

JANNEKE HERMANS

# ICT in Information Services

**Use and Deployment of ICT in the  
Dutch Securities Trade, 1860 - 1970**



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*Use and deployment of ICT in the Dutch securities trade  
1860-1970*

Photo front page: stockbroker in stock exchange booth at the Amsterdam Stock Exchange, ca. 1950.

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# **ICT in Information Services**

*Use and deployment of ICT in the Dutch securities trade  
1860-1970*

## **ICT in informatie dienstverlening**

Gebruik en inzet van ICT in de Nederlandse effectenhandel 1860-1970

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Janneke Hermans,  
Rotterdam, september 2004





# 1. Introduction

## 1.1 Introduction

As from the end of 2002, the trade floor at the Amsterdam Stock Exchange has no longer hosted shouting option traders that tried to execute trade orders. In December 2002 the option trade changed from an open outcry system to full screen trade. Their predecessors, traders in bonds and shares (securities), had already left the trade floor in 1998. These changes relate to technological possibilities in the area of telecommunication technologies. By means of modern information and communication technologies (ICT) face to face contact is no longer necessary to execute a securities or option trade order. This thesis studies exactly this subject; the use and deployment of ICT in the Dutch securities trade. By using ICT, we aim at technologies that 'capture, transmit and display data and information electronically'.<sup>1</sup> This implies the inclusion of devices such as electromagnetic telegraphs, telephones, radios and telexes and also the infrastructure such as the lines, cables and radio waves that make communication between the devices possible. In this, we follow the OECD definition concerning the ICT sector.

Traditionally, information and communication technologies (ICT) have been considered as technologies that *support* business processes.<sup>2</sup> However, with the hype of the 'new economy' at the end of the 1990s, ICT is considered to be more than just a supporting technology. It was supposed to alter the world economy and business radically. The hype has quietened down by now but what remains is that ICT has transformed from playing a facilitating to a more strategic role in firms. ICT,

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<sup>1</sup> OECD, *Measuring the Information Economy 2002* (OECD STI) p. 81.

<sup>2</sup> N. Venkatraman (1991) 'IT-Induced Business Reconfiguration', in: Michael S. Scott Morton (ed.) *The Corporation of the 1990s. Information Technology and Organizational Transformation* (Oxford University Press; New York/Oxford) pp. 122- 158, p. 122 and p. 125.

particularly internet applications, creates possibilities to form new distribution channels from a firm to its clients (business to consumer), and new channels for trade between firms (business to business). Furthermore, it is said that ICT lowers the costs of communication. By means of ICT it becomes easier to contact other persons and to obtain quickly relevant information. As a result, firms have wider possibilities to find suitable business partners. According to several authors, these new developments will result in the situation that firms will focus on their core competence and outsource other activities. These other activities should then be purchased in the market. Hence, more transactions will take place via the market instead of via hierarchical relations.<sup>3</sup> Others have asserted the contrary. ICT offers the possibility to control and to integrate partially or completely, industrial columns. ICT thus favours integration of activities.<sup>4</sup> Clearly, ICT affects relationships between firms and between firms and their clients. However, different opinions exist as to what the result will be if ICT is actively deployed in business.

In this thesis, this issue is explored in a historical context. Whereas the participants in the current discussion on the role and effects of internet and e-commerce mainly have to rely on information on initial effects combined with expectations of longer term effects, a historical approach offers the advantage that the outcomes of change processes are known. Furthermore, a historical study provides the possibility to put recent changes in perspective. By studying earlier modes of ICT, such as the telegraph, the telephone, and the telex, and their ability to change business processes and business relationships, a more sensible approach to the question of whether and how ICT influences business relationships and the relationships between firms and their clients, can be taken.

## 1.2 ICT and services

Existing literature on the impact of ICT on firms mostly involves firms that produce *tangible* products.<sup>5</sup> In this thesis the focus is on the services sector.

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<sup>3</sup> Thomas W. Malone, JoAnne Yates and Robert I. Benjamin (1987) 'Electronic Markets and Electronic Hierarchies', *Communications of the ACM*, vol. 30, no. 6, pp. 484-497; and John Hagel III and Marc Singer (1999) 'Unbundling the Corporation', *Harvard Business Review*, vol. 77, iss. 2, pp. 133-141.

<sup>4</sup> Joost Jonker and Keetie Sluyterman (2000) *Tuis op de wereldmarkt. Nederlandse handelshuizen door de eeuwen heen* (Sdu uitgevers; Den Haag) p. 384 (also translated into English, entitled *At home on the world markets: Dutch international trading companies from the 16<sup>th</sup> century until the present*, published in 2000 with SDU publishers, The Hague), and Ranjay Gulati and Jason Garino (2000) 'Get the Right Mix of Bricks and Clicks', *Harvard Business Review*, vol. 78, no.3, pp. 107-114.

<sup>5</sup> Kathryn Rudie Harrigan (1983) *Strategies for Vertical Integration* (Lexington Books; Lexington); Morris Silver (1984) *Enterprise and the Scope of the Firm. The Role of Vertical Integration* (Robertson; Oxford);

Together with the transport sector and the press, the financial sector belongs to early adopters of telecom technologies in the services industry.<sup>6</sup> The transport sector offers the service of transporting goods, the press provides news, and the financial sector offers a wide range of services varying from cash withdrawals to concluding mortgages.

The advantages of new ICT to the transport sector relates to the quantity and nature of the transported goods. By means of ICT, a firm can be informed on the current situation. The variety and quantity of the transported goods can be tailored to the needs of local markets. The advantage is that the risk for losses diminishes since the possibility of transporting too few or too many goods decreases. Furthermore, a truck, train, boat or other transporting vehicle can be informed 'en route', whether it has to return with another load of goods. This obviously saves transportation costs. The press early adopted any means to obtain news as fast as possible from all over the world with the aim to publish it as soon as possible. After all, a newspaper is most valuable when it contains the most current news. The same can be said concerning the financial sector; the one that possesses the most relevant information earlier than others, can make huge profits. This is especially pressing in a particular branch of the financial sector, the securities trade. Information relevant to securities trade, is of a high time value.<sup>7</sup> Information having a high time value is information that is only useful for a short period of time. Although current information in the transport sector is important, other technologies such as transportation means and ways to conserve perishable goods during transportation also play an important role in determining the quality of the offered service. In order to point out effects of ICT, it is more plausible to focus on industries in which ICT is the main 'cause' of the profitability of a service which is the case with both the press as the financial sector. In these sectors the quick handling of information is of vital importance. In this thesis, we focus on the financial sector, particularly on the securities trade, because the 'supply chain' of the offered service is longer in comparison to the news sector and therefore, more communication is necessary. This supply chain consists of a seller, a financial intermediary of the selling

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Yeong Heok Lee (1994) *Vertical Integration and Technological Innovation. A Transaction Cost Approach* (Garland Publishing; New York).

<sup>6</sup> Ithiel de Sola Pool (1983) *Forecasting the Telephone: A Retrospective Technology Assessment* (Ablex Publishing Corporation; Norwood New Jersey); R.B. du Boff (1980) 'Business Demand and the Development of the Telegraph in the United States, 1844-1860', *Business History Review*, vol. 54, no.4, pp. 459-479, p. 465.

<sup>7</sup> A.J. Field (1992) 'The Magnetic Telegraph, Price and Quantity Data, and the New Management of Capital', *The Journal of Economic History*, vol. 52, iss. 2., pp. 401-413, p. 403.



## Chapter 1

party, a financial intermediary of the buying party, and a buyer. Communication between client and intermediary and between the intermediaries is necessary to execute an order. With the press, communication between, for instance, a newspaper's office and news providers such as news agencies and journalists, is inevitable but these actors do not necessarily have to have contact with their 'clients' (the readers of a newspaper), to offer their main service: the provision of news. Since the 'communication chain' in the securities trade is thus more elaborate, we expect to see earlier and more extensive results due to the use of ICT in this branch of business than with the press. Therefore, the securities trade is singled out to study effects of ICT on business relationships.

### 1.3 Literature survey

Between the telegraph and internet several modes of ICT have been developed, improved and implemented, such as for example the telephone and the telex. Several historical studies concerning the effects of these telecommunication technologies have been published that can be broadly divided into socio-cultural and economic studies. In the following two subsections these studies will be discussed in order to observe what work already has been done in this field. The third subsection deals with existing literature on the Dutch financial sector, with a focus on the Dutch securities trade. The results of the discussed studies help position this thesis in literature.

#### 1.3.1 Literature on consequences of ICT in general

Representatives of the socio-cultural studies are Kern (1983), Flichy (1991), De Sola Pool (1977, 1983) and Fischer (1992). Kern (1983) studied new technologies in the period 1880-1918, among which are telecommunication technologies such as the telegraph and telephone, with the help of philosophical concepts on time and space.<sup>8</sup> For instance, Kern cites a Canadian engineer, Sanford Fleming, who tried to explain why the telegraph was adopted in 1886:

'[the telegraph] subjects the whole surface  
of the globe to the observation of civilized  
communities and leaves no interval of

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<sup>8</sup> Stephen Kern (1983) *The Culture of Time and Space 1880-1918* (Harvard University Press; Cambridge, Mass.).

time between widely separated places  
proportionate to their distances apart.<sup>9</sup>

In other words, a technology such as the telegraph, changed the existing notions on time and distance. Concerning distance, new telecommunication technologies bring closer other areas, which can be reached instantly. Concerning time, Kern has distinguished the concept of 'time' into 'past', 'present', and 'future'. New telecommunication technologies, especially the telephone, altered the way 'present time' was experienced. The telephone makes direct communication between people at different locations possible who could respond to each other instantaneously. Kern even states that a telephone offered the possibility 'to be in two places at the same time'.<sup>10</sup> The present no longer included the direct environment a person lived in, but also consisted of events around the globe. Telecommunication technologies not only accelerated business transactions but also affected social relationships between people. Since it could penetrate all places, thus also houses of people having a different social status, the telephone had the ability to level traditional hierarchies and bring to life new social distances.<sup>11</sup> Hence, as Kern concludes, the telephone 'worked to create the vast extended present of simultaneity'.<sup>12</sup> The conclusion appears somewhat bombastic, and the rather 'down-to-earth' question arises whether telecommunication technologies were as widely used and adopted as Kern wants to make us believe during the period he covers in his book. Still, the general thought of his book holds well, which is that due to, amongst others, telecommunication technologies, the rest of the world becomes far less away and can be reached within a few minutes instead of within days, or even months.

Flichy (1991) also studied the adoption and use of information and communication technologies, varying from optical telegraphy to radios and computers.<sup>13</sup> The way Flichy built up his book already shows the developments these technologies underwent and what Flichy wants to point out. In different time periods, telecommunication technologies had more influence on particular spheres than in other time periods: from a communication means for governments to an important communication

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<sup>9</sup> Kern, *The Culture*, p. 11.

<sup>10</sup> Kern, *The Culture*, p. 69.

<sup>11</sup> Kern, *The Culture*, p. 316.

<sup>12</sup> Kern, *The Culture*, p. 318.

<sup>13</sup> Patrice Flichy (1991) *Une histoire de la communication moderne. Espace public et vie privée*. (Éditions la Découverte; Paris).

## Chapter 1

device for trade in the period 1790 – 1870; in the period 1870 – 1930 telecommunication technologies started to enter private spaces; in the period 1930 – 1990 communication technologies connected the whole world and were massively used on a very individual level. Radio and television were ‘family’ technologies: listening or watching a programme that provided news from the other side of the world, together with the whole family. During the 1980s, families possessed more than one TV set so that within one family different programmes could be watched. Private telephone conversations were done at home, in private spaces. With the coming of mobile communication (‘la communication nomade’) one carries ‘the private’ into public space. Mobile communication makes the telephone more suited for individual use but at the same time phoning becomes increasingly more a public activity.<sup>14</sup> Flichy concludes that all these communication technologies were not developed separately. Some of these technologies emanate from others. For instance, research to amplify telegraph and telephone signals triggered the invention of the gramophone. Not only their ‘hard’ technology, also the uses of the different communication technologies sometimes resembled each other. In the early phase of the telephone, it was not only seen as a device through which conversations took place but also as a means to listen to opera. Years later, the radio became the technology through which live music could be heard. This amalgamation of technology and use Flichy calls a convergence of media’s.<sup>15</sup>

De Sola Pool was involved in the completion of two books on the telephone. The first book (1977) concerns a collection of a wide variety of essays on the social use of the telephone.<sup>16</sup> None of these essays deal with the relationship between the telephone and business activities. De Sola Pool (1983) also made an evaluation of the expectations of the coming of the telephone.<sup>17</sup> The expectations stem from forecasts that were made in the period between 1876 (the year Bell patented the telephone) and 1940. De Sola Pool reviewed 186 forecasts on the social impact of the telephone system. He concluded that the majority of the forecasts were based on a set of economic-technical parameters. The technical parameters refer to what was technologically possible, the economic parameters refer to considerations on how a technology could effectively be marketed, if

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<sup>14</sup> Flichy, *Une histoire*, pp. 232-236.

<sup>15</sup> Flichy, *Une histoire*, p. 237.

<sup>16</sup> Ithiel de Sola Pool (ed.) (1977) *The social impact of the telephone* (MIT Press; Cambridge, Mass.).

<sup>17</sup> De Sola Pool, *Forecasting the Telephone*.

capital could be raised and so on. According to De Sola Pool, people who understood the technology best made the best forecasts.<sup>18</sup>

Fischer (1992) investigated explicitly the social, thus 'private', use of the telephone in the United States of America.<sup>19</sup> Although the telephone may have altered economic life, Fischer concludes that this was not the case for social life. 'Americans apparently used home telephones to widen and deepen existing social patterns rather than to alter them', as Fischer stated.<sup>20</sup> Basic social patterns are not simply changed by the use and deployment of new technologies. This more modest conclusion contrasts with the vast significance Kern subscribes to new technologies. Yet, this contrast may arise from the different ways Kern and Fischer have set up their studies. As Fischer puts it, Kern has reasoned from the properties of a technology that become characteristics of its users. For instance, because a telephone speeds up contact, it makes life 'more tense, alert, vivid.'<sup>21</sup> This way of thinking can be regarded as a sort of 'technological determinism'; a way of thinking that explicitly focuses on a technology and its abilities without taking into account what influence it has on actual users. Fischer explicitly centres on the users of telephones, and not so much on the technology itself, to make clear what a technology really meant, in this case, to social society.

Although these discussed studies recognise the importance of telecommunication technologies such as the telegraph and the telephone for business activities, the authors do not touch upon the issue in detail. They studied much more the use and impact of telecommunication technology on social life. Literature on ICT and its consequences for business activities are dealt with in the next section (the 'economic studies').

### 1.3.2 Literature on ICT and its 'economic' consequences

The telegraph is held responsible for changes in the opening up of markets, service to clients, modifications in logistical processes, vertical and horizontal integration and in general, for the increase in productivity, efficiency and effectiveness in nineteenth century America.<sup>22</sup> DuBoff (1980,

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<sup>18</sup> De Sola Pool, *Forecasting the Telephone*, p. 155.

<sup>19</sup> C.S. Fischer (1992) *America calling. A social history of the telephone to 1940* (University of California Press; Berkeley [etc.]).

<sup>20</sup> Fischer, *America calling*, p. 260 and p. 262.

<sup>21</sup> Fischer, *America calling*, p. 10.

<sup>22</sup> For the impact of the telegraph on business see the next reference: J. Yates (1986) 'The telegraph's effects on nineteenth century markets and firms' in: *Business and Economic History*, vol. 15, pp. 149-193.

## Chapter 1

1983) argued that the telegraph lowered information and transaction costs and therefore transformed business operations. The immediate and accurate availability of information on prices allowed businessmen to look for the 'best bargain' and it decreased intermarket uncertainties.<sup>23</sup> The telegraph also improved the functioning of markets because it removed obstacles such as deficient information networks that contributed to regional price disparities, high handling and storage costs for goods, and uneven dissemination of technical knowledge.<sup>24</sup> Field stated that the telegraphic services in combination with the railroad formed a necessity for extending outlets of industries that processed perishable goods such as meat and fruit. Because of real-time information on demand and supply circumstances of local, far away, markets, the number of goods could be geared to the local situation or the destination of these perishable goods could be changed along the way.<sup>25</sup> Jones (1996) observed another effect of telecommunications. In a study concerning the rise of multinational enterprises (MNEs) in the nineteenth and twentieth centuries, he concluded that the geographical scope of markets widened as a result of improvements in transport and communication, which increased the frequency of transactions between firms.<sup>26</sup>

Chandler (1977) claimed that 'modern mass production and mass distribution depend on the speed, volume and regularity in the movement of goods and messages made possible by the coming of the railroad and the telegraph in the nineteenth century in the United States'.<sup>27</sup> According to Chandler, this caused an overall increase in the volume of output which in turn increased the number of transactions. Managers of integrated firms were able to monitor the processes of distribution and manufacturing and to co-ordinate the high speed and high volume flows more efficiently than if the monitoring and co-ordination had been left to market mechanisms. ICT was thus especially used to enhance communication within the boundaries of a firm.<sup>28</sup> Jonker and Sluyterman (2000) came to a similar conclusion in their extensive study concerning the functioning of Dutch merchant houses during the period 1550-2000. Yet, they made a distinction

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<sup>23</sup> Du Boff, 'Business Demand', p. 477.

<sup>24</sup> Richard B. du Boff (1983) 'The Telegraph and the Structure of Markets in the United States, 1845-1890', *Research in Economic History*, vol. 8, no. 4, pp. 253-277, p. 254.

<sup>25</sup> Field, 'The Magnetic Telegraph', pp. 410-411.

<sup>26</sup> Geoffrey Jones (1996) *The Evolution of International Business. An Introduction* (Routledge; London) p. 312.

<sup>27</sup> Alfred D. Chandler (1977) *The visible hand: the managerial revolution in American business* (Harvard University Press: Cambridge, Mass) p. 207.

<sup>28</sup> Chandler, *The visible hand*, pp. 207-208.

between effects of the telegraph on the one hand and the telephone and the telex on the other hand. Dutch merchant houses deployed the telegraph to improve communication within the firm.<sup>29</sup> When it comes to the telephone and the telex, Jonker and Sluiterman distinguished two gradual developments. First, several producers started to bypass merchant houses as intermediaries in the trade chain and addressed the retailers of their products directly. The number of participants in this specific chain thus decreased. Second, it resulted in an emancipation of the branch offices of Dutch merchant houses, especially of the overseas branch offices. Until the 1930s, these offices organised the purchase of European goods via the Dutch head offices because communication within Europe was cheaper and faster than communication between, for instance, Asia and Europe. However, after World War II this advantage decreased as a result of diminishing communication costs. It appeared to be more efficient for overseas branch offices to arrange the purchase themselves.<sup>30</sup> This second conclusion is in contrast with Chandler who stated that managers could assert more control from a faraway distance by means of communication technologies. Hence, they actually audited all stages of the production line of a product or service, even though they were not present at all locations of the same production line. It also contrasts with their conclusion on effects of the telegraph. We thus see that the different telecommunication technologies can have different effects.

The question arises whether the same developments appeared in the securities trade sector. Literature concerning the Dutch financial sector has paid little attention to the consequences of the use and deployment of information and communication technologies. Since it is clear that the element of timely delivery is central in the securities trade, and the advantage of telecom technologies compared to earlier means of communication is primarily related to the speed of communication, one would expect that this should have been an important object of study.

Michie (1999) has discussed the role of ICT in relation to the trade in stocks and shares concerning the London Stock Exchange (LSE).<sup>31</sup> He describes several developments that occurred due to the use of telecom technologies. The developments vary from an overall acceleration of the availability of information to the upcoming of new specialised information intermediaries and to the different parties who tried to bypass each other

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<sup>29</sup> Jonker and Sluiterman, *Thuis op de wereldmarkt*, p. 382.

<sup>30</sup> Jonker and Sluiterman, *Thuis op de wereldmarkt*, p. 383.

<sup>31</sup> Randal Michie (1999) *The London Stock Exchange. A History* (Oxford University Press; New York).

in selling and buying securities.<sup>32</sup> Although Michie's main concern is describing a history of the LSE, such a study that discusses the communication facilities and its consequences to the organisation of the securities trade, does not exist for the Dutch situation. What can be concluded from the cultural and economic studies on effects of ICT is that ICT has different effects on different business sectors and that different means of ICT can have different effects.

### 1.3.3 Literature on the Dutch financial sector

Several authors have paid attention to the Dutch financial sector.<sup>33</sup> The published books and articles can be broadly divided into studies that give a macro economic overview of Dutch financial history ('t Hart *et al.*, 1997), studies that deal with Dutch banking (Eisfeld, 1916; De Jong, 1930; Brugmans, 1963; Kymmell, 1992 and 1996; Wijtvtliet, 1993; Sluyterman *et al.*, 1998; Van der Werf, 1999; De Vries *et al.*, 1999; Dankers *et al.*, 2001), and studies that discuss the Dutch securities trade (De la Vega, 1688; Mendes da Costa, 1913; Brouwer 1966; De Vries, 1976; Van der Werf, 1988; Jonker; 1996). These studies are valuable since they offer background information concerning the Dutch financial sector. 'T Hart *et al.* (1997) provided a financial history from the Netherlands in the period 1550-1990 with much

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<sup>32</sup> Michie, *The London Stock Exchange*, pp. 81,116, 120-121, 180, 347, 393, 457.

<sup>33</sup> Literature concerning the Dutch financial sector: Joseph de la Vega (1688) *Verwarring der Verwarringen* (translated from Spanish 'Confusion de Confusiones', reprinted in 1996 by Gestion N.V., Amsterdam), J. Mendes da Costa (1913) *Het A.B.C. van den Amsterdamschen Effectenhandel met bijzonderheden omtrent de voornaamste buitenlandse effectenbeurzen* (J.H. de Bussy; Amsterdam), C. Eisfeld (1916) *Das Niederländische Bankwesen* teil I-II (Martinus Nijhoff; Den Haag), A.M. de Jong (1930-, 2nd edition) *Geschiedenis van de Nederlandsche Bank* dl. I-IV (De Nederlandsche Bank; Amsterdam), I.J. Brugmans (1963) *Begin van twee banken* (Rotterdamsche Bank; Rotterdam), S. Brouwer (1966, 5th edition) *Beurs en effectenhandel* (J.H. de Bussy; Amsterdam), Joh. de Vries (1976) *Een eeuw vol effecten. Historische schets van de Vereniging voor de Effectenhandel en de Amsterdamse Effectenbeurs 1876-1976* (Vereniging voor de Effectenhandel; Amsterdam), D.C.J. van der Werf (1988) *De Bond, de Banken en de Beurzen* (NIBE; Amsterdam), J. Kymmell (1992 and 1996) *Geschiedenis van de algemene banken in Nederland 1860-1914* dl. I-III (NIBE; Amsterdam), C.A.M. Wijtvtliet (1993) *Expansie en dynamiek. De ontwikkeling van het Nederlandse handelsbankwezen 1860-1914* (NIBE; Amsterdam), Joost Jonker (1995) 'Spoil for Choice? Banking Concentration and the Structure of the Dutch Capital Market, 1900-1940' in: Youssef Cassis, Gerald D. Feldman and Ulf Olsson (ed.), *The Evolution of Financial Institutions and Markets in Twentieth-Century Europe* (Scolar Press; Aldershot) pp. 187-208, Joost Jonker (1996) *Merchants, Bankers and Middlemen. The Amsterdam Money Market during the first half of the 19<sup>th</sup> Century* (NEHA: Amsterdam), Keetie Sluyterman *et al.* (1998) *Het coöperatieve alternatief. Honderd jaar Rabobank 1898-1998* (SDU Uitgevers; Den Haag); Marjolein 't Hart, Joost Jonker and Jan Luiten van Zanden (ed.) (1997) *A financial history of the Netherlands* (Cambridge University Press; Cambridge), D.C.J. van der Werf (1999) *Banken, bankiers en hun fusies* (NIBE; Amsterdam), Joh. de Vries, Wim Vroom and Ton de Graaf (ed.) (1999) *Wereldwijd bankieren. ABN AMRO 1824-1999* (ABN AMRO Bank; Amsterdam), Joost Dankers, Jos van der Linden, Jozef Vos (2001) *Spaarbanken in Nederland. Ideeën en organisatie, 1817-1990* (Boom; Amsterdam).

attention for monetary data, such as interest rates of loans, amount of debts, revenues of central governments and tax burdens. The studies on Dutch banking can be subdivided into banking in general (Eisfeld, 1916), studies on specific banks which are embedded in the current developments in the Dutch financial sector with attention to general banking developments (De Jong, 1930-; Brugmans, 1963; Sluyterman *et al.*, 1998; Van der Werf, 1999; De Vries *et al.*, 1999; Dankers *et al.*, 2001), and studies on joint stock commercial banking (Kymmell, 1992 and 1996; Wijtvliet, 1993). Eisfeld described Dutch banking in general, starting with its underpinnings to the latest development at that time, being the concentration of Dutch banks. This development is one of the central issues in this thesis. De Jong has written an extensive history consisting of five parts of the Dutch Central Bank. The volumes are not so much an institutional history of the Dutch Central Bank but De Jong paid much attention to developments such as the extent of provision of credits, circulation of money, interest rates of loans and so on. Brugmans studied two banks (Rotterdamsche Bank and the Nationale Handelsbank) who started to co-operate in 1961 and which were both founded in 1863. Sluyterman *et al.* studied the origination and development of the Rabobank, De Vries *et al.* have done the same for the ABN AMRO bank and Dankers *et al.* researched the rise and stabilisation of Dutch savings banks. Van der Werf discussed the mergers of four large banks into two banks in 1964. Since banks are also participants in the securities trade, these studies are useful to provide background information on Dutch banking and on some banks in particular. These studies however lack attention for ICT or the daily practice of the services provided.

The first study that gave insights into the Dutch securities trade was written by a Spaniard, Josseph de la Vega, in 1688. He wrote *Confusion de Confusiones* in which several dialogues between a merchant, a trader, and a philosopher are displayed. The dialogues provide us with an idea how trade in securities was executed at that time. Mendes da Costa (1913) and Brouwer (1966) provided information on the Dutch securities trade on a very practical level. They make clear how trade works, what the official trade time was, what the involved parties do, when and who has to deliver securities to who, and so on. Jonker (1996) described which type of traders and institutions were active at the Amsterdam money market of the first half of the nineteenth century. The study is valuable since it offers an overview of the involved parties in the Amsterdam financial sector, and



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their activities.<sup>34</sup> De Vries (1976) and Van der Werf (1988) focused more specifically on the securities trade. They paid attention to two important stockbroker organisations that were for a large part responsible to the organisation of the Dutch securities trade. De Vries studied the securities trade from the perspective of the Amsterdam association for securities trade (Vereeniging voor den Effectenhandel), established in 1876.<sup>35</sup> Van der Werf wrote a study from a 'provincial'<sup>36</sup> point of view since it centred around the association which represented the stockbrokers from outside Amsterdam.<sup>37</sup>

Except for De la Vega, these studies aimed at informing (Mendes da Costa, Brouwer) and describing the Dutch securities trade from an institutional point of view (De Vries, Van der Werf, Jonker). Just as with the banking studies, the authors did not focus on the daily activities. Brouwer, De Vries, Van der Werf, and Jonker gave some attention to the deployment of information and communication technologies but they did not specifically concentrate on how ICT affected this trade. This thesis aims to fill that gap in literature.

### 1.4 Research questions

From existing literature, we learn that ICT can have different effects on business. Information and communication technologies bring the outside world closer, through which information, whether it concerns social, political or economic information, from distant regions is quicker available. This results in, on the one hand, the possibility to assert more control on a firm's internal activities (Chandler) while on the other hand, ICT enables the bypassing of parties that were formerly necessary to produce commodities and services resulting in a shortened trade chain (Jonker and Sluyterman, Michie). Literature also observes that use and deployment of the different means for telecommunication does not always result in the same effects. A conclusion from the literature survey of, especially historical literature is that several aspects are left for research. The 'aspects' refer to questions such as how the daily practice of the services in the Dutch securities trade were processed, and to what extent ICT played a role in providing these services. If these questions are answered, we will be able to pinpoint whether any changes in organisation

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<sup>34</sup> Jonker, *Merchants*.

<sup>35</sup> De Vries, *Een eeuw*.

<sup>36</sup> 'provincial' = outside Amsterdam

<sup>37</sup> Van der Werf, *De Bond*.

and services in the Dutch securities trade, can possibly be attributed to ICT. These aspects are the centre of this thesis.

In the introduction of this chapter, relationships between firms and between firms and their clients were mentioned which may be affected by the use and deployment of ICT, and eventually affect the industrial organisation of a sector. By industrial organisation of a sector we refer to the involved parties and how they interrelate. The questions arise *what* changes in the organisation or structure of a sector, and *how* these changes are set in motion. We could think of cooperation between firms in a sector, which becomes so tight due to the use of ICT (*how*) that a merger (*what*) is a logic result. The change is that one of the involved parties disappears and another becomes bigger. Yet, the reversed situation could also occur. ICT offers the possibility to co-operate perfectly well and efficiently over distance (*how*) so why not divestiture (*what*) a department of a firm to a location where costs for transportation or salaries can be kept low. The change in this situation is that new parties arise in a sector. In both cases, ICT affects business relations on a firm level, and consequently, the organisation of a sector changes.

The key question of this thesis thus will be: *how did the use and deployment of telecom technologies affect the daily practice of firms in relation to the goods and services these firms produce, and consequently how did that affect the industrial organisation of a sector?* More specifically, *how did the use and deployment of telecom technologies affect the daily practice of firms, which offer services in relation to the trade in securities, and consequently how did that affect the industrial organisation of the Dutch trade in stocks and shares during the period 1860-1970.* In order to find an answer to the key question, the following research questions are formulated:

- In what way did new telecom technologies facilitate changes in the organisation of the Dutch securities trade?
- In what way did changes in the organisation of the Dutch securities trade facilitate the adoption of telecom technologies?
- What kind of new services originated from the adoption of telecom technologies in the trade of stocks and shares?

The result of this study is a longitudinal analysis, which contributes to theory on effects of ICT and to the understanding of what the use of ICT means to relationships between parties involved in securities trade.

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### 1.5 Methodology

The main question of this study is a 'how' question. According to Yin (1994), 'how' questions can be researched by means of experiments, histories and case studies. An experiment requires control over behavioural events and focuses on contemporary events. Experiments thus imply settings in which the researcher has control over behaviour of the studied subjects. This is clearly not the case in this thesis. A choice between histories and case studies thus has to be made. With histories and case studies control over behavioural events is not necessary. The difference between the two research strategies is the focus on contemporary events. A case study focuses on contemporary events, a history does not. If we strictly look at the research question of this thesis, the choice for history as a research strategy is evident. The choice for a history is even more evident if we consider that case studies have two additional research instruments: direct observation and systematic interviewing.<sup>38</sup> Indeed, the main research question of this thesis focuses on developments in history, thus direct observation and systematic interviewing are not possible. Still, the research questions are inspired from present-day developments on the use and deployment of ICT. Thus we have a mix of contemporaneous and historical aspects to our central research issue. Therefore and because histories and case studies largely overlap, we will conduct historical case studies in order to obtain an answer to the research questions. Because the changing organisational structure of the Dutch securities trade is the centre of attention, it is necessary to study the actors and institutions involved. A number of historical case studies will be performed to investigate their role in the Dutch financial markets and the Dutch telecom services during the period 1850-1970. The selection of cases is discussed in section 1.6.

Yin states that case study research does not lead to generalisations on the level of large populations, or in case of management research, to applied management tools for several business sectors at the same time ('statistical generalisations'). Yet, case study research does lead to 'analytic generalisations' which implies that one or several theories are used as a 'template' which will be compared with the outcomes of case study research.<sup>39</sup> If two or more cases (multiple-case studies) show the same results as theory, one may claim 'replication'. In other words, the

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<sup>38</sup> Robert K. Yin (1994) *Case Study Research. Design and Methods* (Sage Publications; Thousand oaks etc.) pp. 6-8.

<sup>39</sup> Yin, *Case Study Research*, p. 31 and pp. 45-46. See also J.M. Hutjes and J.A. van Buuren (1992) *De gevalsstudie. Strategie van kwalitatief onderzoek* (Boom; Meppel) pp. 63-65.

discussed theory(ies) are valid. If two or more cases do not correspond with theory, this theory needs to be adjusted.<sup>40</sup> Since theories usually claim to be generally applicable, case study research is thus indirectly valid for larger populations.

In this study, we use theories as a tool to help us understand and explain the consequences as a result of use and deployment of ICT. The choice for these theories is based on considerations that are a result of the research question. The research question aims at studying the consequences of ICT on services (the firm level) and on the organisation of the securities trade (the industry level). As concerns ICT and services, the value of the provided services is for a large part based on information. Therefore, the first theory relates to the importance of the early possession of relevant information and how ICT can contribute to that. The part of ICT in relation to the organisation of securities trade relates to integration and/or disintegration processes. Transaction costs economics (TCE) puts central the issue of why firms would want to integrate or disintegrate. Malone, Benjamin and Yates (1987) have related ICT to transaction costs economics. Therefore, TCE is primarily used to find an explanation concerning changes on the industry level.

The empirical material is derived from historical archives. These primary sources consist of minutes of a board, annual reports, brochures, leaflets, circulars and staff magazines. Using historical archives as primary sources to attain the empirical research material, always involves a 'risk' because one can never be sure what to expect. Certainly, it is possible to diminish this risk by consulting the inventories of these archives before going over to the 'research action', but this still does not completely rule out the danger of not finding anything useful. It can also turn out to be the other way around, that one finds much more than expected, or that useful information is found in documents in which one did not expect to find anything.

A consequence of this 'risk' is that the found information is not sufficient to fully apply or test a theory. This will especially be the case with general theories that aim at providing law-like explanations (when A then B). It often occurs, that A or B cannot be exactly established. More likely, it will come close (say Aa or Ab) but not precisely A. Maybe, this is inherent to historical research or even to social sciences in general. The question arises whether it makes sense to try and apply such 'law-like

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<sup>40</sup> Yin, *Case Study Research*, p. 46.

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theories' in historical or social sciences research. This issue will be looked at further in chapter two.

Almost none of the archives of the studied cases contained documents about the exact use of telecommunication technologies in the day-to-day practice of supplied services. Also, it appeared to be hard to detect what the studied organisations exactly had in-house when it comes to the number of telephones or telexes, appeared to be hard. Still, consulting different archives has led to a 'triangulation of sources', and thus to a fairly representative overall picture. Literature has functioned as a secondary source. Literature has been consulted concerning the securities trade in general, actors and institutions involved in the trade in stocks and shares and formed a basis for a general description of the financial sector. With the results of these case studies, structures of the organisation of the Dutch financial markets can be detected and how they have changed over time, how the cases organised their services in the securities trade and how they made use of information and communication technologies to execute these services.

Consequently, the conducted research will not lead to a study in which the relation between quantitative aspects of securities trade (profits ASE, number of traded shares and bonds, rates, etcetera) and ICT is explained. The volume of trade in securities indeed increased in the twentieth century. The widespread use of ICT has most certainly played a role in this development. Yet, ICT is only one of the factors. For instance, we could have made a graph in which the profits of the ASE and number of traded securities at the ASE over time are plotted. In this graph, we can also indicate at which point in time important information and communication technologies were introduced in the Dutch securities trade. The question arises of which year should be taken. For instance, should it be the year that the telephone was introduced in the Netherlands? In 1881, the first public telephone network opened in Amsterdam with 48 subscribers. 1884 is a second year that could be put into the graph because in that year a telephone bureau was opened at the Amsterdam Exchange building. The year 1888 can also be considered. In that specific year, the first trunk line between Amsterdam and Haarlem was put into use. Another point of time that can be taken into account relates to the diffusion of the telephone. For example, the year that the majority of the Dutch possesses a telephone connection can be put in the graph. However, only in 1985, did 40 to 100 inhabitants of the Netherlands

have a telephone connection.<sup>41</sup> Suppose profits and number of traded securities decrease or increase in these years, it could be a result of the telephone but many other circumstances also influence these numbers such as the in- or decrease of listed firms, of stockbrokers, periods of booms or recessions and so on. In other words, to pinpoint the influence of ICT on quantitative data of the ASE requires a different type of study. A second, very practical, restraining factor to draw up such a graph is that the profits of the ASE are only known as from 1940.<sup>42</sup>

### *1.6 Selection of cases and sources*

Because our intention is to research the networks and relationships financial intermediaries set up to facilitate securities trade, it is necessary that the selected cases had built up such relationships or were at least part of such a network. Another, rather down to earth, consideration plays a part in the decision for the selection of cases: did the actors and institutions leave an accessible archive and is the time period of the archive long enough to cover all generations of communication technologies that are of importance to the trade in stocks and bonds?

Before we go on discussing the actual selection of cases, it is useful to provide some information on the Dutch securities trade. The details will be described in chapters three and four. Trade in securities mainly consisted of the execution of orders which was done by financial intermediaries, and everything that goes with it, such as the provision of information and administrative activities. These financial intermediaries were commission traders, sworn brokers, merchant houses, bankers, joint stock commercial banks and specialists, or in general, stockbrokers. The commission traders have long functioned as the most important intermediaries who were divided into Amsterdam and provincial commission traders. A case study of both an Amsterdam and a provincial commission trader can of course not be missed in a thesis whose goal is to describe and to explain the structure of the Dutch securities trade. An example of an important Amsterdam financial intermediary is Hope & Co (1762-1966). However, the public archives of Hope & Co did not provide the information needed. The same problem occurred with other Amsterdam commission traders that left accessible archives, such as Ketwich & Voomborgh (1790-1881), Labouchère, Oyens & Co (1881-1913),

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<sup>41</sup> G. Hogesteeger (1989) *Van lopende bode tot telematica. Geschiedenis van de PTT in Nederland* (PTT Nederland; Groningen) p. 230.

<sup>42</sup> see [www.cbs.nl](http://www.cbs.nl)

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Van Loon & Co (1885-1938) and Wed.<sup>43</sup> W. Borski (1816-1966). This also applies to an active provincial intermediary, F. van Lanschot (1850 until now) from 's Hertogenbosch. An archive of another provincial commission trader from Utrecht, Vlaer & Kol (1691-1975), did give more insights into their daily practices. Information concerning provincial and Amsterdam commission traders is also gathered with the help of other primary sources. The archives of the Amsterdam association for securities and the Amsterdam Chamber of Commerce appeared to be useful information sources. The parts in this thesis on commission traders are completed by making use of secondary sources.

More adequate information could be derived from archives of large joint stock commercial banks. Concerning the joint-stock commercial banks, there is consensus in literature about the five largest banks: Rotterdamsche Bank, Twentsche Bank, Amsterdamsche Bank, the Nederlandsch-Handelsmaatschappij and the Incasso-Bank.<sup>44</sup> Except for the Rotterdamsche Bank, they all started their activities in Amsterdam because its founders were already embedded in the Amsterdam financial sector or, in case of the Twentsche Bank, its founders found it necessary to establish an office in the financial centre of the Netherlands. For a long time the Rotterdamsche Bank was only located in Rotterdam. This bank had to contact an Amsterdam commission trader to execute its securities orders. Therefore, the Rotterdamsche Bank is one of the selected cases. The other joint stock commercial bank that is taken, is the Twentsche Bank, established by the family Blijdenstein. This family had its origins in the eastern part of the Netherlands. The Blijdensteins already had several offices that provided financial services. One of these offices was located in London. However, the first office that bore the name 'Twentsche Bank', was stationed in Amsterdam. Because it is to be expected that the Twentsche Bank often contacted their offices in the eastern part of the Netherlands, the Twentsche Bank is selected as a second case.

Stockbrokers were organised in associations that defended their interests. From 1876, the Amsterdam commission traders were organised in the 'Vereeniging voor den Effectenhandel' (Association for the Securities Trade; further abbreviated as VvdE). From 1903, the provincial commission traders were organised in the 'Bond voor den Geld- en

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<sup>43</sup> the abbreviation 'wed.' stands for 'weduwe' which means widow. A firm that carries this abbreviation in its name is run by the widow of the deceased owner of that company.

<sup>44</sup> J.L. de Jager (1999) 'De harde leerschool, 1914-1950', in: Joh. de Vries, Wim Vroom, and Ton de Graaf (red.), *Wereldwijd bankieren. ABN AMRO 1824-1999* (ABN AMRO; Amsterdam) pp. 241-298, pp. 254-257.

Effectenhandel in de Provincie' (Union for trade in money and securities in the Province). The archives of both organisations were studied. The archive on the VvdE especially provided much relevant information. An organisation to which the VvdE could appeal to, was the Amsterdam Chamber of Commerce. Hence, the archive of this organisation was also taken into account. Finally, the provider of telecommunication material, infrastructure and services is studied which is the national post, telegraph and telephone service, the PTT.

### *1.7 Structure and period thesis*

The thesis proceeds as follows. In the second chapter, the theoretical basis for this study is laid down. As was mentioned earlier, two theoretical approaches are discussed. The first relates ICT to the concept of information and the second contains transaction costs economics which links ICT to the organisation of an industry. These theories function as tools to help explain any changes in securities traffic services and changes on the level of the industry level. The chapter closes with a discourse on the use of general theories in historical research. The third chapter provides an historical overview of the Dutch securities trade. The chapter supplies of the necessary background information on an industry level. It pays attention to the upturn, organisation, institutions and several central issues to the Dutch securities trade over time. Chapter four gives an analysis of the main participants of the Dutch securities trade on a firm level. By participants we aim at actors who perform the actual trade such as commission traders, bankers, joint stock commercial banks and so on. The aim of the chapter is to come to an overview of relationships between the involved actors over time. Chapter four ends with several schemas that picture the different structures of the Dutch securities trade. These schemas thus help to point out what changes have taken place on the industry level. Chapter five centralises the available means of telecommunication in the Netherlands in general, and especially in the Dutch securities trade. The chapter ranges from the electro-magnetic telegraph to the telex. This chapter thus makes clear which telecommunication technologies were available at what point in time. Chapter six links chapters three, four and five together. It discusses how the involved actors organised their services related to securities traffic and how they made use of telecommunication technologies to facilitate or even set up these services. The aim is to establish whether any changes in these services can be linked to the use and deployment of ICT. In chapter seven,



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theory and empirical material is combined, and therefore, functions as the conclusion of this thesis.

The core of this thesis will focus roughly on the period between 1860 and 1970. The choice for this period stems from the following reasons. First, from the year 1860, we see a boom of establishments of joint stock commercial banks (Twentsche Bank 1861; Rotterdamsche Bank 1863; Amsterdamsche Bank 1871). Joint stock commercial banks play a large role in this study since these were for a large part responsible for the integration movement that changed the structure and organisation of the Dutch financial sector. They mainly integrated with provincial financial intermediaries that almost disappeared in 1970. In 1947, the union that represented the interests of provincial stockbrokers, counted 239 independent financial intermediaries. In 1973, their number had decreased to 34.<sup>45</sup> Not surprisingly, this union ceased to exist in the same year. Furthermore, as from the 1970s (and even before) digital communication services become more and more visible in securities trade. These developments will not be studied in this thesis. Several chapters cover a longer period than 1860-1970. This is necessary to be able to include relevant developments that occurred before 1860 or after 1970, or to include developments that start before 1860/1970 and continue after 1860/1970.

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<sup>45</sup> Van der Werf, *De Bond*, p. 262.

## 2. Theoretical Framework

### 2.1 Introduction

The intention of this chapter is to embed the research questions theoretically. With the use of theories, we aim at understanding and structuring what we see happening in the organisation of the Dutch securities trade. We are specifically interested in explaining any changes in this trade. The changes can manifest themselves in an altered provision of services or in the rise or disappearance of actors involved in the securities trade.

By introducing telecommunication technologies in securities trade services, firms innovate; they use a new technology to enhance their services. When firms innovate, they aim at reaching two goals: (1) creating extra value for their customers, and (2) decreasing costs of producing a good or service.<sup>1</sup> These two goals can be separate goals, or the first could result in the second. Participants in the securities trade can profit from prior knowledge of important information. Firms that provide services in the securities industry, create value for their clients by acquiring this information in an early stage. ICT can speed up this process, that could result in a changed range of services. This also affects the costs a firm needs to make to provide these changed services. A changed outline of costs might influence the organisational mode of firms, and thus the structure of a complete sector.

In order to structure the organisation of the securities trade, the notion on value systems of Porter (1990) will be used. Next to that, it is a

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<sup>1</sup> Michael E. Porter and Victor E. Millar (1985) 'How information gives you competitive advantage', *Harvard Business Review*, vol. 63, no. 4, pp. 149-160; Michael E. Porter (1990) *The Competitive Advantage of Nations* (MacMillan Press; London) pp. 40 -47; David J. Teece, Gary Pisano and Amy Shuen (1997) 'Dynamic Capabilities and Strategic Management', *Strategic Management Journal*, vol. 18, no. 7, pp. 509-533.

useful concept to divide activities of both a firm and an industry. By making a value system of the Dutch securities trade on different moments in time, it is possible to detect any changes in the structure of this trade. The notion on value systems obviously provides no explanation for these changes. Two main directions for explaining are explored that clarify why changes in a value system may occur. To the first, we will refer as the 'information view' and the second is transaction costs economics (TCE). The information view draws from information economics which, amongst others, pays attention to information asymmetry and imperfect information. ICT has the ability to decrease or increase information asymmetry, and thus to affect the value creating ability of a firm which has consequences for the services and organisation of a firm. In TCE, the general line of reasoning is, simply said, that high transaction costs lead to hierarchy and low transaction costs to market. Several variables, which will be discussed in detail in the sixth section of this chapter, influence the height of transaction costs. In this field a discussion has evolved regarding the question whether ICT reduces or increases transaction costs, thereby influencing the choice of firms for market or hierarchy. The choice for market or hierarchy influences the organisational structure of a firm. This could lead to a change in the pattern of trade since the choice for hierarchy means that integration of services or of a firm takes place. The choice for market implies that a firm has decided to purchase a product or service on the market instead of producing it in-house.

The information view uses the aspect of creating extra value as a starting point (referring to the first reason to innovate) with decreased costs as a desired consequence. TCE starts from the aspect of decreasing costs (referring to the second reason to innovate). The question to be answered in the assessments on both the information view and TCE is what variables are distinguished, how they can be applied to the subject of this thesis and to what extent the two reasons for a firm to innovate are a consequence of each other.

These theories are general economic theories. This characteristic seems to conflict with historical research since the latter usually studies changes and processes of specific events. The question arises to what extent general theories are applicable to history. This issue is explored in further detail in section 2.2. Section three deals with value systems. Section four discusses the importance of information and how ICT can influence the availability of information. In section five, the information view is made operational for this study. In section six and seven, the basics of TCE

are dealt with. Sections eighth and nine explore how in TCE integration and disintegration of firms is explained and how ICT plays a role in that issue. The tenth section provides the operational factors of TCE while the eleventh section concludes.

## *2.2 Economic theories and history*

Since this thesis focuses on organisations and the way a specific part of the financial sector is organised, we have come to look at economic organisation theories such as new institutional economic theories. These theories aim at providing an explanation on what activities a firm should or should not perform ('the boundaries of the firm') which ultimately has consequences on the way an industry is organised. If a firm decides to integrate new activities via a merger or take-over, the consequence for a sector is that another firm disappears. If this firm sets up the new activity itself in such way that serious competition could be given to other participants in the same industry, it also may lead to the disappearance of firms. The same argument can be given for divestiture. If a firm hives off a business activity it may lead to a new firm that starts to perform the disintegrated activity or if it is taken over by an existing firm, the size of the latter increases. Institutional economics, that deals with these issues, often provides a much more general law like explanation for phenomena than historical theories that are, in general, more based on the explanation of a specific event in history or finding facts of this event. The advantage of a general theory is that it is applicable to many events. On the other hand, since such a theory is extrapolated to a high extent (otherwise, it could not function as a general theory) important details can be missed.

Hodgson (2001) explicitly doubts the usefulness of general theory in relation to studying the past. According to Hodgson a general theory is 'any substantial explanation or model of the principal characteristics and behaviour of human economies and societies, largely or wholly in terms of features that are assumed to be common to most conceivable social or economic systems'.<sup>2</sup> He doubts the usefulness of general theories in relation to history because he sees a problem in the 'historical specificity' of the past. In the following, Hodgson clarifies the problem of 'historical specificity'.

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<sup>2</sup> Geoffrey M. Hodgson, (2001) *How Economics forgot History. The problem of historical specificity in social science* (Routledge; London) p. 6.

'[I]t first acknowledges the fact that there are different types of socio-economic system, in historical time and geographic space. The problem of historical specificity addresses the limits of explanatory unification in social science: substantially different socio-economic phenomena may require theories that are in some respects different. If different socio-economic systems have features in common, then, to some extent, the different theories required to analyse different systems might reasonably share some common characteristics. But sometimes there will be important differences as well. Concepts and theoretical framework appropriate for one real object may not be best suited for another. The problem of historical specificity starts from a recognition of significant underlying differences between different objects of analysis. One theory may not fit all.'<sup>3</sup>

Hodgson does not reject generalisations, abstractions, unifications or simplifications. On the contrary, he states that science cannot function without some universal statements and that these are respectable objectives if causal mechanisms are explained. However, generalisations are often not able to sufficiently explain 'concrete particulars'.<sup>4</sup> According to Hodgson, the issue of historical specificity evokes the question of which unifications are 'appropriate' and which are not. Hodgson specifies the question to the core assumptions of economic science. Are these suited to explain all types of socio-economic systems or only a few or even just a part of a socio-economic system?<sup>5</sup> What is the value of general economic theories to history or/and historical qualitative empirical data that is derived from historical archives? The problem that Hodgson discusses is certainly not an issue specific to *historical* data. Actually, it goes for all data derived from research in social sciences. We will regard this problem as a meta issue underlying this thesis. The main aim is to study and to explain changes in services and organisation of the Dutch securities trade with the help of two theoretical views. In the end, a reflection on that attempt will be made.

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<sup>3</sup> Hodgson, *How economics*, p. 23.

<sup>4</sup> Hodgson, *How economics*, p. 39-40.

<sup>5</sup> Hodgson, *How economics*, p. 38-39.

### 2.3 Value systems and creation of value

According to Porter, firms create value for their clients through performing primary and secondary activities. The primary activities consist of production, marketing, delivery and servicing of the product. Support activities consist of purchased inputs, technology, human resources, and the overall firm structure. This network of activities is called the value chain of a firm. The notion on value chains can thus be used to distinguish a firm's value creating activities. A firm's value chain is part of a value system; a larger stream of activities in a particular industry that includes the suppliers, distributors or retailers, and the buyers of the produced goods or services.<sup>6</sup> Another word that is used for value system is an industry's value chain.<sup>7</sup>

In the value system of securities trade, several services are transferred. Intermediaries provide these services. We assume that ICT makes the transfer of services easier, and thus affect the way these services are provided. For example, it becomes easier to pass on buy and sell orders and it becomes easier to receive and transmit relevant information for a buy or sell decision on securities. The possibilities for obtaining information clearly improves with the introduction of information and communication technologies. As a result, much more information is more easily available to more people. A consequence of this development might be that intermediaries no longer profit from the services they provide. We especially think of information services since ICT is particularly useful in gathering information. In theory, ICT provides the possibility for firms or end consumers to find information themselves without the mediation of intermediaries. Intermediaries might disappear or find new ways to justify their existence.

In the above paragraph, three elements are linked to each other; how *ICT* (1) influences *information services* (2) and thus, the composition of a *value system*. We will discuss their interrelationships in more detail in the following sections. First, some theory on information will be dealt with and, second, *ICT* and information are linked to each other.

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<sup>6</sup> Porter, *The Competitive Advantage of Nations*, pp. 40-43.

<sup>7</sup> Robert Benjamin and Rolf Wigand (1995) 'Electronic Markets and Virtual Value Chains in the Information Superhighway', *Sloan Management Review*, vol. 36, iss. 2, pp. 62-72, p. 63.

## 2.4 Information and ICT

In financial markets, the acquiring of relevant information is essential; particularly *the timing* of acquiring relevant information. The one that possesses the 'hottest' information earlier than others, might gain the most. For example, the alleged possession by Nathan Rothschild of early news concerning the outcome of the battle of Waterloo in 1815, created a myth around him.<sup>8</sup> Rothschild would have greatly profited from the fact that he knew earlier than his competitors who had won this battle. Ferguson (1998) who has made an extensive study on the Rothschild family, has demythologised the story by now. Maybe Rothschild gained from prior knowledge on the outcome of the battle of Waterloo but these profits can never have been very great.<sup>9</sup> Although the example of Nathan Rothschild appeared to be a heavily exaggerated story, still it shows what enormous value is ascribed to the early possession of relevant information.

Stigler (1961) and Arrow (1973; 1985) have stressed the economic value of information. To these authors, the economic value of information is obvious. Stigler states that 'knowledge is power'<sup>10</sup> and Arrow declares that the economic value of information is no great mystery in itself.<sup>11</sup> The one that possesses 'information can make greater profits than would otherwise be the case'.<sup>12</sup> Around the concept of the value of information scholars like Joseph E. Stiglitz, George J. Stigler and Kenneth Arrow have developed a separate branch of economics, information economics. Information economists set out to denounce several basic assumptions of classical economics such as efficient markets and perfect information. The efficient market hypothesis holds that prices in the stock market convey all information. However, as Stiglitz states, if that were the case, no one would spend money on collecting information because it is already represented in the prices and prices are publicly available.<sup>13</sup> A market is

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<sup>8</sup> Robert A. Schwartz (1993) *Reshaping the Equity Markets. A Guide for the 1990s* (Business One Irwin; Homewood, Ill.) p. 393.

<sup>9</sup> Niall Ferguson (1998) *The World's Banker. The History of the House of Rothschild* (Weidenfeld & Nicolson; London) pp. 102-107.

<sup>10</sup> George J. Stigler (1961) 'The Economics of Information', *The Journal of Political Economy* vol. 69, no. 3, pp. 213-225, p. 213.

<sup>11</sup> Kenneth J. Arrow (1973) *Information and Economic Behavior* (Svanbäck & Nymans Boktryckeri; Stockholm).

<sup>12</sup> Kenneth J. Arrow (1985) 'Economic Welfare and the Allocation of Resources for Invention' in: Kenneth J. Arrow, *Production and Capital. Collected papers of Kenneth J. Arrow* vol. 5 (Harvard University Press; Cambridge Mass.) pp. 104-119, p. 110.

<sup>13</sup> Joseph E. Stiglitz (2001) 'Information and the Change in the Paradigm in Economics', Prize Lecture for Nobel Prize, 8 December 2001, <http://www.gsb.columbia.edu/faculty/jstiglitz/papers.cfm>, pp. 472-540, p. 485.

fully informationally efficient if information is distributed to all participants at the same time. Again, if such a situation occurs, no one would bother to gather information if that incurred costs.<sup>14</sup> However, in reality, people do collect information against a certain price.

The notion on perfect information relates to the situation that a decision maker always aims to gather all information relevant for making a decision; he or she wants the information to be perfect in order to make a sound decision. However, in real life, information is never perfect.<sup>15</sup> The information acquired never communicates all relevant aspects.

Information economists have developed the concepts of imperfect information and information asymmetry that are opposite to efficient markets and perfect information. Imperfect information refers to the quality of the information which can never be perfect. Information asymmetry bears on information the involved actors possess. Information asymmetry occurs if a person knows more or different things than others.<sup>16</sup>

The next question is, how information asymmetry and imperfect information originates. Clearly, it is related to unequal availability of information. Unequal availability might be a result of a difference in use and deployment of ICT; a firm might have the disposal over more and better ICT devices and infrastructure than another firm. An advantage can be gained over competitors that do not possess, for instance, a telephone and thus cannot obtain relevant information at the same speed. Yet, one has to keep in mind several considerations before adopting a new technology. New communication technologies need a 'critical' mass of users to be valuable to its users. Simply said, if you are the only one with a telephone, there is no use in deploying it. If more people start to adopt a telephone, it is more valuable to have one yourself. Apart from that, costs of using a new communication technology also play a role in the decision of adopting this technology. In the initial phase of a new communication technology costs are usually high. We only have to think of the newest, state of the art notebooks that are very expensive when these appear on the market for the first time. However, after a few months, prices drop considerably because its 'newness' has disappeared and more people start to use the new technology.<sup>17</sup>

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<sup>14</sup> Stiglitz, 'Information and the Change', p. 491.

<sup>15</sup> Joseph Stiglitz (2002) 'Graaiende managers brengen economie enorme schade toe', *Het Financieele Dagblad*, 25-11-2002 (translation).

<sup>16</sup> Stiglitz, 'Information and the Change', p. 488.

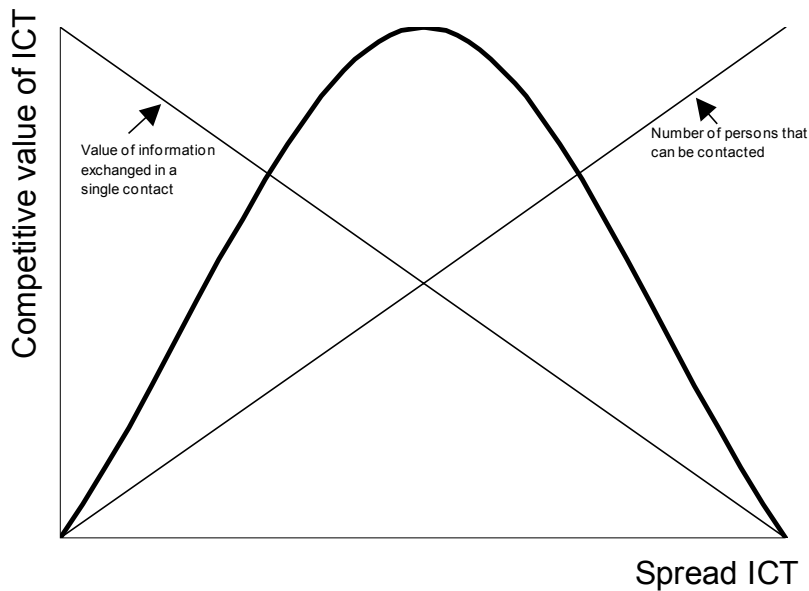
<sup>17</sup> Mark Casson (1997) *Information and Organization. A New Perspective on the Theory of the Firm* (Oxford University Press; Oxford) p. 293.



Chapter 2

In the first phase of a new communication technology the main advantage will thus be increased speed for transmitting and receiving information and not lower costs. The obtaining of information earlier than others, provides competitive advantage. The less others know what you know, the higher the value of your knowledge. In its initial phase, a new ICT has competitive value because it contributes to information asymmetry and thus to the competitive advantage of firms. Logically, competitive advantage is lost if all involved actors in the securities trade possess a telephone due to decreasing costs of ICT. The value of information then even diminishes; if everyone can acquire the same information at the same speed, everyone can use this same information at the same time. In this case, ICT diminishes information asymmetry and its competitive value decreases. This process starts all over when a new communication technology is developed and adopted (see figure 2.1).

Figure 2.1: Stylised representation of competitive value of ICT



Could we think of new services or disappearance of services provided by intermediaries in securities trade, as a result of ICT and information asymmetry? The situation could occur that a client starts to perform a part of the services him or herself because he or she feels that the received information of the financial intermediary is not sufficiently accurate. The

client can switch to another financial intermediary or, after costs of ICT decrease, clients of professionals can end up in the position to purchase communication technologies with which they can gather information themselves. The information service itself persists, but disappears with an intermediary as a value creating activity. If more of its clients begin to gather their own information, an intermediary may disappear or has to find new ways to remain attractive as an intermediary. The disappearance (or appearance) of intermediaries shows itself as a change in the structure, or 'value system' of the Dutch securities trade. Services and structure can thus not be regarded as two separate entities; most likely a change in services leads to a change in the structure of trade.

### *2.5 Operational factors information and ICT*

Value systems will function as a means to structure the Dutch securities trade which gives the insight of involved actors and their value creating activities; ICT and information form the two basics to indicate a change in services. The next step is to formulate how to point out ICT and its influence on information with the help of historical empirical material. In the following, several questions are formulated that will help to make that influence visible, thus operational.

First of all, we need to focus on the industry's value chain. Therefore, the following questions need to be answered:

- a. what actors form the value systems in the Dutch securities trade?;
- b. what are their activities?;
- c. what value do they create?;

With this information, possible imbalances in an industry's value chain can be distinguished. To answer these questions, a and b should not incur any problems. Question c, however, will be more difficult to answer. First of all, how is 'value' assessed and second, from whose perspective? It is to be expected that, in the securities trade, the creation of value strongly relates to information and the means to acquire that information. Therefore, these two aspects need to be assessed in more detail.

Thus secondly, the following questions must be answered as concerns the means to acquire information (ICT):

- d. what are the available means of ICT in general and in the Netherlands in particular;
- e. what means of ICT were used in the Dutch securities trade and;
- f. how the involved actors of the value system deployed ICT in the securities trade.

Third, a closer look has to be taken to information. The basic thought is that uneven availability of information, whether or not caused by the use and deployment of ICT, can lead to information asymmetry, and thus to extra value for clients. In securities trade, time plays a decisive factor. Information of which its value is dependent on the moment it is received and transmitted, is very valuable in securities traffic. As is stated earlier, an early possessor of information, might gain from this knowledge simply because he has obtained it earlier than others. So, we need to know:

- g. what types of information are of importance?;
- h. what are the different means of telecommunication per actor?;
- i. at what time (during stock exchange hours, the same day, the day after?) did they receive the information?;
- j. did the timing of the transfer of information change over time?

However, not only timing and content are of importance as it comes to determining the value of information, also the costs of acquiring information matters. Costs can be a factor in the decision to purchase new ICT. In order to determine the height of information costs, one has to find out:

- k. the costs of making use of information sources such as sending a telegram, telephone calls, the subscription rates to the telex and ticker service. Annual reports are mostly free of charge, and naturally it is impossible to measure the costs of 'informal' information. *The sources of such information can be found on the floor of the Stock Exchange; the commission traders and specialists.*

The answers to this list of questions, needs to provide information to support the argument that use and deployment of ICT by actors in a value system leads to unequal availability of information in a value system. This causes a situation in which some actors in a value system know more or less than other actors in the same value system.

## 2.6 Transaction Costs Economics (TCE)

In the introduction of this chapter, we stated that another aim of firms to innovate is to decrease costs and that TCE is mostly related to this aspect since it focuses on the consequences of changes in costs, especially transaction costs. The costs we mentioned in relation to the second reason for firms to innovate, relate to the costs of 'producing' and transferring a service. A change in these costs, may lead to an altered governance structure of a firm, and eventually to a changed organisational structure of a whole sector. This line of reasoning stems from transaction costs

economics. Transaction costs economics belongs to new institutional economics. Institutional economics especially focuses on the meaning and influences of institutions in the economy. In general, new institutional economics aims at explaining why institutions (governance structures) appear and alter as a result of individual actions and interactions.<sup>18</sup> TCE 'indicates how and why transactions can be matched with institutions in a discriminating way'.<sup>19</sup> The changes on the organisational level of both a firm and a sector manifest themselves in appearance (extension of a value system) or disappearance (contraction of a value system) of actors, or, in terms of TCE, market or hierarchy. Malone, Yates, and Benjamin (1987) have, as one of the firsts, slipped in the factor of ICT that influences transaction costs and thus, the governance structure of a firm.<sup>20</sup> The reasoning is that due to ICT, it is more easier to search for information on suppliers and prices, and to negotiate on contracts. ICT reduces transaction costs, and therefore more transactions will be done via the market. Before this hypothesis is discussed in further detail, we will first deal with the basics of TCE. It is necessary to understand these basics in order to comprehend the possible influence of ICT on transaction costs.

### *2.7 Basics of TCE*

In his famous article 'The Nature of the Firm',<sup>21</sup> Coase (1937) discerned four types of transaction costs:

1. searching costs: costs of discovering the relevant trading partners and their prices;
2. costs of contracting: costs of negotiating and concluding an agreement;
3. costs of enforcement: costs of making specifications of the agreement depending on the duration of the contract: the shorter the contract the more the contract is specified, the longer the contract the less the contract is specified;
4. monitoring costs: when a contract is concluded, both parties are eager to see that the opposite party fulfils the commitment. Therefore the parties will watch each other's moves closely.<sup>22</sup>

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<sup>18</sup> Jack J. Vromen (2002) 'The Economics of institutions – what has evolution got to do with it?' *EIPE-Erasmus University Rotterdam*, unpublished paper, pp. 1- 26, p. 2.

<sup>19</sup> Oliver E. Williamson (1979) 'Transaction-Cost Economics: The Governance of Contractual Relations', *Journal of Law and Economics*, vol. 22, no. 2, pp. 233-261, p. 234.

<sup>20</sup> Malone *et al.*, 'Electronic'.

<sup>21</sup> R.H. Coase (1937) 'The Nature of the Firm', *Economica* IV, pp. 385-405.

<sup>22</sup> Coase, 'The Nature of the Firm', pp. 390-391 and 394-395.

These costs explicitly refer to concluding a contract and everything that goes with it. Williamson (1975, 1979, 1981, 1985, 1991, 1998) further elaborated on TCE. Williamson stated that TCE aims 'to match governance structure to the attributes of transactions in a discriminating way'.<sup>23</sup> The 'governance structure' refers to the way transactions are governed; within a market or a hierarchical relation. The attributes are related to human behaviour and to the environment of the transaction.<sup>24</sup> A transaction itself is a 'transfer across a technologically separable interface'.<sup>25</sup>

The first category of attributes, concerning human behaviour, refers to bounded rationality and opportunism. Bounded rationality relates to the notion that human beings are in fact rational but we are physically unable to comprehend everything that is relevant for a certain transaction.<sup>26</sup> Another possible trait of humans is that they behave opportunistically. Opportunism is defined as 'self-interest seeking with guile'.<sup>27</sup>

The second category of attributes, concerning the environment of a transaction, relates to asset specificity, frequency and uncertainty. Asset specificity is a crucial aspect of TCE. It refers 'to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value'.<sup>28</sup> Note that 'asset' does not refer to a product or service but to the 'devices' necessary to produce a good or service. Asset specificity, then, entails the specificity of investments needed to fabricate a product or service.<sup>29</sup> An asset is very specific if its use is limited and therefore hard to re-use. The extent to which an asset is specific depends on several factors: (1) location (site specificity), for example an irremovable natural resource such as a mine; (2) physical factors (physical asset specificity), for example a specialised machine or tool required to produce a unique component; (3) human factors (human

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<sup>23</sup> Oliver E. Williamson (1981) 'The Modern Corporation: Origins, Evolution, Attributes', *Journal of Economic Literature*, vol. 19, iss. 4, pp.1537-1568, p. 1544.

<sup>24</sup> John Groenewegen (1996) 'Transaction Cost Economics and Beyond; Why and How' in: John Groenewegen (ed.), *Transaction Cost Economics and Beyond* (Kluwer Academic Publishers; Dordrecht) pp. 1-9, p. 1.

<sup>25</sup> Oliver E. Williamson (1985) *The Economic Institutions of Capitalism. Firms, Markets, Relational Contracting* (The Free Press; New York) p. 1.

