴⁴ *Ibid.*

⁴⁵ C. van Bochove, T. van Velzen, *op. cit.*

who escaped, 302 (45%) came from Amsterdam and 358 (55%) were from elsewhere. At the same time, an average of 62% of all employees came from outside Amsterdam, whereas 38% came from the city. The similarity of the respective shares suggests that both those coming from Amsterdam and newcomers who signed a loan contract were similarly constrained, thus contradicting the idea that newcomers were locked up by the innkeepers, whereas people from Amsterdam were entirely free.

To summarise, alongside the problem of adverse selection, there was also the problem of moral hazard, consisting of a lack of control over the future actions of an employee. The VOC partially solved this problem by imposing various regulations and limits on spending. Illness and punishment were, however, an unresolved problem. In addition, any indebted employees were probably forced to board the ship.

Figure 4. Number of people not boarding a VOC ship, debtors vs. non debtors, by year, 18th century (Chamber Amsterdam)



Sources: VOC Sea Voyagers project database, <http://vocopvarenden.nationaalarchief.nl> (5 X 2011).

Part VI Overcoming the Asymmetry of Information on the Secondary Market

Now that it has been proven that a transportbrief was a reliable security, it is time to address the question: 'how was a secondary market for these instruments possible and how were asymmetries of information overcome?' The adverse selection and moral hazard problems were non-existent in the secondary market, due to the involvement of different actors. The documents required in this market were exchanged between two traders, rather than between borrowers and

lenders. For this reason, the adverse selection and moral hazard problems had to have already been dealt with in the primary market for a secondary market to exist. Despite this, the only possible remaining problem was the asymmetry of information, as it was hypothetically possible that the seller of the instrument possessed important information which he or she was hiding in order to sell the instrument at a higher price.

The analysis of the asymmetry of information problem will be subdivided into three phases corresponding to three different situations in the market. The first deals with an exchange before any information about the sailors' earnings and well-being arrived from Batavia, i.e. before there was any money to collect. The second phase came with the arrival of the information, thus altering the situation in the market. The third phase was the actual collection of the money. Due to entirely different dynamics among the three phases, one should perhaps talk about a secondary market for the first phase as well as a second secondary market for the second and third phases (during the collection). In the first phase, the secondary market was used for contacts between borrowers and lenders, whereas later it was used as an exit strategy for lenders.⁴⁶

Once the initial outline has been presented, it is worth analysing the first phase, i.e. before the information concerning the employee's well-being had arrived. At this stage, no one knew which sailors would survive the trip to Asia and which would not, so it was impossible to determine which instruments were worthless. The only asymmetric information was between the document's original buyer and its second holder since the original buyer had met the employee in person and was thus able to better assess the condition of his health. Theoretically, it may have also been possible for the original buyer to have lied about the employee, as could any holder of the instrument, for example by claiming he had had a higher rank than was actually the case.

The market overcame this problem. Table 5 shows that nearly all the documents changed hands following the original transaction. The material was based on a comparison between the people showing up to collect the money and the people listed as the original creditors. As already indicated, it is impossible to tell what happened to the instrument if no one collected the money. Different names indicating a change in the document's ownership on the secondary market, appear

⁴⁶ L. Harris, *Trading and Exchanges. Market Microstructure for Practitioners*, Oxford, 2003.

in 84% of the cases in 1700 to, as high as 100% and 97% in 1740 and 1780 respectively. The same names appear rarely (always less than 5%) and mostly in the case of family members and institutions such as orphanages, which were practically selling the children to the VOC (Weeshuijs te Haarlem, Weeshuis te Leiden, Weeshuis van Buijsloot, Amsterdamse Weeshuis), i.e. in those situations in which someone wanted to allow a person to collect the money rather than obtain credit. There is, however, an interesting case involving a group of specialised buyers which appeared both as the original creditors and the collectors, which would suggest a segment of the credit market was not using the intermediation of the secondary market. This phenomenon, however, seems to have been marginal (only 8% at the beginning of the century) and that it gradually faded out throughout the century. Professionals who bypassed the intermediation of secondary markets in 1700 included: Jacob Croeger/Kroeger (34 instruments); Catharina van Gogh (3 instruments) and Jan Sijmons (3 instruments). In general, however, it can be concluded that the instrument nearly always changed hands on the secondary market.

