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**The Canton of Berne as an Investor
on the London Capital Market
in the 18th Century**

Stefan Altorfer

© Stefan Altorfer
Department of Economic History
London School of Economics

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Department of Economic History
London School of Economics
Houghton Street
London, WC2A 2AE

Tel: +44 (0) 20 7955 7860
Fax: +44 (0) 20 7955 7730

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Abstract

This paper is a case study about investor behaviour of the government of Berne on capital markets in the 18th century, focussing mainly on London. Economic theory about principal-agent problems and portfolio administration will be used to analyse quantitative and qualitative data from government accounts and reports, as well as from the contemporary press. On the basis of this material, information about the decision-making process by one of the biggest investors in the London capital market of the 18th century can be analysed.

With very fortunate public finances, Berne started to invest money abroad in 1710 for both political and economic reasons. When the loans to Britain and Holland were redeemed in 1719 and 1725 respectively, they were invested in shares of chartered companies on the London capital market. During the South Sea Bubble of 1720, the Canton had made enormous profits with an unintended bull strategy. These were lost soon afterwards through opportunistic behaviour of the government's agents in London. As a reaction, financial intermediaries were excluded from the administration of the English funds until 1765. The more dramatic step, to withdraw completely from foreign capital markets, was not made, probably since the remaining capital was still worth more than the investment before the Bubble. Berne acted as a cautious investor on

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European capital markets, especially in London, where its assets were low-risk and low-yield securities. With a portfolio diversification through investment on the continent after 1732, it took slightly more risk, but still qualifies as a *widow-and-orphan* investor, for which getting constant dividend payment is more important than a speculative profit.

Introduction: A Case Study of Investor Behaviour

On April 14th 1719 the Great Council of the republic of Berne decided to invest £150,000 in shares of the *South Sea Company* on the London capital market and thus became one of the biggest individual shareholders of this company.¹ Even though loans to foreign powers had been contracted before, this was the first time that the government of what was at that time the largest state of the Swiss Confederation had bought securities of a private company abroad. In a rather unintended way, considerable profits were made during the South Sea Bubble of 1720, despite the bankruptcy of the two banks that administered the foreign assets. Until the French invasion of 1798, Berne held a considerable portfolio, of which the most significant part was invested in London. For the young patrician Carl Friedrich Steiger, an enthusiastic proponent of the foreign investments, Berne had even become the biggest lender of public credit in Europe by 1784.² Even though this was certainly an exaggeration, it can be argued that the republic was one of the biggest investors in early modern capital markets and that interest payments accounted for a substantial part of its budget surpluses.

¹ If not stated otherwise, currencies have been converted at parity courses (see appendix B for a list of currencies and parities). Dates are in the new style (n.s.), or Gregorian calendar, used in Berne after 1701: RQBE 9/1: 207. England used the old style (o.s.), or Julian calendar, until 1752. The difference was 11 days in 1720.

² For Steiger, the political and economic success of Berne did depend almost entirely on the foreign investment: Steiger 1952; See also Kapossy 1998: 148-149.

This paper is a case study of Berne as an investor on early modern capital markets, particularly in London. The first section provides some background information about the republic of Berne, its government and financial situation. It is followed by sections on methodology (2) and historiography (3). Subsequent sections examine preliminaries to an investment on capital markets and the economic importance of the sums involved (4), introduce concepts of both the emergence of capital markets and investor behaviour (5) and analyse the administration of Berne's foreign portfolio as a principal-agent problem (6). They are followed by an assessment of the reaction to crises with the example of the South Sea Bubble (7). After an overview of methods of early modern portfolio analysis (8), both the London (9) and the overall portfolios (10) will be examined.

1 The Investor: The Republic of Berne and Its Government

In the 18th century, the *Res Publica Bernensis*, the republic, or Canton of Berne, was the biggest state of the Swiss Confederation in geographical area and population. Its economy was largely agricultural, with grain production in the lower area called the *Mittelland*, mixed farming in the pre-alpine regions, and animal husbandry in the Alps. Cereals, wine, cattle, and cheese were exported. A proto-industrial sector produced cheap textiles, mostly linen.³ Even though the Canton of Berne was a territorial state, it retained some distinctive features of a city state. The republic was governed by an oligarchy of patricians, who considered themselves representative of the whole republic. They saw the state as their own 'family business,' as their use of the German word *Stand* (estate) indicates: *Stand*, like the French *Etat*, has the meaning of both

³ C. Pfister 1995; Kümmin/Radefff 2000.

the state and the aristocracy.⁴ In their form of republicanism, freedom (of the estate) and equality (within the estate) were important.⁵ All acts of absolute sovereignty of the republic were carried out by the Great Council, also called the council of the two hundred or CC (Latin for: 200).⁶ Amongst its members, the Great Council elected the mayor, and allocated the highly lucrative offices in state administration.⁷ A sophisticated system of checks and balances avoided the dominance of a single party, and it was accompanied by rivalry and mutual distrust amongst the ruling families. In his anonymously published 'Account of Switzerland' (written in 1714, published in 1756) the former English ambassador Abraham Stanyan divided the aristocracy of Berne in three types: merchants, pen-men, and military men. He considered merchants to be proud and lazy: proud because they were eligible for government offices, and lazy because their commerce was protected. Pen-men were those without profession who only waited for their turn in the government to get a state office. Military men who were serving in the mercenary regiments were the highest esteemed by Stanyan.⁸ Unlike ordinary soldiers, these officers usually did not chose their profession for monetary reasons, but as a way of getting a proper education and an introduction to foreign courts and cultures.⁹

The finances of Berne in the 18th century can be best represented as being in a state of positive equilibrium. Several factors reinforced each other: a low level of defence spending, budget surpluses accompanied by

⁴ For the political system: Feller 1955; Capitani 1991; Geiser 1891.

⁵ For the early modern notions of "freedom" and "freedoms": Epstein 2000.

⁶ Despite its name, the CC did not consist of 200 members, but of a number between 200 and 299. There was a strong tendency towards oligarchy. Most inhabitants of both territory and city were excluded from political participation: Feller 1955: 464.

⁷ Feller 1955; Capitani 1991; Braun 1984. See also the contemporary account of Anonymous [Abraham Stanyan] 1756.

⁸ Anonymous [Abraham Stanyan] 1756: 130-131. For Stanyan: Bucher 1951; Zeerleder 1942.

⁹ W. Pfister 1980-84; Furrer et al 1997.

low taxation, and the absence of a national debt.¹⁰ Thus, Berne was distinctly different from highly indebted ‘absolutist’ or ‘fiscal military’ states.¹¹ At the heart of this development was the virtual absence of war throughout the 17th and 18th centuries.¹² Loans had played an important part in financing the territorial expansion of Berne in the 15th and 16th centuries. The resulting public debt was repaid through tax revenue, payments for mercenary services, and through the secularisation of church property during the Reformation. Thus, by the end of the 16th century, Berne had no more net public debt, and the treasury started to accumulate considerable surpluses. Nobody knew exactly how much money was stocked in the war chest, because no inventories or records were kept, the treasure had to remain a state secret.¹³ In 1714 Stanyan estimated the value of the treasury to be £1.8m.¹⁴ By the French invasion of 1798, the treasure was worth L. 7m (£525,000) in cash. More importantly though, the republic held securities worth almost three times as much (L. 20m, or £1.5m).¹⁵ From the late 17th century, the state started to act like a bank, granting loans to both private lenders and to companies in order to encourage domestic economic development.¹⁶ The government had even commissioned a report from its commercial council about investing abroad, when further investment of state capital in domestic trade and industry was considered to be too risky.¹⁷ The lack of domestic investment opportunities and the low interest rates led to an

¹⁰ For the state finance of Berne: Altorfer 2003B; Körner 1997; Körner 1999; Hagnauer 1995; Landmann 1903.

¹¹ See the comparative analysis in Bonney 1995; Bonney 1999. For the “fiscal military states”: Brewer 1989; O'Brien 2001.

¹² Feller 1955; Kapossy 1997.

¹³ Körner 1997; Körner 1999; Landmann 1903: 13-23.

¹⁴ Anonymous [Abraham Stanyan] 1756: 174-175. He estimated the treasure of Berne to be twice as big as that of Zurich.

¹⁵ Landmann 1904: 60-62; Peyer 1968: 160-161. Zurich had a treasure of L. 1m (cash) and L. 5m (assets) at this time.

¹⁶ RQBE 7/1: 329-336; StABE B I 2: 94; Landmann 1903: 13-23.

¹⁷ StABE B V 2 (47-49). For the commercial council: Lerch 1908; H. Schneider 1937; Bodmer 1973.

oversupply of capital in the Swiss Confederation.¹⁸ This resulted in capital exports from private investors, facilitated by a banking sector specialised in these operations.¹⁹ Even though some of the ruling families had their own money invested in Paris, London, or Amsterdam, it is difficult to understand why money from the war chest should have been invested abroad. Given that the top priority of the government was to maintain the independence of the republic, the foreign investments only made sense if the concept of independence is understood in two ways.²⁰ Firstly, as external, or geopolitical independence, for which the war chest had to be ready to fund sudden needs. Secondly, as that of a government vis à vis its taxpayers. It was well known to the patricians that taxes could only be obtained for political concessions, whereas returns from investment from the coffers were obtained without reference to taxpayers.

2 Methodology

This essay analyses the foreign investments made by Berne using economic theory about transaction costs, principal-agent problems and financial economics. The methodological issues related to these approaches will be discussed separately at the beginning of each section. In general, using economic theory for analysing pre-modern societies can be problematic, especially if theory is applied in a naïve and deterministic way. Scholars of the New Institutional Economics (NIE) school have criticised neo-classical models with their assumption of perfect markets

¹⁸ Körner 1999.

¹⁹ Article “Kapitalmarkt” in: *Historic Dictionary of Switzerland* (forthcoming [online version at www.dhs.ch]); Ritzmann 1973.

²⁰ This double sense of independence refers to the concept of republicanism and the concept of the “estate” (*Stand*; discussed above). For the external independence: Kaposy 1998.

and have focussed on market imperfections, or the cost of transactions.²¹ These transaction costs are considered to be of crucial importance for the establishment and functioning of economic institutions.²² However, mechanisms behind the cost of institutional change remain widely unexplained.²³ Despite the problem that transaction costs are difficult to measure, it can be argued that the costs of coordination that occur in the matching process of supply and demand were higher in early modern times, given the absence of fast and reliable information about market opportunities. Thus, if used carefully, these theoretical explanations provide a useful tool for historical research, despite substantivists' fundamental denial of the validity of any economic theory for pre-modern societies.²⁴ The most sensitive way to handle this issue is the adoption of a research strategy where economic theory and models are used and their outcome is critically assessed in terms of plausibility.

In this study, the macroeconomic effects of foreign investments, such as their impact on the domestic capital market, on the balance of trade or economic growth will not be discussed.²⁵ Neither will there be a detailed analysis of the foreign funds in terms of state finance.²⁶ Another interesting aspect worth further analysis would be information problems, such as problems of both asymmetric information and of general information availability.²⁷

²¹ Coase 1937 was the first to emphasise transaction costs, and his theory was carried on by Williamson 1975. For more recent examples of NIE: see note 23 below.

²² Institutions are best defined as "the rules of the game, or [...] the humanly devised constraints that shape human interaction": D.C. North 1990: 3.

²³ See D.C. North 1981; D.C. North/Thomas 1973; D.C. NORTH 1990; Epstein 2000.

²⁴ For a substantivist position, see Polanyi's articles in Dalton 1971; for a reply: D.C. North 1977; Silver 1983; Law 1992. Non-modern societies can be both pre-modern or contemporary, but they are essentially non-capitalist. For an analysis of non-European credit markets: Bates 1990.

²⁵ See Carlos/Neal 2003 for a discussion of the relevant literature.

²⁶ See Altorfer 2003B. See also the literature in note 10.

²⁷ For information problems and credit markets: Neal/Quinn 2001; M. North 2000. For the information infrastructure in Berne: Schaffroth 1991; Kellerhals-Maeder et al 1991.

This case study of Berne does not claim to be representative for other investors, even if they are narrowly defined as, say, foreign corporate investors. It does, however, examine how a particular investor did behave on the emerging capital markets of the 18th century. For the most part, this study will concentrate on London, since most of the investments made by Berne occurred there. The City was becoming one of the major capital markets in the 18th century, and good data for comparison is available.²⁸ My findings are based to a large extent on sources produced by the government of Berne, especially accounts and records of the Financial Commission, the government body that was in charge of foreign investments. In addition, stock ledgers kept in the Bank of England record office, a selection of contemporary London newspapers, and diplomatic correspondence were considered.²⁹ Data for the comparison with individual portfolios are anecdotal, since there were no systematic inventories or notary archives for Berne in the 18th century.

The main advantage of this study is that documents about the intra-agent decision making process of an investor are available. This is due to the physical distance between the government of Berne and the London market, and because of the corporate nature of the investor with several individuals and government bodies involved. Both features necessitated written communication, and therefore left documents that indicate how well the actors were informed, and why they made decisions. Another advantage is that a number of records have survived with information about investment projects that were not realised.

Limitations of my approach include the fact that the investor of this case study is neither an individual, nor a commercial partnership or any

²⁸ See, for example: Neal/Quinn 2001.

²⁹ Some transcripts of primary sources were kindly provided by other researchers. These include: Nick Linder (Zurich); Larry Neal (Urbana-Champaign) and Ann Carlos (Colorado); Béla Kapossy (Fribourg); Manuel Bigler (Berne) and Andrea Schüpbach (Berne). The use of their data is declared in the relevant paragraphs.

other commercial corporation, but a government. This government possessed legal sovereignty over Bernese territory, even though its jurisdiction did not extend to London. It had to consider not only the economic, but also the political implications of its foreign investments. Lending money abroad has been part of foreign policy for a long time, although the increasingly impersonal nature of public credit throughout the 18th century reduced to some extent the earlier political importance of loans between governments.³⁰ Therefore, it can be argued that the internal decision-making process of the government can be assessed from an economic perspective. However, the government of Berne was never a unified entity. There were institutionalised checks and balances for the rivalries between different groups with a stake in the government. Shifts in the power balance between these groups will not be dealt with in detail. The critics of the foreign funds never had a serious impact on the investment policy of the republic.³¹ In a democratic state, the government is the agent of the voter-cum-taxpayer, and the ultimate investor in this case would be 'the people' of Berne. However, Berne in the 18th century was not a democracy, but a republic run by an oligarchy of patricians. Therefore the government, or the ruling families, will be defined as the principal (investor).

3 Literature Survey

With some notable exceptions, foreign investments of the Bernese treasury have not been subject to intensive research. One of these exceptions is a study by Julius Landmann, written over a hundred years ago in the spirit of the German historical school of economics.³² His

³⁰ See Körner 1980; Körner 1995.

³¹ Kaposy 1998: 151-155.

³² Landmann 1903; Landmann 1904.

description of the establishment and administration of foreign capital investments is based on a document kept in the public record office of Berne, the *Historie der Ausländischen Stands Capitalien* (History of the Foreign Capital of the State [of Berne]), written in 1776.³³ Landmann's study is, for the most part, a detailed and slightly modernised reproduction of the original document, and its analytical content rather limited. For example, different currencies were not standardised, and therefore no comparison between investments made. Other authors simply copied Landmann's findings.³⁴ Another major study regarding the foreign investments made by Berne is an article by Béla Kapossy, who approached the topic from the perspective of intellectual history.³⁵ He investigated different attitudes of government members to the issues of the coffers of the state and its investment abroad, and placed these discussions in a broader context of history of economic and political thought. Recently, there have been studies about the foreign funds during the South Sea Bubble and the bankruptcy of the bank *Malacrida* that was closely related to the administration of Berne's assets.³⁶

Most prominent amongst the contemporaries who noted the foreign investments made by Berne was Adam Smith. In his *Wealth of Nations*, he mentioned them as a singular example: 'The canton of Berne derives a considerable revenue by lending a part of its treasure to foreign states; that is, by placing it in the public funds of the different indebted nations of Europe, chiefly in those of France and England. [...] This policy of lending money to foreign states is, so far as I know, peculiar to the canton of Berne.'³⁷ Smith, however, was not entirely accurate in his statement. Berne did not have any money invested in French funds. The French

³³ StABE B VII 2389.