<sup>26</sup> Oliver E. Williamson (1975) *Markets and Hierarchies. Analysis and Antitrust Implications* (The Free Press; New York) p. 21; see also Bart Nooteboom (1999) *Inter-firm alliances: analysis and design* (Routledge; London) p. 17.

<sup>27</sup> Williamson, *Markets and Hierarchies*, p. 26.

<sup>28</sup> Oliver E. Williamson (1991) 'Comparative Economic Organization: The Analysis of Discrete Structural Alternatives', *Administrative Science Quarterly*, vol. 36, no. 2, pp. 269-296, p. 281.

<sup>29</sup> Nooteboom, *Inter-firm alliances*, p. 18.

asset specificity) for example specified knowledge; (4) brand name capital; (5) dedicated assets which are defined as discrete investments made to meet the demands of a single customer; (6) 'temporal specificity', which can be regarded as a sort of site specificity 'in which timely responsiveness by on-site human assets is vital'.<sup>30</sup>

Finally, frequency and uncertainty affect transaction costs. *Frequency* relates to the number of transactions transferred within a certain time period. *Uncertainty* refers to the (un)expected behaviour of the contracted parties.<sup>31</sup>

## 2.8 TCE and integration

The issue of make-or-buy is explicitly dealt with in TCE. Williamson even calls the issue 'the archetypal problem for transaction cost economics'.<sup>32</sup> The make-or-buy decision especially depends on the condition of asset specificity.<sup>33</sup> If an asset is highly specific, obviously high investments have to be made to produce this asset. In such a situation, internal organisation is favoured. High asset specificity brings about a relation in which both parties are highly dependent on each other. The relation is characterised by one buyer and one supplier. According to Williamson, in such a relation vertical integration is the most efficient solution.<sup>34</sup> If asset specificity were not present, market contracting would be the most appropriate governance structure in every situation while 'neither party has a transaction-specific interest in the continuity of the trade'. If asset specificity enlarges, internal organisation of a transaction will be more likely.<sup>35</sup> As was discussed in the previous section, Williamson distinguished six types of asset specificity: site specificity, physical asset specificity, human asset specificity, brand name capital, dedicated assets and temporal specificity. Especially the first five forms of asset specificity mentioned above lead to vertical integration because it creates bilateral dependency.<sup>36</sup>

The attributes of frequency and uncertainty play a less conclusive role in the decision whether to integrate or not. With respect to frequency, Williamson states the following: *recurrent* transactions of asset specific goods or services are likely to take place within a firm whereas *occasional*

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<sup>30</sup> Williamson, 'Comparative Economic Organization', pp. 281-282.

<sup>31</sup> Williamson, *The Economic Institutions of Capitalism*, pp. 73-79.

<sup>32</sup> O.E. Williamson (1998) 'Transaction Cost Economics: How It Works; Where It Is Headed', *De Economist* vol. 146, no. 1, pp. 23-58, p. 30.

<sup>33</sup> Williamson, *The Economic Institutions of Capitalism*, p. 86.

<sup>34</sup> Williamson, *The Economic Institutions of Capitalism*, p. 91.

<sup>35</sup> Williamson, *The Economic Institutions of Capitalism*, p. 90.

<sup>36</sup> Williamson, 'Comparative Economic Organization', p. 114.

transactions of asset specific goods or services can be transferred in either a hierarchy or a market, but more likely within the boundaries of a hierarchy. If assets are slightly specific, products or services will be purchased in a market relation no matter whether these transactions are recurrent or occasional.<sup>37</sup>

With respect to uncertainty, Williamson assumes that uncertainty is present in such a degree that it poses a problem on the decision whether or not to integrate.<sup>38</sup> If uncertainties accompanying transactions are high, the choice for hierarchy is more likely. Next to markets and hierarchies, Williamson has also distinguished mixed modes of organisations since a dichotomy into markets and hierarchies is highly oversimplified. These hybrid forms of organisations are referred to as bilateral and trilateral governance. High asset specificity leads to hierarchies, low asset specificity leads to markets, and average asset specificity leads to a hybrid organisation of the transaction.<sup>39</sup>

In the background, the human factors of opportunism and bounded rationality also affect transactions. Lindberg *et al.* (1991) have made a comprehensive description of how all attributes relate to each other within TCE:

‘[W]hen actors feel that the financial costs of engaging in and monitoring transactions become too uncertain, because transaction-specific investments are great and it is difficult within the limits of bounded rationality to control an exchange partner’s opportunism, they will develop hierarchically integrated, corporate organizations to supplant the market as the primary forum for exchange’.<sup>40</sup>

## 2.9 ICT, integration, and TCE

Coase claimed that inventions that lead to a lessening of spatial distribution, tend to increase the size of the firm. The telephone and the telegraph tend to reduce the costs of organising spatially, thus firms will enlarge.<sup>41</sup> In this case, Coase reasoning is not based on transaction costs

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<sup>37</sup> Williamson, *The Economic Institutions of Capitalism*, pp. 60-61.

<sup>38</sup> Williamson, *The Economic Institutions of Capitalism*, p. 79.

<sup>39</sup> Williamson, *The Economic Institutions of Capitalism*, p. 79.

<sup>40</sup> Leon N. Lindberg, John L. Campbell, and J. Rogers Hollingsworth (1991) ‘Economic Governance and the Analysis of Structural Change in the American Economy’ in: John L. Campbell, J. Rogers Hollingsworth, Leon N. Lindberg *Governance of the American Economy* (Cambridge University Press; Cambridge) pp. 3-34, p. 9.

<sup>41</sup> Coase, ‘The Nature of the Firm’, p. 397.

economics but on efficiency, especially efficiency of scale. The telephone and the telegraph make it more convenient to manage a firm. Of course, we have to keep in mind that this statement was made in 1937. Today's information and communication technologies are in some respects different from earlier modes of ICT. The computer era had not yet entered in the 1930s. A computer has the distinctive characteristic that it is able to store information and, with the help of the appropriate infrastructure, transmit information. The telegraph, the telephone and the telex only transmit information. Electronically storing information reduces the need for time and space consuming paper work.

Modern modes of ICT and derivatives of it such as Internet, Electronic Data Interchange (EDI), electronic mail, and so on, are attributed to have the opposite effect in comparison to their predecessors, such as the telephone and the telegraph, namely disintegration. Malone *et al.* (1987) argue that modern ICT will lower transaction costs. Since TCE predicts that high transaction costs favour hierarchies and low transaction costs favour markets, Malone *et al.* conclude that as a result of ICT an increase of economic activity will be co-ordinated by markets.<sup>42</sup> According to Malone *et al.*, two specific factors, that can be altered by ICT, determine the organisational structure of a transaction: asset specificity and complexity of product description. Note that they do not pay attention to frequency and uncertainty, and that the aspect of complexity of product description does not refer to the attributes of Williamson. The authors claim that especially new, computer-based information technologies lower asset specificity and that ICT can make the product description less complex so that 'an overall shift from hierarchies to markets' will take place.<sup>43</sup>

As we learn from the overview Koppius (2002) gives, the line of thought of Malone *et al.* has been much criticised.<sup>44</sup> The criticism includes amongst others that there is simply no evidence for the statement of an overall shift from hierarchies to markets due to the use of ICT. On the contrary, empirical data of several authors rather suggests the opposite; namely, a shift towards (electronic) hierarchies. Another type of criticism claims that more factors than asset specificity and complexity of product description alone determine the governance mode of firms. Furthermore, the rather strict choice for either electronic markets or electronic

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<sup>42</sup> Malone *et al.*, 'Electronic', p. 489.

<sup>43</sup> Malone *et al.*, 'Electronic', p. 489.

<sup>44</sup> Otto R. Koppius (2002) *Information Architecture and Electronic Market Performance* (ERIM; Rotterdam) pp. 18-19.



hierarchies has been criticised since more organisational modes exist such as a combination of the two, or a firm might even have these two relationships at the same time.<sup>45</sup> Thus contradicting opinions exist on the role of ICT as a stimulator of both vertical integration and vertical disintegration.

A solution to the problem might be by adding the notion of 'time'. The governance structure of market or hierarchy may succeed each other as the impact of ICT may change over time. By introducing a time element, TCE gains dynamism. The lack of dynamics is exactly what TCE is much criticised for. Historians especially have problems with the comparative-static method of TCE.<sup>46</sup> In many cases, history is about changes, disruptions, and discontinuities in the past. Historians try to describe and explain these ruptures. In a strict sense, the comparative static method, and therefore TCE, is thus not useful for studying the past.

Several authors such as Lazonick (1991), Langlois and Robertson (1995) and Casson (1997) actually set out to construct a dynamic theory of the firm, drawing from TCE, which is applicable to explain historical processes. In Lazonick's view, Williamson's transaction costs economics focuses on the adaptive firm and makes it therefore unsuited for explaining dynamic processes.<sup>47</sup> Langlois and Robertson phrased 'historians' doubts on the use of TCE in the long run quite adequately: 'The reigning transaction-cost theories of vertical integration provide illuminating snapshots of possible institutional responses to a momentary situation. But they do not place those responses in the context of the passage of time.'<sup>48</sup> Williamson himself definitely sees possibilities to apply TCE to business history although he remarks that a mix with evolutionary economics then needs to be assessed.<sup>49</sup> This is exactly what Langlois and Robertson have attempted.<sup>50</sup> They introduce dynamic transaction costs;

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<sup>45</sup> Koppius, *Information Architecture*, pp. 18-19.

<sup>46</sup> See e.g. Gregory K. Dow (1987) 'The Function of Authority in Transaction Cost Economics', *Journal of Economic Behavior and Organization*, vol. 8, no. 1, pp. 13-38; William Lazonick (1991) *Business Organizations and the Myth of the Market Economy* (Cambridge University Press; Cambridge) p. 195; Mark Casson and Mary B. Rose (1997) 'Institutions and the evolution of modern business: introduction', *Business History*, vol. 39, no. 4, pp. 1-8, p. 1; John Groenewegen and Jack Vromen (1997) 'Theory of the Firm Revisited: New and Neo-institutional Perspectives' in: Lars Magnusson and Jan Ottoson (ed.) *Evolutionary Economics and Path Dependency* (Edward Elgar; Cheltenham(UK)/Brookfield (US) pp. 33-56, pp. 41-42.

<sup>47</sup> Lazonick, *Business Organization*, pp. 197-198.

<sup>48</sup> Richard N. Langlois and Paul L. Robertson (1995) *Firms, Markets, and Economic Change. A Dynamic Theory of Business Institutions* (Routledge; London/New York) p. 30.

<sup>49</sup> Williamson, *The Economic Institutions of Capitalism*, p. 394.

<sup>50</sup> Langlois and Robertson, *Firms*, p. 1.

these are the costs of persuading, negotiating, co-ordinating, and teaching outside suppliers. Actually these are costs a firm makes if it does not have the necessary capabilities. The reason why these costs are dynamic is because they occur when alterations in the economic environment of the firm take place, such as a changed demand for a product or service. If the market cannot provide the ancillary capabilities at the right time, vertical integration may occur. If a firm cannot provide the ancillary capabilities at the right time, vertical specialisation may result.<sup>51</sup>

Stigler (1968) and Teece (1986) also provide dynamic view on TCE. They have put forward the idea that the introduction of new products and services involves insecurities for a firm if it uses new technologies or whether it offers a new product or service since success in the market. In order to cope with these uncertainties and to be sure that the profits gained from these new products and services are appropriated by the innovating firm, firms need to incorporate all means and knowledge necessary to produce a new product or service. If the situation has stabilised, the level of integration decreases and a part of the activities may be outsourced. In other words, if ICT leads to new products and services, ICT temporarily results in the disappearance of links in the value chain of an industry. Hence, in several phases of an innovation process, market relations make way for hierarchical relationships. If such a situation occurs, we expect to see an evolution of different modes of organisation of a particular value system. Nootboom however suggested that such a rigid solution need not be necessary. Instead of a movement towards integration and disintegration, outside collaboration might be an option to acquire the necessary complementary assets. Furthermore, such an alliance is much more flexible than a complete merger.<sup>52</sup> What we thus can conclude is that ICT can have temporal effects on value systems of industries.

### *2.10 Operational factors of TCE*

The next step is to make the discussed TCE based theories operational. How do we research the raised issues? A possibility is to discern the key variables of TCE based theories used and to design a tool to measure them. If TCE is dealt with, we need to look at the degree of asset specificity, frequency of transactions and the degree of uncertainty, the key attributes

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<sup>51</sup> Langlois and Robertson, *Firms*, p. 35.

<sup>52</sup> Bart Nootboom (2003) 'An integrated survey of theory on sourcing, inter-firm collaboration and networks', unpublished paper, p. 5.

of TCE. This is the hard part. Measurement tools for asset specificity<sup>53</sup> exist but they are based on surveys and interviews. The data necessary to perform surveys are not present in the researched archives. It is simply impossible to perform a survey because the target population does not exist any more. As it comes to interviews, largely the same problem occurs although some people that were involved in the Dutch securities trade in the second half of the twentieth still live. We need to follow another road to discern the key attributes of TCE.

The extent of asset specificity is fixed by the investments in the devices necessary to produce a certain good or service and, moreover whether these devices can be employed for other uses or users. A security in itself is not very asset specific; it is just printed by printing presses that can also be used to produce other printed matters. The services related to the securities trade are perhaps more asset specific. For this study, we need to look for investments that were necessary to facilitate the securities trade, and the securities trade only. If these investments were highly asset specific, then integration of involved parties in the securities trade probably would have taken place. For sure, ICT was needed to facilitate securities trade. Although the investments in an ICT infrastructure for a single firm were considerable during the starting period of telegraphs and telephones, this is no proof for asset specificity because a telephone can also be used for other purposes or clients than the securities trade. What *can* be a proof for asset specificity are the investments in the *capacity* of ICT, such as infrastructure (just the lines and cables), devices (telephonic apparatus) and personnel. Especially if this capacity is purchased to maintain a particular relationship in securities trade. Hence, the question:

1. what investments are made in ICT by the actors in the concerned value system?

needs to be answered. The securities business itself is a highly volatile one. Sometimes it is busy, sometimes it is not. Yet, if a firm wants to be able to serve all clients at busy times, a firm invests to meet this need. This concerns an investment in capacity that is only addressed at certain periods during a day or even a week. Hence, the investments in capacity of a sufficient ICT infrastructure could be an indication of asset specificity in the securities trade, and thus an indication for vertical integration.

The volatile nature of the securities trade not only affect asset specificity but also the other two factors of frequency and uncertainty.

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<sup>53</sup> See dissertation Michael J. Mol (2001) *Outsourcing, Supplier Relations and Internationalisation: Global Sourcing Strategy as a Chinese puzzle* (ERIM; Rotterdam) and Nooteboom, *Interfirm alliances*.

According to TCE, high frequency and high uncertainty, especially in combination with high asset specificity, lead to integration of firms. It is hard to predict (=uncertainty) whether clients will place many or few buy and sell orders in a couple of hours, today, tomorrow or in a week. The question thus is

- m. to what extent is uncertainty present concerning the number of orders?

In theory, the factor of frequency should be made operational by counting the number of transactions. The question would thus be:

- n. how many transactions have taken place?

In practice, this will not be easy to discern and it may even be impossible. Before counting them, we have to establish what it is we count. According to Williamson, a transaction takes place if a 'good or service is transferred across a technologically separable interface'.<sup>54</sup> So, for this purpose we have to distinguish the services offered in the securities trade. The answer to subquestion b should provide that information. The subsequent stage would then be to establish how many times these services were provided over a period of 110 years. This is no option since the type of information required, is not available. Conceivably, we have to reason from both a high and low number of transactions. With the help of theory and the empirical material, we can establish the most likely scenarios. Since the outcomes are known, the scenario that fits can thus be seen as the representative of 'what happened' and thus, it can be established whether the frequency of the transactions was high or low.

### *2.11 Conclusion*

The aim of this chapter was to discuss theories that deal with relevant issues for this thesis: how to study changes in information services and how to explain alterations in the organisational structure of the securities trade. Theory is thus used on two levels; first as a tool to structure and second as a tool to explain. The choice for a theory depended on the extent it helps to answer the question in what way ICT influences the structure or pattern of the securities trade. The way trade can be structured will be studied with the help of Porter's value systems. The notions on value systems and value chains are thus used to structure the Dutch securities trade, and second, it forces to make clear who performs what activities in

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<sup>54</sup> Oliver E. Williamson (1981) 'The Economics of Organization: The Transaction Cost Approach', *The American Journal of Sociology*, vol. 87, no. 3, pp. 548-577, p. 552.

## *Chapter 2*

the Dutch securities trade. Clearly, it is a way to sort out empirical material.

Changes in these value systems will be explained with the help of two theoretical perspectives: degree of information asymmetry and transaction costs economics because the influence of ICT on securities trade is viewed from two aspects: the services provided and the organisational structure. In discussing these theories, we particularly centred on the role of ICT. Furthermore, an attempt was made to make them operational; what factors are of importance to the different approaches and how can these factors be detected? We have to remark here that this is done in such a way that it fits historical research. We realise that the picked theories impose difficulties on historical research. First, we have to deal with general economic theories to explain the particularity of history. Second, quantitative research is necessary to detect variables of, for instance, asset specificity. This type of research requires data that are often hard to extract from historical archives unless the subject of study is recent enough to perform a survey among 'the living'. The different way of how those theoretical approaches are assessed, shows via the formulation of questions (a to n) to which the data should give answers to. With the answers obtained, we aim at matching theory with empirical historical data.

### **3. Dutch Securities Trade**

#### *Upturn, Accommodations, Stockbroker Organisations and Central Issues*

##### *3.1 Introduction*

This chapter gives a historical overview of the Dutch securities trade. This knowledge is needed to understand the mutual relations of the involved parties in the Dutch securities trade that is the subject of chapter four. These relationships largely shaped how the trade and its related services were organised and executed. The Dutch securities trade developed from a wide open market in which practically anyone could participate, into a closed institutionalised one, and again to a slightly more open market. The closed character was a result of a professionalisation of its practitioners as well as their attempts to organise trade more efficiently.

The chapter starts with a description of the upturn and establishment of the Dutch securities trade. Section 3.3 touches upon the different accommodations in which securities trade took place. After that, the focus is on stockbrokers organisations which were established to organise securities trade more orderly. These organisations have dealt explicitly with three issues that kept recurring; the tariffs for commissions, the issues on quotations and on the mid-rate. These issues will be further elaborated in sections 3.5 and 3.6 before the conclusion is drawn up.

##### *3.2 Upturn financial services*

In Europe, at the end of the Middle Ages, a separate financial sector started to take shape as a result of increased economic activities during that period. Specialised financial intermediaries started to appear due to the variety of coins that circulated. They were able to value and exchange these different coins. Such 'money changers' first showed up in Italy in the tenth century; around 1250 they were also spotted at Brugge, located in the

present Belgium.<sup>1</sup> Besides the valuating and exchanging of coins, travelling merchants started to deposit money at local financial intermediaries such as moneychangers and cashiers. A cashier basically paid creditors and collected from debtors under order of a client.<sup>2</sup> Both moneychangers and cashiers were called private exchange banks. In return for a money deposit, clients received a certificate which they could use as a 'bill of exchange', a sort of trade document. A bill of exchange was an order for paying a debt that arose from a trade transaction. Financial intermediaries all over Europe co-operated in this system of bills of exchange. For instance, an Italian merchant from Milan instructed a correspondent (a financial intermediary) who was located elsewhere in Europe and by whom he had built up a balance, to pay a creditor from this balance.<sup>3</sup> Bills of exchange made capital very liquid, it speeded up the circulation of money, and it functioned as an international means of payment.<sup>4</sup>

Private exchange banks soon realised that not all deposits needed to be kept in house; a thirty to forty percent should be sufficient to meet the claims of their clients. The rest was used to invest in commercial operations and industrial activities, or for cash credits to loyal customers. Some private exchange banks started to offer more 'bank-type' services such as the transfer of money from one account to another (= giro, which is Italian for circulation) which implied the start of a financial services industry that handled time deposits and bank giro. These banking activities were practised in Italy already before 1200. Southern Europe, especially Italy and Spain, were ahead of the field as it concerned the providing of financial services in the Middle Ages. Their leading position probably originated from their large scale sailing activities to explore the world outside Europe. From Italy and Spain, banking activities spread throughout the rest of Europe. At Brugge the same banking activities took place at least as from 1320. In order to protect the public against bankruptcies of these private exchange banks, city councils of Spanish and Italian cities established communal exchange banks in the fifteenth and sixteenth century. These initiatives were copied by North European cities.

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<sup>1</sup> Herman van der Wee and Erik Aerts (1991) *De economische ontwikkeling van Europa, 950-1950* (Uitgeverij Acco; Leuven/Amersfoort) p. 55.

<sup>2</sup> Pit Dehing and Marjolein 't Hart (1997) 'Linking the fortunes: currency and banking, 1550-1800' in: Marjolein 't Hart, Joost Jonker and Jan Luiten van Zanden, *A financial history of The Netherlands* (Cambridge University Press; Cambridge) pp. 37-63, p. 43.

<sup>3</sup> Johan de Vries (1992) 'Het Nederlandse financiële imperium. Schets van het Nederlandse bankwezen' in: *Bankwezen. Een geschiedenis en bronnenoverzicht* (NEHA; Amsterdam) pp. 13-58, p. 14.

<sup>4</sup> Carlo M. Cipolla (1981, 2<sup>nd</sup> edition) *Before the Industrial Revolution. European Society and Economy, 1000-1700* (Methuen; London) p. 197.

For instance, in 1609, the 'Amsterdamsche Wisselbank' (Amsterdam Exchange Bank) was established. This Bank was founded as an alternative to cashiers. The local authorities suspected that Amsterdam cashiers deliberately disturbed the circulation of currencies. This could cause an overtrading of trade documents which would lead to financial instability. Another reason for the establishment of this Bank were the complaints of several merchants concerning the confusion on the different currencies that circulated in the city. The Amsterdam Exchange Bank had to bring some clarity and unity to that situation.<sup>5</sup>

The supremacy of the Italians and Spanish as financial intermediaries started to subside as from around 1500. An important money market grew in Antwerp, which attracted merchants from all over Europe. A specific development in financial transactions occurred in Antwerp due to bankruptcies of private exchange banks and the absence of city banks. This development refers to the transition of 'transferability' to 'negotiability' of trade documents. A trade document was transferable, if it could be handed over from one party to another by which the debtor did not have to pay to the original creditor at the expiration date of the document, but to the one who had received it from the original creditor. In such a situation, one had to trust, and thus know, one another personally because if the debtor was in default, the party that had received the acknowledgement of debt could not pursue any legal nor financial charges to the debtor. In the Exchange of Antwerp, established in 1531, merchants from all over Europe met. In order to do business, guarantees, other than personal ties, for the financial credibility of merchants became necessary. The involved parties of the Antwerp money market succeeded in the realisation of a renewed trade legislation in which financial and legal guarantees for the keeper of a trade document were acknowledged. It was this development which led to the negotiability of trade documents, and thus to the actual trade in these documents.<sup>6</sup>

Travelling merchants, who deposited money at local financial intermediaries, eventually built up a widespread system of trade documents that facilitated trade. The financial intermediaries involved, formed a network to provide and execute several financial services. A network consisted of several persons or firms that maintained

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<sup>5</sup> Van der Wee and Aerts, *De economische ontwikkeling van Europa*, pp. 55-56 and p. 99; De Vries, 'Het Nederlandse financiële imperium', pp. 14-16; Dehing and 't Hart, 'Linking the fortunes', p. 43 and p. 45.

<sup>6</sup> Van der Wee and Aerts, *De economische ontwikkeling van Europa*, pp. 98-99.



relationships to execute their (business) activities. Next to the 'human' intermediaries, also 'physical' intermediaries arose that facilitated trade. For instance, entrepôts in which commodities were stored and which functioned as central places for the commodities trade that involved many parties such as merchants, carriers, bankers and insurers.<sup>7</sup> Also, Exchange buildings, where buyers and sellers met, formed a central place for trade. Exchanges were to become large hubs of national and international communication networks.

Not only physical goods were traded at these Exchanges, also valuable papers like trade documents became important trading objects at the end of the Middle Ages. Trade documents not only represented bills of exchange but also shares and bonds. Shares and bonds, securities, are issued with the goal to gather capital to finance business activities. If you buy a share, you have become one of the owners of a company, or if you possess all or the majority of the issued shares, then you may call yourself the owner of a company. Each shareholder receives a percentage of the company's profits. This is called 'dividend'. The percentage is fixed per period the dividend is disbursed. The oldest known shares are participations in the Bank of Venice and the Bank of Saint George at Genua, from around 1400.<sup>8</sup> The 'Vereenigde Oost-Indische Compagnie' (VOC: Dutch East Indies Company) issued the first known Dutch shares or 'actiën' (literally; actions) at the very beginning of the seventeenth century (1602). The VOC needed to raise a large amount of capital in order to finance their activities for trade in the East Indies.<sup>9</sup>

A bond is in fact an acknowledgement of a debt. The buyer of a bond accepts per fixed period interest that function as a redemption for the debt. Bonds are issued by companies but also by governments. Bonds and shares have a nominal value; that is the price that is paid for when they are issued for the first time, in a so-called initial public offering (IPO). Dependent on the economic situation, the price of securities fluctuates to a large or small extent. This is the real value of a security. The fluctuations in real value form the basis for the trade in bonds and shares.

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<sup>7</sup> Jonker, *Merchants*, p. 32.

<sup>8</sup> Brouwer, *Beurs*, p. 1.

<sup>9</sup> L. D. Westera (1992) 'Boekhouding en management bij de Verenigde Oostindische Compagnie', *Economisch en Sociaal-Historisch Jaarboek*, vol. 55 (NEHA; Amsterdam) pp. 75-104.

### *3.3 Dutch securities trade and its accommodations*

In general, Amsterdam was the centre for trade in the Netherlands. For a long period, trade took place at fixed places in the open air spread over the city of Amsterdam. For instance, the 'Warmoesstraat' has long functioned as a gathering place for merchants, and later on also the 'Nieuwe Brug'. In bad weather, churches as the 'Sint Olofskapel' and the 'Oude Kerk' accommodated the traders. As from the beginning of the seventeenth century, the Amsterdam City Council decided to build an Exchange building, designed by the architect Hendrik de Keyser in which securities traders, next to other branches of trade, found their niche. This Exchange building opened in 1611 and was located in the centre of Amsterdam, at the 'Rokin'.<sup>10</sup>

On a modest scale, trade in valuable papers also took place in Rotterdam. The first Exchange building in Rotterdam, that served trade in general, was established in 1598.<sup>11</sup> Several publications exist from the year 1720 in which an active gambling trade in shares of a company took place in Rotterdam. However, before and even after the year 1720, little is known on the Rotterdam securities trade.<sup>12</sup>

The Amsterdam Exchange was one of the first in the world that accommodated trade in securities.<sup>13</sup> In London, a securities market existed as from the end of the seventeenth century. The creation of the Stock Subscription Room in 1801, marked the beginning of a more formally organised securities trade in Great Britain.<sup>14</sup> The New York Stock Exchange was officially established in 1792 with the so called 'Buttonwood Agreement'; in this year a small group of stockbrokers agreed under a buttonwood tree at Wall Street, on a sort of organised securities trade.<sup>15</sup>

The Amsterdam Exchange was a public building which implied that anyone could pay a visit to this centre of trade. A disadvantage of free entrance to the Exchange building became the many people that just wanted to take a look at the traders and, probably unintentionally, hindered the brokers. Another problem with free entrance was that less bona fide traders could participate in securities trade as well. An example out of the year 1825 shows what consequences this could have. In this year,

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<sup>10</sup> De Vries, *Een eeuw*, p. 20.

<sup>11</sup> Arie van der Schoor (1999) *Stad in aanwas. Geschiedenis van Rotterdam tot 1813* (Waanders Uitgeverij; Zwolle) p. 181.

<sup>12</sup> A.J.W. Camijn (1987) *Samen effectief. Opkomst, bloei en overgang van de Vereniging van Effectenhandelaren te Rotterdam* (Stichting Historische Publicaties Roterodamum: Rotterdam) pp. 18-19.

<sup>13</sup> Charles R. Geisst (1997) *Wall Street. A History* (Oxford University Press; New York) p. 9.

<sup>14</sup> Michie, *The London Stock Exchange*, p. 15 and p. 36.

<sup>15</sup> Walter Werner and Steven T. Smith (1991) *Wall Street* (Colombia University Press; New York) p. 20.

an Englishman posed as a representative of the non-existent 'Republic Poyais', in order to place bonds of this fictive South American state. Before the deceit was discovered, the British agent had disappeared together with the money of some naïve Dutch investors.<sup>16</sup>

After it had served as a centre for trade for over two centuries, the Exchange of De Keyser had had its best. In 1845, a new Exchange building designed by J.D. Zocher, was put into use.<sup>17</sup> The Zocher Exchange was situated on the Dam square. The trading floor was surrounded with numbered pillars, of which each was allotted to a different type of trade. The stockbrokers gathered around pillar number thirty-three for their specific branch of trade. A gate closed off the Exchange by the time trade began. If one was too late, one had to pay an entrance fee of 25 cents.<sup>18</sup>

For a long time during the nineteenth century, the official exchange hours were from 15.00-16.00 hrs. There have been discussions on this trade time. In 1845, merchants from the province 'Noord Holland' (the same province in which Amsterdam is situated) who travelled three times per week to Amsterdam to do business, wanted to advance the exchange hours. Their request was not honoured.<sup>19</sup> Nevertheless, that did not put an end to the issue. Twenty-five years later, the whole discussion started all over again. Just as in 1845, the advanced time schedule of the postal service formed the stimulus for a group of financial intermediaries to request an advance in trade time. If not, firms could not be ready in time for this specific post service.<sup>20</sup> A counter current of local financial intermediaries recurred. The opponents consisted of bankers, sworn brokers and commission traders in the securities trade, all practising their affairs in Amsterdam. They argued that the Amsterdam Exchange only had any meaning if its traders could make use of the closing prices of foreign Exchanges such as those of London, Paris, Berlin, Frankfurt and Vienna. This information came in around three o'clock in the afternoon.

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<sup>16</sup> De Vries, *Een eeuw*, p. 35.

<sup>17</sup> De Vries, *Een eeuw*, p. 38.

<sup>18</sup> De Vries, *Een eeuw*, p. 38.

<sup>19</sup> Gemeente Archief Amsterdam (Municipal Archive Amsterdam; further abbreviated as 'GAA'), archief Kamer van Koophandel en Fabrieken Amsterdam (archive Chamber of Commerce and Factories Amsterdam; further abbreviated as 'KvKA'), entrance no. 5287, inv. nr. 200, Ingekomen en minuten van uitgaande stukken 1845 (Minutes incoming and outgoing documents 1845), Brief van Burgemeester & Wethouders aan Amsterdamse Kamer van Koophandel en Fabrieken (Letter from City Council Amsterdam to Amsterdam Chamber of Commerce and Factories), no. 72, dd. 28 August 1845.

<sup>20</sup> GAA, archive KvKA, entrance no. 5287, inv. nr. 252, Minuten ingekomen stukken (Minutes incoming documents) 1872, Brief van Burgemeester & Wethouders van Amsterdam aan Amsterdamse Kamer van Koophandel en Fabrieken (Letter from City Council Amsterdam to Amsterdam Chamber of Commerce and Factories), no. 186, dd. 4 September 1872.

The brokers stressed the fact that they did not want to thwart their fellow traders of other branches but noticed that the advancing of the postal time table for foreign destinations was not an issue to securities traders since they used the telegraph for passing on the necessary information (such as price information, and concluded affairs) to their clients outside the Netherlands.<sup>21</sup> Despite the arguments of the stockbrokers the official exchange hours changed to 13.30 to 15.00 hrs.<sup>22</sup>

Until the second half of the nineteenth century, securities listed on the Amsterdam Stock Exchange (ASE) were mostly foreign bonds and shares. The Dutch were especially keen on American and Russian bonds.<sup>23</sup> Only one quarter of the total quotations on the ASE, referred to Dutch securities.<sup>24</sup> In 1880, trade took place in 222 foreign, and 66 Dutch quoted stocks of which 11 originated from the Dutch East Indies.<sup>25</sup> As from around 1895, Dutch companies started to enter the ASE and this appeared to be successful. The number of Dutch and Dutch colonial securities augmented from 243 to 956 in the period between 1890 and 1915. The total possession of securities of the Dutch increased from 3600 million guilders to 6000 million guilders in the same period.<sup>26</sup> Apparently, the Netherlands had entered a favourable economic period that yielded investments and one was willing to take more risks in investments. According to Van der Werf, one of the causes of this economic growth was that the Dutch profited from the growing German economy (export to Germany) and from the exploitation of the resources of the Dutch East Indies.<sup>27</sup>

Despite the gate that closed off the Exchange during exchange hours, impostors or 'tourists' kept recurring, just as the chaotic situations.

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<sup>21</sup> GAA, archive KvKA, entrance no. 5287, inv. nr. 252, *Minuten inkomende stukken* (Minutes incoming documents) 1872, Brief van Burgemeester & Wethouders van Amsterdam aan Amsterdamse Kamer van Koophandel en Fabrieken (Letter from City Council Amsterdam to Amsterdam Chamber of Commerce and Factories), no. 186, dd. 18 September 1872.

<sup>22</sup> GAA, archive KvKA, entrance no. 5287, inv. nr. 253, *Minuten uitgaande stukken* (Minutes outgoing documents) 1872, Brief van Burgemeester & Wethouders van Amsterdam aan Amsterdamse Kamer van Koophandel en Fabrieken (Letter from Amsterdam Chamber of Commerce and Factories to City Council Amsterdam), no. 91, dd. 7 October 1872.

<sup>23</sup> Joost Jonker (1997) 'The alternative road to modernity; banking and currency, 1814-1914', in: Marjolein 't Hart, Joost Jonker and Jan Luiten van Zanden, *A financial history of The Netherlands* (Cambridge University Press; Cambridge) pp.94-123, p. 113.

<sup>24</sup> J.A. de Jonge (1988) 'Het economische leven in Nederland 1844-1873', in: J.C. Boogman (red.) *Geschiedenis van het moderne Nederland. Politieke, economische en sociale ontwikkelingen* (De Haan; Houten) pp. 11-27, p. 21.

<sup>25</sup> Cherelt Kroeze and Ton Nillissen (eds.) (2000) *Beursplein 5... Een kapitaal monument* (Stichting Vereniging voor de Effectenhandel; Amsterdam) p. 31.

<sup>26</sup> Van der Werf, *De Bond*, pp. 27 and 52.

<sup>27</sup> Van der Werf, *De Bond*, p. 45.

Already in 1870, stockbrokers strove for a secluded place for the securities trade in order to overcome these problems. However, on advice of the Amsterdam Chamber of Commerce, the Amsterdam City Council opposed this plan.<sup>28</sup> In the years hereafter, a long lasting discussion (almost thirty years!) took place concerning the Exchange building. This discussion became known as the 'beurskwestie' or 'exchange issue'. The discussion centred around the question how to alter the existing Exchange building, in such a way that it satisfied all involved parties. Several alteration plans were drawn up, yet none of the plans met the needs of the traders. The Amsterdam City Council tried to end the whole issue by calling an international design contest in 1883. Architects were asked to think of a new Exchange building. Designs were sent in, only, nothing was done with the results. Finally, in 1896, the Amsterdam City Council appointed the Dutch architect H.P. Berlage to design a new Exchange building.<sup>29</sup>

In 1903, the Berlage Exchange was put into use. This new Exchange building consisted of three trading floors; one for the commodities trade, one for the grain trade, and one for the securities trade. Again, gates closed off these trading floors. Only now, the trading floors were solely accessible for the traders. The securities trade floor was equipped with booths that the stockbrokers could hire. Such a booth consisted of a small bench and some, dependent on the size, were also fitted up with a small table. A booth afforded the possibility to sit down for a moment, to make notes, or to confer with colleagues. In the middle of the trade floor, the 'Guidebank' was situated. The employees of this Guidebank, the 'guides', kept up all transactions as well as the prices against these transactions were closed. The data these guides gathered were published on boards that hung on the Guidebank so that everyone who walked around on the stock exchange floor, could see them. Furthermore, after the official trading hours, the editorial staff of the 'Officieele Prijscurant' (official list) received the data on the concluded transactions and prices. The Officieele Prijscurant was printed after the official stock exchange hours that was by now advanced

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<sup>28</sup> GAA, archive KvKA, entrance no. 5287, inv. nr. 248, Ingekomen stukken 1870 (Incoming correspondence 1870), Een adres van de de Kommissie benoemd in de Vergadering van Handelaren, Makelaars en Kommissieairs in Effecten (Address of Traders, Sworn Brokers and Commission traders in securities), 28 September 1870; and inv. nr. 249, Uitgaande stukken 1870 (Outgoing correspondence 1870), Brief van KvKA aan Burgemeester en Wethouders van Amsterdam (letter from KvKA to City Council Amsterdam) dd 8 December 1870; Archive Euronext, *Jaarverslag 'Vereeniging voor den Effectenhandel' 1903* (Annual report 1903) dd. 28 April 1904, p. 6.

<sup>29</sup> Kroeze and Nillissen, *Beursplein* 5, pp. 30-31.

from 13.30 until 14.45 hrs., and distributed on the same day.<sup>30</sup> Apart from a separate stock exchange floor, the stockbrokers had the disposal over several other spaces in the Berlage building.

Between 1900 and 1910 the Dutch securities trade expanded even more. The number of quotations rose from 1324 to 2014.<sup>31</sup> This rise affected the number of stockbrokers. The increase of stockbrokers, from 581 to 669 and especially of their servants, from 227 to 736, caused a severe lack of space at the trade floor.<sup>32</sup> Furthermore, the stockbrokers complained about the defective heating and poor ventilation. As a result, the stockbrokers demanded their own stock exchange building. Now, their wish became reality. The architect J.Th. Cuypers designed this building that opened its doors at the end of 1913. The new building was located at the 'Beursplein', very near the Berlage Exchange.<sup>33</sup> In this building, securities trade flourished further on although World War I threw a spanner in this development in spite of the Dutch aloofness in this international conflict. To prevent public panic, the Amsterdam Stock Exchange closed its doors as from 29 July 1914, and only reopened after six months, on 9 February 1915.<sup>34</sup> Trade got into its normal stride quite soon. The total number of quotations in 1914 amounted up to 1918, in 1918 to 2011 and in 1935 it had increased to 3201.<sup>35</sup> World War II caused a more severe setback for the Dutch securities trade. The ASE had only been closed from 10 May 1940 to 15 July 1940 but trade could only continue under many restrictions posed by the Germans.<sup>36</sup>

The Cuypers Exchange remained the location for trade in securities up till this day although by now, the actual execution of orders passes on via computer terminals. The so-called 'screen trade' was introduced in Amsterdam in 1988. Ten years later, the security traders left the trading floor of the Amsterdam Stock Exchange. The specialists took up residence in a room at the first floor of the ASE, the traders moved to the dealing rooms, located in the offices of their own firms.<sup>37</sup> As from 1998, traders in future securities (futures and options) took over the trade floor.<sup>38</sup> Their

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<sup>30</sup> W.A. Paap (1908) *De doodsklok van Damrak* (Uitgevers-maatschappij 'Vivat'; Amsterdam) p. 36.; in this book from 1908, the official trade time is indicated from 13.30-14.45 hrs.

<sup>31</sup> De Vries, *Een eeuw*, p. 87.

<sup>32</sup> De Vries, *Een eeuw*, p. 105.

<sup>33</sup> Kroeze and Nillissen, *Beursplein 5*, pp. 38-39.

<sup>34</sup> De Vries, *Een eeuw*, p. 132 and p. 135.

<sup>35</sup> De Vries, *Een eeuw*, p. 126.

<sup>36</sup> De Vries, *Een eeuw*, pp. 184-185.

<sup>37</sup> In chapter four, the different types of stockbrokers are discussed.

<sup>38</sup> Educatiepakket Euronext Amsterdam, [www.euronext.com/nl](http://www.euronext.com/nl).

stay however, only covered a short period. At the end of 2002, the trade in options also changed to full screen trade and left the trade floor in the ASE. The intention is that the trade floor of the ASE becomes a financial information centre for people interested in trade in valuable papers.

### 3.4 Stockbroker organisations

In the eighteenth and nineteenth century, first attempts were made to organise the Dutch securities trade more orderly. An issue that caused disorder to the securities trade, concerned the problems on how and which prices were made public. Often, inaccurate quotations were published from which stockbrokers tried to benefit. As a client of a stockbroker, it was almost impossible to retrieve the real prices against which a security was bought or sold. In 1789, a stockbroker's organisation was founded in Amsterdam, named 'Collegie tot Nut des Obligatiehandels' (in short 'Collegie'). The 'Collegie' also contributed to an official price list ('Prijscurant der Effecten'). This newspaper was certainly not the only journal that attempted to publish correct quotations. For instance, already since 1723, the editorial board of the 'Amsterdamsche Courant' issued a price list which was put together by a committee of sworn brokers.<sup>39</sup>

The list of the 'Collegie' did not lead to a more accurate publishing of prices. Because of that, a group of stockbrokers left the 'Collegie' in 1833, and set up a second stockbroker's organisation, called the 'Nieuwe Handel-Sociëteit'. Actually, this 'Nieuwe Handel-Sociëteit' did not differ that much from the 'Collegie'; it created its own social meeting place and passed stock exchange quotations to an existing newspaper 'Algemeen Handelsblad'. Yet, the 'Nieuwe Handel-Sociëteit' did not succeed in becoming recognised as a full representative of the Amsterdam securities trade. In 1856, the 'Collegie' and the 'Nieuwe Handel-Sociëteit' merged into the 'Effectensociëteit'. The 'Effectensociëteit' merely functioned as a private club for Amsterdam stockbrokers. More important appeared to be the formation of the 'Algemeen Beurscomité voor Publieke Fondsen' (in short: Beurscomité). The Beurscomité intended to give the securities trade a different complexion since it was always surrounded by the smell of deceit and heavy losses due to malicious stockbrokers. Additionally, the 'Beurscomité' wished to make the securities trade attractive for a wider public. The Beurscomité implemented several rules for exchange transactions, acted as an arbitrator in disputes, judged whether a new security was suited to be listed on the ASE and so on. The 'Beurscomité'

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<sup>39</sup> Jonker, *Merchants*, pp. 148-149; see also De Vries, *Een eeuw*, pp. 45-46.

established itself as an organisation that worked hard for a more regulated and better circumstances for the securities trade. For the maintenance of these rules and to be recognised as a body that arranged everything related to the securities trade, the Beurscomité was dependent on the benevolence of stockbrokers and several official institutions as the City Council and Chamber of Commerce. Yet, since the Beurscomité did not impose any penalties, it lacked the means to exercise real power. Also, the City Council and Chamber of Commerce seemed to pay no attention to opinions of the Beurscomité concerning an improved or even a separate accommodation for securities trade, and of the exchange hours. The decreased importance of both the 'Beurscomité' and the 'Effectensociëteit', these stockbrokers associations decided to merge into the 'Vereeniging voor den Effectenhandel' (VvdE: Association for Securities Trade), in 1876.<sup>40</sup> In Rotterdam, stockbrokers also started to organise themselves. During the 1850s and 1860s Rotterdam stockbrokers formed an association. In 1898, the Rotterdam 'Vereeniging van Effectenhandelaren' (Association of Stockbrokers) received a Royal Approval that was necessary to be recognised as a legal personality. Hence, the year 1898 is generally taken as the official starting point of the Rotterdam 'Vereeniging van Effectenhandelaren'.<sup>41</sup>

As its predecessors, the Amsterdam 'Vereeniging' aimed at organising the securities trade more efficiently. One of the aims of the VvdE was to create a reliable price newspaper which was realised with the 'Officieele Prijscurant' (official list). Every day after the official exchange hours, a member of the Quotations Committee (established by the VvdE), checked all quotations and authorised them. The approved quotations were published in the 'Officieele Prijscurant'.<sup>42</sup> In the nineteenth century, a writing press that exclusively dealt with the securities trade started to emerge, although modestly, so as to inform the public about certain listed (foreign) companies or (foreign) government loans.<sup>43</sup>

A second step which the VvdE undertook to organise an orderly and decent trade, was to set very strict rules for membership in order to get rid of malicious stockbrokers. To become a member, a firm had to

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<sup>40</sup> Jonker, *Merchants*, pp. 153-154, and Camijn, *Samen effectief*, p. 32.

<sup>41</sup> Camijn, *Samen effectief*, pp. 28-29, and p. 35.

<sup>42</sup> Brouwer, *Beurs*, p. 77; De Vries, *Een eeuw*, p. 78.

<sup>43</sup> De Vries, *Een eeuw*, p. 40; Jan Luiten van Zanden and Arthur van Riel (2000) *Nederland 1780-1914. Staat, instituties en economische ontwikkeling* (Uitgeverij Balans; Amsterdam) p. 270.



practice trade in securities from an office in Amsterdam.<sup>44</sup> Yet, this did not imply that all Amsterdam stockbrokers could obtain membership. A potential member had to be nominated by ten members and if at least ten members opposed the nomination, a ballot meeting was held which could refuse a potential member.<sup>45</sup> Another consequence of the admittance policy of the VvdE, was that provincial<sup>46</sup> financial intermediaries could not trade any longer on the Amsterdam Exchange directly. They had to make use of the mediation of an Amsterdam financial middleman. Provincial middlemen would visit the Amsterdam Exchange a few days per week or even maybe daily. We know this from the discussions on the trade time in 1845 and 1872, and because of a protest of the director of the company that exploited the state railways. In this protest, the director opposed the intended advance of the time the Amsterdam Exchange would start in 1872. The time schedule of the railways was arranged in such a way that business people from all over the country (Leeuwarden, Groningen, Maastricht, Middelburg) could be in Amsterdam around two o' clock (one hour before the official exchange would start).<sup>47</sup> The establishment of the VvdE was the start of the disappearance of the physical presence of provincial stockbrokers at the Amsterdam Exchange. Probably, they still came as long as trade took place in the public Zocher Exchange although the VvdE made it difficult for provincial intermediaries to execute orders by forbidding their members to trade with non-members.

The majority of the members of the VvdE consisted of stockbrokers whose main activity was to trade in securities. Banks could also become a member of the VvdE.<sup>48</sup> As a matter of fact, not every stock exchange organisation allowed banks to become a member.<sup>49</sup> For instance, the stockbroker organisation of the London Stock Exchange (LSE) demanded that if a firm wished to become a member, the securities trade had to be the only activity of a firm.<sup>50</sup> Since a bank provided several financial services, they were not allowed as a member to the LSE.

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<sup>44</sup> Brugmans, *Begin van twee banken*, p. 152; Kymmell, *Geschiedenis II-A*, p. 100; Kymmell, *Geschiedenis II-B*, p. 298.

<sup>45</sup> De Vries, *Een eeuw*, p. 95.

<sup>46</sup> Here 'provincial' refers to all areas in the Netherlands, located outside Amsterdam.

<sup>47</sup> GAA, archive KvKA, no. 5287, inv. nr. 252, Ingekomen stukken 1872 (Incoming documents 1872), Brief Directeur General der Maatschappij tot Exploitatie van Staatsspoorwegen aan KvKA (letter Director Company for Exploitation of the National Railways to KvKA), dd 4 September 1872.

<sup>48</sup> Mendes da Costa, *Het A.B.C.*, p. 8.

<sup>49</sup> Brouwer, *Beurs*, pp. 70-71.

<sup>50</sup> Michie, *The London Stock Exchange*, p. 40.

Amsterdam stockbrokers functioned as mediators between private and institutional clients and the ASE. As from the end of the nineteenth century, another type of intermediary entered the Dutch securities trade; the 'specialist' or 'market maker' (*de hoekman*). Specialists gathered the buy and sell orders of a particular security in which they were specialised. In chapter four, we will discuss these intermediaries in more detail.

The VvdE clearly tried to seize and monopolise the organisation of the trade in stocks and shares. Their attempts became more effective as from the moment the VvdE had the disposal of an own stock exchange floor in the Berlage Exchange building. Only members of the VvdE were allowed on this floor. Non-members from Amsterdam tried to continue trading in securities in another part of the Berlage building that was labelled as a public Stock Exchange. This did not work out; they were too few and the VvdE had forbidden their members to trade with non-members. Hence, Amsterdam stockbrokers that could not comply with the demands for membership, were deprived from executing their activities. Several financial intermediaries complained about the, from their point of view, unfair course of events with the Amsterdam Chamber of Commerce.<sup>51</sup> The board of directors of the Amsterdam Chamber of Commerce agreed with their complaints. The only thing that could formally be done to break through the VvdE's pursuit for monopolising the Dutch securities trade, was to change the '*Wetboek van Koophandel*' (Code for Commerce; created in 1838). However, the whole board of the Amsterdam Chamber of Commerce considered this a step too far. One of the members of the board proposed to support and to strengthen the public stock exchange by accommodating it with all the comforts needed to execute the trade properly such as telegraphs and telephones.<sup>52</sup> This advice was probably not put into practice or, if it was, it did not succeed in giving a impetus to the public stock exchange. A similar discussion arose when the Cuypers Stock Exchange was put into use in 1913. The VvdE had to comply with the legal demand of public accessibility of this Exchange building. To meet this demand, a Public Exchange was created in a corner at the first floor of the new Amsterdam Stock Exchange. This Public Exchange could be reached via a footbridge passage ('*passerelle*'), which linked the Berlage Exchange with the Cuypers Exchange. In this way,

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<sup>51</sup> GAA, archive KvKA, no. 5287, inv. nr. 31, Notulen Kamer van Koophandel en Fabrieken Amsterdam 1903 (Minutes Board 1903), 16 October 1903, pp. 265 and 267; 20 November 1903, p. 287.

<sup>52</sup> GAA, archive KvKA, no. 5287, inv. nr. 32, Notulen Kamer van Koophandel en Fabrieken Amsterdam 1904 (Minutes Board 1904), 17 June 1904, p. 106.

traders of both buildings could walk quite easily up and down to the other building. The Public Exchange was used for auctioning stocks; a practice that disappeared later on.<sup>53</sup>

As from 1903, the provincial securities traders could be effectively banned. In this year, the provincial stockbrokers organised themselves in the 'Vereeniging voor den Geld- en Effectenhandel in de Provincie' (Association for the Money and Securities Trade in the Province) in order to cope with the VvdE's pursuit for a monopoly on the Dutch securities trade and its strict rules. This provincial association was called in short the 'Bond' (Union).<sup>54</sup>

Apparently, several stockbrokers from The Hague had had a bellyful of the VvdE: they had set up their own stock exchange. It started in a room above a store in 1905. In 1912, The Hague opened its own Stock Exchange building. The The Hague Exchange was primarily meant for the local stockbrokers. The The Hague stockbrokers waited until the prices of the ASE became known. They used these prices to settle their own orders with each other (order clearing).<sup>55</sup> The The Hague stockbrokers especially made use of the 'mid-rate'. In the next section, we will elaborate extensively on the mid-rate. Sufficient here is to state that the mid-rate represents the average between the highest and lowest price of concluded orders of a particular security.

Hence, the VvdE had made the Dutch securities trade *their* business. Yet, the board of the VvdE realised securities trade could not function without the world outside. After World War II, the VvdE started to see the 'education' of the public concerning the 'works' of the securities trade as their mission, not in the least to generate orders. In 1952, a committee was set up to inform interested public. Next to brochures and leaflets, a more vivid way to make clear what securities trade contained, appeared to be the guided tours in the Cuypers building that started in 1952.<sup>56</sup>

Also, the strict rules for membership were loosened at the beginning of the 1970s. Due to the ongoing concentration process in the Dutch financial sector, the VvdE faced the problem of diminishing participants in the securities market, and thus a decrease of trade transactions. This is shown in the decreasing number of members of the

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<sup>53</sup> Kroeze and Nillissen, *Beursplein 5*, pp. 43-44.

<sup>54</sup> Van der Werf, *De Bond*, pp. 39-40.

<sup>55</sup> Van der Werf, *De Bond*, p. 72; P.A. Geljon (1998) *Een zeer persoonlijk effectenhuis. Het Haagse Lissa & Kann 1800-1966* (NIBE; Amsterdam) pp. 93 and 178.

<sup>56</sup> De Vries, *Een eeuw*, pp. 237-238.

VvdE. In 1940 the number totals up to 1507 (including the servants), in 1960 to 1007 and in 1970 to 829.<sup>57</sup> The VvdE decided to reorganise and as from the start of 1973, membership was opened to firms all over the country. The VvdE slightly changed its name, instead of the more old fashioned Dutch of 'Vereeniging voor den Effectenhandel', it became 'Vereniging voor de Effectenhandel'.<sup>58</sup> As a result, provincial stockbroker organisations such as the provincial 'Bond', The Rotterdam 'Vereeniging van Effectenhandelaren', and the The Hague stockbroker organisation ceased to exist in 1974. Also the The Hague and Rotterdam Stock Exchanges stopped functioning.<sup>59</sup> The Rotterdam association turned into a foundation (Stichting Organisatie van Effectenhandelaren te Rotterdam). This foundation aimed at stimulating the money and securities business in Rotterdam in the broadest sense.<sup>60</sup> Another reason for the dissolution of the provincial stockbroker organisations, related to the abolishment of the mid-rate; the provincial stockbrokers lost their guiding hold to clear orders. As a result, this practice gradually diminished which made the local stock exchanges insignificant.<sup>61</sup>

In the 1970s and 1980s securities professionalised onward. The VvdE became an organisation which began to hire paid workers. Before, members ran the VvdE voluntarily. This led to a division in 1990; the VvdE and the ASE became separate organisations. In 1996 the VvdE liquidated itself and turned into a foundation. Due to an increased international competition as a consequence of the formation of the European unification, the ASE decided to merge with the Amsterdam Options Exchange. As from 1997, the organisation that resulted from this merger, became known as the Amsterdam Exchanges N.V. (AEX). It aimed at establishing an attractive market for Dutch investors since the danger existed, they would easily start trading at other European exchanges.<sup>62</sup> Apparently, that did happen. In 2000, the stock exchanges of Paris, Brussels and Amsterdam merged into one large stock exchange market, under the name of 'Euronext'. It was decided that the French trading system was going to be used as a standard on every location of Euronext. This actually implied the

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<sup>57</sup> VvdE (1998) *120 jaar beurshandel in vogelvlucht. Vereniging voor de Effectenhandel 1876-1996* (VvdE: Amsterdam) p. 22.

<sup>58</sup> De Vries, *Een eeuw*, p. 232; Van der Werf, *De Bond*, p. 268.

<sup>59</sup> Van der Werf, *De Bond*, p. 72; Geljon, *Een zeer persoonlijk effectenhuis*, pp. 93 and 178.

<sup>60</sup> F.J. Brevet (1978) 'De effectenbeurs te Rotterdam en haar einde', in: R.A.D. Renting (red.) *Rotterdams Jaarboekje 1978* (Stichting Historische Publicaties Roterodamum: Rotterdam) pp. 187-193, p. 192.

<sup>61</sup> As stated by B. van Marken former director of Pierson, Heldring & Pierson, telephone conversation 18 February 2003.

<sup>62</sup> VvdE, *120 jaar beurshandel in vogelvlucht*, pp. 35-37.

### Chapter 3

disappearance of an intermediary on the ASE, namely the 'hoekman' or specialist since this function is not known in the French trading system. In this system, demand and supply find each other without the mediation of a specialist. The intention was that the specialists should turn into 'animateurs'; firms that keep trade of securities or of several firms alive, against payment of these same firms.<sup>63</sup>

#### 3.5 Commission rates

The VvdE not only physically barred provincial commission traders from the securities market in 1903, it also set minimum commission rates (in general, a third part of the total transaction costs) for executing securities orders. Commission rates were small percentages that clients paid to their financial intermediaries for the execution of securities orders. For the provincial stockbrokers, several disadvantages were attached to the introduction of these minimum commission tariffs. First of all, before 1903 provincial stockbrokers had better control over the height of a commission fee because potentially, they could carry out the orders themselves on the Amsterdam Stock Exchange. If they did not, and decided to engage an Amsterdam stockbroker, mutual arrangements could be made concerning the height of the commission fee. By introducing these minimum commission rates, the provincial commission traders lost control over the height of commission tariffs. Second, the chance now existed that provincial investors turned directly towards Amsterdam securities traders. Third, it created opportunities for provincial branch offices of Amsterdam financial intermediaries.<sup>64</sup> For all three disadvantages applies that the profit margin of a provincial stockbroker diminished. The provincial traders ran the risk of losing their clientele to their Amsterdam competitors if they charged their clients for their own losses due to the minimum commissions of the Amsterdam stockbrokers. If a provincial securities trader would want to compete with his Amsterdam colleagues, he was forced to lower his own commission rates.<sup>65</sup>

Immediately after its foundation in 1903, the 'Bond' tried to fix an official arrangement with the VvdE concerning the mutual tariffs on commissions. The negotiations passed off stiffly. Within the Bond, a

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<sup>63</sup> Annemarie van der Tuijn, 'Rol hoekman op beurs wordt zwaar onderschat', *NRC Handelsblad*, 24 July 2000; 'Daghandel brengt ons direct in de knel met beursregels', *Het Financieele Dagblad*, 12 October 2001; 'Zoveel effectenbanken, zoveel ideeën over het animateursvak', *Het Financieele Dagblad*, 23 September 2002.

<sup>64</sup> De Vries, *Een eeuw*, p. 98; Van der Werf, *De Bond*, p. 37.

<sup>65</sup> Van der Werf, *De Bond*, p. 37.

growing body was of the opinion that the establishment of their own institution where provincial stockbrokers could clear their orders amongst each other, was absolutely necessary. The VvdE only thwarted the provincial stockbrokers in regaining a foothold in Amsterdam so why not establish their own 'provincial' clearing house? Amsterdam stockbrokers that were shut out from the VvdE, could participate too. An existing financial intermediary, probably a bank, would then fulfil the function of such a clearing house. This bank would receive all securities orders from intermediaries that were barred from the Amsterdam Stock Exchange and would clear the orders. The 'Amsterdamsche Liquidatiekas' was willing to fulfil the function of 'provincial' clearing house. When the VvdE heard about these plans, it renewed contacts with the Bond. An obstacle for the VvdE was the representativeness of the Bond. The VvdE demanded that the Bond had to gain a sufficient number of provincial stockbrokers as members, before it would continue talks about the commission rates. The reason why the VvdE made this demand was that it wanted to be sure that all, or at least the majority of the provincial stockbrokers, would comply with and stick to the commission rates agreement. The 'sufficient number' was set at 400; at that moment (April 1904) the Bond had 240 members. The total number of provincial stockbrokers in the Netherlands was 600. If the number of 400 could be reached, it also implied an increase of the credibility of the Bond as a representative of provincial stockbrokers itself. It could then claim to speak for the greater part of the provincial stockbrokers. Probably against the expectations of some Amsterdam stockbrokers, the number of 400 was reached quite fast; in December 1904 the Bond registered the 400<sup>th</sup> member. Finally, the VvdE and the Bond settled the issue concerning the commission tariffs in 1905. It had taken two years before the parties at last agreed on an arrangement that satisfied both sides.<sup>66</sup>

Table 3.1: Commission rates securities traders 1905 <sup>67</sup>	
1905	Commission rates
To members of one of the 'Vereenigingen'* (correspondents tariffs)	½ ‰ (0,0005)
To private persons	1/8 % (0,00125)

<sup>66</sup> Van der Werf, *De Bond*, pp. 72-73.

<sup>67</sup> Van der Werf, *De Bond*, p. 313.

\* The 'Vereenigingen' are: the Rotterdam 'Vereeniging van Effectenhandelaren' and the Provincial 'Bond'. Note that the arrangements between Rotterdam and Amsterdam commission traders remained open. They were not obliged to stick to the provision of a  $\frac{1}{2}$  ‰.

In 1910, the issue on commission rates revived. Members of the VvdE protested against the 1905-agreement while they felt that they did the most important part of the securities trade; namely, the carrying out of the actual securities orders on the ASE. Hence, the Amsterdam stockbrokers were of the opinion that they should receive more commission than their provincial colleagues. After many deliberations, a new arrangement was concluded at the end of 1913 and became effective per January the first 1914 (see table 3.2).<sup>68</sup>

Table 3.2: Commission rates in 1913 <sup>69</sup>			
1913	<i>Over the nominal value of stocks quoted beneath 25 %</i>	<i>Over the nominal value of stocks quoted from 25 % to 105 %</i>	<i>Over the real value of stocks quoted above 105 %</i>
To members of one of the 'Vereenigingen' (correspondents tariffs)	$\frac{1}{2}$ ‰ (0,0005)	1/16 % (0,000625)	1/16 % (0,000625)
To Amsterdam investors	1/16 % (0,000625)	1/8 % (0,00125)	1/8 % (0,00125)
To provincial investors	1/8 % (0,00125)	3/16 % (0,001875)	3/16 % (0,001875)
To provincial investors who lived in the same place as 'their' provincial commission trader and who also paid income taxes in Amsterdam	1/16 % (0,000625)	1/8 % (0,00125)	1/8 % (0,00125)

<sup>68</sup> Van der Werf, *De Bond*, pp. 71-73 and 79-82.

<sup>69</sup> Van der Werf, *De Bond*, p. 315.

The first table can best be compared with the third column of the second table ('Over the nominal value of stocks quoted from 25 % to 105 %'). In this column probably most transactions took place because column two and four represent the extremes. What we see is that the tariffs that the Amsterdam stockbrokers could charge to provincial stockbrokers were raised from 0,0005 ( $\frac{1}{2}$  ‰) to 0,000625 ( $\frac{1}{16}$  ‰). Also, a division was made between Amsterdam clients, provincial clients and commuters who lived in the province but worked in Amsterdam. The provincial clients had to pay the highest commission tariffs. Apparently, provincial clients entailed more costs than Amsterdam clients and commuters. Probably, these extra costs were generated due to higher communication costs since Amsterdam clients and commuters were, literally, closer to the ASE. Also the costs for execution and administration should have been the same for any client so therefore we suspect that the extra costs were a result of higher communication costs.

After years of struggle on the commission tariffs, the hostility between the different stockbroker organisations slowly disappeared. They constituted a permanent consultative body which regularly discussed the height of the commission tariffs.<sup>70</sup>

### *3.6 Quotation issue and mid-rate*

One of the main problems the VvdE had to deal with was the question of the quotations. Newspapers often published wrong quotations. The journalists depended on the stockbrokers for the quotations. Some mistakes were made by accident, however: it regularly happened that stockbrokers deliberately passed on the wrong prices in order to fool their clients or their stockbroker colleagues, or to influence the quotation of a certain share or bond.<sup>71</sup> For instance, in 1893, a member of the VvdE complained in a letter that another stockbroker deliberately wrote down a wrong quotation.<sup>72</sup> Information on prices was thus often blurred. The VvdE established a Quotations Committee whose members had to superintend the quotations. If a deal had been closed, the involved parties were obliged to give note of this deal to one of the members of the Quotations Committee. Also, the highest and lowest price per day of a

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<sup>70</sup> Van der Werf, *De Bond*, pp. 160-163.

<sup>71</sup> De Vries, *Een eeuw*, p. 45; Camijn, *Samen effectief*, p. 29; Jonker, *Merchants*, pp. 150-151.

<sup>72</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), Commissie voor de Noteering (Committee for the Quotations), inv. nr. 1604 1891-1969, Brief van D.C. de Boer aan bestuur VvdE (Letter D.C. de Boer to the board of directors VvdE), dd. 13 November 1893.



security needed to be made known to this Committee. Unfortunately, the problems concerning the quotations remained. The Committee disciplined the offenders with warnings and fines but the complaints did not decline.<sup>73</sup>

With the help of the highest and lowest price the so-called 'middenkoers' or mid-rate was established. The mid-rate is the arithmetical average of the highest and lowest (executed) bid. Clients could give limited and 'bestens' (unlimited) orders. With a limited order, a client indicated the range (minimum and maximum) for the sell or buy price. If a 'bestens' order was given, a client wanted his order to be executed as soon as possible, regardless of the price. Yet, the majority of the public eventually wanted to be charged with the mid-rate and not with the price the stockbrokers actually had paid. The popularity of the mid-rate with the large public happened to be a result of malicious stockbrokers. Clients did not trust the prices these commission traders claimed to have paid. While the highest and lowest price was published in newspapers, clients could see for themselves what the mid-rate must have been. The mid-rate appeared to be not always the most advantageous price, but at least clients knew what to expect. However, the mid-rate brought about other modes of deceit. For instance, if specialists and commission traders bought securities lower than the mid-rate, they created extra incomes for themselves while the client paid the mid-rate. On the other hand, the risk also existed that the mid-rate would be lower than the price against which an intermediary had just bought securities. In such a case, specialists or commission traders did not refrain from making up fictitious concluded orders to keep the mid-rate artificially high.<sup>74</sup>

In 1905, protests were heard against the mid-rate. A member of the VvdE, Jacques Krijn, proposed the idea that a system of time periods should be introduced, amongst others to stop the usage of the mid-rate. The Quotations Committee agreed with this point of view. The Committee even suggested going a step further; it argued for an extension of the official stock exchange hours while that would result in the situation that clients could be kept informed about the prices by telegram, and that they could choose the moment themselves when their orders should be executed. However, these ideas were rejected by the majority of the members of the VvdE.<sup>75</sup>

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<sup>73</sup> De Vries, *Een eeuw*, pp. 110-111.

<sup>74</sup> O.B.W. de Kat (1932, 3rd edition) *Effectenbeheer. Rechtskundig, economisch en administratief handboek* (De Erven F. Bohn N.V.; Haarlem) pp. 448-449.

<sup>75</sup> De Vries, *Een eeuw*, p. 113.

