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ANDERS ÖGREN

Empirical Studies in Money, Credit and Banking

The Swedish Credit Market in Transition
under the Silver and the Gold Standards, 1834 – 1913



*Institute for Research in
Economic History*

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STOCKHOLM SCHOOL
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Institute for Research in Economic History



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Keywords: *Balance of Payments, Banking Fragility, Capital Market, Classical Silver and Gold Standards, Endogenous Money Approach, Financial Crises, Fractional Reserves, Free Banking, Institutional Theory, Lender Of Last Resort, Liquidity, Monetary Base, Monetary Policy, Money Supply, Sweden*

ABSTRACT

The empirical results reached in this thesis contradict the traditional theoretical view of money as being exogenously introduced into an economy as a medium of exchange intended to reduce the transactions costs associated with barter. Instead money was endogenously created in the form of credit. Thus, the long run neutrality of money also is called into question. The varying quality of different kinds of money reflects the demand for them. If legal tender was of higher quality than private promissary notes, it was because the former were in greater demand. Concisely put, the market determines the value, and therefore the quality, of various kinds of money.

The principal problem addressed in this thesis is how, during the expansive nineteenth century, it was possible to satisfy the ever growing need for credit and means of payment without sacrificing the fixed exchange rate. Particular attention is paid to the private note issuing banks, the so called Enskilda banks, that dominated the Swedish banking system throughout the nineteenth century. In addition to their note issuing, the Enskilda banks were characterized by unlimited owner liability.

An examination of the ongoing political process from a rational choice perspective, indicates that initially the concept of note issuing Enskilda banks enjoyed wide spread support. They were considered to be a reasonable response to the problem of establishing a commercial banking system in an illiquid economy. The distribution of political and economic power in favor of the Crown and the Nobility included their control over the issuance of bank charters. The monopolistic policy they followed in this regard, however, resulted in growing hostility towards these. As a result, starting in the middle 1860's, a more liberal attitude towards the

establishment of banks began to prevail. By the end of the nineteenth century, various political interests were able to engineer the revocation of the Enskilda banks' note issuing rights.

The special characteristics of the Enskilda banks, the right to issue bank notes and the unlimited liability of their owners, have caused them to be perceived as outdated, at least once Joint Stock banks were introduced. In contrast to the Enskilda banks, these were unable to issue notes but instead provided their owners with limited liability. The thesis demonstrates that, given the initial illiquidity of the Swedish economy, the Enskilda banks actually were the more efficient alternative. Indeed, the note issuing privileges of the Enskilda banks became one of the principal factors behind the development of liquid domestic capital markets.

An empirical study that includes the most basic constraints faced by the nineteenth century Swedish economy, the demands of the specie standard and the general shortages of reliable means of payment and of credit, reveals that the Enskilda bank system can not, strictly speaking, be considered an example of free banking. Instead of holding specie reserves, the Enskilda banks backed their notes with central bank (Riksbank) notes. This was not because the public preferred Enskilda bank to Riksbank notes. Rather it was the result of a monetary adverse selection process; Gresham's Law. Previously utilized, lower quality, means of payment were replaced by Enskilda bank notes. By accepting some of the discount costs, the Enskilda banks made their notes circulate at par with Riksbank notes. Thus a domestic specie exchange system was created. The note issuance of the Enskilda banks paved the way for the deposit based commercial banking system that followed, and it was essential for the monetization of the economy that occurred during the late 1860's.

The long run expansion of the money supply was unrelated to growth in Riksbank reserves, specie holdings or the monetary base. Other countries operating under the specie standard also experienced monetary growth, indicating that the specie standard actually was a system of credit. Money supply, as measured in terms of Riksbank and Enskilda bank notes held by the public, eventually reflected the level of output (GDP). VAR-tests indicated that annual changes in the level of Riksbank reserves preceded changes in the money supply which, in turn, preceded changes in the level of prices, thus supporting the price quantity theory. These results are summarized in a regression model that estimates domestic price movements as a function of current changes in international prices and GDP and of lagged changes in domestic prices and the money supply.

The final chapter is an empirical analysis of the support provided to the Swedish banking system during the most severe financial crises of the nineteenth century. Maintaining the specie standard was over riding goal of the Riksbank. In times of crises, this concern prevented the Bank from supporting the banking system in accord with the classical lender of last resort recipe; to inject liquidity and briefly suspend convertibility. The thesis argues that in a transitional economy, such as that of nineteenth century Sweden, the fixed exchange rate makes it impossible in times of crisis to support the banks at all costs. Doing so might well convert a banking crisis into a currency crisis. Indeed, this is exactly what has happened in various countries on several occasions during the late twentieth century. Instead the appropriate procedure for acting as lender of last resort in a transitional economy is to initially support the banks, but only as long as central bank reserves are not exhausted. Should the seriousness of the crisis make this insufficient, the authorities should then proceed to import high powered money as a way of supplementing their reserves. The possibility that such action will be needed makes it particularly important that the country's public finances be kept in good order.

Till Er som alltid har stått mig som närmast tillägnar jag den här avhandlingen. Som Tack för att Ni finns i mitt liv!

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Stockholm April 2003
Anders Ögren

List of Contents

Chapter 1 – Empirical Studies in Money, Credit and Banking: The Swedish Credit Market in Transition under the Silver and Gold Standards, 1834 – 1913. An

Introduction..... 17

Introduction..... 19

Previous Research..... 21

Theory..... 23

 Rational Choice and Bounded Rationality 24

 Institutional Theory and a Theoretical Framework of Political Economy..... 26

 Monetary Theory..... 28

 Barter, Money and Credit..... 31

 Theories of the Adjustment Process 34

 Free Banking Theory..... 35

 Banks, Vulnerability and Capital Markets 36

 Lender of Last Resort Theory..... 37

Methodology 38

 Qualitative Methods 38

 Quantitative Methods 39

 Methodological Problems and Definitions..... 42

Sources..... 43

 Qualitative Sources 44

 Quantitative Sources..... 44

Summarizing the Thesis..... 48

Sources and Literature 53

 Sources 53

 Literature 53

Chapter 2 – Institutions, Politics and Credits: Political Rational Choice in the Forming of the Swedish Credit Market, 1823 – 1906 61

Introduction..... 63

Institutionalism, New Institutional Economics and Nested Games 64

 The Institutional Setting 67

Changing Institutional Design During the Struggle for Economic Power	69
The Introduction of Private Commercial Banks	70
The Readoption of the Silver Standard.....	72
Forming a Private Commercial Banking System	74
A Continuation of Private Bank Monopolies and Increased Opposition.....	77
The Rise and Fall of the Filial Banks	81
After the Representative Reform: Banking Expansion and State Consolidation.....	85
Conclusions.....	88
Sources and literature.....	90
Sources	90
Literature	91

**Chapter 3 – Commercial Note Issuing Banks and Capital Market Development:
An Empirical Test of the Enskilda Banks’ Assets, Liabilities and Reserves in
Relation to Evolving Capital Market Liquidity in Sweden, 1834 – 1913. 95**

Introduction.....	97
Enskilda Banks versus Joint stock banks	100
The Establishment of New Banks	101
Bank Deposit Financing	104
Enskilda Banks and the Liquidity of the Swedish Capital Markets	105
Enskilda banks, Liquid Reserves and the Emergence of Liquid Capital Markets ..	108
A Bank Specific Model Estimating the Determinants of Liquid Reserves.....	111
Estimating the Model for Determining the Enskilda Banks’ Liquid Reserves.....	116
A Model Estimating the Determinants of Enskilda Bank Bond Holdings	119
Estimating the Model Determining Enskilda Bank Bond Holdings	122
Conclusions.....	124
Sources and literature.....	126
Sources	126
Literature	127
Appendix – Testing the Models	129
Appendix A – Testing the cross sectional model	129
Appendix B – testing the OLS model determining liquidity reserves (time series)	131
Appendix C – testing the OLS model determining Bond holdings (time series) ...	135

Chapter 4 – Expansion of the Money Supply with a Fixed Exchange Rate: “Free Banking” in Sweden under the Silver and Gold Standards, 1834 – 1913 139

Introduction.....	141
Bank Note Substitutes, Free Banking and Endogenous Money.....	143
Free Banking Theory.....	145
The Endogenous Approach to Money.....	147
The Riksbank and the Issuance of ”High Powered Notes”.....	147
Riksbank Reserves.....	148
Enskilda Banks and the Issuance of ”Medium Powered” Notes.....	150
Enskilda Bank Reserves.....	153
The Circulation of Currency.....	157
Expanding the Money Supply.....	161
The Total Backing of Currency.....	161
Swedish Monetization.....	163
Conclusions.....	165
Sources and Literature.....	167
Sources.....	167
Literature.....	169
Appendix – The Note Issuance Determination Model.....	174

Chapter 5 – Reserves, Money Supply and Prices: The International Adjustment Mechanism in Sweden under the Silver and Gold Standards, 1834 – 1913 177

Introduction.....	179
The Theoretical Framework and Monetary Definitions.....	181
The Monetary Base.....	182
The Monetary Balance of Payments.....	186
Methodological Problems of Estimating the Monetary Base.....	187
The Money Supply.....	190
The Flexibility of the Riksbank’s Reserves and the Practice of Monetary Discipline.....	192
International Capital and the Riksbank’s Reserves.....	192
The Flexibility of Riksbank Reserves.....	194
Measuring Monetary Discipline.....	196

The Growth of the Money Supply	200
What Caused Changes in the Money Supply?	205
Conclusions.....	210
Sources and Literature	212
Sources	212
Literature	214
Appendix – Testing the Models	217
Appendix A – Johansen’s test for Cointegration.....	217
Appendix B – Vector Auto Regression Tests on Causality (precedence)	220
Appendix C – Tests of the OLS-model determining price changes	231
 Chapter 6 – Lender of Last Resort in a Transitional Economy with a Fixed Exchange Rate: Financial Crises and Monetary Policy in Sweden under the Silver and the Gold Standards, 1834 – 1913.....	 235
Introduction.....	237
Lender of Last Resort in Theory	239
The classical view on lender of last resort.....	239
The evolutionary view on lender of last resort	241
Lender of last resort and currency crises.....	242
Swedish Monetary Policy During the Nineteenth Century	244
The Lender of Last Resort in Nineteenth Century Sweden.....	249
Lender of last resort during the crisis of 1857/58.....	251
Lender of last resort during the crisis of 1878/79.....	257
Lender of Last Resort in a Transitional Economy: the Argument Refined	263
Conclusions.....	265
Sources and Literature	266
Sources	266
Literature	267
 En populärvetenskaplig Sammanfattning – Empiriska studier i pengar, kredit och bankverksamhet: Den svenska kreditmarknaden i transition under silver- och guldmyntfoten 1834 – 1913.....	 273
Teoretiskt ramverk	275
En teori om politisk ekonomi	275
En teori om pengar i en ekonomi	276

De undersökta problemen och slutsatserna	278
Kapitel 2 – Den politiska stridens betydelse vid etablerandet av ett sedelutgivande affärsbankssystem	278
Kapitel 3 – De sedelutgivande bankernas fördelar och deras betydelse för framväxten av likvida kapitalmarknader	279
Kapitel 4 – Den fasta växelkursen och de Enskilda bankernas betydelse för den svenska monetariseringen.....	279
Kapitel 5 – Om förhållandet mellan reserver, penningmängd och priser	280
Kapitel 6 – Om bankstöd i en transitionsekonomi med en fast växelkurs, Sverige under 1800-talet.....	281
Appendix – Numerical Data.....	283
Riksbank Reserves and Note Issuance, 1834 – 1913. 1000's SEK	283
Enskilda Bank Reserves and Note issuance, 1834-1905. 1000's SEK.....	285
Total Specie Reserves and Money Supply, 1834 – 1913. 1000's SEK	288

List of Figures

Chapter 1

Figure 1. 1: Bank Note issued by Den Fortsatta Skånska Privat-Banken (Skåne Enskilda Bank) in 1847.....	17
Figure 1. 2: Bank Note issued by Rikets Ständers Bank (the Riksbank) in 1856	18

Chapter 2

Figure 2. 1: Wermland Enskilda bank Share Certificate (1833).....	62
Figure 2. 2: No. of Enskilda, Joint Stock & Filial Banks, 1834-1913.....	70
Figure 2. 3: The Parliament challenging the overall power of the King in a game of chicken – dethronement viewed as a credible threat by Carl XIV Johan	78
Figure 2. 4: The threat of the Parliament as a control game. Mutual cooperation instead of mutual defection.....	79
Figure 2. 5: The King, Oscar I, ascending the throne in 1844 not viewing dethronement as a credible threat	80
Figure 2. 6: Enskilda bank Note Issue and Riksbank Credit Provided to Filial Banks, 1852-1863. 1000's SEK	83
Figure 2. 7: Share Certificates from Hernösands Filial bank (left) and Stockholm Enskilda bank (right).....	84
Figure 2. 8: The Circulation of Riksbank and Enskilda Bank Notes. 1000's SEK.	87

Chapter 3

Figure 3. 1: No of Enskilda and Joint Stock Banks (including folkbanks), 1834-1913.....	102
Figure 3. 2: Enskilda and Joint Stock Banks Assets, 1869 – 1900 (percentage shares of total commercial bank assets).	103
Figure 3. 3: Total Deposits in Enskilda and Joint Stock Banks, 1834 – 1900 (1,000,000's SEK).....	104

Figure 3. 4: Cross Sectional OLS-Regression on Geographical Distance and Bank Establishments as Determinants on the use of Deposits in 1871.	106
Figure 3. 5: Issued Notes, Deposits and Bond Holdings, as Percentages of Total Assets in 1871 and 1881 for Enskilda Banks Established Between 1865 and 1871, Arranged by Note Issuance in 1871.....	107
Figure 3. 6: Note Issuance, Demand Deposits and Liquid Reserves of the Enskilda banks, 1834 – 1900 (1,000's SEK).....	109
Figure 3. 7: Liquid Reserves of the Enskilda Banks as a Percentage of Total Assets, 1834 – 1900.....	110
Figure 3. 8: Liquid Reserves as a Percentage of Total Assets and Annual Changes in that Percentage, 1834 – 1900.....	111
Figure 3. 9: Circulating Notes as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.....	112
Figure 3. 10: Demand Deposits as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.....	112
Figure 3. 11: Time Deposits as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.....	113
Figure 3. 12: Equity Capital as Percent of Total Assets and Annual Changes in that Percentage, 1834-1900.....	114
Figure 3. 13: Net Assets Maintained at Other Financial Institutions as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.....	114
Figure 3. 14: Bonds as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900	115
Figure 3. 15: Bills of Exchange as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900	115
Figure 3. 16: Lending as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900	116
Figure 3. 17: OLS-Regression of the Determinants of the Enskilda Banks' Liquid Reserves	117
Figure 3. 18: Bond Holdings as Percent of Total Assets and in Natural Logarithm Form, 1834 – 1900.....	120
Figure 3. 19: Money Supply M3 as a Natural Logarithm and Annual Changes Therein, 1834 – 1900	121
Figure 3. 20: Nominal GDP as a Natural Logarithm and Annual Changes Therein, 1834 – 1900.....	121
Figure 3. 21: Enskilda Bank Lending as Percentage of Total Assets and as a Natural Logarithm, 1834 – 1900	122
Figure 3. 22: OLS-Regression Results of the Determinants of Enskilda Bank Bond Holdings.....	123
Figure 3. 23: Chow Breakpoint tests of the model for the years 1864 & 1865	124

Chapter 4

Figure 4. 1: Backing of Riksbank Notes Issued, 1834 – 1913 (in percentages).....	149
Figure 4. 2: The Number of Enskilda banks, 1834 – 1913	151
Figure 4. 3: Unutilized Note Issuing Rights of Enskilda banks, 1834 – 1900 (in percentages of Total Note Issuing Right)	154
Figure 4. 4: Gold and Riksbank Note Backing of Enskilda Bank Notes, 1834 – 1913 (in percentages)	155
Figure 4. 5: Determinants of Enskilda Bank Note Issuance, 1874 – 1900 (OLS Regression)	156
Figure 4. 6: Enskilda Bank and Riksbank Notes in Circulation, 1834 – 1900 (1000's of SEK).....	158
Figure 4. 7: Specie Coverage of Notes Circulating in Sweden (1834 – 1900) and Finland (1841 – 1900) (in percentages).....	162
Figure 4. 8: The Swedish Money Stock, 1834 – 1913 (M1, M2 and M3 in 1000's of SEK).....	163
Figure 4. 9: Velocity of Means of Payment (M3), 1834 – 1913 (index form, 1870=100)	165

Chapter 5

Figure 5. 1: The Enskilda banks' Holdings of Specie, Riksbank and other Enskilda bank Notes in a Percentage of Issued Enskilda bank Notes, 1843-1900.....	184
Figure 5. 2: Components of the Monetary Base, 1834-1913, (1000's SEK)	186
Figure 5. 3: Annual Monetary Balance of Payments, 1834-1913 (1000's SEK)	187
Figure 5. 4: Swedish Domestic and International Bond Loans, 1834 – 1910	188
Figure 5. 5: The Monetary Base Including (MBASE-CA) and Excluding (MBASE) Net Foreign Assets of the National Debt Office, 1834-1913 (1000's SEK)	190
Figure 5. 6: The Swedish Money Supply in terms of M1, M2 and M3 in logarithmic form, 1834-1913 (1000's SEK)	191
Figure 5. 7: Annual Current Account and Changes in Riksbank Reserves, 1834 – 1913. 1000's SEK	193
Figure 5. 8: Correlations Between Annual Changes in Imports and Exports with Annual Changes in GDP , 1834-1913.....	193
Figure 5. 9: The Reserves of the Riksbank at Current Prices (1000 SEK), and the Percentage Reserve Backing of Its Note Issue, 1834-1913.	194
Figure 5. 10: Foreign Holdings as a Percentage of Total Riksbank Reserves, 1845-1912	196
Figure 5. 11: The Mean Value of the Ratio of the Monetary Base to the Stock of Specie and to the Reserves of the Riksbank	197
Figure 5. 12: Monetary Pyramid Ratios, 1834 – 1913.....	198
Figure 5. 13: Ratios of the Stock of Specie to the Money Supply (M1), (M2), and (M3), 1834-1913	200
Figure 5. 14: Money Supply (M1), Issued Riksbank Notes (RBISS), Formal Reserves of the Riksbank (RBRES) and the Monetary Base (MBASE), 1834-1913 (1000's SEK).....	202
Figure 5. 15: Growth in Percentage of the Money Supply (M1), (M2), (M3) Issued Riksbank Notes (RBISS), Formal Reserves of the Riksbank (RBRES) and the Monetary Base (MBASE).....	203
Figure 5. 16: Circulating Notes plus the Public's Deposits in Commercial and Savings Banks (M3) in Sweden and Some of Its Principal Trading Partners, 1834 – 1913. Current Value Indexes, 1870=100.....	204
Figure 5. 17: Johansen's test on Cointegration between Real Output (GDPVOL) and the Money Supply in terms of Circulating Notes in stable prices (MIDEF), 1834-1913.	205
Figure 5. 18: Correlations Between Annual Percentage Changes in Swedish Wholesale and Consumer Prices with Those of her Principal Trading Partners, 1834-1913	206
Figure 5. 19: Vector Auto Regression on the Consumer Price Index (CPI), Money Supply (M1DEF), (M2DEF), (M3DEF), and Riksbank Reserves (RBRESDEF), 1834-1913. 2 lags, variables deflated by the consumer price index and in logarithmic form.	208
Figure 5. 20: OLS-regression determining changes in domestic prices (CPI), as dependent on current and prior changes in the variables the German Consumer Prices (GERCPI), the Money Supply (M1DEF), and GDP (GDPVOL), 1834-1913	209

Chapter 6

Figure 6. 1: Cumulative Current Account Balances and Foreign Debt, 1834-1913. 1000's SEK	245
Figure 6. 2: Bond Issues of the National Debt Office and the Riksbank, 1858-1879	246

Figure 6. 3: The Reserves of the Riksbank at Current Prices (1000 SEK), and the Percentage Reserve Backing of Its Note Issue, 1834-1913	248
Figure 6. 4: The Riksbank's Unutilized Rights to Issue Notes as a Percentage of Issued Notes, 1834-1913	250
Figure 6. 5: Monthly Data on Riksbank Reserves and Note Issue, January 1855 – December 1858. 1000's SEK	251
Figure 6. 6: Monthly Data on the Riksbank's Total and Disaggregated Reserves as Percentages of Issued Notes, January 1855 – December 1858	252
Figure 6. 7: Monthly Data on the Riksbank's Unutilized Rights to Issue Notes and Foreign Bills of Exchange as Percentage of Issued Notes, January 1855 – December 1858.....	256
Figure 6. 8: Weekly Data on the Riksbank's Unutilized Rights to Issue Notes in 1000's of SEK, January 1874 – December 1879	259
Figure 6. 9: Borrowers from the Railroad Mortgage Fund.....	262

– Chapter 1 –

Empirical Studies in Money, Credit and Banking: The Swedish Credit Market in Transition under the Silver and Gold Standards, 1834 – 1913. An Introduction

Figure 1. 1: Bank Note issued by Den Fortsatta Skånska Privat-Banken (Skåne Enskilda Bank) in 1847



Original at Strandbergs Mynt & Aktiesamlaren AB in Stockholm. Photo by Anders Ögren.

This note was issued by the pioneer of the Enskilda banks, Skåne Enskilda bank established in 1831 in Ystad. The name *Den Fortsatta Skånska Privat-Banken*, literally translated means “the continuing private bank of Skåne”, and illustrates that the bank was experiencing its second charter. Today this bank is part of SEB. On the note it is clearly stated that the note is redeemable for the fixed amount of 3 1/3 Riksdaler Banco, the currency of Riksbank notes. As seen on the note, this was equal to 5 Riksdaler Riksgälds, the popularly used unit of account. Riksdaler Riksgälds was the currency of the previously circulating notes issued by the National Debt Office between 1789 and 1818 (these liabilities had been taken over by the Riksbank in 1818 (see Heckscher, E.F. (1949)).

Figure 1. 2: Bank Note issued by Rikets Ständers Bank (the Riksbank) in 1856



Original at Strandbergs Mynt & Aktiesamlaren AB in Stockholm. Photo by Anders Ögren.

In the rectangular field at the bottom it is printed that forgery of the note is punishable by death. A falsifier of Enskilda bank notes did not face this destiny, at most three years hard labor. As all notes it was signed by the Chairman of the bank and the Cashier at the office before put into circulation. The note displays three denominations: 1) 6 $\frac{2}{3}$ Riksdaler Banco which was the currency of the notes issued by the Riksbank. 2) 10 Riksdaler Riksgälds. As it was the most commonly used unit of account in public life, in 1857 it became the official currency Riksdaler Riksmünt when the metric system was adopted. In 1873 it was turned into the krona (SEK) at par value with the previous Riksdaler Riksmünt. 3) The note clearly states that it is redeemable into 2 $\frac{1}{2}$ Riksdaler Silver Specie, which was the silver currency.

As the text on the Enskilda bank note stated that it was redeemable for a fixed value in the currency of Riksbank notes (figure 1.1 above). This illustrates two of the main conclusions in the thesis; the Enskilda banks were dependent on the Riksbank upholding the specie standard and the Riksbank and the Enskilda banks in conjunction worked as a specie exchange system.

I thank the participants in the EHF seminar at SSE January 28 2003 for contributing with valuable comments on this Chapter. In particular, I am indebted to Torbjörn Engdahl for stimulating discussions and helpful comments on the nature of money and monetary theory. All errors are my own.

Introduction

What was to become an uninterrupted eighty year period with a fixed exchange rate in Sweden began modestly with the re-adoption of the silver standard in 1834. The German inspired conversion to gold in 1873 did not fundamentally change the situation. Only in 1914, with the out break of World War I and the consequent abandonment of the gold standard, did the fixed exchange rate era come to an end. During these same eight decades, Sweden had been transformed from a poor, underdeveloped country, into a modern industrial state, with a well developed financial system. Given the deflationary tendencies of the specie standard, the puzzle explored in this thesis is: How was the need for increased credit and means of payment in an expanding economy satisfied without abandoning the fixed exchange rate?

In his work "The State", Plato provided an answer. He suggested that two different kinds of coins be used: one of no intrinsic value for domestic transactions and another of recognized value for foreign travel and warfare.¹ In a sense, this was the Swedish

¹ Agardh, J.M. (1865) p. 154. International comparisons and the dominant economic theories of the nineteenth century stressed the quantity theory, the price specie flow mechanism and the currency school. Contemporary Swedish economists argued for the correctness of these theories. The Swedish dependence on paper credit was seen as a case of economic backwardness due to the lack of "real" money. Simultaneously, the use of paper credit was defended as a response to the scarcity of "real" money and credit, which in the case of Sweden was interpreted as impeding the workings of a proper economy in accordance with existing theories

solution. The principal circulating means of payment within the Country were private bank notes that did not have legal tender status.

Thus, in addition to the central banking maintaining convertibility, the question becomes, how well was the Swedish commercial banking system suited to provide the domestic economy with sufficient credit and means of payment? To answer this question, the thesis examines the both the central bank and the commercial bank system. Special attention is paid to the private note issuing banks, the so called "Enskilda banks", that dominated the Swedish banking system throughout the nineteenth century.

The thesis is divided into five analytical chapters. Each was written as a separate paper, and they each treat different aspects of the system, particularly the commercial banking system, that made a fixed exchange rate compatible with a rapidly developing economy. The first paper (Chapter two) poses the question of how the commercial banking system came to be based on private note issuing banks. In so doing, the role of politics in building this system is stressed. The third chapter compares the system of unlimited liability Enskilda banks with that of the limited liability Joint Stock banks (first permitted during the 1860's), and studies the role of the Enskilda banks in the emergence of liquid domestic capital markets. The fourth chapter proceeds to investigate how the system of note issuing Enskilda banks functioned vis a vis the Riksbank and the fixed exchange rate regime. In particular, it deals with the contribution of this system to the monetization of Sweden. The existing common belief that the workings of the system can best be analyzed in terms of free banking theory is shown to be incorrect. The banking system having been scrutinized, the fifth chapter explores the workings of the fixed exchange rate system from an international perspective. The relationship among central bank reserves, the monetary base and the money supply is studied. Finally, Chapter six asks the question, how was the lender of last resort function provided given the constraint of a fixed exchange rate?

The justification for writing individual papers is that it makes it possible to focus on one problem at a time. Scholarship always encounters the problem of limiting the scope of a study. Individual papers makes it easier to stick to the essentials of each topic, and can thus be considered as part of the scholarly approach. It also forces the student to select problems that can be handled with the scope of an article. The principal drawback of this approach is that it inevitably results in the repetition of certain basic facts.

The thesis relies on both quantitative and qualitative evidence, and therefore utilizes both quantitative and qualitative methods of analysis. New quantitative data concerning the balance sheet of the commercial banks has been assembled for the entire period. In addition to facilitating the analysis of the development of the commercial banking system, the use of balance sheets to measure the reserves of the Enskilda banks provides

(see also Nordström, J.J. (1853) and Wennberg, J.O. (1829)). Chapter 2 in Lobell, H. (2000) contains a discussion on economic theories when the silver standard was readopted.

a more accurate and continuous estimation of the Swedish money stock and reserves. Qualitative sources include the minutes and the correspondence of the boards and various departments of the National Debt Office and the Swedish central bank (the Riksbank), as well as Parliamentary publications and the Swedish Legal Code.

Previous Research

The Swedish nineteenth century banking system has been the subject of numerous scholarly studies. These studies can be divided into three principal categories: 1) Chronological surveys of the banking system and the credit market, 2) Studies of particular organizations or individuals and 3) Studies of particular economic phenomena or events. These distinctions are not always easy to draw, since all these studies are connected to important economic and political events and are influenced by some theoretical economic framework.

The economist Sven Brisman authored a chronological survey of the development of the Swedish banking system from the discount companies of the eighteenth century to the inter World War situation. He also described the workings of the central bank in a Riksbank monograph published in 1931. The theoretical framework for his analysis was one of evolution and it was, in some respects, influenced by anachronistic assumptions. The functioning of commercial and central banking in the inter war period was presented as an ideal. Earlier credit market actors, including the nineteenth century Riksbank, were seen as links in an evolutionary chain. Modernity and efficiency were represented by a system based on a central bank with a note issuing monopoly and which both defended a fixed exchange rate and fulfilled other goals of monetary policy through variations in the discount rate. Thus, Brisman failed to explain the emergence or the usefulness of, for example, the Enskilda banks. Instead, in accord with his evolutionary view, he simply dismisses the system of private bank note issuance as primitive or even backward. It should also be noted that his empirical evidence sometimes fails to be convincing.

Even with these drawbacks in mind, however, Brisman's work is far from unimportant. On the contrary, he provides insights and specific facts that are of use to anyone studying the history of Swedish banking. An American commentator on Swedish nineteenth century banking was A.W. Flux. In 1910 he published a comprehensive study of "The Swedish Banking System" for the National Banking Commission.

Another Swedish economist, David Davidsson, wrote parts of the Riksbank's monograph on its nineteenth century history. His contributions are substantial, being

full of valuable empirical evidence. The chronological structure of the work, however, prevented him from fully pursuing some of the most interesting theoretical questions.

A more recent contribution is a short, but informative, work on the organizational evolution of the formal Swedish credit market from the founding of the precursor of the Riksbank, the Stockholm Banco of 1657, to the Citibank of the mid 1980's. The author of this book, Ingemar Nygren, also has done extensive research on the Swedish savings banks. Well written, brief but still comprehensive, overviews of the development of the Swedish banking system can also be found at the beginning of the report of the Special Committee on Banking that was appointed following the banking crisis of the early 1990's.²

The second type of research, case of studies of individual banks and/or persons are crucial to an understanding of the functioning of the nineteenth century banking system. A few examples are, Karin Kock's book about the first Enskilda bank, Skåne Enskilda Bank, Karl Gustaf Hildebrand and Ernst Söderlund's work on the two most important limited liability Joint Stock banks, Stockholm Handelsbank and Skandinaviska Kredit Aktiebolaget and most certainly Göran B. Nilsson's books on Stockholm Enskilda Bank and its founder, A.O. Wallenberg. These works all set out to explore and explain the actions of the individuals involved. As a result, they contain exquisite descriptions of the functioning of the economy and of economic trends.

One example of the successful integration of a number of such case studies to yield more general scholarly results is the research project on Swedish savings banks at Uppsala University. This work has not only produced knowledge concerning the behavior of savers and borrowers, it has also contributed to an understanding of how organizations, especially Enskilda and Savings banks, cooperated during the nineteenth century.