³⁴ Feller 1955: 106-129; Peyer 1968: Ch. 3.

³⁵ Kapossy 1998. He relies for the most part on Steiger 1952.

³⁶ Altorfer 2003A about the investment of Berne during the South Sea Bubble; Linder 2003 about the bankruptcy of *Malacrida & Comp.* See note 103.

³⁷ Smith 1976, Vol. 2: 819-820.

'assets' were unredeemed debts from the 16th century, and there was a handful of Swiss republics that invested money abroad. They all followed the example of Berne on a considerably smaller scale. Research on the investments of these other Swiss republics is not very analytical and usually does little more than simply describe or reproduce historic documents.³⁸ Another example where a state invested money on foreign capital markets is that of the Landgrave of Hesse-Cassel, who held assets on the London capital market in the late 18th century. His purchases were financed by the sale of mercenary troop service, especially to Britain. Interestingly, the Landgrave himself had obtained loans from the government of Berne from 1738-1750 and from 1758-1763.³⁹

There are a number of other investors that could be used for comparison. For most of them, however, the literature is not abundant. First, there are corporations from Berne that invested abroad, such as the butchers' guild, which held *South Sea Company* shares after 1725, as did other associations and family funds. However, no thorough investigation of their financial situation and behaviour has been made thus far.⁴⁰ The most interesting Swiss corporate investor in the 18th century was *Leu & Comp* from Zurich, a semi-governmental bank that issued bonds ('Rathausobligationen') and invested in foreign funds.⁴¹ Private bankers from Berne were involved in similar activities, but Swiss banking history has not approached the matter so far.⁴² Another area for comparison is

³⁸ See Veyrassat 1982: 290-291 (Annexe 2); MAYOR 1914: 30; Büchli 1916: 82-85; Peyer 1968: 30-33.

³⁹ Landmann 1903: 54-58; Ingrao 1987; Ferguson 1998: ch. 2 (60-80). See also the negative opinion of the Financial council about Hesse-Cassel cited on p. 45.

⁴⁰ BBB ZA Metzgern 19 and 1121; See also Schläppi 2001: 398; Capitani 1985: 77; Zesiger 1910: 143-145. Guilds were also amongst the creditors of *Malacrida & Cie*: StUB H XXII 117.1 (8). See note 103.

⁴¹ See Peyer 1968: 132-141; Landmann 1905.

⁴² Banking history about Berne in the 18th century is very teleological, concentrating on surviving firms and techniques (survivor bias): Burckhardt 1914; Ritzmann 1973; Salzmann 1953; Seelhofer 1987.

with the private investors, about which little is known, despite anecdotal evidence sampled by a few authors.⁴³ Carlos and Neal analysed the behaviour of women investors.⁴⁴ The involvement and behaviour of foreign investors has been dealt with in some studies, mostly Dutch, but also Swiss (discussed below).

4 Preliminaries: The Foreign Loans of 1710

The first decision to invest funds from the Bernese treasury abroad was made in November 1709, when the Great Council decided to start credit negotiations with Great Britain and the Dutch Republics, both of which were engaged in the costly war of the Spanish succession at the time.⁴⁵ The Queen of England finally received a loan of £150,000 against yearly interest payments of 6%, and the treasury in the Hague issued six bonds on the republic of Holland worth R. 100,000 each (6 x £22,500) with a maturity of 15 years at 4% interest.⁴⁶ The total sum granted in 1710 was Thl. 1.266m (£285,000), considerably more than the one million Thaler that the Great Council had originally intended for foreign loans.⁴⁷ It is difficult to evaluate the significance of these sums. Comparative numbers are sporadic, since there are no GDP estimates for Berne in the 18th century. The revenue of the state cannot be established easily either,

⁴³ See, for example Dickson 1993; Carswell 2001: esp. 256-261.

⁴⁴ Carlos/Neal 2003; The same authors are involved in a research project about "Risk Management in the First Emerging Markets. A Micro-Study of Agents' Behavior before, during, and after the South Sea Bubble." I would like to thank them for providing me with some of their data.

⁴⁵ StABE B I 94: 194. The negotiations with England happened in Berne with ambassador Stanyan (see note 8). In the Hague Berne was represented by a diplomat, François Louis de Pesmes de St. Saphorin: Gehling 1964; Stelling 1935.

⁴⁶ „R.“ stands for Reichsthaler (conversion at parity, see list of currencies in appendix B): StABE B VII 2389; Landmann 1903: 24-30. The transfer of the sum to Holland was made through Genoa, where bills of exchange on Amsterdam could be purchased: StABE B I 107. See J. Schneider et al 1992 for the exchange rates. For details of this transactions see Altorfer 2003A.

⁴⁷ The actual loans were paid Thl. 1.232m, since the exchange rate for the £ was below parity: StABE B VII 2389.

as some of it was collected and spent locally, or was paid in kind and would have to be capitalised. However, the revenue of the most important central accounts for the year 1709 was Thl. 121,635 (£27,368).⁴⁸ In 1712, Berne used Thl. 437,500 (£98,438) from its coffers to finance the Second war of Villmergen (1712), a short civil war with the catholic Cantons of the Swiss Confederation.⁴⁹ Therefore, the sums invested abroad were important for Berne. Compared to the British national debt, however, they were minuscule, as even its increase – and not the absolute sum – during the war of the Spanish succession (£37.29m) was roughly 250 times bigger than the loan granted by Berne.⁵⁰ The big chartered companies had a nominal capital of £5.56m (Bank of England in 1709) and £9.18m (South Sea Company in 1711).⁵¹ Nevertheless, because of the fragmentation of the capital markets, Berne was probably amongst the biggest single investors in London at the time. The wealthiest of the individuals mentioned by Dickson (ignoring assets in South Sea stock) was Peter Henriquez jun., a member of the ‘cosmopolitan mercantile plutocracy of the City’, with total assets worth £120,000.⁵² The total Swiss investment in London according to Monter was £25,000 in 1709, and slightly more than £150,000 in 1718.⁵³ It would be interesting to compare the sums that the treasury invested abroad to the domestic credit granted by the government, but no quantitative analysis of the exact relationship

⁴⁸ Revenue of the *Deutsche Standesrechnung* and the *Welsche Standesrechnung*: StABE B VII 590 and B VII 707.

⁴⁹ Feller 1955: 318. The war was financed without additional tax revenue (!).

⁵⁰ The English national debt increased from £37.3m in 1702 to £53.7m in 1713: Hamilton 1947: 127. For the national debt see also: O'Brien/Hunt 1999; Brewer 1989; Ferguson 2001.

⁵¹ Neal 1990: 49 and 52.

⁵² Dickson 1993: 262-263 (quote: 263). His assets were: £20,500 lottery annuities, £46,591 East India stock, £25,500 Bank stock (plus £20,500 new subscription in 1709). The ledgers of the South Sea Company have not survived.

⁵³ Monter 1969: 290-291. His numbers include lottery annuities, Bank and East India stock, but not South Sea stock. The Swiss were the second biggest group of foreign investors after the Dutch, though on a considerably lower scale. He ignores investment by the Canton of Berne completely.

between domestic and foreign investment can be made because of the decentralised structure of the register and administration of the domestic funds. Peyer is likely to be wrong with his estimate that in Berne only 10% of the revenue from interest payments were domestic, since he did not draw on data for all accounts in which domestic credit was registered.⁵⁴ The same problem occurs when the importance of the revenue from interest payments for state finances has to be assessed. For Landmann, they represented a third of the Canton's total revenue.⁵⁵ This is not exactly true, as he only uses central accounts, which do not include all the revenue collected locally, but were largely comprised of the surplus from other accounts. It can only be said that interest payments accounted for at least a third of the *gross benefits* of the state administration. Their contribution to the total revenue of the state cannot be estimated at this stage of the research.

The first foreign investments of 1710 were motivated by both economic and political considerations. It was not unusual for a state to grant credit to allies in need.⁵⁶ At the beginning of the 18th century, Berne had a rather weak alliance with the Dutch republics, and there were talks about a defence treaty with England, though this was not materialised in any formal alliance.⁵⁷ It is not a coincidence that loans to Holland and England were pushed by the anti-French party under the mayor Johann Friedrich Willading.⁵⁸ They were disappointed with the way Berne had been treated by France, its major ally, towards the end of the reign of Louis XIV. There might also have been religious considerations for Berne to support its fellow protestants. The fact that both Holland and Berne

⁵⁴ Peyer 1968: 160. He used figures from Landmann 1903. Data from all the different accounts of the districts would be too voluminous.

⁵⁵ Landmann 1903: 9.

⁵⁶ Körner 1995; Körner 1980.

⁵⁷ Feller 1955: 195-240; Bonjour 1961.

⁵⁸ Willading was also the richest citizen of Berne of his time. He had owned Bank stock since 1701: BERO AC27 423:4057. For Willading: Feller 1955: 195-240; Fischer 1927.

were republics was probably not of great importance. Personal contacts with Holland were amply provided through the two mercenary regiments from Berne that were stationed there. Cultural links should not be over-emphasized as an explanation, as such links also existed to places where Berne did not invest – such as France. More essential is the economic rationale that both Holland and England had public finances that were efficiently administered and under parliamentary control. Their funded national debt was also the backbone of their capital markets, the most sophisticated at the time.⁵⁹ Nevertheless, the loan to the Queen of England was a ‘traditional’ one, where the Queen was debtor, and the interest payments were guaranteed by future revenues of taxes on wine and other consumables.⁶⁰ A significant difference in investment strategy occurred only when this loan was prematurely redeemed in 1719, and the government of Berne invested in shares of the *South Sea Company*. After the redemption of the original loan was announced, a government report suggested that the funds should be invested in the British national debt, rather than withdrawing the money. It proposed 5% lottery annuities, a parliamentary fund ‘and solid as nothing else.’ Stock of the *Bank of England*, the *South Sea Company*, or the *East India Company* were not advised since they were all ‘subject to revolutions [i.e. changes (in price)].’⁶¹ *Muller & Comp*, Berne’s banker in London, did not carry out an order to buy Land Tax tallies for the Great Council, but recommended purchase of South Sea stock instead.⁶² The government decided to purchase some shares ‘as a test’ initially, but ended up investing the whole sum in this manner.⁶³ For the first time ever, money was invested

⁵⁹ Riley 1980; Dickson 1993; O'Brien 2001; O'Brien/Hunt 1999 (the *Financial Revolution* is discussed below).

⁶⁰ StABE B VII 2389.

⁶¹ StABE A V 1506: 38.

⁶² StABE B VII 2389; PRO C 11/483/2.

⁶³ The original words are „zu einem probier streich“: StABE A VII 665: 358.

in securities of a private company.⁶⁴ Ten years earlier, the treasurer Alexander von Wattenwyl had written to François Louis de Pesmens de St. Saphorin who was negotiating the Dutch investment for Berne, stating that these securities were lucrative, but too risky, and thus not suitable: 'Les action en Angleterre, quoy que d'un profit considerable, nous paraissent requerir trop de mouvements et de soin – de sorte que nous ne pensons point d'en acheter.'⁶⁵ The developments on the London capital market must have made the government change its mind.

5 Capital Markets and Investor Behaviour in the 18th Century

There were two main factors pushing the development of early modern capital markets: trade and government finance. Long distance trade depended on markets for the exchange of financial claims, which became increasingly independent of the markets for goods. The negotiability of (foreign) bills of exchange was an important factor in establishing what Neal calls 'financial capitalism.'⁶⁶ North has listed the innovations that lowered transaction costs in early modern long distance trade. They reduced the cost of transactions because they increased the mobility of capital, lowered information costs, and transformed uncertainty into risk.⁶⁷ Trading in government finance, or what Max Weber called 'politically oriented capitalism', had existed since late medieval times, but the market was limited to a small number of investors.⁶⁸ As a consequence of the *Financial Revolution* in the Netherlands, these

⁶⁴ In 1711 Berne bought Bank stock from interest payments because the course of the exchange was unfavourable. These assets were sold shortly afterwards and the money transferred to Berne: StABE A II 631: 188.

⁶⁵ Wattenwyl to St. Saphorin (1710-01-29): StABE B I 2: 204-208 (quote: 208). Willading had suggested to buy English funds: Willading to St. Saphorin (1709-10-27): StABE B I 107.

⁶⁶ Neal 1990: 1-19.

⁶⁷ D.C. North 1991.

⁶⁸ Weber 1978.

markets changed considerably from the 16th century.⁶⁹ The establishment of a funded national debt allowed the issue of more tradable government securities, annuities in particular. As a consequence, the relationship between the government and its borrowers had become impersonal. In England, joint-stock companies – the *Bank of England* and the *South Sea Company* – were commissioned to administrate the national debt in a debt-for-equity swap.⁷⁰ Their stocks had the advantage of being fungible. They were easier to trade than annuities, so investors benefited from a liquidity premium. A government that chose this financial strategy had the advantage of paying lower interest, but it had to secure interest payments through mortgaging some of its revenue and through a commitment to ‘play by the rules of the capital market.’⁷¹ All these innovations were usually driven by the financial needs of warfare, which was becoming increasingly expensive.⁷² Amsterdam and London had emerged as the most advanced and important European financial markets of the 18th century, and they were well integrated through a reliable network of payment, information, and legal action.⁷³ The payment system in Amsterdam was centralised on the *Wisselbank*, or *Bank of Amsterdam*, whereas the *Bank of England* did not have the same dominant role in the London payment network that was coordinated through the market.⁷⁴ Through better administration of the public debt, government funds became less risky. Financial intermediaries provided additional security and offered their services to a broad range of investors.⁷⁵ For a single

⁶⁹ Tracy 1985; Dickson 1993; Neal 1990; Roseveare 1991.

⁷⁰ Neal 1990: 44-61.

⁷¹ Neal 2000: 124.

⁷² Brewer 1989; Ferguson 2001; O'Brien 1988; O'Brien 2001.

⁷³ Neal 1990. He uses autoregressive moving-average (ARMA) models for the changes in share prices in Amsterdam and London. He further concludes that the capital markets were efficient in the sense that stock price of the previous period is the best predictor of the current stock price.

⁷⁴ For a comparative approach: Neal 2000.