Still, the system of the mid-rate, or rather the abolishment of it, remained an issue during most of the twentieth century. In 1907, two members published a leaflet in which they raised the issue about the quotations and the mid-rate again. As a consequence, the ad hoc Committee for the Quotation Issue (Commissie voor het Noteeringsvraagstuk) was established. This Committee carried out a survey among the members of the VvdE. Clearly, different opinions about the mid-rate existed. Some of members, notably the commission traders, condemned the mid-rate, others, especially the specialists, wished to keep it. Another conclusion was that the mid-rate actually resulted in a deprivation of orders executed on the floor of the Amsterdam Stock Exchange. Banks, and also provincial intermediaries used the mid-rate to enclose the orders they received from their clients themselves without bringing these orders to the ASE. These intermediaries waited until the mid-rate became known for that day, and tried to match the orders they had received, in-house or among each other.<sup>76</sup> This was called order clearing. In this way, transaction costs were avoided. The members of the VvdE naturally disapproved of the situation while this implied a missed chance for functioning as an intermediary, thus a lack of provision, thus fewer incomes. Another, more economic, ground for rejecting this practice is that, if not all supply and demand is brought together, the price can never be 'pure' or a realistic reflection of the market. On the basis of these results, the Committee for the Quotation Issue once again put forth the idea of lengthening the trade hours and to divide the lengthened trading time into periods (tijdvakken), aiming at more transparency concerning realised prices. The members of the Committee believed that this transparency would automatically lead to the abolishment of the mid-rate while the public could see for themselves what price was best for them. The suggested plans caused a tumultuous meeting in which the majority did not accept the plans. The Committee tried to launch their plans once more with the opening of the Cuypers building in 1913 while this new environment, equipped with the newest telephone and telegraph devices and infrastructure, was excellently suited to animate trade by extending

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<sup>76</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1604B, Verslag der Enquête-Commissie (Report Questionnaire Committee, Quotations Issue) [1908] p. 5.

the stock exchange hours and by transmitting prices during the trade. However, it failed once again.<sup>77</sup>

The discussion re-opened in the 1920s. The board of the VvdE followed the standard procedure of the establishment of an ad hoc committee, Committee Revision Regulations of the Quotations (Commissie herziening Noteeringsreglement) which had to formulate a plan concerning time periods. When the board of the VvdE presented the concepts of this Committee in 1923, they acted very carefully, trying to avoid clashes with the persevering advocates of the mid-rate. In 1924, a first experiment was approved with separate time periods during official stock exchange hours. 7 November 1924, the experiment started in Dutch government bonds. Four time periods were distinguished: (1) 13.30 – 13.40 hrs; (2) 13.40-14.00 hrs; (3) 14.00-14.30 hrs; (4) 14.30-14.45 hrs. At the end of each time period, the specialists determined the quotations on the basis of ongoing trade. These quotations were distributed to the ‘outside world’ by means of VvdE’s radio service. In due time, the experiment was extended with other active funds, and with more time periods (7). Nevertheless, the mid-rate survived. A stockbroker could decide for himself when to execute the orders that were given before the stock exchange had opened.<sup>78</sup> Possibly, he waited to detect the tendency of a certain stock, trying to estimate the mid-rate, and then sell or buy higher or lower to profit from the margin between the mid-rate and the price he really received or paid.

Another Committee, Committee Bernhard (Commissie-Bernhard; ‘Commissie belast met het onderzoek op welke wijze de beurs te reorganiseren is’), established in 1930 with the aim to design a plan for reorganising the Exchange in general, advised introducing the so-called ‘call system’. Within this system, all demand and supply for a particular fund must be made known by all parties at the same time, that is at the ‘call’. At this ‘call’ the stockbrokers gathered around the specialists. The stockbrokers told the specialist which orders they had. Out of all these buy and sell orders, the specialist formed an official rate. This official rate functioned as the sole quotation for that particular fund for the rest of that day. Hence, all orders that came in after the call, were settled with the official rate. The calls should be done each day, in a fixed order. According to the advice of the Committee, a fixed order of the calls offered the

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<sup>77</sup> De Vries, *Een eeuw*, pp. 113-115; Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1604B, advies Commissie voor het Noteeringsvraagstuk aan het bestuur van de VvdE (advice Committee Quotations Issue to VvdE), 29 January 1913.

<sup>78</sup> De Vries, *Een eeuw*, pp. 152-153.

advantage that more members of the VvdE could be present than before; they knew exactly when a specific stock would be handled. Besides, the Committee expected that it would cause a widening of the securities trade. What the Committee meant by 'widening' is not completely clear but one could think of more orders. Seeing that the quotations were determined at the beginning of the official trading hours, the stockbrokers could inform their clients about the execution of their orders in an early stadium, which should result in more orders. A 'call' contains practically all buy and sell orders from that moment, hence, the official rate can be viewed as a real and pure reflection of the market. Besides the widening of trade, two other advantages of the call system should be that it: (1) diminished trade outside the official corner of a certain security because no one would run the risk of not being able to execute an affair: and, (2) that it abolished the mid-rate while the official price was the price determined at the 'call'. As another means to break down the mid-rate, the Committee suggested expanding the official trading hours even though this request had been done earlier without any results. The same reasoning as twenty ears before was followed, namely that longer trading hours offered larger possibilities to inform clients during the opening hours of the ASE, thus, a client could decide to buy or sell on a real time basis.<sup>79</sup>

The summed up advantages of the call system did not convince the board of the VvdE. The idea that stockbrokers had to expose themselves already at the beginning of trade, was merely seen as a disadvantage instead of a favourable circumstance. The VvdE feared that the official rate indicated a particular tendency (buying or selling) and that the larger part of the public just followed this tendency without thinking. An economic crash (note that the world was just recovering from the 1929 crash) would then occur much more easily than it would in the existing situation. Accordingly, the suggestion for the introduction of the call-system already fell with the board of the VvdE. The board of the VvdE approved of the idea for more stock exchange hours. It is not known why the board was attracted to this idea but it was probably due to the expectation that a longer trade time provoked a larger number of orders, and thus a larger volume of the Amsterdam, or Dutch, securities trade. The board launched another idea in addition that aimed at animating and expansion of trade,

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<sup>79</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief ((Policy portfolios in the Securities archive), inv. nr. 2474, Schema van reorganisatie ingediend door de commissie belast met het onderzoek op welke wijze de beurs te reorganiseren is (Oktober 1932). (Scheme of reorganisation, October 1932).

namely to publish bid and asked prices of securities in the 'Officieele Prijscourant' next to the real prices.<sup>80</sup> A bid price was a recommended price for securities that were wanted, given by the specialist. An asked price was a quotation for securities that were for sale, also given by the specialist. In both cases, sellers respectively buyers had not yet presented themselves. Conceivably, the board hoped that, with the publication of bid and asked prices of particular securities, potential buyers and sellers could see what was offered and what was asked and thus, that they would be triggered to give order to their intermediary to buy or sell. Hence, transparency should lead to more orders and a larger volume of trade. The above discussed recommendations that were written down in the 'Scheme for Reorganisation', drawn up by the 1930 Committee, did not make it. In a meeting, the majority of the members of the VvdE rejected once again plans to change the set up of the Dutch securities trade.<sup>81</sup>

After World War II, the Amsterdam Stock Exchange reopened on 7 January 1946. The stock exchanges of Paris, Brussels and even those of Frankfurt am Main and München opened shortly after the war in 1945. Apparently, the Dutch showed some reluctance to start up one of the central drivers of the economy. Currency reform and reorganisation of public finances needed to be arranged first. After the Amsterdam Stock Exchange had opened its doors again, trade was very limited. Order clearing was prohibited and trade was only allowed in domestic bonds.<sup>82</sup> The board of the VvdE probably figured that this was the time to abolish the mid-rate and order clearing once and for all. In March 1947, the VvdE introduced the system of the 'hoofdkoers' or 'main quotation'. This system worked as follows: at two o' clock the specialist of the concerned security made up a main quotation out of the orders he had received until five minutes before two o' clock (note that the stock exchange hours still ran from 13.30 to 14.45 hrs)<sup>83</sup>. On two 'o clock, a break of ten minutes started. After this ten minutes break free trade began, divided into three tapes in which orders other than 'main quotations' orders were executed. In fact,

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<sup>80</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 2474, Prae-advies van het bestuur der Vereeniging voor den Effectenhandel inzake het schema van reorganisatie ingediend door de commissie belast met het onderzoek op welke wijze de beurs te reorganiseeren is. [1933](Pre-advise board VvdE concerning the scheme of reorganisation 1933).

<sup>81</sup> De Vries, *Een eeuw*, p. 159.

<sup>82</sup> De Vries, *Een eeuw*, p. 201.

<sup>83</sup> In May 1947, the official trade time is advanced for ten minutes (13.20-14.30) in order to meet a request of provincial newspapers so that they could publish the quotations. Later, the trade time is set to 13.00-14.15. I do not know exactly from what year and why.

the complete trade time was split up in three parts; the first (13.30-14.00), in which at the end a main quotation was established, the second (14.00-14.10) which was the break, and third (14.10-14.45) in which "free" trade took place during three time periods, the so-called tapes. The stockbrokers who gave their orders to the specialist before 13.55 hrs., had to indicate whether their clients wished the order to be executed against this main quotation. If this was not the case, stockbrokers waited until the free trade period and tried to find a match for their clients there. Furthermore, a client could give a limitation to a main quotation order, for instance 359 % (the percentage represents the real value of a security). If the main quotation was, for instance 360 %, the order could not be executed. The stockbroker could use the ten minute break to contact his client to inform him on the possibilities; either wait until the main quotation of the next day, or execute the order in the free trade period. This system only applied for the active securities, thus the securities that were traded over seven tapes before the war.<sup>84</sup> The system of the main quotation lasted less than a year. In November 1947, it was abolished again. Also, the embargo on order clearing was lifted. The VvdE decided to return to quotations in seven tapes for the active securities.<sup>85</sup>

In 1954, the VvdE established the Committee Mandersloot. The Committee was amongst others, assigned to investigate the factors that hindered the securities trade and to advise on possible solutions. With these hindering factors, one aimed at the mid-rate and, inextricably related to that, at order clearing. The members of the Committee considered once again to lengthen the official trade hours, namely from 10.30 to 15.30 hrs. The Committee expected that the effect of this prolongation should not only be an increase of orders, but also that the orders, given at different moments in time, should be sent to the ASE, as well as the balances of the orders that were passed through at the same time. Apparently, the members of the Committee saw a longer trade time as a remedy to clearing. It gave room to more diversified quotations of securities which could be more advantageous than the mid-rate. Still, the Committee also saw disadvantages to the system of continuous trade; the need for extra

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<sup>84</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1604, Bericht no. 3 van W. Willems & Cie (commissionair in effecten), 'Een tijdelijke regeling van den beurshandel', 25 februari 1947 (Message of W. Willems & Cie (commission trader in securities), 'A temporary arrangement of the exchange trade, 25 February 1947); and krantenknipsel uit de Maasbode, 'Geen tijd voor experimenten', 20 februari 1947 (newspaper clipping out of the "Maasbode", entitled 'No time for experiments', 20 February 1947).

<sup>85</sup> De Vries, *Een eeuw*, p. 244-245.

personnel, insecurity for the specialists, and the attachment of the large public to the usage of the mid-rate.<sup>86</sup> Concerning the need for extra personnel: since the stock exchange hours were only an hour and a quarter of an hour, the personnel involved could easily perform other tasks, like administrative actions that came along with the securities trade. Hence, if the trade time was lengthened, extra personnel was needed to perform the tasks, the stock exchange employees normally would do. Concerning the insecurity for the specialists: by accepting orders, specialists committed themselves to the execution of these orders. In fact, they warranted that the orders were carried out. Specialists thus ran the risk for one hour and a quarter of an hour that no suitable buyer or seller would present himself. If that would happen, the specialist had to act as buyer or seller himself. A longer trade time would imply that the specialist had to run that risk even longer. Concerning the attachment of the large public to the usage of the mid-rate: to settle against the mid-rate was a common use. The majority of the public did not know any better. They even demanded to settle their orders against the mid-rate. It would be hard to change this practise.

After weighing the advantages and disadvantages, and having consulted several specialists the Committee decided not to urge on a lengthened trade time. Instead of this, the Committee advised the prohibition of order clearing. The Committee did not talk to other parties involved in the securities trade thus, the opinion of the specialists strongly influenced the Committee's advice. The report of the Committee mentioned that the prohibition of order clearing should be worked out very carefully.<sup>87</sup> However, that was not done in the report and, according to my knowledge, the VvdE did not comply with the advice of the Committee Mandersloot. Once again a Committee was established to bring up a solution for the mid-rate and order clearing, and once again it appeared to be a failure. The failure did not spring out of the mismatch between the conservative members and a too progressive committee and members but it was due to the fact that the Committee hanged its ears too much to one party, namely the specialists.

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<sup>86</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief, inv. nr. 2199A, Reorganisatie Beurs (Reorganisation Exchange), Rapport van de Commissie 1954 (Mandersloot) aan het bestuur van de VvdE (Report of the Committee 1954 (Mandersloot) to the board of the VvdE), p. 3.

<sup>87</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 2199A, Reorganisatie Beurs (Reorganisation Exchange), Rapport van de Commissie 1954 (Mandersloot) aan het bestuur van de VvdE (Report of the Committee 1954 (Mandersloot) to the board of the VvdE), p. 4

As from the 1960s, the board of the VvdE once again started the discussion concerning the organisation of the securities trade, amongst others, on how to reorganise the realisation of quotations. After consulting different parties, new regulations were introduced in 1967. First of all, the mid-rate was abolished. Strangely enough, after more than half a century of discussion the prohibition on the mid-rate seemed to be complied with. Apparently, all parties involved agreed that the age of the mid-rate was over. The reason for this agreement remains unclear. Second, the stock exchange hours for inactive securities were divided into two time periods, namely from 11.30 to 12.15 hrs. and from 12.45 to 13.15 hrs (note that the stock exchange hours were advanced from 13.00-14.15<sup>88</sup> to 11.30-13.15 hrs). Normally, at the end of the trade time, a quotation was made up for inactive securities. By dividing the stock exchange hours for inactive securities with a thirty minute break, the VvdE aimed at animating trade in these valuable papers. After the first time period, the concerned specialist had to come up with a quotation which could be made known to parties outside the building of the ASE. In the thirty minute break, financial intermediaries could seek contact with clients and inform them, or interested people could pass through orders after hearing this first quotation. The stock exchange hours for active securities remained divided into seven time periods. What changed was that trade started with an opening quotation around 11.30 hrs that the specialist made up out of the orders he received before the official trade time. After that, trade continued into seven time periods. A stockbroker had to indicate to the specialist whether his client wished his order to be executed against the opening quotation. This way of trading resembled very much the system of the main quotation in 1947. The difference was that the opening quotation was formed at the beginning of the stock exchange hours and the main quotation after one half hour of trade. Besides the abolishment of the mid-rate, the stockbrokers were obliged to pass through all their orders although some of these orders could be compensated with others (thus, clearing).<sup>89</sup> It seems that as from now the ban on the mid-rate and the injunction to notify specialists of all orders persisted.

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<sup>88</sup> Brouwer, *Beurs*, p. 68.

<sup>89</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1604B, Circulaire no. 66-32 van het bestuur van de VvdE aan de leden (Circular no. 66-32 from the board of the VvdE to its members), 9 augustus 1966 (9 August 1966); and, idem, een schrijven van de Commissie van de Noteering betreffende een evaluatie en voorstellen tot verbetering van de reorganisatie die in januari 1967 is ingegaan (a document of the Committee for Quotations concerning an evaluation and proposals for enhancement of the reorganisation that is introduced in January 1967), 18 januari 1968 (18 January 1968); see also De Vries, *Een eeuw*, pp. 251-257.



In 1970, one of the members of the Quotations Committee proposed the idea for continuous quotations for active securities. The tapes had lost their meaning since the mid-rate was abolished in 1967. After all, the tapes were introduced to get rid of the mid-rate. The board of the VvdE adopted this idea. On 1 July 1971 the ASE switched over to continuous quotations for active securities. The advantage of this new system should be that continuous quotations gave a good insight in the price range, and thus, it would entail more securities orders. In order to obtain that goal, it was necessary that an adequate telecommunication system would be installed which could relay these prices continuously.<sup>90</sup> Through the years, the number of securities that was continuously quoted, increased.

Above, we have mentioned several times the *official* stock exchange hours. This already implies that there was also unofficial stock exchange hours. Indeed, before and after the official stock exchange hours, trade in securities also took place. Probably, this 'unofficial' trade has taken place since the start of securities trade in the seventeenth century. The status of the 'pre- and post' Exchange (voor- en nabeurs) gradually became more official. This is shown by the discussion in the 1930s concerning the question whether the results of a transaction done during the pre or post Exchange, should be made public. The board of the VvdE opposed the idea while no control mechanism existed to check these quotations.<sup>91</sup> Yet, the VvdE could not escape from the growing importance of the pre- and post exchange. Quotations made up during the pre-Exchange started to be used as a direction for the official quotations. Gradually buy and sell decisions, were taken on the basis of pre-Exchange quotations.<sup>92</sup> Stockbrokers started to appear that solely focused on trade in the pre- and post exchange.<sup>93</sup>

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<sup>90</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1604B, Verslag van de vergadering van de Commissie voor de Notering d.d. 1 december 1970. (Minutes meeting Committee of the Quotations, 1 December 1970).

<sup>91</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1990, Dossier Voor- en Nabeurs (dossier pre- and post exchange), , no. 1, Brief van het bestuur van de VvdE aan de redacties van de kranten "De Telegraaf" en het "Algemeen Handelsblad" (Letter board VvdE to editorial board of two newspapers, "De Telegraaf" and the "Algemeen Handelsblad"), 9 oktober 1936 (9 October 1936); Brief van het bestuur van de VvdE aan de Twentsche Bank N.V. (kantoor te Leiden) (Letter board VvdE to Twentsche Bank N.V. (branch office at Leyden)), 3 maart 1938 (3 March 1938).

<sup>92</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 1990, Dossier Voor- en Nabeurs (dossier pre- and post exchange), , no. 1, Bijeenkomst van het Dagelijks bestuur van de VvdE en eenige leden der Noteeringscommissie betreffende voorbeurs (Meeting board of the VvdE and the Committee for the Quotations), 30 oktober 1930 (30 October 1930).

<sup>93</sup> Since when these specialised pre- and post exchange stockbrokers exist is not quite clear. We know from a note concerning the pre- and post exchange, dated 11 November 1960, that an arrangement with

During the 1970s, the pre- and post exchange became more and more involved in the continuous trade of active securities. In 1985, the pre- and post exchange was added to the official stock exchange hours which resulted in a start of trade in active securities as from 10.00 until 16.30 hrs..<sup>94</sup>

### *3.7 Conclusion*

In the Netherlands, buying and selling of securities started to grow with the establishment of the VOC in 1602. At the time, trade had an open character which sometimes led to chaotic situations. Clearly trade became more organised during the nineteenth and twentieth centuries. Several stockbroker organisations were established to create some order in the often chaotic way securities were traded. The stockbroker organisations particularly focused on producing a reliable official list. The VvdE succeeded in becoming the stockbroker organisation that appropriated the domain of the *organisation* of the Dutch securities trade. It established itself as the voice for the securities traders, in particular for the Amsterdam securities traders. Traditionally, traders from all parts of the country could participate in the securities trade at the ASE. However, the VvdE turned the securities trade into an in crowd happening for Amsterdam financial intermediaries. The Exchange buildings strengthened the 'emancipation' of the stockbrokers. In the Zocher Exchange, the stockbrokers were fed up with the commotion. In the Berlage Exchange, the stockbrokers who were a member of the VvdE disposed of a secluded trade floor. The Cuypers building was solely destined for the securities trade.

One of the main issues the VvdE had to deal with were the problems concerning the quotations. First, a reliable price list needed to be drawn up and second a solution to the dominance of the mid-rate needed to be found. Both practices were unwanted since it could lead to deceit. A reliable price list appeared as the Officieele Prijscurant. The prices were checked before published. Eventually, an end was put to the mid-rate although it took over fifty years to realise the abolishment. Attempts to

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with pre- and post stockbrokers is concluded on 26 March 1954. However, since the pre- and post exchange existed much longer, we suspect that these specialised pre- and post exchange stockbrokers, also appeared earlier than 1954. The question however is since when they were regarded as a separate group.

<sup>94</sup> Archive Euronext, Beleidsportefeuilles in het Fondsenarchief (Policy portfolios in the Securities archive), inv. nr. 2116C, VvdE, Publikaties, map 'Historie Amsterdamse Effectenbeurs' (dossier History Amsterdam Stock Exchange).

### *Chapter 3*

dissolve the mid-rate led to changes in the securities trade such as the introduction of tapes.

After World War II, the closed character of the Dutch securities trade, slowly started to become more open again. The opening up of membership of the VvdE to intermediaries from outside Amsterdam especially affirmed this development. Within two centuries, the securities trade had switched from a wide open market to a closed institutionalised one, to open again. Yet, the openness as we saw in the seventeenth and eighteenth century did not return. This openness related specifically to persons who were involved professionally to securities trade. The only way to see a glimpse of the securities trade as a private person, was to take a guided tour through the Cuypers Exchange.

## 4. Value Systems of the Dutch Securities Trade

### 4.1 Introduction

The origination and backgrounds of the Dutch securities trade are now known; the next step is to discern the main participants and whether any new participants appear or disappear. With this knowledge, we can put together a value system of the Dutch securities trade and thus answer subquestion (a) *which actors constitute the value systems in the Dutch securities trade?* The aim is to come to several value systems over time. These value systems will be compared and by means of this comparison, the changes in the organisation of the Dutch securities are distinguished.

Section 4.2 gives a general overview of the main participants in the Dutch securities trade. Section 4.3 focuses especially on joint stock commercial banks that, as will be indicated, dominated as service providers in the Dutch securities throughout the twentieth century. Two banks in particular are studied in more detail: the Rotterdamsche Bank/Rotterdamsche Bankvereniging and the Twentsche Bankvereniging/Twentsche Bank.<sup>1</sup> The reason to focus on these two banks lies in the fact that their origin was from outside Amsterdam and therefore they constitute interesting cases to see how they organised their services in relation to the securities trade. As concerns the TB, its first office was established in Amsterdam. However, the founders of the TB were from the eastern part of the Netherlands. Therefore, it is expected that the TB actively stayed in contact with its roots. In this chapter, the Rotterdamsche Bank and the Twentsche Bank are discussed in general. After the

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<sup>1</sup> 1863-1911: Rotterdamsche Bank; 1911-1947: Rotterdamsche Bankvereniging; 1947-1964: Rotterdamsche Bank.

1861-1917: Twentsche Bankvereniging; 1917-1964: Twentsche Bank.

discussion on the different participants, the value systems for the Dutch securities trade will be drawn up in section 4.4.

#### 4.2 Actors Dutch securities trade

During the eighteenth and nineteenth century Dutch trade in securities professionalised. Distinct groups of traders that engaged in securities came up such as commission traders, sworn brokers, merchant bankers, specialists<sup>2</sup> and bond administration offices that executed orders for their clients and all administrative acts that came with it. 'Commissionairs' or commission traders functioned as the key figures. They can be regarded as the 'wholesalers' of the securities trade. Their chief activity was made up of the trade in securities in name of their clients against a certain percentage (=commission) of the quotations of the traded securities. In addition to that, commission traders were part of underwriting syndicates<sup>3</sup> and issues, intermediated between lenders and borrowers on 'prolongatie'<sup>4</sup>, and were active in arbitrage trade. Furthermore, they took initiatives in trying to organise the trade in an orderly way. Commission traders were driving the force behind the establishment of the Vereeniging voor den Effectenhandel.<sup>5</sup> Makelaars or 'sworn brokers' stood one step beneath the commission traders in the hierarchy of stockbrokers. They had to stick to pure intermediation between buyers and sellers while commission traders were allowed, besides the intermediation business, to take a position in the market. As Jonker puts it, 'commission traders had a distinct status'.<sup>6</sup> For their intermediation business, the sworn brokers received 'courtage' or brokerage.<sup>7</sup> Another step below came the rest; traders without any official status that just hoped to gain from price differentials such as day-traders.<sup>8</sup>

The merchant bankers formed a different group while the securities trade was only one of their activities and not their principal activity. Actually, merchant bankers were true middlemen; they offered financial services related to bills of exchange, insurances, commodities, securities,

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<sup>2</sup> The generic term for commission traders, sworn brokers and merchant bankers that will be used in this book is stockbrokers or securities traders.

<sup>3</sup> A syndicate is a temporary group of financial intermediaries that supports a issue.

<sup>4</sup> 'Prolongatie' will be explained on pages 77 and 78 of this chapter.

<sup>5</sup> Jonker, *Merchants*, p. 146.

<sup>6</sup> Jonker, *Merchants*, p. 146.

<sup>7</sup> J.P.B. Jonker (1997) *Schakel tussen verleden en toekomst. 275 jaar traditie en vernieuwing in het Nederlandse bankwezen* (MeesPierson; Amsterdam) p. 14.

<sup>8</sup> Jonker, *Merchants*, p. 147.

guaranteeing payments and money.<sup>9</sup> Examples of merchant bankers that also acted as commission traders in securities were the old Amsterdam firm Hope & Co, Vlaer & Kol from Utrecht, F. Van Lanschot in 's Hertogenbosch, Lissa & Kann from The Hague and R. Mees & Zoonen from Rotterdam.<sup>10</sup>

The hierarchy of the stockbrokers was also reflected in the way they acted. For instance, in the eighteenth century the different groups gathered in separate cafes. In the nineteenth century the merchant bankers could be recognised as the gentlemen that stood next to the jostling crowd of traders. These gentlemen engaged other brokers to execute their and their client's orders. The commission traders did mingle in the crowd but for the reasons mentioned above, it was clear to anyone that they functioned as the central figures in the securities trade.<sup>11</sup> Nonetheless, at the end of the nineteenth century and at the beginning of the twentieth century, the commission traders increasingly left the execution of orders to their employees.

It seems that as from the end of the nineteenth century, a new intermediary entered the securities trade, although it is not entirely clear when the 'specialists' or 'market makers' (hoekman) precisely entered the scene or why they appeared. According to De Vries, in 1890, the different spaces in the Exchange building where the various securities were traded, were called 'corners'. In these corners, certain persons became specialised in the trade of the shares or bonds of one company or one loan. That explains the term 'specialists'. The activities of these specialists were new, but the specialists themselves were usually stockbrokers that were trained in securities trade. Specialists actually functioned as stockbrokers for the stockbrokers. They gathered the buy and sell orders of a certain security. By doing this, they obliged themselves to execute these orders even if a suitable buyer or seller did not appear. Hence, a specialist ran the risk that he had to buy or sell himself, at his own costs, to meet the obligation which he had imposed on himself, of executing an order, without a direct repayment.<sup>12</sup> Gradually, specialists consolidated their position in the Dutch securities trade and even set up their own association in 1922.<sup>13</sup> The question arises why this new type of intermediary entered. A plausible explanation is that since the number of traded securities rose at the end of

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<sup>9</sup> Jonker, *Merchants*, p. 187.

<sup>10</sup> De Vries, *Een eeuw*, p. 39.

<sup>11</sup> Jonker, *Merchants*, pp. 145-146.

<sup>12</sup> Brouwer, *Beurs*, p. 213.

<sup>13</sup> De Vries, *Een eeuw*, p. 109.

the nineteenth century, the need for intermediaries who were specialised in certain securities appeared.

Dutch investors were very much interested in Russian bonds and American railway bonds in the second half of the nineteenth century due to a lack of domestic securities. The market for American railway bonds was especially very speculative. Yet, due to the large distances, information asymmetry played a large role. The interests of investors from overseas were often at stake because they always heard relevant news later than their counterparts on the spot. Bankers and merchant bankers started to establish 'administratiekantoren' or bond administration offices in order to cope with this information asymmetry. Bond administration offices tried to defend the interests of their clients and to inform them as good as possible. It appeared to be a unique Dutch institution. In addition to that, bond administration offices managed the original shares or bonds and the accompanying rights such as the supervising and the right to vote for their clients. The clients received certificates that stated they were the owners of a certain amount of securities. Rights, attached to the ownership of securities, such as the right to vote on shareholders meetings and to supervise a company, were left to the administrators of the bond administration offices. Another task the administrators performed, became the payment of interest, in case of bonds, or dividend, in case of shares, against a small fee.<sup>14</sup>

Earlier, several merchant houses were mentioned as intermediaries in the securities trade such as Hope & Co, Vlaer & Kol from Utrecht, F. Van Lanschot in 's Hertogenbosch, Lissa & Kann from The Hague and R. Mees & Zoonen from Rotterdam. None of them, except for Van Lanschot which is still an independent bank, kept existing as independent intermediaries. In 1978 Van Lanschot became a limited liability company and its official name turned into F. van Lanschot Bankiers N.V.<sup>15</sup> In 1940, Hope & Co from Amsterdam obtained all shares of Lissa & Kann from The Hague. These measures were dictated by the fear of the German occupation of the Netherlands brought with since Lissa & Kann origins were Jewish.<sup>16</sup> The take-over was formally arranged in 1947. In 1942, Heldring & Pierson, originally from The Hague, started to collaborate more closely with Pierson & Co from Amsterdam to support each other in

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<sup>14</sup> Jonker, *Merchants*, p. 157; Van Zanden and Van Riel, *Nederland*, pp. 269-270.

<sup>15</sup> *Nederlandse financiële instellingen in de twintigste eeuw: balansreeksen en naamlijst van handelsbanken*, DNB Statistische Cahiers Nr. 3 (NIBE/SVV; Amsterdam) p. 113.

<sup>16</sup> Geljon, *Een zeer persoonlijk effectenhuis*, p. 160.

those hard times. The two involved 'Piersons' were brothers. This collaboration converted into a complete merger in 1958 and became known under the name Pierson, Heldring & Pierson. The merger was instigated by the fact that Royal Shell wanted to initiate a large international issue. Pierson & Co possessed the best contacts abroad but Heldring & Pierson was more familiar with Royal Shell. In order to prevent confusion in name in case both would participate in the issue, these two banks decided to merge. Vlaer & Kol from Utrecht was taken under the wings of Pierson, Heldring & Pierson in 1967. A same construction as between Heldring & Pierson and Pierson & Co, was seen between Mees & Zn from Rotterdam and Hope & Co from Amsterdam. In 1962, Mees & Zn and Hope & Co joined forces. In this year these two banks started to cooperate which ended in a merger in 1966, resulting in Mees & Hope. Mees & Hope further expanded through a merger with the Nederlandse Overzee Bank in 1968, from then known as Bank Mees & Hope. The latter sold itself to the ABN<sup>17</sup> in 1975, while in the same year Pierson, Heldring & Pierson went over to the AMRO Bank<sup>18</sup>. They became subsidiary companies. Three years after the merger between the ABN and AMRO Bank in 1990, Pierson, Heldring & Pierson formed MeesPierson together with Bank Mees & Hope. In 1997, the Fortis Bank took over MeesPierson from ABN AMRO.<sup>19</sup>

The places of residence from these different intermediaries were mentioned several times. This however does not always imply that they only had one office in that city. For instance, Heldring & Pierson had taken over Broekman's Effectenkantoor from Amsterdam in 1922. Although, Broekman's Effectenkantoor kept its own name in the beginning, it meant that Heldring & Pierson from 1922 onward owned an office in Amsterdam.<sup>20</sup>

The overall movement in the financial sector was clearly towards integration. As from the 1940s, the merchant bankers merge with each other, and as from the 1970s, these merchant bankers come under the wings of a joint stock commercial bank as a subsidiary company or they completely merge with their new owners.

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<sup>17</sup> ABN stands for Algemene Bank Nederland and is the result of a merger between the Twentsche Bank and the Nederlandsche Handelmaatschappij in 1964 as will be discussed in section 4.3.4.

<sup>18</sup> AMRO stands for Amsterdamsche Bank and Rotterdamsche Bank; a merger that took place in 1964 which will be further elaborated on in section 4.3.2.

<sup>19</sup> Jonker, *Schakel tussen verleden en toekomst*, p.79, p. 86, pp. 96-99.

<sup>20</sup> Jonker, *Schakel tussen verleden en toekomst*, p. 77.



## Chapter 4

### 4.3 Joint stock commercial banks

In the second half of the nineteenth century, a new type of intermediary entered the financial sector. Several joint-stock commercial banks were founded such as the Twentsche Bank (1861), the Rotterdamsche Bank (1863) and the Amsterdamsche Bank (1871). It is remarkable that the emergence of these banks occurred in the same period. Some authors even speak of a completely new development in the financial sector and use terms as 'Gründungswelle' (German for 'founding wave') and 'revolution' to typify that period.<sup>21</sup> What catches the eye is their juridical form - a joint stock company or limited liability company -, the size of their starting capital, - many millions -, and their primary objective, - the providing of credits.<sup>22</sup> The juridical form of a limited liability is remarkable since this type of business organisation stood under strict control of the Government since Napoleon's Code du Commerce (1811). As from then, an approval by the Government was required ('Koninklijke Bewilliging') before a firm could establish itself as a limited liability company. Apparently, entrepreneurs were not very eager to submit themselves to Government control. Although Napoleon's influence disappeared after a few years, the Government's approval was preserved in the new commercial code (Wetboek van Koophandel) in 1838. Actually, the Dutch Government did not acquiesce in several requests for joint stock banks in 1837 and in 1857.<sup>23</sup> The alternative for Dutch firms was a private limited company (commanditaire vennootschap). Within such an organisational form, 'sleeping partners' supply capital and are only accountable for the sum of money that is staked. A small group of active partners ran the business.<sup>24</sup> The advantage of a private limited company was that the sleeping partners did not interfere with the way a firm was managed; this was the sole domain of the active partners.

Although the big wave of the establishment of limited liability companies still had to come, the new joint stock commercial banks founded around the 1860s, received the required Government's approval. The governance structure of a limited liability company became a more popular option for financial institutions as from the rise of 'Crédit Mobilier'. The idea of Crédit Mobilier developed in France and constituted the thought that as a consequence of laws of inheritance, means of

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<sup>21</sup> Kymmell, *Geschiedenis I*, p. 135; Van Zanden and Van Riel, *Nederland 1780-1914*, p. 270.

<sup>22</sup> Kymmell, *Geschiedenis I*, p. 107.

<sup>23</sup> Jonker, *Merchants*, pp. 61-62.

<sup>24</sup> Jonker, *Merchants*, p. 61.

production had not always ended up in competent hands. Banks were needed to distribute the means of production in such a way that capable manufacturers, farmers and merchants would receive it. Therefore, banks needed to gather capital from investors or capitalists and make it available in the form of credits. In this way, credits would bring prosperity to the country.<sup>25</sup>

The advantage of joint stock commercial banks in comparison to other financial institutions was that they were better able to gather large amounts of (starting) capital within a short period of time for sizeable credits due to being a limited liability company. According to Kymmell, the expectation was that large credits would be necessary for the upcoming capital intensive industry at that time.<sup>26</sup> This idea blew over from other European countries as France and Germany.<sup>27</sup> However, the idea of the needs for large credits did not apply to the Netherlands. Due to the open and sophisticated character of the Amsterdam Stock Exchange, capital could be raised quite easily in the Netherlands.<sup>28</sup> As Jonker puts it: 'No need here, as elsewhere in Europe, for new institutions to accommodate the flotation of capital-intensive projects like the railways. The existing arrangements sufficed, and between 1837 and 1860 railway issues totalling 52 million guilders were usually taken up with ease'.<sup>29</sup> The open and sophisticated character of the Amsterdam Stock Exchange and the 'existing arrangements' refer to the 'prolongatie stelsel' or putting money on-call. Jonker defines 'prolongatie' 'as a short term advance for a month against shares, bonds, or debentures, tacitly prolonged at the end until cancellation by either side'.<sup>30</sup> People could easily offer their spare money as an advance to other people who wanted to borrow it in exchange for securities in order to invest it, again, in securities. Because of that, securities were as liquid as hard cash. The market for prolongatie credits came up in the nineteenth century, and due to the telegraph, it soon became a national market for credits. A national 'prolongatie' system required quick and reliable information from all over the country concerning shortages and surplus of liquid assets, or in other words, demand and supply. The telegraph met this need.<sup>31</sup>

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<sup>25</sup> Kymmell, *Geschiedenis I*, p. 116; Van Zanden and Van Riel, *Nederland*, p. 271.

<sup>26</sup> Kymmell, *Geschiedenis I*, p. 107.

<sup>27</sup> Kymmell, *Geschiedenis I*, pp. 112-119; Van Zanden and Van Riel, *Nederland*, p. 271.

<sup>28</sup> Jonker, *Merchants*, p. 164.

<sup>29</sup> Jonker, *Merchants*, p. 164.

<sup>30</sup> Jonker, *Merchants*, p. 90.

<sup>31</sup> Van Zanden and Van Riel, *Nederland*, pp. 268-269.

Joint stock commercial banks also started to offer other services, including services in the trade in stocks and shares.<sup>32</sup> The majority of these banks started to act as commission traders to profit from the ever-growing interest in the securities trade.<sup>33</sup> Hence, the joint-stock commercial banks offered more and more the same services as the existing financial intermediaries. The difference might have been that they could provide larger credits and that they could offer a greater variety of services but the services itself were not new. Therefore, there was no question of revolution in the financial sector.<sup>34</sup>

Until the beginning of the twentieth century, Dutch banking had been relatively small. The joint stock commercial banks that were almost all founded in the second half of the nineteenth century, mainly provided short term credits for national and international trade. This pattern started to change while the manufacturing industry gradually obtained a foothold in the Dutch economy. For instance, banks were more and more prepared to underwrite issues of industrial firms. Banks and other financial intermediaries often jointly issued an initial public offering. Such a joint co-operation between financial intermediaries is called a syndicate. Another possibility to issue shares was a 'guichet issuing'. In this case, a financial intermediary only mediated by offering shares to interested people without guaranteeing yield of the issue to the issuing institution. A financial intermediary merely put its counter (=guichet) and its accompanying administrative facilities at the disposal of the issuing company.<sup>35</sup>

The number of listed industrial firms at the ASE rose from 24 to 108 in the period 1900 - 1914. According to De Jonge, the introduction of preferent shares in the same period also played a role in the rise of listed industrial firms, apart from just the expansion of the industrial sector. A preferent share insured an investor of a fixed percentage, although limited, of the profit the firm had gained. If you were a 'normal' shareholder, you always had to wait and see whether you would receive dividend.<sup>36</sup>

Due to the widespread *prolongatie* system, joint-stock commercial banks had a hard time attracting deposits. These banks initially aimed at

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<sup>32</sup> Jonker, *Merchants*, p. 64.

<sup>33</sup> Kymmell, *Geschiedenis II-B*, p. 298.

<sup>34</sup> Jonker, 'The alternative road to modernity', p. 117.

<sup>35</sup> J.A. Gons en C. de Pee (1994) *Geld, Banken & Financiële Markten. Praktische inleiding in de economie 3* (Stenfert Kroese; Leiden) p. 48.

<sup>36</sup> De Jonge (1988) 'Het economische leven', pp. 262-263; W.H. Berghuis (1967) *Ontstaan en ontwikkeling van de Nederlandse beleggingsfondsen tot 1914* (Van Gorcum & Comp. N.V.; Assen) p. 115.

gathering large sums of deposits in order to use this capital for credits.<sup>37</sup> Actually, World War I created opportunities for banks in attracting deposits. Since the Amsterdam Stock Exchange had to close in July 1914, the use of the 'prolongatiestelsel' diminished. Companies and private persons saw a lucrative possibility to offer their spare money as loans on the securities trade market, disappear. It appeared to be the safest option to store their redundant money with banks. Although the Amsterdam Stock Exchange re-opened its doors after a few months, in February 1915, the idea of leaving money with a bank had become less fearsome.<sup>38</sup> The 'Nederlandse Overzeese Trustmaatschappij' (NOT) (Dutch Overseas Trustcompany) demanded a bank guarantee if companies wanted to import commodities. The NOT formally was a private company that arranged international trade for Dutch companies during WW I but had become more and more an institute that took over and carried out Dutch economic policy.<sup>39</sup> Consequently, the role of banks became firmly fixed in the international trade of Dutch companies. Other evidence that showed the growing importance of banks, was the increasing number of commissionerships (commissariaten) of Dutch bankers with large firms. In the period 1910 - 1923 the number had risen from 200 to 431. Banks used these commissionerships as a means to supervise their long-term investments in industrial firms and to strengthen the mutual relationships. Yet, in the beginning of the 1920s it seemed that supervision by means of commissionerships did not always lead to flawless management with the supervised firms. Lack of knowledge concerning long term financing of industrial activities, seemed to be a major problem. Banks collected their loans and the number of commissionerships decreased.<sup>40</sup> Particularly the Rotterdamsche Bank had to take some beatings. Managing director Willem Westerman had given a credit of 25 million guilders to a large shareholder of the RB. This amount of money was as much as the total of the bank's reserves. Due to the economic malaise, people started to recollect the money they had deposited. The RB could not cope with these recollections since it had spent its total reserve to this enormous loan. The Minister of

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<sup>37</sup> Jonker, *Merchants*, p. 91.

<sup>38</sup> Jan Luiten van Zanden (1997) 'Old rules, new conditions, 1914-1940', in: Marjolein 't Hart, Joost Jonker and Jan Luiten van Zanden (eds.) *A financial history of The Netherlands* (Cambridge University Press; Cambridge) p. 124.

<sup>39</sup> H.W. von der Dunk (1988) 'Nederland ten tijde van de Eerste Wereldoorlog' in: J.C. Boogman e.a., *Geschiedenis van het moderne Nederland. Politieke, economische en sociale ontwikkelingen* (De Haan; Houten) p. 353.

<sup>40</sup> Jan Luiten van Zanden (1997) *Een klein land in de 20e eeuw. Economische geschiedenis van Nederland 1914-1995* (Het Spectrum; Utrecht) pp. 139-140 and p. 146.

Finance had to intervene to ensure RB's future; the Minister guaranteed the Dutch Central Bank (de Nederlandsche Bank) that he warranted for 60 million guilders to save the RB.<sup>41</sup>

The importance of joint stock commercial banks certainly grew during the first twenty years of the twentieth century. Undoubtedly, this development was related to the Dutch economic process in which growth of the Dutch manufacturing business had taken place. At that time, the four largest banks were the Rotterdamsche Bank, the Amsterdamsche Bank, the Twentsche Bank, the Incasso-Bank, and the Nederlandsche Handel-Maatschappij. If a closer look is taken at their balance sheets, we see their growth in the period 1895-1949 (table 4.1):

<b>Table 4.1: Total balance sheet in million guilders of the four largest banks in the period 1895-1949.<sup>42</sup></b>				
<i>Year</i>	<i>Twentsche Bank</i>	<i>Amsterdam-sche Bank</i>	<i>Rotterdam-sche Bank</i>	<i>Nederlandsche Handel-Maatschappij</i>
1895	39,12	29,44	15,74	63,81
1900	61,17	28,60	23,27	58,26
1905	78,99	44,60	22,11	109,45
1910	104,01	51,57	30,46	136,67
1913	127,47	86,57	123,41	151,57
1914	135,25	92,08	124,85	157,30
1919	263,47	456,74	608,37	452,85
1924	240,90	423,67	288,86	391,07
1929	286,06	440,86	386,21	475,08
1934	233,38	364,36	256,12	293,87
1939	209,58	294,64	275,54	353,65
1944	507,76	462,98	663,75	976,66
1949	759,20	1110,00	1077,65	1687,99

During the inter war period, the Second World War, and the first years after this War, commercial banks kept on doing what they had always done. However, as from the 1950s, commercial banks entered the market

<sup>41</sup> De Jager, 'De harde leerschool', pp. 265-266.

<sup>42</sup> Jaap Barendregt (1999) 'Op weg naar nationale bekendheid. Het Handelsbankwezen tussen 1870 en 1914', in: Joh. de Vries, Wim Vroom, Ton de Graaf (eds.) *Wereldwijd bankieren. ABN AMRO 1824-1999* (ABN AMRO Bank N.V.; Amsterdam) pp. 133, 136, 147, 159.; De Jager, 'De harde leerschool', p. 256, p. 263, p. 274, p. 284.

for savings which were traditionally dominated by savings banks, agricultural banks, and the 'Rijkspostspaarbank' (the postal savings bank) (see table 4.2). The pursuit for saving deposits was related to increased demand for medium term credits from Dutch industrial firms and the decreased supply of deposits of Dutch business firms in general. Commercial banks were brought into contact with these types of loans just after World War II. In that period, the Minister of Finance, mr. P. Liefstinck, established a national bank, the 'Herstelbank' which aimed at restoring Dutch business. Banks participated for 49 percent in the share capital of the Herstelbank and were closely involved in the operations of this bank. As a result, commercial banks got acquainted with medium term credits.<sup>43</sup>

<b>Table 4.2 : Shares of different groups of banks in the market of savings, 1950-1988 (in percentages)<sup>44</sup></b>					
	1950	1960	1970	1980	1988
'Rijkspostspaarbank'	32	24	18	14	16
Savings banks	29	28	25	17	16
Agricultural banks	37	39	42	41	40
Commercial banks	1	8	16	28	28
Total	100	100	100	100	100

The activities in the savings market, heralded the start of *retail banking* of commercial banks. Retail banking implied the offering of banking services to private housekeepers. The Twentsche and Amsterdamsche Bank took the lead in this retail banking process. For instance, the Twentsche Bank introduced deposit-bankbooks, the personal loan (1958), the salary account (1959), investment funds and budget credits. The Amsterdamsche Bank stimulated, for example, consumptive credits. These types of services eventually led to a diversification of the Dutch banking sector. Banks with different origins, thus with a commercial, agricultural, or savings background offered more and more the same package of services.<sup>45</sup>

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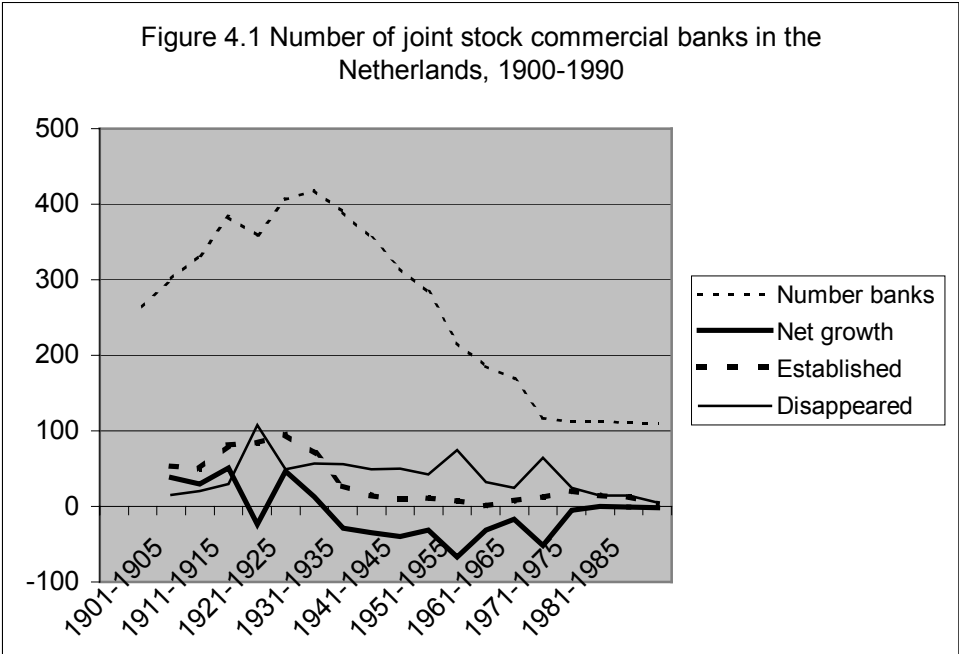
<sup>43</sup> Jan Luiten van Zanden and Roland Uittenbogaard (1999) 'Expansie, internationalisering en concentratie, 1950-1990' in: Joh. de Vries, Wim Vroom, Ton de Graaf (eds.) *Wereldwijd bankieren. ABN AMRO 1824-1999* (ABN AMRO Bank N.V.; Amsterdam) p. 342; Jaap Barendregt and Hans Visser, 'Towards a new maturity, 1940-1990' in: Marjolein 't Hart, Joost Jonker and Jan Luiten van Zanden (eds.) (1997) *A financial history of The Netherlands* (Cambridge University Press; Cambridge) p. 170.

<sup>44</sup> Barendregt and Visser, 'Towards a new maturity', p. 171.

<sup>45</sup> Van Zanden and Uittenbogaard, 'Expansie', pp. 343-344, pp. 348-349.

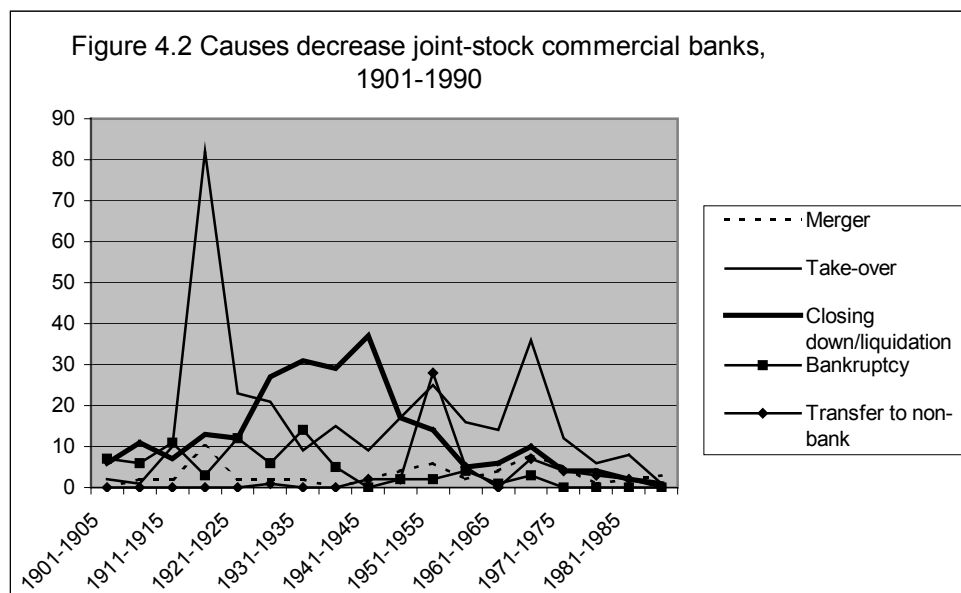
Chapter 4

Let us recall the balance sheets of the four largest joint stock commercial banks. What is interesting, is the enormous boost the Rotterdamsche Bank made in the period 1910-1913. This is due to several take-overs and mergers and is generally seen as the start of a concentration process in the Dutch financial sector. The process implied less but larger banks. The decrease of the number of banks is visualised below (figure 4.1):



Source: *Nederlandse financiële instellingen in de twintigste eeuw: balansreeksen en naamlijst van handelsbanken*, DNB Statistische Cahiers Nr. 3 (NIBE/SVV; Amsterdam) p. 102.

The causes for their disappearance are shown below (figure 4.2):

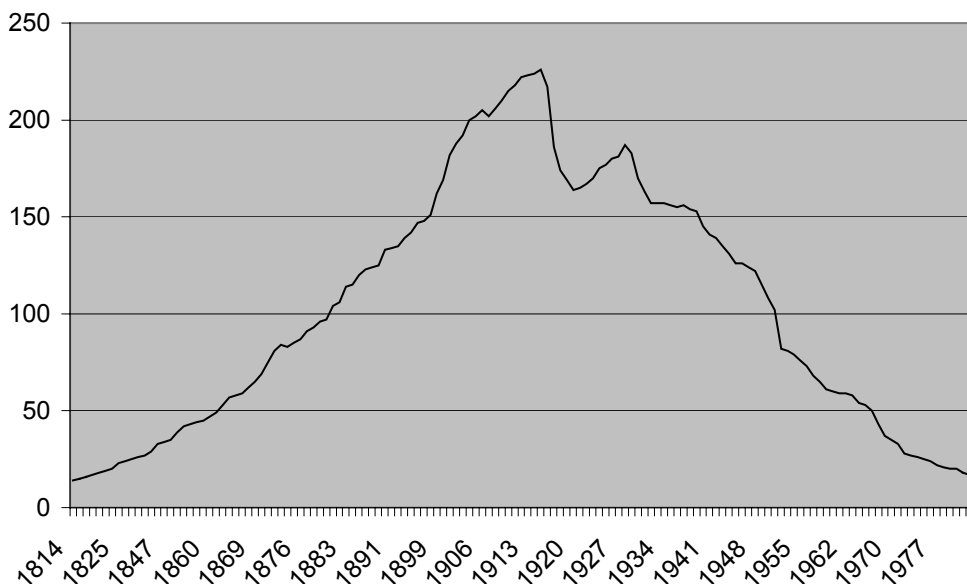


Source: *Nederlandse financiële instellingen in de twintigste eeuw: balansreeksen en naamlijst van handelsbanken*, DNB Statistische Cahiers Nr. 3 (NIBE/SVV; Amsterdam) p. 102.

As we can see in figure 4.2, a boost of take-overs is seen in the period around 1920, and somewhat less in the period 1966-1970. The decreased number of joint stock commercial banks, affected for a large part the disappearance of provincial banks:



Figure 4.3 Number provincial banks, 1814-1984



Source: D.C.J. van der Werf (1988) *De Bond, de Banken en de Beurzen* (NIBE; Amsterdam) pp. 304-307.

The graphs show that, especially provincial financial intermediaries disappeared almost completely during the twentieth century. The Rotterdamsche Bank was one of the banks that remained and that only grew larger. In the next section, this Bank is discussed in more detail.

#### 4.3.1 Origination Rotterdamsche Bank(vereeniging) 1863-1911

In 1863, a group of Rotterdam businessmen and bankers initiated the foundation of the Rotterdamsche Bank (RB). Among this group we find R. Mees & Zoonen, Gebroeders Chabot & Zn., Schaay & Madry, Jan Havelaar & Zn, Hendrik Muller Szn en J.W. Bunge.<sup>46</sup> The founders aimed at a bank

<sup>46</sup> Joost Jonker (1999) 'De bakermat van het moderne bankwezen. De Nederlandse geldhandel tussen de Franse Tijd en de eerste handelsbanken, 1813-1870' in: Joh. de Vries, Wim Vroom en Ton de Graaf (eds.) *Wereldwijd bankieren. ABN AMRO 1824-1999* (ABN AMRO; Amsterdam) p. 92 and Historisch

that would mainly serve the financing of trade between the Netherlands and the Dutch East Indies (the present Indonesia) and of the manufacturing industry in this Dutch colony.<sup>47</sup> A year after its foundation, the RB opened a principal branch office in Batavia (nowadays this is Jakarta). In 1865, the RB started branch offices in Singapore and Surabaya, and in 1867, also in Amsterdam. However, the branch offices in Singapore and in Amsterdam barely existed for one year. The RB had to cut costs due to the unfavourable economic situation in the East Indies. Due to a severe recession in the East Indies, the RB decided to phase out its activities in that area. The offices in Batavia and Surabaya were liquidated. The RB made arrangements with international banks, active in the East Indies, so that the RB and its clients could still perform economic activities in this part of the world.<sup>48</sup>

In 1879, the RB had to deal with another setback. A Rotterdam banker, Lodewijk Pincoffs, who was involved in several Rotterdam trade and securities firms, managed to bring down almost all Rotterdam banks, bankers and cashiers since he had cheated with the bookkeeping of one his own banks.<sup>49</sup> The setbacks made the RB follow a somewhat reserved strategy. The RB first needed to obtain a foothold at the domestic market.

The RB started to focus more on other types of financial services such as the securities trade although it was not a completely new area. The RB had already been involved in the securities trade in several ways. First, the RB had issued shares itself to gather capital. Second, the Bank owned securities itself to profit from the fluctuations in prices to lard its own capital.<sup>50</sup> Probably, these securities were also be used to settle orders from clients of the RB without actually bringing these orders to the Exchange itself. Third, the RB participated in syndicates. In the annual reports of the RB, a specification of participation in syndicates was given for several years. Unfortunately, it was not done consistently.<sup>51</sup> Fourth, the RB provided short term credits that were used to trade in securities, the so called 'prolongatiekrediet'.<sup>52</sup> Fifth, the RB mediated in the execution of security orders for their clients. The RB certainly did not belong to the

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Archief ABN AMRO (HAAA), archive Rotterdamsche Bank (RB), inv. nr. 73, *Gedenkschrift ter herinnering aan het 50-jarig bestaan der Rotterdamsche Bank, thans Rotterdamsche Bankvereniging* (Rotterdam 1914) p. 5.

<sup>47</sup>Jonker, 'De bakermat van het moderne bankwezen', p. 92.

<sup>48</sup> HAAA, archive RB, inv. nr. 73, *Gedenkschrift*, pp. 9-11.

<sup>49</sup> Barendregt, 'Op weg naar nationale bekendheid', p. 131.

<sup>50</sup> Kymmell, *Geschiedenis II-B*, p. 262.

<sup>51</sup> HAAA, archive RB, *Annual reports Rotterdamsche Bank/Rotterdamsche Bankvereniging 1891-1964*.

<sup>52</sup> Kymmell, *Geschiedenis II-B*, pp. 222 and 225.

largest players in this area of financial markets. The third activity, namely participation in syndicates, implied long term financing while the RB still emphasised on the providing of short term trade credits. Rotterdam ship owners and shipping companies turned to Amsterdam financial intermediaries for long term financing.<sup>53</sup> The same accounted for wealthy investors who deployed directly Amsterdam financial intermediaries to execute their security orders.<sup>54</sup> Hence, the RB was related to securities trade only marginally since it had no office in Amsterdam and therefore, the RB could not become a member of the VvdE.<sup>55</sup>

#### 4.3.2 Expansion *Rotterdamsche Bank(vereeniging)* 1911-1964

Since the activities of the *Rotterdamsche Bank* in the Dutch Indies did not work out, the Bank first tried to obtain a foothold in the Netherlands itself. Under the direction of Willem Westerman, who entered the board of directors in 1904, the RB started to grow. Westerman became president-director in 1910. He immediately appointed J.P. van Tienhoven and K.P. van der Mandele as members of the board of directors. Now, the board existed of young (they were all three in their thirties) and ambitious directors. Particularly in the year 1911, these ambitions became reality. In this year, the RB merged with the *Deposito- and Administratiebank* (1900) from Rotterdam. After this merger, the name of the *Rotterdamsche Bank* was changed to the *Rotterdamsche Bankvereeniging* (Robaver). Furthermore, the Robaver took a controlling share in an old Amsterdam banker's firm *Determeijer Weslingh & Zn* (1765) in the same year

Unfortunately, little is known concerning the motives for these two rather remarkable actions while a large part of the archive of the RB was destroyed in World War II. Still, we can imagine what the board of directors aimed at. Apparently, the directors wanted to strengthen and expand the securities trade part of the Robaver. Both the *Deposito- and Administratiebank* and *Determeijer Weslingh & Zn* dealt extensively in securities. The *Deposito- and Administratiebank* focussed more on the administrative side of securities trade. *Determeijer Weslingh & Zn* was an active player at the Amsterdam Stock Exchange. According to a historical overview written in the year report of 1963 of the *Rotterdamsche Bank* (in 1947, the Robaver changed its name back to *Rotterdamsche Bank* again),

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<sup>53</sup> P. van de Laar (1996) 'Waar werkte Rotterdam? Een analyse aan de hand van beroepstellingen 1859, 1889, 1899 en 1909', in: *Rotterdams Jaarboekje 1996* (Stichting Historische Publicaties Roterodamum: Rotterdam), pp. 339-373, pp. 365-366.

<sup>54</sup> De Vries, *Een eeuw vol effecten.*, p. 95.

<sup>55</sup> Brugmans, *Begin van twee banken*, p. 150

the Deposito – and Administratiebank and the Robaver completed each other while they were specialised in different aspects of the securities trade.<sup>56</sup> Since Determeijer Weslingh & Zn was a member of the VvdE, Robaver had gained a seat at the Amsterdam Stock Exchange without having to meet the rather strict rules for membership of the VvdE. The acquisition with Determeijer Weslingh & Zn was a cunning move. Banks were not very welcome as members of the VvdE; they were big players and they had a name of clearing orders without bringing them to the market. Hence, commission traders feared that banks would deprive them of their powerful status and of orders, and thus of commission fees. Not coincidentally, membership of the VvdE was refused to the Nederlands-Indische Handelsbank and the Javasche Bank at the end of 1911.<sup>57</sup>

The question arises if employees or members of the board travelled now and then to the ASE before the grip of the VvdE on the securities trade tightened. After all, the RB was founded in 1863, while the VvdE was established in 1876. Maybe the Rotterdamsche Bank first focused on obtaining its goals that were set by its establishment that was to provide credits to facilitate trade between the Netherlands and the Dutch East Indies. After that had failed, after the RB was recovered from the Pincoffs affair and after Willem Westerman had entered the executive board in 1904, the RB started to make work of performing other types of financial services. This resulted in a complete integration of services related to the securities trade in 1911. Before 1911, the RB probably made use of one or several Amsterdam stockbrokers to execute its and its client's securities orders. After 1911, the RB could execute the orders itself.

The Robaver continued its merging and acquisition activities. In 1913, another Amsterdam bankers firm was taken under the wings of the Robaver, namely Labouchère Oyens & Co, a continuation of Ketwich & Voombergh (1720). The Robaver aimed at strengthening its position in Amsterdam with this acquisition.<sup>58</sup> Particularly, the acquisitions with the Amsterdam banks, stirred up the Amsterdam financial industry. For the first time, a Rotterdam financial intermediary had penetrated the Amsterdam financial market and most Amsterdam financial middlemen were not too pleased with it. In 1912, the board of Robaver decided that two Rotterdam business partners of Determeijer Weslingh & Zn were, for

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<sup>56</sup> HAAA, archive RB, inv. nr. 313, *Jaarverslag Rotterdamsche Bank 1963* (Annual Report Rotterdamsche Bank 1963), p. 28.

<sup>57</sup> Kymmell, *Geschiedenis II-A*, p. 100.

<sup>58</sup> HAAA, RB, inv. nr. 108, Elfde vergadering van commissarissen, 20 september 1913 (Eleventh meeting of commissioners, 20 September 1913).

#### Chapter 4

the time being, not allowed to do business in Amsterdam due to the negative public opinion.<sup>59</sup>

Nonetheless, the Robaver continued its concentration process. After having obtained a seat in Amsterdam, the attention of the Robaver focussed on acquiring a foothold in the province. In 1915, a majority of the shares of the 'Nationale Bank' at The Hague were bought whose seat was brought to Leiden. In the same year, the Robaver opened a branch office in The Hague. The Nationale Bank practiced predominantly its banking and cashier activities in the province. One year later, the Robaver founded a subsidiary company in Utrecht, under the name Nationale Bankvereeniging. The Nationale Bank and several other take-overs of smaller provincial bankers firms such as the Bank van Huydecoper & Van Dielen at Utrecht, the Dordtsche Bank at Dordrecht, the Statenbank at The Hague, and A. Bloembergen & Zonen's Bank at Leeuwarden were subsumed into this Nationale Bankvereeniging. Furthermore, the Robaver took a controlling share in the Zuid-Nederlandsche Handelsbank at Tilburg in the same period, which had branch offices in the largest cities of the southern parts of the Netherlands like Breda, Eindhoven, Sittard and Maastricht. Already in 1920, the Zuid-Nederlandsche Bank was brought under the Nationale Bankvereeniging. Now, the Nationale Bankvereeniging possessed 86 branch offices in the country. In 1929, the Robaver completely took over the Nationale Bankvereeniging and from then, this department of the Robaver carried the name 'Provinciale Centrale'.<sup>60</sup> The Robaver even founded a bank especially for their female clientele (simply the Vrouwenbank or Women's bank) in 1928 which was dissolved in 1971 because it had become unnecessary.<sup>61</sup> After these 'roaring' twenty years of mergers and take-overs, the number of acquisitions of the Robaver diminished.

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<sup>59</sup> HAAA, RB, inv. nr. 114, Vergadering van het comité uit Commissarissen der Robaver, 27 maart 1912 (Meesting, committee commissioners Robaver, 27 March 1912).

<sup>60</sup> Brugmans, *Begin van twee banken*, pp. 152 and 154

<sup>61</sup> ABN AMRO (1993) 'ABN-AMRO. De Historie' (Historisch Archief ABN-AMRO; Amsterdam) pp. 15-16.

**Table 4.3: Take-overs Robaver/RB of commercial banks after 1930.<sup>62</sup>**

<i>Year</i>	<i>Name</i>	<i>Place</i>
1948	Halfwegsche Bank	Halfweg
1950	Bank voor Schouwen en Duiveland	Zierikzee
1951	Middenstands Credietbank 'Neede'	Neede
1960	Nijkerksche Bank	Nijkerk
1961	Nederlandsch-Indische Handelsbank	Amsterdam
1964	Maris & Schipper	Willemstad

In the years 1950 the RB grew less fast than the other three large banks (Twentsche Bank, Amsterdamsche Bank and Nederlandsche-Handel Maatschappij). According to Van der Werf, this was due to the lagging growth of investment credits and the granting of credits to financing companies.<sup>63</sup> Investment credits were used to purchase investment goods. Financing companies were engaged in object financing (for instance, an agricultural machine) or financing of a specific market sector such as dealers, buyers or end consumers.<sup>64</sup> The RB also did not plunge into new developments in Dutch banking such as the personal loan for private persons, as introduced by the Twentsche Bank in 1958. Already in the same year, one of the members of the Board of Directors of the RB, C.F. Karsten, brought up the issue of introducing personal loans. However, his fellow directors did not see the need to provide these types of loans. Years after the Twentsche Bank and Amsterdamsche Bank began to provide personal loans, the Board changed its mind. In 1963, the RB provided personal loans as well although not very wholeheartedly. Strangely enough, the interest of the Board for the savings department of the RB, appeared rather late although the RB owned its own savings bank since 1931. The Board observed in 1956 that the interest rate was much lower in comparison to other banks; in other words, the RB had not monitored the activities of other banks in the area of savings, otherwise, the RB would have kept up by raising the interest rate. The branch offices of the RB were

<sup>62</sup> *Nederlandse financiële instellingen in de twintigste eeuw*, pp. 103-120.

<sup>63</sup> Van der Werf, *Banken*, p. 169.

<sup>64</sup> *Banklexicon* (NIBE/Kluwer; Amsterdam/Deventer), p. 117.

ordered to raise the interest rate but they were not allowed to make that publicly known; the Board wanted to keep savers at a distance since they thought that saving did not yield profits. In 1959, the somewhat reserved attitude of the board of the RB towards savings, started to change. As from this year, other banks such as the Twentsche Bank and the Nederlandsch-Handel Maatschappij explicitly focussed on 'small' clients by introducing account books for their current account, their savings account, and their investment account. When the Amsterdamsche Bank also introduced savings accounts, the RB could not stay behind. The already existing savings bank was taken under the wings of the RB itself as a separate savings department. After a few years of experience with savings, the Board recognised its potential and continuity. The Board even considered financing a larger part of its investments out of savings.<sup>65</sup> After World War II, the RB slowly reacted on ongoing developments in banking. The RB merely responded to other Dutch banks for introducing new types of financial services.

In this period, the first years of the 1960s, the RB was obviously not going that well. The granting of credits lagged behind other banks. Karsten insisted on being more accommodating in providing credits. Yet, the rest of the board did not advocate this opinion. Probably, as Van der Werf also suggested, several members of the Board were very anxious to end up in the same situation as forty years ago when the Bank nearly went bankrupt as a result of granting a very large credit. Van der Werf also points out the decreased earning capacity (*rentabiliteit*) of the RB in the years 1960 (11,4 %) – 1963 (7,2 %). The RB had enough reserves to carry on for a few years but it is clear that the Bank had ended up in a less favourable situation.<sup>66</sup> For that reason, the RB consented in starting negotiations with the Amsterdamsche Bank in order to agree on a future merger. In 1964 the Rotterdamsche Bank merged with the Amsterdamsche Bank into the AMRO-Bank.<sup>67</sup>

#### 4.3.3 Origination *Twentsche Bank(vereeniging)* 1861-1917

In the nineteenth century, Benjamin Willem Blijdenstein junior laid the foundations for the *Twentsche Bankvereeniging*. He started out as a notary in Enschede, a town in the Eastern part of the Netherlands near the German border. In this region, which is called 'Twente', the textile

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<sup>65</sup> Van der Werf, *Banken*, pp. 192-193.

<sup>66</sup> Van der Werf, *Banken*, p. 227, pp. 238-240.