By contrast, as stated before, Christiaan van Bochove and Ton van Velzen, making use of additional sources, give the example of a sailor who listed someone as a creditor yet sold the instrument to another person.⁴⁷ It is, therefore, impossible to ascertain, using only the VOC ledgers, which name changes would have been indications of transactions and which not. Moreover, as explained earlier, there are problems with identifying family members in the database. It is highly likely that many of these holders were people related to the employee's household.

Table 5. Change in ownership in the secondary market (before collection)

Relation between original holder and collector	1700	1740	1780
n pairs	512	184	612
different name	432 (84.3%)	184 (100%)	592 (96.7%)
same name: family	15 (2.9%)	0	2 (0.3%)
same name: institution	0	0	7 (1.1%)
same name: specialist	40 (7.8%)	0	2 (0.3%)
same name: other	25 (4.9%)	0	9 (1.5%)

Source: see the text.

⁴⁷ C. van Bochove, T. van Velzen, op. cit.

Asymmetric information was overcome due to the instrument's proper design whereby it stated all the necessary information. Moreover, it is unlikely that meeting the sailor in person would give the original holder any significant advantage because, hypothetically, the VOC had already screened the employee even before any potential trader when deciding whether or not to employ him. Therefore employment could be used as a quasi health certificate. Nevertheless, any subsequent transactions were characterised by a perfect symmetry of information – traders were only aware of what was written on the instrument – as well as the lack of imperfect information if the employee were still alive.

How was it possible to trade so extensively in such instrument if there was no way of determining which sailors were alive and which were dead? Joseph Stiglitz suggests that situations of perfect information and situations of entirely imperfect information give rise to similar circumstances in the market.⁴⁸ No one knew which instruments were going to pay back and which were useless. This created an asymmetry of information being the same principle that applies to the famous Schrödinger's cat theoretical experiment. Should a cat be locked in a box with poison and there is a 50% chance the poison will kill the cat within an hour, to the outside observer, after such period of time, the cat could be both either dead or alive, thus making it impossible to ascertain its true condition.

Furthermore, the specialized collectors eventually bought all the instruments. Table 5 shows that very few instruments did not change hands, often because the instrument was given to a person to hold (a family member or an orphanage). For this reason, they could be safely traded as there was no risk. If a person was disinterested in collecting the money then he or she would end up with a worthless document. This argument supports Joseph Stiglitz's thesis that lack of information can foster the trade in a way similar to perfect information.

Once the symmetry of information has been proven in the first phase it is time to move to analyse the second phase of the problem. At this point, information about the employee's condition arrives in Amsterdam for the first time. As has been mentioned, the most dangerous part of the employment was the journey to the East-Indies. It could be compared to a lottery with winning transportbrieven and losing ones being drawn. The question was: 'how could the market have reacted to such changes, given the potential asymmetry of informa-

⁴⁸ J.E. Stiglitz, *Economics of Information and the Theory of Economic Development*, NBER Working Papers 1566, National Bureau of Economic Research, Inc. 1986.

tion?' When the current holder of the transportbrief went to the VOC to check out the information and collect the money he, and only he, was informed about the employee's condition. If it transpired the letter was worthless due to the employee's death, the holder could have done two things. He could have disposed of the letter, or made use of the asymmetric information and the fact that only the holder of the letter could check the account, and thus try selling it to someone pretending that it was a 'winning ticket'. If the employee were alive, the holder could have decided to either hold on to the document, in order to collect more money in the future, or sell the document on the secondary market at a higher price as the risk was lower than in the first phase, i.e. 'cash the prize'.

Table 6. Change in the collectors by year, a comparison of the first and last person collecting the money from the account (the secondary market in the second and third phases)

Change	1700	1740	1780
Yes	121 (27.5%)	6 (3.3%)	21 (3.5%)
No	319 (72.5%)	174 (96.6%)	581 (96.5%)
N	440	180	602

Source: see the text.