⁷⁵ Dickson 1993. Financial intermediation could also be a source of agency problems (discussed below).

investor, participation in capital markets had become much less complicated. Entry barriers were lowered, investment was safer, and risk could be limited through diversification. Even though it was only demonstrated mathematically in 1952, investors of the 18th century were well aware that spreading investment helped to curtail risk.⁷⁶

Investors value an asset with respect to the profit it can generate and the security that is attached to it.⁷⁷ In general, the security of an investment rests on its legal position and the guarantees attached to it. These can either be real, as in the case of a mortgage, or take the form of a commitment that elicits confidence. According to modern financial theory, stock markets are efficient in the sense that they fully utilise use all available information in establishing stock prices at any given time. In this view, the price of an asset is determined by the best information about the future profitability of a company, also referred to as its *fundamentals*.⁷⁸ Investors value the higher security of an asset through a (negative) risk premium. The willingness to take risks, or degree of risk aversion, is dependent on the value set of an investor. Every investor tries to maximise the 'risk adjusted' return. For Neal, his results indicate 'that participants in the stock markets of the Age of Reason were rational in their economic behaviour.'⁷⁹ Such a statement makes particular sense if rationality is broadly defined. To understand investor behaviour in early modern capital markets, the profit of an asset must be understood socially as well as economically, and it is then better referred to as *utility*. In a paper written for the Imperial Academy of Sciences in St. Petersburg in 1738, Daniel Bernouilli wrote: 'the value of an item must not be based on

⁷⁶ Markowitz 1952; see Bernstein 1996: 6. Carter 1975: 48-49 mentions Dutch investors who were spreading investment to avoid risk.

⁷⁷ Hoppit 1986: 42; Kindleberger/Laffargue 1982.

⁷⁸ Critics of this efficient market approach note that stock prices also reflect information about current battles for control of company decisions: Neal 1990: 120-123; with reference to Mirowski 1987.

⁷⁹ Neal 1990: 130.

its price, but rather on the utility that it yields.⁸⁰ For him, the utility of an investment was inversely proportionate to the wealth of an individual. Bernouilli was the first to recognise that the expected value of an investment is not the same for everybody and he attempted to measure this phenomenon. He ignored, however, that what he tried to measure was something that is difficult to quantify. In addition to Bernouilli's approach, the utility of an asset depends on the value that an investor is prepared to pay for its security, which, in turn, is a function of his *risk profile*. For a better understanding of the Bernese government's behaviour as an investor, it is therefore helpful to discuss different approaches to classifying investors according to their risk profile. In his account of the Amsterdam stock exchange from 1688, Joseph de la Vega divides investors into three categories. First, great capitalists looking for a permanent investment. Second, substantial merchants risking only part of their capital in moderate and relatively safe speculation. Third, gamblers who were involved in every kind of speculation. The problem with de la Vega's distinction is that the difference between investors, speculators and gamblers is often gradual.⁸¹ For Adam Smith, a speculator was not a financial operator, but someone without a regular, established branch of business and who is always active where he sees profitable opportunities.⁸² Participants in stock exchanges are usually referred to as *bulls* and *bears*. The former invest at low prices and hope to sell at a higher price in the future, whereas the latter sell borrowed securities expecting to buy them back later at a lower price. Bears are considered

⁸⁰ Bernouilli 1954. However, this text was only translated to German in 1896, to English in 1954, so its impact was limited to a small number of scientists: See also Bernstein 1996: 99-115.

⁸¹ De La Vega 1957: 5-6 (21-29 in the original text).

⁸² Smith 1976: 130-131; see also Chancellor 1999: introduction.

the more speculative investors.⁸³ One category of investors in financial economics is the ‘widow and orphan’ investor. This group is usually described as investors with fiduciary liabilities, and they are said to be passive, interested in low-risk and thus low-yield, assets. Nevertheless, this group should only be viewed as an ideal type, since, as Carlos, and Neal have shown, women did not behave differently on the capital market, even though widows were sometimes seen as naïve and in need of protection against charlatans by their contemporaries.⁸⁴ Another distinctive group of investors comprises the foreigners, who are normally said to be active participants in the market with a speculative outlook. For the London capital market in the 18th century, there are some studies about foreign investors, especially from the Netherlands.⁸⁵ Authors have based their research on the movement of exchange rates, and occasionally on stock ledgers or other asset inventories.⁸⁶ For Dickson, it was not until the time of the South Sea Bubble that foreign investors began to invest. By 1723-24, their total holdings in *East India Company*, *Bank of England* and *South Sea Company* represented 9.3% of the total capital, and 19.2% in 1750 (including annuities).⁸⁷ In a perfect market, there is no reason why foreign and domestic investors should behave differently from each other. However, early modern capital markets had high transaction costs, and investments by agents were often difficult to monitor (discussed below). Thus, entry barriers were higher, so foreign investors can be expected to be more professional than domestic. According to Wilson, possibilities for secure investment by the Dutch in

⁸³ The expressions *Bull* and *Bear* were first used in 1714, but the principle was already described in De La Vega 1957: Article “Bull” and “Bear”, in: *Oxford English Dictionary* (online edition: www.oed.com).

⁸⁴ For women, to speculate was a way of earning money without having to possess land estates and without work. There were no restrictions on holding shares: Carlos/Neal 2003; Chancellor 1999: 78-80.

⁸⁵ Carter 1975; Wilson 1941; Dickson 1993; Neal 1990. For Swiss investors: Monter 1969. See also Lüthy 1959.

⁸⁶ Carter 1975; Monter 1969.

⁸⁷ Dickson 1993: 312, 321.

London were still very limited in 1700. In the first decade of the 18th century, the situation changed and they began to buy English stocks, usually with a friend or family member as agent. For the first time, ordinary citizens and not only professional financiers invested abroad. Dutch investment became crucial in maintaining Britain's financial capacity.⁸⁸ The English public usually regarded its importance as a necessary evil at best, and investors from the Netherlands were said to be shrewd speculators.⁸⁹ For Wilson, who based his findings on correspondence of individual investors, contemporary literature and notary archives, the Dutch were active investors.⁹⁰ Carter's work, based on collateral succession inventories and stock ledgers, sees them as no different from other investors. For her, the active members of the stock market were English, Huguenot, Dutch or Jewish dealers: 'It is, however, a mistake to suppose that the "gnomes" of those days actually did live in Amsterdam any more than they ever really lived in Zurich.'⁹¹ Overall, the question of whether the Dutch investors were active and destabilizing or not, remains unanswered.⁹²

If we assume that the government of Berne wanted mainly to invest funds from its treasure safely with the possibility of withdrawing it in an emergency, we would expect it to behave like a widow-and-orphan investor, or a great capitalist of de la Vega's first category.

6 Foreign Portfolio Administration as a Principal-Agent Problem

The case of Berne's investment in London presents typical features of a principal-agent relation, where the government as an investor (the

⁸⁸ Wilson 1941: 97, 202-203.

⁸⁹ Wilson 1941: 163.

⁹⁰ Wilson 1941; See the Wilson-Carter controversy reprinted in: Carter 1975 53-65.

⁹¹ Carter 1975: 139.

⁹² Neal 1990: 147 comes to the same verdict.

principal) has to use an agent to manage its portfolio. Microeconomics offers a broad range of principal-agent theory to deal with this issue.⁹³ Its main concerns are agency problems that arise because of opportunistic behaviour, when the agent has differing individual objectives and the principal cannot ensure that the task is carried out in pursuit of her goals. The risk of self-interested misbehaviour by the agent (moral hazard) increases if the work of the agent is impossible or too expensive to monitor, if differences in incentives between the principal and the agent cannot be resolved by designing and enforcing a complete contract, or if information is asymmetric.⁹⁴ There are some studies of early modern European capital markets that explicitly employ agency theory.⁹⁵ Greif's analysis of principal-agent problems in long distance trade can also be helpful for credit markets. The problem of imperfect monitoring, especially in unrepeated transactions, can be overcome by group cohesion that provides an informal contract enforcement institution (second party enforcement).⁹⁶ In contracting with their agents, principals of the early modern period had to overcome the same basic problems as their modern counterparts. However, there were significant differences: transaction costs were much higher, and the coordination mechanisms were slow. Information was extremely costly, and the legal framework for the contract enforcement was only partially available.⁹⁷ With the fundamentals of principal-agent theory and their constraints in mind, we can formulate a set of working hypotheses for investments made by Berne. First, we expect government members to be aware of the

⁹³ For an overview: Milgrom/Roberts 1992, esp. ch. 6. Agency theory is often combined with concepts from game theory to explain the strategic behaviour of actors: Dixit/Nalebuff 1991; McMillan 1992; Hart 1995. For an explicit use of agency theory in a comparison of early modern fiscal systems in Europe: Kiser 1994.

⁹⁴ Milgrom/Roberts 1992: ch. 6.

⁹⁵ Hoffman et al 1999; Hoffman et al 2000; Neal/Quinn 2001.

⁹⁶ Greif 1996. But compared to a legal system, they were only a second-best solution, because group membership was not free. See Weber 1921; Sugarman 1996.

⁹⁷ D.C. North 1991.

problems of contract design, such as agent remuneration or monitoring. Second, in the absence of a universally enforceable legal system for Berne, we expect the government to use alternative informal enforcement mechanisms. Third, if changes in administration occur, they are expected to be in response to agency problems. It is possible to test these hypotheses using documents about the administration of Berne's foreign portfolio.⁹⁸

The loans of 1710 had been prepared by the Secret Council as a matter of foreign policy.⁹⁹ After the South Sea Bubble, the Secret Council was expanded with the addition of the mayor and two experts ('councillors') for matters concerning foreign investments. It was then referred to as *Geheime Räte und Beigeordnete*, and for simplicity I will call it the *Financial Council*. For all investment decisions, the Great Council was the ultimate decision maker. The Financial Council had to prepare decisions and report on important issues.¹⁰⁰ Minutes of the Financial Council have not survived, but some of its discussions about the administration of foreign funds were recorded in a collection of government reports, the *Responsa Prudentum*.¹⁰¹

The first loan of £150,000 to England in 1710 had been transferred there by the ambassador Abraham Stanyan.¹⁰² Bankers *Malacrida & Comp* from Berne were entrusted with the administration of interest payments for this loan. *Malacrida* was a company founded by young members of patrician families who had converted to Catholicism, and were thus ineligible for any government office. They were soon

⁹⁸ See also Landmann 1904: 3-9. It would also be interesting to analyse the correspondence between St. Saphorin and Willading of 1709/10 under this aspect: StABE B I 107.

⁹⁹ The Secret Council consisted of eight members of the Small Council: Linder 2003: 4.

¹⁰⁰ Landmann 1904: 6; Linder 2003: 164-184. The instruction is edited in RQBE 9/1: 199-201.

¹⁰¹ An accountant, or secretary, carried out minor administrative duties. He was not part of the government, but usually a young member of a ruling family: RQBE 9/1: 83.

¹⁰² StABE B VII 2389. For Stanyan see note 8.

associated with Saumuel Müller, a citizen from Berne acting as banker in London, and became *Muller & Comp.* The original purchase of South Sea stock in 1719 was partly a result of opportunistic behaviour on their part, when they did not carry out orders by the government but advised the purchase of securities (discussed above). After the South Sea Bubble of 1720, both *Muller* and *Malacrida* went bankrupt. In a classic case of opportunistic behaviour, *Muller* had mortgaged the assets of the republic without the principal's consent. They had been used to grant speculative credits that became non-performing loans when the asset price bubble burst (discussed below).¹⁰³ The government was worried about its London assets and sent two members of the Great Council, Marx Morlot and Samuel Tscharner, as 'commissioners' to handle the matter. Morlot was a lawyer with knowledge of foreign languages and administrative experience, Tscharner an officer in a Bernese mercenary regiment positioned in the Netherlands.¹⁰⁴ It is not known how good their know-how in financial matters was. From their correspondence with the treasurer, it can be argued that they were familiar with most investment tools of the time, even though they expected the government to send an accountant to assist them.¹⁰⁵

In a typical move for early modern administration, the office of a commissioner for the English funds was established as an *ad hoc* solution to a problem and was then perpetuated.¹⁰⁶ Tscharner remained in London until 1724 to manage the assets, as well as to attend the trials linked with the bankruptcy of *Muller & Comp.*¹⁰⁷ Shortly before his return, the government formulated its instruction for the future administration of the

¹⁰³ This episode is also referred to as the *Malacrida* crisis: Mülinen 1896; Landmann 1903: 24-50; Linder 2003.

¹⁰⁴ Articles „Morlot“ (# 8) and „Tscharner“ (#10) in: *HBL*S (*Historisch-biographisches Lexikon der Schweiz*), Neuenburg 1929.

¹⁰⁵ For the correspondence: BBB Mss. Hist. Helv. III.89. The request for an accountant: Tscharner/Morlot to Sinner (1721-04-21): *ibid.*: 39.

¹⁰⁶ See, for example: Agena 1972.

¹⁰⁷ For the trials, see also: PRO C 11/483/2.

English funds: a member of the Great Council should be elected and sent to London for two years, with a yearly salary of £600. He had to collect interest payments and report to the Financial Council. He was accountable to the Great Council, and would be accompanied by a secretary-cum-accountant.¹⁰⁸ Thus, financial intermediaries were excluded from the administration of the portfolio as a reaction to a crisis. Contractual relations to banks were replaced by a line of command from the Great Council to one of its members, linked to the republic by both birth and oath.¹⁰⁹ The sanctions for opportunistic behaviour of a government member, which also threatened his whole family, included the exclusion from government offices and the loss of both fortune and honour.¹¹⁰ Private banks were only to be involved in the administration of the English funds again after 1765, when *Van Neck & Comp*, a London bank, managed the assets and informed the government about financial matters.¹¹¹ For investments on the continent after 1732 the government relied on bankers from Vienna, Frankfurt, Dresden, Amsterdam and Geneva, as well as domestic banks.¹¹² By sending one of its members to London, the government paid a high security premium for the administration of its English funds. This do-it-yourself solution was more expensive than contracting the task to a third party, and it impeded gains from specialisation. Unsurprisingly, this created a lively discussion amongst a government that was otherwise known for its frugal outlook.¹¹³ Before the commissariat for the English funds was formally established in 1730, the Financial Council would have preferred contracting with a

¹⁰⁸ StABE A II 682: 347.

¹⁰⁹ One document also mentions the “duty of the estate” [“Standespflicht”]: StABE A V 1479: 365-380. See also Linder 2003: 164-184.

¹¹⁰ The loss of honour is not to be neglected in a pre-modern society: Muldrew 1998.

¹¹¹ *Van Neck & Comp* was a Dutch-English-Huguenot partnership. It was one of the most important and most influential actors on the London capital market around 1760: Wilson 1941: 111-114; Carter 1975: 99.

¹¹² See the (incomplete!) list in Landmann 1904: 4.

¹¹³ Landmann 1903: 6-7.

London bank, but it was outvoted by the Great Council, who wanted to introduce a new and profitable office for its members.¹¹⁴

The commissariat was an office similar to the post of bailiff in one of the more profitable counties of the Canton.¹¹⁵ The commissioner was elected amongst the members of the Great Council by majority, served for four years, and received a fixed salary.¹¹⁶ The appropriate salary for the commissioner in England was controversial. The Financial Council considered a yearly salary of £600 largely sufficient, since – as they claimed – most ambassadors in London were not paid even half as much. Furthermore, this pay rise could attract ‘all kinds of subjects’ to stand for office, and they may not ‘carefully examine themselves if they have the necessary capacity [for this task].’¹¹⁷ In microeconomics a situation where high remuneration may attract the wrong economic agent is referred to as adverse selection, or a ‘lemon problem.’¹¹⁸ Albeit, the Great Council decided to pay the commissioner £800 a year, but to abolish the post of a secretary at the same time. This relatively high salary was also intended to compensate for the prohibition of any other source of income for a commissioner, and thus to avoid opportunistic behaviour. The commissioner was neither allowed to trade assets for himself or others, nor to collect interest payments or perform any other duties for third parties.¹¹⁹ This awareness of agency problems is understandable, given

¹¹⁴ StABE A V 1470: 899, 1000-1001; After the abolishment of the commissariat (in 1765) a report against its re-introduction estimated that this would mean to “satisfy a farfetched private interest”: StABE A V 1479: 357-364.