<sup>67</sup> Van der Werf, *Banken*, p. 384.

industry formed the main economic activity. Blijdenstein also started to preoccupy himself with several banking activities which gradually began to push aside his activities as a notary. Since the market for textile grew in the Far East, Blijdenstein sent his son, also called Benjamin Willem Blijdenstein only without the 'junior' part, to London to open an office over there, since England had large interests in that part of the world. The firm 'B.W. Blijdenstein & Co' started in London in 1858. Also the Dutch East Indies appeared to be a profitable outlet for textiles. This development instigated the idea for the establishment of an Amsterdam branch of the Blijdenstein firm. The idea developed to the foundation of a bank. In 1861, Blijdenstein junior founded, together with several textile manufacturers from Twente, the 'Twentsche Bankvereening' (TBV). The organisational form of the TBV was a sleeping partnership or private limited company (commanditaire vennootschap).<sup>68</sup>

Around the turn of the century, the organisational form of the TBV caused a lingering conflict between the 'traditionals' and the 'progressives'. The traditionals, mainly consisting of the family Blijdenstein which were the founders of the TBV, wanted to keep the limited partnership. The 'progressives' wished to turn the TBV into a limited liability company. Finally, the Blijdenstein family gave in. Per 1 January 1917 the Twentsche Bankvereening transformed from a silent partnership to a limited liability company. The official name now became the Twentsche Bank N.V. (TB).<sup>69</sup>

Not surprisingly, the services the TBV provided focused on the granting of short term credits to finance industrial, especially textile, manufacturing and it took care of all the administrative financial handling surrounding the shipment of goods. For instance, the shipments needed certified bills of cargo and they also needed to be insured. Next to that, the range of services differed not much from other joint stock commercial banks such as the Rotterdamsche Bank. The TBV tried to attract deposits and accepted bills of exchange.<sup>70</sup> The TBV was also engaged in securities trade in the same way as the RB.<sup>71</sup> The TBV owned securities itself, it participated in syndicates, it mediated between buyers and sellers of

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<sup>68</sup> ABN AMRO (1996) *Van katoentjes tot persoonlijke lening. Geschiedenis van De Twentsche Bank 1861-1964* (Historisch Archief ABN AMRO; Amsterdam) pp. 10-13.

<sup>69</sup> C.A.M. Wijtvliet (1993) *Expansie en Dynamiek. De ontwikkeling van het Nederlandse handelsbankwezen 1860-1914* (NIBE; Amsterdam) pp. 174-177.

<sup>70</sup> M.C. Wintersteijn (1961) *Twentsche Bankvereening 1861-1961 De Twentsche Bank N.V.* (unpublished manuscript) p. 7.

<sup>71</sup> *Van katoentjes*, p. 15.



securities and the ASE, it offered credits to trade in securities such as the ‘prolongatiekrediet’ and, after the TBV had become a limited liability company in 1917, it also issued shares.

4.3.4 Expansion Twentsche Bank(vereeniging) 1906-1964

The TBV expanded its services in scope and volume by taking over other financial intermediaries. The RB had taken a very offensive strategy, the Twentsche Bankvereeniging turned into a calmer road. Maybe, the background of the TBV as a provincial banker with a less ambitious expansionist policy, played a role.

The TBV however did not sit still as it came to contacts and cooperation with other financial intermediaries, especially in the province where it traditionally had many contacts. At the beginning of the twentieth century, the TBV was very active in taking participations in several provincial firms.

Table 4.4: Participations Twentsche Bank/Twentsche Bankvereeniging, 1906-1917. <sup>72</sup>		
Year of participation	Firm in which TB(V) has taken a participation	Location
1906	Bergsma & Dijkers	Hengelo
1907	Lissesche Bankvereeniging	Lisse
1909	C. & H. Baurichter	Oldenzaal
1909	Jordaan & Cie	Paris
1910	Schmasen & Nacker	Roermond
1911	D.A. Wisselink	Alkmaar
1911	Heldersche Bank	Den Helder
1917	Groninger Bank	Groningen
1917	Venlosche Bank	Venlo
1917	Haarlemsche Bankvereeniging	Haarlem

According to Wintersteijn, the initiative for co-operation did not only come from the larger joint stock commercial banks that wanted to expand their sphere of influence but also from the provincial financial firms themselves while they could not cope with the large capital demands that the rising industrial activities needed. Wintersteijn also stated although he did not indicated how many and who, that many provincial bankers, started their

<sup>72</sup> Wintersteijn, *Twentsche Bankvereeniging*, p. 73.

financial career as an employee at the TB(V). Therefore, they appealed for help with the TB(V).<sup>73</sup> This 'help' expressed itself in the fact that the TB(V) took a controlling share in such a provincial financial intermediary so as that its subsistence was guaranteed. Another kind of help was that the TB(V) sent orders for collections to a provincial cashier, in exchange for securities orders.<sup>74</sup> Apparently, the landing of securities orders was of large importance. Even within the TB(V), employees battled over it. For instance, a former bank employee remembered a sharp competition between a branch office of the TBV and the main office. In 1915, he was assigned to collect a list at the main office. The list represented the executed security orders for the clients of the branch office. However, the stock exchange employees at the main office were not very willing to hand the list over to him. They wanted to keep the profits that came with executed orders for themselves although they belonged to the same company. These men yelled at him and tried to scare him off. At his wits end, he grabbed the papers from their writing desks and ran away.<sup>75</sup>

Gradually, the strategy of participating in provincial financial firms changed to taking controlling shares and complete mergers at the end of the 1910s, since the TB had become a limited liability company. In 1918 and 1919, controlling shares were taken in the Provinciale Bank voor Limburg, the Geldersch-Overijsselsche Bankvereniging, and the Bank van Wisselink. The Stichtse Bank at Utrecht and Stoop & Zn at Dordrecht were completely taken over in respectively 1918 and 1920. These became branch offices of the Twentsche Bank.<sup>76</sup> The following schematic overview of the TB and its acquisitions can be made around 1921:

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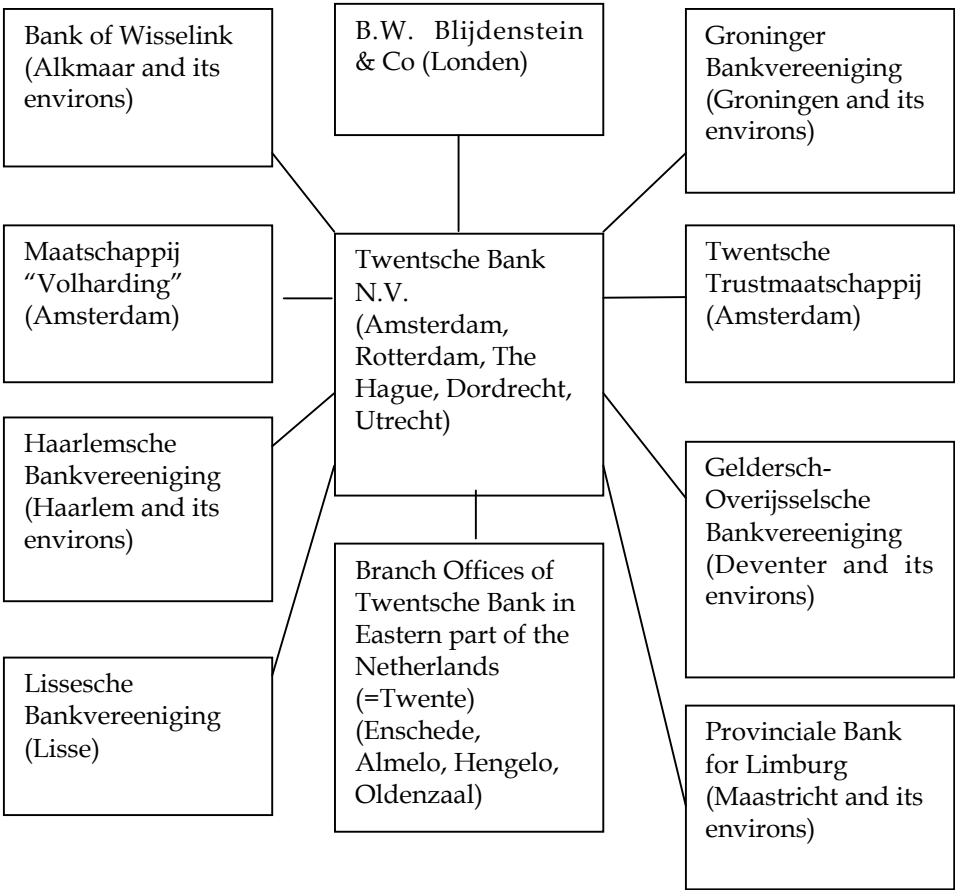
<sup>73</sup> Wintersteijn, *Twentsche Bankvereniging*, p. 51.

<sup>74</sup> Rijksarchief Overijssel (RAO; Public Records of Province Overijssel), archive Twentsche Bank, inv. nr. 781, *Notulen der bestuursvergaderingen kantoor Amsterdam 11 maart 1882-25 mei 1883* (Minutes meetings board of directors TBV Amsterdam office 11 March 1882-25 May 1883), 9 September 1882 and 18 September 1882; idem, inv. nr. 782, *Notulen der bestuursvergaderingen van het kantoor Amsterdam 26 mei 1883-16 december 1884* (Minutes meetings board of directors TBV Amsterdam office 26 May 1883-16 December 1884), 9 July 1883; idem, inv. nr. 793, *Notulen der bestuursvergaderingen van het kantoor Amsterdam 2 februari 1895-17 januari 1896* (Minutes meetings board of directors TBV Amsterdam office 2 February 1895-17 January 1896), 15 July 1895.

<sup>75</sup> RAO, archive Twentsche Bank, inv. nr. 623, *Bank Notén. Personeel-orgaan van de Twentsche Bank N.V.* 1947 (Staff magazine of the Twentsche Bank), vol. 1, no. 8, p. 2.

<sup>76</sup> Wintersteijn, *Twentsche Bankvereniging*, p. 73

Figure 4.4: Schematic overview of the TB and its acquisitions in 1921



Source: Wintersteijn, *Twentsche Bankvereeniging*, p. 76.

We see that in 1925, earlier participations in companies as Bergsma & Dijkers and Baurichter are converted to mergers. By the time the Second World War broke out, all these firms in which participations had been taken (also the above mentioned banks in the schema as the Bank van Wisselink, Haarlemsche Bankvereeniging, Lissesche Bankvereeniging, Provinciale Bank voor Limburg, Geldersch-Overijsselsche

Bankvereniging, and Groninger Bankvereniging) were carrying the name of Twentsche Bank N.V.<sup>77</sup> The subsidiary companies Maatschappij "Volharding" and Geldersch-Overijsselsche Bankvereniging remained as they were.

The acquisitions of the Twentsche Bank were of a different nature compared to the first mergers of the Robaver (Deposito- and Administratiebank, Determeijer Weslingh & Zn and Labouchère Oyens & Co) which were clearly meant to obtain a seat in Amsterdam, and the Amsterdam Stock Exchange since the Robaver could not become a direct member of the VvdE because it had no offices in Amsterdam. The Twentsche Bank(vereeniging) had its main seat in Amsterdam from the beginning, and was already directly active on the Amsterdam Stock Exchange since the Bank was a member of the VvdE. Still, the trade in securities had grown to an important activity of the Twentsche Bank, and the Bank always looked for ways to obtain more security orders. No doubt, merging or taking a controlling share in a firm, was a means to obtain more stock exchange orders.

In the interwar period, the Twentsche Bank took over Buisman, Gratama & Co from Zwolle in 1925, Koopman & Co from Middelburg in 1930, the Provinciale Bank voor Limburg from Venlo in 1930, the Handelsbank from Arnhem in 1931, the Nijmeegsche Bankvereniging Van Engelenburg & Schippers CV from Nijmegen in 1931. After World War II, the Twentsche Bank remained alert for possibilities to merge but, like the Robaver, the frequency of merging activities diminished. In 1945, the N.V. Het Onderling Crediet from Rotterdam, in 1949 the Middenstands-Credietbank voor Gorinchem en Omstreken from Gorinchem as well as Ogier & Co from Gouda. After that, two important provincial banks joined the ranks of the Twentsche Bank; the Van Ranzow's Bank from Arnhem in 1950 and Van Mierlo & Zn N.V. from Breda in 1952.<sup>78</sup> The bringing in of Van Ranzow's was important because this Bank was directed by capable directors, the brothers Wurfbain. The board of the Twentsche Bank especially saw a future for J.C. Wurfbain as a director for their own Bank. Van Mierlo & Zn. was well represented in the province of 'Noord-Brabant', particularly in its western part; a province which the Twentsche Bank had not covered yet. Van Mierlo & Zn. Filled this gap.<sup>79</sup> The Twentsche Bank proceeded with Gebr. Mispelblom Beyer

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<sup>77</sup> *Nederlandse financiële instellingen in de twintigste eeuw*, pp. 106-120.

<sup>78</sup> *Nederlandse financiële instellingen in de twintigste eeuw*, pp. 104-120.

<sup>79</sup> Van der Werf, *Banken*, pp. 128-130, p. 140.

from Leeuwarden in 1952, G. Mesdag from Groningen in 1956, and Bank Jordaen NV Haaksbergen in 1958.<sup>80</sup> 1963 marked the year of the take-over of Bank Vermeer from Deventer and one year later, the Twentsche Bank took over one of the last independent provincial banks, the Hoornsche Bank from Hoorn.<sup>81</sup>

During the same period the Twentsche Bank certainly showed itself to be an exponent of a new trend in banking, retail banking. The Twentsche Bank aimed at gaining the confidence of 'small' clients such as introducing the earlier mentioned 'personal loan' in 1958. However, already in an earlier stadium, the TB had entered this specific part of the financial sector by means of offering 'consumptive credits'. The TB provided these types of small credits through the Industriele Disconto Maatschappij which it had taken over in 1953. The credits were used to buy consumer goods such as cars or housekeeping devices.<sup>82</sup> Besides this extension of financial services, the TB also kept on doing what it had always been doing; providing credits for domestic industrial activities. For several reasons, the Board of the TB deliberately focused on the domestic market and not on the international market. First, it was hard to judge the financial situation of foreign enterprises, second, these companies would never be full clients, and third, the TB did not want to compete with their fellow foreign banks. Traditionally, the TB offered credits for the textile industry; it was even one of the reason to establish the TB in the first place. Precisely these credits caused difficulties for the TB due to deteriorating economic circumstances for the textile sector. This development led, amongst others, to a decreased solvability of the bank.<sup>83</sup> The TB looked for possibilities to solve these problems. Already in 1959 representatives of the Twentsche Bank and the Nederlandsche-Handel Maatschappij held conversations concerning a possible merger. They did not come to an agreement immediately. After several interruptions and as much resumptions of the negotiations, the NHM even flirts with the Amsterdamsche Bank, the TB and NHM finally joined forces in 1964. The newly formed bank carried the name Algemene Bank Nederland (ABN).<sup>84</sup> In 1990 the ABN merges with the AMRO-bank into ABN AMRO Bank.

Both the RB and the Twentsche Bank built up a large network of branch offices throughout the Netherlands during the twentieth century.

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<sup>80</sup> *Nederlandse financiële instellingen in de twintigste eeuw*, pp. 104-120.

<sup>81</sup> Van Zanden en Uittenbogaard, 'Expansie', p. 335-336.

<sup>82</sup> Van der Werf, *Banken*, p. 125.

<sup>83</sup> Van der Werf, *Banken*, p. 121, pp. 148-150.

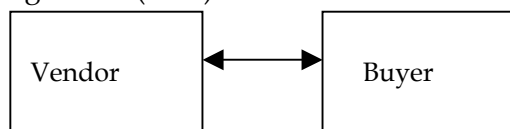
<sup>84</sup> Van der Werf, *Banken*, p. 374.

This network was for a large part established by take-overs of local financial intermediaries. This integration process mostly strengthened the existing services (horizontal integration but it also offered the opportunity to offer new services or the same services without intermediation of a local party (vertical integration).

#### *4.4 Value systems*

On the basis of the description from above, we can discern several value systems of the Dutch securities trade over time. Next to a different value system that exists in different times, different value systems also exist besides each other at the same time. The most basic value system for buying and selling securities, is composed of two parties; the vendor and the buyer (figure 1). This basic type of trade probably occurred that securities trade started at first in the Netherlands which must be around 1600 (if we take the shares of the VOC as the first traded Dutch securities). Naturally, this figure is not specific to trade in securities but it applies to trade in general.

Figure 4.5 (1602)



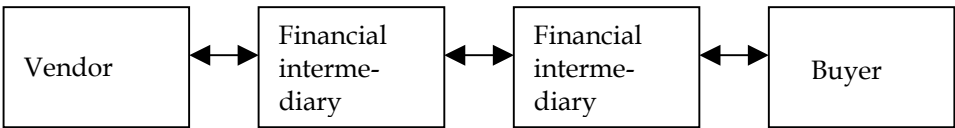
As we have seen in this chapter, a distinct group of traders started to trade in securities soon after the introduction of VOC shares. In the beginning, securities trade was not their sole business. A professionalisation of the Dutch securities trade took place in the eighteenth and nineteenth century. The result was that several intermediaries started to specialise in securities trade, and that thus the value system extended. Potentially, a vendor and buyer could still find each other without the mediation of a financial intermediary. One of them could also deploy a professional trader or both could hire such a person (figure 4.6a and figure 4.6b).

Figure 4.6a (1600-1876)



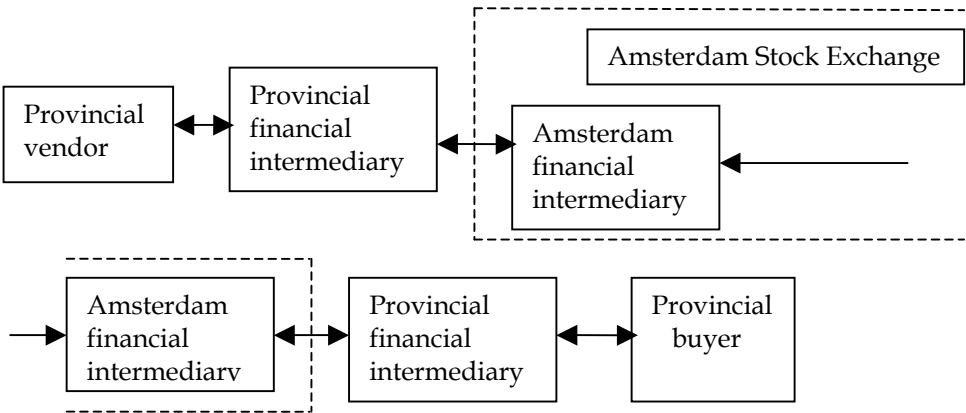
Or:

Figure 4.6b (1600-1876)



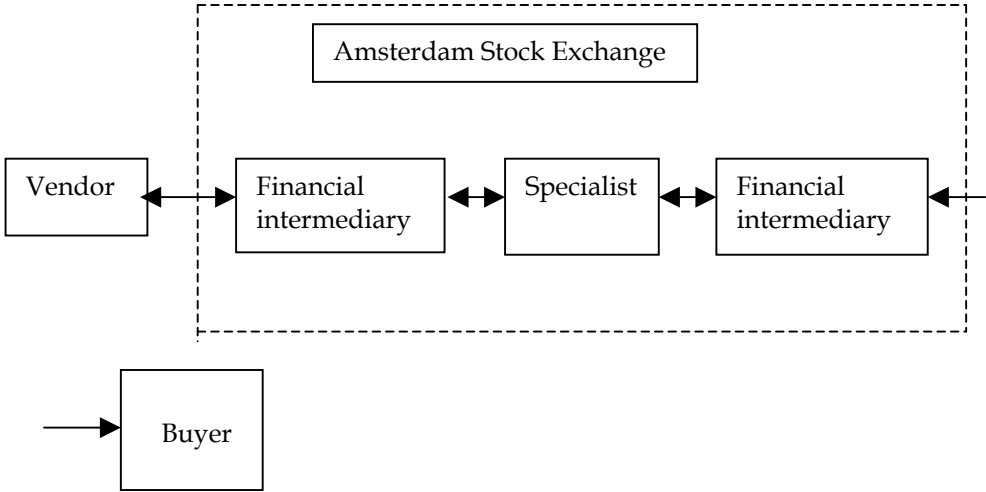
Before 1876, it did not matter whether this financial intermediary came from outside Amsterdam or not. After 1876, when the VvdE was established, members of the VvdE needed to have an office in Amsterdam and were not allowed to trade with non-members. These strict demands for membership really had an effect as from 1903 when the VvdE could effectively close of ‘their’ securities trade floor in the new Berlage Exchange. From the year 1903, the value system of the Dutch securities trade thus lengthens even more, if a provincial vendor and/or a provincial buyer hired a local financial intermediary. Furthermore, the very basic form of trading with one other (vendor-buyer), was ruled out since the same year.

Figure 4.7 ((1876) 1903 - )



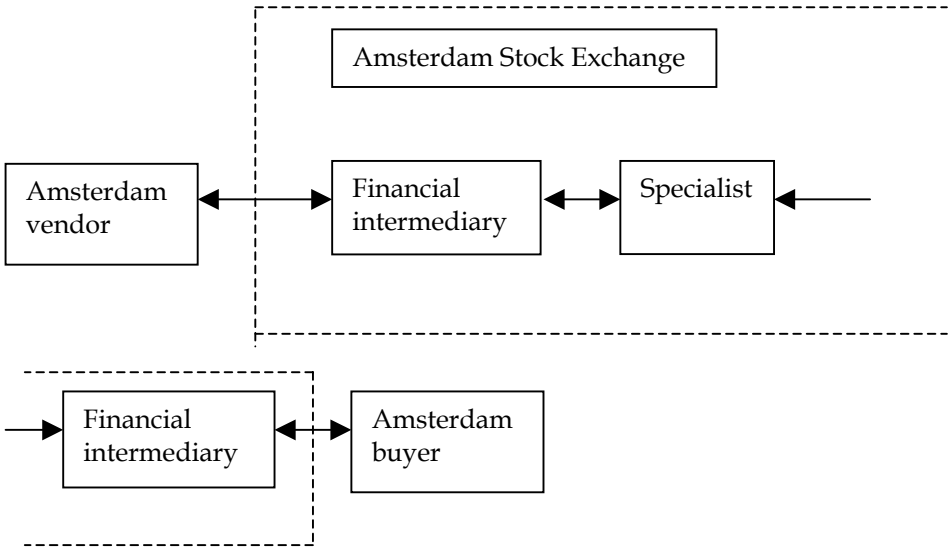
At the end of the nineteenth century, a new intermediary arose; the specialist who became an intermediary for the intermediaries. This resulted in the following value system:

Figure 4.8a (1890-2001)



If we add ‘provincial’ and ‘Amsterdam’ into this schema, the several variations can be discerned. First, if both vendor and buyer were both citizens of the city of Amsterdam, the following value system applied.

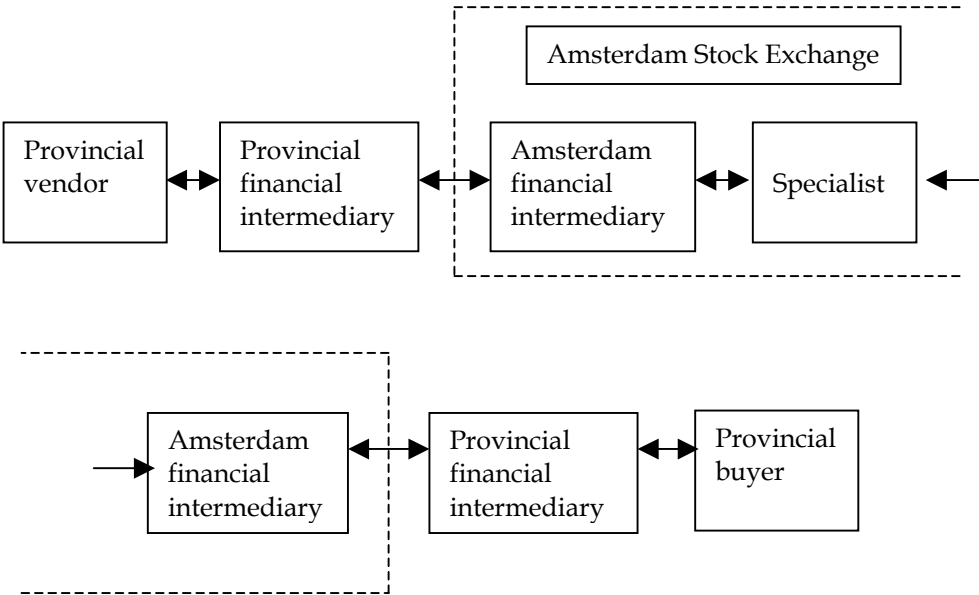
Figure 4.8b



Second, both vendor and buyer lived outside Amsterdam:

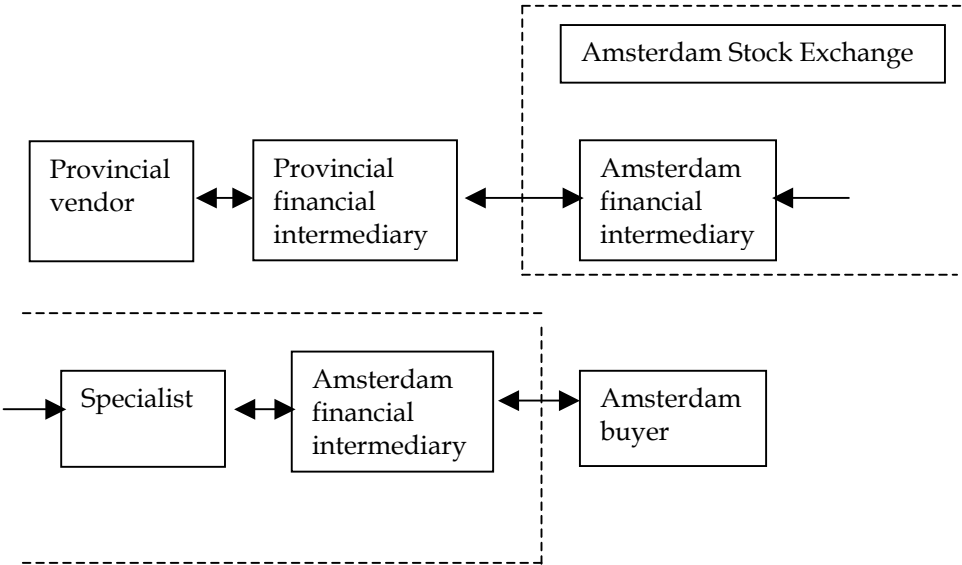


Chapter 4  
Figure 4.8c



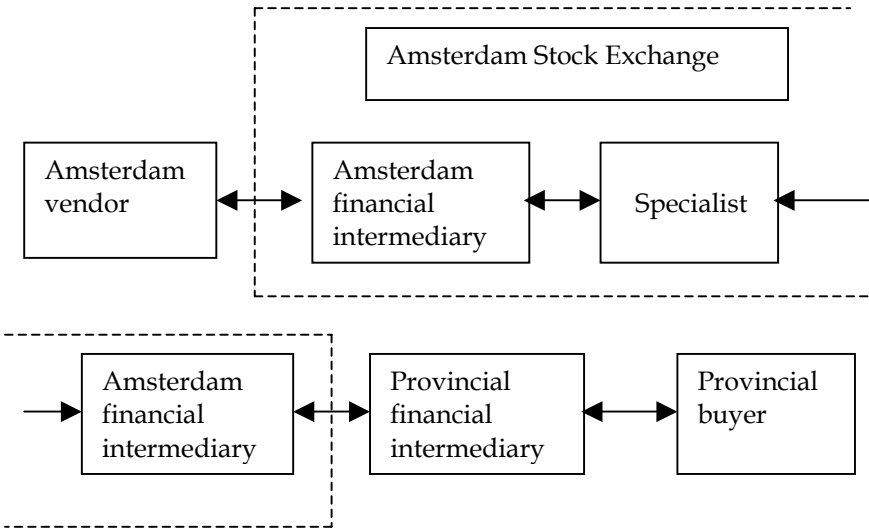
Third, the vendor could be from the province with a provincial intermediary and the buyer from Amsterdam:

Figure 4.8d



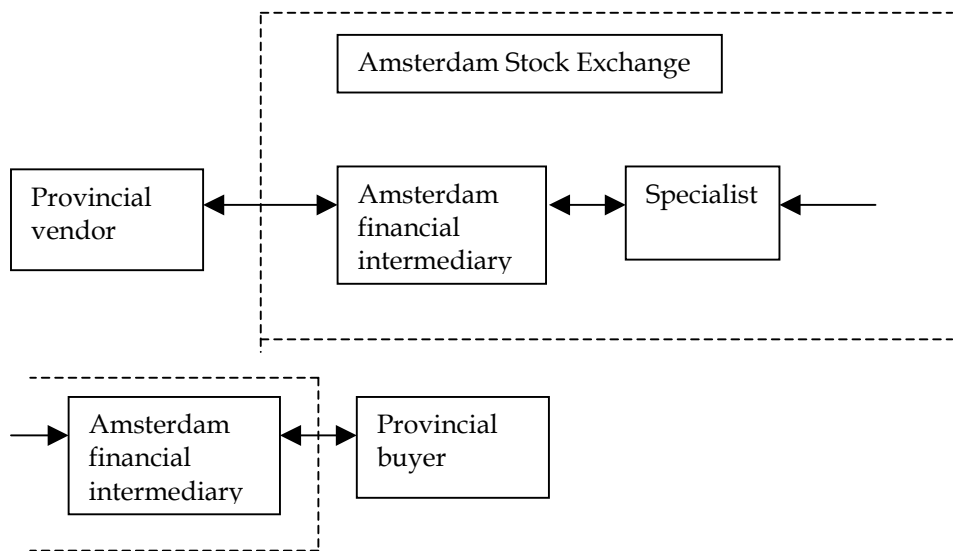
Or vice versa:

Figure 4.8e



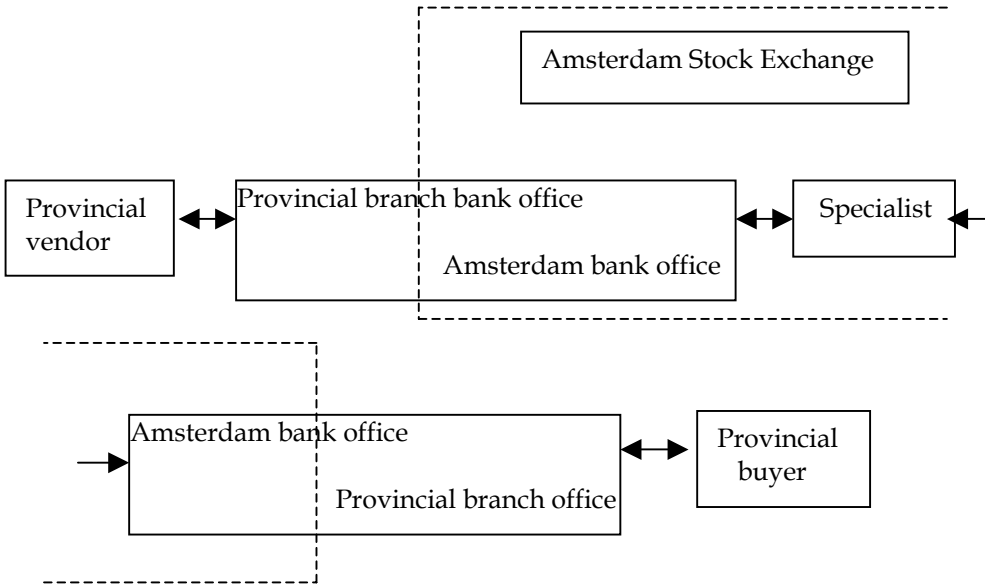
Lastly, a provincial client could also directly contact an Amsterdam intermediary:

Figure 4.8f



In the second half of the nineteenth century, joint stock commercial banks arose as financial intermediaries in, amongst others, securities trade. At first their appearance changed nothing in the value system of securities trade since they functioned as the existing intermediaries in securities. However, these banks started to expand as from the beginning of the twentieth century. This expansion manifested itself in take-overs of provincial financial intermediaries and the establishment of branch offices. This development persevered throughout the twentieth century. So, if you were a provincial investor and were a client with a branch office of a bank that also had an office in Amsterdam, the value system was shaped in the following way:

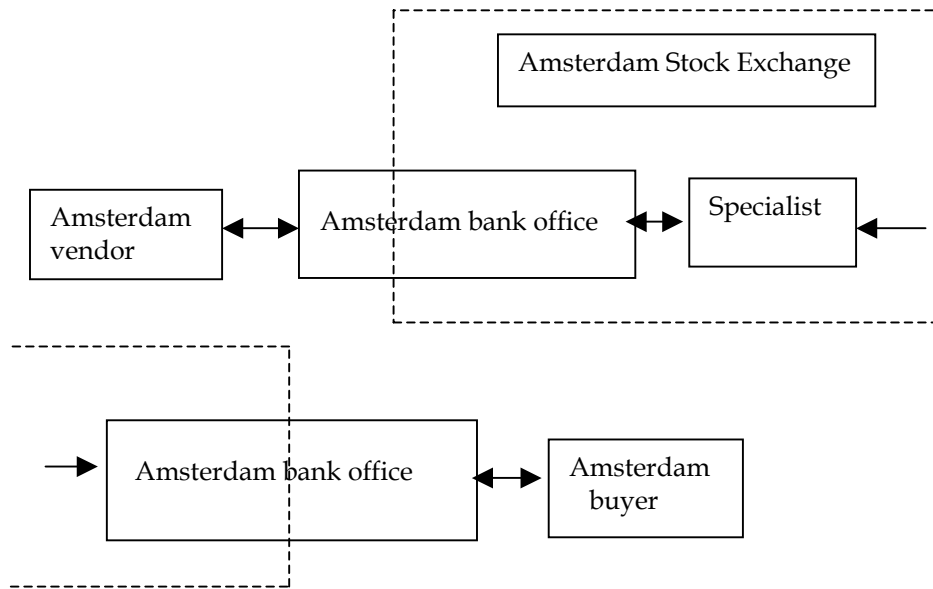
Figure 4.9 20<sup>th</sup> century



As from the second half of the twentieth century, we saw that the same development applied for several merchant bankers such as Hope & Co en Heldring, Pierson & Heldring that started to merge with other financial intermediaries. Hence, we want to stress that figure 4.9 not only applied for the large stock commercial banks but also, as from around the second half of the twentieth century for merchant bankers.

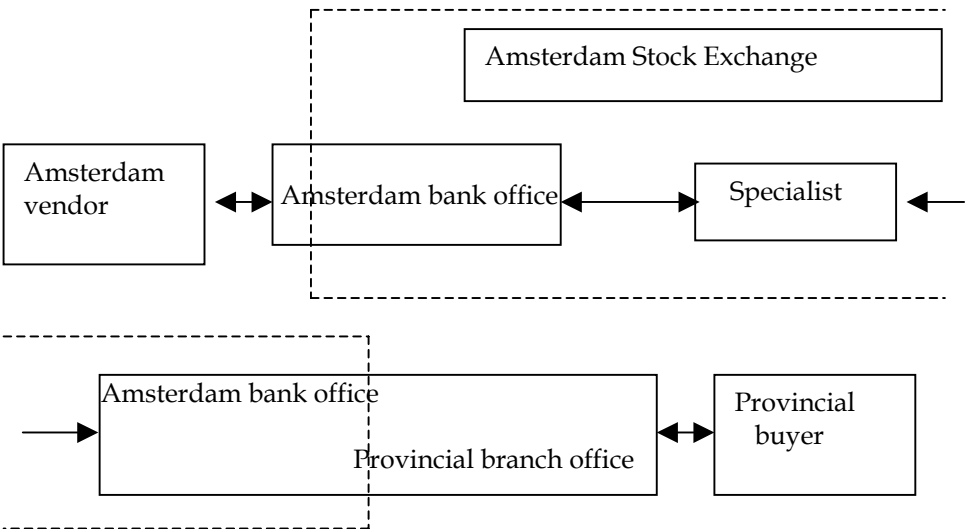
Again, several variations on the above scheme are possible. For instance the vendor and buyer may originate from Amsterdam:

Chapter 4  
Figure 4.9a



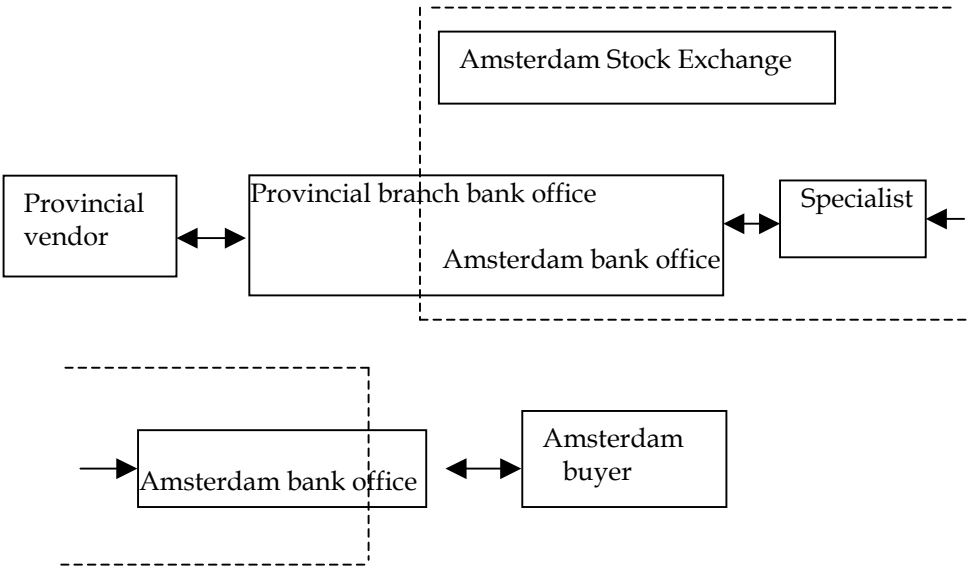
Or the vendor is from Amsterdam and the buyer from the province:

Figure 4.9b



Or vice versa:

Figure 4.9c



Note that figures four and five and their variations persist side by side although banks dominated as intermediaries in securities more and more throughout the twentieth century.

*4.5 Conclusion*

The main aim of this chapter was to discern the actors who form the value system of the Dutch securities trade (subquestion a) and to detect any changes throughout the period 1850-1970. The actors are buyers and sellers of securities, stockbrokers that can be subdivided into commission traders, sworn brokers, day traders, joint stock commercial banks and specialists. These actors together form a network, which facilitates trade in securities. What we see is that different value systems exist next to each other at the same time, depending on the fact whether the perspective of an Amsterdam or provincial investor is taken, and on who are their intermediaries.

In the period 1850-1970 several changes can be seen in the value systems. Until around 1900, the general development is that the value system expands due to a professionalisation of trade which firmly sets the position of intermediaries such as the commission traders, sworn brokers, bankers, banks and specialists. So the first change is the upturn of these intermediaries. With the help of an intermediary a buyer or seller did not need to find a seller or buyer himself and an intermediary took care of the administrative actions after a closed deal. A second change can be attributed to the foundation of the VvdE in 1876. From this year onwards, a larger role for Amsterdam stockbrokers is retained by the strict rules of the VvdE. The third change is the rise of specialists. This rise can be explained from the fact that the growth in number of listed securities required people who were specialised in the trade of one or several particular securities. The fourth alteration is the most remarkable which is an overall movement towards integration. For a large part, the joint stock commercial banks were responsible for this movement. From the beginning of the twentieth century, joint stock commercial banks started to appropriate a larger role as intermediaries in the Dutch securities trade. If a provincial investor chose a bank with a branch office in the place of residence of this provincial investor and an office in Amsterdam, the value system shrinks again. Yet, this was not always the case. Provincial and Amsterdam stockbrokers persisted throughout the twentieth century although the dominating picture in this period is commercial banks as an intermediary in the Dutch securities trade. The number of independent stockbrokers, whether they were from Amsterdam or the province, declined in the twentieth century as a result of take-overs of both large banks and merchant bankers, bankruptcies and closures. So the big change in the organisation of the Dutch securities trade was the dominance of banks as intermediaries as from the second half of the twentieth century onward. The question is why this happened. Stockbrokers were specialised in trade in securities. To banks, it was only one of their activities and their main focus. One would expect that the specialists (not to be confused with the earlier mentioned specialists as match makers between buyers and sellers) would survive because they knew best what was of importance and what happened in the world of valuable papers. Trying to explain the movement towards integration in the Dutch securities trade, will be the focus for the remainder of this thesis. For that, we need to make clear what actually happened in the daily practice of financial intermediaries who facilitated the Dutch securities trade. When discussing this daily practice

we cannot leave out information and communication technology since ICT became omni-present in securities throughout the twentieth century. So, before we go on to the study of securities trade services, first the available means of information and communication technologies in the period 1850-1970 will be discussed in the next chapter.





## 5. Telecommunications in The Netherlands

### 5.1 Introduction

Information and communication technologies have always been of great importance to financial intermediaries, especially to traders in goods and securities. Intermediaries in trade exist by the grace of availability of information, in particular, how fast they possess relevant information. Every medium of communication shall be deployed to obtain information that will lead to an advantage over the other. The main focus of this thesis is to identify whether telecommunication technologies have influenced the way Dutch securities trade was organised. Therefore, we have to know *which* telecom technology became *when* available against *what* costs. In other words, this information relates to sub questions (d) *what are the available means of ICT in the Netherlands in general?*, and (k) *what are the costs of making use of information sources such as sending a telegram, or making a telephone call?* The focus of this cost analysis is clearly on the telegraph and the telephone and much less on related technologies such as radiotelegraphy and radiotelephony. The telegraph and the telephone were widely used in securities trade as will become clear in chapters six and seven.

Not so much the technical aspects of these telecommunication technologies will be discussed but we will focus on the introduction and development as well as the usage of telegraphy, especially electromagnetic telegraphy, telephony, and the telex. This will make clear at what time, what information and communication technologies were available to establish contact with the world outside the Exchange building. This information is necessary to answer the question on how these telecom technologies were deployed and used in services related to securities trade.

The chapter starts with a general overview of institutional aspects of telegraphy and telephony. Section 5.3 discusses the start and development of telegraphy. Section 5.4 discusses telephony.

### *5.2 Institutional environment Dutch post, telegraphy and telephony services*

Before telegraphy, telephony and other types of information and communication technologies will be discussed in more detail, first the institutional setting in which these technologies were provided will be dealt with. The reason to deal with this first is to prevent misunderstandings in the remainder of this chapter concerning the name of the state's postal and telegraph service.

When telegraphy came under state control in 1852, the national telegraph service ('Rijkstelegraaf', note; private telegraph services were also active) fell under the Ministry of Domestic Affairs (Ministerie van Binnenlandse Zaken). The postal services fell under the responsibility of the Ministry of Finance (Ministerie van Financiën). In the year 1877, a new Ministry of Public Works, Trade and Industry (Ministerie van Waterstaat, Handel en Nijverheid) was established. The national post and telegraph service were both transferred to this ministry. Complete integration of both services became reality in 1886. The division became known as the 'Hoofdbestuur der Posterijen en Telegrafie' (General Board of the Post and Telegraph Service), or in short P & T. Since the P & T fell under the responsibility of a minister, the powers of the 'Hoofdbestuur' were limited. The fact that the 'Hoofdbestuur' had limited control over the height of its budget, frustrated the general managers of the P & T. Not surprisingly, the general managers strove for more autonomy. In 1893, the P & T turned into an autonomous organisation within the Ministry of Public Works, Trade and Industry. Its name changed to 'Administratie der Posterijen en Telegrafie' (Administration Post and Telegraph Service). Twenty two years later, the P & T became a state company. Therefore, we officially speak of the 'Staatsbedrijf der Posterijen en Telegrafie' from 1915 onward.<sup>1</sup>

When telephony was introduced in the Netherlands in 1881, it legally fell under the state's telegraph service since the telephone was seen as a sort of telegraph. As a result, telephony was also classified under the national telegraph law of 1852. In its starting phase, the actual construction and exploitation of a telephone infrastructure was left to private persons although the national telegraph service did already use telephones in 1881

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<sup>1</sup> Mila Davids (1999) *De weg naar zelfstandigheid. De voorgeschiedenis van de verzelfstandiging van de PTT in 1989* (Uitgeverij Verloren; Hilversum) pp. 110-112.

for the transfer of telegrams. In February of that year a first 'Rijkstelefoonkantoor' (state's telephone office) opened its doors at Texel, an island in the North of the Netherlands. In the same year, four similar offices were opened in other parts (mainly rural areas) of the country.<sup>2</sup> Still, private companies instigated public telephony for which they received a concession. Employees of the Rijkstelegraaf needed to supervise the granted concession. In doing this, it became clear that the juridical aspects of laying telephone lines, were significantly different from constructing telegraph lines. The difference was that telephone lines needed to be extended to private property. Otherwise, residents were unable to use their telephones. At that time, telegraphic traffic mainly passed on between Rijkstelegraaf offices hence, telegraph lines were constructed on public territory (telegraph traffic between private persons or a private person and a Rijkstelegraaf office only became possible as from 1907). Therefore, the telegraph and telephone needed to be separated legally. In 1904 the government passed the Telegraph- and Telephone bill. Only in 1928, the word 'telephony' was taken up in the name of the responsible division, resulting in the Posterijen, Telegrafie en Telefonie, or in short PTT.<sup>3</sup>

The Ministry of Public Works, Trade and Industry also changed its name. From 1906, it became the Ministry of Public Works, while Trade and Industry formed a new Ministry together with Agriculture. In 1947, Transport was added to the Ministry of Public Works. To this Ministry the PTT had to justify its actions.<sup>4</sup>

The degree of independence of the PTT remained an issue throughout the twentieth century. In 1989, an important step was taken to transform the PTT into a private company. In this year, the PTT had become a limited liability company in which the Dutch Government acted as the only shareholder. The full name of this 'new' company became 'Koninklijke PTT Nederland N.V.', or in short KPN (Royal PTT the Netherlands). No binding agreements concerning the division of shares were made since the Minister of Transport and Public Works clearly regarded the 100 percent ownership in shares by the government as a temporary arrangement.<sup>5</sup> Indeed, the Dutch government has gradually

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<sup>2</sup> Onno de Wit (1998) *Telefonie in Nederland 1877-1940. Opkomst en ontwikkeling van een grootschalig technisch systeem* (Otto Cramwinckel; Amsterdam) p. 70.

<sup>3</sup> Davids, *De weg naar zelfstandigheid*, pp. 110-111.

<sup>4</sup> See for an overview of Dutch Administrations during the twentieth century: <http://www.pdc.nl>, visited 27 February 2003.

<sup>5</sup> Davids, *De weg naar zelfstandigheid*, p. 133 and p. 136.

## Chapter 5

reduced its ownership over time (1998: 43,5 %; September 2003: 19,3%). In 1998, KPN implemented an important reorganisation measure; its postal and telecom activities were separated. The postal division merged with the Australian company Thomas Nationwide Transport (TNT; named after its founder Ken Thomas) to TNT Post Group (TPG). Its telecom part became known as KPN Telecom.<sup>6</sup>

### 5.3 Rise and fall of telegraphy in the Netherlands

#### 5.3.1 Start telegraphy

With the coming of electrified means to send information, messages travelled faster than its messengers. In *Communication in History* (1995), the changed way of how information was communicated is called a transformation from the 'transportation' model of communication to the 'transmission' model.<sup>7</sup> In the transportation model, the sending of messages depended on the available means of transportation (people, horses, stagecoaches, trains etc.). The introduction of the telegraph meant a separation between transportation and communication. Information could now be transmitted autonomously and quicker than means of transportation. This is the transmission model.<sup>8</sup>

Yet, communication and transportation remained related to each other although their mutual dependency turned around. Telegraphy and transport, especially the railroad, even became the 'siamese twins of commerce'.<sup>9</sup> In the United States (US), the railway system was mostly single tracked. Hence, the danger existed that trains would collide. With the help of the telegraph, the railroad system was managed in an efficient and safe way. The stations communicated with each other about which trains departed at what time. The telegraph was also useful to commercial activities. A manufacturer could be informed on the local needs and thus the number of products sent to local outlets could be adjusted. This type of information and its rapid availability, was especially convenient to producers and sellers of perishable goods such as fruit and vegetables.

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<sup>6</sup> Annual report KPN 1998, p. 18, see also: <http://www.kpn-corporate.com/nl/kpn/index.php?id=1.08&taal=nl>, and <http://www.tpg.com> under 'history', visited 27 February 2003.

<sup>7</sup> 'Electricity creates the wired world' in: David Crowley and Paul Heyer (1995) *Communication in History. Technology, Culture and Society* (Longman Publishers; White Plains, N.Y.) pp. 145-148, p. 145.

<sup>8</sup> James Carey (1995) 'Time, Space, and the Telegraph' in: David Crowley and Paul Heyer, *Communication in History. Technology, Culture and Society* (Longman Publishers; White Plains, N.Y.) pp. 154-159, p. 155.

<sup>9</sup> Quote of H.D. Estabrook in 1913, in: Alexander J. Field (1994) 'French Optical Telegraphy, 1793-1855: Hardware, Software, Administration', *Technology and Culture*, vol. 35, no. 2, p. 315.

**Table 5.1: Speed of sent messages in days, 1866-1875.<sup>10</sup>**

<i>To London from</i>	<i>Surface Mail 1866-1869 (number of days)</i>	<i>Transmission via Telegraph 1870- (number of days)</i>	<i>Year connected via Intercontinental telegraph</i>
Australia: Sydney	60	4	1876
New Zealand	65	4	1876
Asia:			
Bombay	29	3	1870
Calcutta	35	3	1872
Hong Kong	51	3	1871
Madras	40	3	1870
Shanghai	56	4	1870
Yokohama	70	5	1871
Africa:			
Alexandria	11	2	1868
Capetown	30	4	1868
Lagos	12	3	1886
Madeira	8	2	1874
North America:			
Galvestone	17	3	1866
Montreal	14	2	1866
New Orleans	17	3	1866
New York	14	2	1866
Central America:			
Barbados	26	4	1868
Havanna	24	4	1868
Jamaica	25	4	1868
South America:			
Baia	15	3	1873
Buenos Aires	32	3	1875
Colombo	33	3	1875
Natal	36	4	1875
Rio de Janeiro	30	3	1875
Valparaiso	46	4	1875

<sup>10</sup> Source: Jorma Ahvenainen (1986) 'The Role of the International Telegraphs in the years 1870-1914', in: W. Fischer R. Marvin McNinn and J. Schneider ed., *The emergence of a world economy, 1500-1912* (Steiner; Wiesbaden) p. 507.

Hence, the telegraph was an important device for logistical control.<sup>11</sup> Table 5.1 illuminates the enormous acceleration of sent trade data all over the world due to the electro-magnetic telegraph.

Different persons in several countries experimented with electric telegraphy in the 1830s, which eventuated in the electromagnetic telegraph that appeared to be the most practical application of electric telegraphy.<sup>12</sup> The electromagnetic telegraph had its predecessors such as talking drums, smoke signals, carrier pigeons, and optical telegraphy.<sup>13</sup> The optical telegraph appeared at the end of the eighteenth century in several forms (for instance; three wooden arms attached to a wooden scaffold, designed by a Frenchman called Claude Chappe). The key to these different optical telegraphs was that a scaffold could be turned and twisted and that each position represented a letter, a number, a word or a series of words. These telegraph scaffolds were placed on high points in the landscape, such as hills or church towers. The observer who stood on the next station picked up the messages with the help of a pair of binoculars and then forwarded the message.<sup>14</sup> Of course, the optical telegraph could only be used during daytime and when the weather was clear. It mostly relayed military news although a Dutch economic journal immediately recognised its commercial potential.<sup>15</sup> However, in the Netherlands the optical telegraph remained exclusively reserved for sending messages with a military or political character in contrast to its neighbouring country, Belgium. In Belgium, private exploitation of optical telegraphy existed. In 1842, a large part of the Belgium financial sector complained to their government. They felt damaged because of the speculation practices of private telegraph owners who also traded in securities. Obviously, the latter group profited from prior knowledge on prices of securities.<sup>16</sup>

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<sup>11</sup> Field, 'The Magnetic Telegraph', p. 406 and p. 410.

<sup>12</sup> O. de Wit (1993) 'Telegrafie en Telefonie' in: H.W. Lintsen et al. (red.) *Geschiedenis van de techniek in Nederland. De wording van een moderne samenleving 1800-1890* (Walberg Pers; Zutphen) pp. 271-298, pp. 275-276.

<sup>13</sup> 'Electricity creates the wired world' in: David Crowley and Paul Heyer (1995) *Communication in History. Technology, Culture and Society* (Longman Publishers; White Plains, N.Y.) p. 145.

<sup>14</sup> G. Wilson (1976) *The Old Telegraphs* (Phillimore; London); PTT (1977) *Ontwikkeling van de telegrafische berichtgeving* (Staatsbedrijf der PTT; Den Haag) pp. 3-4; Rob Korving and Bart van der Hertten (red.) (1997) *Een tijding met de snelheid des bliksems. De optische telegraaf in de Nederlanden 1800-1850* (Leuven Universitaire Pers; Leuven).

<sup>15</sup> E.A.B.J. ten Brink and C.W.L. Schell (1954) *Geschiedenis van de Rijkstelegraaf 1852-1952* (Staatsbedrijf der PTT; Den Haag) p. 4.

<sup>16</sup> Pascal Verhoest (2000) *Openbare telecommunicatie (1798-1998). Twee eeuwen politieke economie van het netwerkbeheer in België*. (VUBPress; Brussel) p. 26.

Private companies and persons were responsible for the first applications of the electromagnetic telegraph in the Netherlands. The railway company 'Hollandsche IJzeren Spoorweg Maatschappij' (HIJSM: Dutch Iron Railway Company)) set the first Dutch electromagnetic telegraph connection into operation in 1845. The HIJSM employed this line along the railroad connection between Amsterdam and Haarlem. Messages could be forwarded with a speed of 15 to 28 characters per minute.<sup>17</sup>

In 1845, the Dutch government received a request for exploiting a telegraph line between Amsterdam, as a centre of trade, and Den Helder, an important seaport at that time. If a ship came in, this telegraph line notified commercial Amsterdam.<sup>18</sup> Unfortunately, it took years before the Dutch government dealt with this request. The Dutch government lingered that long because of fear of competition with the state's postal service and of abuse by stock exchange speculators and political troublemakers.<sup>19</sup> When the government finally did take a decision, a much broader issue was at stake: how to create and exploit a public telegraph network? Leave it to private persons or turn it in to a state service? A choice was made for the latter. As from 1 December 1852, the Dutch national telegraph service ('Rijkstelegraaf') became operative. The government aimed at turning the telegraph, its infrastructure and its services, into a state owned public service. In 1884, the 'Rijkstelegraaf' had obtained control of all telegraph lines that were formerly exploited by private companies.<sup>20</sup>

### 5.3.2 Subscription telegraphy

Sending a telegram involved going to the nearest office of the 'Rijkstelegraaf' from which the message was relayed to the nearest 'Rijkstelegraaf' office of the addressee. An employee of the 'Rijkstelegraaf' delivered the telegram to the addressee. This somewhat laborious procedure gave two Amsterdam merchants the idea of setting up a private telegraph network that linked up subscribers directly with each other. In 1861 the two Amsterdam merchants obtained permission to exploit such a service but never realised their plans. There appeared to be not enough interest in such a service among private persons at that time.<sup>21</sup>

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<sup>17</sup> De Wit, 'Telegrafie en telefonie', p. 277.

<sup>18</sup> E.A.B.J. ten Brink (1957) *De Rotterdamsche Telegraaf Maatschappij 1854-1884* (Staatsbedrijf der PTT; 's Gravenhage) pp. 3 -4.

<sup>19</sup> Ten Brink, *De Rotterdamsche Telegraaf Maatschappij*, p. 4.

<sup>20</sup> De Wit, 'Telegrafie en telefonie', p. 287.

<sup>21</sup> Ten Brink and Schell, *Geschiedenis*, pp. 116-117.



The laborious procedure for sending telegrams also resulted in being unprofitable for the Rijkstelegraaf to offer telegraph services in small and remote places. The number of telegrams was simply too few to operate a profitable telegraph service. With the introduction of the telephone, these problems were solved since a telegram message could now be passed on verbally, via the telephone. Since more telephone calls were made than telegrams sent, small provincial villages obtained a telephone (annex telegraph) station. The content of a telegram message was passed on via the telephone to the nearest telegraph transmitting station and from there, sent to the nearest telegraph station of the addressee.<sup>22</sup>

The idea of subscription telegraphy became more serious in 1907. In this year, a 'Koninklijk Besluit' (Royal Decision) was accepted that approved of the instalment of telegraph connections between subscribers and a Rijkstelegraaf office (note; this did not involve telegraph connections between clients). The costs of this service were fl. 10 per month. Initially, the service did not attract many interested parties. The first subscriber was the 'Nederlandsch-Amerikaansche Stoomvaart Maatschappij' (Dutch-American Steam Navigation Company) from Rotterdam that obtained a connection in 1910. From then on, more clients were connected to this specific service. The subscribers received a device to send and transmit telegrams, the so called 'Ferndrucker'. The 'Ferndrucker' did not reach a high speed in sending and transmitting telegrams. Furthermore, the electricity for the Ferndrucker came from storage batteries that needed to be recharged regularly. If such a battery had run out of electricity, the P & T came to pick it up and gave the client a new battery. This service cost a client around fl. 60 per month in addition to the subscription rate and the right to have a personal telegram address. Besides the additional costs, the whole picking up and switching procedure was time consuming and inconvenient for both client and the P & T.<sup>23</sup>

The devices used to transmit telegraph messages gradually evolved. The Morse-apparatus was the most well-known telegraph device to transmit messages with.<sup>24</sup> In 1919, Charles L. Krum introduced the teleprinter or 'verreschrijver'. This transmitting device looked almost similar to a typewriter. The typed message appeared on paper but it was also punched in code on a small paper strip. This coded message passed through a telephone line by means of electrical pulses. On the other end,

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<sup>22</sup> De Wit, 'Telegrafie en Telefonie', pp. 293-296.

<sup>23</sup> Ten Brink and Schell, *Geschiedenis*, pp. 118-119.

<sup>24</sup> De Wit, 'Telegrafie en Telefonie', p. 290.

the coded message was decoded automatically and appeared in letters on paper. The teleprinter was very user friendly and thus, perfectly adapted to send messages between private persons since the need to know complicated codes disappeared.<sup>25</sup> Sending messages with the help of a teleprinter is called a 'telex service'. The word 'telex' is a contraction of teleprinter and exchange. A telex apparatus and a telex network were in fact the result of attempts to make telegraphic traffic between private persons possible.<sup>26</sup>

In 1921, the Rijkstelegraaf tested these teleprinters extensively. The Rijkstelegraaf refrained from applying them right away since after long use of the first versions of the teleprinters, disturbances occurred. After the teleprinter was considerably improved, the Rijkstelegraaf decided to put them into use.<sup>27</sup> In 1933, the PTT opened a public telex network. Telex traffic took place by telephone lines since more people were linked to a telephone network than to a telegraph network. Besides a public telex network, the PTT also offered the possibility to create a private telex network to which interested persons or firms could subscribe to.<sup>28</sup> In 1935, the 'Algemeen Nederlands Persbureau' (General Dutch News Agency) created a private telex distribution network to which seventy daily newspaper were linked up. From a central point, all seventy newspapers received news at the same time by telephone lines on their telex machines.<sup>29</sup>

### *5.3.3 Radiotelegraphy*

Another development in telegraphy had already presented itself in the Netherlands around twenty years earlier than the teleprinter; radiotelegraphy. Radiotelegraphy involves sending messages by electromagnetic waves. Since these waves travelled through air, telegraph or telephone lines were not necessary to transmit a message. Not coincidentally, the first applications of radiotelegraphy appeared in the shipping sector. With help of radiotelegraphy, seamen could contact the shore or vice versa. The Netherlands got involved in radiotelegraphy in 1899. In that year, the Lloyds Committee from London, requested

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<sup>25</sup> PTT (1968) *Telegrafie, telefonie en draadomroep in Nederland* (Staatsbedrijf der Posterijen, Telegrafie en Telefonie; 's Gravenhage) p. 30.

<sup>26</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 170.

<sup>27</sup> Ten Brink and Schell, *Geschiedenis*, pp. 62.

<sup>28</sup> Ten Brink and Schell, *Geschiedenis*, pp. 120-126.

<sup>29</sup> J.A. Baggerman and J.M.H.J. Hemels (1985) *Verzorgd door het ANP. Vijftig jaar nieuwsvoorziening* (Uitgeverij L.J. Veen B.V.; Utrecht/Antwerpen) p. 38.

permission to locate and exploit a radio station (a 'Marconi'- device) on the lightship 'Maas'. This anchored and illuminated ship laid before the 'Rotterdamse Waterweg', to point out the entrance to the canal that led to the Rotterdam port. The Dutch government refused to grant the permission since it feared a loss of authority in its own country in the area of radiotelegraphy if a foreign company was given permission to exploit such a service, right in front of the Dutch coast. Instead, the Dutch Government installed a committee that explored the possibilities of radiotelegraphy. At the same time, the 'Rijkstelegraaf' also experimented with radiotelegraphy. At the end of 1904, a well-equipped radiotelegraphy station at Scheveningen-Haven, at the North Sea, was opened. However, not many ships were equipped with the radio installation equipment. The possibilities for sending and receiving telegrams increased after shipping companies that exploited ferry services installed a complete send and receive station on their ferries. Vessels could sail up to such a ferry and offer or receive messages. These messages were sent to Scheveningen-Haven and from there, transmitted by the normal telegraph lines.<sup>30</sup> Around 1913, six coastal radio stations and around hundred wireless telegraph stations, installed on vessels, were in operation. These radiotelegraphic devices mainly served to facilitate maritime communication in coded messages.<sup>31</sup>

The tariff system for radiotelegraphic traffic was rather complicated. On top of the prices for normal (wired) telegrams, a 'coastal tax' of 0,10 cents per word was added with a minimum of fl. 1 per radio-telegram. Let us take the example of an interurban telegram of 10 words that cost 0,25 cents in 1910. A radio telegram thus cost minimal fl. 1,25. For the use of radiotelegraph stations on board of vessels, the Minister of Communications charged a 'shipping tax' of 0,10 cents per word (in 1907; 0,20 cents per word) with a minimum of fl. 2 per telegram. For received messages on board of a ship, again a 'coastal tax' of fl. 1 per message needed to be paid. In 1923, the prices for radiotelegraphy became more conveniently arranged; fl. 2,50 on top of each normal telegram tariff.<sup>32</sup> Thus, a ten-worded radio telegram added up to fl. 3,00).

Further technical developments in the field of wireless communication led to wider applications such as transmitting 'the spoken

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<sup>30</sup> Ten Brink and Schell, *Geschiedenis*, pp. 130-140.

<sup>31</sup> W.O. de Wit (2002) 'Radio tussen verzuiling en individualisering' in: J.W. Schot e.a. (red.) *Techniek in Nederland in de twintigste eeuw. Deel V Transport en Communicatie* (Walburg Pers; Zutphen) pp. 203-229, p. 206.

<sup>32</sup> Ten Brink and Schell, *Geschiedenis*, pp. 320-321.

word' (radiotelephony), and to broadcasting by radio. Radio technology attracted many amateurs who experimented with this form of wireless telegraphy and telephony in the 1910s. H. à Steringa Idzerda who fabricated wireless transmitting equipment started with weekly wireless telephony broadcasts as from 1919. Idzerda's public remained limited to a few thousands listeners whom he mainly dished up advertisements of his own company, the Nederlandsche Radio Industrie (Dutch Radio Industry). In 1923, another producer of wireless transmitting equipment, the Nederlandsche Seintoestellen Fabriek (NSF; Dutch Transmitting Instruments Factory) also started to advertise through radio broadcasts. In 1924, this transmitting station developed into a public radio station with a variety of programmes such as broadcasts of live music. This station became known as the Hilversumsche Draadlooze Omroep (HDO: Hilversum Wireless Broadcasting Corporation) that attracted many paying listeners. The HDO thus laid the basis of the Dutch radio broadcasting system.<sup>33</sup>

#### *5.3.4 Telegraphy and telexes*

At the end of the 1930s, telegraphy, both wired and wireless, worked reasonably well in the Netherlands. World War II did not significantly changed that. The German invasion inflicted some damage to the Dutch telegraph network but, miraculously, most damage could be repaired quite easily. Soon after the Germans took control most telegraph lines were opened to the public again. During the occupation, the extent to which Dutch people made use of the telegraph fluctuated strongly. The German occupiers determined that if a telegram was sent a, a stamp from the Sicherheitspolizei was needed. This measure obviously discouraged the sending of telegrams since it implied control over the contents of the message. Not surprisingly, the number of domestic telegrams declined by sixteen percent in 1940 compared to 1939. Yet, the measure was reversed again in 1941. In the years hereafter, the number of sent domestic telegrams grew explosively, resulting in five million telegrams, transmitted in 1943 (in comparison 1939: 1.990.000, 1950: 3.509.000, 1955: 2.506.000)<sup>34</sup>. The explosive growth could be ascribed to the fear of being tapped when having a telephone conversation. However, the shortages of material and devices started to have serious consequences for the telegraph service. Only with great efforts, were the employees of the

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<sup>33</sup> De Wit, 'Radio tussen verzuiling en individualisering', pp. 208-211.

<sup>34</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 227.

Rijkstelegraaf able to make ends meet. When the war hardened in the fall of 1944, the Germans imposed stricter measures for sending telegrams. At the end of 1944, telegraphic traffic had nearly come to a standstill.<sup>35</sup>

After World War II, telegraph traffic recovered quite easily. Still, the telegraph service had to be enhanced in order to compete with the telephone, and thus find a right for existence. Already at the beginning of World War II, PTT engineers had developed plans to reorganise the Dutch telegraph system. They especially focussed on possibilities to automate the connections that have to be made to get a telegram at its destination. The PTT engineers developed a switchgear system that went through several experiments. Pre-emptive to the automation of telegraph traffic was the usage of teleprinters. Teleprinters could be easily adapted for automated traffic. In 1952, powerful equipment that automatically made connections for telegraph traffic was installed in the main office of the PTT in Amsterdam. Although this exchange was originally meant for the public telegraph network, the PTT realised that it was actually most needed to facilitate the telex network due to the growth of telex traffic after 1945 which is showed in table 5.2.<sup>36</sup> The increase in telex traffic persevered since the scarcity of the necessary devices gradually disappeared and the number of countries that could be reached by telex expanded in the 1950s. As a result of these developments, the PTT built a separate telex infrastructure with its own exchanges in 1954. Because of this, telex traffic no longer needed to make use of telephone exchanges to send messages.<sup>37</sup>

Table 5.2: Number of telex subscriptions, 1939-1970. <sup>38</sup>	
Year	Number telex connections
1939	295
1950	431
1955	1401
1960	3238
1965	6780
1970	12972

In the 1950s and 1960s the automation of the telegraph network went on. By 1967, Amsterdam, Rotterdam, The Hague and eighty larger post offices

<sup>35</sup> Hogesteeger, *Van lopende bode tot telematica*, pp. 172-173.