Two example of work more explicitly rooted in economic theory are the articles written by Lars G. Sandberg concerning the relationship between Swedish economic growth and the banking system prior to World War I, and Lars Jonung's articles on the workings of the Swedish monetary system. These are important scholarly contributions, filled with new and important empirical economic knowledge. The great degree to which the work of Jonung and Sandberg has served to inspire me will emerge in the course of this thesis.

Arguably, however, Jonung's analysis has been too heavily influenced by his pre-existing theoretical framework. Thus his interpretation has not always been subjected to satisfactory empirical testing. This, for example, is clearly the case when he examines the Enskilda banks from a free banking perspective. His conclusions emerge directly from free banking theory rather than from the, not particularly supportive, empirical

² See Lindgren, H. (1994).

evidence.³ Moreover, his interpretation has resulted in the Enskilda banks being presented in the literature as an example of successful free banking.⁴

This type of research does not utilize qualitative material, nor does it subject its quantitative sources to the type of critical scrutiny common in historical work. Moreover, the tendency has been to use the theories as part of the methodology when the results are interpreted. As a result, the theoretically based results are hard to falsify. Research in economic history, however, has successfully merged the historical approach with economic theory. It has been demonstrated that this joint approach can yield general and scientifically valid results that are independent of time and place, while also providing answers regarding a particular case.⁵

This thesis will follow these examples in combining empirical research consistent with the axioms of economic theory and with the historical approach. The intent is to produce a well structured, up to date and methodologically valid study of the most important features of, and innovations in, the banking system and the policies of the central bank, within the context of overall Swedish economic development. Hopefully, it will also succeed in answering some more general questions, and thus in adding to existing knowledge concerning the workings of the banking system and the central bank in a transitional economy.

Theory

Theory can be used in two ways: 1) The theory can be assumed to be correct and then used as part of the method used to filter and interpret the empirical material, and 2) The validity of the theory can be subjected to an empirical test. Thus, various theories are utilized in different chapters depending on the focus of the study. An example of theory

³ Empirical evidence does not support the idea of competition in note issuance between the Riksbank and the Enskilda banks. Furthermore, it is not compatible with free banking theory that the Enskilda banks chose to operate with Riksbank reserves. Empirical evidence also shows that Enskilda banks were subject to State support in some crises, and even that some of them failed.

⁴ See Schuler, K. (1992) pp. 31-32, 40, Selgin, G.A. (1988) p. 7. Selgin views absence from regulations as one variable typical of the Swedish case.

⁵ A thesis by Håkan Lobell dealing with the Riksbank's open market activities on the domestic market for foreign currency between 1834 and 1880 is one example (Lobell, H. (2000)). Other examples are Torbjörn Engdahl's study of cotton production in Uganda in the early twentieth century (Engdahl, T. (1999)), Mikael Olsson's thesis on the process of privatization in Slovakia in the 1990's (Olsson, M. (1999)), Tom Petersson's study on the development of a local banking system from mid nineteenth century in Sweden (Petersson, T. (2001)), and Peter Vikström's study on the Swedish growth, structural changes and distribution of income from 1870 till the late twentieth century (Vikström, P. (2002)).

that is used in the former way, that is as an empirical filter, is what is referred to as the theory of political economy.

This theory can be described in either of two ways: 1) Within the field of economics' as an institutional theory that subsumes rational choice and bounded rationality or 2) From an historical perspective, as arguing that people act according to their inner motives (preferences), including, for example, a desire for wealth and power. Society's view of what constitutes acceptable discourse restricts the motives for pursuing a goal that can be admitted openly. Clearly what can be done to achieve such goals, and even the preferences themselves, are affected by the context, including the initial distribution of power and resources.

Rational Choice and Bounded Rationality

Rational choice assumes that agents strive to maximize their payoffs, subject to the limitations imposed by the institutional framework and the information structure. The use of rational choice can be criticized on three grounds: 1) Rational choice theory searches under the lamp post even when the answer lies in the dark. Thus, once it has been assumed, rational choice inevitably will be found, even if it is of little importance to the matter at hand. 2) There is no empirical support for the contention that politicians and voters act in accordance with rational choice theory. 3) What constitutes rational action is often difficult, or even impossible, to define. With no limits on what is rational, however, there can be no irrational behavior. Thus, it is argued, the assumption of rationality becomes tautological.

Although all three lines of criticism have validity, strong arguments for using the rational choice approach remain. When the source material is extensive, researchers inevitably have to analyze it in terms of some theoretical structure. That in turn means that they are "searching under the lamp post". When the structure used is rational choice it means that the results also can be interpreted in such terms. It is thus clear which "lamp post" has been chosen.

The claim that there is no empirical support for rational choice in politics rests on observations of the behavior of voters and decision makers. Studies indicate that people do not vote strictly according to economic self interest, and politicians are prepared to take actions that are against their private interests. There are, however, two reasons why these results are not sufficient cause to dismiss rational choice. First, voters' preferences, quite rationally, are not limited to economic matters. Second, due to the role of discourse, respondents do not always tell the truth, especially when their actual intentions are not perceived as being socially acceptable. Anyone who has worked extensively with political source material knows well that there frequently is a gap between true intentions and rhetoric or discourse. Every actor has to couch his arguments in terms that are socially acceptable, i.e. they conform to the norms of accepted political rhetoric. The objective of utilizing rational choice structures is to

detect an actor's true motivations, hidden as they are behind a veil socially acceptable rhetoric.⁶

The problem with the criticism that the rational choice approach is without content is that it does not distinguish rational action from the concept of rationality.⁷ A rational action is contextual. It depends on available information, existing social institutions (both formal and informal) and, of course, on the agent's preferences. Rationality is the agent's act of choosing a particular course of action because he believes, within these parameters, that it will yield the greatest benefit. Thus, rationality per se is not contextual. It merely asserts that the agent will act in a way that he believes will maximize his pay off. The fact that information asymmetries, as well as social norms and beliefs, affect the pay offs associated with various choices makes it a case of bounded rationality.

The argument is that without the assumption of bounded rationality, analysis is hardly possible. It would not require attempts to explain what appears to be irrational behavior, and such behavior might, on closer examination, turn out to be quite rational.

⁶ Regarding the gap between the discourse (or rhetoric) and actual intention in modern day politics, see Schmidt, V.A. (2000) and (2001).

⁷ Regarding the question of rationality and its limitations, see Elster J. (1990). As written by Elster, rational choice tells us what we ought to do in order to achieve our aims, and not what our aims ought to be. The problem is that he then obscures the concept by seeking for a general statement of what a rational action implies. One example is if a dissident in a totalitarian regime can be rational when fighting for his freedom, if at the same the prison guard is rational when avoiding this conflict (Elster, J. (1990), pp. 3-7). According to Elster, the latter can not be rational, because: "*One cannot be rational if one is the plaything of psychic processes that, unbeknownst to oneself, shapes one's desires and values.*" (Elster, J. (1990), p. 6). If so, no person in any way shaped by his or her background or context can be regarded as rational. Thus, rationality can never be bounded. If bounded rationality exists, the choice of both the dissident and the prison guard may be rational actions given the situation, information and preferences of respective agent. Elster also criticizes the assumption of rational actions in "Analytic Narratives" by stating that what matters for rationality is if actors pursue them in an instrumental rational manner. That agents seldom do follow the strict rules of instrumental (and unbounded) rationality he shows in two ways. First, there are infinite examples in history of actions taken by agents believed to be rational, but that backfires. Second, rationality does not take into account other motives for actions, such as concerns, emotions, fairness, glory or honor (Elster, J (2000), p. 692). First, failing actions can clearly be rational, in the sense of making the best choice because there were no better alternatives given the information. The example provided by Elster is a type example of an agent considering different choices and then selecting the one that was believed to give the best outcome. Second, there is a mix up between motivations of actions (or preferences), and what is rationality. To choose an action to fulfill a desire such as glory and honor, which in the study also were considered important in society is indeed to act rationally. Elster also states that rational choice easy can be broadened to include such concepts, but this seems to be a disadvantage for the rational choice approach.

Institutional Theory and a Theoretical Framework of Political Economy

An important work combining methodological analysis and institutional theory with empirical studies of the role of institutions is the book “Analytic Narratives” written by Bates, Greif, Levi, Rosenthal, and Weingast. The title is derived from its blend of analytic tools with a narrative form for the study of historical events. The book is an example of New Institutional Economics (NIE) that, moreover, acknowledges the importance of the historical context.⁸ Its success in combining the need for detailed knowledge of historical episodes with a quest for general understanding is inspiring. Its aim is not to produce thick detailed descriptions of each historical episode but to extract the essence of its role in the creation of effective institutions.⁹

A key assumption of this work is that of rational choice, i.e. agents are assumed to maximize their pay offs. These agents might be individuals, groups, elites or even nations. Qualitative sources are used to determine what considerations will influence the strategic choices of the agents. These considerations form the context of the analysis, thus implicitly introducing the assumption of bounded rationality.

There are three key differences between the methodological approach advocated in “Analytic Narratives” and the historical method (or approach). First, “Analytic Narratives” seeks to extract general knowledge concerning institutions, not to explain specific historical episodes, 2) The distribution of power is essential to the historical method, but not to “Analytic Narratives” and 3) In “Analytic Narratives”, formal reasoning is defined as equilibrium outcomes of extensive games.¹⁰

What goes under the general heading of the theory of political economy combines features of the New Institutional Economics (NIE) and traditional institutionalism. NIE, being a branch of economic analysis, is favorable to the existence of generally

⁸ The authors’ view their method as an attempt to over bridge differences between historical institutionalism and NIE (Bates, R.H. et al (2000) p. 696). Given the equilibrium analysis, and the view on institutions as improving efficiency by decreasing different forms of transaction costs, the “Analytic Narratives” is, I would argue, a case of NIE.

⁹ The general description of “Analytic Narratives” as method and as institutional theory is from the introductory chapter, Bates R.H. et al (1998), pp. 3-18

¹⁰ “*Our use of rational choice and game theory transforms the narratives into analytical narratives.*” (Bates, R.H. et al (1998), p. 12). According to the authors, extensive form games are used because these are believed to be useful in creating and evaluating explanations of particular outcomes (Bates R.H. et al (1998), p. 11). The extensive form game is said not only to take sequence, or order of events, into account, it also captures the importance of uncertainty and the capacity of people to manipulate and strategize as well as the peoples’ limitations to do so (Bates R.H. et al (1998), p. 14). The authors are not convincing in what the utilization of game theory actually does provide that is not present in a formal, logical reasoning already. They seem to argue that the use of game theory automatically leads to an independent and thus objective analysis, not made by the researchers themselves. It is the Game that provides the available choices of the agents, their outcomes and pay offs, not the analysis made by the researchers. Although, it is admitted that the game actually is constructed to match the choices of agents, and the contextual features with the outcomes (Bates, R.H. et al (1998), p. 14). If so, the game is, as any model, a useful simplification and illustration of a complex process or mechanism serving to connect the assumptions with empirics to reach a certain outcome. But, the game form does not add any explanatory power, or formal reasoning in itself.

applicable "laws" of economics, of which rational choice is an example. General economic axioms are thus an essential element of this approach.

Second, at least in its broadest incarnation, institutional theory provides a framework within which the behavior of agents is guided by rules, regulations and social norms. The rational choice approach assumes that the actors, within their institutional setting, follow strategies intended to maximize their pay offs. It is more common in traditional institutionalism to assume that this rationality is bounded. That is, that the actors do not possess full information and that cultural norms and beliefs affect both preferences and the set of viable choices.

Third, it is more common within traditional institutionalism to focus on the concept of power. Generally in NIE, institutions are created to reduce transactions costs. Institutions are thus viewed as equilibrium outcomes, built on credible prospects of benefits or costs.¹¹ Institutional equilibrium is reached when no actor, given the existing alternatives and payoffs, either has an incentive to alter his or her behavior or has reason to expect others to change theirs.¹² Once equilibrium has been reached, only exogenous factors will alter the behavior of the actors.

Power and coercion are at least as central to traditional institutional analysis as is economic efficiency. Actors do not only strive for personal material benefit, also power is an essential driving force behind the choice of actions. The focus on power in traditional institutional analysis does not only enter as part of the preferences, affecting the pay offs for different alternatives. On the contrary, power at the outset, including economic resources, is a key feature when implementing new, or changing existing, institutions. Those with economic and political power will create institutions designed to maintain their control over economic resources as well as the political agenda. If possible, power will also be used to limit the number of possible choices (setting the agenda) for other groups. The less influential groups will have to strive for their best alternative among the choices determined by those in power. As a result, also given the

¹¹ Bates, R.H. et al (1998) p. 8. The distinction between the number of choices being constrained from above and a free choice of the actor with credible prospects of benefits and costs is however not as clear as argued in this case. The credible proposition of bearing the cost of ten years imprisonment clearly will affect the free choice of the actor, and thus partly create an eventual equilibrium institution. But, the process of imposing the cost of ten years of imprisonment for a certain action is hardly the result of a metaphysical process, rather an outcome of the distribution of power when designing the institution.

¹² In the extensive form game, there is the existence of subgame equilibria, i.e. any part of the game in which behaviour can be analysed independently from any other point (in time). In every subgame, the agent's best response to the actions taken by other actors is available. But a subgame equilibria does not provide the best pay offs for the agents if, as an extensive game does, the game is allowed to continue and evolve (an example is the well known the prisoners' dilemma).

circumstances, created institutions do not have to be the optimal solution to the problem in terms of over all economic efficiency.

Political economy theory serves both as a theory and as a method for interpreting empirical material and to validate their sources. As argued above, it is basically an historical approach that subsumes rational choice and other basic economic axioms.

Monetary Theory

One of the most basic characteristics of a market economy is the use of money in daily transactions. In this thesis it is argued that what constitutes money can not be determined *a priori*. The fact that in economics money is measured in strictly defined units and is compared among economies and over time, does not mean that there is unanimity of the basic question of how to define the concept of money. There are four principal areas where there is dispute concerning the definition of money: 1) what is the role of money in an economy? 2) How does money enter into an economy? 3) What types of assets (or liabilities) constitute money? and 4) What gives value to money?

Orthodox economic theories such as traditional Keynesianism and Monetarism (Neo-Classical theory), define money functionally as a medium of exchange. Thus money enters the economy exogenously, serving as a lubricant to lower the transactions costs that would exist in a pure barter economy. It is considered to be a veil over the real economy and is, at least in the long run, neutral.¹³ These theories of money have been derived in the context of economies with a pre-existing monetary framework. Thus they have not needed to answer the basic theoretical questions of what assets constitute money and how they have been endowed with value.

The fact that money is defined functionally also means that it is contextual, that is what constitutes money can change from case to case. Traditionally the functions that distinguish money from other commodities or financial assets are: 1) Serving as a medium of exchange (or payments), 2) Constituting a store of value and 3) Being a unit of account. The first two of these can be seen as the same function since no one will accept a medium of exchange that is without value. The store of value concept also has a time dimension. While money, like most commodities and financial assets, may change in relative value over time, it can still be differentiated from commodities in orthodox economic theory. Furthermore, assets other than those that generally qualify as money are stores of value. In addition, empirical evidence makes it clear that the money in circulation need not be the same as the generally accepted unit of account.

¹³ Regarding the Monetarist view see for instance Meyer, L.H. (2001)

Distinguishing money from other commodities in this way means that money is whatever serves as a means of payment (exchange). Clearly this functional definition is circular. At any point in time, it is dependent on what is then used as money.¹⁴

The same problem arises in regard to how money is endowed with value. Economic theory draws a clear distinction between so called commodity money and fiat money. As the name makes clear, commodity money means that some (valuable) commodity is used as a medium of exchange. The value of fiat money, by contrast, is guaranteed by the issuer and evaluated by the market. In the case of commodity money, economic theory embraces the notion of intrinsic value. That is commodity money is valuable because the commodity in question has other, non-monetary, uses, such as being consumed or used as input in production. This is the only occasion in orthodox economic theory when the value of an item is not determined by the market. As with all other commodities, the value of gold and silver is determined by supply and demand, but, if they are used as a medium of exchange, their value becomes intrinsic. This notion of intrinsic value is also maintained in the case of commodities used as reserves to back note issuance. As long as that are sufficient reserves to guarantee the redemption of circulating notes in a fixed quantity of gold or silver, the value of the currency is considered to be intrinsic. Thus a currency board system that holds foreign currency as reserves, at least in theory, is totally at variance with a specie standard system.

The value of money based on fractional reserves is crucially dependent on the issuer's ability to redeem the notes with the appropriate commodity. Demand and supply will affect the reserves behind, and thus the value of, this type of money. Still, since the reserves consist of a commodity, the value of the money is basically considered to be intrinsic.

The explanation of what gives value to fiat money is based on the concept of transaction costs and the role of money as a lubricant for the economy. Money stores information and reduces the search and bargaining costs present in a barter economy. The fiat money's valuation thus becomes dependent on its ability to reduce such

¹⁴ See Chick, V. (1992), in particular Chapters 8 & 9. Victoria Chick argues that the quest is to know what characteristics that makes certain assets become and remain generally acceptable as means of payments, as well as explain how confidence, which is a prerequisite for an asset to be used as means of payment, is achieved (Chick, V. (1992) p. 146). There are many examples in the Swedish financial history of different kinds of IOUs, issued by private persons, enterprises, and authorities, that for a period of time have circulated as more or less universally accepted means of payments. Eventually these have been replaced with some other kind of IOU. Recently I have engaged in a research project entitled "Means of Payment in Circulation. Money and Credit in Sweden, 1668 – 1903" aiming at answering the questions posed by Chick by utilizing the empirical material in the Swedish case. This project is joint with Torbjörn Engdahl at Uppsala University (currently at LSE) and is funded by the Swedish Research Council.

transaction costs. This ability is a direct function of the demand for the particular kind of money in question, which, in turn, depends on public confidence and ultimately on institutional and organizational features. In the case of fixed exchange rates, these included the reserves of the issuer. Thus even the valuation of non-commodity money, like all price setting, is a contextual process. It obeys economic laws, but it is not independent of place and time.

The Post-Keynesian, so-called Endogenous Approach to Money, has a broader view of the concept of money in that it distinguishes between money and mediums of exchange. Money is viewed not just functionally, but also in terms of how it enters the economy. The basic preconditions for the existence of money is the recognition of private property. Money and private property, in turn, are preconditions for the existence of a capitalistic market economy. Money comes into being endogenously with the capitalistic production of goods and services.¹⁵ The distinction between a real and a nominal economy is thus questioned. It is not possible to analyze monetary parameters independently of the real economy and vice versa.

This Endogenous Approach to Money sees money and credit as two sides of the same coin. Money is created when purchasing power is transferred from the future to the present, that is when one agent is willing to become the debtor of another agent. If a third party is willing to hold this debt, for instance in the form of an IOU, then it circulates as a medium of exchange. This circulation may proceed to the point that the debt becomes universally recognized as medium of exchange. An example of this process are the liabilities of the State incurred through the central bank. As L. Randall Wray defines money in his 1990 book “Money and Credit in Capitalist Economies. The Endogenous Money Approach”:

“In summary, money is a balance sheet item, or a unit of account, which finances a flow of spending. It is created as one transfers purchasing power from the future to the present, and can be held in an uncertain world as insurance to meet expected and unexpected payment commitments because it is the generally recognized form of purchasing power and the universally recognized means of retiring debts.”¹⁶

There is a distinction between money and liquid assets. By definition, the more liquid an asset is the more quickly it can be converted into means of exchange with little loss of value. Thus, the most liquid asset is the universally accepted medium of exchange. There is a difference of opinion as to whether the State creates the universal medium of exchange through its approval or if it is the market’s approval that matters.

Clearly the process through which some type of debt becomes, or does not become, the accepted means of payment hinges on circumstances and on institutional and organizational features, that is, it is contextual. There is simply no clear definition of

¹⁵ Also Schumpeter, Minsky and economists of the Austrian school does to different degrees share this view.

¹⁶ Wray, L.R. (1990) p. 13

which assets are to be included in the concept of money. Once again, this has to be determined on a case by case basis.

Money, credit and the medium of exchange will be supplied in response to demand. Either the State, or some private issuer of the medium of exchange, will meet this demand, or else the banking system likely will create money by altering the composition of its balance sheet. If these systems all fail to satisfy the demand, lower quality means of exchange may appear. Reserve requirements will not strictly limit the supply of money as a medium of exchange, but they may force the economy to rely on means of payment other than formal central bank notes and coins.¹⁷

What gives money its value is not the reserves, but simply the fact that they are transferable, that is they are demanded by others. Formal, State issued, money retain their value as long as they are generally accepted and can be used for transactions with the State. Thus, even though the means of payment were technically based on a commodity under the classical specie standard, their value was still determined by the market.

Barter, Money and Credit

A question still remains as to why the theory of modern fiat monetary systems should not be applicable to so called commodity money? Fiat money is defined as a negative mirroring of commodity money, that is money that can not be used for consumption or production. Modern monetary theory usually does not deal with commodity money systems since these are considered to be a thing of the past. The Endogenous Approach to Money views the barter economy as being essentially without money or credit, arguing that this was suitable for economic systems lacking private property.¹⁸ The theoretical argument for the necessity of a monetary means of exchange to lubricate the economy advanced by traditional Keynesians and Monetarists, is derived from a hypothetical primordial money free barter economy.

This theoretical notion of a barter economy, including the idea of a "double coincidence of wants", used as the basis for such explanations has a rigid view of the economic relationship between agents. Both agent A and agent B are assumed to be price takers. Thus there is one correct price for each commodity at which agent A will

¹⁷ See Bell, S. (2001) and Wray, L.R. (1990). This is exactly what happened in the Argentinian crisis recently, when the banking system was forced to freeze public assets in order to protect the fixed exchange rate towards the US \$.

¹⁸ The historical derivation and argumentation that this type of society indeed has existed, for instance in feudal Europe, is not empirically convincing. I would argue that it is more probable that the view on "commodity money" as apart from "fiat money" is misleading.

sell his or her surplus to agent B.¹⁹ Transactions costs arise when agent A searches for agent B, or vice versa, to execute the transaction. Under these circumstances, money will serve to decrease transaction costs. This makes the origin of money as a commodity logical since no one would accept a medium of exchange if it did not have value in some other arena.

A striking feature of the barter model is that people are reduced to isolated individuals that lack all of the social contacts that would facilitate exchange. The derivation of the existence of money from such a hypothetical case demonstrates the existence of a consensus that the function of money is to serve as a medium of payment (exchange). It also, however, means that monetary theories are based on a misleading assumption. Monetary theory still faces the problems discussed above: 1) How does money enter the economy? 2) What properties does money have that makes it acceptable as a means of payment (exchange)? and 3) How is money endowed with value? A fourth question arises in the context of so called fiat money: Why would any rational individual accept something that by definition is without value in exchange for a good or service that can be consumed or used as a productive input?

There are numerous theoretical models that answers one or two of these question at a time. None, however, can answer them all, despite reliance on far fetched assumptions. Furthermore, no consensus exists as to what constitutes money. That is to say, what will serve as a means of payment or exchange. Instead, a circular definition is used. Money is defined as whatever fulfills the function that explains why fiat money is accepted.²⁰

¹⁹ The constraint of the right price may be softened by introducing the possibility to haggle, but the main transaction cost to find this 'double coincidence of wants', remains.

²⁰ In their article from 1989 "Money as a Medium of Exchange", Kiyotaki and Wright defines commodity money and fiat money by negative mirroring. Thus, fiat money is defined as an intrinsically useless "good" with the specific property of being totally indifferent for the utility of the people in the economy. This "good" is introduced from nowhere. The overall utility increases if this particular "good" replaces commodities as medium of exchange. Since the commodities are assumed to be positively related to the utility when consumed, this outcome is intuitive from the assumptions. So is the outcome that only commodities will circulate as mediums of exchange if the first agents do not believe the fiat money is possible to transfer in the future, since the fiat money has no value. "..., a critical factor in determining if an object can serve as a medium of exchange is whether or not agents believe that it will." (Kiyotaki, N. & Wright, R. (1989) p. 928) Thus, I would argue that the conclusions are mainly contextual. "We also demonstrate how genuine fiat currency may, or may not circulate in the economy, depending on extrinsic beliefs, or social customs, as well as preferences and technology." (Kiyotaki, N. & Wright, R. (1989) p. 928). The definition of a medium of exchange used by Kiyotaki and Wright is based on Wicksell, and may easily include all kinds of financial assets (Kiyotaki, N. & Wright, R. (1992) p. 18). In the article "Money and Prices: A Model of Search and Bargaining" (1995) the author, Shi, uses the same set of assumptions as Kiyotaki and Wright, to develop the model for, among other things, exchange market intervention. Note that these models assumes impossibility to hoard money, as the agents have to chose between accepting a medium of exchange or a commodity. Both can not be held at the same time. Another approach, but based on the traditional functions of money and the definition of fiat money as useless, i.e. not affecting utility of the agents, is arguing that money is memory. Memory is defined as: "knowledge on the part of an agent of the full histories with whom he has had direct or indirect contact in the past." (Kocherlakota, N. R. (1998) p. 232). Arguably, this approach is the balance sheet approach, without acknowledging the idea that money is part of a debt. On the contrary, Kocherlakota

These shortcomings in monetary theory, the definition of money as being whatever currently fulfills the medium of exchange function and money being externally injected into the economy, serves as the foundation of the proposition that money is neutral. This is a basic proposition of orthodox economic theory, especially Monetarism. This thesis presents three basic objections to the way money is perceived in orthodox monetary theory: 1) Its concept of a barter economy, which serves as the basis for the contention that money is simply a medium of exchange, 2) The assumption that economic agents are isolated individuals, lacking all social contact and 3) The distinction drawn between commodity and fiat money. The very existence of fiat money is based on the assumption that a "good" totally lacking in utility circulates as the medium of exchange. Fiat money is thus distinguished from commodity money, which has alternative uses that yield positive utility. Taken together, these objections lead to the conclusion that money is not an exogenous part of the economy.

This theoretical barter economy not only lacks money, it also is devoid of credit. Historical insights into the functioning of economic relationships in societies lacking a formal monetary system (i.e. what should be barter systems), however, reveal the existence of credit transactions among individuals. Rather than being unable to dispose of their surplus production at all, sellers were willing to accept some form of future payment, perhaps in form of a written promise of future payment (an IOU). The transaction would occur as long as difference in utility between keeping the product and selling it for a future payment exceeded the likely loss on that payment (including the risk of it being reneged on). This promise of future payment (IOU) might also be transferable to other agents who recognized its credibility. The larger the number of people prepared to accept the IOU as payment, the greater its value.²¹

In short, there simply exists no convincing evidence, historical or theoretical, that there is any difference between what is labeled commodity money and so called fiat

argues that money does not allow society to transfer resources over time. The idea that money is accepted because it keeps a track record is interesting but not convincing without a more complex view on money than that it is what circulates as means of exchange. Why would the agents in an economy bother to keep a track record of the past? Basically the question must be asked, what possibility there is for the holder to use the money in transactions in the future. One conclusion is as a consequence that commitment is essential (Kocherlakota, N. R. (1998) p. 244). The authors of these articles maintain the fundamental assumptions, and thus do not test the validity of the assumptions in existing monetary theory. Instead the authors seek to prove that the consistency of the theory holds. Where fiat money comes from is not discussed, the value of money is derived from the possibility to decrease transaction costs (increasing the probability of a match), and there are no attempts to define what assets that will serve as money (by decreasing transaction costs or keeping memory). Thus, money and its origin is still a mystery.

²¹ Even in late nineteenth century a large part of the Swedish money supply held by the public was in the form of private IOUs, see Lindgren, H. (2002).

money. Nor is there any evidence that money is an invention that was exogenously injected as a lubricant to reduce transaction costs in a barter economy. Bank notes are accepted because individuals know that they will have the ability to transfer these notes in the future with little risk of loss, or at least with a loss lower than the cost of refraining from the transaction. The same argument holds whether the payment consists of a shell or a piece of gold. When the transaction involved an agent that was outside the network and thus unable to collect the debt personally, a means of payment acceptable in a wider network was needed. The fact that certain commodities were chosen for this role increased their value, not the other way around. Although there is always the possibility that the commodity used as money will decline in value, the more widely it is considered valuable, the less likely this is to happen.

Its rejection of the existence of special features of commodity money, makes the Endogenous Approach to Money an appealing approach to studying monetary issues in transitional economies such as nineteenth century Sweden. Money should be viewed like any other financial commodity with a future expected value. It certainly obeys general economic laws, but its value or what it consists of is determined by the market and may only be fully explicable *ex post*. This observation leads to the conclusion that what constitutes money and what endows it with value can only be determined through empirical research.

Theories of the Adjustment Process

Interlinked with monetary theory are hypothesis concerning how monetary systems and exchange rate regimes work. The one associated with the classical specie theory, and thus compatible with classical economic theory and the quantity theory of money, is the Price Specie Flow Mechanism. Originally this theory only considered capital movements associated with trade in commodities and services (as in the current account). More recently, however, it has been widened to also include short and long term capital flows associated with activity on international capital markets.

A deficit in the balance of payments leads to a reduction in reserves, and since reserves have a fixed relationship to the money supply provided by the authorities, a reduction in the money supply follows. According to the quantity theory, the reduced money supply will result in lower prices. Since this means that domestic prices will be low relative to prices in other countries operating under a fixed exchange rate, exports will increase and imports will decline. This, of course, will tend to restore equilibrium in the balance of payments.

The so-called rules of the game concept, which supposedly describes how central banks operated under the classic gold standard, is based on this classical theory. In order to maintain the specie standards, central banks were admonished not to sterilize the

effects of capital flows on the domestic economy. On the contrary, they might even act to accentuate them, thereby accelerating the adjustment process.²²

The monetarist perspective on the adjustment process is related to the classical view, but the causality posited is very different. The Monetary Approach to the Balance of Payments considers changes in the balance of payments to result from a domestic imbalance in the demand for, and the supply of, money. The balance of payments is one mechanism for correcting such an imbalance. Increased demand for money will eventually force the central bank to supplement its reserves used to back notes. In an economically integrated world, purchasing power parity will cause the prices in open economies to follow those in their trading partners. Increases in international, and thereby in domestic, prices may thus lead to an increase in the demand for money.

In theory there is a strict correspondence between the so called monetary base, usually defined as the monetary liabilities of the central bank, and the money supply created by the banking system. This money supply is the product of the money multiplier times the monetary base. The money multiplier, in turn, is a function of the commercial banks' reserve/deposit ratio and the non bank public's currency/deposit ratio.²³ Thus the central bank, or whoever issues base money, can control the overall money supply.