¹¹⁵ The commissariat was classified as an office of the second class in the four-class system of government offices: Feller 1955: 106-129; Anonymous [Abraham Stanyan] 1756: 81-82.

¹¹⁶ Ordinary bailiffs were elected by lot, served a term of six years, and were remunerated with a fixed salary topped up by a proportionate share of government revenue according to the tasks carried out.

¹¹⁷ StABE A V 1470: 999-1007, quote: 1002. It would be interesting to find out whether the statement about the ambassadors was true or not.

¹¹⁸ Akerlof 1970.

¹¹⁹ StABE A IV 215: 912-916, edited in RQBE 9/1: 201-206. See also StABE A V 1473: 285-297.

the negative experience encountered in the past. Apart from the case of *Muller & Comp*, the secretary Samuel Schneider had cheated on several government members in 1729 and absconded with their private money.¹²⁰

With the establishment of the commissariat, the discussions about the administration of the foreign funds were not over. As early as 1737, its abolition was suggested.¹²¹ In the 37 years of its existence there were at least 13 attempts to reform the commissariat, and its instructions were changed several times.¹²² The discussions centred around two issues: the lack of candidates and the problem of security. The lack of candidates was the result of several factors that made this office unattractive. A commissioner was stationed far away from home, and even the high salary did not make up for the missed career opportunities in Berne, where an even more profitable bailliage could be obtained. According to Stanyan, a bailiff could put Kr. 25-36,000 (£4,687-6,750) in his pocket during his six years of duty, 'which is a great sum in a country, where the law retrenches all superfluities in equipage, apparel and furniture, and where oeconomy [sic!] is so well understood and practiced.'¹²³ In contrast to this, living in London was expensive, and, as one report had it, the commissioner had to live 'amongst people whose language he [the commissioner] neither knows nor understands.'¹²⁴ Furthermore, tasks undertaken in normal times were repetitive, since a commissioner only had to collect dividends and write 'increasingly sterile' letters, a duty that the Financial Council considered both unaccustomed and unworthy of a

¹²⁰ One victim was Christoph Steiger (later to become major): BBB Mss. Hist. Helv. L67; see Linder 2003: 173.

¹²¹ StABE A V 1472: 133-158.

¹²² The 13 attempts for reform are only those for which reports can be found in StABE A V 1472 – A V 1490. For the changes: RQBE 9/1: 201-206.

¹²³ Anonymous [Abraham Stanyan] 1756: 81-82.

¹²⁴ StABE A V 1478: 9. The reports usually also mention the strange, or foreign air and food (the German expression "fremd" means both "strange" and "foreign").

government member.¹²⁵ To check for all these unappealing aspects, there were attempts to raise the salary for the commissioner.¹²⁶

To address the lack of candidates, the abolishment of the existing limits in eligibility and a reduction in the term of the office were discussed.¹²⁷ The other major subject of debate was the security of the funds and the interest payments – or the agency problem of opportunistic behaviour. One proposal wanted to establish an additional guarantee for the commissioner who was dealing with considerable sums for the treasury.¹²⁸ Such a guarantee would have to cover at least one years' worth of dividends (£10,000). This high sum made it difficult to find someone willing to stand as guarantor, 'considering that the office is so remote, and there are so many fatalities, temptations and dangers a friend [i.e. the commissioner] is exposed to.'¹²⁹ The Financial Council was well aware that such a collateral would further reduce the field of potential candidates.¹³⁰ It shows, however, how important the security of its investment was to the government.¹³¹ It did not trust the internalised sense of duty of its own members entirely – despite informal (and formal) enforcement mechanisms.¹³² The behaviour of *Muller* and *Malacrida* had happened despite such informal inter-group sanctions.¹³³

When the commissariat was finally abolished in 1765, Berne paid considerably less for the administration of its English funds. According to

¹²⁵ For the Financial Council, this task was more suitable for a merchant: StABE A V 1479: 10 (report written in April 1765, after the abolishment of the commissariat).

¹²⁶ StABE A V 1486: 905-910; A V 1478: 826-837. The limits to eligibility were the same as for other offices of the second class (discussed above): StABE A V 1486: 905-910; A V 1478: 826-837.

¹²⁷ StABE A V 1472: 133-158; A V 1478:826-837 and 902-911.

¹²⁸ The documents speak of "Bürgschaft" (collateral, bail): StABE A V 1472: 133-158; A V 1478: 902-911.

¹²⁹ StABE A V 1478: 902-909.

¹³⁰ StABE A V 1472: 133-158; A V 1478: 902-911.

¹³¹ See also StABE A V 1473: 285-297.

¹³² Greif 1996.

¹³³ The property of the bankers was confiscated and they were banned from the city. For the trials: Linder 2003: 135-147.

the contract with *Van Neck*, they received £200 per year – not even a quarter of what a commissioner had been paid, if travel expenses are included. They had to inform Berne in good faith about ‘news that is likely to have an influence on [Berne’s] interests.’ As security (collateral) for the dividend payments, *van Neck* had to mortgage £10,000 in 3%-Consols to Berne.¹³⁴ A report by the Financial Commission of 1737 shows that an earlier, stalled project had expected bankers *Boissier & Selon* from Geneva to mortgage even their real estate property as a security, which they apparently refused.¹³⁵ Improved monitoring possibilities, such as a well established legal infrastructure in London, and the availability of more reliable and faster information helped reduce the costs of contracting this transaction out.¹³⁶ Even after the commissariat was abolished, discussions continued for a short time.¹³⁷ One concern was that financial know-how within the government could be missing, and that information would be unreliable. This argument was dismissed with reference to the ‘great many books written and published in all languages’, and to existing contacts to London both through merchants and private investors.¹³⁸

7 Reaction to Crises: The South Sea Bubble

It is often in situations of crisis that problems of investor behaviour become most tangible. However, when dealing with crises, one has to keep in mind the potential bias of tradition. Extraordinary events are more likely to be recorded, by both contemporaries and historians, than the

¹³⁴ In case of a capital transaction they would have to do the same for the sum involved. The convention is edited in: Landmann 1904: 63-64 (annex 32).

¹³⁵ StABE A V 1472: 133-158. As a reply to this, *David Gruner* (the successor of *Malacrida*) had proposed his services, but mortgaging property was considered to harm his credit. It is according to his proposal that *Boissier & Selon* had finally refused this form of collateral: BBB Mss. Hist. Helv. II.9 (35).

¹³⁶ See D.C. North 1990; D.C. North 1991.

¹³⁷ StABE A V 1479: 357-364 and 365-380.

¹³⁸ StABE A V 1479: 357-364.

uneventful business as usual, or, as Perkins had it: ‘the bad guys get all the ink.’¹³⁹ This section will analyse the reaction of the government to financial crises using the example of the South Sea Bubble of 1720. This crisis had a substantial impact on where and how Berne invested its money abroad.¹⁴⁰

There is an abundant literature about financial crises.¹⁴¹ According to Kindleberger and Laffargue, a financial crisis is associated with changed expectations that result in a rapid and sudden shift from one asset to another.¹⁴² Dependent on the author’s standpoint with respect to market efficiency theory crises are either the outcome of irrational speculative manias and exuberances (Kindleberger, Chancellor), or they are a reaction to uncertainties linked to economic transition, and thus the necessary and useful learning experiences on the way to a sounder financial system (Neal).¹⁴³ Financial crises are difficult to define. Contemporary observers, or literary evidence, are not always congruent with statistical indicators. Furthermore, the financial markets of the 18th century were relatively new and evolving, and it is often difficult to separate change from crisis.¹⁴⁴ The South Sea Bubble of 1720 was a dramatic crisis, especially for those involved in government securities.¹⁴⁵ It was driven by the issue of shares in the *South Sea Company*, a joint-stock company whose main field of activity was the administration of the

¹³⁹ These words were used by Edwin J. Perkins in his review of J.W. Markham, *A Financial History of the United States* (Amrok, 2002) in H-Business (newsletter), 2003-08-01.

¹⁴⁰ For the investment of Berne during the South Sea bubble: Altorfer 2003a.

¹⁴¹ For example: Ashton 1959; Kindleberger 1989; Kindleberger/Laffargue 1982; Hoppit 1986; Neal 1990; Flood/Garber 1994; Chancellor 1999; Schnabel/Shin 2002.

¹⁴² Kindleberger/Laffargue 1982: 2; Hoppit 1986: 41-42.

¹⁴³ Kindleberger 1989; Chancellor 1999 vs. Neal 1990; Neal/Weidmenmier 2002.

¹⁴⁴ See also Hoppit 1986: 39-41.

¹⁴⁵ For Hoppit, the South Sea Bubble had little impact on the rest of the economy, except for those inexperienced investors who suffered most. He argues with the number of bankruptcies (not including landholding proprietors): Hoppit 1986: 47-48.

British national debt.¹⁴⁶ For Neal, the crisis – as well as the virtually parallel Mississippi crisis in Paris – was the ultimate result of the conversion of fixed-interest, irredeemable national debt into tradable, variable-yield securities. The bubble occurred because of problems with the adaptation of new market instruments. In the beginning, during the ‘rational bubble,’ the share price rose because investors were prepared to pay a high liquidity premium for these securities. The bubble finally burst because the directors of the company overreached themselves and the company did not manage to honour its commitments.¹⁴⁷ In the aftermath of the crisis, the basis for an international capital market was created: ‘The South Sea Bubble proved to be the “big bang” for financial capitalism in England.’¹⁴⁸ This interpretation is rejected by Chancellor, for whom the liquidity premium could not have been so great, as investors who had wanted marketable securities before 1720 could have held other assets like *Bank of England* or *Million Bank* shares. The attempts of the *South Sea Company* in 1720 were not the first to convert public debt into private stock.¹⁴⁹ Since the company had no prospects for profitable trade, the value of its shares was derived entirely from government payments that would fix it around £150. Therefore, the bubble was entirely irrational and speculative. For Chancellor, the rational bubble was nothing but the ‘greater fool’ investment strategy, where everyone hopes to find a ‘greater fool’ who will pay a higher price for the shares later.¹⁵⁰

When Berne bought South Sea Stock in April 1719, the Great Council had expected an increase in share price if Britain could attain

¹⁴⁶ For the South Sea Bubble (in addition to note 145): Carswell 2001; Emmett 2000; Balen 2002.

¹⁴⁷ Neal 1990: 62-71.

¹⁴⁸ Neal/Weidmenmier 2002: 10-11 (quote: 11).

¹⁴⁹ Such debt-for-equity swaps had occurred in 1697 (Bank of England), 1711 and 1719 (South Sea Comapny). The first South Sea conversion even led to a fall in the share price: Chancellor 1999: 93.

¹⁵⁰ Chancellor 1999; 92-95. In his critique, however, he fails to cite Neal’s most important work (Neal 1990).

peace with Spain, with whom she was fighting a commercial war at that time.¹⁵¹ However, the government was surprised by the actual rise in share prices.¹⁵² When *Muller & Comp* reported in April 1720 that prices in London had risen dramatically, the Great Council decided to sell its shares.¹⁵³ On the 22nd of June, the day before the books of the *South Sea Company* were closed for dividend payments and when the share price was almost at its apex, Berne sold its South Sea stock, resulting in a profit of almost 660% of the original investment! The last orders to sell the remaining stock at prices between 1,200% and 1,500% of par reached London when they had already started to fall.¹⁵⁴

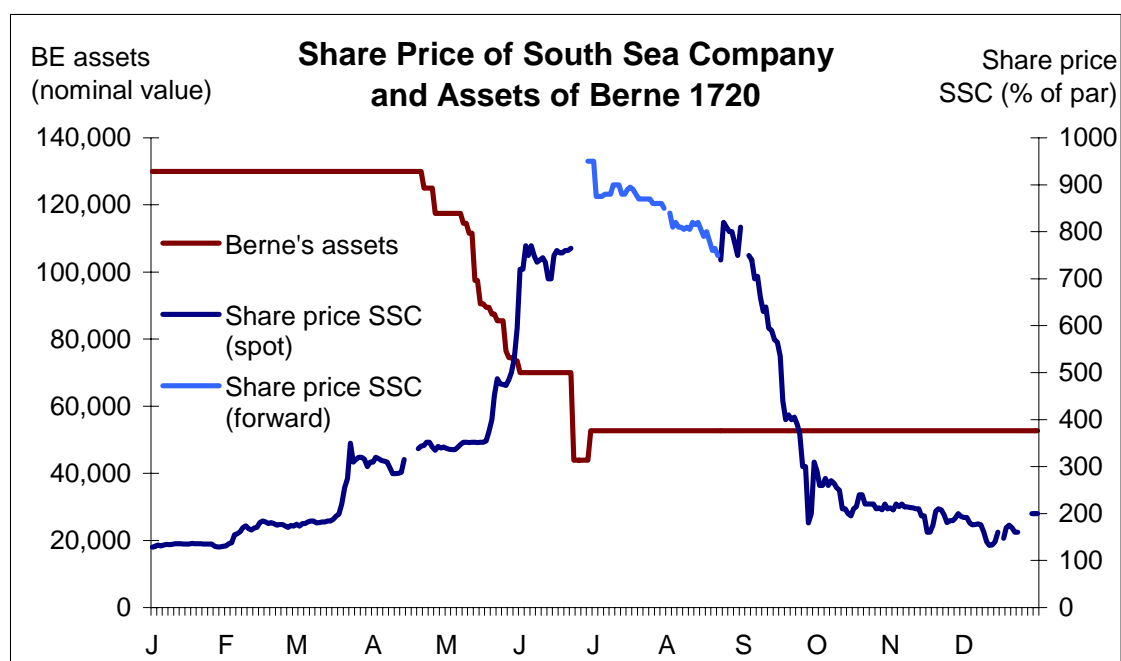


Fig. 1: Share Price of the South Sea Company and the Assets of Berne, 1720¹⁵⁵

¹⁵¹ StABE A II 666: 37-39. For the brief war and the peace with Spain: Dickson 1993: 90-156.

¹⁵² For share prices: Neal 1990: appendix.

¹⁵³ StABE A II 670: 77.

¹⁵⁴ StABE A II 671: 2, 22, 62, 284.

¹⁵⁵ Data from StABE B VII 2389 (BE assets) and Neal 1990: appendix (for the SSC share price). Further data was provided by the Inter-University Consortium for Political and Social Research, Ann Arbor: <http://www.icpsr.umich.edu>. The nominal value of a South Sea share was £100. Since transfer books were closed from June 24 until August 22 prices during this period are not spot prices, but forward prices (for the opening of the books): Neal 1990: 101.

During the South Sea Bubble, Berne made enormous profits with a rather unintended bull strategy. The qualitative evidence shows, however, that the motivation for the sales was that the government was worried about the dramatic rise in share price and considered the investment to be unsafe.¹⁵⁶ Nevertheless, King George congratulated the republic on its exceedingly fruitful venture.¹⁵⁷ At the height of the speculation, in July 1720, *Applebee's Weekly Journal* recorded the rumour that Berne was about to sell its shares and take its profit, blaming it as a foreign profiteers of the bubble.¹⁵⁸ Evidence from the government records shows that this rumour was true.¹⁵⁹ In February 1721 the commissioners Tsharner and Morlot wrote home that 'everywhere people complain that the machinations of the South Sea directors has caused big losses in England [...] and some speak [...] more than we would like about the profit that our estate [Berne] is said to have made.'¹⁶⁰ However, most of the phenomenal profits vanished with the bankruptcies of the two banks that administrated the English funds, *Muller* and *Malacrida*, to which the establishment of the commissariat had also been a direct reaction (discussed above). If the more drastic solution of a complete withdrawal from foreign capital markets had not been chosen, it was probably also because Berne only lost a speculative profit, and not its invested capital. By midsummer 1723, after the bubble and all its bankruptcy trials were over, Berne still had considerably more money invested in London than in 1719 (see Fig. 2, discussed below).