<sup>36</sup> Ten Brink and Schell, *Geschiedenis*, pp. 113-115.

<sup>37</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 186.

<sup>38</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 228

spread over the country had connected one or more teleprinters to an automatic telegraph exchange to which were connected. The remaining offices only sent and received telegrams by means of a telephone. With the realisation of the Gentex-net (General Telegraph Service via Exchanges) in the 1960s, European countries could exchange telegrams automatically.<sup>39</sup> Despite these measures to make the sending of a telegram more attractive, the number of sent telegrams decreased because more and more people had a telephone connection (table 5.3).

<b>Table 5.3: Number telegrams (per thousand, per five year), 1853-1985.<sup>40</sup></b>			
<i>Year</i>	<i>Domestic telegrams</i>	<i>Telegrams abroad</i>	<i>Total</i>
1853	15	24	39
1855	56	47	104
1860	198	125	323
1865	419	289	709
1870	1106	516	1622
1875	1442	684	2125
1880	1915	976	2892
1885	2002	1160	3162
1890	2185	1597	3781
1895	2380	1847	4227
1900	2800	2268	5068
1905	3111	2808	5919
1910	2906	3267	6173
1915	4044	4151	8195
1920	4725	5584	10309
1925	2457	5892	8349
1930	2149	4981	7130
1935	1271	3203	4474
1939	1990	3917	5907
1950	3509	4322	7882
1955	2560	4405	6965
1960	2296	1911	4207
1965	2003	1697	3700
1970	1346	1426	2772

<sup>39</sup> PTT, *Telegrafie, telefonie en draadomroep in Nederland*, pp. 22-24.

<sup>40</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 227.

During the last decades of the twentieth century, not only the telephone formed a competing communication means, the fax and electronic mail threatened the existence of the traditional telegram even more. Per 1 September 2001, the telegraph service ended as provided by the PTT. Nevertheless, it is still possible to send telegrams although only to foreign destinations. This service was taken over by a company named Unitel.<sup>41</sup>

### 5.3.5 Tariffs telegraphy

In order to provide an answer to subquestion (k), an overview of the costs of making use of telecommunication technologies needs to be studied. To be able to draw a comparison between the costs for sending a telegram over time, two actions are taken. First, one unit that can be measured throughout the whole period has to be distinguished since the tariff system for sending a telegram changed several times in the nineteenth and twentieth century. We have chosen to take the costs of sending a ten-worded telegram. Although we do not have numbers on the amount of telegrams categorised in size (number of words) we suspect that the cheapest (telegrams with a maximum of ten words) was mostly sent. In table 5.4, the ten worded telegram is thus used as the unit to compare its tariffs over time. The second action relates to the indices, used to calculate the real prices. We have used the consumer price indices (cpi), drawn up by the Dutch Central Bureau for Statistics (CBS) that range from 1824 to 1998.

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<sup>41</sup> Esther Rosenberg, 'Ziekenhuis houdt telegram in leven', *NRC Handelsblad*, 15 August 2001.

**Table 5.4: Tariffs of telegrams (10 words) with the Rijkstelegraaf in absolute and real prices, 1852-1970.**

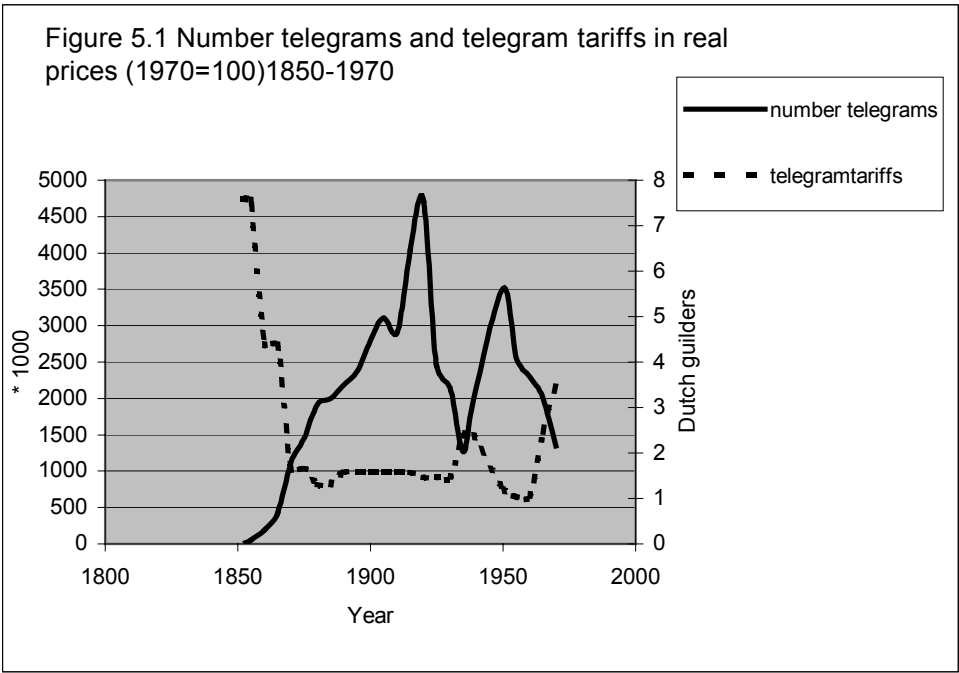
<i>Year</i>	<i>Costs per (local) telegram (10 words)<sup>42</sup></i>	<i>Interurban</i>	<i>Real prices local (1970=100)<sup>43</sup></i>	<i>Real prices interurban (1970=100)</i>
1852	Fl. 1,20	Fl. 1,20	Fl. 7,58	Fl. 7,58
1858	Fl. 0,50	Fl. 0,50	Fl. 4,39	Fl. 4,39
1868	Fl. 0,30	Fl. 0,30	Fl. 1,66	Fl. 1,66
1879	Fl. 0,25	Fl. 0,25	Fl. 1,31	Fl. 1,31
1886	Fl. 0,15	Fl. 0,25	Fl. 0,95	Fl. 1,58
1916		Fl. 0,30		Fl. 1,26
1919		Fl. 0,40		Fl. 1,27
1920	Fl. 0,40	Fl. 0,50	Fl. 1,17	Fl. 1,46
1934	Fl. 0,40	Fl. 0,50	Fl. 1,91	Fl. 2,38
1950		Fl. 0,60		Fl. 1,20
1954	Fl. 0,60	Fl. 0,60	Fl. 1,04	Fl. 1,04
1961	Fl. 0,80	Fl. 0,80	Fl. 1,17	Fl. 1,17
1965	Fl. 2,00	Fl. 2,00	Fl. 2,45	Fl. 2,45
1970	Fl. 3,50	Fl. 3,50	Fl. 3,50	Fl. 3,50

In 1852, at the start of the Rijkstelegraaf, sending a telegram was an expensive business. The Rijkstelegraaf aimed at returning its investments in building a national telegraph infrastructure. The costs dropped quite heavily throughout the nineteenth century. In the first half of the twentieth century, the costs continued to decrease until 1934. After a sharp rise in that year, tariffs declined again and increased again as from 1965. In 1950 a telegram was around seven times as cheap as in 1852. It seems that the number of sent telegrams and the height of telegram tariffs are interrelated: high tariffs and low number of sent telegrams, low tariffs and large number of sent telegrams as we can see in figure 5.1.

<sup>42</sup> Costs of telegrams before 1950 are derived from Ten Brink and Schell, *Geschiedenis*, pp. 316-319, p. 321, p. 324, pp. 326-327 and after 1950; Bibliotheek Museum voor Communicatie (BMvC) te Den Haag (Library Museum for Communication at The Hague), *Tarief tabel voor telegrammen met binnenlandse en Europese bestemming* (tariff table telegrams with domestic and European destinations), T39A.

<sup>43</sup> See for consumer price indexes CBS (1999) *200 jaar statistiek in tijdreeksen* (CBS: Voorburg/Heerlen) pp. 109-111, also to be consulted at (<http://www.cbs.nl/nl/publicaties/publicaties/algemeen/200-jaar-stat-tijdreeksen.pdf>).





## 5.4 Telephony

### 5.4.1 Start telephony 1881-1900

At the same time attempts were made to introduce a telegraph service between private persons in the Netherlands, experiments were conducted in Germany and the United States that eventually led to the introduction of the telephone in 1876.<sup>44</sup> The telephone has the distinct character of a direct two-way communication that takes place irrespective of the location of the two persons that call each other. However, in the beginning the two-way interactive communication was not that obvious. A telephonic conversation required two devices, a transmitter and a receiver. With only a receiver, it was not possible to answer the person on the other side of the telephone line. With the introduction of telephone exchanges in 1878 and the further evolution of the telephone (in the US), two-way traffic became conceivable.<sup>45</sup> It took a while before the telephone was viewed as a separate useful communication means. The telephone was merely seen as

<sup>44</sup> De Wit, *Telefonie*, p. 34.

<sup>45</sup> De Wit, *Telefonie*, pp. 43-45.

an extension of the telegraph. In its very beginnings the telephone was called 'the speaking telegraph'. The contents of a telegram now could be communicated with the help of the telephone; it saved you a walk to the telegraph office. And, just as with telegrams, the content of a telephonic message was strictly related to business.<sup>46</sup> The inventors of the telephone did clearly not foresee its huge social significance. Also, even in 1894, the usefulness of the telephone was still contested. In 1894, a reader of the 'Amsterdamsche Courant', stated that the telephone should absolutely not be treated as an equivalent to the telegraph. He could easily do without a telephone. Furthermore, he regarded the telephone definitely not useful to serve as a large national means for communication.<sup>47</sup>

In the Netherlands, first experiments with the telephone started in 1877. Employees of the Rijkstelegraaf as well as private persons performed tests with this new way for communication.<sup>48</sup> Four years later, the first public telephone network was realised in Amsterdam. In 1881, the 'Nederlandsche Bell Telefoon Maatschappij' (Dutch Bell Telephone Company; further abbreviated as NBTM) started a telephone service in Amsterdam with 49 subscribers. A year later, the NBTM opened a local telephone network in Rotterdam, while in The Hague and Utrecht local telephone networks were installed respectively in 1883 and 1884.<sup>49</sup> For a matter of fact, the NBTM was certainly not the only local network operator but it exploited the largest networks.

As in other countries, the telephone was primarily promoted as a device to support business, and not to support social contacts.<sup>50</sup> Early adopters of telephones related to the dominant economic activity of a city or region as De Wit already observed.<sup>51</sup> In Amsterdam, a relatively large group of financial intermediaries were among the first subscribers. For Rotterdam, the first subscribers were mostly active in the port of Rotterdam.<sup>52</sup>

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<sup>46</sup> De Wit, *Telefonie*, pp. 43-45.

<sup>47</sup> National Archive (NA), Archive Hoofdbestuur Posterijen en Telegrafie 1893-1928, no. 2.16.21, inv. nr. 164, Verbaal hoofdbestuur 1 januari - 31 maart 1894 (incoming and outgoing mail 1 January 1894 - 31 March 1894), Brochure Amsterdamsche Courant, gevoegd bij brief van Minister van Waterstaat aan hoofdbestuur P & T, 17 januari 1894, no. 639 (leaflet attached to Letter of Ministry of Public Works to P & T, 17 January 1894, no. 639).

<sup>48</sup> De Wit, *Telefonie*, pp. 54-55.

<sup>49</sup> De Wit, *Telefonie*, p. 66.

<sup>50</sup> De Wit, *Telefonie*, pp. 62-63.

<sup>51</sup> De Wit, *Telefonie*, p. 83.

<sup>52</sup> De Wit, *Telefonie*, p. 83 and unpublished research memorandum by Adri Albert de la Bruhèze (April 2001).

Local networks functioned for the time being as isolated entities. As from the year 1888, the Minister of Public Works, Trade and Industry granted permission to the NBTM for the linking up of local networks. In this year, the first trunk (interurban) lines were laid between Amsterdam on the one side, and Haarlem and Zaandam on the other side.<sup>53</sup>

International telephony also became an option. In the Netherlands, the international telephone service opened at 1 November 1895. Subscribers to long distance telephony from Amsterdam, Rotterdam, The Hague and Dordrecht could then be linked to Antwerp and Brussels in Belgium and vice versa. The Dutch government operated these international telephone connections.

#### 5.4.2 Telephony 1900-1940

The use of the telephone gradually increased in the Netherlands. In 1882, after one year of service, the NBTM had welcomed 500 subscribers in Amsterdam, and, in 1884, around 400 in Rotterdam. The number of subscribers in both cities did rise but not explosively. In 1895, Amsterdam and Rotterdam counted respectively around 1750 and 750 subscribers. On a national level, the number of subscribers had risen to 2500 in 1885, and up to around 4600 ten years later.<sup>54</sup>

The local networks of Amsterdam and Rotterdam did not work properly despite the rather high subscription rates. According to De Wit, this was mainly due to the laborious concession system. If a company wished to operate a local telephone network, it needed a concession from both the national government, because telephony fell under its responsibility, and the local authorities while local public spaces needed to be rearranged for the construction of a telephone network. Apart from this bureaucratic rigmarole, nothing was arranged after the concession had ended. As a consequence, the NBTM was not very willing to invest in their own networks. This situation led to a faltering telephone network. Since a large part of telephone traffic took place in Amsterdam and Rotterdam, the pressure on the telephone networks was larger than other Dutch cities.<sup>55</sup> As a result, the city councils of Amsterdam and Rotterdam decided to exploit a municipal telephone service to put an end to the defective telephone networks of the NBTM as from 1896. Not only the city councils of the two largest cities of the Netherlands looked for alternatives to

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<sup>53</sup> De Wit, *Telefonie*, pp. 106-107.

<sup>54</sup> De Wit, *Telefonie*, pp. 83-84.

<sup>55</sup> De Wit, *Telefonie*, pp. 83-84.

develop and exploit an adequate telephone network. Other municipalities also started to establish municipal telephone companies due to dissatisfaction with the prevailing telephone operator. Because private telephone companies failed to provide proper telephone networks and services, concessions for local telephone networks were solely given to municipalities as from 1898.<sup>56</sup>

In 1897, the government took over the long distance telephone network of the NBTM at the instigation of the Parliament since an adequate functioning of long distance telephony was considered important to Dutch society and the economy. Before, the government had shown some hesitancy to be actively involved in telephony. The government feared that telephony would lead to a decrease in use, and thus incomes, of the government's telegraph service. Yet, after several years of co-existence, this was not the case. In general, domestic telegraph traffic even increased although at several specific lines, telegraph traffic decreased. Furthermore, if a telegraph line showed a decrease in use, not only long distance telephony was to blame. The enhanced post service and railway traffic were also seen as causes for diminished telegraph traffic at particular telegraph lines.<sup>57</sup> The idea grew that well functioning telephone networks were of national importance, and so, the national authorities had an obligation to take care of that. In 1904, this obligation was arranged legally. Since then, the Dutch government started to take over local networks as well. Formerly it only took care of long distance and international telephony. Initially, the state focused on local networks which were operated by private companies with ending concessions. Later, that is from 1917, telephone networks exploited by municipalities were also taken over. Except for those of the three largest cities (Amsterdam, Rotterdam and The Hague), the state owned all telephone networks as from 1927. This situation ended in 1940; the Germans put every telephone line under the state's supervision.<sup>58</sup>

#### *5.4.3 Developments in telephone infrastructure*

With a local telephone call, a switchboard operator linked the two callers. After the local networks were linked up, another switchboard operator came in to contact the called person in that place. This procedure could result in long waiting times or erroneous connections. Since 1907, the P & T

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<sup>56</sup> De Wit, *Telefonie*, p. 124.

<sup>57</sup> De Wit, *Telefonie*, p. 93.

<sup>58</sup> De Wit, *Telefonie*, pp. 124-129 and p. 192.

offered the possibility to rent a private telephone line with 24 hour per day availability. Such a line was used to, for instance, connect two offices of the same firm.<sup>59</sup> We have to bear in mind that switchboard operators were still involved to make the connection; a switchboard operator of office A made contact with a switchboard operator at office B. The annual rent for such a connection was fl. 4500 (in real cost fl. 27767)<sup>60</sup> if the distance between the connected premises was less than 15 kilometres. In 1919 this sum was raised to fl. 13.000 (in real cost fl. 41280,70) per year. If the distance was more than 15 kilometres the subscriber owed an annual rent of fl. 7000 (in real cost fl. 43193,18) to the P & T and as from 1919, the sum totalled fl. 20.000 (in real costs fl. 63508,77).<sup>61</sup> Hence, the costs were considerable.

Another disadvantage of the manual switchboard system was that it did not pay to install a switchboard and an operator in remote areas. As a consequence, rural areas were deprived of telephone services; a type of fast communication that could be very convenient in case of emergency or to order food articles. In order to resolve these problems, automatic telephone exchanges were introduced. In 1911, the municipal telephone company of Amsterdam installed a semi-automatic telephone exchange. Semi-automatic implies that one still had to contact a switchboard operator who dialled the number instead of plugging the lines into the switchboard.<sup>62</sup> Eleven years later, Amsterdam switched over to a fully automatic telephone system.<sup>63</sup>

The municipal telephone companies appeared to be more decisive concerning the automation of their telephone networks than the national PTT. The PTT operated smaller telephone networks than those of Amsterdam, Rotterdam or The Hague. The automation of the Dutch telephone network started off more seriously after PTT engineers had seen successful experiments with automatic telephony in Switzerland for small telephone networks in the 1920s. The PTT initiated an ambitious project at the beginning of the 1930s with the aim to automate the entire Dutch telephone network within fourteen years. Already in 1940, 82 percent of

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<sup>59</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 151.

<sup>60</sup> 1970=100

<sup>61</sup> HAAA, RB, inv. nr. 93, Uittreksel Staatsblad no. 606 (1919) (Abstract government gazette).

<sup>62</sup> *Gedenkboek Gemeente telefoon Amsterdam 1896-1936* (Amsterdam 1936), pp. 63-64.

<sup>63</sup> G. Hogesteeger en R.A. Korving (1990) *Bellen voor de vrijheid. Illegale telefoonverbindingen in de Tweede Wereldoorlog* (Stichting het Nederlandse PTT- museum; 's Gravenhage) p. 27.

the local networks were automated while 50 percent of interurban traffic passed was transferred through automatic exchanges.<sup>64</sup>

World War II severely disturbed the automation process. Unlike the national telegraph network, the telephone infrastructure was seriously damaged during the invasion of the Germans. Furthermore, German occupiers restricted telephone traffic to a large extent. They reserved a part of the capacity to themselves. German women were even brought in to work as switchboard operators. In 1941 the Germans determined that new subscriptions were only honoured if the subscriber could prove the telephone was vital ('*lebenswichtig*') to him or her. This implied that mainly doctors and hospitals could apply for a telephone subscription. In 1943, the German occupier decided that subscribers to whom the telephone was indispensable in war ('*kriegswichtig*') could keep their connection; all others were disconnected. In 1944, only a small group had the disposal over a functioning telephone connection.<sup>65</sup>

After World War II, the Dutch telephone network was devastated. Telephone exchanges were destroyed (both by the Germans and the Dutch resistance). Besides, the Germans had robbed thousands of telephones as well as telephone cables.<sup>66</sup> The Dutch government aimed at reconstructing telecommunication infrastructure as soon as possible, since it was considered of great importance to trade and industry. However, the necessary materials needed to be imported since no Dutch telecom industry existed. Several countries had to deal with the same urgency so large demands for the necessary materials existed. Hence, the supply of the necessary materials was lacking.<sup>67</sup> Another factor that slowed down the reconstruction of the telecom infrastructure were the uncertainties concerning the PTT budget since the Minister of Public Works, under which the PTT fell, had a large influence on its finances. For instance, during the Korean War in 1951-1952 and the mild recession at the end of the 1950s, the government cut back the PTT's budget. Meanwhile the demand for telephone connections and subscriptions grew intensively. The PTT could not comply with the requests at all which led to long waiting lists. In 1960, around 36.000 people waited for a telephone connection, in

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<sup>64</sup> W.O. de Wit, 'Het communicatielandschap in de twintigste eeuw; de materiële basis' in: J.W. Schot e.a. (red.) (2002) *Techniek in Nederland in de twintigste eeuw. Deel V Transport en Communicatie* (Walburg Pers; Zutphen) pp.161-177, p. 167

<sup>65</sup> Hogesteeger en Korving, *Bellen voor de vrijheid*, pp. 35-36.

<sup>66</sup> Hogesteeger en Korving, *Bellen voor de vrijheid*, p. 37.

<sup>67</sup> Pieter D. Dorsman (1990) *Overloed en tekort. Het beleid van PTT rond de telefoonvoorziening in het Europoortgebied, 1957-1970* doctoraalscriptie EUR, pp. 33-34.

1966 156.000 people and 176.700 people in 1977. The waiting lists merely disappeared at the beginning of the 1980s which implied that almost all Dutch households had the disposal over a telephone connection.<sup>68</sup>

Table 5.5: Number telephone connections in the Netherlands, 1890-1985. <sup>69</sup>	
Year	Number telephone connections (in thousands)
1890	6
1900	19
1910	59
1920	116
1930	214
1935	257
1939	323
1950	507
1955	729
1960	1029
1965	1504
1970	2202

5.4.4 Radiotelephony and radiotelegraphy

After World War II radiotelephony and radiotelegraphy developed onwards and even became quite popular for sending coded messages. One reason for this increased popularity was the enhanced reliability due to the introduction of the so-called TOR-system (Teletype Over Radio) in 1947. Wireless radio regularly induced problems in transmitting the correct message since the content was sometimes ‘mutilated’. Because radiotelegraphic messages were sent in code language, misspelled letters could cause confusion. With the help of the TOR-system the receiving station was able to notice, by means of a special code, whether the contents of a message had changed during the transmitting phase. If so, then the transmitting station automatically transferred the message once again.<sup>70</sup>

<sup>68</sup> Onno de Wit (1995) ‘Langs de lijnen van geleidelijkheid: de telefonie in Nederland als object van staatszorg, 1877-1989’ in: Rathenau Instituut, *Toeval of noodzaak? Geschiedenis van de overheidsbemoeienis met de informatievoorziening* (Rathenau Instituut; Den Haag) pp. 71-127, p. 123; De Wit, ‘Het communicatielandschap in de twintigste eeuw’, p. 168.

<sup>69</sup> Hogesteeger, *Van lopende bode tot telematica.*, p. 230.

<sup>70</sup> Hogesteeger, *Van lopende bode tot telematica.*, p. 184.

A new wireless telegraphy service was introduced in 1963, namely 'semafonie'. A great advantage was that the subscriber could quite easily carry with a 'semafoon', although in its starting period it appeared to be quite large. A semafoon was a device that received radio signals and indicated who had called the carrier of the semafoon since a semafoon did not receive speech. So, after a subscriber had been called, he or she needed to find a telephone to contact the sender of the message.<sup>71</sup>

The PTT gave serious attention to radiotelephony after 1945. A PTT committee advised to establish: (1) a public national network ('Openbaar Landelijk Net': OLN) to facilitate radiotelephony; (2) local networks (one fixed station which covered a limited area); and (3) private networks (users with their own network and their own frequency, without access to the OLN).<sup>72</sup> The PTT placed ground stations (basis stations) that covered an area covering a radius of 25 kilometres. The OLN welcomed its first subscriber in 1949. The number of subscribers to the OLN gradually increased from 300 in 1956 to 2600 in the peak year 1978. In March 1980 a renewed network went on air, named ATF-1 (autotelefoonnet). In 1994, the fourth version of ATF, ATF-4 or better known as GSM (Global System for Mobile Communications) was put into service. GSM facilitated mobile telephony all over Europe and in many countries over the world for twenty-four hours per day.<sup>73</sup>

The PTT installed several local networks to meet the second advice of the PTT committee. The ports of both Amsterdam and Rotterdam used such a network as did the eastern part of the 'Flevoland' province; the so called 'Poldernet'.<sup>74</sup> Private networks were also introduced according to the third advice. In 1957, the PTT put into use a private network for shipping traffic which became known as 'marifonie'.<sup>75</sup> Nowadays, applications of transmitting messages, both written and spoken, by radio waves are still widely used in maritime and mobile communication.

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<sup>71</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 202.

<sup>72</sup> Jacques Caspers (1996) 'Mobiele communicatie in historisch perspectief: de wereld van voor de handhelds', *Informatie & Informatiebeleid* vol. 14, no. 1, <http://www.cram.nl/cram/ieni/960102.htm>, p. 4 and 7.

<sup>73</sup> Caspers, 'Mobiele communicatie in historisch perspectief', pp. 6 - 7; see also W.O. de Wit (2002) 'De ICT-revolutie' in: J.W. Schot e.a. (red.) *Techniek in Nederland in de twintigste eeuw. Deel V Transport en Communicatie* (Walburg Pers; Zutphen) pp. 261-275.

<sup>74</sup> Caspers, 'Mobiele communicatie in historisch perspectief', p. 6.

<sup>75</sup> Hogesteeger, *Van lopende bode tot telematica*, p. 202.



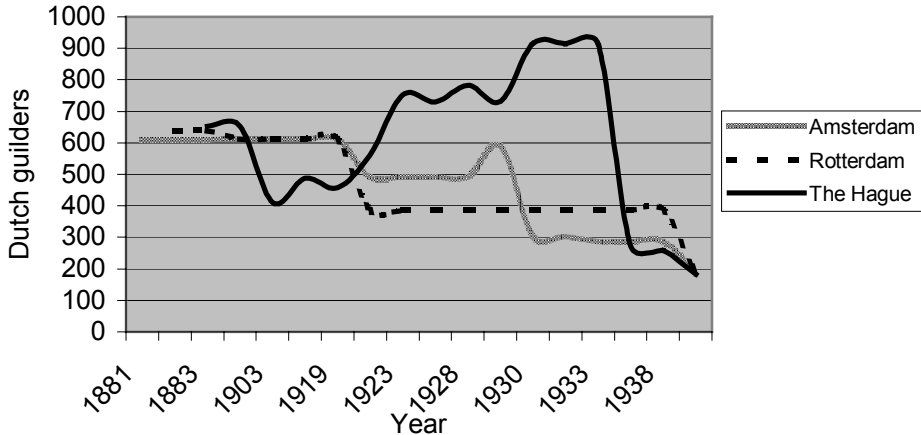
5.4.5 Tariffs and telephone costs in the Netherlands<sup>76</sup>

In the starting period, subscribers paid a fixed annual subscription rate without having to paying additional costs for each telephone conversation. Next to that, subscribers paid single connection charges to be connected to the telephone network. Figure 5.2 shows the development of the height of subscription rates in the three largest cities of the Netherlands in real prices in the period 1881-1941. The reason to stop in 1941 is related to the fact that the municipal telephone services of Amsterdam, Rotterdam and The Hague were placed under control of the PTT on instigation of the Germans during World War II. Since this thesis focuses on business actors, the subscription rates for business activities are taken. Rotterdam and later on also Amsterdam distinguished between private and business subscribers. The Hague had its own way to establish the annual subscription rates. The height of the subscription rates depended on the number of telephone calls. We take the subscription rates that had to be paid for the maximum number of phone calls. Figure 5.3 shows the connection charges. Appendix A displays tables of the exact rates per period. We want to stress here that the figures are used to show trends in costs, not to explain the trends.

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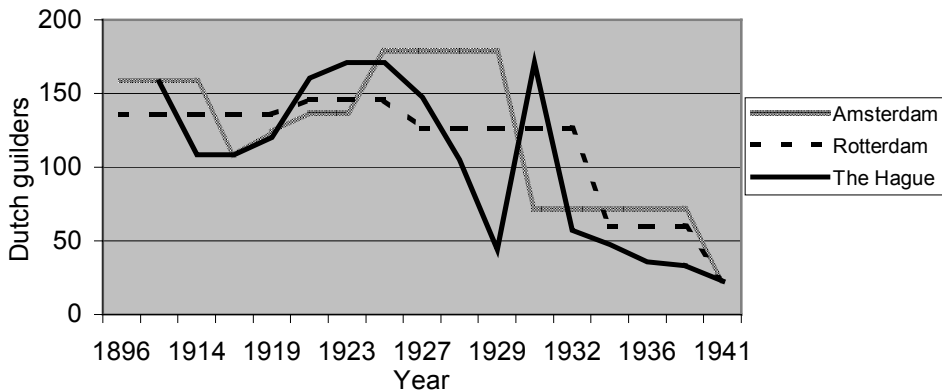
<sup>76</sup> In this section, the tariffs and costs of telephony in the Netherlands will be discussed. Two sources formed the basis of these reconstruction of costs, namely Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage). Linda van Goor has also provided an overview of telephone costs in her dissertation (Linda van Goor (2000) *Banken en industrie-financiering in de 19<sup>e</sup> eeuw*. (Tinbergen Institute; Amsterdam) p. 82) for the period 1881-1900. However, it is not clear which costs she shows. Since the y-axis ranges from zero to 1,2 we might conclude that call charges are displayed in nominal prices. This would be strange because call charges were only introduced in 1897.

Figure 5.2 Annual subscription rates Amsterdam, Rotterdam, The Hague in real prices (1970=100) 1881-1941



Source: Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementsstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).

Figure 5.3 Connection charges, Amsterdam, Rotterdam, The Hague in real prices (1970=100) 1896-1941



Source: Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementsstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).

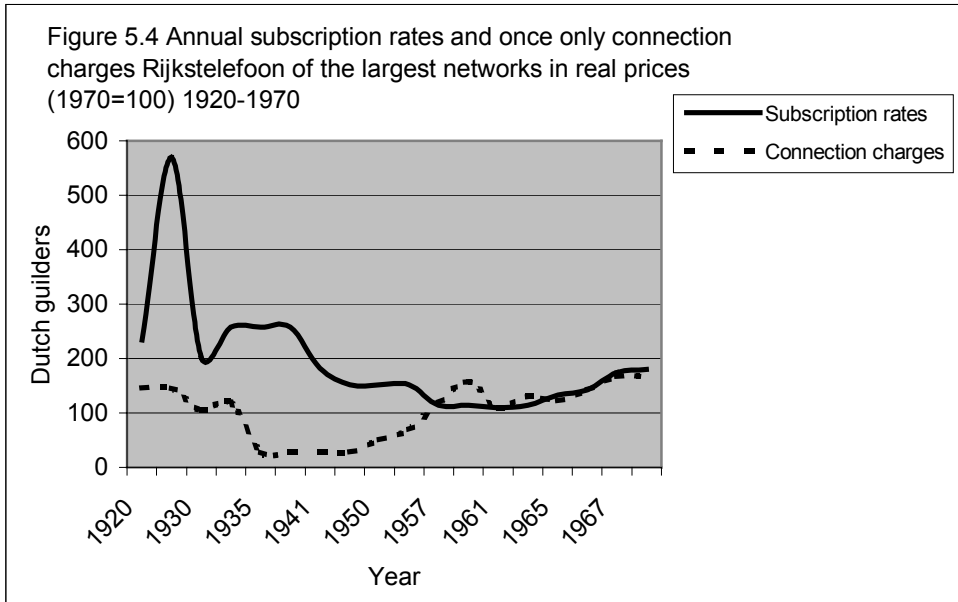
## Chapter 5

Both the annual subscription rates and the connection charges decreased considerably after its starting period. Yet, in Amsterdam and The Hague several fluctuations accompanied the process of decreasing costs. Especially striking is the increase in subscription rates and the decrease in connection charges in The Hague in the 1920s. Maybe, the The Hague telephone service aimed at stimulating the number of telephone connections by lowering the connection charges. These costs were recovered via increased subscription rates. In the 1930s the decrease of prices persisted. The diminishing annual subscription rates did not imply that subscribers paid less than before because the municipal telephone services introduced call charges in this period.<sup>77</sup>

Since 1920 the subscription rates for telephone networks, operated by the government, became more structured. The height of the subscription rates depended on the number of subscribers that were connected to the same telephone network. For a trunk connection, a subscriber did not pay any additional subscription rates, only a call charge. Figure 5.4 shows the development of the annual subscription rates of the 'Rijkstelefoondienst' of the largest networks (see appendix A for the exact sizes and accompanying subscription rates). We focus the largest networks since the actors that are studied in more detail in chapters four, six and seven of this thesis held office in the larger cities of the Netherlands. Figure 5.4 also displays the connection charges subscribers had to pay only once, for a connection to its local network.

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<sup>77</sup> Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).



Source: Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementsstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).

The subscription rates of the Rijkstelefoondienst also lowered over time. The sharp rise and fall of the rates in the 1920s is rather striking. We are not certain of the origin of this heavy fluctuation in price. In 1922, the Rijkstelefoondienst had changed the cost structure for the largest networks (more than 4000 subscribers). Before, subscribers to these networks paid a fixed subscription rate per year irrespective of the number of phone calls. In 1922, the Rijkstelefoondienst determined that the subscription rate in the largest networks depended on the number of phone calls. In figure 5.4 we have taken the maximum being 750 calls per year. However, this new tariff system does not explain the extreme increase in subscription rates. Like the rest of Europe, the Netherlands had to deal with the consequences

of the economic boom after World War II. One of these consequences existed in a 50 % increase of the real wages.<sup>78</sup> We know that salaries took up most of their budgets as of 1920.<sup>79</sup> Imaginably, the same sort of development took place at the Rijkstelefoondienst. Furthermore, more and more switch board operators were necessary to handle telephone traffic. Automation of telephone exchanges became inevitable. The connection charges also diminished but increased again as from the 1950s. The increase was a result of the problems the PTT faced with meeting all the requests for a telephone connection, as was touched upon in section 5.4.3. The PTT raised the connection charges substantively in order to deter people from requesting a telephone connection.

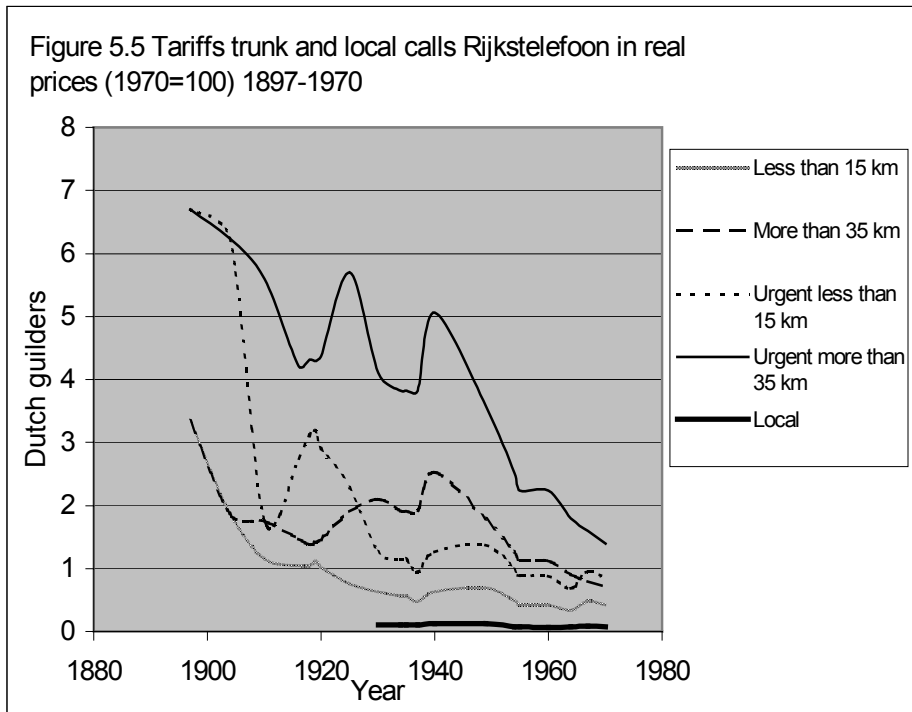
In addition to the subscription rates and connection charges, subscribers of the Rijkstelefoondienst who made use of interurban telephony paid a charge rate per telephone call.<sup>80</sup> Figure 5.5 demonstrates the development of these costs. The distance between the two networks and the length of the conversation determined the height of the charge rate. The PTT changed the 'distribution code' for establishing the charge rate several times (see appendix A). In order to make a cost comparison over a longer period, we have taken the example of 'near by' (less than 15 km) and of more than 35 km trunk calls with a maximum of three minutes. Since we expect that securities traders often made urgent telephone calls, these are included as well. Since 1930, the Rijkstelefoon also charged costs for local telephone calls although these remained very low. These costs are also showed in figure 5.5.

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<sup>78</sup> Van Zanden, *Een klein land*, p. 140.

<sup>79</sup> De Wit, *Telefonie*, p. 183.

<sup>80</sup> De Wit, *Telefonie*, p. 208, p. 213.



Source: Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementsstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).

The tariffs for telephone calls dropped but not smoothly. This development was similar to the other telephone costs such as the annual subscription rates. These costs also decreased but were accompanied with, sometimes heavy, fluctuations.

Commission traders thus 'lost' less costs for communicating over time. One would expect that these costs were somehow represented in the commissions that commission traders received for executing an order. For this thesis, it would be interesting to calculate the costs of communication as a percentage of the total commission fees. However, the height of commission fees was not based on a calculation of costs.<sup>81</sup> Therefore, we need to speculate on what part of a commission fee consisted of

<sup>81</sup> NA, Archief Bond voor den Geld - en Effectenhandel te 's Gravenhage, entrance no. 2.19.042.14, inv. nr. 155, Nota inzake de provisietaariefen van de Nederlandse Organisatie van het Effectenbedrijf, dd. 14 november 1962 (Memorandum concerning commission fees, written by the Dutch Organisation for Securities trade, 14 November 1962).

communication costs. For that, several assumptions need to be made. We have taken two situations: that of a provincial commission trader with a client that lived more than 35 kilometres away and that of an Amsterdam commission trader with provincial clients that also lived more than 35 kilometres outside Amsterdam. The criterion of ‘more than 35 kilometres’ offers the possibility to take a high price per telephone call. Suppose that a provincial stockbroker needed three telephone calls for executing an order; one to provide information, one to pass on the actual order to Amsterdam (assuming clients called themselves to pass on the order to their stockbroker), and one to inform the client on the results. Suppose that an Amsterdam commission trader needed two calls because he was present at the floor of the ASE. Finally, an order worth fl. 1000 is taken as an example. In chapters four and five, an overview of the commission rates and prices per telephone call were given. Based on that data, we composed figure 5.6 in which telephone costs are presented as a percentage of a commission fee, assuming a fl. 1000 securities order.

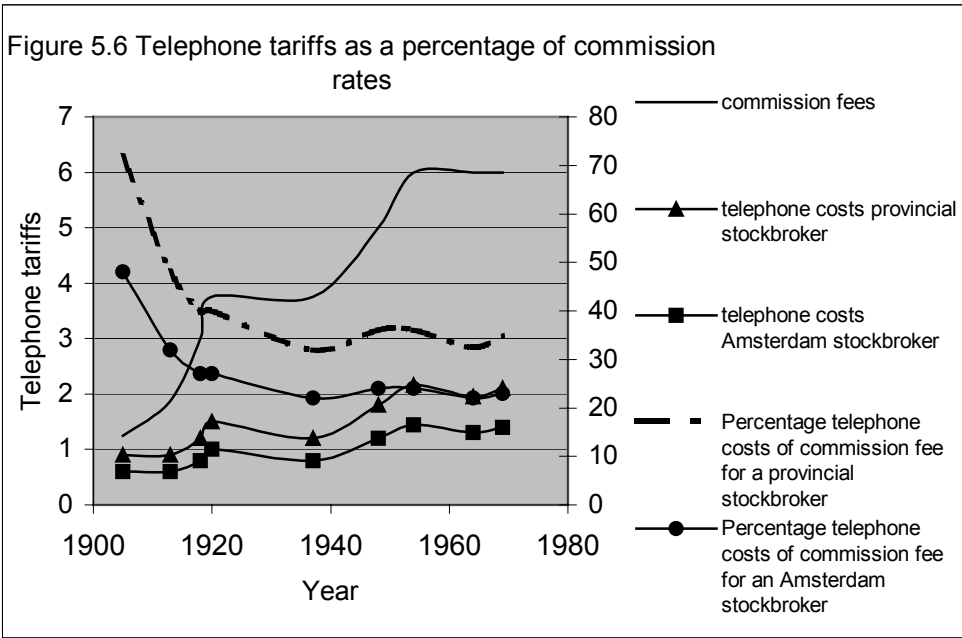


Figure 5.6 shows two developments. First, it demonstrates that the costs for communication became a smaller part of the commission over time. Second, it makes clear that provincial stockbrokers had to count in a larger part for communication costs than their Amsterdam counterparts and thus made less profit.

### 5.5 Conclusion

This chapter gave an overview of the availability of telecommunication technologies in the Netherlands. Several of these technologies were introduced in the Netherlands by private persons and were later on taken over by the Dutch administration. Dutch private persons experimented with electro-magnetic telegraphy in the 1840s but it became a public service in 1852. As concerned telephony, a private company opened the first public Dutch telephone network in Amsterdam in 1881. The role of the Dutch government consisted out of assigning the necessary concession to the NBTM. After the telephone services started to deteriorate, the Dutch government intervened and decided to establish a national telephone network. During the twentieth century, the possibilities to communicate developed further through the radio and existing communication technologies enhanced. With the information provided in this chapter, we are able to answer subquestion (d) *what are the available means of ICT in the Netherlands in general?* Table 5.7 summarises what information and communication technology became a public service at what date in the Netherlands.

<b>Table 5.6: Public availability ICT in the Netherlands.</b>	
<i>What type of ICT?</i>	<i>Year public service</i>
Telegraphy	1852
Telephony	1881
Radiotelegraphy	1904
Radio broadcasting	1924
Subscription telegraphy (Telex)	1933

Apart from the public availability of information and communication technologies, the costs for making use of them were studied (subquestion k). In line with chapter two, we expected to see a decrease in



communication costs over time while at the start of a new technology, costs are high but drop after more people start to use it and the technology evolves. Indeed, the figures show that in the initial stage of a communication technology the costs for making use of it are rather high. Telegram costs dropped quite fast after the introduction of telegraphy, remained low at the first half of the twentieth century and increased again in the 1960s. The increase in price seems to be related to the number of transmitted telegrams. The decrease in sent telegrams through the public service probably has to do with faster and more convenient information and communication technologies such as the telephone but especially the telex. The telex was in fact a telegraph device, primarily used in business and the press. The spread of telexes and the accompanying infrastructure, decreased the need to transmit telegrams by the public network because firms could directly transfer telegraphic messages to each other.

The costs of using the telephone were also quite high in its starting phase. In the end, the costs are considerably lower (except for the connection charges of the Rijkstelefoondienst) compared to the first years of telephony in the Netherlands although heavy fluctuations accompanied the cost reduction process. The annual subscription rates of the The Hague municipal telephone service were even higher in the period 1923-1935 in comparison to its starting period around 1900. The variations in subscription rates might be the result of the developments in the Dutch telephone networks. Initially, the installation of a manually operated telephone network brought along high costs. An increase in these networks led to decreasing costs due to advantageous scale effects. Further developments however resulted in disadvantages of scale; the number of switch board operators necessary to operate the ever extending telephone networks grew extensively as did their salaries. Automatic telephone exchanges reduced the need for switchboard operators. Surely, automatic telephone exchanges induced high costs in their introductory phase but led to a decrease in costs after having operated for a period of time. The conclusion on the development in 'communication' costs thus must be that they are rather high in the initial phase of a new information and communication technology but drop, although not gradually, after it is more widely used and adopted. Costs can increase again after a communication technology ages.

## 6. The Stock Exchange as a Telecommunication Junction

### 6.1 Introduction

In this chapter, we focus on the available telecommunication technologies in the Exchange buildings of Amsterdam. The information provided in this chapter, helps to find an answer to subquestion (e) *what means of ICT were used in the Dutch securities trade?* The chapter is structured according to the different Exchange buildings that accommodated the securities trade. We will begin with the Zocher Exchange since this was the first building that housed telecommunication technologies, starting with the electro-magnetic telegraph. Section 6.3 discusses the telecommunication technologies in the Berlage Exchange that hosted securities trade from 1903 to 1913. Since 1913, the Amsterdam securities traders practised their profession from the Cuypers Exchange. The available telecommunication technologies that were present in that exchange building will be dealt with in section 6.4. This chapter thus lists what kind of telecommunication technologies became available in what period at the Amsterdam Stock Exchange. In the previous chapter, we have done the same for Dutch society at large. Section 6.5 will compare the results of both chapters. We expect that the newest telecommunication technologies were quickly available at the ASE, irrespective of its costs.

### 6.2 The 'Zocher Exchange' (1845-1903)

After the establishment of the Rijkstelegraaf in 1852, a telegraph office was located at the Zocher Exchange. Just as the post office, the telegraph office was located at the entrance of this building. Messages, either per mail or per telegram, could be sent to and from the Exchange building. The telegraph became an important aid for trade in general. Already after its

first year of existence, the executives of the Rijkstelegraaf were surprised of the large extent traders, made use of the telegraph service. As a result, the Amsterdam office of the Rijkstelegraaf already needed to expand its facilities in 1853.<sup>1</sup> In 1854, D. Crommelin, an Amsterdam financial intermediary, stated that if one wanted to trade in securities in large quantities, one could not do without the telegraph. However, Crommelin complained that this 'beautiful' invention in communication, did cost a lot of money.<sup>2</sup>

As from 1855, the Rijkstelegraaf expanded the telegraph connections between Amsterdam and Rotterdam, in particular to comply with the demand of sending telegrams as quick as possible, during the official stock exchange hours of the Exchange.<sup>3</sup> Messengers of the Rijkstelegraaf brought telegrams with other destinations than Rotterdam, from the Exchange building to the main office of the Rijkstelegraaf. From this main office, these telegrams were relayed to the rest of the Netherlands and, to the rest of the world.

At the end of the 1860s, a new central telegraph office needed to be built in Amsterdam. Securities traders stressed the fact that this office had to be located in the direct vicinity of the Exchange building while this would benefit the securities trade. Since all important telegraph lines started or ended at the central telegraph office, it was sensible to keep the lines to this office as short as possible to prevent disturbances and delays. The stockbrokers pointed out that the securities trade was completely dependent on the telegraph and without it, the securities trade would not mean a thing. The telegraph became so important because it gave quotes of foreign stock exchanges, also during the opening hours of the Amsterdam Exchange. In Amsterdam, trade in shares and bonds mainly took place on the basis of these prices.<sup>4</sup> A society of stockbrokers, the 'Effectensociëteit', developed plans to distribute Amsterdam quotes by telegraph in 1861. However, the costs to establish such a service were simply too high:

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<sup>1</sup> BMvC, Ministerie van Binnenlandse Zaken, *Verslag aan den Koning over de openbare werken in het jaar 1853, "Telegrafie"* (Ministry Domestic Affairs, Annual Report to the King concerning the Public Works over the year 1853, "Telegraphy"), p.111.

<sup>2</sup> N.W. Posthumus (1921) 'Nota over den toestand van de Amsterdamsche handelshuizen in het jaar 1854', in: *Economisch-Historisch Jaarboek* vol. 7 (NEHA: Amsterdam) pp. 196-209, p. 207.

<sup>3</sup> BMvC, Ministerie van Binnenlandse Zaken, *Verslag aan den Koning over de openbare werken in het jaar 1855, 'De toestand der telegrafen in Nederland*, (Ministry Domestic Affairs, Annual Report to the King concerning the Public Works over the year 1855, "the situation concerning the telegraphs in the Netherlands") p. 3.

<sup>4</sup> GAA, AKvKA, no. 5287, inv. nr. 246, Ingekomen stukken 1869, 'Een hoofdamtenaar bij den Rijkstelegraaf', 2 februari 1869 (Incoming mail, 'A civil servant at the States Telegraph Service', 2 February 1869).

around 2.880 Dutch guilders per year whereas the annual rent of the society's building added up to 2.200 guilders.<sup>5</sup>

At the end of the nineteenth century the Amsterdam Exchange was connected by telegraph lines to the Exchanges of Rotterdam, Berlin, Brussels, Frankfurt am Main, London and Paris. Telegrams with other destinations, or telegrams that contained more than fifty words, were sent to the main office of the Rijkstelegraaf in Amsterdam by pneumatic tube that was installed in 1896.<sup>6</sup> When the Exchange of Berlage opened in 1903, every three minutes messages for telegrams were forwarded to the main office of the Rijkstelegraaf by a pneumatic tube.<sup>7</sup> Table 6.1 displays the amount of telegrams offered at the Rijkstelegraaf office in the Zocher Exchange. It also shows the relation between the number of sent telegrams from the Netherlands and from the Zocher Exchange. Especially from the moment international destinations became available, the number of 'exchange' telegrams comprised a considerable amount of the national total of sent telegrams.

Communication facilities expanded with the coming of the telephone. Since 1884, the NBTM exploited a telephone bureau as from 1884 in the Zocher Exchange. This telephone bureau was located near the corner of the stockbrokers.<sup>8</sup> The NBTM offered the possibility to call the Exchange during opening hours. An employee of the telephone bureau noted who had called and gave this note to the person concerned who could then decide to phone back or not.<sup>9</sup> During the discussions on the alteration plans of the Zocher building at the end of the nineteenth century, it became evident that the stockbrokers highly appreciated the vicinity of this telephone bureau since it meant 'one of the few comforts of the Exchange'.<sup>10</sup> Stockbrokers also took their own initiatives to enhance ways to obtain information, relevant to securities trade. For instance, in 1900, Rotterdam stockbrokers, united in the Vereeniging van

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<sup>5</sup> Jonker, *Merchants*, pp. 151 and 310.

<sup>6</sup> NA, Archive Hoofdbestuur Posterijen en Telegrafie 1893-1928, no. 2.16.21, inv. nr. 179, Verbaal "hoofdbestuur" 1 juli- 30 september 1899, 'Algemeene instructie voor den dienst op de kantoren der Rijkstelegraaf', 10 juli 1899, no. 8553 (incoming and outgoing mail 1 July 1899 - 30 September 1899, (General instructions for the Rijkstelegraaf) 10 July 1899, no. 8533).

<sup>7</sup> Ten Brink and Schell, *Geschiedenis*, pp. 341-342.

<sup>8</sup> Archive Euronext, *Jaarverslag 'Vereeniging voor den Effectenhandel' 1893*, (*Annual report 'Vereeniging voor den Effectenhandel' 1893*), p. 29.

<sup>9</sup> *Officieele Gids der Nederlandsche Bell-Telefoon Maatschappij* (juli 1891).

<sup>10</sup> Archive Euronext, *Jaarverslag Vereeniging voor den Effectenhandel' 1893* (*Annual report 'Vereeniging voor den Effectenhandel' 1893*), p. 27.

Table 6.1: Number of telegrams offered at the office of the Rijkstelegraaf at the Zocher Exchange compared to the national total of sent telegrams, 1878-1889.

Year	Rotterdam	Paris	Brussels	Berlin	Frankfurt am Main	London	Total	Total sent; domestic and abroad	Percentage
1878	39.724						39.724	1.675.000	2,3
1879	42.369						42.369	1.890.000	2,2
1880	45.032						45.032	2.375.000	1,9
1881	47.041	9.390	25.295	44.033	2.997	15.794	144.550	2.459.000	5,9
1882	40.637	16.711	26.786	41.809	6.774	39.209	171.926	2.523.000	6,8
1883	35.683	9.562	21.412	22.807	4.439	29.425	123.328	2.612.000	4,7
1884	40.485	8.994	14.808	26.690	4.226	37.511	132.714	2.541.000	5,2
1885	42.190	7.714	14.050	30.125	4.137	57.126	155.342	2.525.000	6,1
1886	46.227	15.617	16.013	24.557	6.856	67.051	176.321	2.582.000	6,8
1887	47.376	12.195	18.121	30.137	5.153	62.180	175.162	2.589.000	6,8
1888	45.656	7.963	22.550	46.449	5.038	66.850	194.506	2.710.000	7,1
1889	48.161	14.349	26.765	57.769	5.911	49.007	210.962	2.803.000	7,2

Source: Library Museum for Communication, *Jaarverslagen Rijkstelegraaf* 1881, 1883, 1885, 1887, 1889 (*Annual Reports Rijkstelegraaf*); and Ten Brink and Schell, *Geschiedenis*, pp. 480-481.

Effectenhandelaren, requested a direct telegraph connection between their meeting rooms in the Rotterdam Exchange to the Amsterdam Exchange. As from January 1901, the Rotterdam stockbrokers could make use of this special service against fl. 2500 for the annual rent, plus additional costs for each sent telegram. They used this connection solely for the receiving of Amsterdam quotations during the official trade hours. Before and after these hours, the Rotterdam stockbrokers returned the authority over the telegraph connection to the P & T.<sup>11</sup>

### 6.3 *The 'Berlage Exchange' (1903-1913)*

The architect H.P. Berlage devoted a central place to communication means in his design for a new Exchange building. He situated the post, telegraph and telephone office in the entrance hall of the building that gave access to the trading floors.<sup>12</sup> The stockbrokers were privileged: they had a direct passageway at their disposal that connected the securities trade floor to the telephone bureau. They did not have to cross the public entrance hall to reach the telephone bureau as the grain traders had to do. Especially during the official stock exchange hours (13.30 -14.45 hrs), the entrance hall was often filled with people who wanted to take a look at the traders. Within the rooms that were rented by the VvdE such as the library and the billiards room, telephone facilities were installed so that members could use them for business. Business went on after the official trading hours, and even took place before the official trading time.<sup>13</sup>

The telephone facilities in the central hall did not always meet the requirements of the securities traders. In 1905, Labouchere Oyens & Co, an Amsterdam stockbroker, presented a petition to the Amsterdam Chamber of Commerce and Factories on behalf of a large group of commission traders and sworn brokers in the securities trade in which they stressed the importance for improvements to the interurban telephone service at the Exchange building. The undersigned stated that requests for interurban telephone connections increased daily. Commission traders and sworn brokers who maintained relationships in the province and even in foreign

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<sup>11</sup> NA, Archive Hoofdbestuur Posterijen en Telegrafie 1893-1928, no. 2.16.21, inv. nr. 533, Index op het verbaal "hoofdbestuur" 1900 no. 2901-4200 (Index incoming and outgoing mail 1900 no. 2901-4200), p. 3003 and, inv. nr. 538, Index op het verbaal "hoofdbestuur" 1901 no. 3021-3620 (Index incoming and outgoing mail 1901 no. 3021-3620), p. 3088.

<sup>12</sup> Nederlands Architectuur Instituut (NAI: Dutch Architecture Institute), Rotterdam, file H.P. Berlage Nzn, microfiche 77, 65.113-65.118.

<sup>13</sup> NAI, file H.P. Berlage Nzn, microfiche 77, 65.113-65.118; Archive Euronext, inv. nr. 3946A, *Jaarverslag Vereeniging voor den Effectenhandel* 1905 ( *Annual report Vereeniging voor den Effectenhandel* 1905), p. 9.

countries, needed to contact their clients during trading hours to pass on prices, to receive orders, and to inform their clients about the results of concluded orders. If every broker intended to use interurban telephone lines, they had to wait a long time so that the purpose of the presence of telephones was lost. The petitioners furthermore stressed that this was especially the case since interurban telephone lines were also made available to the commodities traders. They ended with a plea for more interurban telephone booths and additional telephone personnel.<sup>14</sup> According to the board of the Amsterdam Chamber of Commerce, the Post and Telegraph service was aware of the poor interurban telephone facilities at the Berlage Exchange. The director-general of the P & T responded that the necessary adjustments were going to be executed to meet the requirements of the traders.<sup>15</sup>

#### 6.4 *The 'Cuypers Stock Exchange' (1913-1998)*

##### 6.4.1 *The 'Cuypers Stock Exchange' (1913-1927)*

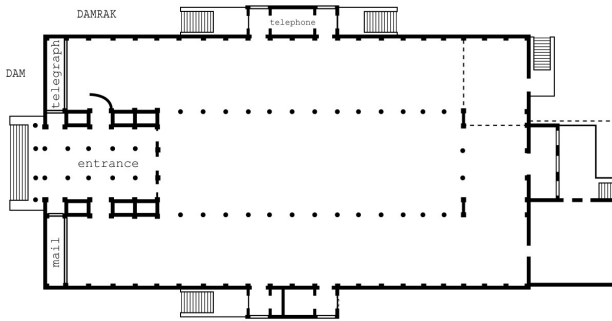
Within the Cuypers building, telecommunication technologies occupied an even more prominent place than before. Now, the stock exchange booths that surrounded the trading floor were equipped with telephones. The stockbroker did not have to leave the trading floor any longer to contact his office or clients and vice versa. Stockbrokers that could not afford the annual rent of such a stock exchange booth, or in case all were already let, made use of the telephone bureau that was located in the vicinity of the stock exchange floor or of the telephones in clubrooms of the VvdE. Besides a telephone office, a post and telegraph office was situated in the Cuypers building. Domestic telegrams were sent immediately from this office; international telegrams were transmitted by a subterranean pneumatic connection, just as in the Berlage Exchange, to the main office of the 'Rijkstelegraaf' and then relayed to the rest of the world. As from the 1920s, the Western Union Telegraph Company offered an alternative. This company owned an office in the Cuypers building from which a direct

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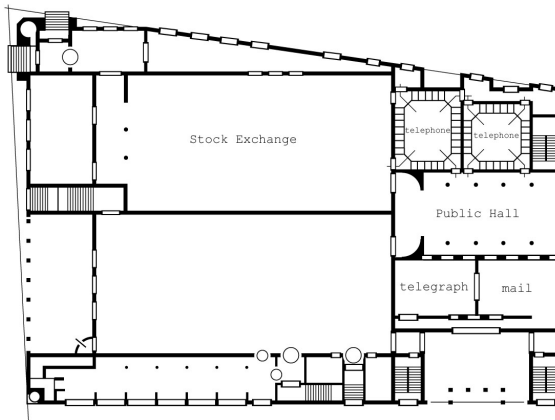
<sup>14</sup> GAA, AKvKA, inv. nr. 317, Ingekomen stukken 1905, Adres van Labouchere, Oyens & Co, A'dam aan KvKA, 3 maart 1905, nr. 47, (Incoming documents 1905, Letter from Labouchere, Oyens & Co, A'dam to KvKA, nr. 47, 3 March 1905).

<sup>15</sup> GAA, AKvKA, inv. nr. 33, Notulen van de Kamer van Koophandel en Fabrieken Amsterdam 1905, 17 maart 1905 (Minutes Board 1905, 17 March 1905), and idem, inv. nr. inv. nr. 317, Ingekomen stukken 1905, Brief Directeur -Generaal P.& T. te Den Haag aan KvKA, 24 mei 1905, nr. 123 (Incoming documents 1905, Letter from director-general of the State's Post and Telegraph Service to KvKA, nr. 123, 24 May 1905).

Zocher Exchange



Berlage Exchange



Cuypers Exchange

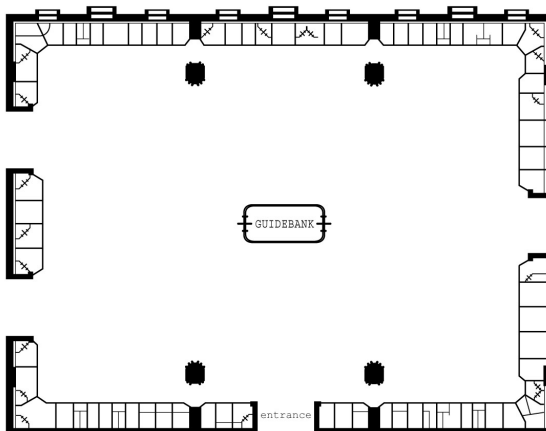




Figure 6.1: After the introduction of the telephone at the Zocher Exchange in 1884, telecommunication technologies obtained a prominent place in the Exchange buildings. In the Cuypers Exchange, the trade floor was surrounded with stock exchange booths that were filled with telephones.

*Copyright figure: Foundation History of Technology.*

telegraph connection ran to the New York Stock Exchange via the London Stock Exchange. Western Union made use of 'verreschrijvers'.<sup>16</sup>

In addition to making use of the existing information and communication possibilities, financial intermediaries started to create their own telecommunication infrastructures in the 1920s. In 1920, the P & T reported to the Minister of Foreign Affairs that a group of Amsterdam bankers had taken the initiative to establish a Dutch cable company in cooperation with Western Union with the aim to construct telegraph lines between the Netherlands, Germany and from there to the Azores archipelago. The idea was that, from this group of islands, the United States was reached with a telegraph cable of the Western Union. Apparently, these Amsterdam bankers were not satisfied with the existing telegraph connection between the Netherlands and the United States in that period. However, the German Telegraph Administration refused to co-operate and the whole enterprise was cancelled.<sup>17</sup>

A more successful initiative was taken in the same year. The NSF requested the Minister of Public Works in 1920, to license the establishment and exploitation of a radio service that passed through the prices of active securities during the official trading hours. A person spoke the prices in code into a microphone. The NSF figured that this type of information would especially interest banks and commission traders from outside Amsterdam. This information could immediately be passed on to clients so that a heightened number of transactions was expected. Certainly, banks and commission traders made use of interurban telephone connections. Yet, these connections always involved the deployment of several, sometimes even four, switchboard operators before the caller could speak to the called person. In combination with structural

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<sup>16</sup> A.W. de Jongh (1926) *Gedenboek 1876-1926. Vereeniging voor den Effectenhandel te Amsterdam* (Vereeniging voor den Effectenhandel; Amsterdam) pp. 97-99.

<sup>17</sup> NA, Archive Staatsbedrijf der Posterijen, Telegrafie en Telefonie. Kabinet 1893-1934, no. 2.16.04.02, inv. nr. 19, Verbalen 1920, brief van de afdeling Posterijen en Telegrafie, gericht aan Min. van Bui. Za., 26 juli 1920, no. 5111 (incoming and outgoing mail 1920, Letter from P & T to Ministry of Foreign Affairs, 26 July 1920, no. 5111).

capacity problems (too few lines), an urgent telephone call could sometimes take up to three hours in 1920.<sup>18</sup> Hence, a radio service offered a solution for the problematic telephone connections for the securities traders in the province, and secondly, such a radio service decreased the necessity to contact Amsterdam financial middlemen for acquiring current price information.

The VvdE supported the NSF's request. The board of the VvdE sent a circular to its members, which led to an enthusiastic response. Particularly, members that possessed branch offices in the province reacted positively while they still depended on interurban telephone connections. In his reaction to the request, the Minister indicated that he preferred a public service but presumed that it would take a while before that would go into operation. Therefore, at the end of 1920, the Minister granted temporarily permission to the VvdE to establish, in co-operation with the NSF, a radio broadcasting service that would relay current stock market price from the stock exchange building to its subscribers.<sup>19</sup> The first experimental broadcasts started already at Christmas 1920, and during the summer of 1921, the first subscribers were provided with a receiving set. Impressive antenna's appeared on fifty bank buildings and on towers of churches. Every ten or fifteen minutes, prices of active stocks were transmitted in code.<sup>20</sup> The subscribers listened to this by means of a headphone and received the key to the code that was changed regularly. In 1926, 105 companies and institutions from outside Amsterdam had subscribed to this service that the VvdE offered as from 1921.<sup>21</sup>

A few years later, it became clear that the temporarily granted permission was not going to be renewed. The government decided to end all private initiatives in the field of radiotelegraphy and radiotelephony. In 1927, the PTT took over the stock exchange transmitting station. The PTT started a business news station, broadcasting from Scheveningen-Haven.<sup>22</sup>

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<sup>18</sup> De Wit, *Telefonie*, pp. 107 and 132.

<sup>19</sup> Ten Brink and Schell, *Geschiedenis*, p. 171. For a matter of fact, the NSF hired the transmitting station from the British Marconi Company that followed the experiments with great interest.

<sup>20</sup> at 1:30, 1:45, 2:00, 2:15, 2:30 and 2:45 hours ([www.stichtingvvd.nl](http://www.stichtingvvd.nl), 16 January 2004)

<sup>21</sup> Ten Brink and Schell, *Geschiedenis*, p. 171; W. Vogt ([1958]) *Spanne en Spanningen. De veertigjarige geschiedenis van de n.v. Philips' Telecommunicatie Industrie voorheen n.v. Nederlandse Seintoestellen Fabriek* (Meulenhoff; Amsterdam) pp. 71-74; De Vries, *Een eeuw*, p. 168.

<sup>22</sup> Ten Brink and Schell, *Geschiedenis*, pp. 174-175; De Vries, *Een eeuw*, Vogt, *Spanne en Spanningen*, p. 76.

#### 6.4.2 Stocktickers in the Netherlands

The VvdE started to look around for a new system for the quick broadcasting of quotations. The search for a new system led to countries such as the United States and the United Kingdom where respectively in 1867 and 1872, the stock ticker was introduced in substitution for the couriers that ran up and down from the stock exchange floor to the stockbroker offices with the latest stock market prices. A stock ticker was a telegraphic device that printed stock market quotations and important news announcements on a small paper strip, the tape.<sup>23</sup>

In 1927, a member of the VvdE, Mr A.H.H. Boissevain, stayed a short period in New York to visit his contacts. The VvdE asked him to study the stock ticker systems at Wall Street while he was there. As much as four companies operated a stock ticker service: Dow Jones News Ticker, Stock Quotation Company, New York Quotations Company, and the Western Union Telegraph Company. The first two companies made use of telephone lines for transmitting the information, and the latter two employed telegraph lines. The VvdE preferred the stock ticker systems that worked with telephone lines because they already had made some arrangements with the municipal telephone service of Amsterdam.<sup>24</sup>

Still, the VvdE contacted Western Union to fulfil its information needs although this company worked with telegraph lines, and not with the desired telephone lines, to operate their ticker service. Western Union already exploited a telegraph line from Amsterdam to New York so this company was already located in Amsterdam. An employee of Western Union, Mr J. Beenhouwer, functioned as the contact between Western Union and the VvdE. Western Union approved of the idea of setting up a Dutch 'Tikkerdienst' (ticker service) and was prepared to participate in it financially and by way of delivering the necessary devices.<sup>25</sup> Later, for unknown reasons, the Western Union withdrew its promises concerning financial participation but was still prepared to provide the necessary

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<sup>23</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Beschrijving tikkerapparatuur [1931] (Records 'Tikkerdienst and Telex', Description ticker equipment, [1931]).

<sup>24</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, brief van het bestuur van de VvdE aan de Gebroeders Boissevain, 14 februari 1927 (Records 'Tikkerdienst and Telex', , letter board VvdE to Bros. Boissevain, 14 February 1927); and nota werking tikkersysteem van de New York Quotation Company [1927] (memorandum concerning the working of the ticker system of the New York Quotation Company [1927]).