The Endogenous Approach to Money maintains that no such relationship exists. Furthermore, since money and the medium of exchange are supplied in response to demand, there can be no over issuance of money.²⁴

Free Banking Theory

The theory of free banking, arguably based on the historical example of Scotland during the period 1716-1844, is a monetary model based on fractional reserves and incorporating a belief in the supremacy of using gold reserves. A true free banking system must be based on the principle that banking should not be subjected to any legislation different from that applied to business in general. Thus it has no need for

²² According to empirical research it is dubious whether any central bank under the classical gold standard period actually followed these rules of the game.

²³ Officer, L.H. (2002) p. 114. Currency in this case denotes the amount of circulating mediums of exchange, which usually in economic theory is defined as issued by the central bank. Again this shows the contextual nature of such measures.

²⁴ As money is supplied because someone wants it, an excess money supply is said to force the invention of Friedman's helicopters.

restrictions on the issuance of bank notes, barriers to entry or reserve requirements. Naturally, no state sponsored central bank is called for.²⁵

A focus on note issuance follows from the conclusion of orthodox economic theories that to control note issuance is to control the supply of credit.²⁶ Free banking theory, however, argues that the system is fully self adjusting. As with any other product, the supply of notes will equal the demand. Here a distinction must be drawn between the ability to issue notes and the ability to keep them in circulation. One of the keys to this system is the emergence of a clearing mechanism to balance transactions among the banks. A bank that over issues notes will lose reserves due to declining public confidence. The notes will be, directly or indirectly, returned to the issuing bank to be exchanged for reserves in accord with the law of adverse clearing. At the same time, an over issuing bank will damage its reputation causing the public to seek out notes from banks with a higher reserve ratio. The reserve ratio is not the subject of legislation. Instead the interaction of the banks and the public will lead to the emergence of principles of good practice.²⁷

The theory of free banking under fractional specie reserves is linked to the monetary approach to the balance of payments as a theoretical model of the workings of the gold standard.²⁸ The money supply would be brought into equilibrium through international specie flows. If all the banks in one region over issued notes, then reserves would either flow out of the region, be hoarded by the public or both. The reserve ratio of the banks in the region would thus decline.²⁹

Banks, Vulnerability and Capital Markets

All banks, including central banks, are subject to reserve draining runs. This sad fact of banking life raises the next question to be addressed: How significant were the note issuing Enskilda banks in the development of liquid capital markets in Sweden?

Since this question poses a strictly economic causal relationship, the analysis will be based on economic theory. In particular, a model derived by Douglas W. Diamond that focuses on the relationship between banks and the development of liquid capital markets will be used. Its starting point concerns the trade off banks face between

²⁵ Selgin, G.A. & White, L.H. (1994) pp. 1718-1719. Sechrest argues that both Smith and White have overvalued the freedom of the Scottish system. Usury laws, minimum denominations, privileged chartered banks among other things limited the free banking of Scotland. (Sechrest, L.J. (1993) p. 92)

²⁶ Smith, V.C. (1990) pp. 9-10

²⁷ Sechrest, L.J. (1993) p. 14, Selgin, G.A. & White, L.H. (1994) p. 1720, White, L.H. (1985) pp.119-121, White, L.H. (1989) pp. 21-22, 27-28, 23-36

²⁸ Regarding the Monetary Approach to the Balance of Payments under the classical gold standard, see McCloskey, D.N. & Zecher, R.J. (1984) & McCloskey, D.N. & Zecher, R.J. (1985).

²⁹ White, L. H. (1989) pp. 21-22, 27-28, 32-36. It is even argued that the international adjustment mechanism is not fully operational without a pure free banking system (White, L.H. (1985) pp. 119-121).

vulnerability and efficiency. The lower their reserves the greater their efficiency, but also the higher their vulnerability.

Basically the model asserts that in illiquid capital markets, uncertainty, and therefore, volatility, is great. At the same time, banks are forced to hold liquid assets as reserves in a case of a run on their deposits or notes. These liquid assets are thus kept from circulating on capital markets. By contrast, when banks start to purchase and hold financial assets, liquidity is added to capital markets. The more liquid these markets become, the more the banks can substitute financial assets for fully liquid assets in their reserves. In case of a run, these financial assets now can quickly be converted into liquid assets.³⁰

Lender of Last Resort Theory

Analysis of the relationship between the support of banks and the fixed exchange has its basis in economic theory, particularly the theory of last resort lending.³¹ Of particular importance is the strand of economic theory dealing with the provision of lending of last resort services and the occurrence of currency crises in a country whose currency, relatively speaking, is not in great demand. As was the case with nineteenth century Sweden, these countries usually are considered to be transitional economies.

The theoretical argument goes as follows: Domestic banks are subject to runs on their reserves of national currency. Regardless of its reserve position, the central bank responds by issuing more currency to assist the domestic banks in trouble. The public converts their deposits with the domestic banks into the national currency, but they do not trust the value of that currency. Therefore, they will convert their national currency into central bank reserves at the fixed rate, thus igniting a currency crisis.³²

This process has not been accepted as part of the nineteenth century specie standard mechanism. Once again, this is probably a contextual matter. The lender of last resort concept was created and developed in then richest country, Great Britain, which had the most widely demanded currency of the day. Thus, the question of whether the Swedish experience in this regard differed significantly from that of Great Britain arises.

³⁰ See Diamond, D.W. (1997), Diamond, D.W. & Dybvig, P.H. (1983) and Diamond, D.W. & Rajan, R.G. (2001).

³¹ See Bagehot, W. (1866) and Bordo, M.D. (1989).

³² See Chang, R. & Velasco, A. (1998).

Methodology

The historical method is designed to analyze how and why an event or process occurred as it did and why a particular outcome resulted. It can be used to provide answers to questions concerning how and why social phenomena changed over time, and why this change occurred when it did. Thus, the historical method relies on comparisons, both over time and between entities.

Both quantitative and qualitative source material is evaluated according to criteria that are part of the historical method. These are intended to separate historical "facts" from historical fiction.³³ Present within the historical approach is what an economist would refer to as rational choice under conditions of bounded rationality. Historians search for an actor's inner motives, given the context of their actions.³⁴ Thus, statements contained in the sources can not uncritically be accepted as facts or universal truths. Both qualitative and quantitative sources might be biased. The scholar instead has to inquire as to the circumstances under which the source was constructed and what connection the author of the source has to the statement. A question has to be asked concerning what possible economic and political motives underlie the source. Consequently, there is great stress on the context, since motives can only be determined with a detailed knowledge of the circumstances.³⁵

Basic statistical time series analysis provides a structure for analyzing complex quantitative relationships, while the historical method is used for analyzing qualitative material in a structured and consistent manner. The extensive use of appropriately analyzed qualitative material is intended to yield more substantial, generally valid, results than those that can be obtained from coincidental assertions, often referred to as "anecdotal evidence."

Qualitative Methods

The historical method assumes rationality within a particular context. To evaluate and analyze qualitative source effectively certain disturbing anachronistic notions have to be avoided. This is done in three ways: 1) By assuming that our predecessors were as rational as we, and mainly driven by the same forces, 2) By understanding that people are social and adaptable beings and 3) By exploring the context within which people

³³ The historical fact in this sense is actually a question of what the researcher views as the most likely interpretation. A fact is that Sweden officially readopted the silver standard in 1834. But as E.H. Carr puts it: *"To praise a historian for his accuracy is like praising an architect for using well-seasoned timber or properly mixed concrete in his building. It is a necessary condition of his work, but not his essential function."* Carr, E.H. (1987) pp. 10-11.

³⁴ The Swedish historical tradition (also known as the *Weibull* tradition) of source criticism in order to seek for these inner motives emerged in the early twentieth century.

³⁵ See chapter 5 in Jarrick, A. & Söderberg, J. (1993). This view is closely related to what is presented in "Analytic Narratives" (see the section on a theoretical approach to political economy).

have lived, worked and made choices. These three points are highly interrelated: the first assures that actions will not be explained by alleged stupidity, the second recognizes the people wish to fit into groups and hence are affected by the institutions that govern such groups and the third serves as a reminder that our view of the world is not now, nor has been in the past, universally accepted.

Two methodological problems arise when using sources that are principally political in nature: 1) They are not independent and 2) They are tendentious. The content of such sources is analyzed through the filters of rational choice and socially acceptable discourse. That is, actors are ruled by their inner motivations (or preferences) and they utilize the discourse or rhetoric that is politically acceptable to legitimize these preferences. Thus, the institutions they try to introduce reveal their preferences and their arguments reveal the accepted political discourse. Naturally, different groups will support different institutional innovations and will use different arguments. The arguments used, however, are selected simply for their expected ability to convince the rest of society. Some of the actors' arguments may also be derived historically, but seldom do these historical arguments coincide with the views and historical perspectives of other actors.³⁶

Quantitative Methods

Quantitative methods are used in five different ways: 1) Quantitative data is plotted and viewed over time and relative to other data, 2) Correlations among various variables are studied, 3), Causality between a number of independent variables and one dependent variable is assumed and then subjected to testing using Ordinary Least Square regressions, 4) Causality among a number of variables is tested using so called Vector Auto Regressions and 5) Johansen's test for cointegration is used to evaluate long term relationships in levels between two or more variables that do not obey the laws of stationarity.

Since this quantitative data largely is in the form time series, most of these series are non-stationary. That is, they do not have a constant mean value over time. Despite its acknowledged problems, the Augmented Dickey-Fuller test was used to test the stationarity of the series.³⁷ In addition to the tests, plotting the data to view the nature of

³⁶ In the 1840's and 1850's both the groups supporting private note issuing banks and those opposed derived their views on the current banking system from "history" and the original "intentions" of the Parliament when accepting private banks. None of these descriptions matched each other by a long shot, or what the sources indicated had happened only twenty years earlier (see PrBd 1840/41 Vol. 7 pp. 228-231, PrAd 1844/45 Vol. 6 pp. 440-444, PrP 1850/51 Vol. 2 pp. 332-334, PrAd 1856/58 Vol. 4 pp. 143-147).

³⁷ Regarding the problems of ADF test, see chapter 4 in Maddala, G.S. & Kim, I-M. (1998).

the series is useful. Non-stationary series corrupt significance tests of the variables and of the model as a whole. Thus, such series should be excluded from most statistical tests, with the exception of those for cointegration.

Series of first differences, of course, measure changes. They were therefore used when questions arose as to if and how changes in one variable affected changes in another dependent variable. Usually such series of first differences are stationary. The logarithmic form, however, is used when it is important to evaluate the internal relationship among the variables in terms of elasticities (or percentage changes). The choice of a significance level is of course always discretionary.³⁸ Usually significance at the 5 % level is considered as desirable to rule out the possibility of coincidence, thus this level is used as a rule of thumb.

The assumption underlying the cointegration test is that non stationary variables may still be closely related if the residual between the two series is stationary. Thus, cointegration indicates that long term changes in levels (growth or decline) of two or more variables occurs in a way that is interrelated.³⁹

Just like the OLS test, the VAR is corrupted if the variables are not stationary. Using the VAR to test causality is preferable to the so called Granger test, because the former acknowledges the existence of interrelations among prior changes in both the dependent and the independent variables. Still, like the Granger test, the VAR test can not actually prove causality, only determine the precedence of change in one variable before another. Once again, first differences of the series are used to emphasize changes in the variables.

The greatest reliance on quantitative material occurs in Chapters 3 and 5. The first question dealing with how the Enskilda and the Joint Stock banks are perceived is addressed by first quantitatively aggregating these two types of banks into "systems" and then comparing their key parameters.

As to the question concerning the role of the Enskilda banks in the development of liquid capital markets, the evidence consists of the aggregated balance sheets of all the Enskilda banks. Since the number of banks changed over time, and they were at different points of their life cycle at any given point in time, a comparison over time required that all types of assets and liabilities were measured in relation to total assets.

Since the question concerned what types of assets and liabilities affected the liquid reserves of the Enskilda banks, an OLS regression setting the banks' holdings of legal tender as the dependent variable was performed. On the assumption that it was changes in the dependent variables that caused the banks, or rather their boards, to alter their holdings of liquid reserves, first difference series were utilized.

³⁸ For instance Maddala, G.S. & Kim, I-M. (1998) p. 146

³⁹ See Enders, W. (1995) Chapter 6, and Maddala, G.S. & Kim, I-M. (1998) pp. 39-41. Both in the case of VAR and Cointegration tests, these have been started with a large number of lags that has been reduced.

One potential problem with performing the regression with the variables being measured relative to total assets (and, therefore, also to total liabilities) is that the variables are locked into a defined relationship. As a result the model's goodness of fit value (R^2) is extremely high (92%). Still, there are two reasons that this problem probably has not biased the results: 1) The independent variables do not appear to be strongly correlated internally (no multicollinearity), and 2) Running an OLS regression with the independent variables limited to the most important types of liabilities, thus dissolving the defined relationship to the dependent variable, did not dramatically alter the results. The most noticeable change was a drop in the value of R^2 to a less spectacular, but still impressive, value of 75%.⁴⁰

A follow up OLS regression was also estimated to see if the banks' holdings of financial assets were positively related to general capital market liquidity. Since they were not part of the equity capital, bond holdings were set as the dependent variable. The money supply in terms of M3 (notes in circulation plus the public's deposits in commercial and savings banks) was used as a proxy for capital market liquidity. Because the effect being tested was quite long run in nature, first differences were not used. To facilitate evaluation of the coefficient values, the variables were converted to logarithmic form.

In addition to these tests, a Chow breakpoint test was used to estimate the likelihood that a structural break occurred at some key point in time. The occasion posited was when the establishment of Enskilda banks was virtually freed of all practical limitations, resulting in a very rapid increase in the number of such banks.⁴¹

In Chapter 4 the development over time of the system of Enskilda banks and of the Riksbank is analyzed, with the quantitative material being plotted on graphs. This includes comparisons with other nations operating under the specie standard. In order to determine if the 1874 legislation substituting gold for Riksbank notes as backing for Enskilda bank notes actually halted the use of Riksbank notes, an OLS regression with note issuance as the dependent variable was estimated.⁴²

The examination of the causality among reserves, the money supply and prices in Chapter 5 made use of all five quantitative techniques. Since the theories tested posited that changes in one variable affected changes in another, VAR tests of first differences were used. Posited long term relationships in the rate of growth of the variables, when

⁴⁰ See Appendix B to Chapter 3

⁴¹ Chapter 3 and the Appendix to Chapter 3 contains more specific information of these analyzes.

⁴² To make a comparison over time possible as the number of Enskilda banks changed, all variables are set in relation to total Enskilda bank assets. Regarding more specific information of this analysis, see Chapter 4, and the Appendix to Chapter 4.

they were non-stationary and gave no evidence of a structural break, were, when possible, tested with Johansen's test for cointegration. Since no causality was assumed, the international integration of prices was tested with correlations between the first difference of Swedish price series with those of some of her principal trading partners. Finally, the results of the VAR tests of causality were used to construct an OLS regression model that makes changes in domestic prices dependent on prior changes of such prices and the money supply (currency in circulation), as well as on current changes in GDP and international prices.

Two aspects of the descriptions of how lender of last resort services in the classical sense might be provided formed the basis for the analysis of whether or not the Riksbank was prepared to endanger the specie standard to this end. One possibility was to inject liquidity by briefly suspending convertibility and the other was to announce, in advance, an intention to support the banks in case of a panic

The former alternative was tested by calculating the extent to which the Riksbank violated the requirements of the specie standard by briefly exceeding the legal limits on the issuance of notes during times of crisis. The latter was also investigated and found not to apply to the Swedish case, a result also supported by the qualitative sources.

Methodological Problems and Definitions

Methodologically speaking, units characterized by the same features, preferences and interests can be aggregated into groups. In practice, however, all the social sciences and all methods face the same problem: that is, what does the group actually represent.⁴³

In this thesis, the Enskilda banks are aggregated into a system based on their right to issue notes and the requirement that their owners accept unlimited liability. In chapter 2, Members of Parliament, as well as the Crown (or government), were aggregated into groups on the basis of what was believed to be their common preferences. Since group preferences are not necessarily stable over time, intra group conflicts also were studied. When preferences appear to have changed, the group either had to be reformulated, or else the preferences of the group had to be revised.

Another problem concerns the use of monetary measures such as monetary base, M1, M2 and M3. These labels are used for the sake of simplicity. As demonstrated in the section on monetary theory, however, the concepts to which these labels are applied are neither universal nor immutable. Since the definition of money is contextual, no

⁴³ The same problem is of course present in quantitative studies. What does groups labeled for instance commercial banks, Sweden or Multinational enterprises imply? In fact it is almost impossible to make a satisfactory definition that will embrace all of the members of the group and at the same time exclude all others. Methodological discussions concerning these issues are surprisingly few when it comes to quantitative methods in social sciences. This is probably because often when working with quantitative data, the researcher in person do not have to make these distinctions and then sort the material into different groups. This is frequently the case when working with qualitative sources.

fixed definitions of these measures exist. These definitional problems are discussed further in Chapters 4 and 5.

In modern monetary theory, the monetary base, usually defined as the monetary liabilities of the central bank or the assets used as reserves by the commercial banks, is labeled M0. Today, M1 consists of circulating currency plus the public's holdings of demand deposits in commercial banks. This, however, is not appropriate measure for nineteenth century Sweden. Whether or not a deposit was subject to withdrawal on demand mattered little. Banking offices were few and far between, and their hours of operation limited. There was a huge difference in the velocity of notes and of demand deposits. The appropriate measure of M1 should be limited to currency in the hands of the public, including coins, deposits with the central bank and Enskilda bank notes, minus central bank notes held by the Enskilda banks as backing for their notes.

Since no data on the circulation of coins exists, and both recent and contemporary sources describe coin financed transactions as being rare, these are not included. Thus, the measure of currency (M1) consists of Riksbank and Enskilda bank notes in the hands of the public. The justification for treating Enskilda bank notes as currency, although not as base money, is that they circulated at par with Riksbank notes and were accepted for bank deposits, after 1869 even for deposits in the Riksbank. Because the Enskilda banks backed their notes with holdings of Riksbank notes, the former ultimately were a claim on the reserves of the Riksbank. It should also be remembered that their notes formally were the only liabilities that the Enskilda banks were compelled to back with reserves.

In this thesis, M2 is defined as notes in circulation plus demand deposits in commercial banks. It is only included because it has been used in previous work. It is not, however, an appropriate measure of the money supply in nineteenth century Sweden. To the extent that demand deposits in the commercial banks is of interest, it is better to include the public's deposits in the so called Savings banks, here referred to as M3. This is the case because the Swedish Savings banks, unlike those in Great Britain and the United States, principally functioned as commercial banks.

Sources

There are three reasons for utilizing both quantitative and qualitative sources: 1) Some questions can only be analyzed with qualitative sources, 2) Some questions can only be analyzed with quantitative sources and 3) Most questions can most thoroughly be analyzed using both qualitative and quantitative sources in a complementary fashion.

Thus, there exists no *a priori* advantage to using one type of source or the other. The best alternative available depends on the problem.

Qualitative Sources

In addition to complementing the quantitative material, qualitative sources provide the basis for those parts of the thesis that are not subject to quantitative analysis. These qualitative sources provide evidence concerning the preferences and the strategic choices of actors, as well as specifying the context within which decisions were made.

Qualitative sources are used to varying degrees in all the chapters. They play their most prominent role, however, in the discussion of the political background to the emergence of the commercial banking system in Chapter 2. The sources for this chapter consist principally of parliamentary publications dealing with banks and the issuance of bank notes.⁴⁴ Thus, the attitudes of various actors within the Parliament is well documented. Royal decrees and publications, as well as the writing of Minister of Finance C.D. Skogman, represent the view of the Government. Moreover, the writings of the Minister constitute a chronological survey of the history of the Swedish central bank and the Swedish credit market from the seventeenth century until the mid nineteenth century. It is the author's position that makes it a source for this thesis.

The minutes, correspondence and journals of both the Riksbank and the National Debt Office have been used to determine the preferences of these organizations. This is especially the case in chapter 6, where monetary policy and lender of last resort activities during the deeper financial crises in Sweden are evaluated. The most likely bias of these sources is in favor of those who composed them is not denied. They do, however, unquestionably describe the experiences and reveal the preferences of the boards of the Riksbank and the National Debt Office.

It is not clear whether the material from the Riksbank and the National Debt Office should be classified as qualitative or quantitative sources. They include the minutes and ledgers of the Railroad Mortgage Fund, administered by the National Debt Office, the minutes concerning the loans and the international loan contracts of the National Debt Office and the ledgers of the Riksbank's Loan Fund.

Quantitative Sources

As is the case with qualitative material, quantitative sources, in addition to complementing qualitative sources, provide the basis for analysis that requires quantitative data. There are two principal areas where this thesis contributes new data series: 1) The Swedish money supply and monetary reserves between 1834 and 1913

⁴⁴ Of help when using Swedish Parliamentary material is the fact that the material from 1809 and onwards is indexed, making it possible to find the location regarding certain topics in the vast material that constitutes the Parliamentary publications.

and 2) The aggregate assets and liabilities of the Enskilda banks between 1834 and 1900. These new series are based on annual data. The underlying data on which these series are based is interrelated, since the Enskilda banks based their issuance of notes on Riksbank notes and, after 1874, also on specie.

Earlier estimates of the money supply are seriously flawed for the period from 1834 until 1871. No figures on Enskilda bank reserves, and thus of their holdings of Riksbank notes, existed for the years between 1857 and 1870. Brisman presented a series of Enskilda bank holdings of legal tender for the years 1834-1856, but he provided no source. Unquestionably these figures had been collected in 1858 by the Special Committee on Finance. As such they were provided by the banks themselves at the behest of the Committee and they were neither complete nor in accord with the balance sheets that had been submitted for those years.⁴⁵ Jonung also failed to provide a source, but he probably relied on Brisman's data for the years when it was available. For the years 1857-1870, he simply assumed that Enskilda bank holdings of Riksbank notes remained constant at ten million SEK.⁴⁶

New annual series of the Enskilda banks' note issuance, reserves and unutilized issuance rights were constructed from the time of the re-adoption of the silver standard in 1834, until these notes ceased being issued at the turn of the twentieth century. This data was collected from these banks' officially published balance sheets contained in *Post & Inrikes tidning* [Official Swedish Gazette] for the years 1834-1870 and *Sammandrag af Bankernas Uppgifter* [Summary of Bank Reports] 1871-1906. These sources are available in the Swedish National Library. The accuracy and reliability of these self reported figures is not obvious, but when differences with other sources were detected, the balance sheets reported less favorable (i.e. lower) ratios of reserves to notes.⁴⁷

Notes and specie together were reported as a single item in the balance sheets of the Enskilda banks from 1834 through 1874. Starting in 1875, the Enskilda banks' holdings of specie coins and Riksbank notes were listed separately. For the years, 1836 through 1840, no balance sheets for the oldest Enskilda bank, Skåne Enskilda Bank, could be located. The same was true for the second oldest bank, Wermland Enskilda Bank, for 1841-42. For these years, figures on their holdings of coins and Riksbank notes, have been taken from Brisman's *Sveriges Affärsbanker – Grundläggningstiden*. Data on their

⁴⁵ Finanskommittén 1858

⁴⁶ Jonung, L. (1989). In his estimation of the Swedish money supply he does not confront the problem of deducting Riksbank notes held by Enskilda banks prior to 1871 (Jonung, L. (1975) p. 219).

⁴⁷ See Brisman, S. (1924) pp. 246-247, BaU 1853/54, Finanskommittén 1858 and Sveriges Riksbank (1931) pp. 172-185

note issue comes from *Sveriges Riksbank 1668-1924, Bankens tillkomst och verksamhet. Part V*.⁴⁸

For 1866, the published balance sheets referred to the end of September of that year, instead of December 31, as was otherwise the case. For 1866, the figures have been supplemented with data from Sveriges Riksbank (1931) concerning note issuance reserves. For 1867, Enskilda bank holdings of legal tender has been estimated to be their total cash reserve minus two million SEK.⁴⁹ In the absence of any information for 1835 and 1867, the level of unutilized rights to issue notes as a ratio of notes actually issued for those years was assumed to be halfway between that of the previous and that of the following year.

Data concerning the reserves and note issuance of the Riksbank was taken from Sveriges Riksbank (1931) "Statistiska tabeller" [Statistical tables] in *Sveriges Riksbank 1668-1924. Bankens tillkomst och verksamhet. Part V*. This is the final volume of a monumental history of the Riksbank written between 1918 and 1924. For the purpose of that work, the statistical division of the Bank collected statistical material concerning most aspects of the Bank's operation.

To calculate the money supply in terms of M2 (M1 plus deposits in commercial banks) and M3 (M2 plus deposits in savings banks), material was collected from Sveriges Riksbank (1931) pp. 172-185 and SCB [National Bureau of Statistics]. The money supply to reserves ratio was also compared with that in other countries. Data on Finland is from Hugo Pipping's History of the Finish Central Bank. As to the principal European central banks, the Bank of England, the Banque de France and the German Reichsbank, Marc Flandreau has graciously made available the series he and his colleagues have collected.⁵⁰

It has been assumed that the circulation of specie and coins was negligible, thus making the circulation of notes a trustworthy proxy for the money supply in terms of M1. This assumption is in line with earlier research and, more importantly, accords well with contemporary sources. This lack of specie and coins in circulation, due to a lack of

⁴⁸ The problem of finding data from these years might have to do with the fact that these banks applied for prolonged charters. To apply for a prolongation of the charter involved the problem of exchanging all of the Enskilda banks' circulating notes before the termination of the old charter. Despite Skåne Enskilda banks attempts to prolong the period of time for exchanging all of its notes due to its new charter this was turned down by the king both as the first charter ended in 1841 and the second in 1849 (Kock (1931) pp.103-104). Skåne Enskilda bank did not publish any balance sheets for 1841-42 but did publish material concerning its note issuing. The auditors' reports concerns the period January 1 1841 until May 31 1843 (Kock (1931) p.183)

⁴⁹ Why this was the case only for the end of years 1866 and 1867 is probably because many new banks were established and most of the older banks applied for new charters. The charters and the accounting years ended for most banks on the last of June.

⁵⁰ See Chapters 4 and 5

what was then considered to be proper money, is also one of the principal points of this thesis.⁵¹

One problem relative to the circulation of notes is whether or not it was geographically limited to Sweden. It is definitely reasonable to assume that such was usually the case. Still, there are some known exceptions. Riksbank notes circulated in Finland at least until 1850. This, of course, is not overly surprising since Finland was a part of the Kingdom of Sweden until 1809. The economist David Davidsson calculated that the circulation of Riksbank notes in Finland in 1840 amounted to approximately nine million SEK. This result is based on the quantity of Riksbank notes exchanged for silver or bills of exchange during the period 1840-1850. The lion's share of this amount, 7.3 million SEK, was cashed in during 1840 and 1841. The conclusion that Riksbank notes stopped flowing into Finland after 1840 is based on two observations: 1) The Swedish trade balance with Finland shifted from deficit to surplus starting in 1841 and 2) As of January 1, 1843, Swedish coins and notes were no longer considered legal tender in Finland and were to be removed from circulation. The circulation of Riksbank notes in Finland between 1834 and 1839 is accounted for in the estimates of the Swedish monetary base contained in Chapter 5.⁵²

It is also possible that some Enskilda bank notes circulated outside Sweden. By far the largest issuer of such notes was Skåne Enskilda Bank, and it is, of course, not unlikely that some of its notes circulated in nearby Denmark. During the crisis of 1857, large quantities of Skåne Enskilda Bank notes were presented for redemption by Danes.⁵³

A series of the total assets and liabilities of the Enskilda banks as a group was required for Chapter 3. Once again, these figures were assembled from the officially published balance sheets of these banks. Prior to 1848, some of the banks only published the entries on their balance sheets that affected their right to issue notes. Starting in 1848, however, the series is complete.

As to the note issuance and reserves of the Riksbank during the crises of 1857/1858 and 1878/1879, more frequently issued data was located in *Finanskommitten* 1858

⁵¹ This is more elaborated in chapter 3 and 4. In chapter 2 the lack of money and credit is on the agenda as the reasons why banks were established, and why banks had to be granted the right to issue notes.

⁵² Davidsson, D. (1931) pp. 205-209. A few rural areas in Finland were however, given some years of respite. The ban on Swedish tender in Finland was also the reason why the Riksbank consequently exchanged the notes for silver bullion and according to the chairman of the Riksbank the Finish central bank was the main buyer of silver bullion (BaU 1853/54 No2).

⁵³ See Chapter 6 and Brisman, S. (1934) pp.102-103, 105-106

[Special Committee on Finance 1858], and in the annual reports of the Parliamentary auditors concerning the Riksbank.⁵⁴

All figures have been recalculated into the Swedish currency unit, the krona or SEK, that was introduced in 1873. This new unit had the same value as its predecessor, the Riksdaler Riksmünt. This later unit, in turn, had been introduced at the beginning of 1858, replacing the Riksdaler Banco at the rate of 1 Rdr B:co = 1.5 Rdr Rmt. At the end of 1857, all but two banks reported their accounts in Riksdaler Riksmünt.⁵⁵

The GDP figures utilized in this thesis are from the series constructed by Olle Krantz. The current account, until 1912, is from the series produced by Lennart Schön (made available as an excel file). Finally, the data on foreign domestic bond loans has been collected from Flodström.⁵⁶

Summarizing the Thesis

This thesis has reached several principal conclusions. First of all, the establishment of the system of note issuing Enskilda banks did not result from ignorance of the principles of banking. On the contrary, it was designed to function given a specific economic problem, the lack of trustworthy means of payment and of credit. Although its creation was initially impeded by political wrangling and group interests (see chapter 2), the system of note issuing Enskilda banks was well designed to meet the demands of a credit market in transition under a fixed exchange rate (see Chapters 3 and 4). Ultimately it was based on the Enskilda banks principally holding Riksbank notes as reserves and on these notes being readily convertible into specie. Thus the Enskilda banks played a major role in the monetization of Sweden, and this monetization began to take effect in the late 1860's. The long term growth of the money supply, measured in terms of circulating Enskilda and Riksbank notes, was related to the growth of economic output. Specie holdings, or constructs such as the monetary base, had no measurable influence on the size of the money supply (see Chapter 5). The specie standard, however, did prevent the central bank from following the classical recipe for supporting the banking system in times of crisis, that is to temporarily abandon the specie standard. The specie standard was not to be put at risk. Thus instead, when reserves were shrinking, international capital markets were tapped (see Chapter 6).

Chapter 2, the first analytical chapter, "Institutions, Politics and Credits: Political Rational Choice in the Forming of the Swedish Credit Market, 1823 – 1906", explores the role of political struggles in the creation of the formal Swedish credit market.