¹⁵⁶ StABE A II 671: 77.

¹⁵⁷ StABE A II 670: 292-293.

¹⁵⁸ *Applebee's Weekly Journal*, 16th of July 1720; See also Dickson 1993: 150 and Carswell 2001: 137 (note 29).

¹⁵⁹ StABE A II 671: 77.

¹⁶⁰ Morlot/Tscharner to Sinner (1721-02-06): BBB Mss. Hist. Helv. III 89. Their mission is discussed above.

The reaction to other crises was much less dramatic. Berne usually did not react at all, as the constant investment in nominal terms shows.¹⁶¹ During the crises that Hoppit classified as crises of public finance, i.e. 1745 and 1761, its reaction was anti-cyclic.¹⁶² In 1745, the government decided to profit from the low share prices and sent Thl. 50,000 to London to buy 3%-annuities. These were considered 'pure parliamentary funds and thus best secured, and because of their very low interest are the last to be redeemed, at the moment can be purchased at 15% below their true and intrinsic value.'¹⁶³ The main consideration of the government was its fear of a debt redemption, to the point that they were willing to invest in lower yield securities to avoid being paid back. As an additional measure of security against redemption Berne bought annuities issued in different years (1744, 1745, and 1750). Ashton argued with evidence from exchange rates, that Dutch investors had the same bull strategy of buying during a financial crisis and hoping for an increase in prices.¹⁶⁴

8 Early Modern Portfolio Analysis

Financial economics provides a set of sophisticated tools for analysing investment portfolios and their performance.¹⁶⁵ The basic principle of portfolio management is for an investor to diversify holdings in order to maximise the expected return for a given amount of risk.¹⁶⁶ The underlying assumption is that yields are inversely related to risk, or that investors have to pay a negative risk premium for safe assets. The *capital*

¹⁶¹ See the figures in Landmann 1903.

¹⁶² Hoppit 1986: 45.

¹⁶³ Landmann 1903: 47. Similarly, in 1740 the Financial Commission expected that an immediate outbreak of a war with Spain would bring a fall in prices for public funds, and thus provide the opportunity to buy at low prices: StABE A V 1486: 49-56.

¹⁶⁴ During crises, the foreign exchange rate did turn in favour of the £. Ashton explained this by the bull investment from Dutch investors, and by a run for liquidity in London, when merchants sold foreign bills of exchange at a very low course: Ashton 1966: 194.

¹⁶⁵ See for example: Elton/Gruber 1995.

¹⁶⁶ The basic concept was presented by Markowitz 1952; Markowitz 1959.

asset pricing model (CAPM) suggests that the market will adjust to ensure that the return compensates investors for the risk of their assets when held with a perfectly diversified portfolio. It calculates an expected return for any asset as a function of the rate of return of risk-free assets, plus a risk premium (called *Beta coefficient*) for this particular asset.¹⁶⁷ The problem when applying these models quantitatively to early modern times is to find the necessary data. London and Amsterdam asset prices have been edited, but not those for the rest of Europe.¹⁶⁸ Prices for the bonds issued by the *Vienna City Bank*, one of Berne's major investments, are only anecdotal.¹⁶⁹ Some of Berne's assets were not traded at all, and therefore did not have a market price. It was impossible to calculate their price for contemporaries, and even for the economic historian, trying to establish their real value is impossible, since the necessary data were not recorded.¹⁷⁰ Furthermore, it is very difficult to define a risk-free return in the 18th century, since even an investment in government bonds was risky by today's standards. The fact that there was never a state bankruptcy in Britain does not mean that government securities were safe *ex ante*. Innovations in government finance were still relatively recent, and commitment to the new rules of the capital market was not always beyond any doubt. Financial crises occurred regularly and rumours about a voluntary state bankruptcy were commonplace, as can be seen from David Hume's essay 'of Public Credit.'¹⁷¹ As a proxy for risk-free assets,

¹⁶⁷ For the basic CAPM: Elton/Gruber 1995: 294-310; Neal uses a simple version for the 18th century: Neal 1990: 125-131.

¹⁶⁸ For Amsterdam and London: Neal 1990; Dillen 1931.

¹⁶⁹ Records before the establishment of the Vienna stock exchange in 1771 are uncertain. After this date, bond prices had to be posted by official brokers, the *Sensale*. It is not clear if these prices were published. They have not been edited so far. See Chaloupek et al 1991: 930; Baltzarek 1973: 1-32; FUCHS 1998. Thanks to Dana Stefanova (Vienna) and Markus A. Denzel (Leipzig) for information about this matter.

¹⁷⁰ Neal 1990: 125.

¹⁷¹ Hume 1994; see also Hoppit 1990: 311-312; Kapossy 1998.

Neal used the *Consol*, a fixed interest government bond, that was introduced in its final form only in 1751.¹⁷²

Similar problems occur when converting different currencies. Payments were made by bill of exchange.¹⁷³ There were no published exchange rates for money transfers for any Swiss city in the 18th century, which supports the hypothesis that Swiss financial centres were not integrated into the international system of exchange until the 19th century.¹⁷⁴ Real exchange rates were noted in the accounts, but their analysis would necessitate intense and separate research.¹⁷⁵ Thus, the conversion to a single currency is best made by parity courses for species that are based on metric units of bullion (see appendix B). The paper only uses very basic models of financial economics, such as yearly holding-periods rate of return (HRP). The HRP is defined as

$$\text{HRP}_t = [(P_{t+1} - P_t) + D_{t+1}] / P_t$$

Where P is the price per share as a percentage of par, and D is the dividend as a percentage of par. A regression of the HRP of a single stock on the HRP of the market as a whole provides the beta coefficient as a measure for the risk of this asset.¹⁷⁶ Given the inexact nature of the raw data, the use of more sophisticated statistical techniques would suggest an inappropriate degree of accuracy. For the same reason, an even simpler indicator had to be used for comparing these results with the continental portfolio in section 10, where gross returns for any investments were calculated by setting the 'real' revenue (as recorded in

¹⁷² Neal 1990: Consols were perpetual and redeemable (consolidated) annuities. For the time before prices for 3%-Consols are available (1753), Neal extrapolated back until 1726 with 3%-Bank annuities, and until 1723 with South Sea annuities: Neal 1990: 127 (note 16).

¹⁷³ See for the bill of exchange: De Roover 1953; McCusker 1978; Neal 1990: 1-19; J. Schneider et al 1992.

¹⁷⁴ Denzel 1998.

¹⁷⁵ They were noted in StABE B VII 2389; B VII 2396-2473.

¹⁷⁶ Neal 1990: 55. This is usually made with monthly data.

the Bernese accounts) in relation to the capital. Standard deviations for these gross returns can be indicators of the risk of an asset. These quantitative results will be compared with unsystematically collected qualitative data about portfolios of other investors, and with government reports about the foreign funds. In a sense, this is an application of the basic concepts of financial economics in a qualitative way – even though the term ‘qualitative financial economics’ comes close to sounding like an oxymoron.

9 The London Portfolio

The investment of Berne in London started with a loan to Queen Anne in 1710 (discussed above). After 1719 all the money was invested securities traded on the capital market of the city. Fig. 2 provides an overview of these investments at market value, calculated with data from *Castaing’s Course of the Exchange* published by Neal.¹⁷⁷ Investments during the South Sea Bubble of 1720 have been discussed in a previous chapter.

¹⁷⁷ Data from StABE B VII 2389 and StABE B VII B VII 2396-2473; See also Landmann 1903; Neal 1990, appendix. Prices for South Sea annuities (old and new) are the prices in Amsterdam, edited by Dillen 1931. His data is very reliable and have an almost perfect correlation with the London series for those prices quoted on both spots (see Neal 1990: 146).

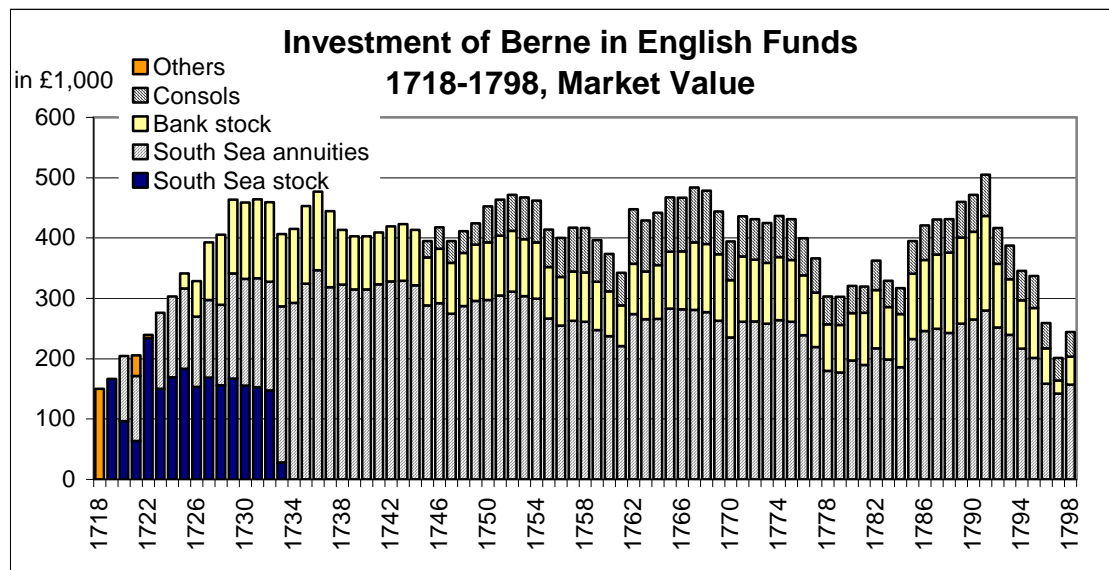


Fig. 2: Investment of Berne in English Funds 1718-1798, Market Value¹⁷⁸

Investment in England increased until 1730, and then remained constant for about 60 years, despite some fluctuations, especially the two troughs of the 1760s and the late 1770s, both due to low share prices. In the 1790s, the value of the English funds fell rapidly. In 1719, the whole portfolio consisted of South Sea stock. After the South Sea Bubble, Berne also held Bank stock, South Sea annuities, and several short-term assets. All these bearer bonds were sold for South Sea stock in 1722. When the *South Sea Company* split its capital a year later, half of the assets became South Sea annuities. The redeemed Dutch loan was invested in Bank stock between 1725 and 1730. After the mid-1730s, there were no more significant changes in the portfolio. If new assets were bought, they were Consols. From 1792 to 1796, Bank stock was sold.¹⁷⁹

To assess the risk of this portfolio, one should regress its HPR against the HPR for the market average. Unfortunately, dividend payments necessary for its calculation are not edited. This leaves only the

¹⁷⁸ "Others" are short-term investment, such as Land-Tax bills. SSC Annuities include old and new South Sea Annuities.

¹⁷⁹ See Landmann 1903 for the nominal values.

fixed interest annuities as an alternative. Therefore, the HPR of the Bernese portfolio was regressed against the HPR of a *Virtual Consol* in a linear regression.¹⁸⁰ Thus, only a relative beta coefficient (relative to the Consol) can be established. We would expect the Portfolio of a risk adverse investor to have a similar beta coefficient as the Consol, considered to be the safest asset of the time.¹⁸¹ The regression results in appendix D indicate that the Portfolio of Berne had almost the same risk as the *Virtual Consol*, with a relative beta coefficient of 0.9702 (the results are highly significant but have a relatively low R square of 0.7890). It also has to be noted, however, that the HPR themselves, if considered as a time series, had a very high volatility, which is due to the high volatility of the stock market prices.¹⁸² Nevertheless, it can be concluded from the quantitative analysis that the English portfolio of Berne was a low-risk and low-yield investment. This interpretation can now be verified with qualitative evidence from government sources.

The security of the investment was always of major concern to the government. For example, Berne bought Bank stock in 1725 because this was believed to be the safest of the English funds. In addition, bearer bonds (such as annuities) were considered less safe than the registered stock.¹⁸³ In May 1730, the Great Council ordered the Financial Commission to report on different investment opportunities. They suggested not to invest in South Sea stock because Berne already held £158,700 at this time. It was considered to be the most endangered and uncertain of all the English funds in the case of war. Moreover, the company directors were not very highly esteemed – overall a very

¹⁸⁰ „Virtual“ in the sense of: before its official establishment: See also note 172. For the regression: Hudson 2000: 153-159; Neal 1990: 55.

¹⁸¹ When regressed against a market-HPR, beta coefficients usually range between 0.5 (for a low-yield, low-risk security) and 1.5 (high-yield, high risk): Neal 1990: 55.

¹⁸² With a mean of 3.66%, the standard deviation is 9.16% (min. -29.66%, max. 28.49%).

¹⁸³ StABE B VII 2389.

remarkable assessment of the fund where the republic had most of her money invested! The report also resisted buying shares of the *East India Company* that were supposedly overpriced, despite a yearly dividend of 8%. More suitable for Berne were annuities of the *South Sea Company* or the *Bank of England*, because they were ‘a parliamentary fund and not involved in risky commercial ventures.’ In particular, titles of the Bank were said to have excellent reputation, and to be the most profitable assets despite their relatively high price.¹⁸⁴ When in 1792 the government thought about withdrawing money from London because of the ‘uncertain times,’ the assets in England were considered the easiest to liquidate. Their high price and an advantageous course of the exchange would make them suitable for this operation, despite the fact that they were also the most secure investment. According to the Financial Commission, bonds of the *Vienna City Bank* were much less volatile and should thus be saved for ‘urgent necessities.’¹⁸⁵ Another major concern of the government was the fear that England might repay its national debt.¹⁸⁶ In a report of 1732, the commissioner Lerber was worried that the South Sea stock would be repaid as soon as the British government redeemed its debt. The Great Council discussed the possibility of increasing its continental assets, but finally decided to leave the money in England, where ‘the whole nation is liable, to pay a little more, and to be safe.’¹⁸⁷ But the government was still concerned about the commitment of the English government to the rules of the capital market – at least in the way it understood them. In 1736, there were complaints that the English parliament – with ‘deceit and force’ – tried to get rid of foreign creditors by

¹⁸⁴ StABE B VII 2465/1. The CC decided to invest in Bank stock on 1730-06-07.

¹⁸⁵ StABE B VII 2465/56. It is not possible to test this quantitatively with HPR regressions, since bond prices for the VCB are not edited. The standard deviation of their gross returns was lower than that of the English funds (median gross return: 4.57%, std dev: 0.90%; for the English funds: 3.79% and 1.10% respectively) (see appendix C).

¹⁸⁶ See also Steiger 1952; Kapossy 1998; see note 171.

¹⁸⁷ Quotes from Landmann 1903: 53.

continuing to repay them through the sinking fund with taking up new loans at 3% and thus harming old creditors.¹⁸⁸

10 The Foreign Portfolio: London and the Continent

Given that the Bernese strategy for its London investment was to maintain a low risk profile, the continental portfolio will be analysed with the hypothesis that the government was willing to take a greater risk by starting to invest there. This hypothesis will first be discussed quantitatively, then on the background of qualitative evidence.

Fig. 3 shows the foreign investment of Berne from 1710 to 1798 from contemporary accounts.¹⁸⁹ London assets are at market prices, the rest are nominal values. Currencies have been converted at parity in Thaler of Berne (BE-Thl.), the primary unit of account.¹⁹⁰

¹⁸⁸ StABE B VII 2465/2; LANDMANN 1903: 51-52.