<sup>25</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, brief van J. Beenhouwer aan het bestuur van de VvdE, 14 mei 1930 (Records 'Tikkerdienst and Telex', letter J. Beenhouwer to board VvdE, 14 May 1930).

technical apparatus.<sup>26</sup> Apparently, Beenhouwer was caught by the idea and kept involved in the Tikkerdienst. He even became the main initiator of the whole enterprise. Beenhouwer started to send letters to financial intermediaries in Amsterdam to promote the ticker service. Within a short period of time, he organised eighteen companies that were willing to participate in the limited liability company, the Tikkerdienst. They all took a block of five shares of fl. 1000 per share. That brought its paid up capital to fl. 90000.<sup>27</sup> The shareholders were mostly Amsterdam financial middlemen as table 6.2 indicates:

<b>Table 6.2: Shareholders N.V. Tikkerdienst 1930.<sup>28</sup></b>	
<i>Firm</i>	<i>Place</i>
Amsterdamsche Bank	Amsterdam
Amsterdamse Liquidatiekas	Amsterdam
J. Beenhouwer	Amsterdam
Bank-Associatie	Amsterdam
Banque de Paris et des Pays-Bas	Amsterdam
Broekman's effectenkantoor	Amsterdam
De Twentsche Bank	Amsterdam
Heldring & Pierson	's Gravenhage
Incasso-Bank	Amsterdam
R. Mees & Zoonen	Rotterdam
Nederlandse Handel-Maatschappij	Amsterdam
Nederlands-Indische Escompto Maatschappij	Amsterdam
Nederlands-Indische Handelsbank	Amsterdam
H. Oyens & Zonen	Amsterdam
Patijn, Van Notten & Co	Amsterdam
Pierson & Co	Amsterdam
Rotterdamsche Bankvereniging	Amsterdam
B. Sanders Ezn.	Amsterdam
Vermeer & Co	Amsterdam

<sup>26</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, brief van J. Beenhouwer aan het bestuur van de VvdE, 12 augustus 1930 (Records 'Tikkerdienst and Telex', letter J. Beenhouwer to board VvdE, 12 August 1930).

<sup>27</sup> HAAA, archive RB, inv. nr. 525, statuten N.V. Tikkerdienst 1930 (founding papers N.V. Tikkerdienst 1930).

<sup>28</sup> HAAA, archive RB, inv. nr. 525, statuten N.V. Tikkerdienst 1930 (founding papers N.V. Tikkerdienst 1930).

After a successful trial period, the N.V.<sup>29</sup> Tikkerdienst started its services on 2 November 1931. The Tikkerdienst 'hired' a room in the Cuypers building in which the transmitting station was installed, paying a rent of 1000 Dutch guilders per year. Actually, the rent was a formality because the VvdE subsidised the Tikkerdienst fl. 1000 per year. The VvdE contributed to the Tikkerdienst also in another way: a chief 'guide' (an employee of the Guidebank) for the ticker service would be recruited. This chief guide had to collect the quotations that the VvdE put at its disposal free of charge, which he passed on to the employees of the Tikkerdienst at the transmitting room, whom in their turn, relayed the information to the subscribers of the Tikkerdienst. The chief guide received his salary for one half from the VvdE and the other half from the Tikkerdienst.<sup>30</sup>

In 1937, the Tikkerdienst introduced the possibility to project the small paper strip on a elongated screen. Such screens were placed on top of the Guidebank. Now, everyone on the trading floor could clearly see the information on the tape, without having to crowd around the boards or tickers.<sup>31</sup> Not only did the ways to view the information of the ticker expand, but also the types of information that were transmitted through the ticker were extended. The Tikkerdienst began with the opening quotations, the actual concluded affairs ('gedane affaires'), and the final quotations. The Tikkerdienst started to extend its services in the course of the 1930s. In 1932, quotations from dealings that were closed before official trading hours were transmitted via the ticker.<sup>32</sup> The Tikkerdienst also wanted to place tickers in the public entrance hall of the Berlage Exchange as from 1934. The VvdE was not exactly charmed by this request. The board of the VvdE feared that several firms would 'abuse' the information of the tickers by buying and selling securities from each other, against the prices printed on the tikker tape, without the mediation of the ASE. As a result, members of the VvdE would miss orders, and thus commission or courtage. According to the Tikkerdienst, this fear was unjust. On the

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<sup>29</sup> NV= naamloze vennootschap = limited liability company.

<sup>30</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, 'Huurovereenkomst tusschen de VvdE en de N.V. Tikkerdienst, augustus 1931 (Records 'Tikkerdienst and Telex', Rental agreement between the VvdE and the N.V. Tikkerdienst, August 1931); brief van het bestuur van de VvdE aan de N.V. Tikkerdienst, 13 augustus 1931 (letter VvdE to N.V. Tikkerdienst, 13 August 1931).

<sup>31</sup> HAAA, archive RB, inv. nr. 525, *Jaarverslag N.V. Tikkerdienst 1937* (Annual report N.V. Tikkerdienst 1937).

<sup>32</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, *Statistiekboeken N.V. Tikkerdienst [1943]* (Records 'Tikkerdienst and Telex', Statistics N.V. Tikkerdienst [1943]).

*The Stock Exchange as a Telecommunication Junction*

Leaflet N.V. Tikkerdienst, ca. 1940. (Museum voor Communicatie, Den Haag).



contrary, it would just result in more affairs.<sup>33</sup> Initially, no tikkers were placed in the Berlage Exchange. However, as we shall see later on, tikkers appeared in the Berlage building a few years later. Another extension of provided information by the Tikkerdienst were the prices of the affairs concluded after official trading hours as from 1938.<sup>34</sup>

The Tikkerdienst started its services in Amsterdam. The Tikkerdienst certainly aimed at expanding its network but to achieve that goal, arrangements needed to be made with telephone companies for the usage of interurban and local telephone lines.<sup>35</sup> In 1935, the Tikkerdienst extended its services to The Hague. The ticker messages were sent to a

<sup>33</sup> Archief Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Brief van N.V. Tikkerdienst aan de VvdE, 23 oktober 1934 (Records 'Tikkerdienst and Telex', letter N.V. Tikkerdienst to VvdE, 23 October 1934).

<sup>34</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Statistiekboeken N.V. Tikkerdienst [1943] (Records 'Tikkerdienst and Telex', Statistics NV Tikkerdienst [1943]).

<sup>35</sup> HAAA, archive Rotterdamsche Bank, inv. nr. 525, *Jaarverslag N.V. Tikkerdienst 1934* (Annual report N.V. Tikkerdienst 1934).

telephone exchange in The Hague. The The Hague department of the Tikkerdienst had hired two rooms in a nearby restaurant. From this restaurant, the messages were transmitted to the The Hague subscribers.<sup>36</sup> Plans existed to extend the service to Rotterdam. The board of the Rotterdam Association for Stockbrokers (Vereeniging voor Effectenhandelaren) pointed out the advantages of a stock ticker system; it should be no longer necessary to call to the Amsterdam Stock Exchange for information, only for passing through the orders. Hence, this meant a saving in costs for phone calls.<sup>37</sup> Apparently, the Rotterdam stockbrokers could not be persuaded since the Tikkerdienst has never operated in Rotterdam.

The national ambitions of the Tikkerdienst were realised in 1938. In co-operation with the VvdE and the PTT, the Tikkerdienst started to provide current price information through a private telex network.<sup>38</sup> Theoretically, everyone in the Netherlands could subscribe to this telex service provided that the necessary devices were purchased or hired. In contrast to the already existing telex network of the news agency 'Algemeen Nederlands Persbureau' (General Dutch Press bureau: A.N.P.), but similar to the public telex network of the PTT, this telex network used telephone cables for sending messages. A subscriber obtained an additional telephone line which ran between his office and an office of the 'Rijkstelefoon' service. So, although this subscriber might already have a 'normal' telephone connection and although he might have been linked up to the public telex network, the extra telephone line was still installed. In the case that the subscriber had already made use of the public telex network, he had a 'verreschrijver'. This subscriber could install a switch in order to change between the public telex network and the price telex network. The total subscription costs added up to fl. 800 à fl. 850 annually. This included the subscription rate to the price telex network, the costs for hiring a telex installation, costs for the additional telephone line and the costs for paper and typewriter ribbons.<sup>39</sup>

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<sup>36</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Beschrijving tikkerapparatuur [1931] (Records 'Tikkerdienst and Telex', Description Ticker Apparatus, [1931]).

<sup>37</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Circulaire VvdE aan haar leden, 29 oktober 1935 (Records 'Tikkerdienst and Telex', Circular board Vereeniging van Effectenhandelaren to their members, 29 October 1935).

<sup>38</sup> Ten Brink and Schell, *Geschiedenis*, pp. 125-126; HAAA, archive Rotterdamsche Bank, inv. nr. 525, *Jaarverslag N.V. Tikkerdienst 1937* (Annual report N.V. Tikkerdienst 1937).

<sup>39</sup> Archive De Nederlandsche Bank (Dutch Central Bank, further abbreviated as DNB), inv. nr. 1.42/49/1, telex en telegram verkeer 1937 (telex and telegram traffic 1937).

The Tikkerdienst started in Amsterdam with 33 subscribers against 17 in The Hague. Table 6.3 indicates that the number of subscribers initially rose steadily but stagnated during World War II :

**Table 6.3: Tikkerdienst number subscriptions at Amsterdam, 1931-1943.**<sup>40</sup>

<i>Date</i>	<i>Number subscriptions A'dam</i>	<i>Date</i>	<i>Number subscriptions A'dam</i>	<i>Date</i>	<i>Number subscriptions A'dam</i>
1 Nov. 1931	33	1 May 1936	37	1 May 1940	68
1 May 1932	32	1 Nov. 1936	36	1 Nov. 1940	65
1 Nov. 1932	31	1 May 1937	50	1 May 1941	67
1 May 1933	30	1 Nov. 1937	58	1 Nov. 1941	62
1 Nov. 1933	33	1 May 1938	57	1 May 1942	66
1 May 1934	35	1 Nov. 1938	66	1 Nov. 1942	72
1 Nov. 1934	36	1 May 1939	65	1 May 1943	67
1 May 1935	34	1 Nov. 1939	70	1 Nov. 1943	63
1 Nov. 1935	36				

**Table 6.4: Tikkerdienst number subscriptions at The Hague, 1935-1943.**<sup>41</sup>

<i>Date</i>	<i>Number subscriptions The Hague</i>	<i>Date</i>	<i>Number subscriptions The Hague</i>
1 Nov. 1935	17	1 May 1940	26
1 May 1936	18	1 Nov. 1940	27
1 Nov. 1936	18	1 May 1941	31
1 May 1937	23	1 Nov. 1941	33
1 Nov. 1937	24	1 May 1942	35
1 May 1938	24	1 Nov. 1942	36
1 Nov. 1938	23	1 May 1943	34
1 May 1939	23	1 Nov. 1943	32
1 Nov. 1939	26		

<sup>40</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Statistiekboeken N.V. Tikkerdienst [1943] (Records 'Tikkerdienst and Telex', Statistics N.V. Tikkerdienst [1943]).

<sup>41</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Statistiekboeken N.V. Tikkerdienst, [1943] (Records 'Tikkerdienst and Telex', Statistics N.V. Tikkerdienst [1943]).



A spokesman of the 'Rotterdamsche Bankvereniging' (Robaver) elaborated on the advantages of the tikker in a newspaper in 1930. The tikkersystem guaranteed promptness, correctness, and completeness while the information was printed directly on paper. This prevented mistakes and misunderstandings which, due to bad telephone connections, could occur when using the telephone. Especially provincial offices would profit from the tikker because they depended on interurban telephone calls of their main office or their Amsterdam commission trader. Another financial intermediary, H. Oyens and Sons, also favoured the tikkersystem above the telephone system because, first, prices of *all* executed orders of the main/active securities were printed on the tikker tape and not only the quotations of the time slots in which the official trade time was divided. Second, the information was received quicker and more constantly in comparison to the telephone. Third, a client could, if he had a tikker in his vicinity, independently keep up with the course of the quotations.<sup>42</sup>

The subscribers to the Tikkerdienst consisted mostly of financial firms such as banks, bankers, commission traders as is showed in appendix B. These companies often placed the tikkers in public places so that their customers could also have a look at it and inform themselves. The stockbrokers firm Louis Korijn & Co held office opposite the Stock Exchange building. Korijn & Co had a public reading and news room (Lees- en Tijdingzaal) within their office in which people interested in securities trade could read professional literature, and where Korijn & Co had hung up boards on which current quotations were written down. When the tikker was introduced, Korijn & Co hired a room in the Berlage building in which a tikker was placed for public use.<sup>43</sup> Korijn & Co immediately deployed the possibility of projecting the ticker tape on a elongated screen in 1937. The projection of the ticker tape prevented the pushing aside of people so that everyone had a clear view on what the tikker displayed.<sup>44</sup> Primarily to please their guests, also hotels like the Carlton subscribed to the Tikkerdienst. So, during a lunch, guests of the Carlton 'could combine pleasure with business', as their advertisements stated.<sup>45</sup>

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<sup>42</sup> HAAA, archief RB, inv. nr. 525, 'Het "tickersysteem" te Amsterdam' in: *De Maasbode* [1930].

<sup>43</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, advertentie Louis Korijn & Co, 27 januari 1934 (Records 'Tikkerdienst and Telex, 'Advertisement Louis Korijn & Co, 27 January 1934).

<sup>44</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, bericht van Louis Korijn & Co aan zijn klanten, 7 december 1937 (Records 'Tikkerdienst and Telex, Message of Louis Korijn & Co to its customers, 7 December 1937).

<sup>45</sup> 'Tikker op de Amsterdamse Effectenbeurs (I)', in: H.W. Guenst (1991) *Trommelpapper. 115 jaar Vereniging voor de Effectenhandel* (VvdE; Amsterdam) pp. 61-62.

Tikkerdienst traffic increased steadily: the number of subscribers expanded as did the profits of the Tikkerdienst (appendix B). Yet, World War II put a spoke in its wheel. The profits of the Tikkerdienst diminished during this war. The Tikkerdienst had a hard time starting up again after 1945 (see appendix B). Due to diminishing returns, the Board of the Tikkerdienst started to consider the possibility to transfer all shares to the VvdE. As from 1956, the VvdE owned the Tikkerdienst.<sup>46</sup>

The Tikkerdienst continued to expand its services. At the end of the 1960s, the Tikkerdienst provided the following information:

- Quotations of trade before official stock exchange hours;
- Opening quotations London, Frankfurt, Düsseldorf, Tokyo;
- Course of the quotations;
- All official quotations;
- Exchange rates (of foreign currencies);
- Final quotations Frankfurt and London;
- Opening quotations New York;
- News provided by the A.N.P. and averages of prices, volume (number of orders) and so on, provided by the 'Centraal Bureau voor de Statistiek' (Central Bureau for the Statistics: C.B.S.);
- All financial messages of the A.N.P. (for which one needed an extra subscription).<sup>47</sup>

Despite the extensive coverage of information, the Tikkerdienst plodded along. It served 109 subscribers, spread over Amsterdam and The Hague. These subscribers paid a subscription rate of respectively fl. 600 and fl. 675 per half year. Some of these subscribers had installed a tikker in their stock exchange booth. Also the Guidebank whose task it was to gather the concluded orders and pass them on to the employees of the Tikkerdienst, had placed several tikkers at its desks. The devices were primarily used as a convenient means to check earlier concluded orders. In the 1960s, two mechanics walked around on the stock exchange floor to repair and replace the tikker machines.<sup>48</sup> The fact that two mechanics were necessary implies that the tikkers broke down regularly. Indeed, in the 1960s the Tikkerdienst still worked with the same tikkers as in 1930. The machines had become obsolete so its parts were sparse and repairs costly. Besides

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<sup>46</sup> HAAA, archive RB, inv. nr. 525, Brief van N.V. Tikkerdienst aan aandeelhouders, 29 maart 1956 (Letter N.V. Tikkerdienst to shareholders, 29 March 1956).

<sup>47</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Nota betreffende situatie N.V. Tikkerdienst, 28 oktober 1969 (Records 'Tikkerdienst and Telex', memorandum concerning position N.V. Tikkerdienst, 28 October 1969).

<sup>48</sup> Interview G. van den Brink, who worked at the ASE from 1958 to 1996.

the outdated material, the P.T.T. demanded a different voltage with which the pulses were passed through. This demand would have to result in radical and thus costly alterations of the tikkersystem. Maybe, it was more useful to switch to a complete new system.<sup>49</sup>

The VvdE reconsidered the position of the Tikkerdienst in 1969.<sup>50</sup> The Board decided to end the transmission of prices and other types of relevant information by means of the tikker in 1971. The subscribers of the Tikkerdienst were offered to subscribe to the price telex network; 66 subscribers took the offer. The Tikkerdienst was converted into a private company (besloten vennootschap), carrying the name 'Beursnieuws B.V.' (exchange news), which was effectuated per 18 January 1972.<sup>51</sup> The elongated screens were replaced by Philip's illuminated news trailers.<sup>52</sup> Better alternatives (telex) and outdated technology thus led to the closure of the Tikkerdienst. Nowadays, the ticker tape still exists. Above the entrance of the Cuypers exchange, a news trailer displays current prices of securities. Also websites of stock exchanges offer the possibility to insert a news trailer on computer screens.

#### 6.4.3 Telecommunications at the Cuypers Exchange after World War II

In the after war period, not so many new but increasingly more and enhanced telecommunication technologies entered the ASE. Underneath the trading floor, several rooms were in use as 'clubrooms' (sociëteitszalen) by the VvdE. However, in the 1960s the frequency of its use diminished and it was decided that these rooms could be hired by the members. The banks and commission traders that hired these rooms 'stuffed' them with telephones, telexes, and stock tickers.<sup>53</sup> In 1954, the AVRO, a Dutch radio and television broadcasting association, started to broadcast a radio

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<sup>49</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Nota betreffende situatie N.V. Tikkerdienst, 28 October 1969 (Records 'Tikkerdienst and Telex', memorandum concerning position N.V. Tikkerdienst, 28 October 1969).

<sup>50</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Nota betreffende situatie N.V. Tikkerdienst, 28 October 1969 (Records 'Tikkerdienst and Telex', memorandum concerning position N.V. Tikkerdienst, 28 October 1969).

<sup>51</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Jaarverslag Beursnieuws B.V. 1971 (Records 'Tikkerdienst and Telex', Annual report Beursnieuws B.V. 1971).

<sup>52</sup> Archive Euronext, map Tikkerdienst en Telex, inv. nr. 818 II 131, Mededeling van VvdE, 24 september 1973 (Records 'Tikkerdienst and Telex', announcement VvdE, 24 September 1973).

<sup>53</sup> Interview mr. W. Wiegel who worked at the ASE from 1963 to 1982.

program called 'Beursplein 5' (the address of the ASE) live from the stock exchange floor.<sup>54</sup>

In 1971, a few specialists (hoekmannen) undertook a remarkable action. They had installed a private telephone system between their own stock exchange booth and stock exchange booths of other members of the VvdE. For instance, the company Mandersloot & De Bruin, a specialist in Shell Royal Oil securities, installed such a telephone system, connecting twenty nine members to their stock exchange booth. So did H. de Roos Jr. & Co, a specialist in AKZO shares, connecting eighteen other members. So, stock exchange employees not only used the telephones in the stock exchange booths to have contact with their offices or their clients, but also with each other. The aim of such a private telephone system was that members could call the stock exchange booths of the specialists to ask for a quotation without having to cross the stock exchange floor. Or, if a telephonic order came in, the stock exchange employee could call the specialist right away to conclude the order. A fast and direct quotation advice by the specialists was especially appreciated by the members.<sup>55</sup> In fact, within the stock exchange building an additional, dedicated information network was created.

The Quotations Committee did not approve the telephone systems that both Mandersloot & De Bruin and De Roos had placed without their permission.<sup>56</sup> The Quotations Committee feared that the public nature of the securities trade might be in danger as a result of these private telephone systems. The danger existed that trade would divert from the open corner (since Shell and AKZO were active securities) to the stock exchange booths of the specialists. Still, the Committee identified it as an efficient means to communicate and thus, the Committee, and also the board of the VvdE, were reluctant in prohibiting the private telephone systems right away.<sup>57</sup> The chairman of the Quotations Committee held a

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<sup>54</sup> RAO, archive Twentsche Bank, inv. nr. 2349, Folder aankondigingen radio-uitzendingen, uitgegeven door de VvdE [1961] (Leaflet published by VvdE that announces radio broadcasts from the stock exchange floor).

<sup>55</sup> Archive Euronext, inv. nr. 1990, Uitknipsel Notulen van de bestuursvergadering van de VvdE, 11 november 1971 (Clip out minutes meeting Board of the VvdE, 11 November 1971).

<sup>56</sup> Archive Euronext, Besluiten van de Commissie voor de Notering etc. Klachten inzake notering 1970 t/m (Decisions of the Quotations Committee etc. Complaints concerning quotations), inv. nr. 1604 B, Verslag van de vergadering d.d. 14 oktober 1971 van de Commissie voor de Notering (Report of a meeting of the Quotations Committee, 14 October 1971).

<sup>57</sup> Archive Euronext, Besluiten van de Commissie voor de Notering etc. Klachten inzake notering 1970 t/m (Decisions of the Quotations Committee etc. Complaints concerning quotations), inv. nr. 1604 B, Verslag van de vergadering d.d. 14 oktober 1971 van de Commissie voor de Notering (Report of a meeting of the Quotations Committee, 14 October 1971); and, inv. nr. 1990, Uitknipsel Notulen van de

questionnaire among the members who were connected to these telephone systems in order to gain more insight in the issue. Twenty firms were asked whether they had any objections to the removal of the private telephone system, if they made much use of the connections, and whether they could continue their affairs without these lines. All of the interviewees were prepared to give up the telephone lines in question, although some protested. For instance, Pierson, Heldring & Pierson used the internal telephone connections extensively, and would deplore their removal. In contrast, F. van Lanschot would not regret the disappearance of the lines.<sup>58</sup> In 1974, the private telephone systems were abolished.<sup>59</sup>

After the *tikker* had disappeared, computers entered the securities trade. In 1988, the 'trade supporting system' (Handelsondersteunend Systeem; HOS) was introduced in the Dutch securities trade; a system that particularly supported the specialists. It appeared to be the start of a drastic change of the appearance of the securities trade floor.<sup>60</sup> It also marked the end of the open outcry system. The trade floor was reconstructed again after the introduction of the Trading System Amsterdam (TSA) in 1994. No more screaming nervous stockbrokers that flocked around the specialist to execute their orders or stockbrokers who walked up and down to their stock exchange booths to receive and make calls. The financial intermediaries started to execute the securities trade from the dealing rooms, located at the main offices of their employer. After the merger with the option traders, the specialists moved from the trading floor to a room on the first floor of the Cuypers Exchange. Nowadays, the securities trade is completely done from behind computer screens.<sup>61</sup>

### 6.5 Comparison between general availability of ICT and ICT at ASE

We have seen what telecommunication technologies became available as a general public service and at the Exchange buildings. Below, these data are listed in table 6.5. By drawing up this table, subquestion (d) *what are the*

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bestuursvergadering van de VvdE, 11 november 1971 (Clip out minutes meeting Board of the VvdE, 11 November 1971).

<sup>58</sup> Archive Euronext, inv. nr. 1990, Vertrouwelijke enquête, gehouden door de voorzitter van de Commissie voor de Noteringen [1974] (Confidential questionnaire, executed by the chairman of the Quotations Committee) [1974].

<sup>59</sup> Archive Euronext Besluiten van de Commissie voor de Notering etc. Klachten inzake notering 1970 t/m (Decisions of the Quotations Committee etc. Complaints concerning quotations), inv. nr. 1604 B, Kort verslag van de Commissie voor de Notering, 28 februari 1974 (Short report of a meeting of the Quotations Committee, 28 February 1974).

<sup>60</sup> J.E. Berendsen, J. de Haan en G.H. Huisman, "Amsterdam (Ex)changes. Theorie en praktijk van de Amsterdamse Effectenbeurs", *Financiële Monetaire Studies*, jg. 16, 1998, nr. 4, p. 17.

<sup>61</sup> *120 jaar beurshandel*, p. 32.

available means of ICT in the Netherlands in general? is answered. Subquestion (e) *what means of ICT were used in the Dutch securities trade?* is only partly answered since this chapter did not make clear which ICT were used by the actors at their offices. This issue will be further explored in chapter seven.

**Table 6.5: Comparison between public availability of ICT and ICT at the ASE, 1850-1940.**

<i>What type of ICT?</i>	<i>'Public' availability</i>	<i>ICT at ASE</i>
Telegraphy	1852	1852
Telephony	1881	1884
Radiotelegraphy	1904	
Radio	1924	1921
Tikker		1931
Telex	1933	1938

Soon after its national introduction, telegraphy was introduced to the Zocher Exchange. The quick adoption relates to the fact that traders already experimented with electromagnetic telegraphy in the 1840s. Telephony was introduced at the Exchange building three years after the local telephone network in Amsterdam was established. We do not have an explanation for this rather late adoption of telephony. Presumably, telegraphy sufficiently satisfied the needs of traders till then. Actors at the ASE did not use radiotelegraphy but the VvdE did make use of radiotelephony through radio broadcasts. The VvdE had to give up their radio concession since it was decided that radiotelephony (including broadcasting) should fall under the supervision of the PTT in 1926. The tikker did not become a public service because it was an information technology, specifically designed for trade on financial markets and operated on a subscribers base only. Although the services of the 'Tikkerdienst' were limited to Amsterdam and The Hague, national coverage was reached by means of a price telex network in 1938.

### *6.6 Conclusion*

Communication possibilities widened enormously in the nineteenth and twentieth centuries. Telecommunication technologies became indispensable for the securities trade, as this chapter indicated. Telegraphy became available in the Netherlands in the middle of the nineteenth century. In 1855, the Rijkstelegraaf extended telegraph capacity between

Amsterdam and Rotterdam to send and receive telegrams *during* the opening hours of the Exchange. Since 1878, a direct telegraph line between the Exchanges of Amsterdam and Rotterdam was available. In 1881, a public telephone network in Amsterdam came into operation, while since 1884 the NBTM exploited a telephone bureau at the Zocher Exchange. So, it was possible to have telephonic contact with the outside world to pass on relevant information. The 1905 address of several securities traders, initiated by Labouchere Oyens & Co, revealed with whom direct contact during trade hours was needed: their own offices, their provincial relations and the clients, to communicate prices, to receive orders, and to give notice of executed orders.

Stockbrokers not only used telecommunications that were provided by third parties, they also actively searched for ways to employ ICT specifically for the securities trade. The stock exchange radio broadcasting station in 1921, the attempts of a group of Amsterdam bankers to form a Dutch cable company around the same time, the establishment of the 'Tikkerdienst' in 1930, and the establishment of a price telex service in 1938 all demonstrated the inventiveness of stockbrokers and the VvdE to employ ICT in their own way. The fact that several telecommunication technologies were utilised to inform the outside world on what went on inside the Exchange building, shows that the traders realised that information generates trade. In a way, ICT made securities trade more open. We have seen the development of an open to a closed securities trade in the third and fourth chapter. The telegraph, the telephone, the tikker and the telex offered the possibility to open up securities trade although on a different level. ICT has opened up securities trade resulting in a wider availability of information. It has not influenced the rules for membership of the VvdE. Also, the openness as a result of ICT needs to be put in perspective. The tikker and telex service were subscriber based. The subscribers were mainly professionals.

Now that we have discussed the available means of communication to the security traders, we want to know how they were actually used and what was done with the information that was passed on. For that reason, several case studies were executed which will be elaborated on in the next chapters. We will have a closer look to the backgrounds of the cases, what their available means of communication were, how they organised their services concerning the securities and last but certainly not least, if telecommunication technologies altered the way they arranged these services.

## 7. Services and ICT in Dutch Securities Trade

### 7.1 Introduction

Now that we have discussed the different intermediaries, the available means of telecommunication technologies in general and in the Dutch securities trade in particular, the subsequent step is to discern the activities of the Dutch stockbrokers and how they made use of ICT to perform these activities. The aim of this chapter will be to come to a general overview of daily services provided by intermediaries in the securities trade. It would be logical to first study the activities of the commission traders since they traditionally functioned as the most important party in the Dutch securities trade. Yet, not much information on their daily practice has been preserved in their archives. Therefore, the RB and the TBV are used as a basis to come to a general overview of activities.

The aim connects directly to one of the subquestions, posed in chapter two, namely subquestion (b) *what are the separate activities of the intermediaries in the securities trade?* Since clients pay for these activities, the activities can be regarded as value-creating activities which link to subquestion (c) *what value do intermediaries in the Dutch securities trade create?* Apart from distinguishing the separate activities, we would like to know what telecom technologies the actors used to perform these activities which can be connected to subquestions (f) *how did the involved actors deployed ICT in the securities trade?* and (h) *what are the different means of telecommunication (telegraphs, telephones, telexes) per actor.* The involved actors used ICT to gather and provide information. Therefore we will distinguish (g) *what types of information are of importance?* It will be interesting to see whether the process of gathering and providing information changed due to the use of ICT. To detect any changes, we need to find an answer to subquestions (i) *at what time (during trade hours,*



*the same day, the day after?) did actors receive information and (j) did the timing of transfer of information change over time? To be able to apply transaction costs economics, we need to answer subquestions (l) the investments in the capacity of ICT, such as infrastructure (just the lines and cables), devices (telephonic apparatus) and personnel, especially if this capacity is purchased to maintain a particular relationship in securities trade, (m) to what extent is uncertainty present?, and (n) how many transactions have taken place? After the services and the employed ICT with the actors are studied, we might be able to analyse whether the investments in ICT were purchased specifically to execute the services in the securities trade.*

The chapter starts with an analysis of the telecom facilities of the Robaver. After that, the activities of the Robaver in relation to the securities trade are discussed. The reason to discuss the telecom facilities before elaborating upon the activities is that when dealing with the activities, we cannot do without ICT. The same will be done for the Twentsche Bank. Section 7.7 continues with an analysis of the (however limited) information we have traced concerning the activities of the 'smaller' stockbrokers such as commission traders. In section 7.8 all the activities of the studied intermediaries are combined in a general overview of activities in the Dutch securities trade. The section ends with a figure that visualises these activities. In the discussion part, we will return to the subquestions. The period of this chapter ranges from 1850 to 1964. The year 1852 is taken as a starting point since from that year the electromagnetic telegraph became available. We end with 1964 because the TB and the RB both merged with another joint stock commercial bank in that year.

## *7.2 Available means of communication RB/Robaver*

The Rotterdamsche Bank was primarily located in Rotterdam until 1911. By means of telephone guides, we are able to sketch an overview of the telephonic accessibility of the RB. The NBTM started a local telephone network in Rotterdam in 1882, one year later than in Amsterdam. The first list of NBTM subscribers appeared in 1883, which also mentioned the RB in Rotterdam as one of the subscribers.<sup>1</sup> As from the beginning of the twentieth century onwards, the RB decided to take more telephone connections. As a matter of fact, the telephone connections mentioned here, were the number of lines that ran from the Rotterdam office to the local telephone exchange. In 1905, the RB had two telephone connections

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<sup>1</sup> *Officieele gids der Nederlandsche Bell-Telefoon Maatschappij*, nr. 1 (September 1884).

at its disposal. In 1915 the number of telephone connections of the Robaver amounted to five, and in 1920 the local telephone guide showed twelve telephone numbers via which the Robaver could be reached. As from the 1930s, the Robaver in Rotterdam only had one telephone number, but containing thirteen lines. For several years, a number of departments of the RB were mentioned separately in the telephone guides such as the Board of Directors, General Affairs, Arbitrage, Securities and the Exchange department. Apparently, these departments needed to be reached easy for clients.<sup>2</sup> As a matter of fact, the mentioning of these departments stopped around the same time the Robaver could be reached by one number, with several lines. This number of lines was expanded to nineteen after World War II. As from 1960, the number of lines was not mentioned any longer in the telephone guide. The RB could also be reached directly to the Rotterdam Exchange as from 1950 onwards. Most likely, this possibility already existed but it was explicitly printed in the Rotterdam telephone guide as from 1950.<sup>3</sup>

As we saw in chapter four, the RB expanded enormously as from 1911 onwards. In order to enhance communication between the different offices over the country, the RB made use of the possibility to hire telephone lines. This possibility had become available as from 1907. As from May 1911 onwards, employees of the Robaver could make use of a direct trunk line between the main offices in Rotterdam and Amsterdam. One has to bear in mind that two switchboard operators still came in between; one at the switchboard of the Rotterdam office and one at the Amsterdam office.<sup>4</sup> In 1916, the The Hague office of the Robaver was linked to Amsterdam and Rotterdam by means of such a direct trunk line.<sup>5</sup> Apparently, the employees of the Amsterdam and Rotterdam office communicated intensively with each other since the Robaver decided to hire a second trunk line between these offices as from 1920.<sup>6</sup>

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<sup>2</sup> Gemeentearchief Rotterdam (GAR: municipal archive Rotterdam), *Gids gemeentelijke telefoondienst Rotterdam*, 1905, 1915, 1920 and 1925.

<sup>3</sup> GAR, *Gids gemeentelijke telefoondienst Rotterdam*, 1935, 1950, 1956, 1960 and 1964.

<sup>4</sup> HAAA, RB, inv. nr. 93, Brief van Robaver (R'dam) aan het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, dd. 4 mei 1925 (Letter from Robaver (Rotterdam office) to Board of P & T at The Hague, 4 May 1925).

<sup>5</sup> HAAA, RB, inv. nr. 93, Brief van Robaver (R'dam) aan het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, dd. 12 juni 1925 (Letter from Robaver to Board of P & T at The Hague, 12 June 1925).

<sup>6</sup> HAAA, RB, inv. nr. 93, Brief van Robaver (R'dam) aan het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, 16 september 1919 (Letter from Robaver to Board of P & T at The Hague, 16 September 1919).

The costs for renting such a specific telephone line totalled up to quite an extensive amount. Before 1919 the renter owed the P & T fl. 7000 per year; after the economic boost in 1919 the P & T raised the annual rent to fl. 20.000.<sup>7</sup> If an organisation decided to rent such a direct trunk line, it had to take into account that the P & T demanded that it was rented for at least five years. In the 1920s, the Robaver reconsidered the need for its trunk lines. This reconsideration was probably the result of the setbacks the Robaver experienced in this period. The Robaver wanted to dispose of the trunk line between Rotterdam and The Hague in 1925. However, since the obligatory (second term of) five years had not yet elapsed, the P & T only agreed to stop the agreement if the Robaver guaranteed it would hire one of the two trunk lines that connected Rotterdam and Amsterdam, at least until 1929. The Robaver agreed on this proposal, probably since the rent for second trunk line between Rotterdam and Amsterdam, could be stopped according to the agreement in November 1925, which the Robaver did.<sup>8</sup> Hence, in 1925 the Robaver rented two direct trunk lines; Amsterdam – The Hague and Amsterdam – Rotterdam. Clearly, the Amsterdam office had grown to the most important one of the Robaver.

The Robaver not only rented direct trunk lines, the Amsterdam office also requested a direct telegraph connection to the main office of the Rijkstelegraaf in Amsterdam. As from 1916, the Amsterdam office of the Robaver could make use of this connection. The telegraph messages were typed on a fairly easy to handle 'telescripteur'. The annual rent added up to fl. 475 in the first year, fl. 450 in the subsequent four years and fl. 270 as from the fifth year.<sup>9</sup> One year later, the Dutch Central Bank (de Nederlandsche Bank: DNB) also decided to hire such a telegraph connection. Before doing that, the DNB obtained advice from the Robaver. The Robaver recommended purchasing or hiring at least two 'telescripteurs' in case one subsided, and also to place a telephone in the telegraph department so that, in case of any disturbances to the telegraph

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<sup>7</sup> HAAA, RB, inv. nr. 93, Uittreksel Staatsblad no. 606 (1919) (Abstract government gazette)

<sup>8</sup> HAAA, RB, inv. nr. 93, Briefwisseling tussen van Robaver (R'dam) en het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, dd. 12 juni 1925, 25 juni 1925, 26 juni 1925, 5 augustus 1925, 15 augustus 1925 (Correspondence between Robaver to Board of P & T at The Hague, 12 June 1925, 25 June 1925, 26 June 1925, 5 August 1925, 15 August 1925).

<sup>9</sup> HAAA, RB, inv. nr. 358, Briefwisseling tussen de Robaver (A'dam) en het Hoofdbestuur der P & T te 's Gravenhage, 23 maart 1914, 31 december 1914, 2 januari 1915, 23 maart 1915, (Correspondence between Robaver to Board of P & T at The Hague, 23 March 1914, 31 December 1914, 2 January 1915, 23 March 1915).

network, the telegraph messages could be transmitted orally.<sup>10</sup> In 1921, the Amsterdam office of the Robaver moved into a new building. This building was equipped with the most modern telecom equipment. The RB placed a private branch exchange with fifty lines for internal communication. A few years later it already replaced this equipment by a private automatic branch exchange (pabx): the first in the Netherlands.<sup>11</sup> The question arises how important telecom was to the Robaver. For instance, in the annual reports no word was wasted on the decision of whether or not to rent trunk lines or purchase telecom devices, although the costs appeared to be quite high. Only sporadically were the company's expenses divided more specifically, which makes it impossible to place the telecom costs of the in a broader perspective (see appendix C).<sup>12</sup>

The frequency of use of the telephone depended on the type of the department. In 1917, the employees of the department of Securities-Arbitrage made most use of the telephone. This is not surprising since the core of the arbitrage trade is to profit from price differences of securities listed at stock exchanges all over the world.<sup>13</sup> Hence, the employees of this department needed to communicate with foreign countries to inquire after the current prices.

Another tool that helped the employees of the departments concerned with securities trade became the *tikker* as from 1931. The Amsterdam office of the Robaver was actively involved in the establishment of the *Tikkerdienst* because it participated in this undertaking as a shareholder. Not surprisingly, this office was subscribed to this service.<sup>14</sup> It seems likely that the The Hague office also had a *tikker* at the moment this service came available in The Hague in 1935 since the Robaver was a shareholder. The '*Tikkerdienst*' did not offer its service in Rotterdam. Yet, the Rotterdam office of Robaver could subscribe to the

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<sup>10</sup> HAAA, RB, inv. nr. 358, Brief van de Robaver, dd. 7 juni 1917 (A'dam) aan De Nederlandsche Bank (Letter from Robaver to Dutch Central Bank, 7 June 1917).

<sup>11</sup> HAAA, RB, inv. nr. 93, Brief van Robaver (R'dam) aan het het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, dd. 9 april 1923 (Letter of RB office in Rotterdam to Board of Directors of P & T, 9 April 1923) and Brief van Robaver (R'dam) aan het het Hoofdbestuur der Posterijen en Telegrafie te 's Gravenhage, dd. 5 augustus 1925 (Letter of the of RB office in Rotterdam to Board of Directors of the P & T, 5 August 1925).

<sup>12</sup> HAAA, RB, inv. nr. 730, 731, 734, Gespecificeerde balansbescheiden 1914, 1915, 1916, 1917 (Specified balances over the years 1914, 1915, 1916, 1917).

<sup>13</sup> HAAA, RB, inv. nr. 733, Brief aan directeur Mr. Dr. J.P. van Tienhoven, 1917 (Letter to director Mr. Dr. J.P. van Tienhoven, 1917).

<sup>14</sup> HAAA, RB, inv. nr. 525, Stukken betreffende de deelname van de Robaver in de NV *Tikkerdienst*, 1930-1956 (Documents concerning the participation of the Robaver in the *Tikkerdienst*, 1930-1956).

telex service that the VvdE offered in co-operation with the Tikkerdienst as from 1938.

It seems that departments related to securities trade were more privileged to the use and deployment of telecommunication technologies than others. For instance, as from the 1950s the RB had installed a separate department that arranged its telegraph traffic, the Code-department.<sup>15</sup> The Code-department took care of telegraphic messages of every department except for the Securities-Arbitrage department. This department had the disposal of its own telex apparatus. In 1958, the employees of this department requested a second telex, especially for incoming messages, since the first telex was almost constantly in use for outgoing messages during the opening hours of the foreign stock exchanges. In the same year, the Exchange -, Issue- and again the Securities-Arbitrage department were furnished with brand new telephone tables whereas the remaining departments were not. Finally, the RB supplied their provincial branch offices, which contributed large volumes in securities orders, with telexes in 1958.<sup>16</sup> Information transfer concerning the securities to the branch offices of the RB was regarded as an important issue. The employees of the Amsterdam Exchange department telephoned frequently to the provincial branch offices to pass on current price information, to receive orders and to notify the results of the orders. This Exchange department also daily made a tape on which the quotations of the most important securities were recorded next to important news that affected the quotations such as resolved mergers and so on. The branch offices of the RB dialled a special telephone number to listen to that tape.<sup>17</sup>

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<sup>15</sup> HAAA, RB, inv. nr. 94, Globaal overzicht van de werkzaamheden in de verschillende afdelingen [1960] (Global overview of activities of the different departments, [1960]) pp. 9- 10.

<sup>16</sup> HAAA, RB, inv. nr. 94, Verslag van de afdeling Organisatie betreffende op handen zijnde werkzaamheden 1958 en 1960 (Report department Organisation concerning upcoming operations, 1958 and 1960) .

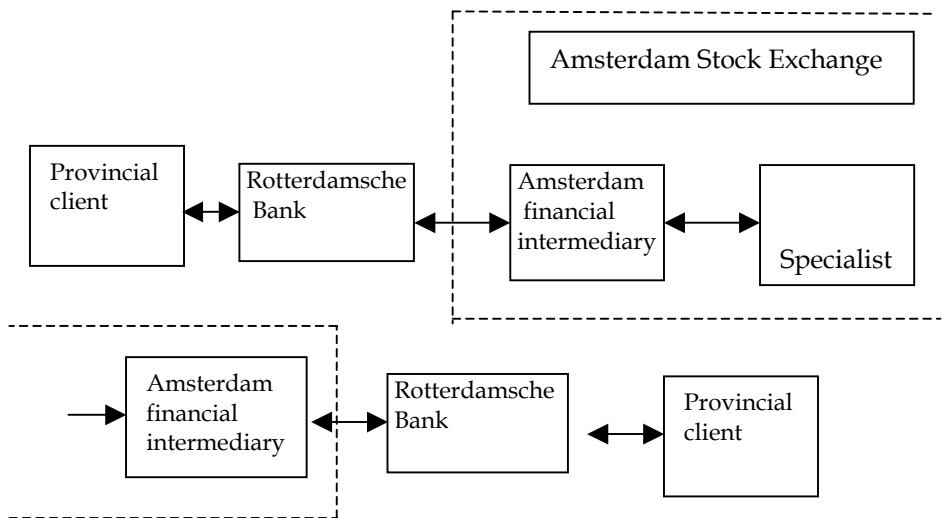
<sup>17</sup> HAAA, RB, inv. nr. 94, Globaal overzicht van de werkzaamheden in de verschillende afdelingen [1960] (Global overview of activities of the different departments, [1960]) p. 13 and p. 19.

<b>Table 7.1: Overview telecommunication technologies RB, 1882-1960.</b>	
<i>Year</i>	<i>What/Who?</i>
1882	First telephone connection (communal)
1905	Second telephone connection (communal)
1911	Private trunk line connection between Amsterdam and Rotterdam office
1915	Rotterdam office: fifth telephone connections (communal)
1916	Private trunk line between The Hague-Amsterdam and The Hague-Rotterdam
1916	Private telegraph line Amsterdam office with Amsterdam Rijkstelegraafkantoor and telescripteur
1920	Rotterdam office: twelfth communal telephone connection
1920	Second private trunk line between Amsterdam and Rotterdam office
1921	Private branch exchange
1923	private automatic branch exchange
1925	Cancellation trunk line The Hague-Rotterdam
1929	Cancellation second trunk line Rotterdam-Amsterdam
1931	Tikker at Amsterdam office
1958	Second telex at Amsterdam office, for Securities-Arbitrage department Telephone tables for Exchange - Issue- and Securities-Arbitrage department
1960	Telephone tape with information on securities trade for branch offices RB

7.3 Organisation securities trade RB/Robaver

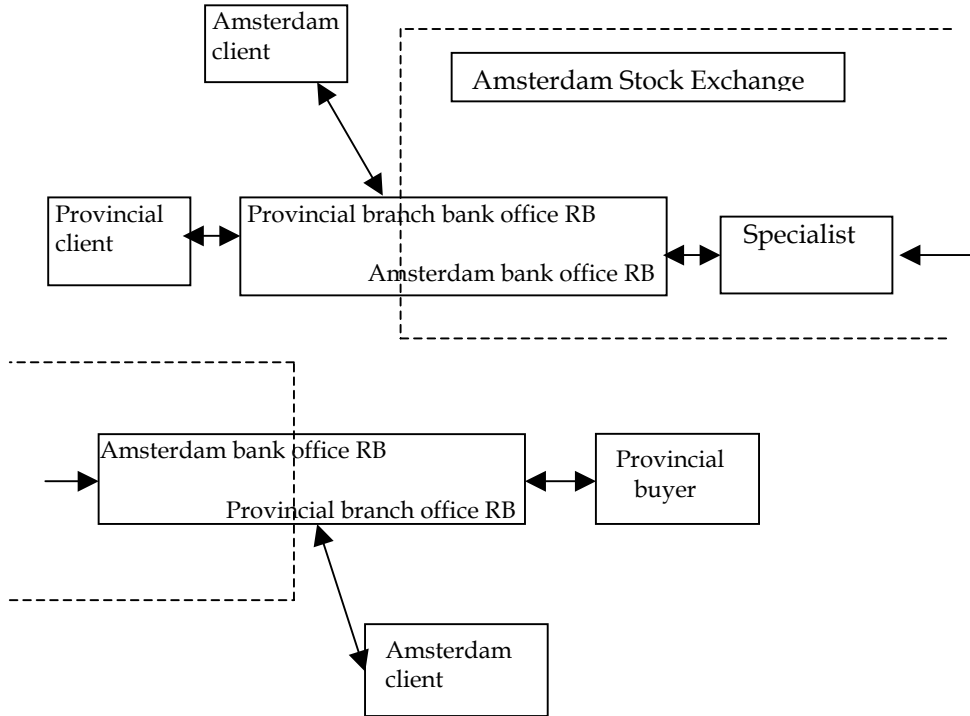
Before 1911, the RB had to contact an Amsterdam stockbroker to execute its and its clients orders at the ASE. We do not know if the RB made use of one or several stockbrokers. The situation for the RB is visualised in figure 7.1.

Figure 7.1: Organisation securities trade RB before 1911



In the years after the take-over in 1911, the Robaver obtained direct access to the ASE which changed its organisational structure as it came to their services in securities trade. The change is visualised in figure 7.2:

Figure 7.2: Organisation securities trade Robaver after 1911



The Robaver built up a name in efficiently organising its activities.<sup>18</sup> We know from an overview, made in 1918, which activities the Robaver performed, and thus, how this bank was organised. Since the amount of these activities was large (around sixty), only the ones that are related to the securities trade are mentioned here. The rest of the activities are displayed in a separate supplement. With the help of this list (unfortunately, no explanation of the activities was given, they were just summed up) and a short notice on the activities of Robaver's stock exchange employees (without date), we can discern, although to a limited extent, how this Bank organised its services in relation to the securities trade.

<sup>18</sup> O. de Wit and J. van den Ende (2000) 'The Emergence of a New Regime: Business Management and Office Mechanisation in the Dutch Financial Sector in the 1920s', *Business History*, vol. 42, no. 2, pp. 87-118.



A part of the employees of the securities department were daily present at the Amsterdam Stock Exchange, the rest stayed at the office. On the floor of the Amsterdam Stock Exchange (in the Cuypers Stock Exchange building) the Robaver had the disposal of two stock exchange booths as from 1918.<sup>19</sup> The manager of the Exchange department saw to it that the stock exchange employees called the first and second quotations of traded securities at the ASE, to the Amsterdam office as soon as possible. With these first quotations, clients were informed. They could call the bank themselves or bank employees would call clients.<sup>20</sup> Probably, during these calls, some advice was given on what to buy or sell, however, there is no proof of this. With the Robaver, orders mostly came in by mail, telegram or telephone at the office of the Robaver in Amsterdam. These orders came directly from clients, from the main office in Rotterdam, or from branch offices in the rest of the Netherlands. If an order came in at the Amsterdam office during the official stock exchange trade hours, the employees of the Amsterdam office called to one of the stock exchange booths the Robaver possessed at the Cuypers Stock Exchange.<sup>21</sup> Possibly, clients could also pass through orders to the stock exchange employees present at the trading floor. However, as we know from interviews with stock exchange employees who worked at the ASE in the 1960s, only specific (read: big) clients were allowed to do this.<sup>22</sup> After an order had been executed, a stock exchange employee of the Robaver had to call the concerned client immediately to inform him about the outcome.<sup>23</sup>

The Robaver tried to organise all its administrative paperwork very efficiently, seeing that its archive contains many documents that reflect on organising the Bank more adequately.<sup>24</sup> The Robaver had discerned the

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<sup>19</sup> HAAA, RB, inv. nr. 95, 'Een wenk voor de wenkenbus', dd. 5 februari 1918 (A suggestion given by an employee, 5 February 1918).

<sup>20</sup> HAAA, RB, inv. nr. 94, Eenige punten voor de heer P. Josso [Chef Beursafdeeling, JH], dd. 16 december 1918 (Several points of attention for mister P. Josso [Manager Stock Exchange Department, JH], 16 December 1918).

<sup>21</sup> HAAA, RB, inv. nr. 95, 'Een wenk voor de wenkenbus', 5 februari 1918 (A suggestion given by an employee, 5 February 1918).

<sup>22</sup> Mr. G. van den Brink who worked on the ASE floor from 1958 to 1996 (interviewed 7 February and 27 March 2001), Mr. J. Poelwijk who worked at the ASE floor from 1958 to 1967 (interviewed 17 October 2001), and Mr. W. Wiegel who worked on the ASE floor from 1963 tot 1982 (interviewed 10 and 18 January 2001).

<sup>23</sup> HAAA, RB, inv. nr. 94, Stuk betreffende de activiteiten van beursmedewerkers, zonder datum (Document concerning the activities of the Robaver stock exchange employees, without date).

<sup>24</sup> These documents are especially kept in inventory number 94 of the Rotterdam Bank Archive in the Historical Archive of the ABN AMRO Bank; and see also De Wit and Van den Ende, 'The Emergence of a New Regime', pp. 87-118.

administrative processing in relation to the securities trade in the following activities (table 7.2):

<b>Table 7.2: Administrative activities securities trade Robaver 1918.<sup>25</sup></b>		
<i>Nr</i>	<i>Dutch</i>	<i>English</i>
1	Beursboeken	Exchange books
2	Coupons	Coupons
3	Effecten Administratie	Securities Administration
4	Effecten Controle	Control Securities
5	Fondsenbehandeling	Handling securities
6	Prolongatie	'Prolongatie'
7	Uitlotingen	Drawings

The stock exchange employees filled in the '*beursboeken*' in which they wrote down the concluded orders. Concerning the *coupons*: a security itself consisted of several parts: a body (*mantel*), and a coupon sheet respectively, a dividend sheet, depending on the fact whether it was a bond or share. A coupon gave the owner the right to collect the interest of a bond. As a proof that a coupon was used to collect the interest, the coupon needed to be cut off. This was all done manually by the employees of the financial intermediary that stored the security papers. The '*effecten administratie*' kept up the administration of the securities per client. Every client received regularly on overview of his securities account at the Robaver. With the '*effecten controle*', the employees checked whether the executed orders were noted down correctly (against the correct prices), and the clients' accounts were checked for its creditworthiness. The employees of '*fondsenbehandeling*' checked if the actual security papers that were bought, came in, and were sold, got to the persons who were entitled to it. The employees responsible for '*prolongatie*', handled the providing of prolongatie credits although the popularity of making use of prolongatie had lowered considerably since World War I. The temporary closure of the Exchange caused a stoppage of '*prolongatie*' credits which resulted in a loss of confidence in '*prolongatie*'. Furthermore, large banks established themselves as safeguards of the Dutch economy during World War I which generated trust with the large public. After World War I, more and

<sup>25</sup> HAAA, archive RB, inv. nr. 440, *Algemeene mededeelingen aan het personeel* (General announcements to the personnel) (Amsterdam 1918) pp. 2-5.

more people left their spare money with banks instead of providing it as ‘prolongatie’ credit.<sup>26</sup> A buyer of bonds provided credit to the one that had issued the bonds. In return, the buyer received interest yearly. Apart from that, the credit needed to be paid off at a certain moment in time. In order to determine which bonds or series of bonds were paid off, lotteries were held regularly since each bond had a number. The employees that had to take care of ‘uitlotingen’, checked which numbers were selected in those lotteries.<sup>27</sup> To store valuable possessions such as security papers, the Robaver offered the possibility to hire safes.<sup>28</sup>

As we see in the annual reports, the Robaver started to report the gained commission of the securities trade of the three most important offices, Rotterdam, Amsterdam and The Hague as from 1932. Not surprisingly, the securities trade generated more profits in Amsterdam than in Rotterdam and The Hague (table 7.3):

<b>Table 7.3: Commission rates of securities trade Robaver as a percentage of the total returns of provisions, 1932-1964.<sup>29</sup></b>				
<i>Year</i>	<i>Rotterdam commission securities trade as a percentage of the total provisions</i>	<i>Amsterdam commission securities trade/total provisions</i>	<i>The Hague commission securities trade/total provisions</i>	<i>Totals (percentage of total commission)</i>
1932	10%	27%	28%	19%
1937	18%	47%	33%	35%
1942	18%	52%	34%	38%
1947	9%	23%	18%	17%
1952	8%	17%		
1964	9%	34%		

<sup>26</sup> Jan Luiten van Zanden (1997) ‘Old rules, new conditions, 1914-1960’ in: Marjolein ‘t Hart, Joost Jonker and Jan Luiten van Zanden (eds.) (1997) *A Financial History of the Netherlands* (Cambridge University Press; Cambridge) pp. 124-151, p. 124.

<sup>27</sup> HAAA, archive RB, inv. nr. 94, Overzicht afdelingen vestiging Amsterdam [1960 (Overview departments Amsterdam office, [1960]), idem, inv. nr. 1320, Beschrijving Effecten Administratie sinds 1915 [1922] (Description Administration Securities since 1915, [1922]); *Banklexicon*, p. 184.

<sup>28</sup> HAAA, archive RB, inv. nr. 440, *Algemeene mededeelingen aan het personeel*, Amsterdam 1918 (General announcements to the personnel, Amsterdam 1918) p. 5.

<sup>29</sup> HAAA, archive RB, *Annual reports Rotterdamsche Bank/Rotterdamsche Bankvereniging 1932, 1937, 1942, 1947, 1952, 1964*.

If we look at the activities the RB/Robaver performed in the securities trade the big change took place in 1911. Before 1911 it received orders from its clients and passed them through to their Amsterdam intermediary, after 1911 the Robaver could execute the orders directly at the ASE. As a result of this, the Robaver could inform its clients much more directly than before since this Bank was no longer dependent on their intermediary. The Robaver could inform its clients on the current prices, immediately after their orders were concluded. Hence, the change in the organisational structure of the Robaver caused a change in the activities the Robaver performed in the securities trade. The immediacy of the services increased, not only because of the fact that the Robaver was directly present at the ASE as from 1911, but also with the help of information and communication technologies.

#### *7.4 Telecom facilities of the TB(V)*

The TBV belonged to one of the first subscribers to the NBTM network that opened in 1881. For a long time, the TBV only stuck to this one connection and also, to only one telephone. As from 1898 onwards, telecommunication technologies truly entered the Amsterdam office of the TBV. In 1898, Roelvink who was a member of the Board and also managed the securities department, initiated the purchase of a second telephone. The first telephone became solely the use of the securities department.<sup>30</sup> One year later, a telephone was bought to make trunk telephone calls. The costs for trunk connections were fl. 84 in the first year and fl. 60 in the subsequent years. In the same year, the TBV was linked to the main office of the Rijkstelegraaf in Amsterdam with a private telephone line, probably to pass through incoming and outgoing telegrams immediately.<sup>31</sup> Also in 1899, the TBV purchased a private branch exchange for eleven connections, keeping the option open for twenty connections. A switchboard operator was hired to operate this private branch exchange. She received a salary of fl. 300 per year.<sup>32</sup> The private branch exchange was replaced by an

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<sup>30</sup> RAO, archive TB, inv. nr. 797, *Notulen der bestuursvergaderingen van het kantoor Amsterdam 2 maart 1898 – 15 november 1898*, dd. 10 november 1898 (Minutes board of directors Amsterdam office 2 March 1898-15 November 1898, 10 November 1898).

<sup>31</sup> GAA, Archive Gemeentelijke Telefoon dienst Amsterdam (Municipal telephone service), inv. nr. 159, *Index op de indicateur en minuten van uitgaande stukken 1899* (index to indicator and minutes of outgoing documents 1899).

<sup>32</sup> RAO, ATB, inv. nr. 798, *Notulen der bestuursvergaderingen kantoor Amsterdam 16 november 1898-22 augustus 1899*, 14 april 1899, 10 mei 1899, 10 juni 1899 en 5 juli 1899 (Minutes board of directors Amsterdam office 16 November 1898-22 August 1899) 14 April 1899, 10 May 1899, 10 June 1899 and 5 July 1899).

improved version in 1908. In the immediate years after 1899, the Board decided to take more local telephone numbers, adding up to four in 1905. Furthermore, a direct line was hired to connect the first branch office of the TB at the Prins Hendrikkade in Amsterdam to the Amsterdam main office in 1901. The costs for this line totalled fl. 95 per year. The Board even agreed to hire a direct local telephone line which connected the main office of the TBV in Amsterdam with the Berlage Exchange in 1905.<sup>33</sup>

Despite the expansions of local and trunk telephone networks, these still did not function properly during the first decades in the twentieth century. Between 1910 and 1920 the board of the TB decided twice to install a special committee to research the complaints of clients and relationships in the province concerning malfunctioning telephone lines. As a reaction to the findings of the first committee in 1912, the board of the TB agreed to take three local telephone lines in addition to the three the Bank had already hired (additional costs fl. 180 per year), and to engage a second switchboard operator.<sup>34</sup> In 1919, after the report of the second committee, the TB actually undertook the same actions as in 1912, namely, the hiring of more lines and the employment of a third switchboard operator. The TB installed an additional capacity of five trunk and four local connections; the extra switchboard operator came from within the company. However, her direct manager requested for her return. One year later, a third switchboard operator was attracted from outside the Bank. In 1922, the TB acquired a new private branch exchange which was connected to the services of the municipal telephone company for fl. 20.000.<sup>35</sup>

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<sup>33</sup> RAO, ATB, inv. nr. 800, *Notulen der bestuursvergaderingen kantoor Amsterdam 12 juni 1900-17 mei 1901*, 16 maart 1901 (Minutes 12 June 1900-17 May 1901, 16 March 1901), inv. nr. 801, *Notulen der bestuursvergaderingen kantoor Amsterdam 18 mei 1901-19 april 1902*, 2 augustus 1901 (Minutes 18 May 1901-19 April 1902, 2 August 1901), inv. nr. 806, *Notulen der bestuursvergaderingen kantoor Amsterdam 1 juli 1905-18 september 1906*, 12 oktober 1905 en 16 december 1905 (Minutes 1 July 1905-18 September 1906, 12 October 1905 and 16 December 1905), inv. nr. 808, *Notulen der bestuursvergaderingen kantoor Amsterdam 23 september 1907-16 september 1908*, 21 juli 1908 (Minutes 23 September 1907-16 September 1908, 21 July 1908), inv. nr. 810, *Notulen der bestuursvergaderingen kantoor Amsterdam 16 november 1909-15 november 1910*, 14 juni 1910 (Minutes 16 November 1909-15 November 1910, 14 June 1910).

<sup>34</sup> RAO, ATB, inv. nr. 812, *Notulen der bestuursvergaderingen kantoor Amsterdam 6 oktober 1911-22 augustus 1912*, 30 mei 1912 (Minutes 6 October 1911-22 August 1912, 30 May 1912); inv. nr. 628, 'De telefoon-centrale van het hoofdkantoor' (the telephone exchange in the main office), in: *Bank Noten. Personeel-organ van de Twentsche Bank N.V. 1952* (staff magazine of the TB), 6e jaargang, no. 1, pp. 6-7.

<sup>35</sup> RAO, ATB, inv. nr. 821, *Notulen der bestuursvergaderingen kantoor Amsterdam 29 augustus 1918-20 maart 1919*, 14 januari 1919, 14 februari 1919 (Minutes 29 August 1918-20 March 1919, 14 January 1919, 14 February 1919), inv. nr. 822, *Notulen der bestuursvergaderingen kantoor Amsterdam 21 maart 1918-8 augustus 1919*, 28 april 1919, 2 mei 1919 (Minutes 21 March 1918-8 August 1919, 28 April 1919, 2 May 1919), inv. nr. 825, *Notulen der bestuursvergaderingen kantoor Amsterdam 7 juni 1920-29 november 1920*, 22 juni 1920 (Minutes 7 June 1920-29 November 1920, 22 June 1920), inv. nr. 828, *Notulen der*

As the Robaver, the TB also decided to hire a direct trunk line between the offices in Amsterdam – The Hague – Rotterdam although in a later stadium than the Robaver did. The TB requested the P & T for such a connection in 1919. Since the P & T suffered from a lack of materials, the P & T could not meet the TB's request right away.<sup>36</sup> It remains unclear since when the TB could make use of these lines. In any case, the TB still rented the lines in 1951.<sup>37</sup>

In spite of the extra lines and switchboard operators, complaints regarding the erroneous telephonic accessibility of the TB remained. In 1930 the TB complained to the municipal telephone company on ill-working telephone lines. Even twenty years later, the TB still faced problems with its telephone connections. Nevertheless, the TB unmistakably expanded its telecommunication facilities. Whereas the first private branch exchange of 1899 could facilitate 11 internal connections available, the private automatic branch exchange of 1951 could process 550 connections. Despite the automation of telephone networks and private branch exchanges, switchboard operators remained necessary to put through incoming calls to the concerned persons.<sup>38</sup> By 1959, the switchboard operators of the TB no longer needed to plug in the lines but the pushing of the right buttons sufficed.<sup>39</sup> Around 250 telephones were connected to the internal private branch exchange of the main office of the TB in Amsterdam in the mid 1950s. The employees of this office had 2000 to 2500 telephone conversations per day with persons outside these offices and around three times as much amongst each other, which came to an average of 10.000 daily telephone conversations. Not surprisingly, the TB attached great value to a proper and decent processing of its telephone traffic.<sup>40</sup> In a large bank such as the TB, telephones were used for all kinds

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*bestuursvergaderingen kantoor Amsterdam 2 juni 1922-2 juli 1923, 11 juli 1922* (Minutes 2 June 1922-2 July 1923, 11 July 1922).

<sup>36</sup> RAO, ATB, inv. nr. 822, *Notulen der bestuursvergaderingen kantoor Amsterdam 21 maart 1919-8 augustus 1919*, 28 april 1919 (Minutes 21 March 1919-8 August 1919, 28 April 1919).

<sup>37</sup> RAO, ATB, inv. nr. 627, 'De telefooncentrale van het hoofdkantoor' (the telephone exchange in the main office) in: *Bank Noten. Personeel-orgaan van de Twentsche Bank N.V. 1951* (staff magazine TB), 5e jaargang, no. 12, p. 2.

<sup>38</sup> RAO, ATB, inv. nr. 833, *Notulen der bestuursvergaderingen kantoor Amsterdam 19 March 1929-18 November 1930*, 19 August 1930 and inv. nr. 627, 'De telefooncentrale van het hoofdkantoor' (the telephone exchange in the main office), in: *Bank Noten. Personeel-orgaan van de Twentsche Bank N.V. 1951* (staff magazine TB), 5e jaargang, no. 12, pp. 2-5.

<sup>39</sup> RAO, ATB, inv. nr. 635, 'De effectenbeurs in de branding', in: *Bank Noten. Personeel-orgaan van de Twentsche Bank N.V. 1959* (staff magazine TB), 13e jaargang, no. 9, p. 2-5.

<sup>40</sup> RAO, ATB, inv. nr. 868, *Stukken betreffende de reglementering van het gebruik van de telefoon in het bankverkeer* (1955) (Documents concerning the use of telephones in banktraffic, 1955).

of services. Yet, telephone traffic related to the securities trade was privileged over other telephone traffic, especially during the official stock exchange hours. In that period, the switchboard operators of the TB gave priority to all telephone calls related to the exchange department. Directly after the ASE had ended, the switchboard operators even had to keep open their own private lines with the The Hague and Rotterdam office for one quarter of an hour (from 14.15 hrs to 14.30 hrs) specifically for the exchange department so that the results of the executed orders could be passed on right away.<sup>41</sup>

The TBV also made use of several other telecommunication services. To accelerate the deliverance and reception of telegrams, TBV's main office in Amsterdam was linked to the office of the Rijkstelegraaf by means of a pneumatic connection in 1909.<sup>42</sup> Around ten years later, the TB purchased a 'telescripteur' with the same goal; to speed up the sending of telegrams. Yet, a telescripteur was also useful to send telegrams directly to the addressee if the latter also had the disposal of such a telegraph connection and a 'telescripteur'. As we saw in chapter five, this possibility for communication existed around 1919. Such a telescripteur device cost fl. 1500.<sup>43</sup> The TB acquired a receiving station for wireless telegraphy for the amount of fl. 4000 in 1920.<sup>44</sup> Via the trade company Seters & Co in Amsterdam from which the station was bought, the TB engaged a 'marconist' who could handle this specific communication technology. Nevertheless, the Board of the TB decided to employ an own marconist in 1922.<sup>45</sup> Presumably, the arbitrage and securities department mostly used this receiving station for wireless telegraphy. The fact that an employer of the Arbitrage department advised who to hire as a marconist, strengthens this assumption.<sup>46</sup> The question arises for what it was exactly used. Since arbitrage traders needed to know the quotations from securities and the

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<sup>41</sup> RAO, ATB, inv. nr. 627, 'De telefooncentrale van het hoofdkantoor' (the telephone exchange of the main office), in: *Bank Noten. Personeel-orgaan van de Twentsche Bank N.V.* 1951 (staff magazine TB), 5e jaargang, no. 12, p. 5.

<sup>42</sup> RAO, ATB, inv. nr. 809, *Notulen der bestuursvergaderingen kantoor Amsterdam 16 september 1908-15 november 1909, 17 maart 1909* (Minutes 16 September 1908 – 15 November 1909, 17 March 1909).

<sup>43</sup> RAO, ATB, inv. nr. 825, *Notulen der bestuursvergaderingen kantoor Amsterdam 7 juni 1920-29 november 1920, 26 juli 1920* (Minutes 7 June 1920-29 November 1920, 26 July 1920).

<sup>44</sup> RAO, ATB, inv. nr. 825, *Notulen der bestuursvergaderingen kantoor Amsterdam 7 juni 1920-29 november 1920, 24 augustus 1920* (Minutes June 1920-29 November 1920, 24 August 1920).

<sup>45</sup> RAO, ATB, inv. nr. 828, *Notulen der bestuursvergaderingen kantoor Amsterdam 2 juni 1922-2 juli 1923, 11 juli 1922* (Minutes 2 June 1922-2 July 1923, 11 July 1922).

<sup>46</sup> RAO, ATB, inv. nr. 828, *Notulen der bestuursvergaderingen kantoor Amsterdam 2 juni 1922-2 juli 1923, 11 juli 1922* (Minutes 2 June 1922-2 July 1923, 11 July 1922).

exchange rates of currencies, we assume that wireless communication was deployed to receive that type of information.