⁵⁴ See Chapter 6.

⁵⁵ These two banks were Göteborgs Enskilda bank and Stora Kopparbergs Enskilda bank (Post & Inrikes Tidning 25/2, 26/2-1858)

⁵⁶ See Chapters 5 and 6

Particular attention is paid to the emergence of the private, note issuing, so called Enskilda banks. Rational choice analysis, together with the various strands of traditional institutionalism and new institutional economics, is utilized to create a coherent theoretical framework for the analysis. It is concluded that the design of the system, to a large extent was determined by political interests, even at a cost in economic efficiency.

From the outset of the period until the early 1840's, most groups in the Parliament supported the idea of a private banking system as a way of easing the perceived credit shortage. Given the shortage of capital, permission to issue notes was considered essential for the creation of a banking system. The opposition was limited to those interests that were already engaged in providing pre industrial capital and who were not eager to face increased competition.

Conflicting ideas on how to design the new banking system were based on the interests of the various groups involved. But there was more at stake. The fact that the Crown had taken control of the establishment of private banks, and that these banks were allowed to issue notes, had involved banking in the general struggle for political power. Most cabinet members were also members of the Noble Estate. Thus, the banking system that emerged initially most closely reflected the interests of the group controlling the agenda, the Nobility.

As the system developed, with the establishment of a limited number of monopolistic banks, groups that were being denied influence shifted their position from supporting to opposing note issuing private banks. During the mid 1860's, a virtually unconstrained right to establish banks temporarily eased the political confrontation. Opposition to private bank note issuance continued, but it was realized that denial of such a right would seriously impede credit creation.

The results provided in Chapter 2, serve as the basis for questioning the widely held view that the Enskilda banks represented a primitive form of banking. Therefore, the third chapter, "Commercial Note Issuing Banks and Capital Market Development: An Empirical Test of Enskilda Banks' Assets, Liabilities and Reserves in Relation to Evolving Financial Market Liquidity in Sweden, 1834 – 1913", begins with a comparison of the Enskilda banks with the supposed proto type of modern banking, the limited liability Joint Stock bank. It is noted that in the nineteenth century, there was a clear preference for the former type of bank. This observation obviously raises the question of what characteristics of the Enskilda banks caused them to be preferred to the Joint Stock banks. The answer is the right to issue notes.

The right to issue notes made these banks flexible and less dependent on the size of their original capital. It made it possible for banks both to set up shop in areas of capital scarcity and to adjust to situations of temporary capital shortage. Furthermore, for the

Enskilda banks it was a cheap way of financing the provision of credit, thus increasing its supply.

These results call for a re-evaluation of the Enskilda bank system. Given the Country's lack of capital, and in accord with Diamond's model (1997) of the role of banks in developing countries in the cumulative creation of liquid capital markets, this system contributed to the creation of liquid capital markets in Sweden to an extent not feasible for non note issuing banks. Indeed, the importance of the Enskilda banks was such that the banking Act of 1864, which allowed for the unhindered establishment of Enskilda banks, must be considered the most important institutional innovation in this area. Succinctly put, the system of note issuing Enskilda banks was better suited to the specific needs of the Swedish credit markets of the nineteenth century than was a system of Joint Stock banks. It is thus argued that in the case of illiquid capital markets, note issuing banks are better at cumulatively injecting capital into the economy than are banks limited to reliance on deposits and equity capital.

An example of this development is that when the National Debt Office issued domestic bonds in the early 1860's, it not only had to utilize agents, it had to insure that the bonds and their coupons were acceptable for tax payments. By the early 1870's, however, the Office could just place its bonds directly on the domestic market.

After studying the establishment and the importance of the Enskilda bank system for Sweden's economic transition, the next logical question is, how did it contribute to Sweden's monetization? This problem is addressed in Chapter 3, "Expansion of the Money Supply with a Fixed Exchange Rate: "Free Banking" in Sweden under the Silver Standard and the Gold Standard, 1834 – 1913". The conclusion is that the Enskilda banks contributed to the expansion and integration of the Swedish economy by providing both credit and acceptable means of payment to an extent that would have been impossible for the specie convertibility constrained Riksbank.

Contrary to what has been frequently claimed, the Enskilda bank system did not operate according to free banking theory. The public did not view the Enskilda bank notes as superior to the Riksbank notes. Instead there were three other factors at work causing the circulation of Enskilda bank notes to exceed that of Riksbank notes: 1) Gresham's Law (the classic monetary adverse selection process) was at work. Thus the public hoarded Riksbank notes to the extent possible, 2) A large fraction of the existing Riksbank notes were held as reserves by the Enskilda banks and 3) Enskilda bank notes often replaced informal, and less transferable, means of payment, many of them issued by private persons and lacking any backing.

The re-adoption of the silver standard was a crucial precondition for this development because it allowed the Enskilda banks to hold Riksbank notes as reserves in lieu of specie. In accordance with free banking theory, the backing required for the Enskilda bank notes was set by the market rather than by legislation. The Enskilda banks, however, continued to back their notes with Riksbank notes even after legislation

supposedly ruled this out. This development is evidence that the public preferred a system where the Enskilda banks and the Riksbank worked symbiotically. This situation permitted the Enskilda banks to meet the demand for credit and means of payment more generously than would have been possible had they operated with specie reserves.

Since the Enskilda bank notes were accepted for deposits in the banking system, starting in 1869 even in the Riksbank, they constituted a form of "medium powered money" for domestic circulation. These medium powered notes, plus the "high powered" Riksbank notes held by the public, constituted the money supply in terms of M1. In comparison with another peripheral economy, Finland, the specie backing of the circulating notes in Sweden was lower. Thus, the Riksbank alone probably could not have issued notes to the extent actually in circulation. Consequently, the joint Swedish system succeeded in maintaining a larger money supply in terms of currency than was feasible for most countries, given the requirements of the specie standard.

Including deposits in commercial and savings banks (M3), the Swedish money supply increased rapidly during the late 1860's. Accepting the quantity theory and taking decreased velocity as an indication of increased public use of formal means of payment, yields the same result, that is rapid monetization during the late 1860's. This development may also explain why volatility was so low during the gold standard period.

The thesis then moves on from the banking system *per se* to its role in the Riksbank's efforts to preserve the specie standard. A question is how the specie standard actually functioned relative to the money supply. The fifth chapter, "Reserves, Money Supply and Prices: The International Adjustment Mechanism under the Classical Specie Standard in Sweden, 1834 – 1913", explores the specie standard from an international perspective. Theoretical explanations, as well as previous empirical studies (see Jonung, 1975, 1983), reveal contradictions in how the adjustment mechanism under the specie standard worked. Thus, this chapter focuses on the interrelationship variables such as reserves and prices, and the money supply.

The first section, where the monetary measures are defined and then estimated, includes a theoretical and methodological discussion of how best to treat the foreign debts of the authorities as well as the substantial volume of notes issued by private Swedish banks. This highlights the difficulties faced in defining and applying these concepts to various economies and in different times.

The Riksbank had some degree of flexibility, even while maintaining convertibility. The existence of foreign assets in the form of liabilities issued by other countries within the exchange rate system, made it possible to increase reserves despite the supposed fixed total reserves of the specie system. The monetary pyramiding ratio indicates that

monetary discipline was at its lowest point during the 1860's, and that foreign assets increased in importance as Riksbank reserves.

In the long run, the money supply in all the countries under the specie standard grew, while the share of specie in reserves declined proportionally. There was a relationship between the growth in size of the money supply, and the growth of GDP. Causality tests pointed in the direction of reserves affecting the money supply and then the money supply affecting prices. Such a mechanism is in accord with the specie flow mechanism. Changes in Swedish prices, however, were correlated with those of her trading partners. This made it possible to estimate an OLS-regression of the determinants of domestic price changes. Changes in international prices, GDP changes and lagged changes in the money supply, defined as Riksbank and Enskilda bank notes in circulation, were used as the independent variables. This regression model captured the domestic price changes quite well.

The explanation for these seemingly contradictory results is that the money supply in the countries under the specie standard grew in harmony with each other and with economic growth. Prices followed monetary expansion, but this expansion was an international phenomena within the system. Thus, the transfer of specie in this system was of little practical importance. Other financial assets instead became increasingly important in the maintenance of this exchange rate system. This explains why the central bank reserves of specie standard countries did not move in opposite directions.

Finally, Chapter 6 concerns the question of how the banks were supported during times of crisis. Entitled "Lender of Last Resort in a Transitional Economy with a Fixed Exchange Rate: Financial Crises and Monetary Policy in Sweden under the Silver and the Gold Standard, 1834 – 1913" it focuses on the central bank's role in maintaining convertibility and the constraints this placed on monetary policy. According to the classical view, the central bank could briefly suspend convertibility in order to inject liquidity to support the domestic credit market. Observations of more recent financial crises make it clear that the tension for the central bank of simultaneously maintaining a fixed exchange rate and acting as a lender of last resort still persists. The argument in this thesis is that a capital importing country like Sweden had to take the rules of a specie standard much more seriously than did capital exporting countries with highly respected currencies.

The results of the study indicate that the tension between supplying distressed banks with funds and maintaining the specie standard was ever present. Once capital imports had begun to reach substantial levels in the late 1850's, abandoning the fixed exchange rate, even briefly, was no longer an option. Instead, additional capital was borrowed abroad in order to ease conditions on the credit market. After the crisis of 1857/58, the support to the banks was administered, not by the Riksbank, but by the authority responsible for the State's foreign loans, the National Debt Office. It was instead made

clear that the Riksbank was to concentrate on maintaining convertibility. Consequently, the Riksbank refused to follow the prescription for acting as lender of last resort.

The lessons of this experience is used to widen the classical lender of last theory to include transitional economies. As in the standard classical theory, the central bank in a transitional economy initially can respond to a crisis. That is, it can utilize its reserves to maintain the money supply. If the crisis persists, however, and preserving the fixed rate of exchange is a primary goal, then funds constituting high powered international money has to be borrowed abroad and used to build up reserves. This reliance on international capital markets, increases the importance of having an effective tax system and following the principals of prudent public finance. It also implies that international capital markets are more rational than is usually assumed in the literature proposing the creation of an international lender of last resort.

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– Chapter 2 –

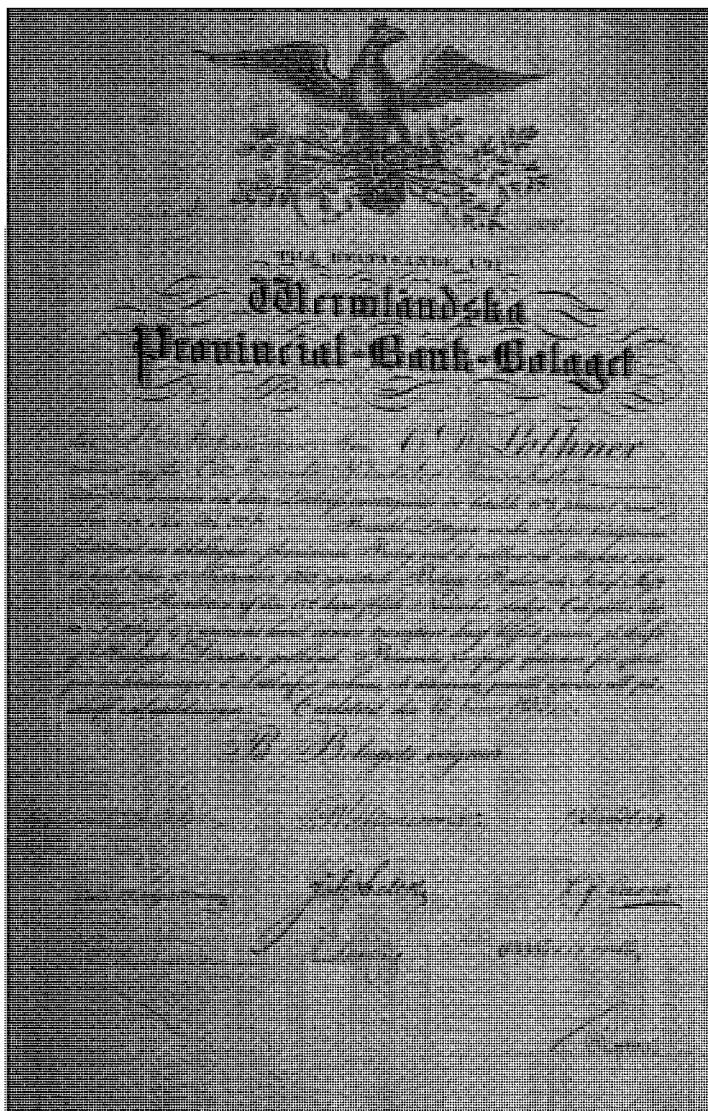
Institutions, Politics and Credits: Political Rational Choice in the Forming of the Swedish Credit Market, 1823 – 1906

Keywords: *Constitutional Monarchy, Credit Market, Institutional Theory, Nested Games, Political Economy, Rational Choice*

ABSTRACT

This paper concerns the important role institutions and political conflict played in the development of the formal credit market in nineteenth century Sweden. Traditional institutional theory is combined with “new institutional economics”. A rational choice approach that assumes bounded rationality and variations in the initial distribution of power among actors is used. As a consequence, control of the political agenda becomes crucial for an actor’s ability to mold the institutional environment in his favor, as well as to limit the choices open to other actors. Institutions are thus viewed both as the outcome of attempts to increase economic efficiency and as a consequence of the ability of powerful actors to alter their economic environment. In the Swedish case, politics determined which alternatives were feasible and, as a consequence, the structure of the Swedish financial system depended at least as much on the outcome of political conflict as on economic rationality *per se*.

Figure 2. 1: Wermland Enskilda bank Share Certificate (1833).



Original at Strandbergs Mynt & Aktiesamlaren AB in Stockholm. Photo by Anders Ögren

The bank was established in 1833 as the second of the Enskilda banks (after Skåne Enskilda bank, originally named Skånska Privat Banken, established in 1831). Its original name was Wermländska Provincial-Bank-Bolaget. In 1857 the name was changed to Wermlands Enskilda bank. The main office was located in Karlstad. Today the bank is part of Nordea.

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Introduction

From its establishment in 1668 until the end of the nineteenth century, the Swedish central bank, the Riksbank, was owned and operated by the Parliament, and was carefully insulated from any influence by the Crown. In 1809, the war against Russia forced Sweden to abandon the convertibility towards the silver, or rather, the Board of the Riksbank itself decided no longer to exchange its notes for silver.¹ The autonomy of the Riksbank vis a vis the Crown and the Government was demonstrated during the political turbulence of 1809. On March 12, King Gustav IV Adolf requested increased funding from the Riksbank so that he could pay his rioting troops. The Riksbank, however, refused to provide the King with any funds in excess of those approved by the Parliament. Before the day was over, the King had abdicated.²

The deposition of Gustav IV Adolf led to the adoption of a new constitution explicitly based on Montesquieu's division of power concept. In this constitutional monarchy, the Crown was the executive branch. The Crown's principal constitutional

¹ Montgomery, A. (1934) pp. 13-15, Skogman, C.D. (1846:1) pp. 80-83. Already in 1807 the Riksbank was successfully sued in court for refusing to redeem its notes. At what time Sweden in practice abandoned the silver standard is not fully clear, but at least from 1809.

² Skogman, C.D. (1846:1) pp. 4-5. This started a rumor that the King had tried to gain control over the Riksbank.

target was Article 72. It guaranteed Parliament absolute control not only over the Riksbank, but also over note issuance and credit facilities.³

Sweden suffered from a lack of trustworthy credit and means of payment. At the same time, there was great interest in re-adopting a fixed exchange rate. The problem facing the Country and its political leaders was thus one of how to successfully return to the silver standard, while designing a system that could satisfy the demand for credit without endangering the fixed exchange rate.

The eventual solution was the establishment of private note issuing banks, the so called Enskilda banks. Officially the notes issued by these banks were not legal tender, the Riksbank having a constitutional monopoly on such notes. Still, the note issuing rights of the Enskilda banks, as well as Parliament's exclusive control over the Riksbank, continued to color the on going political debate until the very end the nineteenth century. The Crown in 1897 was finally given the prerogative of appointing the chairman of the Riksbank's board. This same legislation also abrogated the right of Enskilda banks to issue bank notes, thus finally granting the Riksbank a monopoly in this sphere.

In addition to the rivalry between the Parliament and the Crown, the former was split into various groups representing different interests. The political stakes were control of the formal credit market, and thus the ability to create credit.

This chapter addresses three interrelated questions. The first, and most general, of these is whether the creation of the institutions governing the formal banking system were adopted because they were the overall economically most efficient alternative available or as a result of the distribution of political power. The second question is why, after so many years, the Crown was finally given influence over the Riksbank. A third, and final, question is why the establishment of commercial banks initially was so slow, and then took off in the 1860's.

In the following section, institutional theory and the rational choice approach will be discussed, first as a theoretical framework and second in relation to the Swedish economic and political situation during the nineteenth century. On the basis of the theoretical implications derived, the next section will present an empirical study of how the political conflict concerning the commercial banking system and influence over the national bank, the Riksbank determined the shape of the Swedish credit market in the nineteenth century.

Institutionalism, New Institutional Economics and Nested Games

According to the commonly accepted definition of institutions, they are formal or informal rules that guide the behavior of actors.⁴ For purposes of this chapter, however,

³ Montgomery, A. (1934) pp. 13-15, Skogman, C.D. (1846:1) pp. 80-83

there are some important aspects of both traditional institutionalism and New Institutional Economics (NIE) that are merged together.⁵ It is my position that institutional analysis should include the rational choice perspective, while, at the same time, keeping an open mind concerning the true motives underlying the creation and retention of institutions.

One key assumption is that of bounded rationality. That is to say, given the context in which they function, agents will strive to maximize their pay offs. In addition to providing a structure for the analysis, using the rational choice approach helps detect the true motives of actors, as distinct from the politically acceptable rhetoric in which they indulge.⁶

Given the pure economic efficiency perspective, NIE is basically transaction costs economics, using a traditional economics framework with optimizing agents in a world of (bounded) rationality and equilibria. Institutions are created, developed and changed in order to achieve the most economic efficient outcome possible. Any potential institutional innovation that would not increase benefits or lower costs, quite simply, would not be adopted.⁷ Economically inefficient institutions might prevail, but their existence is explained by path dependence, not that they were instituted just to preserve a certain, inefficient, economic order.

Traditional institutionalism is more holistic, and is thus prepared to consider other, non pure benefit cost based, explanations for the emergence and survival of institutions.⁸ Power and coercion are at least as central to traditional institutional analysis as is economic efficiency. Thus, overall economically inefficient institutions might be created because of the economic and political power they bestow. In NIE, force and coercion are an endogenous part of the economic system.⁹ Indeed they are needed to

⁴ See North, D.C. (1990).

⁵ See Bates, R.H. et al (1998), Dugger, W. (1990) and Greif, A (1998).

⁶ For a more extensive discussion on institutional theory and the use of rational choice, see Chapter 1. Regarding the gap between the discourse (or rhetoric) and actual intention in modern day politics, see Schmidt, V.A. (2000) and (2001).

⁷ Bates, R. H. et al (1998) pp. 3-18, Greif, A. (1998). The authors' of "Analytic Narratives" view their method as an attempt to over bridge differences between historical institutionalism and NIE (Bates, R. H. et al (2000) p. 696). Given the equilibrium analysis, and the view on institutions as improving efficiency by decreasing different forms of transaction costs, the "Analytic Narratives" is, I would argue, clearly a case of NIE.

⁸ According to Dugger, as institutionalism sees institutions principally as mirroring power relationships, it tends to be skeptical of existing institutions. By contrast, NIE considers them to be the result of attempts to reduce transaction costs induced inefficiencies in human relationships, and thus its view is much more positive (Dugger, W. (1990) p. 425).

⁹ Bates, R.H. et al (1998) p. 8. As pointed out in the introductory chapter, the distinction between the number of choices being constrained from above and a free choice of the actor with credible prospects of benefits and

maintain the institutions that generate economic efficiency. They do not, however, enter as parameters influencing the creation of institutions. By the same token, the possession of power does not enter the actor's utility function. Nevertheless, as in the case of traditional institutionalism, it is reasonable to assume that, all things equal, increased power and control will increase an actor's utility. These are two reasons why the distribution of power among actors should play a role in institutional analysis.

One tool utilized by the actor's studied in this paper in their struggle to increase their pay offs was the power to set the agenda. This power is of great importance in all collective decision making situations and has received more attention in political science than in economics.¹⁰ When analyzing collective actions, which of course are crucial when dealing with institutions, however, the question can not be limited to who stands to gain. It is also necessary to determine who has the power to establish an institution. Once rational choice is accepted, and it is assumed that power itself is positively related to utility, it no longer follows that institutional innovations merely represent a quest for greater economic efficiency. Rather, those in control of the agenda are likely to establish parameters that will insure that collective decisions do not deviate too far from their original intent (i.e. their preferences). Less influential groups have to limit their support to their best option that fits within the agenda parameters. In short, the division of power, and thus control over the agenda, usually deprives large groups from striving for their optimal alternative.

In an influential work in the field of political science, "Nested Games. Rational Choice in Comparative Politics", Tsebelis argues that apparently irrational actions actors are observed to take in the so called principal arena in fact frequently are totally rational: 1) Because the actor is involved in games in multiple arenas and his actions in one of these affects the pay off in the others. 2) Because the actor is involved in a greater, over arching rule determining, game. This creates opportunities for the actor to innovate and to create new options that have higher pay offs than any previously existing choice. When the actor simultaneously is involved in such a game concerning the rules, this nested game is referred to as a game regarding institutional design.¹¹ Utilizing control over the agenda allows the actor to define the rules of the game, and hence to affect the pay offs of all the actors.

costs is not as clear as argued in this case. The credible proposition of bearing the cost of ten years imprisonment clearly will affect the free choice of the actor, and thus partly create an eventual equilibrium institution. But, the process of imposing the cost of ten years of imprisonment for a certain action is hardly the result of a metaphysical process, rather an outcome of the distribution of power.

¹⁰ See for instance Dahl, R.A. (1989)

¹¹ Tsebelis, G. (1990) pp. 5-11

The Institutional Setting

In their article, “Constitutions and commitment: the evolution of institutions governing public choice in seventeenth century England”, North and Weingast demonstrate the historical importance to the development of stable financial markets in England of limitations on the Monarch’s access to tax revenues and credit facilities. The English constitution implemented after the Glorious Revolution of 1688 balanced the powers of the Crown, the Parliament and the Courts, with the right to tax being exclusively vested in the Parliament. Thus this constitution was an equilibrating institution intended to prevent political actions favoring the economic interests of particular actors.¹²

Many of the important institutional features that emerged in England after the Glorious Revolution of 1688, also were present in Sweden in 1809. The King had been forced to abdicate, and a new constitution had been launched. It was based on the formal division of power between the Crown (i.e. the Government), the Parliament and, as in England, an independent judiciary.¹³ The Crown was vested with the executive power, but financially the new constitution made it totally dependent on Parliament. Article 72 endowed the Riksbank, and thus the Parliament, with the sole right to issue bank notes, and Article 54 gave Parliament the exclusive right to impose taxes.¹⁴ Article 89, which provided that the Crown could legislate on economic matters without Parliamentary interference, seems to contradict these provisions, but its practical importance was unclear.

The actual distribution of political power differed from that contemplated by the constitution. The intended distribution was also the subject of political dispute throughout the nineteenth century. Within some reasonable limits, but naturally enough in their own favor, various interest groups interpreted the constitution differently. Ultimately, of course, the actual distribution of power, affected the official

¹² See North, D.C. & Weingast, B.R. (1996). Among the most important institutional changes was the increased economic power of the Parliament. Before the Glorious Revolution in 1688, the ruler held monopoly on coercive force, and during some circumstances the ruler would discount so heavily on the future that the reputation control, i.e the incentive to engage in a consistent behavior in terms of fulfilling economic contracts, was set out of order. This was why political institutions came to have a significant role to play as a complement to reputation and punishment by acting as constraints when reputation alone was not enough (North, D.C. & Weingast, B.R. (1996) pp. 136-139, 146-150, 161-162).

¹³ The Swedish legal system was and is different from the English system of common laws.

¹⁴ Lagerroth, L. (1965) pp. 115-116, Montgomery, A. (1934) p. 7, Skogman, C.D. (1846:1) p. 14. Earlier the Crown had held the right to solely decide upon what and even if notes should be accepted as tax and other forms of payments to the Crown.

interpretation of the constitution. Thus, being subject to varying interpretations, the new Swedish constitution was not as a stable equilibrium institution.¹⁵

The political struggle was not limited to a Parliament versus Crown dichotomy. During the period 1809-1865, the Swedish Parliament was divided into four Estates: the Burghers, the Clergy, the Nobility, and the Peasantry. Agreement among three of estates was required for legislation to be passed. The Parliament was far from monolithic, with the division between the Nobility and the Peasantry being the most pronounced.¹⁶ In 1866 the Parliament was reconfigured to two chambers. In addition to gender, representation was limited on the basis of income.¹⁷

According to the constitutions, actors could choose between two arenas for advocating new legislation. They could either try for a Parliamentary majority or they could join forces with the Crown. Before 1866, all standing committees were especially influenced by the Nobility, giving that Estate an advantage in the legislative process. Moreover, most cabinet ministers were drawn from the Nobility.

As a result of the failure of the discount companies in 1817, the formal credit market was virtually extinguished. All that remained was the Riksbank, with its single office in Stockholm. Since Parliament had complete control of the Riksbank, and thus of the formal credit market, it acted to increase its influence by instructing the Bank to open offices in Gothenburg and Malmö.

Generally supply of credit was scarce, expensive and unreliable. The usury laws were evaded in various ways and the credit received often consisted of some private person's IOU. A lucky borrower might receive a written assignment of credit at the Riksbank on which the issuer was entitled to draw. The politically controlled and heavily regulated Riksbank lending did not serve the general credit market. Instead it provided low cost (within the usury limits) loans, paid out in the coveted Riksbank notes, to a few favored borrowers.

Scarcity of credit, however, was not the only problem. The unstable paper standard was also viewed with a jaundiced eye. Powerful social groups, especially the Clergy and the Nobility, were dependent on tax revenues, whose real value declined as the currency depreciated. This created a pair of interrelated problems: 1) How to successfully re-

¹⁵ Fundamental to the ability of the Riksbank and the Parliament to deny funds to the King in 1809 was the generally weak political position of the Crown. Twenty years earlier, in 1789, the then powerful King, Gustav III, had requested funding for a war against Russia. When he was rebuffed by the Riksbank, he simply authorized another agency, the National Debt Office, to issue notes to fund the war, see Heckscher, E.F. (1949:2). Similarly, earlier eighteenth century experience with a politically dominant Parliament had been one of suspended convertibility and an unstable currency (Fregert, K. & Jonung, L. (1996)).

¹⁶ The hostility between these groups nearly overthrew the new constitution, as the Peasants largely objected the Nobilities' right to certain privileges and specific right to taxation (see Wibling, J. (1965).

¹⁷ Until 1921, women not only were excluded from Parliament but were denied the right to vote. Representation was weighted so that cities had higher representation than the countryside in relation to income (Nilsson, G.B. (1969)).

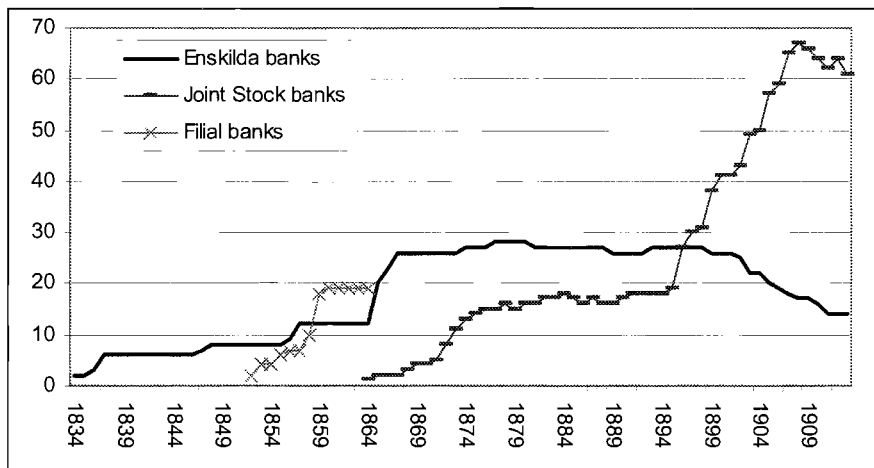
adopt the silver standard and 2) How to design a system that could supply adequate credit without endangering convertibility. For the political agents, the stakes were control of the formal credit market and thus the volume of credit. Such control might be established through the Riksbank, through a commercial banking system or, better yet, through control of both the Riksbank and a commercial banking system.

Changing Institutional Design During the Struggle for Economic Power

Proceeding to an institutional analysis of the most significant, politically induced, changes in the credit market. The actors are assumed to behave in accordance with rational choice, that is they strive to maximize their pay offs. Their rationality is bounded in the sense that the context, and their access to information, influences which action they believe will be most advantageous. Since all the actors are assumed to act in their own self interest, the distribution of power is critical to the outcome. Those able to affect the agenda, or the institutional design, will take advantage of their position to maximize their own pay off, regardless of the effect on overall economic efficiency. Those with little ability to affect the institutional design will have to support the best option available given the parameters set by the agenda.

As Figure 2.1 demonstrates, initially the establishment of private banks was slow. Accepting the assumption of efficient institutions, the explanation might be that, under the circumstances, it was optimal for the Swedish economy as a whole to slowly introduce a formal commercial banking system. If it is assumed that power matters, however, then the conclusion could be that the actors in control of the agenda preferred a low rate of bank establishment. That would be optimal for those groups, although not for the economy as a whole.

Figure 2. 2: No. of Enskilda, Joint Stock & Filial Banks, 1834-1913



Sources: Brisman, S. (1924) p. 245, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185

The Introduction of Private Commercial Banks

In 1822, the King appointed a committee to study the future of the Swedish monetary system and credit market. This action was justified by the unsatisfied demand for credit, as well as the desirability of a return to the silver standard. The committee took every opportunity to criticize the exclusion of the Crown from the affairs of the Riksbank. In order to finesse Article 72, the committee recommended that the Riksbank, - officially known as *Rikets Ständers Bank* or the Parliament's Bank - become little more than a silver storage facility. It would just issue silver certificates up to the value of its silver reserves. A new bank, using the popularly used name, the Riksbank, would be established under the joint control of the Parliament and the Crown. Private interests might also be allowed to participate.¹⁸

Naturally the Crown worked to gain influence over the Riksbank. Private ownership, even if limited, would increase the pay offs for those groups who were in a position to invest in, and profit from, this single, monopoly actor on the formal credit market. As part of nested game in multiple arenas, the Nobility had the opportunity to wield increased influence via the Government. The other Estates, however, had no reason for increasing the influence of the Crown, since the effect would be to reduce their control

¹⁸ BaU 1823 Vol No 20 pp. 243-289, KProp 1823 Vol 1 Bilaga pp. 347-439. The Riksbank was officially named *Rikets Ständers Bank* until 1867 when the name the Riksbank was officially established, but in public speech it was already referred to as the Riksbank.

over the Riksbank and the formal credit market. Not surprisingly, the Parliament of 1823 declined to adopt these proposals that the Crown had introduced through the committee.