Lying was not an option in the market as the VOC clerks included all relevant information concerning the employee directly in the letter, i.e. the size of the claim, the money collected and the employee's possible termination of employment. Therefore, the institutions created by the VOC prevented the existence of worthless transportbrieven, or the sale of an instrument, which had already been used to collect the money to a naive buyer. In fact, this institutional arrangement solved all the information problems in the secondary market.

In the collection phase, the collectors could have had new incentives to sell the instrument, for example: (1) since the instrument's value diminished with the collection, the transport costs (for example, travelling to Amsterdam to collect the money) could end up being greater than the obligation; (2) investors could have been in need of money and therefore would have needed to liquidate their assets; (3) the employee due to his poor repayment, may have been indicating that he was a bad debtor, i.e. there was little money on his account due to the family's, or his poor health situation, and therefore, the holder may have decided to sell the asset.

As in the previous cases, the holder could have been willing to sell a bad instrument, while trying to conceal the circumstances. Table 6 also illustrates the situation in this phase of trading, showing examples of changes in the instruments' ownership. It suggests that the problem that could have possibly threatened the exchange was mitigated. The asymmetry of information problem was overcome by the fact that the employee's performance was noted on the transportbrief, i.e. all the transactions and dates. It was, therefore, impossible to conceal anything.

Part VII Development of the Specialised Market

Now that it has been proven that the secondary market for the transportbrieven managed to eliminate the problem of asymmetric information, it is time to move to the problem of imperfect information. The main hypothesis here is that the buyers did not need an institution that would price the instruments for them, but were able to do it correctly by themselves thanks to the specialisation.

As described earlier, the market for the transportbrieven was a competitive one. Christiaan van Bochove and Ton van Velzen argue that if a buyer was unable to price the risk correctly, he was either forced out of the market by the competition or went bankrupt.⁴⁹ Having said that, it is worth taking a closer look at the possible types of collectors and conceptualise their behaviour in the market. This theoretical distinction will enable a better understanding of whom the people trading in the market actually were.

There are three possible classes of investors operating on this market. The first, which can be called amateurs or speculators, could be characterised by their smaller portfolios and lack of interest in long-term investments. They bought the instruments in order to re-sell them and were not particularly interested in pricing them appropriately due to the instant transfer of the risk. The second group can be described as being semi-professionals; they collected many instruments and viewed the investment from the long perspective, although they may have lacked full knowledge about all the insights of the trade in an instrument. Due to their lack of knowledge, they tended to price the instruments incorrectly and thus left the market. Furthermore, since they were not fully specialised, they may have sometimes needed to

⁴⁹ C. van Bochove, T. van Velzen, *op. cit.*

liquidate their assets in order to meet other commitments. The last group consisted of the specialised buyers who treated the trade in the transportbrieven as a profession. They bought many instruments to hold, and perceived them as a long-term investment. They also had the knowledge necessary to price the instruments correctly.

The traders could obtain information concerning correct pricing through experience. This knowledge could be passed from one generation to the next, as in the case of the Carstens family, described by Christiaan van Bochove and Ton van Velzen. The other way of gaining experience was by collecting extensive portfolios of instruments and learning what the optimal discount rate should be. The larger the portfolio, the higher the chance of assessing the discount rate correctly, in line with the central limit theorem. In addition to this, such portfolios would be an indication of specialisation.

To sum up, the existence of large and specialised portfolios could be a sign of two things: the first being that the holder was a specialised buyer who was learning how to price the instruments. If, however, the collectors on the market purchased only small numbers of instruments, it could have been an indication that they were not specialised, i.e. that they were speculating or were semi-specialised and, as a consequence, obtained either no knowledge or very little about the instrument.