In 1938, the TB obtained a telex apparatus. One of the advantages of a telex was the immediate realisation of a connection, which made the passing through of a message by telex cheaper than by phone. It could also have a cost advantage in comparison to the telegraph if the employee was a dexterous typist since a telegraph message was settled per time unit and a telegraph message per word. So the faster the typist, the more words were transmitted per time unit.<sup>47</sup>

In the same year, the VvdE had started its closed telex network which relayed information concerning the ASE to its subscribers. Hence, the purchase of the telex apparatus suggests that it was going to be deployed to subscribe to that service. Yet the question remains whether the main office of the TB in Amsterdam would subscribe to this service since it also had a subscription to the Tikkerdienst which relayed the same information as the telex information network of the VvdE. Furthermore, in the minutes of the Board of the TB no clear link between the purchase of this telex and the telex network of the VvdE was made. The telex was placed at the department of Domestic Correspondence.<sup>48</sup>

**Table 7.4: Telecommunication technologies TBV, 1881-1959.**

<i>Year</i>	<i>What/Who?</i>	<i>Remarks</i>
1881	First telephone connection (communal)	
1898	Second telephone connection (communal)	First telephone for sole use securities department
1899	Separate trunk telephone	
1899	Instalment internal telephone system.	
1899	Private telephone line from main office to Rijkstelegraaf	
1899	Appointment operator for internal	

<sup>47</sup> RAO, ATB, inv. nr. 626, 'De telex', in: *Bank Noten. Personeel-orgaan van de Twentsche Bank N.V.* 1950 (staff magazine TB), 4e jaargang, no. 12, pp. 18-19.

<sup>48</sup> RAO, ATB, inv. nr. 836, *Notulen der bestuursvergaderingen kantoor Amsterdam 15 oktober 1935-17 januari 1939, 25 oktober 1938* (Minutes 15 October 1935-17 Januari 1939, 25 October 1938).



## Chapter 7

	telephone system	
1901	Third telephone connection (communal)	
1901	Direct telephone connection to Amsterdam branch office.	First branch office Prins Hendrikkade (also at Amsterdam) opened in 1901.
1905	Fourth telephone connection (communal)	
1905	Direct telephone connection to 'Beurs van Berlage'	
1906	Telephone, especially for employee Hillerstrom. <sup>49</sup>	Hillerstrom worked at the Arbitrage department.
1908	Installation internal telephone system	Probably replacement internal telephone system installed in 1899? Although motivation for purchase was
1909	Pneumatic connection from TBV office to 'Rijkstelegraafkantoor'.	To speed up the receipt of telegrams from the post office.
1910	Fifth and Sixth telephone connection (communal).	
1912	Seventh, Eighth, and Ninth telephone connection (communal).	
1919	Five trunk telephone connections.	
1919	Direct trunk telephone connection Amsterdam-The Hague-Rotterdam	
1919	Tenth, Eleventh, Twelfth, and Thirteenth telephone connection (communal).	
1920	Appointment third operator.	Not clear when second operator was appointed.

<sup>49</sup> RAO, ATB, inv. nr. 806, *Notulen der bestuursvergaderingen kantoor Amsterdam 1 juli 1905-18 september 1906*, 19 januari 1906 (Minutes 1 July 1905- 18 September 1906, 19 January 1906).

1920	Installation 'Verreschrijver' (pre-telex)	To speed up the receipt of telegrams from the post office.
1920	Installation receiving station wireless telegraphy (radio telegraphy).	
1922	Installation new telephone exchange	
1922	Employment marconist	
1930	Ticker(s)	
1938	Installation telex	
194?	Installation new telephone exchange	
1959	Installation new telephone exchange	

### 7.5 Organisation Securities Trade TB(V)

The TBV did not plunge into securities trade or the participation in syndicates right from the start. In the 1870s, a commission trader, Gerlings & Co, executed the securities orders for the TBV and its clients. This procedure of hiring an Amsterdam commission trader occurred more often. For instance, one of the largest bankers in the Netherlands in the nineteenth century, Hope & Co, hired Wed. W. Borski, a firm that really functioned as an intermediary, to execute its stock exchange operations. Both firms were from Amsterdam.<sup>50</sup>

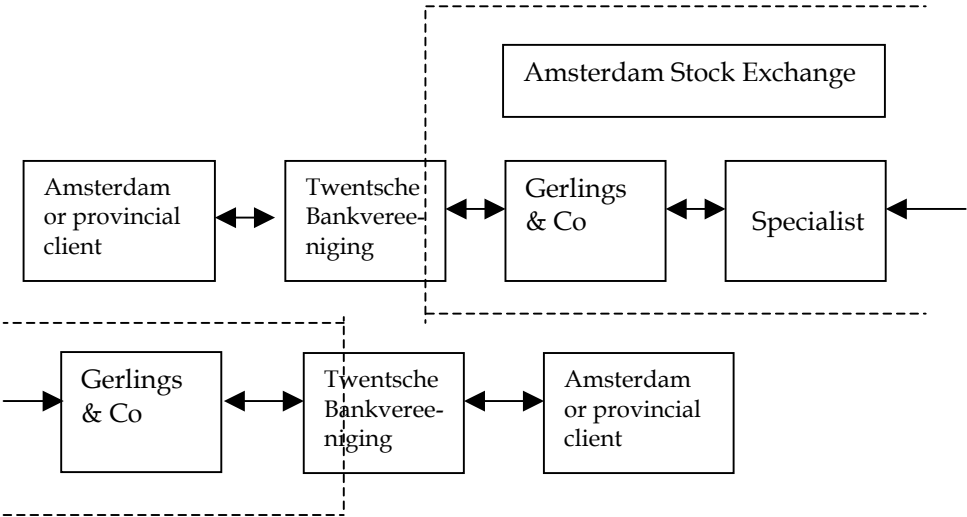
The TBV was certainly not the sole client of Gerlings & Co. The TBV demanded that its orders should be executed immediately at the ASE. The TBV made this plea while Gerlings & Co often tried to match received orders of clients itself, without bringing them to the ASE.<sup>51</sup> The TBV was entitled to speak up since the relationship with Gerlings & Co was probably tighter than with its other clients. The fact that several servants of the TBV walked around at the ASE to assist Gerlings & Co demonstrates the tight relation. The stock exchange servants of the TBV received strict orders to pass on their orders to Gerlings & Co. Also, the office personnel of the TBV had to hand over the orders directly to Gerlings & Co and not

<sup>50</sup> Jonker, *Merchants*, p. 201.

<sup>51</sup> RAO, ATB, inv. nr. 774, *Notulen der bestuursvergaderingen kantoor Amsterdam 1876*, 14 april 1876 (Minutes 1876, 14 April 1876).

to their colleagues. This way of handling securities orders was a result of an agreement between Gerlings & Co and the TBV in order to streamline the flow of securities orders that came in via the TBV. If the stock exchange servants of the TBV tried to find a match for a certain order themselves, Gerlings & Co would loose the overview.<sup>52</sup> Conceivably, Gerlings & Co pocketed commissions per executed order. The way the TBV organised its securities trade services is visualised in figure 7.3.

Figure 7.3: Organisation Securities Trade TBV before 1876



The directors of the TBV considered the securities trade an important financial service. In a period that less securities orders came in, Blijdenstein touched upon the issue in a meeting of the board of the Amsterdam office. He ordered two other directors to draft a proposal that would have to bring about more securities orders for the TBV.<sup>53</sup> In another meeting of board of directors, the two stated that if the securities branch of the Bank was to be reorganised, a totally different relationship with Gerlings & Co

<sup>52</sup> RAO, ATB, inv. nr. 773, *Notulen der bestuursvergaderingen kantoor Amsterdam 1875*, 2 en 13 december 1875 (Minutes 1875, 2 and 13 December 1875).

<sup>53</sup> RAO, ATB, inv. nr. 773, *Notulen der bestuursvergaderingen kantoor Amsterdam 1875*, 2 december 1875 (Minutes 1875, 2 December 1875).

should be considered.<sup>54</sup> Since the name Gerlings & Co, gradually disappeared out of the minutes of the board of directors (the last time they were mentioned, was 14 April 1876), the totally different relationship apparently resulted in a termination of the cont(r)act between Gerlings & Co and the TBV. Maybe the foundation of the VvdE in 1876, also played a role in the decision to end the relationship. Imaginably, the TBV wanted to be involved in the VvdE directly from the start although the VvdE's formal power was very limited in its starting period. The new situation is visualised in figure 7.4.

Figure 7.4: Organisation Securities Trade TBV after 1876

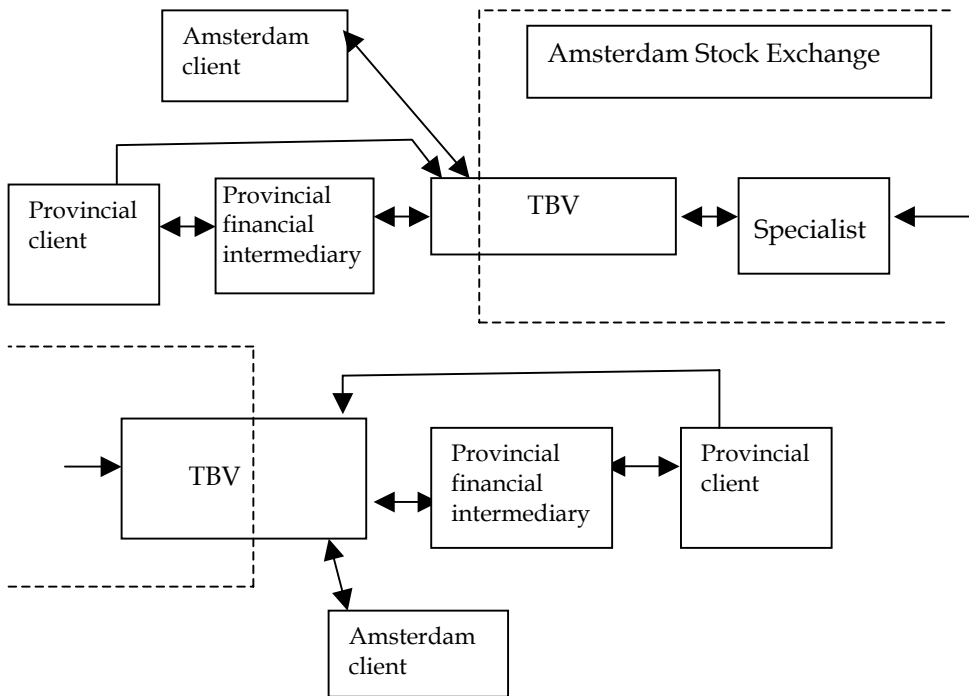


Figure 7.4 shows a 'provincial financial intermediary' in between 'provincial client' and TBV because the TBV obtained several orders via

<sup>54</sup> RAO, ATB, inv. nr. 774, *Notulen der bestuursvergaderingen kantoor Amsterdam 1876*, 22 februari 1876 (Minutes office 1876, 22 February 1876).

their contacts outside Amsterdam. These local intermediaries functioned as correspondents, which means that they executed all kinds of financial transactions on the request of the TBV. For instance, they undertook collections of accounts for the TBV in the place where they were located. These local correspondents received an allowance for taking care of such financial transactions. Not surprisingly, provincial financial intermediaries offered to act as the TBV's correspondents in a particular town. In return, the TBV often demanded to receive securities orders.<sup>55</sup> In Rotterdam wed. J. de Jongh & Zn functioned as a correspondent for the TB. Via this contact, securities orders came in on a regular basis. However, this firm got into great difficulties after some careless provision of credits in 1878. This implied the end of the TBV's main correspondent in Rotterdam. Since the TBV certainly desired a trustworthy contact in Rotterdam, the TBV decided to start a limited liability company, bearing the name the Wissel-en Effectenbank.<sup>56</sup> Apart from the contact with the correspondents, provincial clients could always contact the TBV directly in Amsterdam. Therefore, an arrow also directly runs from a 'provincial client' to the TBV in figure 7.4.

It is not quite clear why the TBV not executed its securities orders itself from the beginning. It is imaginable that the directors of the TBV felt that not enough knowledge concerning the execution of securities orders was available within the TBV itself. By deploying Gerlings & Co and by letting its employees walk along, they could learn how to behave and perform in the Dutch securities trade. The board of directors of the TBV of the Amsterdam main office clearly felt confident enough to be responsible for the execution of securities orders themselves as from 1876. Roelvink took care of the securities branch of the TBV. In 1881 Roelvink was requested to bring forth every issue regarding the securities trade in the meetings of the board of directors.<sup>57</sup> Roelvink apparently took effort in running the securities branch successfully. Blijdenstein appointed him as a managing partner of the TBV in 1884, since, so he motivated, it was

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<sup>55</sup> RAO, ATB, inv. nr. 781, *Notulen der bestuursvergaderingen kantoor Amsterdam 11 maart 1882-25 mei 1883*, 9 en 18 september 1882 (Minutes 11 March 1882-25 May 1883, 9 and 18 September 1882); idem, inv. nr. 782, *Notulen der bestuursvergaderingen kantoor Amsterdam 16 mei 1883-16 december 1884*, 9 juli 1883 (Minutes 26 May 1883-16 December 1884, 9 July 1883); idem, inv. nr. 793, *Notulen der bestuursvergaderingen kantoor Amsterdam 2 februari 1895-17 januari 1896*, 15 juli 1895 (Minutes 2 February 1895-17 January 1896, 15 July 1895).

<sup>56</sup> RAO, ATB, inv. nr. 493, *Annual Report 1878*, pp. 8-11.

<sup>57</sup> RAO, ATB, inv. nr. 780, *Notulen der bestuursvergaderingen kantoor Amsterdam 10 december 1880-11 maart 1882*, 1 februari 1881 (Minutes 10 December 1880-11 March 1882, 1 February 1881).

necessary that a managing partner represented the TBV at the ASE.<sup>58</sup> In literature, Roelvink is regarded as the brains behind the securities department of the TBV. As Wijtvliet stated, under the direction of Roelvink, the securities department became the 'money maker' of the TBV.<sup>59</sup>

Roelvink actively managed the securities department. For instance, in a meeting in 1883, he announced that he proceeded to act as both a renter and a letter of securities packages. This implied that against interest or a commission rate Roelvink rented respectively let, a package of securities.<sup>60</sup> The keeping of such let or rented security packages were called 'leendepots' ('security depositary'). In time of need, these packages were used to fulfil obligations with regard to the delivery of physical papers to other parties. If a third party was in default, and this would cause a shortage of physical securities with, the TBV could still deliver these securities by means of renting them. Hence, 'leendepots' raised the liquidity of banks while it gave them the possibility to pay off their 'securities debts' right away.<sup>61</sup>

A more fundamental change that Roelvink established was the involvement in syndicates, initial public offerings and share issues. Until 1884, the TBV had strictly occupied itself with the provision of services that come with the execution of securities orders.<sup>62</sup> According to Wintersteijn, the participation in syndicates was explicitly excluded in a description of the working of the TBV, dated in 1871.<sup>63</sup> Syndicates and share issues were definitely seen as risky undertakings. A reflection on the decision to join syndicates as from 1884, was made in the staff magazine of the TB in 1961. Two motives were mentioned. On the one hand, amongst the clientele of the TBV eligible industrial and trade firms for issues were to be found. On the other hand, the TBV had built up a clientele which was sizeable enough to place shares and bonds that came along with a participation in a syndicate.<sup>64</sup>

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<sup>58</sup> RAO, ATB, inv. nr. 782, *Notulen der bestuursvergaderingen kantoor Amsterdam 26 mei 1883-16 december 1884*, 9 juni 1884 (Minutes 26 May 1883-16 December 1884, 9 June 1884).

<sup>59</sup> Wijtvliet, *Expansie en Dynamiek*, p. 165.

<sup>60</sup> RAO, ATB, inv. nr. 781, *Notulen der bestuursvergaderingen kantoor Amsterdam 11 maart 1882-25 mei 1883*, 16 april 1883 (Minutes 11 March 1882-25 May 1883, 16 April 1883).

<sup>61</sup> RAO, ATB, inv. nr. 637, *Bank Noten. Staff magazine of the Twentsche Bank 1961*, vol. 15, no. 5, p. 11.

<sup>62</sup> Wintersteijn, *Twentsche Bankvereniging*, p. 30.

<sup>63</sup> Wintersteijn, *Twentsche Bankvereniging*, p. 18.

<sup>64</sup> RAO, ATB, inv. nr. 637, *Bank Noten. Staff magazine of the Twentsche Bank 1961*, vol. 15, no. 5, p. 11.

## Chapter 7

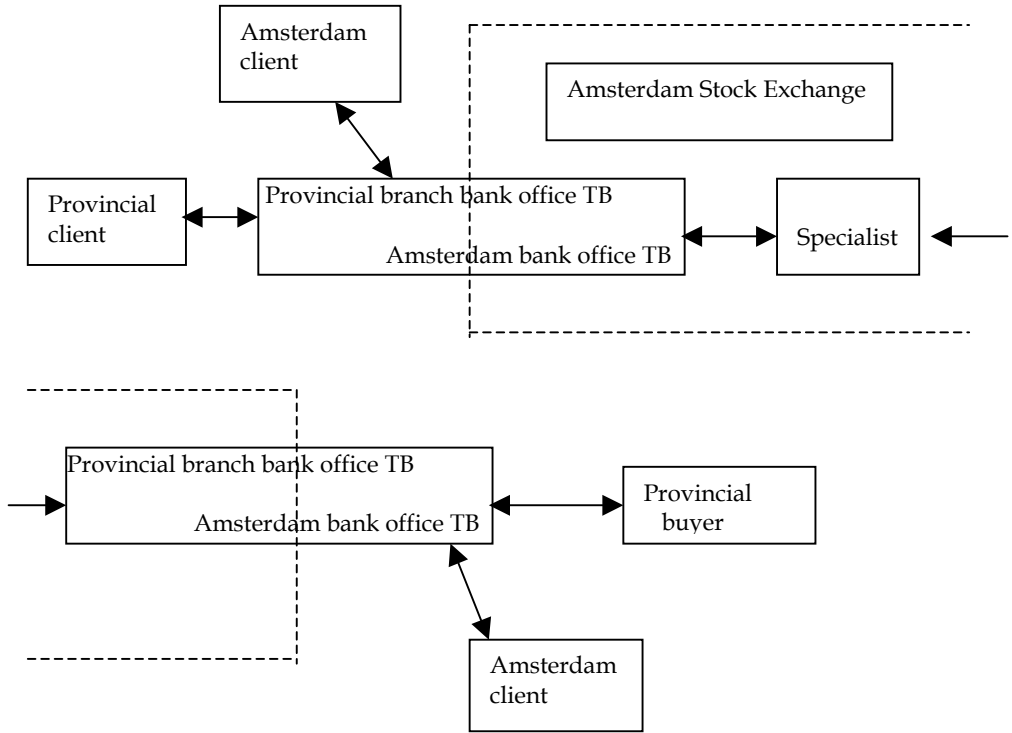
Roelvink paid visits to the province to keep in touch with local cashiers and to enter into new relationships.<sup>65</sup> The traditional contacts in Enschede could also be used to tap new sources for securities orders. The board of directors thought it a good idea if some experienced stock exchange employees from the Amsterdam office, could be placed at the office in Enschede to animate the local interest for securities. However, the managing partners of the Enschede office did not see much to it. According to them, the local securities trade did not amount to anything. The few investors Enschede counted, settled their orders with Amsterdam commission traders directly. <sup>66</sup> The dependency of local intermediaries to obtain securities orders decreased as from 1906 when the TBV started actively to take over provincial intermediaries as we saw in chapter four. The dominant organisational structure for the TB as it came to execution of securities throughout the twentieth century is visualised in figure 7.5:

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<sup>65</sup> RAO, ATB, inv. nr. 781, *Notulen der bestuursvergaderingen kantoor Amsterdam 11 maart 1882-25 mei 1883*, 7 en 8 november 1882, 13 november 1882, en 30 november 1882 (Minutes 11 March 1882-25 May 1883, 7 and 8 November 1882, 13 November 1882, 30 November 1882).

<sup>66</sup> RAO, ATB, inv. nr. 788, *Notulen der bestuursvergaderingen kantoor Amsterdam 10 juli 1890-14 mei 1891*, 14 en 18 februari 1891 (Minutes 10 July 1890-14 May 1891, 14 and 18 February 1891).

Figure 7.5: Organisation securities trade TB 20<sup>th</sup> century



Banks received commission for all kinds of services. In financial overviews, these provisions were usually not itemised per banking activity. Kymmell therefore stated that it was no use trying to detect what the commissions yielded. However, as one of the few, the TBV had listed its returns on commissions obtained from executing orders in the securities trade, although it stopped after the TBV had become a limited liability company in 1916 (table 7.5).



**Table 7.5 Returns commissions of securities trade TBV, 1877-1916.<sup>67</sup>**

<i>Year</i>	<i>Returns commissions of securities trade TBV in Dutch guilders</i>	<i>Year</i>	<i>Returns commission of securities trade TBV in Dutch guilders</i>
1877	57.340,48	1897	249.871,47
1878	83.602,79	1898	288.382,36
1879	92.355,53	1899	248.142,44
1880	134.835,98	1900	235.173,68
1881	113.486,78	1901	330.791,62
1882	129.255,40	1902	318.234,08
1883	152.246,15	1903	333.125,58
1884	160.515,47	1904	363.922,00
1885	141.150,32	1905	498.742,29
1886	153.293,09	1906	392.235,14
1887	175.307,18	1907	233.677,02
1888	185.232,75	1908	485.759,09
1889	207.650,56	1909	589.962,83
1890	184.773,58	1910	362.792,01
1891	157.599,75	1911	367.090,54
1892	172.496,58	1912	393.950,69
1893	180.718,08	1913	308.864,98
1894	156.395,77	1914	320.766,58
1895	166.463,28	1915	705.438,72
1896	182.116,22	1916	990.813,14

Out of this, we can picture how the TBV organised its securities trade outside the boundaries of its own firm. In the beginning, the managing partners of the TBV had hired Gerlings & Co to execute the securities orders of the TBV and its clients. After several years, the TBV started its own independent securities department, supervised by Adam Roelvink. From this period, the TBV acted as a full commission trader on the ASE. The securities orders came in via their clients, but also via the contacts of provincial cashiers. Indeed, the board of directors of the TBV encouraged the policy to actively bring in securities orders. The next step is to get inside the firm in order to detect the role of telecommunication technologies in the contacts of staff and employees in relation the way the TBV organised the execution of security orders and everything that comes with it.

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<sup>67</sup> Source: RAO, *Annual Reports TBV 1877-1916*.

### *7.6 Daily practice securities trade TB(V)*

Besides the actual execution of an order at the ASE, the TBV also offered other services in relation to the securities trade. The Twentsche Bankvereeniging published a weekly report for all their clients consisting of price quotes and relevant information on the securities trade.<sup>68</sup> In 1877, the board of the directors decided to limit the frequency and circulation of this report. It was going to be published at irregular times and recipients were confined to clients who regularly sent buy and sell orders. The motives for this switch in frequency and recipients are not given but it seems that the directors did not want others to profit from their gathered information. Furthermore, one of the directors insisted that, at the foot of each securities account which was sent to clients, a note on the securities trade needed to be placed. The concerned director did not expand on the exact contents of this note. This was done since 1876, thus, in the same year that the contact with Gerlings & Co was broken. Two senior employees had to check whether the prices, written down in the securities accounts, were correct and needed to make 'some remarks concerning the securities market'.<sup>69</sup>

Certainly clients asked for advice. For instance, in 1877, a client from Arnhem wished to know how the senior staff of the TBV thought about the Eastern Issue ("Oosterse Quaestie") and how a possible war would affect the securities trade. The TBV responded in very reluctant terms; that the TBV had no opinion about the Eastern Issue, that the feelings on the ASE were mixed, and that the TBV believed that it had taken sufficient measures in case war broke out.<sup>70</sup> These vague answers did not remain unnoticed. Blijdenstein himself urged on to be more specific and more explicit when clients of the TBV asked for advice in relation to the securities trade as long as the public was not encouraged to speculate.<sup>71</sup> Still, the TBV remained rather prudent in the distribution of information. For instance, in 1917 still, J.J. Th. Blijdenstein, a son of B.W.

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<sup>68</sup> RAO, ATB, inv. nr. 773, *Notulen der bestuursvergaderingen kantoor Amsterdam 1875*, 13 oktober 1875 (Minutes 1875, 13 October 1875).

<sup>69</sup> RAO, ATB, inv. nr. 774, *Notulen der bestuursvergaderingen kantoor Amsterdam 1876*, 23 februari 1876 (Minutes 1876, 23 February 1876); idem, inv. nr. 775, *Notulen der bestuursvergaderingen kantoor Amsterdam 29 december 1876-17 januari 1877*, 2 januari 1877 (Minutes 29 December 1876- 17 January 1877, 2 January 1877).

<sup>70</sup> RAO, ATB, inv. nr. 776, *Notulen der bestuursvergaderingen kantoor Amsterdam 18 januari 1877-27 augustus 1877*, 20 februari 1877 (Minutes 18 January 1877-27 August 1877, 20 February 1877).

<sup>71</sup> RAO, ATB, inv. nr. 776, *Notulen der bestuursvergaderingen kantoor Amsterdam 18 januari 1899-27 augustus 1877*, 28 juni 1877 (Minutes 18 January 1877-27 August 1877, 28 June 1877).

Blijdenstein, stated that the giving of information on securities might by no means degenerate in the providing of tips!<sup>72</sup> The TBV also offered the possibility to their clients to stop by the office itself and ask questions concerning their investments. Their questions could then be answered in a more personal way.<sup>73</sup>

Until around the end of the nineteenth century, the orders for buying and selling securities came in at the main office of the TBV in Amsterdam mostly per mail or per telegram. Mostly, because probably some orders also came in via personal contacts. The official stock exchange hours ran from 13.30 to 14.45 hrs. If the order was received after 13.00 hrs, the clients were settled against the mid-rate. If orders were received before 13.00 hrs, the orders could be executed, in accordance to the wishes (limited to a certain buy or sell price) of the client.<sup>74</sup> A range of clients gave orders for buying and selling securities: private persons who owned a securities account with the TBV, financial intermediaries such as cashiers, and small bankers, financial intermediaries with whom the TBV maintained personal relationships such as the Wissel- and Effectenbank at Rotterdam, and later the branch offices of the TBV.<sup>75</sup>

The orders received at the office before 13.00 hrs were simply written down and taken to the Exchange. The stock exchange employees went to the Exchange building around 13.00 hrs or probably somewhat earlier. There, already some informal talks between stockbrokers, and amongst their servants, took place. Since the Zocher building had a telegraph, a post office and since 1884 also a telephone bureau, orders could also be sent directly to the Exchange. Errand boys of the P & T service walked around to deliver the telegrams and mail messages to the traders. Errand boys of the NBTM walked around to inform the traders if a call had come in for them. Errand boys of the TBV itself probably brought messages that came in at the office of the TBV after 13.00 hrs to the Exchange building. These errand boys also delivered messages at the Exchange building and back again to the TBV office. After the telephone had become more current, errand boys also became less necessary

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<sup>72</sup> RAO, ATB, inv. nr. 819, *Notulen der bestuursvergaderingen kantoor Amsterdam 31 mei 1917-4 januari 1918*, 27 september 1917 (Minutes 31 May 1917 – 4 January 1918, 27 September 1917).

<sup>73</sup> RAO, ATB, inv. nr. 804, *Notulen der bestuursvergaderingen kantoor Amsterdam 7 november 1903-3 augustus 1904*, 3 juni 1904 (Minutes 7 November 1903-3 August 1904, 3 June 1904).

<sup>74</sup> RAO, ATB, inv. nr. 781, *Notulen der bestuursvergaderingen kantoor Amsterdam 11 maart 1882-25 mei 1883*, 26 juni 1882 (Minutes 11 March 1882-25 May 1883, 26 June 1882).

<sup>75</sup> RAO, ATB, see inv. nrs. 773-837, *Notulen der bestuursvergaderingen kantoor Amsterdam 1875-1949* (Minutes 1875-1949).

although these messengers remained useful for a long time. Especially within the cities, they were faster than the telephone connections.

The clients received an overview of their securities account by mail. Some clients demanded to be informed earlier. In 1880, a client from the TBV requested whether his securities contract notes could be sent by the early mail service. Unfortunately, the TBV could not meet his request but the Bank was willing to send him a memorandum by the early mail service.<sup>76</sup> Mispelblom Beyer, a bankers firm from the Northern part of the Netherlands (Leeuwarden), demanded to be informed on their concluded orders by means of a telegram immediately after the Exchange had closed.<sup>77</sup>

Since the administration that came along with securities trade, appeared to be enormous, the TBV set up a separate limited liability company the 'Twentsche Trust Maatschappij' in 1901.<sup>78</sup> This Twentsche Trust Maatschappij actually functioned as a bond administration office which function was explained in chapter three. Another service related to the securities trade was the obtaining and passing through of the physical security papers. The TBV even used a coach to deliver the securities. Unfortunately, an employee of this Bank once stumbled and fell when he got off the coach. The wind took the security papers and blew them across the street and in a canal. After a serious talk with his superiors, the man resigned.<sup>79</sup> Just as the Robaver, the TBV offered to store the security papers in safe deposits. In 1901, room was made in the main office of the TBV in Amsterdam for small safes in which clients could leave their physical securities. The interest for these safes appeared to be large, as can be seen in table 7.6:

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<sup>76</sup> RAO, ATB, inv. nr. 780, *Notulen der bestuursvergaderingen kantoor Amsterdam 10 december 1880-11 maart 1882*, 21 december 1880 (Minutes 10 December 1880- 11March 1882, 21 December 1880).

<sup>77</sup> RAO, ATB, inv. nr. 780, *Notulen der bestuursvergaderingen kantoor Amsterdam 10 december 1880-11 maart 1882*, 13 december 1880 (Minutes 10 December 1880-11 March 1882, 13 December 1880).

<sup>78</sup> RAO, ATB, inv. nr. 637, *Bank Noten. Staff magazine of the Twentsche Bank 1961*, vol. 15, no. 5, p. 11.

<sup>79</sup> RAO, ATB, inv. nr. 792, *Notulen der bestuursvergaderingen kantoor Amsterdam 10 april 1894-2februari 1895*, 28 december 1894 (Minutes 10 April 1894- 2 February 1895, 28 December 1894).

**Table 7.6: Number of rented safes for securities and valuable possessions in the TB office.<sup>80</sup>**

<i>Year</i>	<i>Number</i>
1902	275
1903	501
1905	734
1906	921
1908	1309
1909	1628
1913	2384
1914	2665
1920	3452
1946	19553
1950	17703
1960	25045

Besides taking care of the execution of orders for their clients, the TBV also provided them with information related to securities. Just as with the RB, a change in providing securities trade services was seen after an organisational change. After the TBV had broken with Gerlings & Co, it started to execute orders itself. However, this change had a less direct impact on the organisation of the TBV than was the case in RB. The difference in impact results from the situation that the TBV did not have to move to another city, as was the case with the RB, and the TBV had already some experience and know-how in house concerning the practice at the trade floor due to their servants who helped Gerlings & Co. The change in services was thus less immediate as with the RB. Another activity was that the TB informed its clients on the results of their orders. Some clients received a telegram directly after the ASE had ended. So the existing services were speeded up by means of ICT. After the execution, the TB took care of the administrative part which consisted of keeping up the account overviews, delivering and receiving of the traded papers, and as from 1900 the storing of securities in safes against a monthly rent.

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<sup>80</sup> RAO, ATB, inv. nr. 494, *Annual reports* 1903, 1906, 1909, 1914, 1920; and idem, inv. nr. 495, *Annual Reports* 1946, 1950, and 1960.

### *7.7 Securities trade with commission traders*

A specific interesting group of study form the provincial financial middlemen since they had to maintain contacts with Amsterdam to execute their stock exchange operations and with their clients in the province. The problem is to figure out how these communication lines exactly ran and worked. Some information of provincial middlemen and their procedures is known which will be discussed below. Yet, this information is not as complete as we had on the RB and TB.

W. Laane, a bankers firm from Roosendaal and Bergen op Zoom founded in 1860, with a branch office in Oudenbosch, maintained contacts with Lippmann Rosenthal & Co who took care of Laane's securities orders.<sup>81</sup> Vlaer & Kol, founded in 1691 in Utrecht, acted as a provincial financial middlemen, at first as a cashier but later this firm started to focus on the securities trade and also on the providing of credits. Another part of the Kol family was active in Amsterdam in the same branch, first as Kol & Boissevain (Boissevain died in 1879), as from 1885, under the name Jan Kol & Co, and since 1913 as Kol & Co while in this year, Jan Kol left the firm.<sup>82</sup> For convenience sake, I will refer to this firm as Kol & Co. Kol & Co and Vlaer & Kol worked closely together. They even used joint notepaper to stress their co-operation.<sup>83</sup> Not surprisingly, Kol & Co functioned as Vlaer & Kol's intermediary at the Amsterdam Exchange. Hence, for these provincial intermediaries, one of the figures out of chapter four applies perfectly. In figure 7.6, we see how a provincial intermediary contacts who to execute the securities orders he received via his clients.

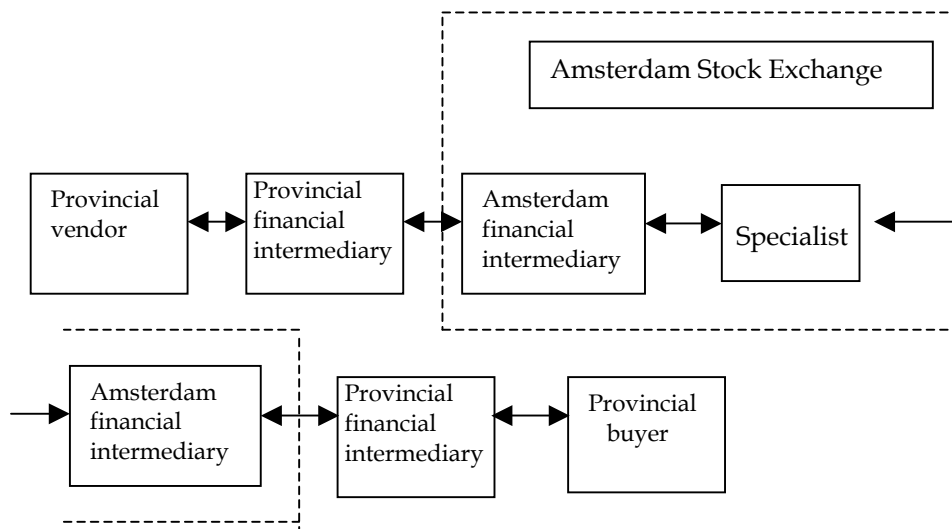
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<sup>81</sup> C.F. Scheffer (1979) *Van Bank naar Bank. Herinneringen aan het bankwezen*. (Coöperatieve Centrale Raiffeisen-Boerenleenbank B.A.; without place) p. 21.

<sup>82</sup> Het Utrechts Archief (HUA), Archives of the Kol family, of the bankersfirms Vlaer & Kol, Kol & Co and of the N.V. Crediet en Deposito Kas, entrance number 715-1, inv. nr. 413 *Minuten van brieven van de firma Jan Kol, resp. Kol & Co, 1879-1922* (Minutes of letters of the firm Jan Kol, resp. Kol & Co, 1879-1922), *Circulaire*, 31 december 1879 (Circular 31 December 1879) and *circulaire* 31 oktober 1913 (Circular 31 October 1913); idem, inv. nr. 425, *Akten van oprichting van de firma Vlaer & Kol 1888*. (Memorandum of Association of the firm Vlaer & Kol 1888).

<sup>83</sup> HUA, archive Kol, inv. nr. 454, *Gezamenlijk briefpapier uit 1902 Jan Kol & Co te Amsterdam en Vlaer & Kol te Utrecht* (Joint note-paper Jan Kol & Co at Amsterdam and Vlaer & Kol at Utrecht 1902).

Figure 7.6: Organisation securities trade provincial intermediary



Kol & Co executed Vlaer & Kol’s stock orders at the ASE and it kept its colleagues in Utrecht informed with regard to news which may affect the prices on the stock exchange. For instance, Kol & Co sent copies of their financial transactions for Vlaer & Kol several times per week by mail. On the back of these copies, notes concerning the Exchange were written down. These notes varied from ‘today nothing happened’ to ‘rumours go that something is wrong with a cashier firm in Groningen’.<sup>84</sup> If news was very important and sudden, Kol & Co would try to contact Vlaer & Kol by phone immediately. For example, one day it became known that a firm (owned by a certain ‘De Goeyen’) had ceased to exist. Apparently, the person or firm in question, had sold large packages of dollars without having received the payments for it. This message hit the Exchange hard. Jan Kol had tried to call Vlaer & Kol but he could not get to a phone since it was too crowded at the telephone bureau.<sup>85</sup>

The supply of information did not work as a one-way street. Kol & Co sometimes asked Vlaer & Kol for information on persons or firms that were probably known to Vlaer & Kol or maybe lived in Utrecht or its

<sup>84</sup> HUA, archive Kol, inv. nr. 454, Afschriften financiële transacties, 24 januari 1903 en 17 augustus 1903 (Copies financial transactions, 24 January 1903, and 17 August 1903).

<sup>85</sup> HUA, archive Kol, inv. nr. 454, Afschriften financiële transacties, 7 oktober 1903 (Copies financial transactions, 7 October 1903).

surroundings.<sup>86</sup> The type of information Kol & Co wished to receive from Vlaer & Kol, laid in the area of a person's or a firm's financial situation, now and in the past, and its reliability. Vlaer & Kol supplied that type of information also to other business relations as the bankers firm R. Mees & Zoonen from Rotterdam.<sup>87</sup> Hence, we see here the existence of a network of financial intermediaries who stood in contact with each other to supply each other with information.

How was information provided to clients of these provincial intermediaries? According to Mr. E.P. Bloembergen, director of a broker's office at The Hague in the 1930s, a small intermediary was pre-eminently fit for the supply of relevant information to clients. Bloembergen especially stressed hereby the amount and quality of information his office obtained. For instance, his office received all types of information such as the course of events at the ASE after 13.30 hrs, the opening prices of Wall Street after 15.30 hrs and, if there was any, sudden unexpected news. Any interested person was cordially invited to call Mr. Bloembergen's firm and he or she would receive the desired information.<sup>88</sup> Although it is imaginable that the supply of information, and probably foremost the advisory part, occurred on a more personal basis than with a large bank, the types of information Bloembergen mentioned here, were also available to clients of large banks. Hence, the advantage of a small intermediary, as it comes to information, is not that obvious.

Branch offices of Amsterdam commission traders perhaps even possessed 'better' information than an independent provincial middleman such as Bloembergen while they stood in direct contact with the main office in Amsterdam. Louis Korijn & Co, a stockbroker from Amsterdam had a branch office in Rotterdam. With the coming of the telephone, the employees of the Rotterdam office stood almost continuously in contact with the main office in Amsterdam, the ASE and their clients to receive and pass on information. Besides, the employees kept their knowledge up to date by gathering as much as relevant information concerning listed

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<sup>86</sup> HUA, archive Kol, inv. nr. 454, Afschriften financiële transacties 13 februari 1903 (Copies financial transactions, 13 February 1903).

<sup>87</sup> HUA, archive Kol, inv. nr. 456, Diverse brieven van effectenafdeling van R. Mees & Zoonen te Rotterdam 1915-1916 (Various letters from Securities Department R. Mees & Zoonen Rotterdam 1915-1916).

<sup>88</sup> HUA, archive Kol, inv. nr. 979, 'Het bestaansrecht van particuliere kassiers- en effectenkantoren' door E.P. Bloembergen te Den Haag, 1932 (The right of existence for private cashiers- and brokers offices by E.P. Bloembergen, The Hague, 1932).



firms. This relevant information came from studying financial newspapers, reports, and all other kinds of news.<sup>89</sup>

Vlaer & Kol advised their clients personally on their investments. Either Mr. Vlaer or Kol even warned clients who took too much risk. A special room at the office of Vlaer & Kol was reserved for these talks. One client could not bear to live with the consequences of his speculations; he committed suicide in this special room after a reprimand of Mr. Kol.<sup>90</sup> Also, the board of directors of Lissa & Kann, a bankers firm from The Hague, and specialised in the trade in stocks and shares, maintained very personal contacts with its clients.<sup>91</sup>

If the orders were received before 13.30 hrs at the Exchange itself, Kol & Co guaranteed execution against the mid-rate. Note that the TBV acted the other way around. The TBV had as a rule that orders received after 13.00 hrs were executed against the mid-rate while the orders received before 13.00 hrs. and with a limit to the minimum and/or maximum buy or sell price were concluded against its proposed limits. Kol & Co made the reservation that this only applied to orders for active stocks in normal times.<sup>92</sup> This condition can be explained from the knowledge that trade in inactive securities only occurred at irregular times. This could result in a situation that you should almost be thankful if a buyer or seller of a certain security appeared and thus, the height of the price became less important. Also, in more chaotic times or even a crisis, in general, people wanted to sell against each price that came forth. The question arises what Vlaer & Kol did with orders received during the official stock exchange hours. It is not very likely that these were limited orders although I assume that 'bestens' orders formed the majority that were passed on during stock exchange hours. The reason why this assumption is made, is that 'bestens' orders need to be executed right away, irrespective of the current price. If someone would pass on a limited order he or she could not be sure if the order might be executed that day while that was depended on the limits the client had given. So, since a limited order is in any case less urgent than a 'bestens' order, I assume that more 'bestens' orders were given during the official trade time than limited orders are. Remember that trade time

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<sup>89</sup> Scheffer, *Van bank naar bank*, pp. 36-37.

<sup>90</sup> HUA, archive Kol, inv. nr. 983, "Het oude kantoor". Herinneringen van N.C. Haksel aan de tijd toen hij bij de firma Vlaer & Kol in dienst trad (1 juli 1886). ("The old office". Memories of N.C. Haksel to the time he started to work at Vlaer & Kol. 1 July 1886. Memories were written down in 1947).

<sup>91</sup> Geljon, *Een zeer persoonlijk effectenhuis*, p. 107.

<sup>92</sup> HUA, archive Kol, inv. nr. 454, Afschriften financiële transacties, 24 augustus 1903 (Copies financial transactions, 24 August 1903).

only covered one hour and a quarter of an hour. Before interurban telephony was possible (so before around 1900) Vlaer & Kol sent their securities orders to Kol & Co in Amsterdam by mail and telegram. These concerned orders assigned before trade time.<sup>93</sup> What was done with orders, given during trade time, is not mentioned. Vlaer & Kol also used the telephone to inform their clients about the executed orders.<sup>94</sup>

Out of this we can conclude that provincial middlemen mainly dealt with one fixed Amsterdam correspondent to execute their securities orders and that they gathered information concerning the securities trade, supplied their clients with this information, and advised their clients on their securities orders. It remains however unclear what information- and communication technologies they had in-house, and for what purposes these provincial intermediaries deployed ICT. From the archive of Vlaer & Kol, we know in any case that telegrams were used to pass on orders to Amsterdam. From the moment interurban telephony belonged to the possibilities, Vlaer & Kol also used the telephone to pass on the orders. We also learned that Vlaer & Kol deployed the telephone to inform their clients about the results of their executed orders.

#### *7.8 Schematic overview in securities trade and the use of ICT in contacts between intermediaries and their clients*

Hence, a client needed a stockbroker for several purposes of which the main purpose existed in the execution of orders. Yet, it must have been possible to execute your own orders at the beginning of active Dutch securities trade, thus as from 1602 (establishment VOC). Still, the execution of orders by intermediaries is the dominant picture throughout the seventeenth, eighteenth, nineteenth and twentieth century. On the basis of the information about the two banks and provincial middlemen that we discussed above, we can state that intermediaries performed more activities than the execution of orders alone. In this section, a general overview of steps, taken before, during and after the actual execution of an order, is drafted.

First, an investor needed to know what went on at the stock exchange. A private investor must have had a hard time obtaining relevant information. Not until 1795 did a regular appearing securities price journal

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<sup>93</sup> HUA, archive Kol, inv. nr. 983, "Het oude kantoor". Herinneringen van N.C. Haksel aan de tijd toen hij bij de firma Vlaer & Kol in dienst trad (1 juli 1886). ("The old office". Memories of N.C. Haksel to the time he started to work at Vlaer & Kol. 1 July 1886. Memories were written down in 1947).

<sup>94</sup> HUA, archive Kol, inv. nr. 432, Memorandum Kol & Co te Amsterdam aan Vlaer & Kol te Utrecht, 27 mei 1920 (Memorandum Kol & Co ,Amsterdam, to Vlaer & Kol, Utrecht, 27 May 1920).

exist.<sup>95</sup> Accordingly, the private investor mainly relied on financial intermediaries. The latter group attained their data from the actual trade and from what they heard amongst their fellow traders although many deliberate false gossips and rumours circulated. This type of information was certainly not exclusive since anyone could visit the Exchange building. Certainly, an investor could inform himself by studying the newspapers that published stock exchange quotations but he could also ask a stockbroker for information.<sup>96</sup> A financial intermediary tried to keep his knowledge concerning listed companies up to date by reading professional literature, financial newspapers, weekly news reports and so on. With the help of this information, stockbrokers could inform their clients.<sup>97</sup> from The TBV for example published weekly a report for its clients which provided information concerning the stock exchange. Information could also be transferred more personally. If client and commission trader lived in the same town, they could meet each other at the office or at home. Telecom technologies made it possible that information became available on a real time basis, especially with the introduction of the telephone. Clients of commission traders could be informed *during* official opening hours of the Exchange building.<sup>98</sup>

Second, an investor could ask for advice. However, most commission traders were reluctant in giving explicit advice. They were willing to provide relevant information but declined to give a strong view on securities to their clients. The reason why most stockbrokers adopted this attitude was that they did not want to urge speculation.<sup>99</sup> Speculation contains the selling respectively buying of securities, (foreign) currency, gold etcetera in order to repurchase them against a lower price at a subsequent moment respectively selling against a higher price. The buying of securities and shortly after, selling the same securities against a higher price is called a bull transaction. Persons who execute this type of trade are called bull operators. The selling of securities that are not in one's

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<sup>95</sup> De Vries, *Een eeuw*, p. 19.

<sup>96</sup> De Vries, *Een eeuw*, p. 112; Willem Schürmann [1912] *Speculanten. Een kluchtig spelletje van de beurs*. (De Maatschappij voor goede en goedkoope lectuur; Amsterdam) p. 25.

<sup>97</sup> Scheffer, *Van bank naar bank*, p. 37.

<sup>98</sup> Note that for a long time (until the 1980s) the official stock exchange hours were one and a quarter of an hour per day, except for Sundays, from 13.30-14.45, 1947: 13.20 - 14.30 hrs. 1959: 13.15-14.30 As from ??, 13.00-15.15 hrs., 1967: 11.30 - 14.15 hrs., 1985: 10.00-4.30, 1992: 9.30-16.30. Before and after these official opening hours deals were also concluded.

<sup>99</sup> RAO, ATB, inv. nr. 776, *Notulen der bestuursvergaderingen kantoor Amsterdam 18 januari 1877-27 augustus 1877, 28 juni 1877* (Minutes 18 January 1877- 27 August 1877, 28 June 1877); Geljon, *Een zeer persoonlijk effectenhuis*, pp. 107-108.

possession and buying them at a moment that the buying price is lower than the selling price, is called a bear transaction. A person that executes bear transactions is called a bear operator.<sup>100</sup> Speculation stood in bad odour in Dutch society. For instance, in a farce, performed for the first time in 1906, speculation was depicted as something decent people did not take part in and as a disgrace to the family.<sup>101</sup>

Third, after having been informed and/or advised, the client had to make a decision and indicate whether he wanted to buy or sell. The decision-making process altered since telecommunication technologies became available, especially due to the telephone, while it meant that with the help of up to date information, investors could, in theory, make decisions on a real time basis. Fourth, a client had to send word to his stockbroker about his orders. In doing that, he had to point out whether he would like to place a limited order or a 'bestens' order. Besides, a client needed to indicate the time span of their orders: day-orders or good-till-cancelled orders.<sup>102</sup> A client could pass on his orders by means of mail, telegraph or telephone.

The fifth activity consists of passing on the orders to the employees on the floor of the Stock Exchange. Normally, a client sent his orders to the office of his personal (provincial) financial intermediary. Then, the staff of the stockbroker's office contacted the employees or the stockbroker himself at the Exchange building. Large clients could communicate directly to a stockbroker in the Exchange building by means of the telephone. An Amsterdam client could visit the Exchange building and could have a small talk with his commission trader at the gate that closed off the trading floor.<sup>103</sup> By means of the telegraph and the telephone, investors could notify their orders during the official trading hours.

Sixth is the negotiating part. Hopefully the financial intermediaries tried to obtain the best prices for themselves and for their clients. Hopefully, because not all commission traders appeared to be that honest or competent.<sup>104</sup> On the other hand, the question is, strangely enough, whether that much room was left for negotiating. Often, it was merely a question of who accepted what was offered.

The actual execution of the order on the ASE can be considered to be the seventh activity. This activity was the domain of specialists. They

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<sup>100</sup> Mendes da Costa, *Het A.B.C. van de Amsterdamschen effectenhandel*, p. 17.

<sup>101</sup> Schürmann, *Speculanten*.

<sup>102</sup> Mendes da Costa, *Het A.B.C.*, pp. 16-17.

<sup>103</sup> De Vries, *Een eeuw*, p. 95.

<sup>104</sup> De Vries, *Een eeuw*, p. 107.

gathered the buy and sell orders and tried to match these orders. Until the 1970s, no telecom technologies were involved with this activity. As we saw in chapter five, specialists took the initiative to install an internal telephone system that connected stock exchange booths with each other. In this way, stockbrokers could, from their stock exchange booth, inquire for current information with a specialist or pass on an order by phone instead of crossing the stock exchange floor. Despite its convenience, the VvdE decided to prohibit this internal telephone system in 1974 because it favoured the stockbrokers that had a connection over the stockbrokers that were not connected to this internal telephone system.

Eighth, a client could be informed in several ways concerning the result of his order. Every client received an overview of his account by mail. A client only heard a few hours to a few days after closing time which of his transactions were concluded against what prices. Due to use and deployment of telecommunication technologies a client could be informed right away concerning the results of his or her orders.

The ninth service was to keep up the administration of the clients. A classical certificate consists of two parts: a body of a security, and a coupon sheet respectively, a dividend sheet, that depending on the fact on whether it is a bond or share. A stockbroker administrated who had bought and sold what securities and collected the dividends and coupons for their clients. Every time dividend or coupons were paid, a part of the coupon sheet or a dividend coupon needed to be cut off. The cutting off appeared to be a very time-consuming activity. As soon as became clear what a financial intermediary had bought and sold, the exchange of the physical security papers commenced.

The obtaining and passing through of the physical security papers is distinguished here as the tenth activity of a financial intermediary in the trade in stocks and shares. Every day, messengers ran or cycled through the city to other financial intermediaries to deliver the physical security papers. Not surprisingly, some of these messengers got robbed.<sup>105</sup>

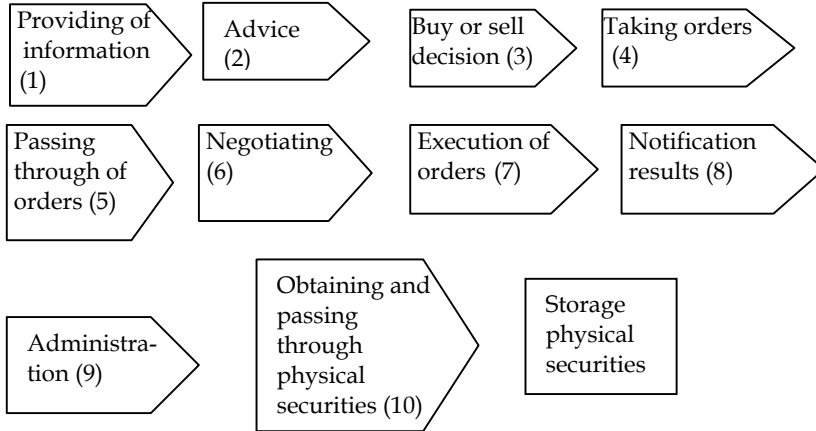
As an eleventh service to their clients, some financial intermediaries offered to store the security papers in safe deposits. Figure 7.7 lines up all the above discussed activities. Between these activities transactions take place because the activities imply that contact has to be made with clients or other intermediaries. Since such a contact is

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<sup>105</sup> RAO, ATB, inv. nr. 782, *Notulen der bestuursvergaderingen kantoor Amsterdam 26 mei 1883-16 december 1884*, 5 augustus 1884 (Minutes 26 May 1883- 16 December 1884, 5 August 1884).

transferred from technologically separable interfaces, we regard these contacts as transactions.

Figure 7.7: Schematic overview activities trade of bonds and shares



The schema is presented here as a sort of timeless situation. Indeed these eleven activities still exist. In the course of time, a change was not seen in the fact that new activities were added or existing activities disappeared but they did change in the way they were executed such as the acceleration of services in which information is exchanged. Also, the administrative part became increasingly more carried out with the help of administrative machines ('ponskaartmachines'), counting machines for coupons, and later of course, computers. Also, the obtaining and passing through of the physical securities and their storage in safes has been automated since the establishment of the 'Effectenclearing N.V.' in 1961. The VvdE established the 'Effectenclearing N.V.' in order to do away with the, rather risky, practice of errand boys running around the city with very valuable papers.<sup>106</sup>

### 7.9 Discussion

In this chapter we have discussed the way joint stock commercial banks and commission traders organised their services related to the securities trade. In the last section an all-round overview of activities in the securities

<sup>106</sup> De Vries, *Een eeuw*, pp. 153 and 250.

trade was formulated which forms the answer to subquestion (b) *what are the separate activities of the intermediaries in the securities trade?* The number of activities remained more or less the same throughout the nineteenth and twentieth century. What did change was the way they were performed. For instance, a client needs to be informed on the execution of his orders. In 1790 the client received an overview of his account the following day, in 1950 the client received a phone call right after his order was concluded. We also learnt the different information sources (subquestion h) of the different actors. The traders, whether they were large joint stock commercial banks or small provincial commission traders all had telephones, tikkers (depended on the residence since the Tikkerdienst only provided services via the tikker in Amsterdam and The Hague) and telexes in-house. A difference was that the RB and the TB also possessed a telegraph connection to the Rijkstelegraaf which the smaller stockbrokers did not have. Another difference was the scale of employed ICT facilities. The joint stock commercial banks simply had more means to install large ICT facilities. A consequence of this greater scale was also that joint stock commercial banks hired direct trunk lines to link their branch offices with the main office in Amsterdam. If a small commission trader had a branch office at all, he probably did not link up these offices by means of direct telephone lines due to high costs. A 'small' stockbroker would more likely have had a relationship with a local intermediary to obtain orders, or vice versa to execute the orders for him at the ASE. It would impose too great a risk to have a direct telephone line with only one stockbroker, whatever the location of both stockbrokers. A private investor did not have these wide facilities. He or she could have a telephone connection and, in theory, a telex or tikker connection also belonged to the possibilities. However, in reality most subscribers to these services were professionals. If a private investor owned or hired these telecom facilities, he or she must have been very wealthy. Other information sources for these people were newspapers, reports of their stockbroker and the stockbroker himself. For what purposes were those information sources deployed? Or in other words *how did the involved actors deploy ICT in the securities trade?* (subquestion f). In this chapter, we learnt that the information sources were necessary to gather and provide information on securities (as well as before as during official trade hours), to pass on orders (from client to stockbroker, from stockbroker to ASE, or directly from client to the ASE), and to pass on the results of the concluded orders.

Intermediaries performed the distinguished activities (figure 7.7). By performing these activities, intermediaries created value for their clients and for their colleague intermediary. The question now arises of how much value intermediaries created (subquestion (c) *what value do intermediaries in the Dutch securities trade create?*). What could be done to determine 'value' is to take the amount of money which clients pay to their intermediaries for these services. The payment is represented in the commissions: a fixed percentage of the concluded order. Yet, we can doubt whether the commission fee represents the value that is at stake here. For instance, what if a commission trader is renowned for the fact that he offers high quality information. Since the commission fees were fixed in 1903, the value for providing good information is not represented in the commission fee. After all, another stockbroker who gives information of lesser quality to his clients, receives the same commission fee. Hence, value is created in the way the activities are performed and not in receiving a commission fee. We want to know if ICT influenced this performance. Therefore, it is necessary to focus on the activities by which the impact of ICT should be most obvious. These activities clearly relate to the obtaining, relaying, and receiving of information. As was made clear in this chapter, the timing of information advanced due to ICT. What also became clear is that different types of information have different 'time-values'. In other words, some information is more valuable if it is transferred immediately after it becomes known. Other information may preserve its value whether it is relayed directly or after a few hours. Most certainly, value is created in securities trade if one learns from relevant information in an early stage. If one can profit from this information, the created value is thus also appropriated. ICT can significantly speed up the process of obtaining and receiving of information and thus enhance the ability to create value. The ability to create value thus relates to the timing of information, and thus with subquestions (i) *at what time (during trade hours, the same day, the day after?) did actors receive information* and (j) *did the timing of transfer of information change over time?* In order to adequately answer these questions, first we have to make a division between the different types of information that are of importance to the securities trade (subquestion g).

The most valuable information is information of which its value decreases or even disappears if it is not relayed and received instantaneously. Its value increases if it is transmitted quickly and obtained earlier than others. The questions arise what types of information



are at stake and what the most time valuable types of information are. We distinguished the following types of information:

- price information
- information on the micro level, thus on the level of the firm (for instance, on mergers, or on fraud of bookkeepings)
- information on the industry level (meso-level)
- information on a macro economic level (for instance on (un)employment, foreign direct investments, gross national product)
- political news (resignation of a government or an announcement for going to war)
- natural disasters (floods, virus outbreak)

Information on prices most directly influences the prices itself. If an active investor sees prices fluctuating, he or she probably reacts by selling or buying securities even though the reasons for the fluctuations are not clear. The reasons for price fluctuations may be various. It could be based on one of the other types of information or it could be just for emotional reasons; based on a rumour or on the fact that others sell or buy securities for reasons you do not know. Since prices change more often than the other types of information, and the fact that they are only valuable within the period of the trade hours, prices are highly time valuable. Therefore, we regard price information as the most valuable type of information.

The second type of information that influences trade in securities is information on the firm level. This concerns information on the financial situation of a firm, its operational activities and its strategic activities. If news comes out that a firm has decided to integrate vertically, which means that a firm extends its activities, this usually positively influences the price of its shares. If a firm appears to be unprofitable, the value of its shares decreases. This type of information appears less 'frequent' than information on prices; a firm does not merge every day. This type of information can be made known at every moment of the day and is most valuable at that moment. The value of price information is specifically related to the fixed trade time, and therefore more time specific than information on the micro level.

The third type of information relates to the industry level. A good example for this sort of information forms the 'ICT-hype' at the end of the twentieth century. At first, every ICT firm, whether it concerned production type firms or service type firms, could count on a huge interest with an initial public offering for its shares if the concerned firm was

already listed. The interest concerned the ICT sector and not so much the positive results of individual firms. As soon as it became clear that ICT activities did not yield any profits, the hype collapsed. The prices of shares of ICT firms decreased dramatically. This type of information has an impact on a whole sector. Eventually, it influences the share value of individual firms but not so directly and fast as information on the level of the firm. Therefore, industry level information is regarded as less valuable than micro level information.

Information on a macro economic level is regarded here as the fourth type of information. The sort of information at which we aim here is information that gives insights into the general economic situation of a country, a continent or the world. For instance, investors would like to know if the economy in general flourishes or is in crisis, or what the interest rates are for credits. At the moment, world economy is in a recession. As a consequence, investors are less active on the securities market. The interest rate is of importance since it is seen as a stimulator for investments. Information on the macro economic level thus reflects the economic situation which affects the buying and selling behaviour of investors. This type of information has a less direct impact on the securities trade than price information, and information on both the micro and meso level. Thus, we regard this type of information less valuably than the first three types.

The fifth sort of information concerns political news. For instance, if a new government needs to be installed, a liberal administration is considered to be more advantageous to trade than a left wing government. Such news can positively influence the atmosphere in the securities market but not so directly as the above mentioned types of information. The same counts for the sixth type of information. News on an area that has been afflicted by an earthquake or another type of calamity certainly affects economic activity, and thus also indirectly influences the trade in valuable papers. Yet, it has not such a direct impact on the rates of securities as the first four information types.

Obviously, most value is created if one is well acquainted with the current trend in prices. ICT can be a means to improve the process of creating value from information. But, just as different types of information exist, different means of information and communication technologies are available. It is very well conceivable that for the relaying of different types of information, different types of ICT are used. Price information needs

quick conveying so it is logically transmitted by an ICT mode that is equipped with such abilities.

We now return to subquestions (i) and (j). As concerns current price information, this type of information was to be found at the stock exchange floor, in particular with the specialists of the listed securities. The specialist received the buy and sell orders of the stockbrokers. On basis of these orders, the specialist formed a rate. Since a specialist reviewed all orders, he had the best insights in the market of a particular security. How would you obtain this information if you were not a specialist or a stockbroker who had access to the stock exchange floor?

Before telecommunication technologies entered the scene, thus before 1852, price information circulated among the stockbrokers during the official stock exchange hours. As from 1723 a price list was drawn up which was disseminated after stock exchange hours. Yet, the liability of this list did not stand. Another possibility to obtain such information, as a client of a stockbroker, was to pay a visit to the Exchange building and maybe ask your personal stockbroker for the current rates. This was easier if you lived in or nearby Amsterdam than if you lived further away. In the latter case, a provincial client had to depend on the price list and on the information he obtained via his stockbroker by mail or by word of mouth. Such a price list could be with the provincial client in the evening. Around 1880, a large part of the Netherlands was covered was accomplished.<sup>107</sup> A face-to-face conversation with his personal stockbroker, if that stockbroker visited the Exchange himself, could thus take place in the evening after the stockbroker had returned from Amsterdam.

The other types of information that played a role became known per newspaper which is a 'public' information medium so, in theory, available to anyone. Yet, we could think of some factors restricting familiarity with newspapers: too expensive, or illiteracy. On the other hand, people who could not afford or read a newspaper, probably did not have any spare money to invest in securities. Did stockbrokers also have a lead as it came to this type of information? That could be the case if they had maintained contacts with a company that was listed at the ASE, or if they received information from both national as international contacts. Furthermore, some of this general news circulated amongst stockbrokers earlier than it appeared in the newspapers.

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<sup>107</sup> J.W. Schot e.a. (2002) 'Concurrentie en afstemming: water, rails, weg en lucht', in: J.W. Schot e.a. (red.) *Techniek in Nederland in de twintigste eeuw. Dl. V Transport en Communicatie* (Walburg Pers; Zutphen) pp. 19-43, pp. 24-24.

After the telegraph came into use in the Netherlands, information could be transmitted much faster than before. Since the Rijkstelegraaf manned an office at the Exchange building, information could be relayed during trade time. This implies that for the first time, information, especially price information, became available on a real time basis. Let us take a closer look at *how* the telegraph was used in the securities trade. An Amsterdam stockbroker deployed the telegraph to relay information that he regarded important for the recipient of the telegram. The type of information sent by telegram should have been information that needed quick relaying, thus current price information. This Amsterdam stockbroker obviously expected a reaction, thus an order, to that telegram. Yet, given the time-consuming surrounding activities for sending a telegram, we can ask ourselves whether the provincial correspondent or client had enough time to react to the telegram within the official stock exchange hours of the Amsterdam Exchange. Keeping in mind this rather complicated way of sending telegrams, it is more likely, that, in the initial phase of the telegraph service at the Amsterdam Exchange, provincial correspondents and clients used the telegraph to send late orders. So, the telegraph was especially used to receive orders at the Exchange building and not so much for sending telegrams from the Exchange building by the stockbrokers themselves to pass on current price information. Considering the fact that the stockbrokers experienced the telegraph as an important device for the securities trade, it became, to an increasing extent, a means to pass on orders. The way other types of information were received, remained the same namely via mail and newspapers although the telegraph was probably used in cases of sudden news that affected trade in securities. The telegraph was also used, for instance by the Twentsche Bank, to inform clients about their concluded orders, immediately after the official securities trade hour had closed.

The telephone opened doors to a more immediate contact though not directly from the start. As from 1881 telephony became available in the Netherlands. The first telephone networks were local and independent which implied that a resident from Rotterdam could not make a phone call to Amsterdam. Opportunities to have direct contact with a stockbroker on the Exchange floor increased for Amsterdam inhabitants in 1884, since as from that year, the Amsterdam Exchange building had the disposal of a telephone bureau. Near the end of the nineteenth century, the same possibilities widened due to interurban telephony. We see that other types of information are still transmitted via mail, such as the reports of the

Twentsche Bank and the notes by Kol & Co written down on the back sides on the account overviews for Vlaer & Kol. For news that is sudden, the telephone becomes an increasingly more useful device. This is showed by the petition from 1905 in which stockbrokers protest against the malfunctioning of local and trunk telephone connections and from the fact that Kol & Co tried to reach Vlaer & Kol in vain by phone after it had become known that a firm went bankrupt in 1903. The telephone was not only used to pass on price information and sudden information on a micro-level; it was also deployed for other purposes, such as to inform clients on the concluded orders.

The domain of price information and information on the micro-level became increasingly more transferred via an information technology instead of via a communication technology, the telephone, as from the 1920s. This development started as from 1920, when the VvdE started with a radio telephone service which transmitted price information via a radio transmitting station to subscribers who had a radio receiving station. Although a person made the price rates known by speaking, in code, into a microphone, we regard it as an information technology since a two-way, interactive communication was not possible. This characteristic was even more applicable to technologies as the *tikker* and the *telex* since the information these devices transmitted was printed on paper and not via a voice. The fact that 'costly telephone calls' to Amsterdam were no longer necessary to receive information on prices or any other sudden news on the micro-economic level was indeed a way to attract stockbrokers as a subscriber to the *tikker* service. For instance, the board of the Rotterdam stockbrokers association attempted to persuade its members to become a subscriber to the *Tikkerdienst* by using that argument. Also, the early adopters, seated in Amsterdam, mentioned this advantage over the telephone in a newspaper article in 1931. The services of the *Tikkerdienst* remained limited to Amsterdam and The Hague. However, the information the *Tikkerdienst* transferred to its subscribers, went 'national' with the installation of a *telex* distribution network in 1938. The telephone stayed in use to have contact before, during and after stock exchange hours. The telephone remained very useful to pass on orders. With the help of information technologies such as radiotelegraphy, the *tikker* and the *telex*, clients could inform themselves, instead of making use of the information provided by their stockbrokers. A few reservations are in place here. The subscribers to the radio and *tikker* were institutions and firms such as banks and stockbroker organisations. We do not have

information on the subscribers to the telexservice that started in 1938 but probably the majority also consisted of professional organisations. If a small investor wanted to keep track of the information transmitted by one of these three specific telecommunication services, he or she could pay a visit to his bank or a public space in which such a device was installed. After World War II, the possibilities for smaller investors to inform themselves on prices and news on the micro-level increased, but still, this type of information did not spread throughout every household. Hence, especially price information stayed, during trade time, amongst a select group, namely stockbrokers on the stock exchange floor and subscribers to the tikker and telex service. The telephone remained a useful device to inform clients on current prices and to receive and pass through orders during stock exchange hours.