In this same Parliament, two members of the Nobility advocated the authorization of private banks.¹⁹ The Parliamentary debate on this proposal was quite limited. The only Estate where a number of members expressed opposition to the establishment of private banks was that of the Burghers, where the proposal nonetheless was adopted. These few opponents equated private banks with the unfortunate discount companies, and they stressed the importance of maintaining the legal ban on all types of private note issue.²⁰

The generally positive attitude towards the establishment of private banks had its roots in the deplorable state of the credit market. As a result, the Peasantry and the Clergy were eager to support any measure that would increase the supply of rural credit. Wealthy individuals were also attracted by the prospect of investing in the emerging, if currently unstable, credit market. The few opponents, to be found among the Burghers, probably represented the merchant houses then involved in making loans. Private banks, especially if they were allowed to issue notes, would be unwelcome competition for these lenders.

Following the lines of the discussion in the Estates, the Standing Committee on Supply argued that the proposals in fact did not confer any new rights on the founders of private banks. Indeed, since the right to establish companies already existed in civil law, no special legislation was really required. Because the banks were to be given a partial exemption from the usury law's limit of six percent interest by being allowed to deduct one year's interest in advance, however, it was argued that the Crown should issue charters for no longer than ten years and should approve the proposed company regulations. Like all other businesses, these banks would operate with unlimited owner liability.²¹

¹⁹ PrAd 1823, Bilagor Vol. 2 pp. 198-204, Vol. 1 pp. 977-988.

²⁰ PrAd 1823 Vol. 3 pp. 57-58, Vol. 6 pp. 1069-1073, Vol. 10 Part 1 p. 454, PrAd Bilagor 1823 Vol. 2 pp. 640-642, Vol. 3 pp. 5-16, Vol. 5-6 pp. 533-537, PrBd 1823 Vol. 5 p. 705, PrBg 1823 Vol. 4 pp. 18-21, Vol. 6 p. 443, PrP 1823 Vol. 5 p. 8, Vol. 7 p. 344. Within the Nobility there was some debate concerning the difficulties of operating banks without the right to issue notes and over the appropriate rules concerning the charging of interest. One of the Burghers, Mr Aspelin, approved the proposed law since in his opinion that no bank would ever become a reality with the principle of solidarity. *"Jag tvekar icke att bifalla Betänkandet, emedan jag är öfvertygad att, när det ganska förnuftiga tillägg blifvit gjordt, det Bolagsmännen skola en för alla och alla för en ansvara för Bolagets förbindelser, något sådant Bolag aldrig kommer att existera."* (PrBg 1823 Vol. 4 p. 20-21).

²¹ RdSkr 1823 No 346, StU 1823 Vol. 3 No 315

The King was urged to proclaim the right of individuals to establish private banks in accord with the principles established by the Parliament. The intention of the Parliament was that this banking law would be treated as part of the civil code, just like any other company law. As such, in accord with Article 87 of the constitution, it was to be enacted jointly by the Parliament and the Crown. The Crown, however, relying on its monopoly on economic legislation contained in Article 89, made it a purely Royal proclamation.²² The Parliament of 1823 resulted in a rather vague proclamation asserting the right of individuals to found private banks subject to Royal control of charters.

The Readoption of the Silver Standard

The most important question considered in the following Parliament, that sat from 1828 until 1830, was the readoption of the silver standard and how to make it a success. Arguing that the silver standard could only be successful if it also had its support, the Crown proposed a change in control of the Riksbank. This, of course, required a change in Article 72 of the constitution. The proposal was supported by the Nobility, and its control of the agenda was utilized. The Standing Committee on the Constitution was able to find all of the Estates, except the Burghers, in agreement, and it proposed that the Crown and the Parliament jointly guarantee the debts of the Riksbank, as well as sharing in the design of the Bank's rules and regulations. The Parliament, however, was to continue appointing board members and to operate the business. This proposal ultimately was approved by all four Estates. Since it involved a change in the constitution, however, it was carried over to the next Parliament.

In fact, however, the Burghers wished to exclude the Crown entirely, arguing that its participation at best would be useless and at worst would be a threat to the currency. Instead they argued that legislation involving the Riksbank should require approval by all four Estates. Doubts about Royal influence were expressed among the Peasantry, but the Estate later approved the proposals of the Standing Committee on the Constitution without fuss. The Clergy primarily wanted the fixed exchange rate to be made part of Article 72.²³

As the Riksbank was to start exchanging its notes for silver in 1834, however, a new piece of Riksbank legislation was enacted on March 1, 1830. This new Law prescribed that the Crown was to be involved in Riksbank legislation and that the Parliament was to be involved in private bank legislation. This Act received the approval, not only of all

²² KFO, Skogman, C.D. (1846:1) pp. 137-138. The Minister of Finance to be, C.D. Skogman, wrote that since this proclamation was not possible to put under any other law, it might as well sort under §89. Regarding its content, the proclamation was exactly the same as the Parliamentary resolution.

²³ KU 1828/30 No 56, No 68, PrAd 1828/30 Vol. 32 pp. 170-189, Vol. 62 pp. 131-194, PrBd 1828/30 Vol. 7 pp. 89-92, Vol. 11 pp. 183-184, PrBg 1828/30 Vol. 4 pp. 216-221, Vol. 6 pp. 724-733, Vol. 7 pp. 903-924, PrP 1828/30 Vol. 7 pp. 159-162, vol. 14 p. 321, Vol. 15 p. 41

four Estates, but also of the Crown. It can thus be interpreted as an agreement to treat control of the Riksbank and the issuance of bank charters together.²⁴

As convertibility approached, bank charter applications started to be submitted. The first bank charter, containing permission for the new bank to finance its business by issuing notes, was approved in 1831.²⁵ One more charter received Royal approval before the Parliament next met in 1834. A question arises, however, as to what effect the 1830 legislation had on the Parliament's control over the Riksbank under Article 72.

Gaining access to the Riksbank was important to the Crown. Thus, immediately when the Parliament of 1834 convened, it was urged to act on the resting legislation concerning Article 72. Parliament's rejection of the Crown's request was a question of the allocation of power. Given that all the members of the Ministry came from their Estate, the Nobility saw the executive as one possible arena for exercising political influence. The Burghers and the Peasantry, however, could only lose from increasing the power of the Crown.²⁶

These latter two Estates quarreled openly with the Crown about changes in the infamous Article 72. Their opposition to change was overwhelming, and centered on the question of giving the Crown influence over the Riksbank. Indeed, with the Clergy closely divided, only the Nobility was clearly in favor of the proposal. Thus, the continuing attempts by the Standing Committee on the Constitution to increase Royal influence, failed.²⁷

²⁴ RdSkr 1828/30 Vol. 4 §§ 44-59

²⁵ Skåne Enskilda bank was given the right to issue printed non-interest earning transferable deposit certificates payable on demand for deposits below 20 Rdr Banco. The Crown's representative, Skogman, did not admit any note issuing right, neither for Skåne Enskilda bank or the second bank, Wermland Enskilda bank. Still, Wermland Enskilda bank in its charter and in its balance sheets used the word notes (Skogman, C.D. (1846:1) pp. 181-182, 196-199, Post & Inrikes Tidning 29/4-1835). In the rhetoric of the time, differences were made between deposit certificates, bank notes (*Bankonoter*), credit notes (*credit sedlar*) and notes represented by coins as issued by the Riksbank. Although, all of these were bank notes and served the same purpose.

²⁶ Skogman, C.D. (1846:2) pp. 8-12. This especially, as the proposal made by the Government not only allowed the Crown the right to partake in legislations concerning the Riksbank, but also to move tasks from the Riksbank to the National Debt Office, and the right to with short notice demand a meeting with the Board of the bank. Another suggestion from the Nobility, officially to make sure the Riksbank prudently met the demands of convertibility, was to allow private shareholders.

²⁷ Kprop 1834/35 Part 1 No 2, KU 1834/35 No 1, No 2, No 68, No 78, No 117, PrAd 1834/35 Vol. 4 pp. 107-148, Vol. 17 pp. 415-446, Vol. 19 p. 226, PrBd 1834/35 Vol. 3 pp. 453-498, PrBg 1834/35 Vol. 1 pp. 615-661, Vol. 7 pp. 903-940, Vol. 8 pp. 645, PrP 1834/35 Vol. 3 pp. 9-119. A member of the Clergy was concerned with the strange view of the Riksbank law of 1830 not being a valid law, but even more concerned with the harsh and undeserved abuses that openly had been expressed by representatives from the Government and the Parliament regarding the change in the §72 of the constitution. "*och framför allt de oförtjenta och hätska tillmälen, som med afseende å det ifrågavarande Grundlagsförslaget öppet blifvit de båda Stasmagterna gjorde;*" (PrP 1834/35 Vol. 3 p. 20). According to the index of the Parliamentary Prints, the Minister of

Forming a Private Commercial Banking System

In the Parliament of 1834 there was majority agreement on the need for a private banking system, which, it was also agreed, had to be financed through the issuance of bank notes. The question of what type of banking system would best serve the public interest, however, was the subject of extensive discussion. Considering the entire process of implementation, it is hard to argue that it was a case of an optimally efficient institution overcoming political interests and the distribution of power. The fact that the Crown had chartered private banks caused actors in the Parliament to pursue their own vision of a private banking system.

The Nobility was the Estate most supportive of the right of free note issuance, although that right's conflict with the Riksbank's constitutionally protected exclusive right to issue notes was discussed. The right of private banks to issue notes was in no way restricted, neither by requiring minimum denominations nor by prescribing conditions for note redemption. What was considered important, however, was that the new private banks had sufficient equity capital. The stated motivation was to assure their stability. Therefore, the Nobility proposed not only a high equity capital minimum but also a high minimum level for individual share holdings.²⁸

By contrast, the Peasantry argued that highly detailed legislation would limit the flexibility of the banks and make it difficult for them to satisfy the varying needs of different regions. An excessively high equity requirement, it was argued, would prevent a sufficient number of banks from being established. While agreeing that the right to issue bank notes was a prerequisite for successful bank operations, the Peasantry supported a minimum on their denominations. They thus they argued that the proclamation of 1824 should be widened to deal with the basis of note issuance, to establish minimum denominations and to permit the granting of twenty year charters.²⁹

Most critical of private banks and their right to issue notes were the Burghers. Some members pointed to the failure of the earlier discount companies, while others argued that private bank notes violated the constitution. Initial internal votes went against supporting private bank notes. Faced with the acceptance of such notes by the other three Estates, however, the Burghers concurred. Clearly there was a Parliamentary

Finance, C.D. Skogman faced a prosecution of mistrust in 1834/35. This was probably because the suggestion to change Article 72 had been written in a provocative way by Skogman. Skogman himself wrote that the Estates met his proposal with bitterness (Montgomery, A. (1934) pp. 23-27, Skogman C.D. (1846:2) pp. 4, 8-12, Notes pp. 10, 12).

²⁸ PrAd 1834/35 Vol. 1 p. 256-258, vol. 2 pp. 79-82, Vol. 11 pp. 53-55, Vol. 12 p. 54, pp. 175-179, Vol. 16 pp. 268-314, Vol. 20 pp. 289-405, 445-502, Vol. 21 p. 8, Vol. 22 pp. 65-67, 174. (As one Nobleman put it; without a sufficiently high equity requirement a hundred poor people could start a bank, thus rendering the principle of unlimited owner liability useless ("om 100 trashankar förena sig om att inrätta en bank,") PrAd 1834/35 Vol. 16 p. 269)

²⁹ PrBd 1834/35 Vol. 8 pp. 440-456, 477-480, Vol. 10 pp. 158-181, Vol. 11 p. 141. The argument concerning the equity capital was that if a bank is useful for a region with one million in equity capital, it is so also with half of that amount (PrBd 1834/35 Vol. 8 p. 451).

division on this issue, but the fiercest opposition existed among the Burghers. Like the Peasantry, they considered the minimum equity proposed by the Nobles to be too high. At the same time, however, they considered the minimum denomination suggested by the Peasantry to be too low.³⁰

In the Clergy the right of banks to issue notes was viewed in relation to the ability to maintain convertibility. In their proposal, the Clergy focused on the sections of the act that would confer the power to reduce private bank note circulation when the Crown found it to be necessary.³¹

All of these arguments were presented as serving the public good and were backed by seemingly rational arguments.³² Digging below the surface, however, reveals other motives. The Nobility saw itself as potential investors in private banks. Limiting competition while providing cheap sources of finance for these banks was in their interest. Members of the Peasantry also wanted to start banks, which would be easier if there were fewer limitations on the types of assets that could be used as equity capital and if less equity capital were required. The Peasantry also needed the credit and means of payment that the private banks would supply. Minimum note denominations accorded with their interests since most holders of already existing bank notes lived in rural areas. Those Burghers most opposed to private banks probably had merchant capital invested in pre-industrial rural activities. If so, they would face increased competition from the private banks, especially if these could issue notes. Those in favor, as with the Peasantry, were probably interested in investing in or founding banks, or else were merchants in small cities with a shortage of capital. As for the Clergy, the new banks would especially alleviate the rural shortage of capital. The focus on private note issuance and its potential threat to a fixed exchange rate was logical for a group that received tax payments as income.

As an example of setting the agenda, despite their differences, the Standing Committee on Banking managed to make the four Estates agree on a proposal that

³⁰ PrBg 1834/35 Vol. 7 pp. 221-304, Vol. 9 pp. 376-437, 462-465, 569-571, 636-706, Vol. 10 pp. 63-69, 252-260. Both the votes concerning the right to issue notes were close, and several members openly criticized the first decision not to allow private banks to issue notes (PrBg 1834/35 Vol. 9 pp. 428, 462-465, 569-571, 646). (Voting the first time was 17 for and 21 opposed, and the second time 23 for vs. 17 opposed, PrBg 1834/35 Vol. 9 pp. 428, 646).

³¹ PrP 1834/35 Vol. 13 pp. 567-596, Vol. 14 pp. 31-79, Vol. 17 pp. 293-481, Vol. 19 pp. 124-126. Like the Nobility, the Clergy discussed the possibility of forcing private banks to hold silver reserves but concluded that this would be even more fatal for the Riksbank's ability to maintain the specie standard (see PrAd 1834/35 Vol. 16 p. 276 and PrP 1834/35 Vol. 14 pp. 75-79). The Nobility and the Peasantry invited the Clergy to join their proposal, but this was not accepted (see PrP 1834/35 Vol. 18 p. 207).

³² In the unbound form of rationality, this is not possible, since two inconsistent choices not both can be rational.

largely resembled the original proposal of the Nobility. The extensive debates, however, delayed agreement until May 19, 1835. With the motivation that the bill was delivered too late, the King rejected it.³³

New bank charters were approved during the years 1836 and 1837, increasing the number of banks from two to six. The Crown defended its actions by arguing that these charters followed the legislation proposed by Parliament in 1835.³⁴

When Parliament reconvened in 1840, banking legislation once again was high on the agenda. The Nobility reiterated its stand from the previous session, that is in favor of low barriers to note issue and high barriers to bank establishment. They did not, however, support the acceptance of private bank notes for tax payments.³⁵ Given their enthusiasm for such note issuance, and since accepting them for tax purposes would increase the value of and demand for these notes, this stand seems to be inconsistent. As recipients of certain tax payments, however, the Nobility was rational enough to insist on payment in the generally accepted and convertible Riksbank notes.

The Peasantry still criticized the detailed controls and high equity requirements contained in the proposal put forth by the Nobility and Standing Committee on Banking. They further were troubled by the Crown's policy of handing out charters. Formally, the Estate opposed this process on the grounds that it violated the constitution's explicit ban on the Royal distribution of monopoly privileges.

The rural population had been required to bear most of the note issuing costs of the private banks. The circulation of private bank notes in rural areas where there were few options had triggered that most classic of all adverse selection phenomena; Gresham's Law. According to members of the Peasant Estate, small denomination private bank notes had not just compensated for the shortage of Riksbank notes, they had totally driven them out of circulation. Since there were no legal requirements concerning how, or even if, the private banks were required to redeem their notes in legal tender, it occurred that individuals holding only private bank notes were fined by the tax authorities for not being able to pay their tax in the required, but unavailable, Riksbank notes.

Many members also argued for higher minimum denominations on the notes. Nonetheless, the Peasantry still did not question the right of private banks to issue notes.

³³ BaU 1834/35 Part 2 No 2, No 4, No 7, RdSkr 1834/35 Part 1 No 348. The King did approve laws settled by the Parliament one day after, on May 20, but the banking legislation was not mentioned (Kprop 1834/35 Part 2 No 8). See also Montgomery, A. (1934) p. 30, Skogman, C.D. (1846:2) pp. 26-34, 36. In the closing speech the King expressed his wish that the Parliament should be more supportive of the private banks (Kprop 1834/35 Part 2 No 9).

³⁴ Kprop 1840/41 Part 2. (in the King's speech when opening the Parliament, on January 25 1840, pp. 68-69)

³⁵ PrAd 1840/41 Vol. 1 pp. 314-315, vol. 3 pp. 193-206, Vol. 4 pp. 333-345, Vol. 12 pp. 225-263, Vol. 20 pp. 396-437, 458. The Nobility also stressed the need for a private bank establishment in Stockholm.

The Peasantry's concern was that the notes be accepted for tax payments and that the private banks provide the note holders with access to exchange agents.³⁶

The members of the Clergy were closely attuned to rural problems. Like the Peasantry, they considered the high equity capital requirements and the difficulty in redeeming notes as problematic. Private banks were good since they challenged the monopoly of the "Capital City's money aristocracy". On the other hand, if the private banks were unable to redeem their notes, the best solution would be a Riksbank takeover. Such a course of action would also have the benefit of redirecting the profits of banking to the State through the Riksbank.³⁷

Some members of the Burgher Estate argued that the creation of private banks violated the constitution. Others maintained that the private banks had helped alleviate the shortage of credit and means of payment. Once again, the Burghers were divided, and every detail in the proposed banking legislation had to be voted on separately.³⁸

As had been the case in 1834/35, in 1841 all four Estates agreed on legislation concerning private note issuing banks. Probably as a response to the demands of the Peasantry, the minimum denomination of the notes was increased. The Clergy was conciliated by the inclusion of a clause giving the Crown the right force a reduction in the private bank note issue.³⁹

A Continuation of Private Bank Monopolies and Increased Opposition

The proposed banking law of 1841 was presented to the King, but once again it was rejected for being delivered too late. In practice, the Crown maintained exclusive control of the issuance of bank charters, including both the right to found banks and the regulations for their operation. The Crown rejected most amendments made by the Parliament regarding financial issues, including one that would have made the Riksbank notes legal coinage only as long as the Riksbank was prepared to exchange them for silver at par.⁴⁰

³⁶ PrBd 1840/41 Vol. 1 pp. 244-246, 516-518, Vol. 7 pp. 225-246, Vol. 10 pp. 401-430, Vol. 12 pp. 110-112. When voting on the legislation, a majority of the Estate supported the right for private banks to issue notes by 82 for and 14 opposed (PrBd 1840/41 Vol. 421). The Peasantry again stressed the necessity of note issuance for private banking in such a poor country as Sweden. Regarding the possibility to pay taxes with private bank notes, the Standing Committee on Supply argued that private bank notes were to be considered as IOUs issued by any company, and thus not could be viewed as legal tender (StU 1840/41 Part 2 No 143).

³⁷ PrP 1840/41 Vol. 7 pp. 94-139, Vol. 12 pp. 411-418. Clearly this barb was directed at the merchant lenders among the Stockholm Burghers.

³⁸ PrBg 1840/41 Bilagor pp. 287-288, Vol. 1 pp. 566-575, Vol. 4 pp. 402-420, Vol. 6 pp. 229-241

³⁹ RdSkr 1840/41 No 358

⁴⁰ KKS, Kprop 1840/41 Part 2 No2, RdSkr 1840/41 No 6.

For varying reasons, all four Estates had been discontent with the Crown's handling of the private bank question. Not only had the King repeatedly refused to sanction bank legislation passed by Parliament, large groups of MP s had been unhappy with the note issuance of the private banks, as well as with their large profits. The private bank opponents considered the Crown's granting of charters to be an unconstitutional and inequitable distribution of valuable monopoly privileges.

The confrontational strategy pursued by the Crown caused the Parliament to pass an act of impeachment (*Riksrättsåtal*) against the Government.⁴¹ This is an example of a nested game. That is, there was a perceived possibility of altering the institutional design and to thereby affect the pay offs of the agents. The original stakes, control of the credit market, was expanded to include the over all power of the King. From a game theory perspective, it can be characterized as a credible game of chicken.

Figure 2. 3: The Parliament challenging the overall power of the King in a game of chicken – dethronement viewed as a credible threat by Carl XIV Johan

	The Parliament Cooperates (Not dethroning King)	The Parliament Defects (Dethrones King)
The King Cooperates (Stops Private banks)	b, b	c, a
The King Defects (Keeps note issuing Private banks)	a, c	d, d

Where $a > b > c > d$ when each actor internally ranks the pay offs for different outcomes.

Thanks to support from the Nobility, the prosecution failed. Backing off, the King instead compromised with the opponents of private banks. At an 1842 cabinet meeting, the King presented a memorandum concerning private banking. His vision was to replace the note issuing private banks with banks only partly privately owned and dependent on the Riksbank. These Riksbank branches (or "filial" banks) would have a maximum of 50% private ownership and would operate with credits from the Riksbank. The obvious time for introducing this new system would be when the existing charters expired in 1847.⁴² Regardless of the criticism from the Nobility, the Parliament and the

⁴¹ Nilsson, G.B. (1981) p. 26

⁴² KKS pp. 10-15. One of the less convincing arguments for such a change was that the system of having a large bank as the center of the financial system was to prefer for an orderly passionate people as the Swedes (KKS p. 10). Skogman did not mention this changing policy at all (Skogman, C.D. (1846:2) pp. 75-97). In 1839, when Skåne Enskilda Bank applied for an extension of its charter from 1841, it was granted for only six, rather than the usual ten, years. As a result, this Bank's charter would expire at the same time as the charters of the four banks established in 1837. It is unclear whether the King in 1839 was planning an end to private banking or just wanted an opportunity to standardize bank regulations. In any case, all existing bank charters were extended until 1847. Skogman did not know or did not want to reveal the intention. He wrote that if the intention was to reorganize all banks according to the same principles this would be a good thing.

King now choose to cooperate.⁴³ For a few years, the Crown and the Parliament were in agreement about the creation of a largely State controlled banking system.

With hindsight, it is possible to view the action of Parliament as one step in a control game. It was intended to move the outcome from the lower to the upper left, assuming that the King recognized the threat of the Parliament as credible.

Figure 2. 4: The threat of the Parliament as a control game. Mutual cooperation instead of mutual defection.

	The Parliament Cooperates	The Parliament Defects
The King Cooperates	b,a	c,b
The King Defects	a,d	d,c

Where $a > b > c > d$ when each actor internally ranks the pay offs for different outcomes.

Since the previous session of Parliament, criticism of the private banks' note issuance had been on the rise. The complaints centered on the public's difficulties in using these notes, together with the banks' large monopoly profits. In response, the Burghers wanted to sharply increase the minimum denomination of private bank notes, while the Clergy and Peasantry wanted to put an end to note issuing private banks altogether.⁴⁴

Before the opening of Parliament in 1844, King Carl XIV Johan died and was succeeded by his son, Oscar I. With the motivation that the existing bank should be extinguished in 1846, the new King urged the Parliament to propose new banking legislation. He added that this should be done in consideration of the Riksbank's responsibility for maintaining the silver standard, over which the Crown had no influence.⁴⁵ While there was no lack of bank legislation proposals in Parliament, it is apparent that the King simply wanted a proposal that he could accept.

But, if the intention was to end the existence of these banks, then this would be problematic for the domestic credit market (Skogman, C.D. (1846:2) p. 58).

⁴³ On initiative of the Parliament, the Crown started to become informed of the situation concerning the Riksbank. In spite the fact that this information entirely rested upon the will of the Parliament, the elderly King was pleased with this development (Skogman, C.D. (1846:2) pp. 99-100).

⁴⁴ PrBd 1844/45 Vol. 3 pp. 220-222, 425-460, PrBg 1844/45 Bilagor pp. 60, 241-242, PrP 1844/45 Vol. 1 pp. 377-398. Faced with the problem of private bank notes, the Peasantry presented a series of apparently contradictory proposals. The same motion suggested that private banks be required to have exchange agents at every county seat, that private bank notes be accepted for tax payments and that private note issuing banks be eliminated.

⁴⁵ Kprop 1844/45 Part 1 No 64

The Nobility was utilizing the possibility of setting the agenda through the Standing Committee on Banking. Ignoring the skepticism of three of the Estates, the Committee launched a proposal that disregarded virtually all of the criticism. The only exception was a willingness to “increase” the minimum denomination to the level that had been agreed to at the previous parliamentary session. This was barely more than a third of the level now being proposed by the Burghers.⁴⁶ Nevertheless, the Nobility declined the Committee’s request for a special round of voting on the proposal, principally because of the clause increasing the minimum note denomination.⁴⁷ Those members interested in instituting Enskilda banks had more to gain from a continuation of the current situation than from an increase in minimum denominations.

Once again, the Parliament passed new banking legislation, and once again the King refused to sanction it.⁴⁸ Oscar I’s justification was also the same; the bill had been presented too late. This despite the fact that the constitution had been amended to allow the king to sanction bills after Parliament had adjourned. Instead, in accord with Article 89 of the constitution, the King promptly issued a new law concerning private banks. The Law of 1846 extended the Crown’s exclusive right to act with regard to private banks. Consequently the new King did not consider the threat to depose him to be credible.

Figure 2. 5: The King, Oscar I, ascending the throne in 1844 not viewing dethronement as a credible threat

	The Parliament Cooperates	The Parliament Defects
The King Cooperates	b, b	c, a
The King Defects	a, c	d, d

Where $a > b > c > d$ when each actor internally ranks the pay offs for different outcomes.

In 1847 and 1848, Oscar I agreed to the issue of two new bank charters. Previously the Crown had not dared to charter private banks in cities where the Riksbank had an office. Since the Riksbank already had an office in Gothenburg, the chartering of Göteborg Enskilda Bank provoked Parliamentary hostility towards the Enskilda banks.⁴⁹

⁴⁶ BaU 1844/45 Part 2 No 1, No 2, No 3. Besides the problems the termination of private bank notes would create in terms of a decreasing money supply, the reasons presented by the Standing Committee on Banking was that no one would start a bank without these features since there only would be a modest profit.

⁴⁷ PrAd 1844/45 Vol. 6 pp. 437-481, Vol.10 pp. 3-14, 46-91, 486-507, 587-890. At the end of the debate within the Nobility, a MP dryly remarked concerning the vocal voting that the liveliness in the shouting probably originated from those with an interest in private note issuing banks. “*Jag vill ta mig friheten att nämna, att lifligheten i ropen torde komma ifrån privat-banks-intresset.*” (PrAd 1844/45 Vol. 10 p. 590).

⁴⁸ RdSkr 1844/45 No 237

⁴⁹ Nilsson, G.B. (1981) pp. 26-27, Skogman, C.D. (1846:2) pp. 140-146. In 1837 a charter to run a private bank in Gothenburg had been turned down by the Crown with the motivation that the Riksbank already had an office in the city. As a result, Parliament used its power to tax by subjecting the dividends on private bank shares to special taxation (Montgomery, A. (1934) p. 32, Nilsson, G.B. (1981) p. 27)

In 1850, some twenty seven years after a Parliamentary majority and the Crown had agreed that a private banking system was necessary and that it should have the right to issue bank notes, only eight such banks existed. Despite the clear need for these banks and continuing large bank profits, the Crown, setting the agenda in cooperation with the like minded Nobility, prevented the introduction of free bank establishment. Instead it continued to dispense what were in fact monopoly privileges. As long as the Parliament obstructed Royal influence over the Riksbank this was the only way for the Crown to retain some influence over the credit market. By no means, however, was it the economically most efficient way of creating a commercial banking system.

The Rise and Fall of the Filial Banks

The goal of eliminating the private note issuing banks was maintained by large groups within the Parliament.⁵⁰ Three out of the four Estates, to varying degrees, were united against private bank notes. This was enough to seriously challenge the Enskilda bank system. The rural MP's clearly found themselves in a difficult position. On the one hand, the monopoly position of the private note issuing banks had increased costs in the countryside. On the other hand, trustworthy credit and reliable means of payment were particularly scarce in rural areas.⁵¹

There were two possibilities for replacing private bank credit and notes in circulation. The first was to simply let the Riksbank increase its note issue, while the other was to establish private banks relying on Riksbank credit.⁵² Changing the institutional design by introducing private banks that could compete for market share, might alter the pay offs in favor of the Enskilda banks' opponents.

The question was one of how banks in areas lacking depositable capital (i.e. all those outside Stockholm or Gothenburg) could function without the right to issue notes. To

⁵⁰ A proposition from the Peasantry to end the private note issuing banks was rejected by the Standing Committee on Banking with the motivation that the Parliament had decided to ask the Crown for propositions of how to organize the credit market, and that no new private banks was to be chartered and the existing banks should cease when their charter ran out (BaU 1850/51 Part 2 No1).

⁵¹ The Peasantry again proposed private bank notes both to be valid for tax payments, and that the Riksbank should take over their business (PrBd 1850/51 Vol. 2 p. 63).