The best way to observe the characteristics of these theoretical investors in the market for the VOC transportbrieven is by identifying how much money they managed to collect. This variable depends both on the size of their portfolios and the duration of the investment. If they collected large amounts of money it shows they had many instruments and also held on to them. Small amounts indicated they either had few portfolios and/or were not holding on to them. An empirical analysis proves that a few specialised buyers gradually dominated the market. To be more precise, in 1700, the share of the people collecting small amounts of debt was around 50%. By 1780, this share had dropped to approximately 20%. In 1700 only three individuals had shares of as much as 10% of the global collected debt (Lijber Amelonger, Jacob Croeger, and Jan Bergh); these were followed by a homogenous group of investors who held around a 5% share of all the debts collected. In 1780, just two people controlled one third of the market (Jan Starink [20%] and D. Waalwijk [12%]), followed by six individuals who had more than 5%. Together, these merchants held more than three quarters of the market. A study of this inequality using the Gini coefficient suggests a similar trend. The coefficient grew from 0.68 in 1700 to 0.80 in 1780, thereby suggesting a growing inequality among collectors, i.e.

the dominance of specialised individuals. In the case of the benchmark year—1740, two thirds of the market consisted of very large portfolios (Jan Carstens [28%], R. de Wolff [23%] and Abraham Roijen [16%]) and four-fifths of large buyers in general. Although the results for 1740 support the thesis, they may be overestimated due to the fact that only one ship was used in the sample. In addition, Table 6 shows that there was no secondary market in the collection phase in 1740 and 1780, thus suggesting these specialised buyers were buying to hold.

The question remains whether this specialised group was indeed more successful at correctly assessing the risk. Some insight can be provided by a study of the recovery rates, i.e. the size of the debt reclaimed. It should be stated that low recovery rates do not necessarily have to mean poor pricing of the purchased documents since the specialists may have possibly taken such a high risk into account when purchasing the instruments. Table 7 shows that in 1700 and 1740 the specialised buyers were enjoying higher recovery rates compared to the total market, Jacob Kroeger being the only exception.

Table 7. Recovery rates of individual big buyers compared to total debt, by year

Buyers	Recovery rate
Total 1700	78.97
Lijbert Amelonger	80.82
Jacob Croeger	64.59
Jan Bergh	81.42
Total 1740	48.09
Jan Carstens	64.39
R. de Wolff	59.53
Abraham Roijen	62.68
Total 1780	59.3
1780 without <i>Held Woltemade</i>	66.09
Jan Starink	50.68
Jan Starink without <i>Held Woltemade</i>	59.65
D. Waalwijk	55.58
D. Waalwijk without <i>Held Woltemade</i>	60.92

Source: see the text.

1780 was an interesting case as the recovery rates of selected specialised buyers were much lower than the already low total recovery rate. One reason for this could have been the fact that the contracts

dating from 1780 were signed before the outbreak of the fourth Anglo-Dutch war, which began in December 1780 and lasted until 1784. The traders may have priced the risk incorrectly, as they most probably did not anticipate these political/military events. For example, they purchased the transportbrievens of crewmen sailing on the *Held Woltemade* which, as already mentioned, was taken by two English frigates on 1 July 1781.⁵⁰ What is interestingly though is that even not taking the captured *Held Woltemade* into account, the analysis still yields the same results, i.e. that the recovery rates of the two specialised buyers were lower than the total one. This would suggest that the traders did indeed acquire their expertise by building large portfolios and gaining experience. Such system would be expected to collapse under any unprecedented external shocks to the market or any structural discontinuity.

The fact that the market was dominated by the specialised buyers had several consequences. As more and more individuals had more significant portfolios, they were able to learn how to correctly price the instruments. Had the market been dominated by a multitude of individual buyers, it would have been chaotic since no one would have been able to price the instruments systematically. Another consequence was the small size of the secondary market. As has been shown in great detail, there were no problems with selling the instruments, but, since they were being bought to hold, hardly anyone was doing so. Thanks to the institutions in the market mitigating the moral hazard problem, the collectors were certain that sooner or later there would be money on the account, providing the employee survived. Moreover, as they held large portfolios, they were not interested whether the transaction costs, such as travelling to Amsterdam, exceeded the anticipated payment.