The VvdE adopted technologies as radiotelephony, tikker and telex with the purpose to reach a larger public, in order to obtain more orders. Obviously, current rates needed to become known to more people. Information technologies formed a means to reach that goal. As a result, we gradually see the development of an opening up again of the Dutch securities trade. 'Again', because the Dutch securities trade had started as a branch trade that was 'physically' open to anyone, meaning that any interested person could pay a visit to the Exchange building in which traders of different kinds of goods gathered. After the professionalisation of the Dutch securities trade, the stockbrokers started to seclude 'their' trade. This development accelerated with the establishment of the VvdE in 1876.

Since the knowledge on rates remained amongst a small group, clients of stockbrokers did not have the disposal of this type of information. Hence, no tool or mechanism was present to control whether the amount of money a client paid to his stockbroker represented the actual price and commission fee, against which the order was concluded. Surely, the fact that this information did not become known, was advantageous to certain people but apparently, the majority of the stockbrokers aimed at a more reliable standing of their branch of trade. The VvdE succeeded in publishing a reliable price list that was drawn up daily after trade time was over. The VvdE set up a Commission for the Quotations to which the stockbrokers had to report their concluded orders. Employees of the 'Guidebank' wrote the results down on notice boards and disseminated the information to the editors of the official price newspaper after exchange time. By the time information technologies such

as the radio telegraphic radio station, the tikkers and the telexes entered the scene, the guides also passed on this information to their operators. With the coming of these technologies information on prices could reach a large public, *during* stock exchange hours. So, the Dutch securities trade experienced a development from physically open to physically secluded, and from a closed trade to an open trade on the level of information through the dissemination of price information by means of ICT. So, if we take to the eleven activities, we have to conclude that especially the first activity is essential and creates the 'most' value. ICT is especially of importance to this first activity which has an effect on the activities until the administrative parts (from the ninth to the eleventh activity) begins. The effect is shown in the aspect of time. Because a client could receive real time information with the coming of telecommunication technologies, he can also receive real time advice (which is the second activity). This also applied for the decision to buy or sell, the taking and passing through of orders. The point of time of these activities moved up from *before* to *during* stock exchange hours. So, an intermediary created value for his client to actually make use of these increased possibilities to be more actively involved in the securities trade. And, although clients could perform the activity of gathering information much more themselves, they needed intermediaries to actually perform the execution of the order since the Amsterdam intermediaries had a monopoly on that specific activity due to the VvdE.

The last subquestion that needs to be answered concerns the issue of asset specificity. In the second chapter, we have tried to find a way to determine how asset specificity in case of ICT in relation to securities trade can be determined. We came to the conclusion that (1) *the investments in the capacity of ICT, such as infrastructure (just the lines and cables), devices (telephonic apparatus) and personnel* has to be studied. *Especially if this capacity is purchased to maintain a particular relationship in securities trade.* With the cases of the RB and the TBV, the investments in ICT were described. Joint stock commercial banks offered a wide variety in services in which ICT could be used. There is no clear evidence that extra investments were made in the capacity of ICT, specifically to facilitate services in the securities trade. Clearly, the departments related to securities trade, more than the other departments, used ICT extensively. However, this is no proof for asset specificity. Asset specificity implies that the investments made to provide a service, cannot easily be redeployed for alternative uses or by alternative users.

This only applies to the *tikker*. De *tikker* was solely used for the securities trade. Other modes of ICT were less obviously asset specific. Some indications suggest a slight asset specificity of ICT meaning that they were especially purchased and used to provide services in the securities trade. An example is the investments made in the direct trunk lines between the offices of the TB and the RB located in Amsterdam, Rotterdam and The Hague. These lines could be used for all types of communication but the impression exists that they were more used for the securities trade than for other services. Another example is the TB hiring a direct local telephone line from its main office to the Berlage building in 1905. This line can be regarded as slightly asset specific since this line could also be used for the commodities and grain trade that were accommodated in the Berlage Exchange next to the securities trade. The same goes for the purchased receiving station for wireless telegraphy in 1920 and the telex bought in 1938. The receiving station could be used to receive quotations from Stock Exchanges from all over the world, but it could also be deployed to receive messages from their international correspondents. The TB acquired a telex device in the same year that the VvdE started an information service, in co-operation with the *Tikkerdienst*, passed on via a closed telex network to which interested persons and companies could subscribe to. So the telex was probably deployed to take a subscription to that service. On the other hand, the same telex could also be used to send and receive messages with a different content than information on securities trade. Yet, what can be concluded from the case studies is that the departments related to the securities trade were given priority in relation to ICT in several ways because they obviously used these technologies more than the other departments. For instance, the priority shows in case new means of ICT were purchased or the fact that the securities department solely used the TB's telephone lines for one quarter of an hour immediately after the official trade hours ended. Hence, the investments in ICT are slightly asset specific because they were used for various services but most certainly they were more used for services related to the securities trade than to facilitate other services.

Finally, (m) *to what extent uncertainty is present?* and (n) *how many transactions have taken place?* needs to be explored. To these subquestions no clear answer is possible. In TCE, uncertainty relates to not being certain of the actions of a contracted partner or of the prospects of a market in which economic activities are performed. The TBV 'accused' Gerlings & Co of matching orders without bringing them to the market but the TBV did



not know when or on what scale that happened. Not long after the accusation, the TBV decided to become directly active at the ASE as a commission trader and thus integrated the service Gerlings & Co normally provided. In this case, uncertainty concerning the contracted partner, Gerlings & Co, led to integration. In the other cases, the influence of uncertainty is less clear as a factor for (dis)integration. We know the overall movement was towards integration. If we reason from the TCE assumption that high uncertainty leads to integration, uncertainty thus must have been present. The actors could have been uncertain on the activities of their contracted partner, both in the province as in Amsterdam, or the volatile nature of the securities trade could have played a role.

The number (frequency!) of securities orders, can vary dependent on the fluctuations in prices. If these fluctuations are sudden, the number of orders can also rise acutely. In such a case, an intermediary, that has no direct access to the ASE, wants to be sure that its orders are executed. If such an intermediary cannot rely on its Amsterdam contact, integration might take place. This line of reasoning highly relates to two other attributes of TCE, frequency of transactions and asset specificity. If a financial intermediary without access to the ASE receives many securities orders and has to engage his Amsterdam contact quite often, it pays to integrate this specific service since the Amsterdam intermediary receives a fee for executing orders. On the other hand, integration of that service is accompanied by other costs such as establishing and maintaining an office in Amsterdam. In this phase, asset specificity of investments starts to play a role. Here, we come to the core of this thesis. This issue will be dealt with in chapter 8.

#### *7.10 Conclusion*

By studying the activities of the Rotterdamsche Bank, the Twentsche Bank and several smaller commission traders such as Vlaer & Kol at Utrecht, an image was drawn that shows the daily practice of the Dutch securities in the period 1860-1970. This image shows the activities that intermediaries performed to execute a securities order and their contacts with other actors in the value system of the Dutch securities trade. The two larger joint stock commercial banks started to hire Amsterdam intermediaries that executed their securities orders and they ended by concluding orders themselves at the trading floor of the ASE. The smaller commission traders from the province also engaged Amsterdam intermediaries but did not end up

performing the whole range of activities themselves. Another difference appears to be that large joint stock commercial banks possessed more means to adopt and use telecommunication technologies that enhanced and accelerated the execution of services. The ability of joint stock commercial banks to rent trunk lines that connected offices of the same bank in different cities formed an advantage.

Intermediaries in securities trade thus basically performed the same activities for over the whole studied period. What did change was the way the activities were performed. For instance, the administrative part was probably done more extensively and thoroughly in the twentieth century than in the seventeenth century, which can be explained from the fact that bond administration offices were specifically established to take care of the administrative part in the nineteenth century. Another change is that activities, especially those related to informational services, accelerated due to the introduction of information and communication technologies. Actors obtained and received information on prices or concluded orders much more quickly than before. With the coming of the telephone, direct interactive contact with the floor of the ASE became possible *during* trade time. By exploring the activities of intermediaries in the securities trade and their use of ICT, the remainder of the subquestions could be answered. With these answers, we can now deal with the theoretical issues that were raised in chapter two. The theoretical issues will be discussed in the next and last chapter.



## 8. Conclusion

### 8.1 In summary

Now that the organisation of the Dutch securities trade and how its actors made use of ICT has been discussed, we need to return to the first two chapters of this thesis. The key question of this thesis was: *how did the use and deployment of telecom technologies affect the daily practice of firms in relation to the goods and services these firms produce, and consequently how did that affect the industrial organisation of a sector?* We focussed on the Dutch securities trade in the period between 1860 to 1970 to find an answer to the key question of this thesis.

Before this question could be answered, a general overview of the Dutch securities trade was given in order to provide background information. From the period Dutch securities trade started (round 1600) trade literally took place in the open air in the streets of Amsterdam. As from 1611 the Exchange building of Hendrik de Keyser was opened in which practitioners of different branches of trade gathered. Trade in general had an open and public character meaning that everyone had access to the Exchange building. One of the consequences of this open character was that impostors could mingle quite easily with traders and that the curious public hindered the traders, which could lead to chaotic situations. As from the end of the eighteenth century several stockbroker organisations were established that strived for a more orderly arranged securities trade. One of the main issues that needed proper arrangements was the way rates were disseminated to the world outside the Exchange building. For a long time, this type of information was, only known to the stockbrokers and not to the public. In that respect, the Dutch securities trade had not always been that open. Attempts were undertaken to come up with a reliable price list in the seventeenth and eighteenth century. Only with the establishment of the VvdE in 1876 did trade became more

transparent. The VvdE made it one of its spearheads to establish a reliable price list. The reason why transparency was regarded as an important issue was related to the standing of the securities trade and its practitioners. Trade in securities had always been surrounded by an air of deceit and great losses. The non-transparency of the rates only strengthened that image. The VvdE indeed energetically took up the task of bringing more order to the Dutch securities trade. The VvdE was the first stockbroker organisation in the Netherlands that represented the vast majority of the Amsterdam stockbrokers. The VvdE used strict rules for membership. In this way, provincial stockbrokers were excluded from the ASE as well as several Amsterdam stockbrokers. In other words, the VvdE tried to obtain complete control over the Amsterdam, and thus Dutch securities trade. This became reality when the VvdE obtained its own securities trade floor that could be closed off by means of a gate, in the newly opened Exchange of Berlage in 1903. Only members of the VvdE could enter the stock exchange floor in the Berlage building. Strangely enough, the City Council of Amsterdam and the Amsterdam Chamber of Commerce did not foresee this 'coup'. After several complaints of Amsterdam stockbrokers who were not members of the VvdE, the City Council and the Chamber of Commerce realised what had occurred. The VvdE had secluded a branch of trade, which should be publicly accessible. A public stock exchange was established besides the "VvdE's stock exchange" at the Berlage building but that did not work out since the majority of the Amsterdam stockbrokers was a member of the VvdE. The monopoly, and thus the 'physical seclusion', was completed as from the end of 1913 when the Stock Exchange building of Cuypers, solely destined for trade in securities, opened its doors.

After having provided background information on the Dutch securities trade, we have discerned the value system(s) and the value creating activities in the Dutch securities trade. A value system consists of the actors involved in producing a good or service. The actors in the value system of the Dutch securities trade are clients, banks, commission traders, sworn brokers, merchant bankers, and specialists. All these actors, except for the clients, are financial intermediaries who make possible the execution of securities affairs. All these separate parts of the value system have their own activities and each creates value in its own way.

In chapter four, we have seen that several value systems existed side by side and that they changed over time. Hence, it is virtually impossible to speak of *the* value system of the Dutch securities trade. The

changes that were seen were; first, that intermediaries started to form a hatch between buyer and seller; second, that as from 1876 and especially as from 1903 it mattered whether you lived in or outside Amsterdam as it influenced the route taken to execute an order at the ASE; third, that as from the end of the nineteenth century market makers arose as new intermediaries who were specialised in particular securities; and fourth, that joint stock commercial banks became the dominant group of stockbrokers throughout the twentieth century. The most important change was that we saw a development from individual stockbrokers (commission traders, merchant houses, sworn brokers) as the dominant group of intermediaries to joint stock commercial banks. A fifth development shows the trend towards integration. Both joint stock commercial banks and merchant bankers who were also active as commission traders, integrated by taking over other financial intermediaries or start activities themselves that were formerly engaged with another financial intermediary.

Since this thesis set out to find an explanation in changes in value systems from the angle of ICT, chapters five and six were completely devoted to that aspect. Chapter five described the moment of introduction of the telegraph, the telephone, wireless telegraphy and telephony, and the telex in the Netherlands. In chapter six, an enquiry was made after the available means of ICT at the Exchange buildings. Stockbrokers not only made use of the existing services offered by the PTT but also tried to shape existing ICT facilities to their own ends. For instance, in the 1840s when the electromagnetic telegraph was not yet introduced in the Netherlands, a private courier service of Rotterdam stockbrokers ran up and down to the nearest Belgium telegraph terminal to pass on the quotations of foreign stock exchanges. Another example stems from 1920. In that year, a group of Amsterdam bankers tried to realise a direct telegraph connection to Emden in Germany from which a telegraph connection ran via the Azores to New York. The Amsterdam bankers were not satisfied with the existing telegraph connection to New York via Londen. In the same year, the VvdE started a wireless radio service to which interested persons and firms subscribed. The VvdE was the one of firsts in the Netherlands to introduce such a wireless communication service in co-operation with the NSF. The service had to end because the PTT decided to concentrate all radio services in their own hands. In 1926, the PTT cancelled the VvdE's concession. This formed the impetus to look for alternatives which eventually led to the introduction of the stockticker in the Netherlands.

The services of the *Tikkerdienst* that officially started in 1931 remained limited to Amsterdam and The Hague. A national coverage was reached in 1938 when the same information relayed by the ticker, was transmitted via a telex network to which, as for the ticker, one needed to subscribe to. Thus, a specific group of users used and set up telecommunication technologies services to fit their own needs.

With the help of these information and communication technologies relevant information was relayed, especially information with a high 'time value'. Information with the highest time value is price information. The examples mentioned here of stockbrokers deploying ICT in their own way, all revolve around the receiving and passing through of price information as quickly as possible. Price information became known to more people in real time. In this way the closed character of the Dutch securities was somewhat opened up. 'Somewhat' is deliberately used here because the means of ICT that were discussed in the examples mainly remained reserved for the professionals or the very well-to-do.

Intermediaries such as bankers, banks and commission traders performed a number of activities that were discussed in chapter seven. These activities consisted of providing information (1), advice (2), buy or sell decision (3), taking orders (4), passing through of orders (5), negotiating (6), execution of orders (7), notification results (8), administration (9), obtaining and passing through of physical securities (10) and storage of physical securities (11). The client gave a buy or sell order to his financial intermediary and paid a certain percentage to his financial intermediary after an order was concluded. The specialist or market maker performed the actual execution of the order for which he received a certain percentage of the stockbrokers. The specialist appeared at the end of the nineteenth century. Before, stockbrokers arranged the orders with each other. It is not exactly clear since when this intermediary obtained a distinct status. A market maker was specialised in the trade of a particular security. The market maker gathered all buy and sell orders of that specific security. On the basis of these gathered orders, the market maker formed a price. So, a market maker had the best insight into the demand and supply of a particular security and into the bid and asked prices.

The discerned activities appeared to be quite 'timeless'. All these activities, except for the storage of physical securities, were provided by financial intermediaries active in the securities trade, to a more or lesser extent, throughout the seventeenth, eighteenth, nineteenth and twentieth

century. The number of activities and the contents of the activities remained the same. The transformation is in the way these activities were performed. Especially the services that dealt with the gathering, selecting, transferring and receiving of information were speeded up due to the use and deployment of ICT. These historical conclusions correspond with Fischer's observations although these related to social and not to economic life. Fischer concluded that due to the telephone, Americans deepened and widened social patterns rather than altering them. The same holds for the organisation of services in the Dutch securities trade. Thus statements of authors like Chandler, Jones and Jonker and Sluyterman that ICT led to significant changes in economic life, need to be differentiated. Indeed, ICT speeds up transactions, widens the geographical scope of markets, and makes it possible to adjust to needs of local needs. However, the use and deployment of ICT does not lead to radical new unknown services. It merely speeds up the provision of existing services.

This thesis set out to discern the changes in both the value system and the activities. We were interested whether ICT had played a role in these changes. As concerns the activities, we already concluded that ICT did not lead to new services but to an acceleration of these services. As concerns the composition of value systems of the Dutch securities, we have seen a movement towards integration. To explain these developments we proposed two types of theoretical approaches in the second chapter that we specifically related to ICT. The first related to the early possession of relevant information by means of ICT with which an intermediary creates extra value for its customers. The second was based on transaction costs economics which states that ICT will lower transaction costs and therefore, a trend towards market transactions is to be expected.

## *8.2 Information*

From the 'information' view we discerned that ICT can lead to changes in services. We aim here at a different type of changes as we already discussed in the previous section. We have established that the value creating activities have basically remained the same in due time but that changes show themselves in the way they were executed. The changes relate to an acceleration of the provided services by means of ICT. Financial intermediaries can inform their clients more immediate on current prices and the results of their orders with the help of a telegram and a telephone call. Information could be disseminated during trade hours with the help of information and communication technologies. The



changes to which we refer in this section, should occur from the existence of information asymmetry that can appear and disappear as a result of ICT. In the initial phase of a new ICT, information asymmetry should especially be present because then these new ICT are not yet available to everyone. In the phase that ICT is widely used and adopted, information asymmetry should disappear. In this phase, we expect that clients start to perform a number of the services themselves because through ICT they can inform themselves instead of making use of an intermediary.

To determine information asymmetry, a study was made of the available means of ICT with the different stages of the value system of the Dutch securities trade. A difference in available means of ICT could be an indication for information asymmetry. Although ICT facilities widened and were used by more people over time, current price information remained the 'domain' of stockbrokers with access to the trade floor of the ASE and with subscriptions to the radio service of the VvdE (1920), the Tikkerdienst (1931) and the closed telex network of the Tikkerdienst and the VvdE (1938). Indeed, due to high costs, subscribers to these services were financial, both Amsterdam and provincial, intermediaries, and not small private clients. Unequal availability of information gradually disappeared, but a client remained dependent, when it came to current price information, on his stockbroker.

The obtaining and passing through of price information is a value creating activity. The question arises whether a difference exists between financial intermediaries in providing this service. If a closer look is taken to the available means to gather information, large joint stock commercial banks seemed to have an advantage over smaller stockbrokers. The advantage is a result of the means these banks had, to hire quite expensive direct trunk lines through which the different offices could have contact. These lines could be used for passing through current price information, for passing through orders and for notifying the results. Surely, the employees of these offices had to transfer this information to their clients but the direct trunk line avoids at least, slow interurban telephone connections that occurred via regular telephone traffic. An Amsterdam commission trader who had to contact a provincial commission trade during trade hours by phone regularly had to wait too long before a connection was established. The advantage diminished with the coming of information technologies such as the radio service, the Tikkerdienst, and the price telex network of the VvdE and the Tikkerdienst. These technologies gave provincial financial intermediaries the opportunity to

obtain the price information themselves without the mediation of an Amsterdam intermediary. Still, traders at the ASE floor continued to have a slight lead because information transmitted via ICT was always somewhat delayed. Information asymmetry thus existed between stockbrokers and clients but also between Amsterdam and provincial stockbrokers.

Although information asymmetry diminished over time, it did not disappear, despite ICT. The explanation seems to originate from the institutional environment of the Dutch securities trade. The VvdE had a monopoly on price information and thus determined how and when it was disseminated. This situation could also be the reason for the fact that no changes are detected as concerns the appearance or disappearance of services. Since clients remained dependent on their stockbrokers for price information, in spite of growing possibilities in the area of ICT, this specific service persisted. In chapter two, the suggestion was raised that clients probably will start to inform themselves by means of ICT in order to lift information asymmetry. Here we have to make a distinction in clients. We have seen small private clients that place orders with intermediaries. We have also seen provincial stockbrokers who were both intermediary and client: intermediary, because they took care of orders in name of their clients; and client, because they had to place their orders with a member of the VvdE. Provincial stockbrokers took subscriptions to the radio service, the *Tikkerdienst* and the private telex network of the VvdE. As already established, private persons did not. Thus, provincial stockbrokers could much more inform themselves on current price information and became less dependent on their Amsterdam contacts. However, this did not apply for private clients.

Another phase in the services schema, the buy or sell decision, did become increasingly more the domain of private clients themselves. From the moment that clients could be informed during trade time, the decision to buy or sell thus moved from before to during the stock exchange hours and became much more a client's decision instead of a stockbroker's decision. Clients could thus better influence the price they wanted to have or pay for a share or bond. Naturally, this applies for a certain type of client: the active investor who had knowledge of the securities trade. Presumably, these clients appreciated the possibility to be involved more directly in the securities trade.

It thus proved worthwhile to be directly active at the ASE since obtaining and transferring current price information to clients was a very

valuable activity. Therefore, the conclusion seems to be that an integrated firm had wider possibilities to be well informed and thus had an advantage over a disintegrated provincial intermediary. This explains the move towards integration in the Dutch securities trade of which especially provincial financial intermediaries fell prey to. Why did provincial stockbrokers not, en masse, take over Amsterdam stockbrokers to lift information asymmetry? Apart from some exceptions, for instance Heldring & Pierson from The Hague took over Broekman's Effectenkantoor from Amsterdam in 1922, provincial stockbrokers did not follow the example of, the RB. It was rather the other way around; most provincial stockbrokers were taken over by Amsterdam intermediaries. Maybe, the answer to that question is 'just' a matter of scale. Smaller provincial stockbrokers probably wanted to be directly active at the ASE but did not have the means to either take over an Amsterdam stockbroker or hire a direct trunk line.

The conclusion is that information asymmetry lessens but remains present despite ICT, particularly as it comes to price information. Information asymmetry is not simply lifted if everyone has access to the same tools. In the case of the Dutch securities trade, institutional factors (VvdE) played a large role. The expectation that clients would take over services of intermediaries related to the gathering of information due to ICT, applies for the provincial intermediaries who were dependent on Amsterdam intermediaries for current price information but not to small private clients. The latter group remained dependent on their intermediaries for current price information. The expectation that services would change has also come true, but not in the sense that it has led to new or fewer services. The services remain the same but the character of the services changes due to ICT.

### 8.3 TCE

The attributes for explaining (dis)integration processes according to the TCE perspective are asset specificity, frequency and uncertainty. Of these attributes, asset specificity is regarded as decisive (see chapter two). As we established in chapter seven, the factor of frequency is hard to determine since no information is available on the number of transactions. In securities trade the number of orders can vary depending on the fluctuations in prices. If these fluctuations are sudden, the number of orders can rise or fall quite acutely. The frequency of transactions vary per day, or even per minute. Frequency is thus not a decisive factor in the

decision to integrate or disintegrate because one cannot rely on expectations in the future. This variance in frequency clearly leads to uncertainty. Yet, the factor of uncertainty is used in a different perspective in TCE. Uncertainty should specifically relate to the transaction. In our case, the extent of uncertainty is best discussed in relation to asset specificity.

According to TCE, integration takes place if an economic transaction is characterised by high asset specificity. If an economic transaction is characterised by low asset specificity, it is likely that disintegration will take place. An economic transaction takes place between two parties. In order to determine the extent of low or high asset specificity, the way a relationship between those two parties is organised needs to be assessed.

It is useful to discuss the alternatives the actors had for integration. Let us take the case of the RB, as a provincial financial intermediary. First, the RB could have established its own office in Amsterdam. In that case, the RB could have applied for membership with the 'Vereeniging' since it possessed an office in Amsterdam, a prerequisite for membership. However, this would not have guaranteed direct entrance to the ASE. Within the 'Vereeniging' a growing antipathy against large banks was to be noted. Stockbrokers such as commission traders feared a loss of securities orders since joint stock commercial banks became increasingly more dominant players in the Dutch securities trade. In 1911, the 'Vereeniging' refused membership to the 'Nederlandsch-Indische Handelsbank' and the 'Javasche Bank' although these banks held office in Amsterdam. Not surprisingly, the RB did not take this road to Amsterdam.

The second alternative for the RB was to make use of its contacts in Amsterdam that had executed its orders in the past. The RB could have made arrangements that current price information was transmitted to the RB by one or several of these intermediaries. However, much time could elapse before a telephone connection came about since several switchboard operators need to be passed. After the relevant information had reached the RB, the RB employees had to contact their clients. In the meantime, the time value of the information could have been lost.

A variation to the second alternative was to conclude an arrangement with one single Amsterdam member of the VvdE to pass through orders, to receive 'real-time' information, and for notifying the results of the concluded orders. A direct trunk line between the RB office in Rotterdam and the Amsterdam intermediary could be installed to

minimise loss in time. Because of the large costs, the RB would need strict assurance that this Amsterdam intermediary would inform the RB adequately and that its orders would be executed according to its requirements. If that was not the case, the RB could not serve their clients as well as possible.

If such a direct trunk line was installed between the RB and an Amsterdam commission trader, high transaction costs would be involved in comparison to a hierarchical relation. Especially monitoring costs would be large since uncertainty was involved. The RB needed to be sure that its securities orders were executed against the best prices and that the information it received was real time and accurate. The RB had to monitor whether the services the Amsterdam stockbroker provided, were worth the price and whether the Amsterdam stockbroker did not behave opportunistically. The RB had to be certain that its orders were executed as well and as soon as possible because this Amsterdam stockbroker also served other clients. In other words, the RB surely wanted the contracted party to have enough capacity in personnel, means and infrastructure for communication to serve the RB under all circumstances. The RB could have made use of more than one Amsterdam stockbroker in order to reduce the extent of opportunism although that would have entailed high monitoring costs. Such a situation would thus be profitable if the reduced costs of opportunism were larger than the increased monitoring costs. Apparently, in case of the RB, the increased monitoring costs were higher than the reduced costs of opportunism. The option of concluding a contract with an Amsterdam stockbroker and the installation of a direct trunk line between the RB office in Rotterdam and the office of the Amsterdam stockbroker situation would probably lead to integration in the end, because the investment in a trunk line solely used for the securities trade would be a highly asset specific one.

As concerns the Twentsche Bankvereniging, a different TCE argument plays a role. Although employees of the TBV worked closely together with Gerlings & Co, the TBV was not their only client. This becomes clear out of one of the board meetings in which the fear was expressed that Gerlings & Co would not bring all the orders of the TBV to the open market but matched some of the orders 'in-house'. This practice occurred more often since it was convenient; it saved a lot of paperwork, and thus Gerlings & Co performed fewer activities for the fee they received. Yet, the Board of the TBV was concerned that they and their clients did not pay or receive market prices. Hence, the TBV worried that

Gerlings & Co did not perform the sixth (negotiating) and seventh activity (execution of orders) that well. So, a conceivable solution to that problem might be to conclude a contract in which these services were well arranged. On the other hand, the TBV then needed to monitor whether Gerlings & Co kept its promise which entailed transaction costs. If the costs of concluding a contract, monitoring the contract, and the fees paid to Gerlings & Co, exceeded the 'production costs' of the provided services in case the TBV performed them itself, than vertical integration is likely.

On the integration process of smaller stockbrokers taking over other small (provincial or Amsterdam) stockbrokers, we are less informed. Although not much is known on their investments in ICT, the argument that a direct trunk line involves an asset specific investment also applies to them. The fact that these smaller stockbrokers did not regularly take over other stockbrokers, suggests a lack of means to make such investments in the first place (as we already concluded).

In chapter two, we posed that in a early phase of a new technology, the choice for hierarchy was more likely. In the phase a new communication technology was widely used, hierarchy should be replaced by market. This hypothesis stemmed from the expectation that in a initial phase of a new technology, uncertainty is present to a large extent. In order to reduce uncertainty, firms integrate the necessary means and knowledge concerning that new technology. In the case of the Dutch securities trade, the trend towards integration seems to be isolated from the introduction of a new ICT. The Dutch concentration process in the financial sector started in 1911. The telegraph was already in use since 1852, and the telephone since 1881. It is hard to see a connection between the two developments. If our line of reasoning is followed, then financial intermediaries must have taken over providers of information and communication technology services in order to reduce uncertainties. In its starting period, both the telegraph and the telephone were exploited by private companies. However, such a take-over would be extraordinary since an ICT company did not belong to a financial intermediary's vertical nor its horizontal chain. If such a situation had occurred, a financial intermediary would have been responsible for a city's telecommunication infrastructure. More realistic would have been to hire technical staff to take care of the information and communication technologies of a firm. However, most devices were rented and this technical staff could have done nothing to improve the lines and connections; these fell under the responsibility of the concerned telegraph and telephone company.

The main result of our assessment of TCE in relation to ICT is that a combination of asset specificity (due to investments in dedicated ICT such as trunk lines) and uncertainty (in relation to the aspect of monitoring) has led to a vertical integration process in the Dutch securities trade. The vertical integration process specifically relates here to the movement of financial intermediaries (both from the province and Amsterdam) that were not directly active at the ASE floor. This TCE argument thus does not apply to the *horizontal* integration process of the Dutch financial sector in the twentieth century which is characterised by the development that banks only become bigger banks. The attribute of frequency is less pressing as an explaining factor. The frequency of transactions can fluctuate that much that a firm could, in theory, change its decision for integration or disintegration per day or by the minute. Thus, with business sectors in which transactions are subject to sudden variations in volatility, frequency plays no role in the 'make-or-buy' decision.

#### *8.4 Economic and historical explanations*

What are the results of the attempt to apply economic static theories to historical empirical material? Indeed, most economic theories aim at being quantifiable. We knew that beforehand. By formulating a specific set of questions, an attempt is made to make the theories suitable for historical research. The specific set of questions is formulated by reasoning from theory. These questions are not a general, already used and verified set of questions. We have formulated these questions on the basis of factors that determine the 'explanation part' of a theory. With the 'information view' the explanation was based on ICT and information asymmetry. With TCE, these factors were asset specificity, frequency and uncertainty. We have identified and discussed what the factors comprehend and on that basis, we have formulated the specific questions. Answers to these questions were searched for in archives. Most of the questions could not be answered in a straightforward way because the archives lacked the necessary information. The result is that answers are based on 'circumstantial evidence'. We take the example of how to determine the available means of ICT in the securities trade to show what we mean by 'circumstantial evidence'. The answer is based on documents that provide information on purchased means of ICT. Yet, no document exists in which this information is listed. It was found in the minutes of board directors, out of maps of the trade floor and drafts of the architects of the Exchange buildings, requests with the PTT for telegraph and telephone connections

and so on. Thus, pieces of evidence are found. On the basis of these pieces, we sketch our picture, which will probably be not the complete picture. However, a complete picture is not necessary. It is necessary to establish a fairly representative overview of what the different actors had in-house as it came to ICT. Secondary sources that provide information on the general availability of ICT in the Netherlands function as a reference point on what actors can possibly make use of.

With help of the answers to the subquestions, it should be possible to build up an explanation for changes in the Dutch securities trade in line of the two theories. Still, an uncomfortable feeling seizes the researcher. The feeling stems not so much from for instance, the fact that TCE is a comparative static theory and should therefore not be suitable for historical (process) research. Yes, we can safely state that ICT has enormously accelerated the flow of information. Yet, we cannot safely state that, because of this acceleration (time specificity of services) temporal specific investments were necessary thus integration is a logical result. There are other factors that, at least also, play a role here. Is the fact that the VvdE tried to monopolise the Dutch securities trade not enough reason to explain the integration movement of the RB towards Amsterdam, the financial centre of the Netherlands? Is the fact that banks wanted to keep up with growing (in)ternational economics, bigger credit requests, and maybe above all, with each other, not enough reason to explain the overall integration movement (horizontal and vertical) in the Dutch financial sector? These guesses can be doubted as much as the theoretical explanations. The uncomfortable feeling thus comes from the law-like explanations which leaves no room for other factors that could have played an evenly large or larger part in explaining certain phenomena. Particular circumstances can thus be as valid as general explanations. Thus, to paraphrase Hodgson, a general theory has no attention for the 'particular'.

Hence, can historians use economic theories? Yes, they can for formulating questions with which to 'attack' the pile of archival documents and structure the outcomes. Can historians use them to explain phenomena in history? Only partly, because much more historical specific factors often form the explanation to a phenomenon. This latter observation relates to the circumstance that theories (and not only general economic theory) approach reality from one particular point of view. When studying historical phenomena and processes, a researcher is in the position to



study the complete picture. One thus sees that often several factors play a role that cannot be fit into one theory because then no justice is done to reality. Economic theories are generally drawn up on the basis of the present or 'near history' with the aim of predicting the future. Such a theory can even be established in the middle of an ongoing process. The 'inventors' of that theory do not have the complete picture and thus some factors that also play a role might be missed. That could be the reason why general economic theories only partly fit to explain historical phenomena and developments.

### *8.5 Suggestions for future research*

On basis of the results of this thesis several fields for future research can be formulated. On the meta-level the issue to what extent general economic theories are applicable to historical studies, needs more 'cases'. By collecting a set of studies in which the issue is explored, more general conclusions can be drawn on how to apply a general theory on historical empirical material. It is an important issue because it can give history as a science a deeper theoretical basis. We not only urge historians to explore the issue, but above all, practitioners of general economic theories such as TCE. Since these practitioners should have experience with making the parameters, factors that matter in these theories, they would know what type of data is necessary in order to fully apply such theories. In relation to the subjects discussed in this thesis, we can think of collecting a set of factors that has led to mergers and acquisitions (vertical and horizontal integration) in the past. These should be compared with factors that should play a role according to a theory such as TCE or other theories on integration processes. Of this set of factors, we would be curious whether ICT is among them. Has ICT played a significant or even a decisive role in the decision of firms to integrate or disintegrate in the past? And, more importantly, how to assess the influence of ICT when those processes took place in the past? We indeed experienced a hard time establishing the role of ICT in firms in the past since little primary documentation on the subject was left. We would suggest studying other business sectors in a historical context with a focus on the use and deployment of ICT in order to establish the significance of ICT in business, both on the industry and firm level.

### *8.6 Comparison with the present or epilogue*

If a closer look is taken to the developments in the Dutch securities trade, we see several striking phenomena. First, all trade in valuable papers, including trade in options, has turned into screen trade. The open outcry system has disappeared. This is certainly caused by ICT, or more, computers and its accompanying software and infrastructure. The spectacular images of screaming traders belong to the past. Apart from the fact that these were amusing scenes, some traders feel that the magic of trading has disappeared. Open outcry traders picked up a lot of non-printed and unspoken information by listening to the rumours than arose from the trade floor, the faces and movements of other traders and from who spoke with whom. This type of information, to which we did not pay attention in the analysis since it is so intangible, has disappeared with screen trade since stockbrokers now sit in dealing rooms of the separate firms.

Another development has been the disappearance of the 'hoekmannen' or specialists in the Dutch securities. This is due to the fact that the Amsterdam, Brussels and Paris Stock Exchanges have merged into one stock exchange which is Euronext. Euronext has adopted the French trading system that does not know 'hoekmannen'. These 'hoekmannen' should transfer to the profession of 'animateurs' who acted under the orders of listed companies, to keep trade in securities of those companies going.

The third development is the continuing spread and public availability of information that influence the securities trade. By means of internet, this information has nearly become ubiquitous. It has become very hard to keep important information silent. Still, current price information remains a service for which one has to pay. Price information that is publicly published on websites, always shows prices with a certain delay. For instance, the quotations on the Euronext website, are delayed by fifteen minutes. If one wants current price information, one has to be either a stockbroker or a client of a stockbroker. In that sense, nothing has changed!



**Appendix A: Costs telephony, 1881-1970 in real prices in Dutch guilders (1970=100).<sup>1</sup>**

<b>Annual subscription rates Amsterdam, Rotterdam and The Hague for business activities, 1881-1941.</b>				
<i>Year</i>	<i>Amsterdam</i>	<i>Rotterdam</i>	<i>The Hague</i>	
1881	610,23			
1882	610,23	638,32		
1883	610,23	638,32	651,6	
1896	610,86	610,86	651,6	
1903	610,86	610,86	410,41	
1914	610,86	610,86	488,7	(max. 1500 inc. and outg. conv. per month. More than 1500, obliged to take 2nd subscription).
1919	610,86	610,86	457,26	
1920	492,62	385,35	560,51	
1923	492,62	385,35	751,85	
1925	492,62	385,35	729,06	
1928	492,62	385,35	782,93	(max. 750;more than 750, 2nd subscription)
1930	589,3	385,35	732,42	
1930	303,07	385,35	914,53	(max. 850;more than 850, 2nd subscription).
1931	303,07	385,35	914,53	
1933	285,79	385,35	914,53	
1935	285,79	385,35	271,5	
1938	285,79	385,35	257,21	
1941	182,27	182,27	182,27	

<sup>1</sup> Data Appendix A is derived from: Hoofddirectie der Posterijen, Telegrafie en Telefonie (1967) *De ontwikkeling van het abonnementstarief, de kosten van aansluiting en de gesprekstarieven van de telefoon in Nederland* (Staatsbedrijf der PTT; 's Gravenhage) and Staatsbedrijf der Posterijen, Telegrafie en Telefonie (1969) *De ontwikkeling van enkele telefoontarieven in Nederland* (Staatsbedrijf der PTT; 's Gravenhage).

<b>Subscription rates trunk telephony (annually) Amsterdam-Rotterdam.</b>		
<b>Year</b>	<i>Amsterdam</i>	<i>Rotterdam</i>
1886	568,26	
1896	67,86	Included in local subscription rate.
1920	Included in local subscription rate	

<b>Connection charges (non-recurrent), Amsterdam, Rotterdam, The Hague, 1896-1941.</b>			
<i>Year</i>	<i>Amsterdam</i>	<i>Rotterdam</i>	<i>The Hague</i>
1896	158,85	135,75	
1903	158,85	135,75	157,85
1914	158,85	135,75	108,6
1918	108,08	135,75	108,6
1919	124,13	135,75	120,02
1920	136,83	145,97	160,56
1923	136,83	145,97	170,87
1925	178,47	145,97	170,87
1927	178,47	126,28	147,33
1928	178,47	126,28	105,23
1929	178,47	126,28	44,19
1931	71,45	126,28	170,87
1932	71,45	126,28	57,15
1935	71,45	59,53	47,63
1936	71,45	59,53	35,72
1939	71,45	59,53	33,34
1941	22,78	22,78	22,78

<b>Tariffs trunk phone calls, 1897-1970.</b>					
<i>Year</i>	<i>less than 15 km</i>	<i>more than 35 km</i>	<i>urgent less than 15 km</i>	<i>urgent more than 35 km</i>	<i>local call charges</i>
1897	3,35	3,35	6,7	6,7	
1904	1,87	1,87	6,24	6,24	
1910	1,16	1,75	1,75	5,6	
1916	1,05	1,47	2,74	4,21	
1918	1,04	1,38	3,11	4,32	
1919	1,11	1,42	3,18	4,29	
1920	1,02	1,46	2,9	4,37	
1925	0,76	1,9	2,28	5,7	
1930	0,63	2,1	1,26	4,1	0,11
1934	0,57	1,91	1,14	3,82	0,1
1935	0,57	1,91	1,14	3,82	0,1
1937	0,47	1,91	0,94	3,82	0,1
1940	0,63	2,53	1,26	5,06	0,13
1949	0,69	1,79	1,38	3,58	0,13
1954	0,49	1,26	0,98	2,52	0,07
1955	0,42	1,12	0,88	2,24	0,07
1960	0,42	1,12	0,88	2,24	0,06
1964	0,34	0,9	0,68	1,8	0,07
1967	0,48	0,8	0,96	1,6	0,08
1970	0,42	0,7	0,84	1,4	0,07

<b>Costs Rijkstelefoon networks, 1920-1969.</b>			
<i>Year</i>	<i>Size network (number connections)</i>	<i>Subscription rate in real prices in Dutch guilders per year. (1970=100)</i>	<i>Connection charges in real prices in Dutch guilders.(1970=100)</i>
1920	4001 - 6000	233,55	145,97
1922	more than 4000 with a max. Of 750 conversations per month	569,58	145,97
1930	more than 4000	202,04	105,23
1932	more than 10000	257,21	119,08
1935	more than 10000	257,21	28,58
1939	more than 20000	257,21	28,58
1941	more than 4000	182,27	28,58
1946	more than 4000	152,24	28,58
1950	more than 4000	152,24	50,09
1954	more than 4000	152,24	69,17
1957	more than 4000	113,98	118,73
1957	more than 4000	113,98	158
1961	more than 4000	109,77	109,77
1964	more than 4000	114,11	131,16
1965	more than 4000	132,4	122,57
1966	more than 4000	142,58	142,58
1967	more than 4000	174,3	167,59
1969	more than 2000	180	167,59

## Appendix B : Data N.V. Tikkerdienst

Subscribers NV Tikkerdienst Amsterdam 1935 <sup>2</sup>	
Algemeen Effectenkantoor	+ branch office Damrak
Amsterdamsche Bank	+ branch office Van Baerlestraat
Bank-Associatie	
Bankvereeniging Lodewijk Koriijn	
Continentale Handelsbank	
De Twentsche Bank (two tickers)	
Dunlop & Philips	
Engelenberg & Co	
Arnold Gilissen's Bank	
Theodoor Gilissen	
Incasso Bank	+ branch offices Adm. De Ruyterweg; Ceintuurbaan; Dam, Haarlemmerplein; Nieuwmarkt; Weesperplein; Van Woustraat
Louis Koriijn & Co	
Leidner & Co	
Lippmann, Rosenthal & Co	
Nederlandsche- Handel Maatschappij	
Nederlandsch-Indische Escompto Maatschappij	
Nederlandsch-Indische Handelsbank	
Nederlandsche Middenstandsbank	
Pierson & Co (two tickers)	
Proehl & Co	
Rijkstelegraaf- en telefoonkantoor	
Firma B. Sanders Ezn.	
Transandine Handel maatschappij	
Vereeniging voor den Effectenhandel (three tickers)	
Vermeer & Co	
Rotterdamsche Bankvereeniging	
Hoofdkantoor Tikkerdienst	



<b>Profits N.V. Tikkerdienst in Dutch guilders (nominal value) 1931-1941<sup>3</sup></b>			
<i>Year</i>	<i>Profits</i>	<i>Year</i>	<i>Profits</i>
1931	763,34	1943	-/- 2.311,58 <sup>4</sup>
1932	875,69	1944	12.533,46
1933	1.223,25	1945	29.328,77
1934	4.155,32	1946	6.237,60
1935	4.931,24	1950	4.879,84
1936	9.726,22	1951	-/- 5.629,08 <sup>5</sup>
1937	17.479,99	1952	6.437,05
1938	25.000 <sup>6</sup>	1954	-/- 6.764,88
1941	23.3836,46	1955	-/-8.746,08

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<sup>2</sup> Source: Archive Euronext, Records 'Tikkerdienst and Telex', inv. nr. 818 II 131, Subscribers Amsterdam per 10 May 1935.

<sup>3</sup> HAAA, archive RB, inv. nr. 525, Jaarverslagen N.V. Tikkerdienst (Annual reports) 1934, 1935, 1937, 1941, 1943, 1944, 1945, 1946, 1950, 1951, 1952, 1954, 1955.

<sup>4</sup> Due to concluding of a collective pension scheme for all employees of the Tikkerdienst.

<sup>5</sup> Due to heavy drop in prices of its own holding of securities.

<sup>6</sup> No data for this year so this amount is the estimated profit.

<b>Profits and losses operation costs (‘saldo exploitatie’), in Dutch guilders (nominal value) 1934-1955<sup>7</sup></b>	
<i>Year</i>	<i>Balance exploitation</i>
1934	3.048,82
1935	4.030,12
1937	16.305,92
1941	15.432,26
1943	14.111,02
1944	11.160,86
1945	12.241,30
1946	1.377,99
1950	3.386,62
1951	1.507,70
1952	2.617,96
1954	-/- 13.435,30
1955	-/- 5.296,09

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<sup>7</sup> HAAA, archive RB, inv. nr. 525, Jaarverslagen N.V. Tikkerdienst (Annual reports) 1934, 1935, 1937, 1941, 1943, 1944, 1945, 1946, 1950, 1951, 1952, 1954, 1955, profit and loss accounts.

## Appendix C: Tables Chapter 7

**Table 7.1: Company Expenses Robaver Rotterdam Office, 1914-1917 <sup>8</sup>**

<i>Year</i>	<i>Telephones &amp; maintenance</i>	<i>Telephone lines</i>	<i>Total expenses Robaver (excl. Salaries)</i>	<i>Total telephone costs as a percentage of the total expenses</i>
1914	3.820,85	5.632,35	511.115,97	1,85
1915	3.599,95	5.632,35	578.550,71	1,60
1916	2.302,60	11.097,07	676.035,64	2,00
1917	2.703,59	10.820,30	666.884,52	2,03

**Table 7.2: Company Expenses Robaver Amsterdam Office, 1914-1917 <sup>9</sup>**

<i>Year</i>	<i>Telephones &amp; maintenance</i>	<i>Telephone lines</i>	<i>Total expenses Robaver (excl. Salaries)</i>	<i>Total telephone costs as a percentage of the total expenses</i>
1914	2.911,93	5.632,35	570.534,57	1,50
1915	4.444,40	5.632,35	589.459,43	1,70
1916	6.674,92	11.334,77	780.713,55	2,31
1917	6.026,02	10.820,35	847.151,92	2,00

<sup>8</sup> HAAA, RB, inv. nr. 730, 731, 734, Gespecificeerde balansbescheiden 1914, 1915, 1916, 1917 (Specified balances over the years 1914, 1915, 1916, 1917).

<sup>9</sup> HAAA, RB, inv. nr. 730, 731, 734, Gespecificeerde balansbescheiden 1914, 1915, 1916, 1917 (Specified balances over the years 1914, 1915, 1916, 1917).

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### *Interviews*

Mr. G. van den Brink worked as a stockbroker at the ASE from 1958 to 1996.

Interviewed 7 February and 27 March 2001

Mr. B. van Marken former director of Pierson, Heldring & Pierson  
telephone conversation 18 February 2003.

Mr. J. Poelwijk worked as a stockbroker at the ASE from 1958 to 1967.  
Interviewed 17 October 2001

Mr. W. Wiegel worked as a stockbroker at the ASE from 1963 to 1982.  
Interviewed 10 and 18 January 2001

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## Summary (in Dutch)

In de tweede helft van de jaren negentig van de twintigste eeuw ontwikkelde zich een ware informatie- en communicatie technologie (ICT) hype. Allerhande ICT en de bijbehorende software werden aangeschaft die het productie- en dienstverleningsproces efficiënter zouden doen laten verlopen. Met deze ontwikkeling kwam meer aandacht voor effecten van ICT voor een bedrijf en voor een gehele sector. Men begon in te zien dat de rol van ICT veranderde van een ondersteunende naar een meer strategische. De reden hiervoor is dat ICT kostenverlagend kan werken omdat, heel algemeen gezegd, communiceren en het uitwisselen van informatie sneller en efficiënter gaat dan voorheen. Ook het vinden van geschikte partners kost minder tijd, en dus minder geld. Sommige auteurs beweren dat als gevolg van deze ontwikkelingen bedrijven zich steeds meer gaan richten op hun kern competentie en andere onderdelen van het bedrijf zullen verkopen. Deze andere onderdelen kunnen immers goedkoop worden ingekocht op 'de markt'. Andere auteurs beweren het omgekeerde; bedrijven gaan juist meer integreren omdat ICT de mogelijkheid biedt om controle uit te oefenen op alle onderdelen van een productieketen. In de betreffende literatuur bestaat dus duidelijk geen overeenstemming over de gevolgen van de inzet en het gebruik van ICT in bedrijven. Leidt het nu tot integratie of juist tot desintegratie? Deze kwestie zal in dit proefschrift onderzocht worden vanuit een historisch perspectief. Een historisch perspectief biedt het voordeel dat processen al zijn afgerond en de uitkomst dus bekend is. Onderzoekers die een hedendaags fenomeen als gevolgen van ICT bestuderen, moeten het doen met de eerste tekenen van het betreffende fenomeen en de toekomstverwachtingen daaromtrent. Een historische benadering levert een longitudinale studie op waardoor huidige ontwikkelingen in perspectief geplaatst kunnen worden.

In dit proefschrift is er voor gekozen het gebruik en inzet van ICT in de Nederlandse effectenhandel te bestuderen om uitspraken te kunnen doen over de gevolgen van ICT in de periode 1860-1970. Deze keuze is gemaakt omdat de effectenhandel bij uitstek een sector is waarin nieuwe ICT in een vroeg stadium wordt ingezet om het proces van informatievergaring te versnellen. Immers, als je iets eerder weet dan anderen, kun je winst maken. Wij hebben ons daarbij vooral gericht op telecommunicatiemiddelen zoals de telegraaf, de telefoon, de beurstikker en de telex. In dit proefschrift is geanalyseerd hoe deze technologieën werden ingezet in de dagelijkse praktijk van de Nederlandse effectenhandel en welk effect dat heeft gehad op de organisatie van een bedrijf en dus, de organisatie van deze sector. De hoofdvraag van het proefschrift luidt dan ook: *hoe heeft het gebruik en inzet van telecommunicatie technologie de dagelijkse praktijk beïnvloed van bedrijven in relatie tot productie van diensten en producten, en dus ook hoe telecommunicatie middelen de structuur van een gehele sector hebben beïnvloed? Meer specifiek: hoe heeft het gebruik en inzet van telecommunicatie technologie de dagelijkse praktijk beïnvloed van bedrijven die diensten verlenen op het gebied van de handel in effecten en dus ook hoe telecommunicatie middelen de structuur van de Nederlandse effectenhandel in de periode 1860-1970 hebben beïnvloed?*

Deze vraag is bestudeerd aan de hand van twee theoretische perspectieven: het 'informatie' perspectief (gebaseerd op informatie economie) en de transactiekosten theorie. Het informatie-perspectief wordt gebruikt om aan te tonen dat ICT leidt tot een verandering in het dienstverleningsproces van een bedrijf. Dit theoretisch perspectief wordt dus gebruikt om het eerste deel van de hoofdvraag te beantwoorden. Het gaat bij het informatie-perspectief om het creëren van waarde door er voor te zorgen dat je relevante informatie eerder weet te verkrijgen dan een ander (informatie-asymmetrie). Als je dus als bedrijf ervoor zorgt om deze informatie zo snel mogelijk te verkrijgen, creëer je waarde voor je klanten. Afgezien van het feit dat een bedrijf de juiste contacten moet hebben om informatie te verwerven is het ook noodzakelijk om er voor te zorgen dat je over moderne informatie en communicatiemiddelen beschikt om informatie te zoeken en te krijgen. Als gevolg daarvan, kan de dienstverlening en het dienstverleningsproces van een bedrijf veranderen. De dienstverlening kan sneller en meer 'real-time' plaatsvinden.

De transactiekosten theorie verklaart voornamelijk waarom bedrijven verticaal integreren dan wel desintegreren. Deze theorie wordt dan ook gebruikt om het tweede deel van de hoofdvraag te beantwoorden,

te weten het deel dat gaat over verandering in de structuur van een sector. Drie factoren spelen daarbij een cruciale rol: 'asset specificity', frequentie en onzekerheid. Om het heel algemeen te zeggen: wanneer een zakelijke relatie tussen twee partijen wordt gekenmerkt door een hoge mate van asset specificity, hoge frequentie en hoge mate van onzekerheid dan zal dat uitmonden in een hiërarchisch contract (integratie). Wanneer een zakelijke relatie tussen twee partijen wordt gekenmerkt door een lage mate van asset specificity, lage frequentie en lage mate van onzekerheid dan zal dat uitmonden in een markt contract. Wanneer dus één van beide omstandigheden aanwezig is, kan dat leiden tot een meer of minder geïntegreerde structuur van de Nederlandse effectenhandel.

Deze twee theoretische perspectieven zijn economische empirisch-statistische theorieën. Dit plaatst ons dus ook voor een methodologisch dilemma. In hoeverre is het mogelijk om dergelijke theorieën te gebruiken om *ontwikkelingen* in het verleden te bestuderen en te verklaren aangezien empirisch-statistische theorieën uitgaan van een bepaalde situatie op een bepaald moment.

De Nederlandse effectenhandel kreeg steeds meer vorm in de zeventiende eeuw. Aan het begin van deze eeuw werd de Verenigde Oost-Indische Compagnie opgericht die aandelen (actiën) uitgaf om zo kapitaal te vergaren. In de VOC aandelen ontstond een levendige handel. Het centrum van deze handel was Amsterdam. In 1611 werd het eerste beursgebouw in Amsterdam geopend waar handelaren in allerlei goederen onderdak vond. De handel in goederen maar ook aandelen had destijds een open karakter. In principe kon iedereen handelen in wat dan ook alhoewel er natuurlijk wel specialisten zijn. Ook kon je als gewone burger een kijkje nemen tijdens handelsuren van de beurs. Vanaf de negentiende werd de Nederlandse effectenhandel meer en meer georganiseerd binnen institutionele kaders. In 1876 wordt de Vereeniging voor den Effectenhandel (VvdE) opgericht die dé representant van de Amsterdamse effectenhandelaren werd. Een ingrijpend gevolg was wel dat effectenhandelaren van buiten Amsterdam meer en meer geweerd werden van de Amsterdamse beursvloer. Met de opening van de Beurs van Berlage in 1903 waar de effectenhandel een eigen handelsvloer had, kan geen enkele provinciale effectenhandelaar nog rechtstreeks zelf handelen in Amsterdam. Zij dienden een Amsterdamse commissionair in de arm te nemen om hun orders te doen laten uitvoeren. Aan het einde

van 1913 opent de VvdE zelfs een eigen gebouw waarmee het monopolie van de VvdE op de Nederlandse effectenhandel compleet was.

De structuur van de Nederlandse effectenhandel verandert dus in de loop der tijd. De meest basale vorm was een transactie tussen koper en verkoper van een aandeel of obligatie. In de loop der tijd wringen zich daar een aantal tussenpersonen tussen. Ten eerste is dat de handelaar in effecten, ook wel commissionair genoemd. Vanaf de tweede helft van de negentiende eeuw, wanneer de handel in aandelen toe gaat nemen, komt de 'hoekman' op. De hoekman is gespecialiseerd in een specifiek aandeel (bv. Philips). Deze hoekman verzamelt alle in- en verkooporders met betrekking tot Philips en probeert deze aan elkaar te koppelen (te 'matchen'). Vanaf 1876 ontstaat dus langzaam de ontwikkeling dat provinciale commissionairs, een Amsterdamse commissionair inhuren om orders op de Amsterdamse beursvloer te laten uitvoeren. De meest uitgebreide keten van de Nederlandse effectenhandel ziet er (vanuit het perspectief van een klant buiten Amsterdam) rond 1905 dus zo uit: klant - provinciale effectenhandelaar - Amsterdamse effectenhandelaar - hoekman - Amsterdamse effectenhandelaar - provinciale effectenhandelaar - klant. Deze structuur verandert in de loop van de twintigste eeuw echter weer. Vanaf het begin van de twintigste eeuw zijn de algemene handelsbanken in opkomst die ook optreden als tussenpersoon in de effectenhandel. Deze handelsbanken groeien en verkrijgen vestigingen (veelal door overname van lokale bankiers of commissionairs) door het hele land. In dit geval zit er dus maar één partij tussen de klant en de hoekman in plaats van twee. Alhoewel er meerdere naast elkaar blijven bestaan, wordt de structuur waarbij een handelsbank als tussenpersoon fungeert, de dominante in de twintigste eeuw. De vraag is nu welke rol ICT in dit proces heeft gespeeld.

In de jaren 1840 krijgt Nederland te maken met telecommunicatiemiddelen waarbij elektrische stroom aan te pas komt. In deze periode worden de eerste telegraafverbindingen gelegd, veelal op particulier initiatief. In 1852 kwam daar verandering in toen de 'Rijkstelegraafdienst' werd opgericht. Enkele jaren later krijgt het Amsterdamse beursgebouw een eigen Rijkstelegraafkantoor waar dus telegrammen afgeleverd of verstuurd konden worden. In 1881 opent het eerste publieke telefoonnetwerk in Amsterdam. In 1884 wordt het beursgebouw op het telefoonnetwerk aangesloten zodat handelaren onder beurstijd konden bellen of gebeld worden. In het beursgebouw dat geopend in 1913 is de handelsvloer omgeven met nissen waarin telefoons

hangen. In 1920 start de VvdE met het uitzenden van actuele beurskoersen door middel van een eigen beurszender waarop geïnteresseerden zich konden abonneren. De toepassingen van radiotechniek zijn dan nog maar schaars in Nederland. Aangezien de VvdE met deze beurszender moest stoppen in 1926, ging de VvdE op zoek naar een alternatief. Die werd gevonden in de 'tikker', een telegraafapparaat dat en smalle papieren strook de actuele beurskoersen in code print. De Tikkerdienst gaat in 1931 van start. Dezelfde informatie is vanaf 1938 ook te krijgen door zich te abonneren op een gesloten telex distributienetwerk. Gezien de kosten wordt vooral door 'professionals' in de effectenhandel gebruik gemaakt van deze diensten.

Het wordt dus mogelijk sneller informatie te zoeken met behulp van ICT. Bovendien wordt ook mogelijk om onder beurstijd geïnformeerd te blijven over de actuele beurskoersen. Klant en handelaar kunnen onder beurstijd overleg plegen over ver- en inkooporders. ICT heeft in dit geval niet zozeer nieuwe diensten opgeleverd maar heeft het het dienstverleningsproces enorm gedynamiseerd zoals vanuit het informatieperspectief verwacht kon worden.

Een klant kon dus ook steeds beter zichzelf informeren. Vanuit het informatie-perspectief redenerend, zouden tussenpersonen op den duur dus niet meer nodig zijn als het gaat om de dienst van informatieverstrekking. In andere woorden, informatie asymmetrie zou moeten verdwijnen. Dit is echter niet het geval. Degenen die gebruik konden maken van telecommunicatiediensten waren toch nog altijd de beter bedeeden en voornamelijk, de financiële intermediairs. De abonnees op specifieke diensten als de beurszender, de Tikkerdienst en de telexdienst, waren partijen die actief waren als tussenpersoon in de effectenhandel. Ook het contact tussen klant en de handelaar die op de beursvloer rondliep was veelal weggelegd voor de grote, actieve klanten. Daarnaast kon een telefonische verbinding nog al eens op zich laten wachten omdat er een aantal telefonistes aan te pas moest komen die de verbinding handmatig tot stand brachten. Bedrijven hadden wel de mogelijkheid om de duur van het tot stand brengen te verkorten door een rechtstreekse huurlijn te nemen maar dat was erg kostbaar.

Al met al verruimden dus wel zeker de mogelijkheden om informatie te vergaren, zowel voor handelaar als klant, maar voor wat betreft de meest tijd specifieke, en dus meest waardevolle informatie, te weten prijsinformatie, bleef een klant dus afhankelijk van zijn of haar tussenpersoon die daadwerkelijk zelf op de beursvloer rondliep.



Aangezien je als handelaar alleen op die beursvloer kon rondlopen als je lid was van de VvdE, werd informatie asymmetrie dus voor een groot deel in stand gehouden door een institutionele factor. Een provinciale handelaar werd overigens wel degelijk minder afhankelijk voor wat betreft prijsinformatie van Amsterdamse commissionairs aangezien die wel gebruik kon maken van diensten als de beurszender, de beurstikker enz.. Informatie asymmetrie blijft dus bestaan ondanks alle mogelijkheden op het gebied van ICT.

Om te bekijken of ICT een rol heeft gespeeld bij structuurveranderingen in de Nederlandse effectenhandel in de twintigste eeuw, wenden we ons tot de transactiekosten theorie. Zoals al eerder gezegd leidt een transactie, gekenmerkt door een hoge mate van 'asset specificity', hoge frequentie en hoge mate van onzekerheid tot integratie volgens de transactiekosten theorie. Als partij vanuit de provincie wilde je er uiteraard zeker van zijn dat je orders goed en adequaat worden uitgevoerd. Naast een contract, zou het hebben van direct contact door middel van een huurlijn met een Amsterdamse partij er in ieder geval voor kunnen zorgen dat de orders snel konden worden doorgegeven. Een huurlijn was echter een prijzige aangelegenheid waarbij jezelf erg afhankelijk maakt van één partij die ook nog andere klanten bediende. Daarmee zou een relatie dus gekarakteriseerd zijn door een hoge mate van asset specificity waarbij toch nog onzekerheid zou bestaan of de ander alle orders adequaat uitvoert. Een provinciale partij zou dus logischerwijs overgaan tot overname van een Amsterdamse partij. Dit gebeurde in het geval van de Rotterdamsche Bank die het Amsterdamse Determeijer, Weslingh & Zn overnam en zo zich direct toegang verschafte tot de Amsterdamse beursvloer. Na overname werd er direct een huurlijn tussen het Amsterdamse en Rotterdamse kantoor aangelegd. Provinciale effectenhandelaren volgden echter niet massaal het voorbeeld van de Rotterdamsche Bank. De reden daarvoor lijkt hem simpelweg te zitten in de omvang van de bedrijfsvoering. Provinciale commissionairs bleven afhankelijk van het openbare telefoonnetwerk en hadden niet de middelen om een andere partij over te nemen waarmee dan een geavanceerde ICT infrastructuur kon worden aangelegd.

Ook de Twentsche Bank, alhoewel al gezeteld in Amsterdam, ging er rond 1876 toe over om zelf direct op de beursvloer te gaan handelen. Tot dan toe voerde een andere partij hun orders uit. Ook hier speelt het argument dat de Twentsche Bank er zeker van wilde zijn te allen tijde goed bedient te worden door Gerlings & Co. Afgezien van het feit dat de TB ten

tijde van het contract met Gerlings & Co wel eigen werknemers op de beursvloer had rondlopen die Gerlings & Co konden controleren (zonder dat daar dus informatie- en communicatiemiddelen voor nodig waren), twijfelde de TB er toch aan of hun orders adequaat werden uitgevoerd door Gerlings & Co. We hebben hier dus te maken met een relatie die gekarakteriseerd wordt door een hoge mate van afhankelijkheid ('asset specific') en onzekerheid. In het geval van de TB speelt dus wel degelijk een transactiekosten argument een rol om de dienst van het uitvoeren van effectenorders te integreren, maar is niet te herleiden tot de inzet en gebruik van ICT. Bovendien speelde dit in de periode (ca. 1876), waarin wel de telegraaf volop in gebruik was maar telefonie als publieke dienst nog niet beschikbaar was.

Over het hoe en waarom van het integratieproces van de kleinere effectenhandelaren zijn we minder goed geïnformeerd. Uiteraard speelt ook voor hen het argument dat wanneer investeringen worden gedaan in ICT middelen om er zo zeker van te zijn dat men te allen tijde contact kan hebben met een Amsterdamse commissionair met toegang tot de beursvloer en dat deze zelfde investeringen gebruikt kunnen worden om deze Amsterdamse partij te controleren, erg 'asset specific' zijn. Het feit dat niet veel kleinere commissionairs uiteindelijk de stap van integratie hebben gezet, suggereert een tekort aan financiële middelen.

In bovenstaande bespreking van toepassing van transactiekosten theorie op het onderwerp van deze dissertatie is de factor frequentie niet aan bod gekomen. De rol van frequentie heeft in het geval van volatiele omstandigheden, een ambivalente rol. De frequentie van transacties kan in de effectenhandel enorm fluctueren. Het heeft dan weinig zin om frequentie te laten meewegen in de beslissing om al dan niet te integreren omdat die beslissing dan ook, bij wijze van spreken, dagelijks zou kunnen veranderen. Echter, juist omdat de frequentie van transacties zo kan fluctueren, bestaat er wel onzekerheid over deze frequentie. De factor van frequentie zit in het geval van volatiele markten dus verwerkt in de factor onzekerheid.

Concluderend kunnen we stellen dat ICT tot op een bepaald hoogte een invloed heeft gehad op structuurveranderingen in de Nederlandse effectenhandel. We hebben gezien dat ICT de mate van asset specificity kan beïnvloeden door de hoogte van investeringen in ICT die nodig zijn om een contract tussen twee partijen ten uitvoer te brengen.

De gebruikte theorieën hebben deels de bestudeerde historische processen kunnen verklaren. Voor een daadwerkelijke verklaring van de

veranderende dienstverlening en de veranderingen in de structuur van de Nederlandse effectenhandel spelen meer factoren mee dan de gebruikte theorieën vereisen. De theorieën zijn echter in de beginfase van het onderzoek wel erg bruikbaar gebleken om vragen te formuleren om zo meer helderheid en structuur te krijgen in het vergaarde empirisch materiaal. Op deze wijze wordt de historicus gedwongen het empirisch materiaal op analytische wijze in kaart te brengen. Het feit dat het hier empirisch-statisch theorieën betrof is niet echt een probleem gebleken. De reden daarvoor lijkt hem te zitten in het feit dat deze historisch studie zich voornamelijk heeft gericht op statische situaties in het verleden. De studie heeft zich gericht op het punt van het verticaal integreren van een specifieke dienst uit de effectenhandel, te weten het zelf kunnen uitvoeren van orders.

## Curriculum Vitae

Janneke Hermans (1973) studied history at the University of Nijmegen. She graduated in 1998. In 1999, she started as a Ph. d. candidate at the Faculteit Bedrijfskunde/Rotterdam School of Management of the Erasmus University of Rotterdam. She has conducted research on the role of information- and communication technology in the Dutch securities trade in the period 1850-1970. Her research was part of a large national research project on the history of technology in the Netherlands in the twentieth century (Stichting Historie der Techniek, [www.histech.nl](http://www.histech.nl)). She presented her work on national and international conferences, seminars and workshops in the field of both business history and organisation studies. Articles on her research are forthcoming in the *Scandinavian Journal of Management* and *History and Technology*. Furthermore, she has given courses to third year business administration students and supervised several master theses. From September 2003, she works as a curator of Telecommunications at the Museum voor Communicatie ([www.muscom.nl](http://www.muscom.nl)) in The Hague.

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## ICT in Information Services

Traditionally, information and communication technologies (ICT) have been considered as technologies that support business processes. With the hype of the 'new economy' at the end of the 1990s ICT is increasingly more seen as a strategic asset. The question arises what effects ICT really has had on firms. This thesis analyses the use and deployment of ICT in the Dutch securities trade in the period 1860-1970. It shows the role ICT has had on the level of the firm and on the industry level. This is done by studying the range of services which financial intermediaries provided and by studying the structure of the Dutch securities trade. Concerning the first, ICT has made the provision of services enormously more dynamic. Only think of the possibility to inform clients during trade time on the current rates by means of ICT. Concerning the second, ICT has had a less apparent effect. We see the rise of large of joint stock commercial banks that control almost completely the chain of steps necessary to execute a securities trade order. Before, several intermediaries were involved to execute such an order. The fact that these large players had the means to provide themselves with the most modern and fast ICT of that time, and thus to lower transaction costs, seems to be of overriding importance.

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