⁵² BaU 1850/51 Part 1 No 43, No 65. PrBd 1850/51 Vol. 5 pp. 225-250, Vol. 6 p. 60, PrBg 1850/51 Bilagor Vol. 5 pp. 192-201, 211-212, Vol. 1 pp. 364-367, Vol. 3 pp. 938-985, Vol. 4 pp. 600-610, PrP 1850/51 Vol. 2 pp. 332-334, Vol. 8 pp. 110-154, Vol. 10 pp. 3-19. A new paragraph, number 215, was added to the Riksbank Law authorizing an increase in its unbacked note issue to 2.5 million Rdr Banco in case the private note issuing banks were eliminated. The precise amount was suggested by the Clergy and represented a compromise between two opposing proposals. The Burghers strongly opposed the entire idea, while the Peasantry thought the figure to be insufficient to compensate for the credit and notes provided by the private banks.

make their survival possible the Filial banks were guaranteed subsidized loans from the Riksbank. This action was criticized by the Nobility who considered them to be State supported private banks.⁵³ A system of Filial banks was approved by Parliament in 1850/51, but as a complement to, not a replacement for, the note issuing banks.⁵⁴

Charters for Filial banks were not to be issued for cities where a commercial bank were already in operation. As the Parliament was dependent on the executive power, the Crown was given the ultimate power over the issuance of Filial bank charters. This was exploited to further limit the competitiveness of the Filial banks by reducing the grants decided on by Parliament, and to prevent the Filial banks from engaging in deposit financing.⁵⁵

Initial funding in Riksbank credit was allocated for the establishment of three Filial banks. Within a few months, however, eight applications had been received, all competing for same pot of funds. Over a period of eight years, a total of nineteen Filial banks were established. This can be compared with twelve note issuing banks, four of them recent creations. As can be seen from Figure 2.5, the Filial banks had less access to funds than the right to issue notes made possible.⁵⁶ Against the intent of the Parliament, and perhaps as a result of their limited funding, the branch banks functioned as important distributors of Enskilda bank notes. The unanticipated large number of Filial bank applications is the best evidence that there was no lack of interest in operating a bank.

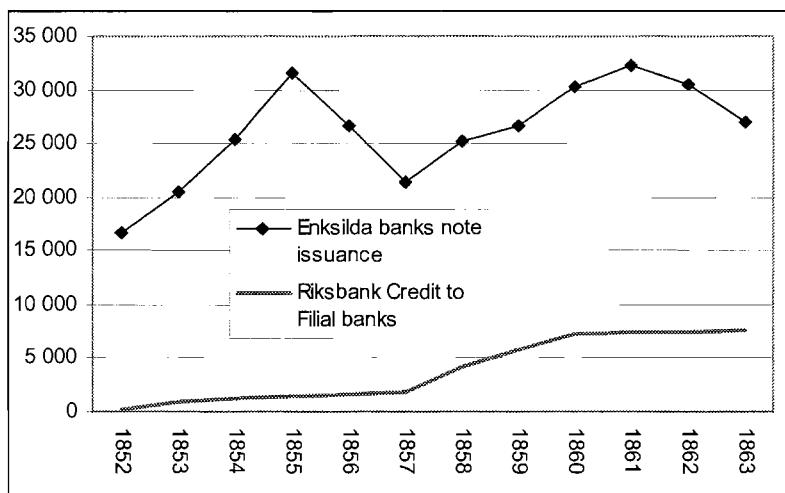
⁵³ PrAd 1850/51 Vol. 8 pp. 153-167, Vol. 9 pp. 82-83, PrP 1850/51 Vol. 8 p. 125, PrAd 1856/58 Vol. 4, p. 147

⁵⁴ The owners of the Filial bank should be responsible according to the principle of solidarity, depositing a foundation fund. One fourth of the foundation fund should be deposited in cash and three fourths could consist of mortgages or bonds. It was against the value of the mortgages and bonds that the Riksbank gave loan to 80 % and a credit to 20 % with the low interest rate of 3 %. (Montgomery, A. (1934) p. 33, Nilsson, G.B. (1981) p. 56, RdSkr 1850/51 Part 2 §§ 25-29) The system of Filial banks was close to the original suggestion made by the King in 1842, and the suggestion made in Parliament as a response on how to solve the question of a banking system if private note issuing banks were to end in 1844/45. Most of the members of the Peasantry had also approved this suggestion (KKS, PrBd 1844/45 Vol. 3 pp. 434-449).

⁵⁵ The motivation was that it anyway was impossible for the Filial banks to compete for deposits due to the already high interest rates (Nilsson, G.B. (1981) pp. 72-73).

⁵⁶ Brisman, S. (1934) pp. 113-119, Montgomery, A. (1934) p. 34

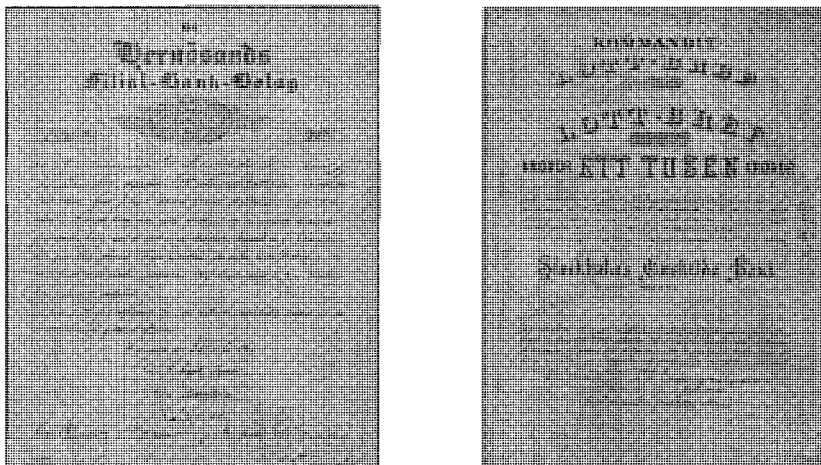
Figure 2. 6: Enskilda bank Note Issue and Riksbank Credit Provided to Filial Banks, 1852-1863. 1000's SEK



Source: Sveriges Riksbank (1931) pp. 21-23, 175-177

The Crown strengthened the position of the Enskilda banks by granting charters for four additional such banks. Included among these, in 1856, was Stockholm Enskilda Bank, the first bank to be allowed to compete with the Riksbank in Stockholm. The type of banking system that should be allowed, however, remained an unsettled question. The Enskilda banks were criticized for issuing notes in violation of the Riksbank's constitutional monopoly. The Filial banks were subsidized by the Parliament through the Riksbank, despite the fact that State support for banking supposedly had been ruled out as early as 1824.

Figure 2. 7: Share Certificates from Hernösands Filial bank (left) and Stockholm Enskilda bank (right).



Images downloaded from <http://www.aktiesamlaren-bjb.se/aktiebrev/index.htm>

Hernösand Filial bank was founded in 1859. It was transformed into an Enskild bank in 1870, after its original charter as a Filial bank ended. This specific share certificate from Stockholm Enskilda bank (founded in 1856) was a specific form of share used to circumvent the law on unlimited liability. As this share was denominated in SEK it was issued after the switch to the gold standard in 1873. The Stockholm Enskilda bank is today part of SEB.

In the Parliament of 1856/58, the competition from the Filial banks caused the supporters of the Enskilda banks to revisit the legislation on banking. The Nobility proposed that there be freedom to establish banks. In addition the Estate wanted that private note issuing banks be required to redeem their notes for legal tender on demand. Being owners and investors, the Burghers now supported private note issuing banks.⁵⁷

In 1857 an international financial crisis hit Sweden. During the crisis, openly supporting the credit market by acting as a lender of last resort brought the Riksbank to the brink of abandoning convertibility. Facing a run for note redemption, the largest bank of the time, Skåne Enskilda Bank, had to be saved from bankruptcy by State intervention.⁵⁸

⁵⁷ PrAd 1856/58 Vol. 2 p. 326, Vol. 4 pp. 143-157, PrBd 1856/58 Vol. 1 pp. 233-239, 253, 345-346, 386, PrBg 1856/58 Bilaga pp. 252-259, 277). A member of the Nobility accused the Crown of creating the opposition towards the banking system by systematically refusing to follow the intentions of the Parliament (PrAd 1856/58 Vol. 4 pp. 144-146).

⁵⁸ See Chapter 6

In the Parliament, opposition to the rescue operation was centered among the Peasantry, now citing the legal rule that no private bank could expect help from the State. But, the Nobility managed to focus retrospective criticism on the Riksbank's policy. In response to these events, in 1858 the King appointed a committee to sort out the situation on the Swedish credit market. It reiterated the proposal of the 1823 Royal Financial Committee that a new bank, jointly controlled by the Crown and the Parliament, be established, while the existing Riksbank would be limited to circulating silver backed notes. This new bank was to be given the right to issue notes. In order to conform to Article 72, however, these notes, although acceptable for tax payments, would officially not be legal tender. In addition it was proposed that the Filial banks be converted into local Riksbank offices. The proposal being the same, so was the Parliamentary response. Only the Nobility was willing to accept this expansion of the Crown's power.

The question of Enskilda versus Filial banks that had been on the docket since the Parliament of 1850/51 was finally resolved by the Parliament of 1862/63. No further Riksbank credit was to be extended to the Filial banks. A new law concerning Enskilda banks was passed and, in 1864, was sanctioned by the Crown. The avowed purpose of the Filial banks, to replace the note issuing banks, clearly had not been achieved.

It might seem as if the opponents of Enskilda banks had been left empty handed. But, the opponents of private bank notes had succeeded in imposing a 0.2 % tax on the issuance of Enskilda bank notes. Moreover, the inclusion in the new legislation of higher minimum note denominations, an explicit requirement that banks redeem their notes on demand and virtual freedom to establish new, and to renew the charters of existing, banks, indicate, however, that some lessons had been learned from the Filial bank experience. Furthermore, whether it was due to the establishment of the Stockholm Enskilda Bank or the Filial banks, the Enskilda banks had started to compete for deposits. The credit market was further deregulated through the repeal of the usury law and the introduction of joint stock banking.⁵⁹

After the Representative Reform: Banking Expansion and State Consolidation

The representation reform of 1866 created a two chamber parliament in which both Chambers had to approve legislation before it was presented to the Crown for its

⁵⁹ Davidsson, D. (1931) pp. 147-150, Montgomery, A. (1934) pp. 36-37, RdSkr 1858/60 Part 1 Vol. 2 No 260, 1862/63 Part 1 Vol. 2 No 183, No 184, Part 2 §§ 34, 41, SFS 1861:34 §15, 1864:31. The 1864 legislation concerning the note issuing banks was agreed upon by all four Estates in the Parliament 1858/60 (RdSkr 1858/60 Part 1 Vol. 2 No 260). One reason why the Peasantry criticized note issuance in the 1844/45 Parliament was that it made private banks reluctant to accept deposits (PrBd 1844/45 Vol. 3 p. 439).

sanction. The new election process for the Second, or lower, Chamber had the effect of increasing the influence of the interests previously represented in the Peasant Estate.⁶⁰ The increased representation of the Peasantry, however, did not result in the elimination of the Enskilda banks' note issuing rights.

A majority in the Second Chamber continued to advocate the revocation of the Enskilda banks' right to issue notes. The First Chamber, however, overwhelmingly supported the note issuing privileges of the Enskilda banks. If the votes in the two Chambers are combined, a majority would be found to have supported the banks.⁶¹ In addition, the recommendation of the Standing Committee on the Constitution that Article 72 be totally repealed was accepted by the First, but rejected by the Second, Chamber.⁶²

In connection with the switch from the silver to the gold standard in 1873, new legislation concerning the Enskilda banks was enacted. While it was largely a matter of adapting the Law of 1864 to the gold standard, it also granted the Enskilda banks, subject to the Crown's veto, the right to issue small denomination (five and ten kronor) notes. In 1879, the five kronor notes were banned as part of legislation that also increased the right of the Riksbank to issue notes not covered by its reserves.⁶³

Paradoxically, opinion had shifted away from the Enskilda banks as a result of the crisis of 1878/79. The important Stockholm Enskilda Bank had to be saved by State funds, but the difficulties of the bank resulted in a run for deposits and not for note redemption. What this crisis actually demonstrated was that the note issuing banks were no more vulnerable to runs than were banks relying exclusively on deposits. Unlike the crisis of 1857/58, however, when the Riksbank was the focus of criticism, this time the Enskilda banks were the principal target. The Standing Committee on Banking reported that existing banking law was deficient, and the Parliament requested that the Crown provide a new legislative proposal. The upshot was that the new special committee on banking of 1883 recommended that the Riksbank be granted a monopoly on the issuance of notes, in return for which the Crown was to receive some degree of influence over the Bank.⁶⁴

⁶⁰ See Nilsson, G.B. (1969)

⁶¹ BaU 1869 Part 2 No 2, MotAK 1868 No 323, 1869 No 85, No 151, No 161, PrAK 1869 Vol. III pp. 503-506, PrFK 1869 Vol. III pp. 307-318. Voting in the second chamber was 65 for vs. 82 opposed, and in the first 47 for vs. 14 opposed (PrAK 1869 Vol. III p. 506, PrFK 1869 Vol. III p. 318). Similar outcomes resulted with regard to voting on an extension of the tax on note issuance and on preventing the Enskilda banks from limiting the redemption of their notes to their main offices.

⁶² BaU 1871, Part 2 No 2, BeU 1871 No 8, No 13, KU 1870 Part 1 No 9, MotAK 1871 No 76, No 98, No 178, PrAK 1871 Vol. IV pp. 464-473, 628-629, PrFK 1871 Vol. IV pp. 413-415

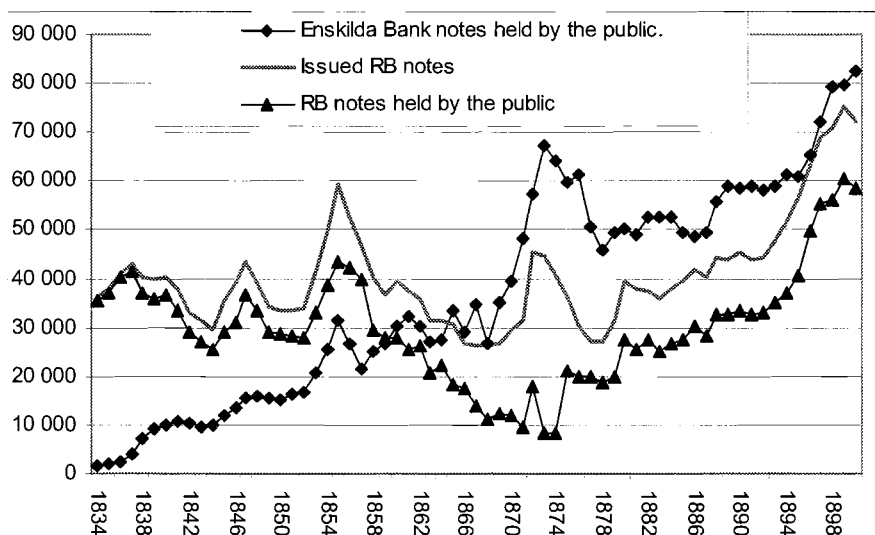
⁶³ RdSkr 1879 No 52, SFS 1874:44, Ögren, A. (2000) pp. 52-53

⁶⁴ Bankkomitén (1883) p. III, BaU 1881 Part 2 No 1, MotAK 1879, No 110, 1881 No 87, No 120, RdSkr 1881 No 50. Due to fraud, Wadstena Enskilda bank failed and its liabilities were assumed by another note issuing bank. Regarding the crisis and the banking support, see chapter 6. An observation is that in every Swedish

No such agreement, however, was reached. In 1886, the Crown proposed alternative legislation concerning both commercial banking and the Riksbank in case private note issuance was to cease. The Standing Committee on Banking concluded that it was impossible to withdraw all the private bank notes. This position, not unexpectedly, was accepted by the First, but not the Second, Chamber. Displaying an interest in reasserting control over the Enskilda banks, both chambers agreed on an overall limit on Enskilda bank notes in circulation.⁶⁵

As can be seen in Figure 2.8 below, private bank notes in circulation exceeded Riksbank notes starting in 1859. Even those who wished to abolish the Enskilda banks had to consider how their notes would be replaced.

Figure 2. 8: The Circulation of Riksbank and Enskilda Bank Notes. 1000's SEK.



Sources: Post & Inrikes Tidning 1835 – 1871, Sammandrag af Bankernas Uppgifter 1871 – 1900.

financial crisis, from the one after the Napoleonic Wars in early nineteenth century until the crisis in the 1990s, the actors on the credit market have been blamed.

⁶⁵ BaU 1886 Part 2 No 1, No 2, No 4, Kprop 1886 Part 1 Vol. 2 No 27, No 28. The second chamber wanted a total limit of 40 MSEK, the first of 60 MSEK. All Enskilda banks circulated approximately 50 MSEK (see figure 2.8), a limit which the chambers agreed upon.

It seems as if the State, i.e. the Chambers of the Parliament and the Crown, was consolidating its interest into one powerful actor. There was little incentive to allow Enskilda banks to issue notes when the note circulation could be controlled by the State through the Riksbank. The Parliament successively increased the tax on private bank note issuance from the original 0.2% to 0.3% in 1887, 0.5% in 1892 and finally to 1.0% in 1893.⁶⁶ As the banks became more solidly established, they decreased their reliance on note issuance. Starting in the mid 1880s, notes amounted to between twelve and fifteen percent of their total liabilities.⁶⁷ More important, the Riksbank was increasing its reserves, thus making it possible for it to replace the Enskilda bank notes without endangering the specie standard.

In 1896, the Crown proposed an end to private bank note issuance together with joint control of the Riksbank. The Parliament agreed to amend Article 72 to permit a Crown appointee to serve as chairman of the seven member Riksbank board. Whether this decision was taken in the interest of greater efficiency is unclear. Certainly it does not correspond with free banking theory, and empirics supports that there is reason to believe that the decision rather was based on a desire to increase control by the State.⁶⁸

Conclusions

At the outset, when Parliament acted with regard to private banking, a clear majority agreed to the necessity of basing it on the right to issue notes. It was viewed as the only way for a banking system to develop in a poor country dependent on personal IOUs and other informal promissory notes. At the same time, all the supporters of this type of banking system saw it as a potential opportunity for personal investment.

One question raised in the introduction was whether the implementation of the institutions governing the formal banking system was dominated by a drive for economic efficiency or was a result of the distribution of political power. Clearly, permitting the establishment of private note issuing banks made the economy more efficient, but it was not the single most efficient alternative available under the circumstances.

As a result of the way the problem was handled, for more than thirty years the banking system reassembled nothing so much as a system of privileged chartered monopolies. Profits were large, while little regard was paid to customer needs. Given the ample supply of potential entrepreneurs eager to establish banks, it is clear that the bank legislation adopted was by no means the most efficient institutional alternative available.

⁶⁶ RdSkr 1887 No 49, 1892 No 98, 1893 No 45, SFS 1861:34 §15

⁶⁷ Sammandrag af Bankernas Uppgifter, see also Chapter 3

⁶⁸ See Chapter 4 and Jonung, L. (1989)

The preferences of those with the power to set the agenda, the Nobility and the Crown, explain the actual course of event. While paying lip service to the common good, these groups were able to build a banking system that suited their interests. It featured high barriers to entry, low financing costs and high profits. Of course their opponents, mostly from the Peasantry, also intoned about the public interest while actually working for their own advantage. In their case, that called for low barriers to entry and high costs for using note issuance as a source of bank financing. In short, these groups resented having to bear most of the costs of private bank notes.

Since the established agenda prevented the opponents from reaching their preferred goal, they instead sought to increase the demand for, and lower the cost of, holding these notes by making them acceptable for tax payment. The Nobility and the Clergy, being recipients of tax payments, naturally rejected this proposal. With continued monopolization and the notes being unacceptable for tax payments, the best alternative remaining for the Peasantry was simply to fight the banks. As a result, opposition to the note issuing Enskilda banks grew rapidly among these groups starting in the 1840's. The result was a number of apparently incompatible, but under the circumstances highly rational, proposals simultaneously calling for making private bank notes acceptable for tax payments and for abolishing the banks that issued them.

Opposing the private note issuing banks was not their first choice, but it was the best alternative available given the state of the agenda. In order to provide competition for the note issuing Enskilda banks, in the 1850's State funds in the form of subsidized Riksbank loans were used to support a group of non-note issuing commercial banks, the so-called Filial banks. The final outcome of the struggle between the group behind the note issuing Enskilda banks and that behind the Filial banks was that the latter banks were abolished. The latter group, however, benefited from a reduction of barriers to entry and legal requirements for the redemption of Enskilda bank notes. As a result, starting in the mid 1860's, the Enskilda banks emerged as a nation wide banking system.

Ever since the Crown in 1823, over the opposition of large groups in the Parliament, was given control of bank establishment, the Parliament's constitutional right to autonomously operate the Riksbank, including its exclusive right to issue bank notes, remained a matter of contention. The majority in Parliament had nothing to gain from sharing power with the Crown. Only the Nobility, being the source of Government ministers, found a constitutional change to be attractive.

In 1897, the Crown obtained the right to appoint the chairman of the Riksbank board, thus operating the Bank in conjunction with the Parliament. This change was a result of the consolidation of State powers, or at least of the interests behind these powers. Since the banking system was no longer under direct political control, the State

could increase its influence by conferring a note issuance monopoly on the Riksbank. The prior opponents of ceding any influence whatsoever over the Riksbank to the Crown, found this less objectionable if the Bank was assured of a monopoly on note issuance. From a free banking perspective, it can, of course, be questioned whether changing from a private note issuing banking system to a central bank monopoly on note issuance is a move towards, or away from, more efficient institutions.

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KU – Konstitutionsutskottet 3:e Samlingen 1823 – 1898 [Standing Committee on the Constitution]

MotAK – Andra Kammaren Motioner 1:a Samlingen 2:a Avdelningen 1866 – 1898 [Proposals of the Second Chamber, Part 2, Vol. 2]

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PrAd – Ridderskapets och Adels Protokoll 1823 – 1865 [Minutes of the Nobility]

PrAK – Andra Kammarens Protokoll 1866 – 1898 [Minutes of the Second Chamber]

PrBd – Bondeståndets Protokoll 1823 – 1865 [Minutes of the Peasantry]

PrBg – Borgarståndets Protokoll 1823 – 1865 [Minutes of the Burghers]

PrFK – Första Kammarens Protokoll 1866 – 1898 [Minutes of the First Chamber]

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– Chapter 3 –

Commercial Note Issuing Banks and Capital Market Development:

An Empirical Test of the Enskilda Banks' Assets, Liabilities and Reserves in Relation to Evolving Capital Market Liquidity in Sweden, 1834 – 1913.

Keywords: *Banking fragility, capital markets, classical specie standard, fractional reserves, free banking, liquidity*

ABSTRACT

First established during the 1830's, the Enskilda banks were characterized by unlimited owner liability and the right to issue bank notes. Consequently, in Swedish banking history, these banks have been considered to be primitive relics. This paper utilizes new data to revise this picture of the Enskilda banks. Applying Douglas W. Diamond's model (1997) of the cumulative contribution of banks to the creation of liquid asset markets in developing economies to the capital poor country of Sweden, indicates that the Enskilda banks made a contribution out of the reach of non-note issuing banks. In view of the crucial role of the Enskilda banks, the Banking Act of 1864, which effectively permitted the free establishment of such banks, must be judged to have been the most important institutional change facilitating the development of the Swedish credit market.

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Introduction

As demonstrated in Chapter 2, the fact that the nineteenth century Swedish commercial banking system came to consist of note issuing private banks, the so called Enskilda banks, was not a matter of chance. Contemporary observers often noted that Sweden lacked both capital and means of payment. Sweden being a poor country, and starting in 1834 being committed to a specie standard, there was no wide spread circulation of means of payment. Today it is possible to view the early and extensive use of bank notes, private promissary notes and other IOUs in daily transactions as a sign of financial sophistication. In nineteenth century Sweden, it was considered to be symbolic of Swedish economic backwardness.¹ The use of paper and credit money was a result of economic and institutional circumstances that prevented Swedes from settling their transactions with specie coins.

The right to issue notes had been implemented as a way to finance the banks due to the lack of trustworthy means of payment and credit.² Consequently, the right to issue

¹ The Riksbank's right to issue one SEK notes was revoked in 1878 in order to promote a more "civilized usage of coins". The Standing Committee on Banking opined that the one SEK notes were a remnant of a disorganized monetary system and caused the public to believe that notes were actually coins (BaU 1879 No8 p. 3).

² See Chapter 2

notes was seen by contemporaneous actors as a necessary prerequisite for the operation of a bank.

This nineteenth century banking system has in retrospect been evaluated from an evolutionary perspective. The presumed "answer" to how an efficient commercial banking system should be designed was in terms of the modern system of non-note issuing Joint Stock banks, not private note issuing banks.³ Thus, instead of realizing that the actors of the time had tried to solve their problems in the best way open to them given the circumstances, the Enskilda banks were simply condemned as symbolic of Sweden's primitive banking system.⁴ This question of the supposed backwardness of the Enskilda banks has also been addressed by international scholars.

In 1978 Lars G. Sandberg published his article, "Banking and Economic Growth in Sweden Before World War I". Sandberg argued that the explanation of Swedish economic success, to a considerable extent, could be found in the early development of a sophisticated banking system. More generally, the relatively high level of education that had been achieved despite low income levels, permitted the development of a banking system well suited to the demands of a growing, credit based, economy. Indeed, the relative sophistication of the banking system, was a major pillar supporting Swedish industrialization.⁵

Rejecting Sandberg's argument, Charles P. Kindleberger questioned whether the mid-nineteenth century Swedish banking system truly could be considered "sophisticated". Moreover, he expressed doubt as to the importance of the banking system in promoting Swedish economic growth at that time. Kindleberger's scepticism was largely based on the observation that the Swedish banks participated only modestly in the export activities that generally were taken to be the driving force behind Swedish industrialization.⁶

On the basis of Granger causality analysis, Douglas Fisher and Walter N. Thurman argued that real Swedish economic growth led to the development of the financial sector, rather than vice versa. Nonetheless, they concluded that the decreasing velocity of circulation of means of payment was evidence of an increasingly sophisticated banking system and thus that Sandberg had a point. Although dubious about how modern the Swedish banking system actually was before the 1870's, Fisher and

³ Apart from the free banking theory, which also makes the same kind of anachronistic assumptions and thus is not applicable on the Swedish case (see chapter 4).

⁴ An example of an anachronistic interpretation is the view of Brisman who wrote in the interwar period. A real and thus effective banking system required a central bank holding monopoly on note issuance, defending the fixed exchange rate by altering the discount rate, and commercial banks were to be non note issuing limited liability Joint Stock banks (Brisman, S. (1924), (1931), (1934)).

⁵ Sandberg, L.G. (1978) pp. 656-657

⁶ Kindleberger, C.P. (1982) pp. 918-920

Thurman agreed that the vital breakthrough in Swedish banking came with the legalization of limited liability Joint Stock banks in 1863.⁷

There is disagreement as to exactly when Sweden experienced the birth of modern banking. Because of its emphasis on deposits, some scholars point to the establishment of Stockholms Enskilda Bank in 1856.⁸ Others emphasize the repeal of the usury law, with its 6% percent limitation on interest, and the legalization of joint stock banks in 1863.⁹ Following in the footsteps of the great guru of Swedish economic history, Eli F. Heckscher, Kindleberger argued that prior to 1895 the history of Swedish banking was largely limited to that of the Riksbank, the central bank owned by Parliament.¹⁰

Even though the years chosen might differ, the case for Swedish financial backwardness is always the same: the absence of a deposit banking system and of liquid capital markets. The clear implication is that a modern banking system requires *Credit Mobilier* type banks, financed by substantial equity capital and deposits, and with joint stock, limited liability for the owners.

At least during the first half of the nineteenth century, Sweden did indeed lack liquid capital markets. The most important capital markets, naturally enough, were located in the two principal cities, Stockholm and Gothenburg.¹¹ There are theoretical arguments for the belief that an expanding banking system promotes economic growth. One of these is that banks can convert illiquid assets into liquid liabilities, thus channeling capital to activities where demand for it is greatest.¹² Thus, there is reason to believe that a result of an expanding banking system is the creation of more liquid, and hence more efficient, capital markets.¹³

Since limited liability Joint Stock banks are considered to be the trade mark of a modern banking system, the Swedish "Enskilda" banks, characterized by unlimited owner liability and the right to issue notes, are commonly viewed as banking relics. They were first established in the early 1830's and they retained the right to issue notes

⁷ Fisher, D. & Thurman, W.N. (1989) pp. 625, 627-631

⁸ See Nilsson, G.B. (1981) and Gasslander, O. (1962)

⁹ Fisher, D. & Thurman, W.N. (1989) p. 625, Sandberg, L.G. (1978) pp. 657, 663. Sandberg divided the Swedish banking history into an early and a modern period. The latter began in 1864 when joint stock banking was introduced and the usury law was repealed.

¹⁰ Kindleberger, C.P. (1982) pp. 918-919

¹¹ See Lobell, H. (2000).

¹² See Diamond, D.W. & Dybvig, P.H. (1983) and Diamond, D.W. & Rajan, R.G. (2001).

¹³ Diamond, D.W. (1997) pp. 949-950

until the Banking Act of 1897 conferred a note issuance monopoly on the Riksbank, starting in 1903.¹⁴

The question if the banking system was “modern” or “sophisticated” or not, might be an anachronistic question based on the view that a banking system has to operate with deposits or equity capital to finance its business. But, if the Swedish banking system was modern or sophisticated is really not the question. The more important question is whether or not the Joint Stock banks truly were more efficient than the Enskilda banks, and if greater reliance on the former would have been better for Swedish economic development. This chapter concludes that such would not have been the case.

This chapter uses balance sheet data of the Enskilda banks’ assets and liabilities at the end of each year from 1834 until 1900 in order to analyze developments over time.¹⁵ The results suggest that the system of Enskilda banks might well have been optimal, given the institutional setting of the nineteenth century. The introduction of joint stock banking and the repeal of the usury law were not the most important institutional changes behind the development of the Swedish credit market. The Act of 1864, essentially permitting the free establishment of Enskilda banks and the automatic renewal of their charters, played a greater role. The note issue of the Enskilda banks contributed substantially to the creation of liquid financial markets and, ironically, perhaps to creating the conditions needed for deposit based banking.

Enskilda Banks versus Joint stock banks

As noted in the introduction, a previous study of the causal relationship between the money supply (M2) and real GDP growth in Sweden during the period 1861-1913 concluded that the financial system did not lead growth. On the contrary, it concluded that real economic growth resulted in expanding financial markets.¹⁶

¹⁴ For a survey of the Enskilda banks during the period 1834 – 1913, see Ögren, A (2000). Lars Jonung has argued the case of the Enskilda banks from a strict free banking perspective, see Jonung, L. (1989).