Part VIII Summary and Conclusions

In this paper, the system of contacting borrowers and lenders on a market for the salary loans obtained with the use of the VOC transportbrievens through the intermediation of a secondary market has been described. It has been investigated how it was possible for such a system to develop. The hypothetical explanation is two pronged, on the one hand it is suspected that there were institutional arrangements

⁵⁰ Dutch Asiatic Shipping project database, <http://www.historici.nl/Onderzoek/Projecten/DAS> (23 X 2011).

present in the market, which allowed poor people to make a credible commitment in the eyes of the lenders, as well as mitigating mistrust on the secondary market. On the other hand, the system is suspected to have been sustainable, thanks to the development and dominance of a specialised group of buyers, who were able to price the risk correctly. It has also been noted that the system was an outcome of historical circumstances. On the one hand some employees needed to support and insure their families, or finance their stay in Amsterdam, before their departure, while on the other, there were investors acting in a well-developed financial market, with the innkeepers, hosting the employees, as well as the people who were trying to make ends meet working as brokers in the middle. The self-interests of all three groups were what fuelled the system.

Three sub-questions were posed in order to investigate the hypothesis. Firstly, it was necessary to understand why the transportbrievens were an interesting security to purchase, i.e. why people were willing to pay for them. Secondly, it was asked how were the asymmetries of information overcome on the secondary market? Asymmetries are believed to be an impediment to exchange. Lastly, there was also the question of how the buyers could correctly assess the risk and purchase the instruments at the right price? For the purpose of this analysis, contract theory and information economics were used, with special focus on adverse selection and moral hazard problems. It has been described how the construction of the document, together with control over the employees' actions by the VOC, ensured there would be money on the employees' accounts and that the creditors would be able to collect it. Moreover, asymmetry of information did not exist on the secondary market, since all the existing and relevant information was noted on the document. It has also been shown empirically that the market was indeed dominated by a group of specialised buyers who possessed extensive portfolios, thus allowing them to price the transportbrievens correctly and stay in business.

The system offers a few insights on how to organise a microfinance institution. Firstly, the system allowed poor employees, who lacked both physical assets and credibility that could be put forwards as collateral, to obtain a loan on the private credit market, which they could not have obtained other than by going to a pawnshop or a money broker. Furthermore, they gained access to long-term credit, which was exceptional. However, the system entailed significant costs which the employee had to cover. Apart from the loss of the high discount, the employee had to face considerable limitation to his freedom. As has

been shown, there are reasons to suspect that once he obtained the loan he could not leave the city before his departure. In addition, the VOC limited his spending and freedom in the East-Indies in order to ensure that he would earn money to put into his account. In summary, in order for the system to be sustainable, the employees had to suffer even worse discomfort than they would have had experienced simply due to the nature of the service. It also seems that the VOC created this system for its own profits, i.e. to enable the employees to work for them, rather than for the sake of the poor sailors and soldiers.

Mikołaj Malinowski

The costs and benefits of microfinance. The market for Dutch East India
Company transportbrieven in 18th-century Amsterdam

(Summary)

Contemporary institutions engaged in extending micro-loans do not usually grant such loans to the poor due to the latter's inability to provide appropriate collateral and their insufficient creditworthiness. In modern times the Dutch East-India Company created a financial instrument called the "transportbrief" which enabled poor employees of the Company to obtain loans on the financial market. The loans were secured with the right to future salaries of the Company's employees. This article answers the question of how the instrument was able to create a primary and secondary market. The author also discusses the way in which the people engaged in trading in the instrument were able to value it correctly. To analyze the mass source information collected for the purpose of the research the author used the game theory and the information economy theory, as well as many statistical methods. The transportbrief system worked effectively, but to the cost of significant limitation of the Company employees' freedom. The purpose of creating the instrument was to safeguard the interests of the Company and to guarantee an inflow of new employees, and not to combat poverty. Despite these flaws the transportbrief is an interesting structure, which reflects the evolution of financial markets; it may also be an inspiration for institutions which nowadays engage in extending micro-loans.

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