¹⁸⁹ Data from StABE B VII 2389 and StABE B VII 2396-2473. See also Landmann 1903. London data are discussed above.

¹⁹⁰ See list in appendix B. Other major units of account in Berne were the Pound (BE-lb.) and the Crown (Kr.): Tuor 1977; Körner ET AL 2001; Furrer 1995. Conversion was made with data mentioned in note 189 and J. Schneider et al 1992; McCusker 1978. For the use of parities see also Ashton 1966: 188-196.

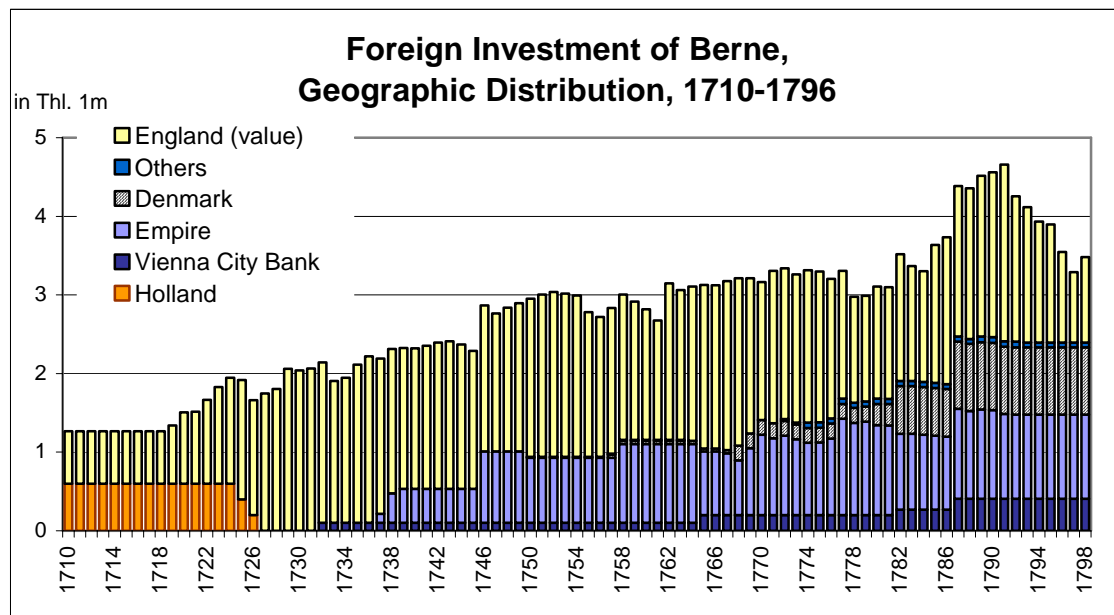


Fig. 3: Foreign Investment (Geographic Distribution), 1710-1798¹⁹¹

The general trend of the investment increased until the middle of the century, and then remained constant for some 30 years. It was followed by a short and steep rise in the 1780s, and by a drastic fall in the 1790s. The geographic distribution shows that most of the assets were concentrated in London. After 1732, investment was made in the Empire, first in bonds of the *Vienna City Bank*, later in bonds and loans to cities, princes, and estates. In the second half of the century, the king of Denmark became one of the biggest creditors (see the list of investments in appendix C).

When comparing gross returns, we would expect the continental assets to have a higher yield and higher standard deviation than the English funds as an indicator of their risk. Table 1 provides this data for investment categorised according to the security offered. We would expect higher risk for investments in loans secured by mortgage (usually to princes) or by collective guarantee (cities and estates).

¹⁹¹ "Others" are the king of Sardinia and debtors from Switzerland.

Investment / Security	Gross Return		
	N ¹⁹²	Mean	Std dev
English funds	77	3.79%	1.10%
Investment in Bonds (continent)	167	3.87%	0.90%
Loans secured by mortgage	205	3.96%	1.21%
Loans secured by collective guarantee	107	3.49%	1.49%

Table 1: Gross Return on Different Investments¹⁹³

The investment in continental bonds did have a slightly higher yield than the English funds, but their standard deviation was smaller. Loans secured by mortgage were a little riskier, with a higher mean return and standard deviation. Loans granted against collective guarantee paid a lower interest rate and had a higher standard deviation. This was also due to the fact that most non-performing loans of Berne were of this type.

The quantitative analysis of government documents has to focus on the most interesting of the continental investments.¹⁹⁴ As a hypothesis, it can be expected that Berne used a (proto-) country risk assessment for its decisions.¹⁹⁵ After the Dutch loan of 1710, the first investment outside of London was made in 1732, when bonds issued by the *Vienna City Bank* (VCB) were chosen to diversify the portfolio. This bank issued bonds guaranteed by the city of Vienna in order to finance the Imperial debt, modelled after the French *Rentes sur l'Hôtel de Ville de Paris*.¹⁹⁶

¹⁹² N is the number of yearly interest payments for this type of investment.

¹⁹³ Calculated with yearly data from StABE B VII 2396-2473 and Landmann 1903: 90-91. See appendix C for a full list of investments and their classification.

¹⁹⁴ For a chronology and a complete list: Landmann 1903.

¹⁹⁵ "Proto" in the sense that it was used before the concept was formally invented. For country risk assessment: Calverley 1985; Haner/Ewing 1985. For a historic example from the late 18th century: Ortuba 1963; Ortuba 1975.

¹⁹⁶ For the VCB: Fuchs 1998; Chaloupek et al 1991: 909-997; Baltzarek 1973: 1-32.

Berne bought these bonds shortly before the *Vienna City Bank* was subject to a severe crisis in 1733.¹⁹⁷ It is not clear what other investment opportunities were discussed for this first investment on the continent, but shortly afterwards, the Financial Council was asked to report about possibilities for further diversification. These included estates in the Empire (Silesia, Nürnberg, Württemberg), princes (the Count of Isenburg and Bündingen, the Margrave of Baden-Durlach), and even a commercial project of a merchant from Geneva (M. Port, for salt trade).¹⁹⁸ Despite investing in bonds of the VCB, direct financial relations with the Emperor were avoided. By as early as 1703, there had been several attempts to make him sell the Fricktal, a neighbouring county.¹⁹⁹ Berne proposed to buy this territory several times, whereas the Emperor wanted to use it as collateral for a loan.²⁰⁰ In 1728, a report by the Financial Council recommended against engaging in an Imperial loan in order to avoid having great lords as debtors, of which, ‘as is known, it is difficult to obtain one’s capital, and no republic wants to provoke their antagonism.’²⁰¹ To avoid dependence on notoriously unreliable big debtors, a remarkable solution was adopted in 1787. In this year the Emperor was issuing loans in Frankfurt, for which the printed prospectus arrived too belatedly for Berne to participate in the subscription.²⁰² For a second loan, the Financial Council proposed an investment of fl. 250,000, but the Great Council decided to take up the whole sum of fl. 500,000. Bonds were

¹⁹⁷ FUCHS 1998: 71-91. He mentions a “spectacular drop” of bond prices, but without quantitative data.

¹⁹⁸ StABE B VII 2465/2. One part of the Financial Council wanted to concentrate the investment in Vienna, another part to spread the money evenly over the different investments.

¹⁹⁹ St. Saphorin was the Imperial agent for the negotiations with Berne: Mensi 1890: 417. For St. Saphorin, see note 45.

²⁰⁰ In 1737 only a political uprising prohibited this sale: Landmann 1903: 80-97.

²⁰¹ The original text says: “[...] will man sich anders nicht mit ihrer Feindschaft beladen, die [sic! *Should be: der*] doch jeder republikanische Staat sorgfältig ausweichen soll”: Landmann 1903: 82. For similar demands to Zurich (1706-1737): Peyer 1968: 125-127.

²⁰² The prospectus is reprinted in Landmann 1903: 126-127.

issued in Vienna to the name of the Frankfurt bankers *Bethmann Bros.*, and from them endorsed to Berne. Thus, the Emperor should be left uninformed about the true nature of his creditor.²⁰³

For its decisions, the government usually applied a country risk assessment. It was not always as explicit as the report about a demand from the Duke of Hesse-Cassel in 1774 that was declined because ‘this court [has] too big a war machine and no sufficient economy.’²⁰⁴ In exceptional circumstances, the standards were not strictly applied. For example, a loan to the city of Ulm was granted despite concerns about its security. Motives for this were the good credit of its citizens, its geographical proximity, and the purpose of this loan being the purchase of grain to avoid starvation.²⁰⁵ The same generosity was applied for some loan extensions, where lower interest rates were conceded mostly in times when the debtor was at war. In 1787 – before investing in the Imperial loan discussed above – several investment opportunities were assessed. According to the report of the Financial Council princes, cities, and estates with the appropriate guarantees were unlikely to take up loans at 4%, which was the minimum interest rate used by Berne when lending. Therefore, the money was to be invested in public funds, of which the most appropriate were in France, England, Saxony and Vienna. With regards to an investment in France, the possibility was not even seriously discussed. Berne had so far ‘adopted a system of which no reason for change seems to be existent.’ There were already important sums in England, and the conditions were not particularly favourable at this moment. The funds in Saxony were awarded a good reputation, but the interest payment (3%) was too low. The interest rate paid by the

²⁰³ The same procedure was applied for the interest payments: (Landmann 1903: 85-87.

²⁰⁴ The original quote is: “weil [...] dieser Hof einen allzugrossen Kriegsstaat und nicht genugsame Ökonomie führe”: Landmann 1903: 75.

²⁰⁵ Landmann 1903: 73.

Vienna City Bank (4%) was more attractive, and the funds were also considered to be safer.²⁰⁶

It is one thing to study investments that did take place, yet it might be more interesting to look at gaps in the portfolio and to explore why some opportunities were by-passed. Some demands from small states were declined straight away.²⁰⁷ More strikingly, no money was invested in France. This kingdom was the major cultural point of reference for Berne, the most important political ally, but also a dominant neighbour and potential threat along its Western border. There were still claims from loans to the French crown that dated back to the 16th century, which were subject to several re-negotiations throughout the century.²⁰⁸ One reason not to invest there was the general avoidance of big debtors, and the notorious track record of the Bourbon kings as debtors. There was also no developed public market for government bonds in France, where the capital market was limited to private notary credit.²⁰⁹ Geneva was the major centre for French financial ventures, sometimes of dubious nature.²¹⁰ Despite – or rather because of – its nature as a high-risk business, several private investors from Berne had some of their money invested in the in life annuities and other French assets. Even though systematic numbers cannot be established, important government members were involved, and it looks as if they were less risk averse with their private investment.²¹¹ Other Swiss Cantons were less scrupulous

²⁰⁶ StABE B VII 2465/36. The document speaks of the “most genteel” [die “vornehmsten”] funds.

²⁰⁷ Landmann mentions the Duke of Mecklenburg-Strelitz, the City of Dünckelsbühl in Swabia, the City of Milan, or the Republic of Wallis: Landmann 1904: 6.

²⁰⁸ In 1720, Berne evaluated these claims to BE-Lb. 2,524,786 (£142,020): Feller 1955: 329, 98. The debt had been re-negotiated in 1787: StABE B VII 2465/2. In 1794 the government decided not to convert old claims into *assigniats*. It was “better to wait with patience for better times than to take a step that could have severe political consequences”: StABE B VII 2465/57.

²⁰⁹ See Hoffman et al 1999; Hoffman et al 2000.

²¹⁰ See Lüthy 1959; Sayous 1935; Sayous 1937.

²¹¹ One example would be Friedrich Karl Ludwig Manuel: BBB Mhh. XXII.59. Thanks for Andrea Schüpbach and Manuel Bigler (Bern) for providing this data.

than Berne. Solothurn, for example, invested in bonds of the Paris City Hall – without great success.²¹² After Necker became finance minister in 1778, Zurich increased its holdings of French assets, which consisted of bonds issued by cities in Burgundy and the Artois county, and some life annuities.²¹³

None of the arguments used for France can be used to explain the absence of investment in what remained the most important and developed capital market of the 18th century, Amsterdam.²¹⁴ After the loan was granted in 1710 and redeemed in 1725, Berne did not make further investments there. Dutch funds were not even evaluated in the investment proposals. There were hardly any new issues of Dutch government bonds, and those that were issued were usually oversubscribed despite their relatively low interest rate. However, foreign governments used the Amsterdam capital market to issue their bonds. The absence of Berne in these ventures can probably be attributed to low interest rates in the overcrowded capital markets of the Netherlands.²¹⁵ The Dutch themselves were net capital exporters, even though Amsterdam regularly outperformed London in terms of net capital return.²¹⁶

Conclusion

The government of Berne acted as a cautious investor on the European capital markets, both in terms of portfolio administration and

²¹² Most of the investment was lost either in the Mississippi crisis (1720) or at latest in the 1790s. Solothurn invested in these securities before 1698, but it is not clear if they were normally purchased or obtained through a conversion scheme: Büchli 1916; for the conversion schemes: Article „Rentes sur l'hôtel de ville“ in: *Dictionnaire de l'Ancien Régime*, ed. by L. Bély, Paris 1996.

²¹³ Peyer 1968: 135-138, 140-141. Some of the assets were held by *Leu & Comp*: see also note 41.

²¹⁴ Wilson 1941: 195.

²¹⁵ For the low interest rate: StABE B VII 2389.

²¹⁶ M.T. Hart et al 1997: 56 (table 3.5), 20-21, 52-56.

investment strategy. The fact that a government was willing to take the risk of investing money from its coffers abroad can be explained by the overcrowded domestic capital market, political motives and the desire for independence from its own taxpayers. The impersonal nature of the early modern capital markets helped the government to downplay the political importance of its investments, but the independence of taxpayers came at the cost of an exposure to market movements and uncertainties. Having no national debt itself, the Canton profited from the indebtedness of other European states relying on capital markets to finance their warfare expenditure, and thus qualifies as a free rider of the *Financial Revolution*. In 1720, the government had made enormous windfall profits during the South Sea Bubble, which were lost almost immediately afterwards through the bankruptcies of its London agents. If, as a reaction to this, it did not withdraw from capital markets entirely, this was because the losses affected only a speculative gain, not the original investment itself. However, the crisis had a great impact on the administration of the English funds, with the replacement of financial intermediaries by government members as a very costly solution to avoid agency problems. Diversification through investment on the continent a decade later was not only a late reaction to the South Sea Bubble, but also a way of avoiding the sole dependency on the national debt of Britain, whose creditworthiness was questioned at several occasions. After 1732, Berne had a balanced portfolio of mostly low-yield (low-risk) securities, with slightly higher risk taking on the continent. With its investment strategy, the government acted as a widow-and-orphan investor, seeking a steady interest payment rather than a quick profit. Qualitative data from its decision-making process support this view. Issues of security were the central guideline when the government compared investment opportunities in a (proto-) country risk assessment. Thus, both quantitative and qualitative data about investor behaviour show that

Berne did have a low risk profile as an investor. If we assume that the government acted as a rational actor – and there is no reason why we should not – it can be argued that it was willing to pay a negative risk premium in the form of missed opportunities for a higher return, and that the safety of its investment was a highly valued utility, both in investment strategy and in portfolio administration.

Subsequent research will have to determine the relative importance of interest payments for the total revenue of the Canton, the relation between domestic and foreign capital investment, and their impact on the development of Berne's economy. An analysis of the discourse about foreign investments would need to consider why the landholding gentry of Berne's *patriciate* engaged in these ventures in the first place, and how its critiques manifested themselves.