¹⁵ These were published in *Post & Inrikes Tidning* for the years 1834 -1870 and in *Sammandrag af Bankernas Uppgifter* for 1871-1906. The years 1835-1846 and 1867-1870 have been supplemented with data from Sveriges Riksbank (1931) pp. 172-179. For 1866, balance sheets as of the end September, rather than the end of December, have been used. These balance sheets are the only source that include detailed information of the Enskilda banks’ assets and liabilities for the entire period. The accuracy and reliability of the figures reported by the banks might be questioned. When other sources differ from them, however, other sources than balance sheets are more favorable for the Enskilda banks in terms of the size of reserves (see BaU 1853/54, Brisman, S. (1924) pp. 246-247, Finanskommittén 1858 and Sveriges Riksbank (1931) pp. 172-179). After the year 1900 Enskilda bank notes in circulation demised drastically as a response to the coming ending in 1903. Due to the emphasis on the note issuance in this chapter, this year is chosen as the ending year.

¹⁶ Fisher, D. & Thurman, W.N. (1989) pp. 627-629. Sandberg and Kindleberger, as well as Fisher and Thurman, all adhere to the Coase theorem: that is that financial systems develop in response to demand (see also Sandberg, L.G. (1982) pp. 921-922).

Nonetheless, the puzzling question as to the relationship between financial and real economic growth remains unresolved. Of course, most wealthy countries have well developed financial sectors. Moreover, research indicates that innovative financial systems are important for economic growth.¹⁷ Thus, there unquestionably is a link between overall economic performance and the quality of the financial system. This, in turn, implies that the development of the commercial banking system was of importance for the growth of the real economy. It thus can be argued that, within the existing institutional setting, Sweden had an efficient banking system.

If limited liability joint stock banks truly were superior to Enskilda banks, the post 1863 period should have witnessed a decrease in the number of Enskilda banks in operation and a rapid expansion of joint stock banking. In fact, however, even after joint stock banking was legalized and interest rate ceilings were abolished, Enskilda banks continued to be established. Since the Enskilda banks imposed unlimited liability on their owners, the question becomes why would anyone accept a greater personal risk in order to found an already outdated bank?

The Establishment of New Banks

During the years 1864 through 1867, no less than fourteen new Enskilda banks were established, thus demonstrating that this form of banking hardly could have been obsolete.¹⁸ A single joint stock bank, the *Skandinaviska Kreditaktiebolag* was established in 1864 in Gothenburg, and it did in fact rapidly assume an important position on the Swedish credit market. Previous to the second wave of joint stock bank establishments during the late 1890's, however, the only joint stock banks that can be considered to be commercial banks were established in Stockholm and Gothenburg, where capital markets already existed.

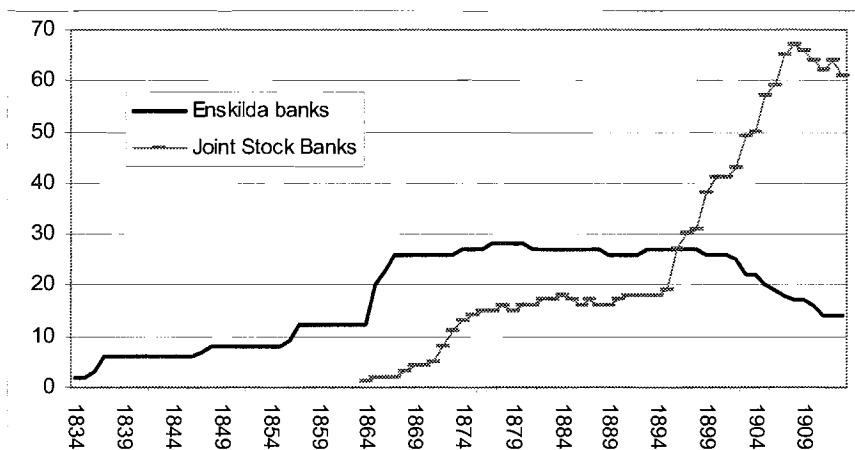
The joint stock banks that appeared outside these two cities were small, so-called *folkbanks*. These were more akin to regional savings than to commercial banks. It was only during the late 1890's, when a plethora of new banks were established, that the Enskilda banks ceased to be the primary form of bank. The reason behind this change, however, was institutional rather than strictly economic. A previously anticipated act

¹⁷ See Sandberg, L.G. (1978), Petersson, T. (2001) and Sylla, R. (2002). In a recent study on Sweden 1834 – 1991, Hansson and Jonung found evidence for a relation between real economic growth and the financial sector. Their interpretation of the causality was that the financial system preceded real economic growth (Hansson, P. & Jonung, L. (2000) pp. 228-230).

¹⁸ Indeed, the last Enskilda bank was not established until 1893. It was located in Norrbotten, in the far north of Sweden where business still was suffering from a scarcity of capital.

rescinding the Enskilda banks' right to issue notes was enacted by Parliament in 1897.¹⁹ The increase in the number of joint stock banks was also accelerated by legislation constraining savings bank behavior passed in 1892. Consequently some savings banks were converted into (joint stock) *folkbanks*.²⁰

Figure 3. 1: No of Enskilda and Joint Stock Banks (including folkbanks), 1834-1913.



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871-1911, Sveriges Riksbank (1931) pp.172-185

One piece of evidence used, first by Flux and later by Kindleberger, to argue that the Enskilda banks were not a successful form of banking is the small number of such banks established before the mid 1860's. This is taken as a sign that the demand for Enskilda bank credits was low.²¹

The true reason for the small number of new banks, however, was institutional in nature. The Crown and influential groups in the Parliament had more to gain from preventing a massive establishment of banks. Previous to 1864, the Enskilda banks were required to obtain royal charters that were limited to ten years duration. At the end of that time, the bank had to close its operations and reapply. This procedure prevented the large scale establishment of Enskilda banks. Not surprisingly, large groups within Parliament came to dislike Enskilda banks and acted to inhibit the establishment of such

¹⁹ Jonung, L. (1989) p. 38, Ögren, A. (2000) p. 50

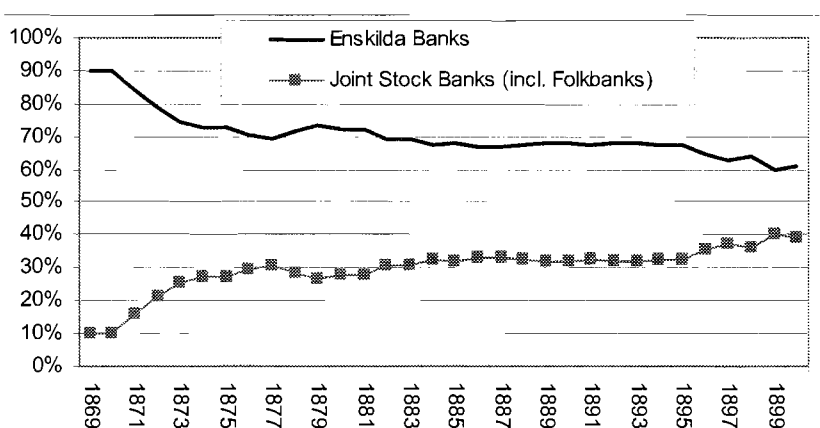
²⁰ Sjölander, A. (2000) p. 44

²¹ Flux, A.W. (1910) p. 56, Kindleberger, C.P. (1982) p. 920

additional Enskilda banks. It also explains why the Banking Act of 1864, which granted virtually total freedom to establish Enskilda banks, was so important.²²

Many of the Enskilda banks that were established during the late 1860's were former so-called "filial banks". These were a form of limited liability bank operating on the basis of credits from the Riksbank. When this form of banking was ended in 1862, virtually all of these filial banks were converted into Enskilda, not joint stock, banks. As shown in Figure 3.2, throughout the nineteenth century the Enskilda banks as a group had more assets than did the joint stock banks.²³

Figure 3. 2: Enskilda and Joint Stock Banks Assets, 1869 – 1900 (percentage shares of total commercial bank assets).



Sources: Post & Inrikes Tidning 1870-1871, Sammandrag af Bankernas Uppgifter, 1871-1900, Sveriges Riksbank (1931) pp. 172-185

Since commercial banking in general promoted the growth of the real economy, it can be concluded that this also was the case with the Enskilda banks. There clearly is little evidence to support the notion that the Enskilda banks were obsolete by the 1870's.

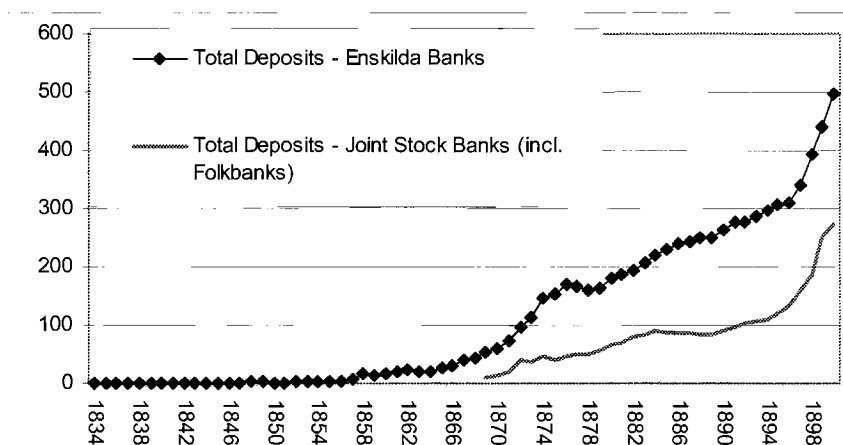
²² See Chapter 2.

²³ When Parliament initiated these banks, the hope was that they would facilitate the replacement of Enskilda bank with Riksbank notes. Instead, the filial banks became major distributors of Enskilda bank notes, see Chapter 2.

Bank Deposit Financing

If reliance on deposit financing is a measure of bank modernity, then the Enskilda banks once again pass the test. By 1867, deposits exceeded notes as a source of Enskilda bank financing.²⁴ Indeed, Enskilda banks had accepted deposits right from their inception, although these were originally less important than notes. As demonstrated in Figure 3.3, until the turn of the twentieth century total Enskilda bank deposits considerably exceeded those of the joint stock banks.

Figure 3. 3: Total Deposits in Enskilda and Joint Stock Banks, 1834 – 1900 (1,000,000's SEK)



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871-1900, Sveriges Riksbank (1931) pp. 172-185

The low reliance on deposits during the first half of the nineteenth century had its roots in the modest circulation of means of payment that could be accepted as deposits which, in turn, increased the importance of the Enskilda bank notes. By initially financing their activities mainly with notes, the Enskilda banks helped create the conditions making the utilization of deposits possible.

The 6% legal limit on interest rates has been perceived to be the true obstacle to the development of a banking system dependent on, or at least willing to utilize, deposits as a source of funds. Another factor limiting the banks' ability to attract deposits surely must have been the scarcity of official means of payment. Deposits could only become a viable alternative source of funds for banks if means of payment more official than private promissary notes were in circulation. The Enskilda banks' creation of semi-

²⁴ Ögren, A. (2000) pp. 87-88

official means of payment arguably was more important for the development of a deposit financed banking system than was the repeal of the usury law.²⁵

As early as 1859, the volume of Enskilda bank notes in circulation exceeded that of Riksbank notes, a situation that continued throughout the rest of the nineteenth century. In 1869, the Riksbank was compelled to accept Enskilda bank notes for deposit at par. While the share of notes in total Enskilda bank liabilities decreased, the absolute volume of notes in circulation continued to increase and peaked in 1900.²⁶ There is no doubt that the Enskilda banks performed an important service before the 1870's by supplying good quality means of payment. The question is, were they outdated after the 1870's?

Enskilda Banks and the Liquidity of the Swedish Capital Markets

The study of Swedish monetization has one major omission: the regional variation in liquidity. There is good reason to believe that while the major cities were reasonably well supplied with credit and means of payment, peripheral areas still suffered from a shortage of capital during the 1870's. In this paper it is argued that reliance on deposits varied geographically. A bank situated in Gothenburg or Stockholm, cities with their own capital markets, had greater opportunities to attract deposits than did rural banks. Thus, after 1863, the motive for opening a note issuing bank might be expected to be the supplying of credit to an area where deposits alone would not do the trick.

A cross section study of the Enskilda banks existing in 1871 supports the hypothesis that the geographical distance to the principal capital markets affected the ability to utilize deposits negatively. Each bank's deposits as a percentage of total liabilities (DEPOSITS) served as the dependent variable. The sum of the distance in kilometers to Stockholm and Gothenburg (STHLM+GBG) was used as a proxy for the degree of the bank's peripheral location relative to the major liquid capital markets. A dummy variable (EST60), was included to determine if there was any significant relationship between the bank's reliance on deposits and how long it had been in business (see Appendix A for model test results).

²⁵ See Chapter 4.

²⁶ See Chapter 4 and Ögren, A. (2000) pp. 45-47

Figure 3. 4: Cross Sectional OLS-Regression on Geographical Distance and Bank Establishments as Determinants on the use of Deposits in 1871.

Dependent Variable: LOG(DEPOSITS)				
Sample(adjusted): 2 27				
Included observations: 26 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.443573	0.990213	1.457841	0.1584
LOG(STHLM+GBG)	-0.387038	0.156215	-2.477599	0.0210*
EST60	-0.064223	0.104264	-0.615966	0.5440
R-squared	0.260449	Mean dependent var		-1.078272
Adjusted R-squared	0.196140	S.D. dependent var		0.282722
Log likelihood	0.385317	F-statistic		4.049968
Durbin-Watson stat	1.578089	Prob(F-statistic)		0.031127

* Denotes significance at least at 5%

Sources: Sammandrag af Bankernas Uppgifter 1871, Motormännens Riksförbund (1999)

The OLS-regressions indicates a negative relationship between deposits as a percentage of total assets and a bank's distance from liquid capital markets. Whether or not the bank was of recent origin (post 1864), however, did not significantly affect its reliance on deposits.

Figure 3.5, however, indicates that several Enskilda banks were established in close proximity to Stockholm and Gothenburg. Thus, although the right to raise funds through note issuance was most important in peripheral areas of Sweden, such as the northern parts, it was utilized to some extent by all banks.

Figure 3. 5: Issued Notes, Deposits and Bond Holdings, as Percentages of Total Assets in 1871 and 1881 for Enskilda Banks Established Between 1865 and 1871, Arranged by Note Issuance in 1871.

Bank	Notes-1871	Notes-1881	Deposits-1871	Deposits-1881	Bonds-1871	Bonds-1881	Region
HernösandsEB	42%	24%	24%	44%	1%	5%	North
SundsvEB	38%	18%	31%	51%	0%	3%	North
WesterbEB	35%	20%	21%	46%	0%	4%	North
GefleLEB	32%	17%	39%	57%	3%	5%	North
SkarabLEB	31%	13%	44%	56%	0%	3%	West
ChristianstEB	30%	19%	38%	48%	2%	7%	West
CalmarEB	29%	13%	26%	50%	5%	13%	South
Ebi Christineh	28%	15%	23%	37%	0%	5%	West
UplandsEB	27%	13%	52%	63%	18%	21%	East
EB i Wernersb	26%	16%	37%	41%	3%	4%	West
GotlEB	25%	13%	24%	49%	0%	4%	South
SödermanLEB	23%	17%	44%	55%	8%	10%	East
BohusLEB	21%	16%	23%	47%	0%	5%	West
BoråsEB	16%	10%	41%	57%	1%	4%	West
All Enskilda banks	27%	16%	39%	53%	7%	9%	

Source: Sammandrag af Bankernas Uppgifter 1871, 1881

Deposit financing differed more among banks in various regions than did note issuance, but the banks closest to Stockholm and Gothenburg had the most deposits. The relative importance of notes diminished for all banks between 1871 and 1881, as increased overall liquidity permitted an increase in deposits. In absolute amounts, however, notes outstanding continued to increase for all banks.

An additional measure of local market liquidity is the quantity of bonds held by the banks, since the willingness to hold them ought to increase with the availability of a liquid secondary market. The fact that the peripheral banks held less bonds, both in 1871 and in 1881, is evidence of the geographically unequal spread of liquidity. Overall, the increase in total bond holdings during this decade is evidence of growing liquidity throughout the Country.

Since Enskilda banks were established even in areas where capital scarcity does not seem to have been an acute problem, the question must be asked why the joint stock form of organization was not used? Three reasons for establishing Enskilda banks in the

more central areas can be posited: 1) The unlimited liability of Enskilda bank owners might have increased public confidence, thus making it possible for them to be less heavily capitalized, 2) The choice of the Enskilda bank format might have been a matter of path dependence, or 3) Even if capital scarcity in the region was not an acute problem, the ability to issue notes might have been of initial importance to the new bank. That is, the issuing notes might have allowed the bank to consolidate its finances and expand its business faster than otherwise would have been the case.

Furthermore, since the Enskilda banks did not exhaust their issuance quotas, they, unlike the joint stock banks, could instantly relieve a temporary lack of liquidity by issuing notes. This fact might explain the willingness of owners to accept the greater risks of unlimited liability. If the banks promoted economic growth by turning real assets into liquid credit, then the question becomes: did the development of the Enskilda banks contribute to the creation of liquid capital markets in Sweden?

Enskilda banks, Liquid Reserves and the Emergence of Liquid Capital Markets

Above, it was argued that banks make an important contribution to economic growth by converting illiquid assets into liquid liabilities. Doing so, however, exposes banks to the danger of runs, in turn forcing them to hold non-interest bearing liquid assets to be able to meet the demands of depositors and note holders. The more instantly redeemable liabilities a bank has, the more vulnerable it is to runs, and therefore the more liquid assets it needs to meet possible liquidity shocks. While more liquid assets reduces the likelihood of bank failure, however, it also impedes credit creation and, thus, economic growth.²⁷ In brief, the level of liquid reserves reflects a trade off between the risk of bank failure and the demand for credit.

The trust engendered by a banking system, as well as its efficiency, might be measured in terms of the evolution of its liquid reserves. The level of the banks' liquid reserves are an indicator of the public's fear of bank failures. The less reserves the banks have to hold, the more efficient they can be in promoting economic growth. The level of reserves is also related to the state of secondary asset markets. The more liquid these are, the more the banks can substitute interest bearing, for non-interest bearing, financial assets, thus further increasing capital market liquidity. The principal goal of this chapter thus is to analyze the factors that determined the level of liquid reserves maintained by the Enskilda banks during the period 1834 - 1900.

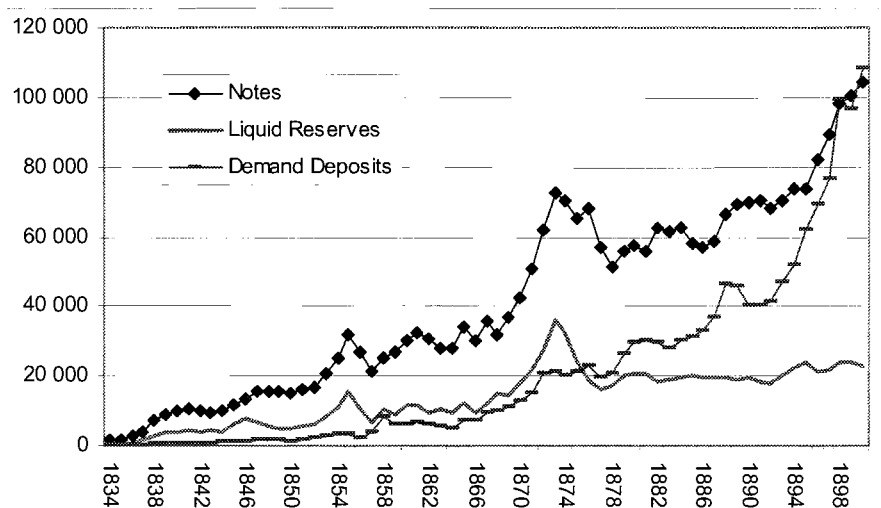
In order to allow holders of their notes to redeem these in legal tender, the Enskilda banks were forced to hold cash reserves. Assuming that the banks behaved efficiently, they would not hold excessive cash reserves. According to free banking theory, the

²⁷ See Diamond, D.W. & Dybvig, P.H. (1983) and Diamond, D.W. & Rajan, R.G. (2001). Diamond and Rajan also discuss the benefits of banking fragility for economic growth (Diamond, D.W. & Rajan, R.G. (2001) pp. 287-288).

demand for cash reserves by a bank's customers has to be satisfied.²⁸ Thus, legal limitations on the right to issue notes only provided a framework for the banks' choices of reserves. Since the Enskilda banks issued less than their legally permissible quantity of notes, their effective issue was not limited by rules and regulations, rather it was limited by the public's demand that they hold sufficient legal tender.²⁹ The Enskilda banks regularly published their balance sheets, providing a high level of transparency of their situation.

The contemporary Swedish debate on banking focused on the question of bank notes. Critics argued that note issuance threatened both the prudence of the banks and, by extension, the fixed exchange rate, even though a run on deposits would be just as serious as one on notes.³⁰ Still, as shown in figure 3.5, liquid reserves were not as closely linked to demand deposits as to notes in circulation.

Figure 3. 6: Note Issuance, Demand Deposits and Liquid Reserves of the Enskilda banks, 1834 – 1900 (1,000's SEK).



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900

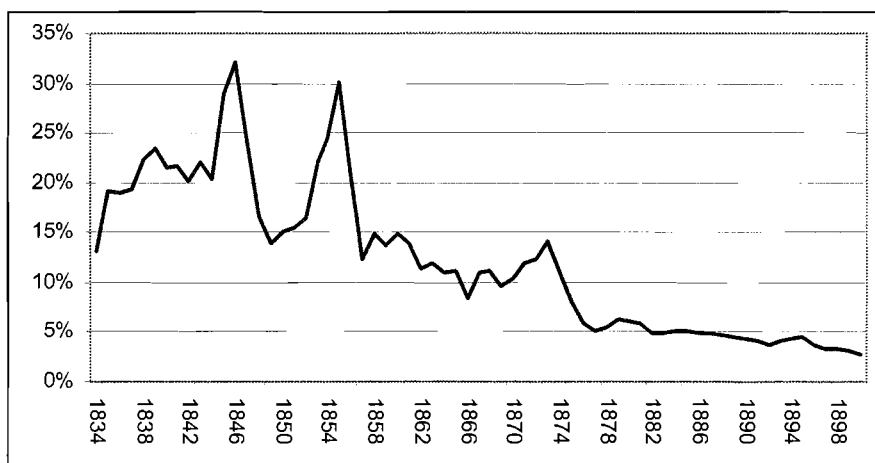
²⁸ Selgin, G.A. & White, L.H. (1994) p. 1720

²⁹ Ögren, A (2000) pp. 39-40

³⁰ Ögren, A. (2000) p. 47. As an example, in the early 1860's a tax was imposed on the issuance of notes.

Assuming that the banks were efficient in their choice of liquid reserves, the reserves actually maintained must have been sufficient in the eyes of the public. Either the banks' customers did not consider demand deposits to be a source of bank vulnerability, or else the demand for liquid reserves declined over time while, coincidentally, demand deposits also increased. The former explanation seems unlikely in view of the fact that Stockholm Enskilda Bank experienced a run on deposits in December of 1878.³¹ The latter explanation would imply a general, over all decrease in the demand for cash reserves. As shown in figure 3.7, the overall level of liquid reserves did indeed decline during the latter part of the period. The question thus becomes why liquid reserves were allowed to shrink to approximately three percent of total assets by the end of the period?

Figure 3. 7: Liquid Reserves of the Enskilda Banks as a Percentage of Total Assets, 1834 – 1900.



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900

The dramatic decline in cash reserves shown in figure 3.7 might be explained by any one (or combination) of three hypothesis: 1) Increasing confidence in the banking system might have decreased the public's demand for liquid reserve, 2) Increasing demand for credit might have made it possible for banks to hold smaller liquid reserve, or 3) Increasing liquidity of the financial market might have it possible for the banks to substitute interest bearing (e.g. bonds, bills of exchange or shares), for non-interest bearing, financial assets. Although not likely, it is also possible that the lower liquid

³¹ Söderlund, E. (1964) pp. 113, 129

reserves might be the result of an institutional focus on notes. That is, the public was more concerned with the backing of notes than of other liabilities.

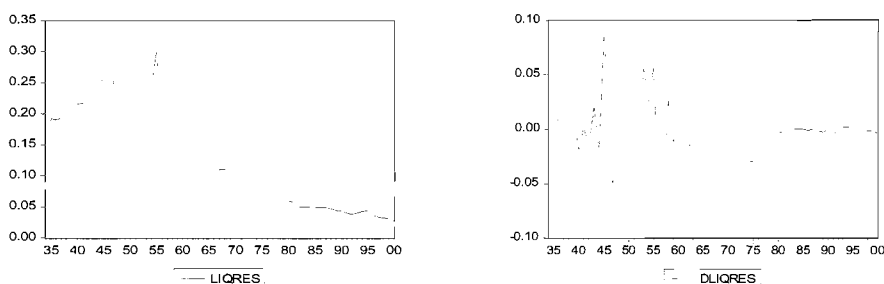
A Bank Specific Model Estimating the Determinants of Liquid Reserves

Before analyzing the structure of assets and liabilities, a qualitative discussion of the relationships among various types of assets and liabilities and of the banks' risk profile is required. The holder of a bank note or a deposit is primarily concerned with his/hers ability to convert the note into legal tender or to withdraw the deposit. Clearly the structure of the bank's assets and liabilities affects this ability.

All the variables are measured relative to total assets (and hence also to liabilities). Thus, the original series reflect the Enskilda banks' holdings of various types of assets and liabilities as percentages of total assets. The series first differences, in turn, reflect annual percentage changes in these assets and liabilities relative to total assets.

The dependent variable LIQRES is defined as the banks' holdings of legal tender (i.e. specie plus Riksbank notes). Notes of other private banks are not included.³² These liquid reserves measure the bank's ability to instantaneously pay out deposits and to redeem its notes in legal tender.

Figure 3. 8: Liquid Reserves as a Percentage of Total Assets and Annual Changes in that Percentage, 1834 – 1900.



Bank assets can be classified according to their riskiness. This riskiness, of course, was one reason there was a demand for cash reserves. If all assets were risk free and could be traded instantaneously, the need for cash reserves would be close to zero. In

³² The small share of any Enskilda bank's notes held by other Enskilda banks indicates both that holding these notes, rather than converting them to legal tender, was considered unnecessarily risky and, in addition, of benefit to the issuing, and competing, bank. Each Enskilda bank thus tried to redeem the notes of all the other Enskilda banks as quickly as possible. These notes, therefore, are not included as assets in the model.

other words, the most secure and liquid assets available were legal tender. With regard to the liabilities of the banks, the following four variables are included in the model:

NOTES and DDEP: Notes in circulation and demand deposits were the most critical bank liabilities, being subject to instantaneous redemption or withdrawal.³³ Thus, these two categories of liabilities ought to have played a major role in determining the banks' preparedness to pay out legal tender. Notes and demand deposits, in relation to total assets, are thus expected to be positively correlated to the quantity of liquid reserves.

Figure 3. 9: Circulating Notes as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900

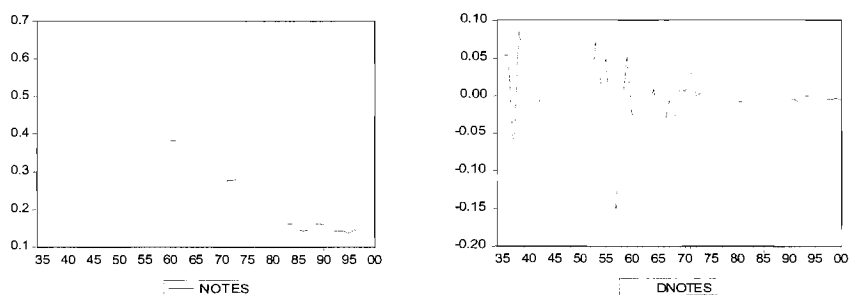
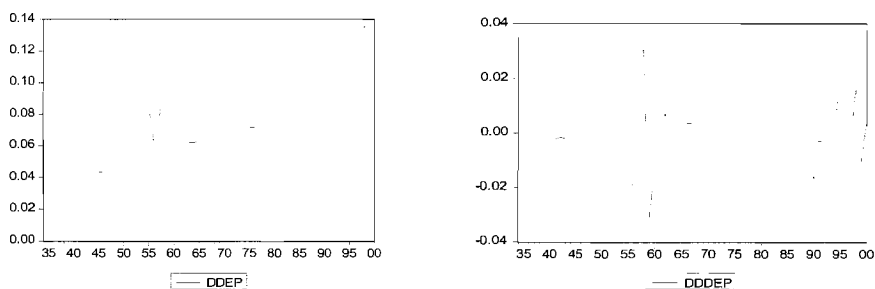


Figure 3. 10: Demand Deposits as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.

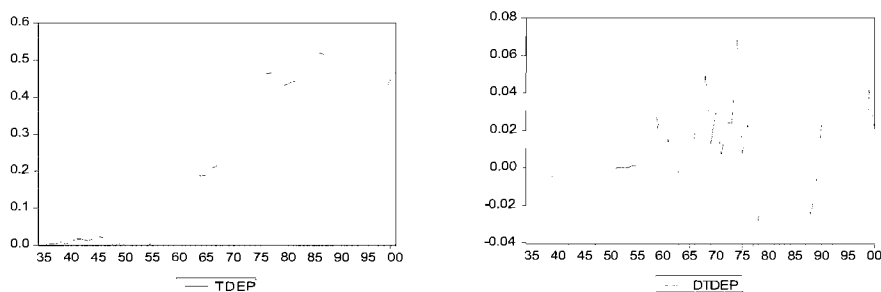


TDEP: Time deposits, which could be withdrawn between two and six months notice, could be expected to require less liquid reserves than notes or demand deposits. A

³³ Also included in the category of outstanding notes are other types of bank promissary notes, such as the so-called bank postal bills, introduced in 1857 to facilitate inter bank clearing, even though legally they did not have to be backed by reserves.

quicker payout, however, would tend to increase public confidence in a bank. Delay could make customers wonder if the bank was operating prudently. Thus, time deposits can also be expected to be positively correlated with cash reserves.

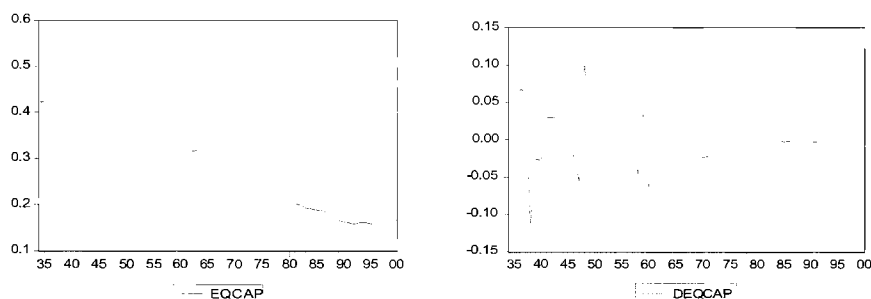
Figure 3. 11: Time Deposits as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900.