Appendix A: List of Abbreviations

£	Pound Sterling (see: Currencies)
ACV	Archives Cantonales Vaudoises (see: Sources)
ANOVA	Analysis of Variance
ARMA	Auto-Regressive Moving Average
BBB	Burgerbibliothek Bern (see: Sources)
BE	Berne
BE-Lb.	Pound (Berne-Pound) (see: Currencies)
BERO	Bank of England Record Office (see: Sources)
BL	British Library (see: Sources)
BoE	Bank of England
CAPM	Capital Asset Pricing Model
CC	200 (= Great Council)
EIC	East India Company
fl.	Gulden (see: Currencies)
GDP	Gross Domestic Product
Hfl.	Dutch Guilder (see: Currencies)
HPR	Holding-Period Return
Kr.	Krone (see: Currencies)
L.	Livre Suisse (see: Currencies)
NIE	New Institutional Economics
PRO	Public Record Office (see: Sources)
R.	Reichsthaler (see: Currencies)

RQBE	Rechtsquellen des Kantons Bern (see: Sources)
SSC	South Sea Company
StABE	Staatsarchiv des Kantons Bern (see: Sources)
Std dev	Standard Deviation
StUB	Stadt- und Universitätsbibliothek Bern (see: Sources)
Thl.	Thaler (see: Currencies)
VCB	Vienna City Bank

Appendix B: List of Currencies and Parity Courses

Symbol	Currency	Parity Thl. (BE)
Thl.	Thaler [Berne]	1.000
Kr.	Krone (Crown) [Berne]	1.200
BE-Lb.	Pound [Berne]	4.000
L.	Livre Suisse ('alter Franken') [Berne]	3.000
£	Pound Sterling [England]	0.225
R.	Reichsthaler [Empire]	1.153
fl.	Guilder (Gulden) [Empire]	2.000
Hfl.	Dutch Guilder [Netherlands]	2.500

Appendix C: List of Investments

	Date	Security	N	Gross Return				
				max	min	mean	median	std dev
English funds (value)	1718-1798	(funds)	0	5.89%	1.22%	3.79%	3.77%	1.10%
Vienna City Bank	1732-1798	B	65	6.54%	1.69%	4.57%	4.59%	0.90%
Tax Office Leipzig (Electorate of Saxony)	1737-1781	B	38	5.96%	0.00%	2.74%	2.96%	1.47%
Count of Hesse-Cassel (1738-49; 1758-63)	1738-1763	M	19	6.92%	2.33%	4.13%	4.65%	1.18%
City of Leipzig	1746-1798	C	46	9.31%	0.00%	4.08%	3.97%	2.09%
Electorate Estates of Saxony	1746-1776	C	25	7.49%	0.00%	2.95%	3.30%	1.99%
Duke of Wurttemberg	1750-1798	M	48	8.10%	2.45%	5.28%	5.40%	0.86%
King of Sardinia	1750-1764	B	14	4.00%	2.28%	3.84%	4.00%	0.47%
King of Denmark	1757-1798	B	40	6.77%	1.24%	4.55%	4.82%	1.22%
Duke of Mecklenburg-Schwerin	1769-1798	M	29	5.07%	2.58%	3.78%	3.90%	0.76%
Bishop of Speyer	1770-1778	M	9	3.88%	2.59%	3.53%	3.88%	0.54%
Count of Nassau-Saarbrücken	1770-1798	M	24	5.90%	0.00%	4.02%	4.36%	1.59%
City of Ulm	1772-1788	C	17	5.82%	1.94%	3.81%	3.88%	0.73%
Abbot of St. Gallen	1772-1798	M	25	6.47%	1.29%	3.83%	3.92%	0.91%
Count of Hesse-Darmstadt	1775-1798	M	21	6.47%	0.00%	4.97%	4.81%	1.24%
City of Nuremberg	1776-1798	C	16	6.27%	0.00%	3.89%	4.61%	2.32%
Duke of Zweibrücken	1777-1798	M	13	3.96%	0.00%	2.33%	3.88%	1.95%
Duke of Saxony-Weimar	1779-1790	M	9	6.52%	0.00%	4.35%	4.35%	1.77%
Emperor	1787-1798	B	10	6.12%	4.01%	5.72%	6.12%	0.78%
Duke of Schwarzenberg	1788-1798	M	9	3.88%	3.88%	3.88%	3.88%	0.00%
Commune of Le Locle	1789-1792	C	3	4.80%	4.80%	4.80%	4.80%	0.00%
All Bonds		B	65	5.60%	0.71%	3.87%	4.18%	0.96%
All Mortgages		M	60	6.92%	1.10%	3.96%	4.08%	1.21%
All Collective Guarantee		C	52	6.12%	0.00%	3.49%	4.05%	1.49%

B = Bonds

M = Mortgage

C = Collective Guarantee

The values for *All Bonds*, *All Mortgages*, and *All Collective Guarantee* were calculated as the yearly sum of interest payments divided by the capital invested at the given year.

Appendix D: Results of the Regression Analysis

X-Variable: HPR English funds of Berne, 1723-1798

Y-Variable: HPR Virtual Consol (3%-annuities), 1723-1798

	<i>Coefficients</i>	<i>Std Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.0059764	0.0050807	1.1762956	0.2432985
X Variable 1	0.9701984	0.0587158	16.523621	2.251E-26

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.8882768
R Square	0.7890357
Adjusted R Square	0.7861457
Standard Error	0.0423481
Observations	75

Appendix E: Sources and References

I. Edited sources:

Anonymous [Abraham Stanyan] 1756: Anonymous [Abraham Stanyan], *An Account of Switzerland. Written in the year 1714*, Edinburgh, 1756.

Bernouilli 1954: Daniel Bernouilli, 'Specimen Theoriae Novae de Mensura Sortis (Exposition of a New Theory on the Measurement of Risk), transl. from Latin by Louise Sommer', in: *Econometrica* 22 (1954): 23-26 (original text from 1738).

De La Vega 1957: Don Joseph De La Vega, *Confusion de Confusiones (Kress Library of Business and Economics: 13)*, ed. by H. Kellenbenz, Boston 1957 (Spanish original edition 1688).

Hume 1994: David Hume, 'Of Public Credit', in: Haakonssen, K. (ed.) *David Hume. Political Essays*, Cambridge, 1994: 166-178 (original text from 1752).

RQBE: Rennfahrt, H. (ed.), *Rechtsquellen des Kantons Bern (Sammlung Schweizer Rechtsquellen)*, Vols. 7/1, 9/1 and 9/2, Aarau 1967.

Smith 1976: Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. by R.H. Campbell, A.S. Skinner and W.B. Todd, Oxford, 1976 (original edition 1776).

Steiger 1952: Steiger, C.F., 'Rede über die Errichtung der ausländischen Finanzen des Hohen Standes. Gehalten vor dem Hochlöblichen Äusseren Stand, den 26. Februar 1784 durch Carl Friedr. Steiger', in: *Berner Zeitschrift für Geschichte und Heimatkunde* 10 (1952): 26-39 (original text of 1784).

II. Manuscript sources:

ACV: Archives Cantonales Vaudoises [Vaud Public Record Office, Lausanne]

Ba 33 Décrets Romands (DR)

BERO: Bank of England Record Office, London

AC27 417-432 Bank Stock Ledgers A-Z (1694-1725)

BL: British Library, London

The Burney Collection Collection of Newspapers

BBB: Burgerbibliothek Bern [Burgers' Library, Berne]

Mss. Hist. Helv. Manuscripti Historiae Helveticae

Mhh. XXII.59 Hausbuch Friedrich Karl Ludwig Manuel, 1764-1792

PRO: Public Record Office, Kew (England)

SP 96 Secretaries of State, State Papers Foreign, Switzerland

PRO C 11 Court of Chancery, Six Clerks Office, Pleadings 1714 to
1758

StABE: Staatsarchiv des Kantons Bern [Public Record Office, Berne]

A I 462-465 Polizeibücher (PolB)

A I 589-494 Instruktionenbücher

A II 586-950 Ratsmanuale (RM), Vol. 1-364 (1701-1798)

A III 87-116 Deutsche Missivenbücher

A IV 215 Instruktionenbücher

A V 1468 Allgemeine Bedenken (AB)

A V 1470-1490 Responsa Prudentum (RP)

- B I 2 Manual des Geheimen Rates, Vol. 1
- B I 23 Missivenbuch des Geheimen Rates, Vol. 1
- B I 107 Livre contenant les négociations faites de la part de L.L. E.E. sur le sujet des argents et des anabaptistes, 1708-1714
- B V 2-4 Instruktionenbuch des Kommerzienrates
- B V 21-22 Manual des Kommerzienrates
- B VII 367-393 Protokolle der Seckelschreiberei
- B VII 581-679 Deutsche Standesrechnungen (1700-1796)
- B VII 762-858 Welsche Standesrechnungen (1700-1796)
- B VII 2388 Schatzbücher
- B VII 2389 Historie der ausländischen Stands Capitalien, 1776
- B VII 2396-2473 Rechnungen über die Ausländischen Fonds
- B VII 2403 Samuel Zeerleder, Eine Abhandlung über das Wechselhaus Malacrida, mit den Annalen des Law'schen Finanzsystems, Bern 1837
- B VII 2465 Akten der Äusseren Gelder-Verwaltung

StUB: Stadt- und Universitätsbibliothek Bern [City and University Library, Berne]

- H XXII 117 Dokumente zur Malacrida-Krise

III. Cited References

- Agena, C.-A., *Der Amtmann im 17. und 18. Jahrhundert. Ein Beitrag zur Geschichte des Richter- und Beamtentums*, Göttingen, 1972.
- Akerlof, G.A., 'The Market for 'Lemons': Quality Uncertainty and the Market Mechanism', in: *Quarterly Journal of Economics* 84 (1970): 488-500.
- Altorfer, S., 'Bulle oder Bär? Der Bernische Staat und die Südseekrise von 1720', in: Veyrassat, B., Gilomen, H.-J., and Müller, M. (eds.), *Globalisierung – La globalisation. Voraussetzungen, Chancen und Risiken aus historischer Sicht (1700–2000) – Conditions, chances et risques. Perspectives historiques (1700-2000)*, Zürich, 2003a.
- Altorfer, S., 'To Have or to Have Not: State Finance of the Swiss Republic of Berne in the 18th Century', in: Economic History Society (ed.) *Conference Booklet of the Annual Conference (Durham 4-6 April 2003)*, 2003b: 21-27.
- Anonymous [Abraham Stanyan], *An Account of Switzerland. Written in the year 1714*, Edinburgh, 1756.
- Ashton, T.S., *Economic Fluctuations in England 1700-1800*, Oxford, 1959.
- Ashton, T.S., *An Economic History of England: The 18th Century*, London, 1966.
- Balen, M., *A Very English Deceit. The Secret History of the South Sea Bubble*, London, 2002.
- Baltzarek, F., *Die Geschichte der Wiener Börse. Öffentliche Finanzen und privates Kapital im Spiegel einer österreichischen Wirtschaftsinstitution*, Wien, 1973.
- Bates, R.H., 'Capital, Kinship, and Conflict. The Structuring Influence of Capital in Kinship Societies', in: *Canadian Journal of African Studies* 24 (1990): 145-164.

- Bernouilli, D., 'Specimen Theoriae Novae de Mensura Sortis (Exposition of a New Theory on the Measurement of Risk), transl. from Latin by Louise Sommer', in: *Econometrica* 22 (1954): 23-26 (original text from 1738).
- Bernstein, P.L., *Against the Gods. The Remarkable Story of Risk*, New York, 1996.
- Bodmer, W., *Die Wirtschaftspolitik Berns und Freiburgs im 17. und 18. Jahrhundert*, Bern, 1973.
- Bonjour, E., 'Die Schweiz und England. Eine geschichtliche Rückschau', in: Bonjour, E. (ed.) *Die Schweiz und Europa. Ausgewählte Reden und Aufsätze*, Basel, 1961: 11-60.
- Bonney, R. (ed.) *Economic Systems and State Finance*, Oxford, 1995.
- Bonney, R. (ed.) *The Rise of the Fiscal State in Europe, c. 1200-1815*, Oxford, 1999.
- Braun, R., *Das ausgehende Ancien Régime in der Schweiz. Aufriss einer Sozial- und Wirtschaftsgeschichte des 18. Jahrhunderts*, Göttingen, 1984.
- Brewer, J., *The Sinews of Power. War, Money and the English State 1688-1783*, London, 1989.
- Bucher, B., *Abraham Stanyan 1705-1714. Die englische Diplomatie in der Schweiz zur Zeit des spanischen Erbfolgekriegs*, Zürich, 1951.
- Büchli, H., 'Solothurnische Finanzzustände im ausgehenden Ancien Régime (ca. 1750-98)', in: *Basler Zeitschrift für Geschichte und Altertumskunde* 15 (1916): 56-116.
- Burckhardt, C.F.W., *Zur Geschichte der Privatbankiers in der Schweiz*, Zürich, 1914.
- Calverley, J., *Country Risk Analysis*, London, 1985.
- Capitani, F.d., *Die Berner Zunft zum Mittellöwen von der Reformation zur Revolution*, Bern, 1985.

- Capitani, F.d., 'Staat und Obrigkeit in Bern zwischen Reformation und Revolution', in: *Berner Zeitschrift für Geschichte und Heimatkunde* 53 (1991): 61-77.
- Carlos, A.M./Neal, L., *Capital Markets, Women and Economic Growth 1720-1725 (Draft paper, EHS Conference, Durham)*, 2003.
- Carswell, J., *The South Sea Bubble*, Stroud, 2001 (original edition 1960).
- Carter, A.C., *Getting, Spending and Investing in Early Modern Times. Essays on Dutch, English and Huguenot Economic History*, Assen, 1975.
- Chaloupek, G./Eigner, P./Wagner, M., *Wien: Wirtschaftsgeschichte. 1740-1938. Teil 2: Dienstleistungen*, Wien, 1991.
- Chancellor, E., *Devil Take the Hindmost. A History of Financial Speculation*, New York, 1999.
- Coase, R.H., 'The Nature of the Firm', in: *Economica* 4 (1937): 386-405.
- Dalton, G., *Primitive, Archaic, and Modern Economies. Essays of Karl Polanyi*, Boston, 1971.
- De La Vega, D.J., *Confusion de Confusiones (Kress Library of Business and Economics: 13)*, ed. by H. Kellenbenz, Boston 1957 (Spanish original edition 1688).
- De Roover, R., *L'évolution de la lettre de change, 14e-18e siècles*, Paris, 1953.
- Denzel, M.A., 'Die Integration der Schweizer Finanzplätze in das internationale Zahlungsverkehrssystem vom 17. Jahrhundert bis 1914', in: *Schweizerische Zeitschrift für Geschichte* 48 (1998): 177-235.
- Dickson, P.G.M., *The Financial Revolution in England. A Study in the Development of Public Credit 1688-1756*, Aldershot, 1993 (original edition 1967).
- Dillen, J.G.v., 'Effectenkoersen ann de Amsterdamsche Beurs, 1723-1794', in: *Economische-Historische Jaarboek* 17 (1931): 1-46.

- Dixit, A.K./Nalebuff, B.J., *Thinking Strategically. The Competitive Edge in Business, Politics, and Everyday Life*, New York, 1991.
- Elton, E.J./Gruber, M.J., *Modern Portfolio Theory and Investment Analysis*, New York, 1995.
- Emmett, R.B. (ed.) *Great Bubbles. Reactions to the South Sea Bubble, the Mississippi Scheme and the Tulip Mania Affair*, 3 Vols., London, 2000.
- Epstein, S.R., *Freedom and Growth. The Rise of States and Markets in Europe, 1300-1750*, London, 2000.
- Feller, R., *Glaubenskämpfe und Aufklärung. 1653 bis 1790 (Geschichte Berns: 3)*, Bern, 1955.
- Ferguson, N., *The House of Rothschild. Money's Prophets 1798-1848*, New York, 1998.
- Ferguson, N., *The Cash Nexus. Money and Power in the Modern World 1700-2000*, London, 2001.
- Fischer, H.R.v., *Die Politik des Schultheissen Johann Friedrich Willading (1641-1718)*, Bern, 1927.
- Flood, R.P./Garber, P.M., *Speculative Bubbles, Speculative Attacks, and Policy Switching*, Cambridge (MAS), 1994.
- Fuchs, R., *Die Wiener Stadtbank. Ein Beitrag zur österreichischen Finanzgeschichte des 18. Jahrhunderts*, Frankfurt a.M., 1998.
- Furrer, N., *Das Münzgeld der Alten Schweiz. Grundriss*, Zürich, 1995.
- Furrer, N. et al, *Gente ferocissima: mercenariat et société en Suisse (XVe-XIXe siècle) Solddienst und Gesellschaft in der Schweiz (15.-19. Jahrhundert): recueil offert à Alain Dubois*, Lausanne, 1997.
- Gehling, T., *Ein europäischer Diplomat am Kaiserhof zu Wien. François Louis de Pesme, Seigneur de Saint-Saphorin, als englischer Resident am Wiener Hof 1718-1727*, Bonn, 1964.
- Geiser, K., *Die Verfassung des alten Bern*, Bern, 1891.

- Greif, A., 'Contracting, Enforcement, and Efficiency: Economics beyond the Law', in: *Annual World Bank Conference on Development Economics* (1996): 239-265.
- Hagnauer, S., *Die Finanzhaushalte der Bernischen Ämter Aarberg, Büren, Erlach und Nidau in den Jahren 1631-1635 und 1681-1685. Elemente zur Geschichte der Bernischen Staatsfinanzen (unpublished lic. phil. manuscript)*, Bern, 1995.
- Hamilton, E.J., 'Origin and Growth of the National Debt in Western Europe', in: *American Economic Review* 37 (1947): 118-130.
- Haner, F.T./Ewing, J.S., *Country Risk Assessment: Theory and Worldwide Practice*, New York, 1985.
- Hart, M.t./Jonker, J./Zanden, J.L.v. (eds.), *A Financial History of the Netherlands*, Cambridge, 1997.
- Hart, O., *Firms, Contracts, and Financial Structure*, Oxford, 1995.
- Hoffman, P.T./Postel-Vinay, G./Rosenthal, J.-L., 'Information and Economic History: How the Credit Market in Old Regime Paris Forces Us to Rethink the Transition to Capitalism', in: *American Historical Review* 104 (1999): 69-94.
- Hoffman, P.T./Postel-Vinay, G./Rosenthal, J.-L., *Priceless Markets. The Political Economy of Credit in Paris, 1660-1870*, Chicago, 2000.
- Hoppit, J., 'Financial Crises in Eighteenth-Century England', in: *Economic History Review (2nd series)* 39 (1986): 39-58.
- Hoppit, J., 'Attitudes to Credit in Britain, 1680-1790', in: *Historical Journal* 33 (1990): 305-322.
- Hudson, P., *History by Numbers. An introduction to quantitative approaches*, London, 2000.
- Hume, D., 'Of Public Credit', in: Haakonssen, K. (ed.) *David Hume. Political Essays*, Cambridge, 1994: 166-178 (original text from 1752).
- Ingrao, C.W., *The Hessian Mercenary State. Ideas, Institutions and Reform under Frederick II, 1760-1785*, Cambridge, 1987.

- Kapossy, B., 'Der Bedrohlich Frieden'. Ein Beitrag zum politischen Denken im Bern des 18. Jahrhunderts', in: Furrer, N., et al (eds.), *Gente ferocissima. Mercenariat et société en Suisse (XVe-XIXe siècle) / Solddienst und Gesellschaft der Schweiz (15.-19. Jahrhundert)*, Lausanne, 1997: 217-232.
- Kapossy, B., 'Le prix de la liberté: idéologie républicaine et finances publiques à Berne au XVIIIe siècle', in: Flouck, F., et al (eds.), *De l'Ours à la Cocarde. Régime bernois et révolution en pays de Vaud (1536-1798)*, Lausanne, 1998: 143-161.
- Kellerhals-Maeder, A./Klöti, T./König, K., *Bevor die Post verstaatlicht wurde. Die Post der Fischer 1675-1832*, Bern, 1991.
- Kindleberger, C.P., *Manias, Panics, and Crashes. A History of Financial Crises*, Basingstoke, 1989 (original edition 1978).
- Kindleberger, C.P./Laffargue, J.-P., *Financial Crises: Theory, History, and Policy*, Cambridge, 1982.
- Kiser, E., 'Markets and Hierarchies in Early Modern Tax Systems: A Principal-Agent Analysis', in: *Politics & Society* 22 (1994): 284-315.
- Körner, M., *Solidarités financières Suisses au XVIe siècle. Contribution à l'histoire monétaire, bancaire et financière des cantons Suisses et des états voisins*, Lausanne, 1980.
- Körner, M., 'Public Credit', in: Bonney, R. (ed.) *Economic Systems and State Finance*, Oxford, 1995: 507-538.
- Körner, M., 'Berns Staatsfinanzen vom 15. bis zum 18. Jahrhundert. Ein Forschungsprojekt an der Universität Bern', in: *Berner Zeitschrift für Geschichte und Heimatkunde* 59 (1997): 324-326.
- Körner, M., 'The Swiss Confederation', in: Bonney, R. (ed.) *The Rise of the Fiscal State in Europe, c. 1200-1815*, Oxford, 1999: 327-357.
- Körner, M./Furrer, N./Bartlome, N., *Währungen und Sortenkurse in der Schweiz 1600-1799*, Lausanne, 2001.

- Kümin, B./Radeff, A., 'Markt-Wirtschaft. Handelsinfrastruktur und Gastgewerbe im alten Bern', in: *Schweizerische Zeitschrift für Geschichte* 50 (2000): 1-19.
- Landmann, J., 'Die auswärtigen Kapitalanlagen aus dem Berner Staatsschatz im XVIII. Jahrhundert. Eine finanzhistorische Studie (Teil 1)', in: *Jahrbuch für schweizerische Geschichte* 28 (1903): 1-128.
- Landmann, J., 'Die auswärtigen Kapitalanlagen aus dem Berner Staatsschatz im XVIII. Jahrhundert. Eine finanzhistorische Studie (Teil 2)', in: *Jahrbuch für Schweizer Geschichte* 29 (1904): 1-91.
- Landmann, J., *Leu & Co. 1755-1905. Ein Beitrag zur Geschichte der öffentlichen und privaten Kreditorganisation*, Zürich, 1905.
- Law, R., 'Posthumous Questions for Karl Polanyi. Price Inflation in Pre-Colonial Dahomey', in: *Journal of African History* 33 (1992): 387-420.
- Lerch, E., *Der Bernische Kommerzienrat im 18. Jahrhundert*, Tübingen, 1908.
- Linder, N., *Die Berner Bankenkrise von 1720 und das Recht. Eine Studie zur Rechts-, Banken- und Finanzgeschichte der Alten Schweiz (unpublished PhD manuscript)*, Zürich, 2003.
- Lüthy, H., *La Banque Protestante en France. De la Révocation de l'Édit de Nantes à la Révolution* 2 Vols, Paris, 1959.
- Markowitz, H.M., 'The Utility of Wealth', in: *Journal of Political Economy* 59 (1952): 151-157.
- Markowitz, H.M., *Portfolio Selection: Efficient Diversification of Investments*, Wiley, 1959.
- Mayor, A., *Le développement des bourses en valeurs mobilières de la Suisse Française*, Basel, 1914.
- McCusker, J.J., *Money and Exchange in Europe and America, 1600-1775. A Handbook*, London, 1978.
- McMillan, J., *Games, Strategies, and Managers*, New York, 1992.

- Mensi, F.F.v., *Die Finanzen Oesterreichs von 1710 bis 1740. Nach archivalischen Quellen dargestellt*, Wien, 1890.
- Milgrom, P.A./Roberts, J., *Economics, Organization, and Management*, Englewood Cliffs, 1992.
- Mirowski, P., 'What Do Markets Do? Efficiency Tests of the Eighteenth Century London Stock Market', in: *Explorations in Economic History* 24 (1987): 107-129.
- Monter, W.E., 'Swiss Investment in England, 1697-1720', in: *Revue Internationale d'Histoire de la Banque* 2 (1969): 285-298.
- Muldrew, C., *The Economy of Obligation. The Culture of Credit and Social Relations in Early Modern England*, New York, 1998.
- Mülinen, W.J.v., 'Law und Malacrida', in: *Neues Berner Taschenbuch auf das Jahr 1897* (1896): 137-162.
- Neal, L., *The Rise of Financial Capitalism. International Capital Markets in the Age of Reason*, Cambridge, 1990.
- Neal, L., 'How it all began: the monetary and financial architecture of Europe during the first global capital markets, 1648-1815', in: *Financial History Review* 7 (2000): 117-140.
- Neal, L./Quinn, S., 'Networks of information, markets, and institutions in the rise of London as a financial centre, 1660-1720', in: *Financial History Review* 8 (2001): 7-26.
- Neal, L./Weidmenmier, M., 'Crises in the Global Economy from Tulips to Today: Contagion and Consequences', in: *NBER Working Paper w9147* (2002).
- North, D.C., 'Markets and Other Allocation Systems in History. The Challenge of Karl Polanyi', in: *Journal of European Economic History* 6 (1977): 703-716.
- North, D.C., *Structure and Change in Economic History*, New York, 1981.
- North, D.C., *Institutions, Institutional Change and Economic Performance*, Cambridge, 1990.

- North, D.C., 'Institutions, Transaction Costs, and the Rise of Merchant Empires', in: Tracy, J. D. (ed.) *The Political Economy of Merchant Empires*, Cambridge, 1991: 22-40.
- North, D.C./Thomas, P., *The Rise of the Western World. A New Economic History*, Cambridge, 1973.
- North, M., *Kommunikation, Handel, Geld und Banken in der Frühen Neuzeit*, München, 2000.
- O'Brien, P.K., 'The political economy of British taxation, 1600-1815', in: *Economic History Review (2nd series)* 41 (1988): 1-32.
- O'Brien, P.K., *Fiscal Exceptionalism: Great Britain and its European Rivals. From Civil War to Triumph at Trafalgar and Waterloo (LSE Department of Economic History Working Papers 65/01)*, 2001.
- O'Brien, P.K./Hunt, P.A., 'England, 1485-1815', in: Bonney, R. (ed.) *The Rise of the Fiscal State in Europe, c. 1200-1815*, Oxford, 1999: 53-100.
- Ortuba, G., *Die Wirtschaftspolitik Maria Theresias*, Wien, 1963.
- Ortuba, G., 'Bericht über eine im Auftrag der mährischen Lehensbank durchgeführten Kommerzialreise - eine zeitgenössische Bestandsaufnahme zur Wirtschaftslage mitteleuropäischer Städte um die Mitte des 18. Jahrhunderts', in: *Jahrbuch für Wirtschaftsgeschichte* 3 (1975): 269-297.
- Peyer, H.C., *Von Handel und Bank im alten Zürich*, Zürich, 1968.
- Pfister, C., *Im Strom der Modernisierung. Bevölkerung, Wirtschaft und Umwelt 1700-1914*, Bern, 1995.
- Pfister, W., *Aargauer in fremden Kriegsdiensten 2 Vols*, Aarau, 1980-84.
- Riley, J.C., *International Government Finance and the Amsterdam Capital Market 1740-1815*, Cambridge, 1980.
- Ritzmann, F., *Die Schweizer Banken. Geschichte - Theorie - Statistik*, Bern, 1973.
- Roseveare, H., *The Financial Revolution 1660-1760*, London, 1991.

- Salzmann, E., *Die erste Sparkasse in der Schweiz. Die Hochobrigkeitlich genehmigte Diensten-Zins-Cassa in Bern 1786-1877*, Bern, 1953.
- Sayous, A.-E., 'La crise financière de 1709 à Genève', in: *Bulletin de la Société d'histoire et d'archéologie de Genève* 6 (1935): 354-383.
- Sayous, A.-E., 'L'affaire de Law et les Genevois', in: *Zeitschrift für Schweizerische Geschichte* 17 (1937): 310-350.
- Schaffroth, P., *Sturm und Drang. Aus der Vergangenheit der stadtbernischen Presse (1500-1900)*, Bern, 1991.
- Schläppi, D., *Die Zunftgesellschaft zu Schmieden in Bern zwischen Tradition und Moderne. Sozial-, struktur- und kulturgeschichtliche Aspekte von der Helvetik bis ins ausgehende 20. Jahrhundert*, Bern, 2001.
- Schnabel, I./Shin, S.H., *Foreshadowing LTCM: The Crisis of 1763 (Working Paper, Sonderforschungsbereich 504, No 02-46)*, Mannheim, 2002.
- Schneider, H., *Die bernische Industrie- und Handelspolitik im 17. und 18. Jahrhundert*, Zürich, 1937.
- Schneider, J. et al (eds.), *Währungen der Welt VI. Geld und Währungen in Europa im 18. Jahrhundert*, Stuttgart, 1992.
- Seelhofer, H.W., 'Banken im alten Bern', in: *Geschichte der Schweizer Banken. Bankier-Persönlichkeiten aus fünf Jahrhunderten*, Zürich, 1987: 175-186.
- Silver, M., 'Karl Polanyi and the Markets in the Ancient Near East. The Challenge and the Evidence', in: *Journal of Economic History* 43 (1983): 795-829.
- Smith, A., *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. by R.H. Campbell, A.S. Skinner and W.B. Todd, Oxford, 1976 (original edition 1976).
- Steiger, C.F., 'Rede über die Errichtung der ausländischen Finanzen des Hohen Standes. Gehalten vor dem Hochlöblichen Äusseren Stand,

- den 26. Februar 1784 durch Carl Friedr. Steiger', in: *Berner Zeitschrift für Geschichte und Heimatkunde* 10 (1952): 26-39 (original text from 1784).
- Stelling, S., *Saint-Saphorin et la politique de la Suisse pendant la guerre de Succession d'Espagne (1700-1710)*, Lausanne, 1935.
- Sugarman, D., *Law in History. Histories of Law and Society*, Aldershot, 1996.
- Tracy, J.D., *A Financial Revolution in the Habsburg Netherlands. Renten and Rentiers in the County of Holland, 1515-1565*, Berkeley, 1985.
- Tuor, R., *Mass und Gewicht im Alten Bern*, Bern, 1977.
- Veyrassat, B., *Négociants et fabricants dans l'industrie cotonnière suisse 1760-1840. Aux origines financières de l'industrialisation Suisse*, Lausanne, 1982.
- Weber, M., *Economy and Society. An Outline of Interpretative Sociology*, Berkeley, 1978 (German original edition 1921).
- Williamson, O.E., *Markets and Hierarchies. Analysis and Antitrust Implications. A study in the Economics of Internal Organisation*, New York, 1975.
- Wilson, C., *Anglo-Dutch Commerce & Finance in the Eighteenth Century*, Cambridge, 1941.
- Zeerleder, A., 'Die politische und literarische Mission des englischen Gesandten Abraham Stanyan in der Schweiz von 1705 bis 1713', in: *Berner Zeitschrift für Geschichte und Heimatkunde* 5 (1942): 87-102.
- Zesiger, A., *Das bernische Zunftwesen*, Bern, 1910.

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