EQCAP: The least risky category of bank liabilities was their equity capital. It appeared on both sides of the balance sheet. On the asset side, the equity capital was divided between the so called security fund (*Grundfondshypotek*), which consisted of bonds and of certain types of stocks and other secure assets and legal tender reserves.³⁴ The larger the share of equity capital in total assets, the greater the liquid reserves the bank ought to be able to maintain. If the hypothesis that increasing liquidity of capital markets made it possible for the banks to substitute other financial assets for liquid reserves is correct, however, then the growth of equity capital ought to have been negatively related to liquid reserves. That is, banks could hold other financial assets as substitutes for legal tender.

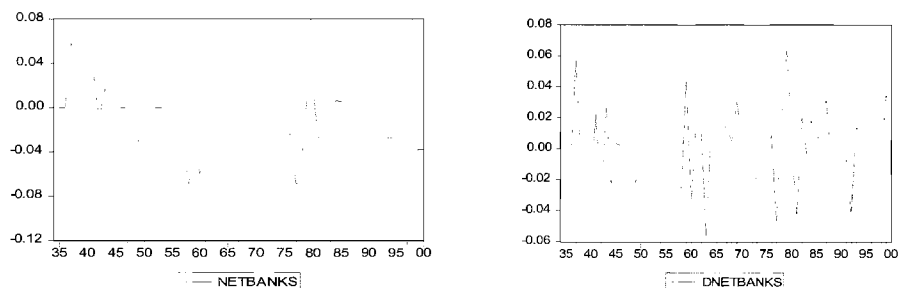
³⁴ On the asset side there was the so-called security fund. It was that part of the equity capital which consisted of shares and bonds rather than liquid reserves. Since it is strongly correlated with equity capital, it is excluded from the model.

Figure 3. 12: Equity Capital as Percent of Total Assets and Annual Changes in that Percentage, 1834-1900.



NETBANKS: This series consists of assets maintained with other financial institutions minus the debts to the bank of these institutions. An increase in the net value of these assets ought to affect liquid reserves negatively.

Figure 3. 13: Net Assets Maintained at Other Financial Institutions as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900



When studying changes in liquid reserves in response to changes in the banks' holdings of other assets, there is already a defined relationship since each class of assets is measured in relation to total assets. Thus, increasing the percentage of one type of asset inevitable requires an offsetting reduction in other assets.³⁵ Nonetheless, this is the basis for determining any systematic relationship between liquid and other types of assets. For instance, did liquid reserves vary systematically in response to changes in the holdings of bills of exchange, bonds or stocks?

³⁵ Despite these definitional relationships, neither assets nor liabilities as independent variables were internally correlated. Thus the model does not suffer from multicollinearity (see Appendix B).

BONDS & BOE: Interest bearing assets, not part of the banks' security funds, such as bonds and bills of exchange, could fluctuate in value.³⁶ This problem, however, diminished as the liquidity of secondary markets increased. The relationship between liquid assets and bonds and bills of exchange, therefore, is an indication of the liquidity of secondary markets. Holdings of bonds and bills of exchange would be expected to increase relative to liquid reserves as those assets increasingly came to be viewed as reliable substitutes for liquid reserves.

Figure 3. 14: Bonds as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900

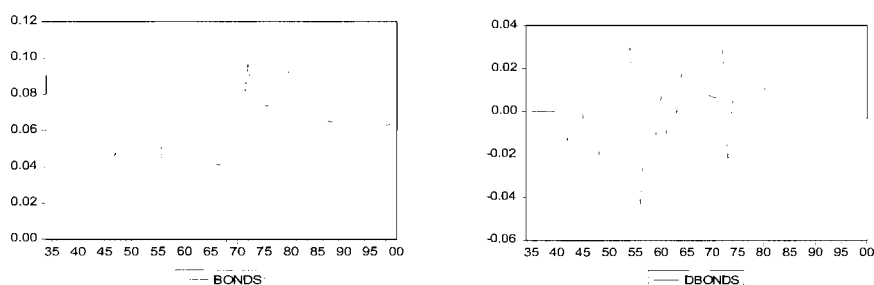
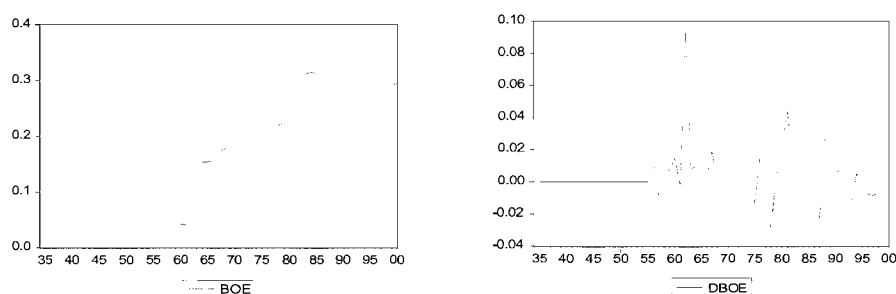


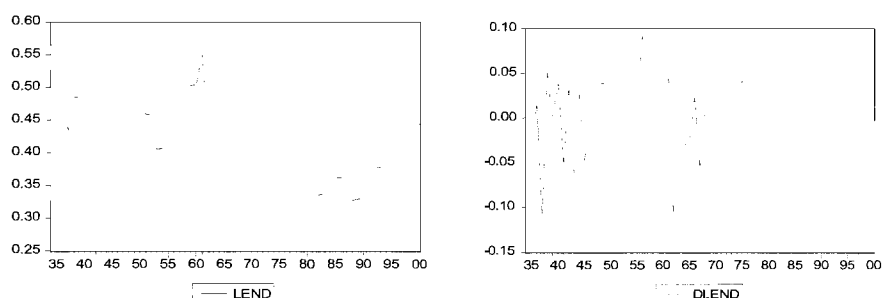
Figure 3. 15: Bills of Exchange as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900



³⁶ One example was the bonds issued to finance the construction of private railroads in Sweden, which rapidly increased in value during the boom years 1870 - 1874. Between 1875 and 1878, however, they shrank to less than half their nominal value, if any buyer could be found. The crisis of 1878 - 1879 also demonstrates that a lack of liquidity on secondary asset markets in a small transition economy such as nineteenth century Sweden could increase the volatility of asset prices, especially during economic downturns.

LEND: Loans were one bank asset that could result in higher levels of risk. The larger the share of bank assets that consisted of credits, the harder it was to increase liquidity on short notice. At the same time, the trade off between the public's demand for credit and its demand for liquid reserves is built into this parameter. If the hypothesis that increased demand for credit permitted a shrinkage of liquidity is correct, then the relationship should be negative.

Figure 3. 16: Lending as Percent of Total Assets and Annual Changes in that Percentage, 1834 – 1900



One final question concerns the role of institutional change. The Banking Act of 1864 was important in that it reduced the impediments to new banks caused by charter requirements. It can therefore be seen as a signal of official approval of the Enskilda bank system which, in turn, might have reflected growing public confidence in these banks.³⁷

Estimating the Model for Determining the Enskilda Banks' Liquid Reserves

As noted above, all the variables are measured relative to total bank assets (and thus also to bank liabilities). This makes the model less sensitive to the number of banks, which in fact increased substantially during the period. It also gives a better picture of the trade off between liquid reserves and other types of assets and liabilities faced by the Enskilda banks than would absolute values. All the series used in the model have been converted into first differences. So doing makes it possible to test how changes in the composition of assets and liabilities affected the holdings of liquid reserves in the short run.

One problem is the small number of banks that existed early in the period. This increases the sensitivity of the results to the actions of a single bank. In addition, the growing number of banks changed over all conditions. As can be seen from the graphed data series, several of the series experienced decreased volatility over time, thus making

³⁷ Ögren, A. (2000) pp. 37-38

the model likely to suffer from heteroskedasticity (see Appendix B for model test results).

The volatility of the early period (from 1834 until approximately 1857/58) can not be explained simply by the crises of 1846/47 and 1856/58. The strong effect of these crises on liquid reserves is most probably explained by the small number of banks in existence. The eighth Enskilda bank was established in 1848. This number then remained constant until the founding of Stockholm Enskilda Bank in 1856. Since 1848 was the earliest year for which complete balance sheets for all the banks could be located, the estimation of the model begins with that year (see Figure 3.17).

Figure 3. 17: OLS-Regression of the Determinants of the Enskilda Banks' Liquid Reserves

Dependent Variable: D(LIQRES)				
Sample: 1848 1900				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000329	0.001197	-0.274696	0.7848
D(NOTES)	0.374589	0.054964	6.815180	0.0000*
D(DDEP)	0.233642	0.115118	2.029597	0.0485*
D(TDEP)	0.186586	0.070322	2.653305	0.0110*
D(EQCAP)	-0.411678	0.067226	-6.123787	0.0000*
D(NETBANKS)	-0.354857	0.059962	-5.917981	0.0000*
D(BONDS)	-0.654004	0.144980	-4.511005	0.0000*
D(BOE)	-0.703533	0.083705	-8.404890	0.0000*
D(LEND)	-0.569022	0.065145	-8.734735	0.0000*
R-squared	0.929814	Mean dependent var		-0.004021
Adjusted R-squared	0.917052	S.D. dependent var		0.026099
Log likelihood	188.9324	F-statistic		72.86266
Durbin-Watson stat	2.076707	Prob(F-statistic)		0.000000

* Denotes at least 5% significance level

Sources: Post & Inrikes Tidning 1849 – 1871, Sammandrag af Bankernas Uppgifter, 1871-1871-1900, Sveriges Riksbank (1931) pp. 172-185

The most general result of the model, displayed in figure 3.17, is that changes in each of the independent variables affected, at the 5% significance level, the liquid

reserves held by the banks.³⁸ Since all the variables are measured relative to total assets, it is also possible to interpret the size of the coefficients. Recall that the original, undifferenced series represent the particular asset or liability as a percentage of total assets or liabilities. Thus differentiating the series causes the changes in this relationship to be measured in percentage terms.

The coefficients of the model imply that an increase in notes in circulation of one percentage point, say from twenty to twenty one percent of total assets, resulted in an increase of liquid reserves equal to 0.37 percent of total assets. Therefore, it can be maintained that the relative volume of notes in circulation had a greater effect on liquid reserves than did the relative volume of demand deposits. As expected, the banks also were forced to increase their liquid reserves more in response to an increase in demand, than in time, deposits. This difference, however, was smaller than expected.

The fact that an increasing share of the equity capital was held in the form of interest bearing financial assets instead of cash reserves supports the hypothesis that the increasing liquidity of the financial markets made it possible for the banks to substitute bonds and shares for more liquid assets. A one percentage point increase in the share of equity capital resulted in a 0.41 percentage point decrease in liquid reserves. In absolute numbers, however, both the level of equity capital and that of liquid reserves increased.

There is good reason to believe that interest bearing financial assets, such as bonds and bills of exchange, increasingly were substituted for liquid reserves. These assets could not totally replace liquid reserves, but the decrease in the share of liquid reserves of between 0.65 and 0.70 percentage points in response to a one percentage point increase in bonds or bills of exchange is quite striking. Also note that these bonds do not include any that might be held as part of the banks' security funds. In the next section, the hypothesis that the increased liquidity of the secondary markets for financial assets made it possible to substitute such assets for liquid reserves, will be examined further.

The lending co-efficient also indicates that the increasing demand for credit was partly accommodated by a growing public acceptance of a lower level of liquid reserves. If lending increased by one percentage point of total assets, this permitted a decrease in liquid reserves of more than half a percentage point. The variable NETBANKS simply reflects that when the banks were net creditors vis a vis other financial institutions, lower liquid reserves were needed.

Whether or not relaxing the rules for establishing new banks influenced the holding of liquid reserves remains an open question. The hypothesis was that increased public

³⁸ The R-square, or explanatory power, of the model is 93 percent. For a model utilizing differenced series that value is quite high, although that is not surprising given that the variables have a defined endogenous relationship among themselves. Still, it is sufficient to conclude that the model largely includes the existing trade offs between liquid reserves and other assets, as well as the effect of various liabilities on the need for liquid reserves.

confidence in the banking system ought to have permitted a reduction in liquid reserves, and that the Banking Act of 1864 reflected such an increase in confidence. Chow breakpoint tests for the years 1864 and 1865 are significant at the ten percent significance level (see Appendix B).

A Model Estimating the Determinants of Enskilda Bank Bond Holdings

The previous section indicates that there is reason to believe that the banks experienced an increased ability to exchange interest bearing financial assets for liquid reserves. This might well have been the result of increased liquidity on the growing secondary financial market. Such a process would be consistent with a model of banks and financial markets in transitional economies created by Douglas W. Diamond. Diamond argues that the banks play an active role in creating liquid secondary markets. As capital markets become increasingly liquid, banks can reduce their holdings of fully mature assets. That is, liquid capital markets allow banks to reduce their holdings of liquid assets, thus, in turn, further increasing capital market liquidity.³⁹

The hypothesis that Sweden benefited from increasingly liquid capital markets is further supported by the increasing ability of the National Debt Office to place bonds on the domestic market. In 1861, the Office issued bonds underwritten by three actors on the Swedish credit market. In order to generate domestic demand for these bonds, they (and their interest coupons) were made acceptable for all types of tax payments. In addition, they could be transferred to third parties at no cost. In effect, these bonds had been given legal tender status, clearly indicating that the secondary financial asset market suffered from a lack of liquidity. The coupon interest rate was a reasonable 4.5%, but in addition a commission (or capital discount) of 7% had to be paid to the underwriters of the loan. In view of the problems encountered in selling the bonds outside the major cities, a further 2% commission was added for such sales. In 1865 another, supposedly temporary, loan to be administered by a Swedish bank was planned for the domestic credit market. Not only did it have to be denominated in Mark Hamburg Banko and Cologne Silver, the interest rate required was a generous 6%, with another 3.5% in total commissions.

Less than ten years later, in 1870 and 1872, two significantly larger bond loans were placed on the Swedish market. This time, no middle man was required and the interest rates were 5% and 4% respectively. In addition the commissions were lower. The second of these loans was designated to pay off the first, as well as two international

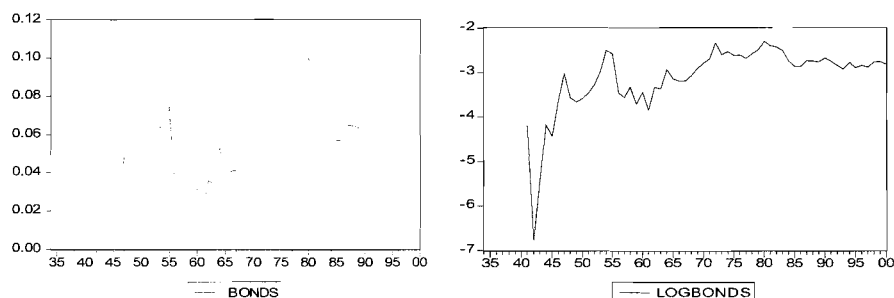
³⁹ Diamond, D.W. (1997) pp. 949-950. Diamond suggests that the model is particularly suitable for a developing economy, which Sweden at the time most certainly was.

bond loans dating from 1868 and 1869. Even if swings in the business cycle played some role, the domestic bond market seems to have become more liquid during these years.⁴⁰

In this section, a model determining the variables affecting Enskilda bank holdings of bonds relative to total assets is estimated. The two hypothesis are: 1) Increasing over all liquidity made bonds a better substitute for liquid assets, and 2) If bonds are viewed as a substitute for liquid assets, then increased demand for credit ought to affect relative bond holdings negatively.

Since this model is intended to explain long term developments, the dependent variable, BONDS, is measured as the natural logarithm of bank holdings of bonds, exclusive of their security fund, in relation to total assets. As was the case with the previous model, the starting year is 1848.

Figure 3. 18: Bond Holdings as Percent of Total Assets and in Natural Logarithm Form, 1834 – 1900

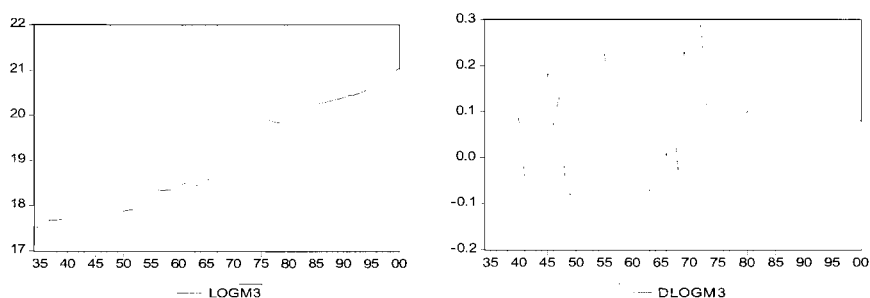


Independent variables explaining the share of bonds in total Enskilda bank holdings are: M3: The money supply in terms of M3 (circulating notes plus the public's deposits in commercial and savings banks) is used as a parameter to measure the growth of liquidity in Sweden.⁴¹ The hypothesis is that growth in M3 ought to lead to increased Enskilda bank bond holdings. Since the natural logarithm of M3 is not stationary, it has to be implemented as first differences.

⁴⁰ RGKLKT. Administering the 1861 loan were the Banking firms Carnegie & Co., C.G. Cervin and Stockholm Enskilda Bank. Administering the 1865 loan was *Skandinaviska Kreditaktiebolaget* in Gotheburg. A Professor from the Institute of Technology had to help the national Debt Office with calculating the actual cost of the loan. In the case of the 1870 and 1872 loan, commission was probably paid to local tax governors administering the handling of these bonds.

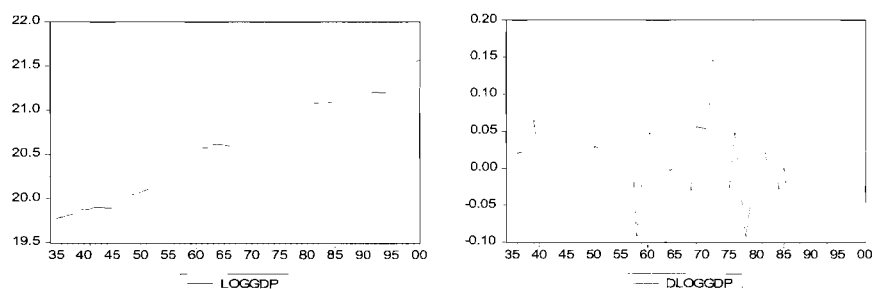
⁴¹ Data is from Post & Inrikes Tidning 1849-1871, Sammandrag af Bankernas Uppgifter 1871-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 45-49.

Figure 3. 19: Money Supply M3 as a Natural Logarithm and Annual Changes Therein, 1834 – 1900



GDP: Nominal GDP is utilized as a proxy for the public's demand for credit.⁴² If bonds were considered to be a substitute for liquid reserves, then increased demand for credit (as measured by GDP growth) ought to be negatively related to bond holdings. As was the case with M3, the nominal GDP series has to be differenced to become stationary.

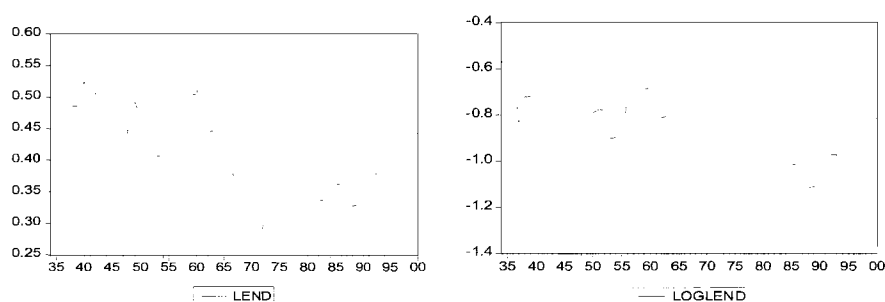
Figure 3. 20: Nominal GDP as a Natural Logarithm and Annual Changes Therein, 1834 – 1900



⁴² The series of GDP at current prices has been gathered from Krantz, O. (1997) pp. 12-14. One possible complication is that the growth of GDP might have been impeded by a lack of credit. Thus GDP would reflect the lack of supply of, as well as the level of demand for, credit. Even though the supply of commercial bank credit initially only equaled one half percent of GDP, rising to over 40 percent in 1913, however, the relationship in absolute numbers between GDP at current prices and the supply of credit is close to linear (the correlation coefficient is 0.94, significant at the 1% level). Krantz, O. (1997) pp. 12-14, Sveriges Riksbank (1931) pp. 172-185.

LEND: If bonds were considered to be a substitute for liquid reserves, then Enskilda bank lending relative to total assets ought to be negatively related to bond holdings. According to the ADF-test, the lending series is actually more stationary in its original, than in its logarithmic, form. Thus the series LEND is defined simply as lending as a share of total assets, even though this series is only close to being stationary at the 5% significance level (see Appendix C).

Figure 3. 21: Enskilda Bank Lending as Percentage of Total Assets and as a Natural Logarithm, 1834 – 1900



Finally, Enskilda bank holdings of bonds lagged one year was included in the model. It was expected that bond holdings would be positively related to bond holdings lagged one year, since the ability to substitute bonds for liquid reserves was increasing over time.

As was the case with the previous model, one question concerns the existence of a structural break point either in 1864 or in 1865. Dealing with Swedish monetization indicates that there was a structural break in the late 1860's which ought to have increased the ability to substitute bonds for liquid reserves.⁴³

Estimating the Model Determining Enskilda Bank Bond Holdings

An OLS-regression on the model for the years 1848 through 1900, gave the results presented in figure 3.22 (for tests of the model, see Appendix C).

⁴³ See also Chapter 4

Figure 3. 22: OLS-Regression Results of the Determinants of Enskilda Bank Bond Holdings

Dependent Variable: LOG(BONDS)				
Sample: 1848 1900				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.489785	0.203332	-2.408797	0.0199
DLOG(M3)	1.388260	0.402205	3.451620	0.0012*
DLOG(GDP)	-1.064474	0.541654	-1.965229	0.0552(*)
LEND	-2.166584	0.595783	-3.636532	0.0007*
LOG(BONDS(-1))	0.552661	0.085126	6.492282	0.0000*
R-squared	0.828695	Mean dependent var		-2.929539
Adjusted R-squared	0.814420	S.D. dependent var		0.391197
Log likelihood	21.79811	F-statistic		58.05068
Durbin-Watson stat	1.737505	Prob(F-statistic)		0.000000

* Denotes at least 5% significance level, (*) is close

Sources: Krantz, O. (1997) pp. 12-14, Post & Inrikes Tidning 1849 – 1871, Sammandrag af Bankernas Uppgifter, 1871-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 172-185

The results of estimating the model seem to be consistent both with the hypothesis that interest bearing bonds increasingly become a reliable substitute for liquid reserves and the hypothesis that this was a consequence of the increased liquidity of the secondary financial markets.⁴⁴

Increases in domestic liquidity, as measured by the growth of M3, resulted in larger bond holdings. Since the growth of economy wide liquidity facilitated the conversion of bonds into liquid assets, this result is in accord with the hypothesis. Since both the dependent and the independent variable are natural logarithms, it is also possible to evaluate the size of the coefficients. A one percent change in economy wide liquidity resulted in a 1.38 percentage point increase in the share of bonds in total bank assets.

Increases in both lending and the demand for credit, the latter represented by annual changes in nominal GDP, resulted in decreased Enskilda bank bond holdings (although the GDP relationship was not significant at the 5% level). These results tend to support the hypothesis that bonds were held as substitutes for liquid reserves since both strictly cash reserves and bond holdings decreased when the demand for credit increased.

⁴⁴ The R-square, or explanatory power, is 83 percent. While not high for time series analysis, it is clearly sufficient to conclude that the model captures the determinants of Enskilda bank bond holdings quite well.

The percentage of bonds in total bank assets was positively related to bonds held the previous year. This is likely to be the result of an increasing ability over time to substitute interest bearing bonds for liquid reserves, as the liquidity of secondary asset markets improved. A discontinuity in the ability to hold financial assets in place of cash reserves indicates that the secondary markets for such assets had become sufficiently liquid to assure the holder that they could be sold with little risk of substantial loss. One way to test if and when such a break occurred is to apply the Chow breakpoint test on the model.

Figure 3. 23: Chow Breakpoint tests of the model for the years 1864 & 1865

Chow Breakpoint Test: 1864			
F-statistic	4.085446	Probability	0.004015*
Log likelihood ratio	20.60074	Probability	0.000963
Chow Breakpoint Test: 1865			
F-statistic	5.037635	Probability	0.001014*
Log likelihood ratio	24.43676	Probability	0.000179

* Denotes at least 5% significance level

The Chow breakpoint tests for the years 1864 and 1865 also are significant at the 5% significance level, indicating that a structural change in the ability hold bonds probably occurred during these years. The high level of significance for year 1865, when the establishment of new banks accelerated in response to the Banking Act of 1864, supports the hypothesis that the right to freely open new banks facilitated the development of the Swedish credit market. Thus the 1860's, thanks to the evolution of the banking system, witnessed significant progress in the creation of the prerequisites needed for the development of an efficient over all capital market.

Conclusions

To paraphrase Mark Twain; the rumors concerning the death of the Enskilda banks in response to the introduction of joint stock banking during the 1860's are exaggerated. The Enskilda banks continued to dominate Swedish banking until the dawn of the twentieth century. Given the commercial banking system's undoubted contribution to economic growth, the Enskilda banks might well have been an optimum response, given the state of the economy and the existing institutional setting. The aspect of the Enskilda banks used to brand them as backward, the issuance of notes, in fact was the source of their success.

The ability to issue notes gave the Enskilda banks a degree of flexibility that made it possible for them to operate in areas of capital scarcity. The use of deposit financing developed not so much because of the repeal of the usury law in 1863, but because of

the provision of sufficient means of payment. The circulation of money, usable for deposits, was largely a result of the note issuance activities of the Enskilda banks.

As deposits increasingly become a viable alternative means of financing banking activity, the Enskilda banks came largely to rely on them. By the late 1860's, note issuance had become secondary to deposits. Indeed, throughout the nineteenth century, the Enskilda banks held more deposits than did the joint stock banks. One of the advantages of the Enskilda banks versus their joint stock competitors was their greater ability to liquify fixed assets, even when they lacked sufficient deposits to operate their business. Arguably, this advantage was maintained throughout the nineteenth century and made the Enskilda banks' mode of operation superior in most parts of Sweden.

The latter section in this chapter examined the interaction between the Enskilda banks and the emergence of liquid capital markets. The level of liquid reserves maintained by the Enskilda banks declined rapidly during the period 1834-1900. Three explanatory hypotheses were discussed: 1) Increasing confidence in the banking system resulted in a decreased demand for liquid reserves, 2) Increasing demand for credit by the public resulted in a decreased demand for liquid reserves and 3) Increasing liquidity of capital markets allowed the Enskilda banks to substitute income generating assets, such as bonds and shares, for non-interest bearing cash reserves.

All three hypotheses seem to have some validity, even if the confidence effect is difficult to measure. Liquid reserves definitely decreased as demand for credit rose, and bond holdings were strongly negatively related to totally liquid reserves. As Enskilda bank bond holding increased in tandem with the economy's overall liquidity, growing capital markets made it possible to substitute interest bearing assets for liquid reserves. Thus, as the liquidity of capital markets increased as a result of banking activities, the banks needed less liquid reserves, thereby further increasing the liquidity of the markets.

The years 1864 and 1865 witnessed a leap upward in the bond holdings of the Enskilda banks, implying a breakthrough for Swedish capital markets. The conclusion of this paper is that the Banking Act of 1864, by removing virtually all legal barriers to the establishment of new banks, was of greater importance for the development and integration of the Swedish credit market than was the introduction of limited liability Joint Stock banking.

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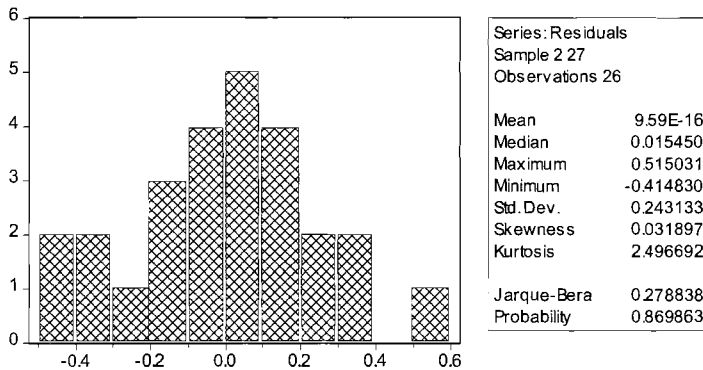
Appendix – Testing the Models

Appendix A – Testing the cross sectional model

Since this model is cross sectional all banks have been sorted in an alphabetic order. Thus, the series are assumed to be stationary (and are so when tested with the ADF-test).

Appendix Figure 1: Complete readout from the Cross Sectional OLS Regression

Dependent Variable: LOG(DEPOSITS)				
Method: Least Squares				
Sample(adjusted): 2 27				
Included observations: 26 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.443573	0.990213	1.457841	0.1584
LOG(STHLM+GBG)	-0.387038	0.156215	-2.477599	0.0210
EST60	-0.064223	0.104264	-0.615966	0.5440
R-squared	0.260449	Mean dependent var		-1.078272
Adjusted R-squared	0.196140	S.D. dependent var		0.282722
S.E. of regression	0.253483	Akaike info criterion		0.201129
Sum squared resid	1.477837	Schwarz criterion		0.346294
Log likelihood	0.385317	F-statistic		4.049968
Durbin-Watson stat	1.578089	Prob(F-statistic)		0.031127

Appendix Figure 2: Distribution of Residuals, Histogram Normality Test on the Cross Sectional OLS Regression

As seen in the figure above, the residuals are normally distributed, and this allows for further testing of the model.

Appendix Figure 3: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.381390	Probability	0.687546
Obs*R-squared	0.911294	Probability	0.634038

As seen above, the model goes clear from the problem of serial correlation, and as the model is made using cross sectional data (no time series) this is expected.

Appendix Figure 4: White Heteroskedasticity Test (Including Cross Terms)

F-statistic	0.674197	Probability	0.617285
Obs*R-squared	2.958902	Probability	0.564726

Heteroskedasticity (a systematic pattern of volatility in values) is seldom a problem using cross sectional data. And this test shows that this was not a problem for the model.

Appendix Figure 5: Ramsey RESET Test (general stability and specification test)

F-statistic	0.059878	Probability	0.808957
Log likelihood ratio	0.070669	Probability	0.790365

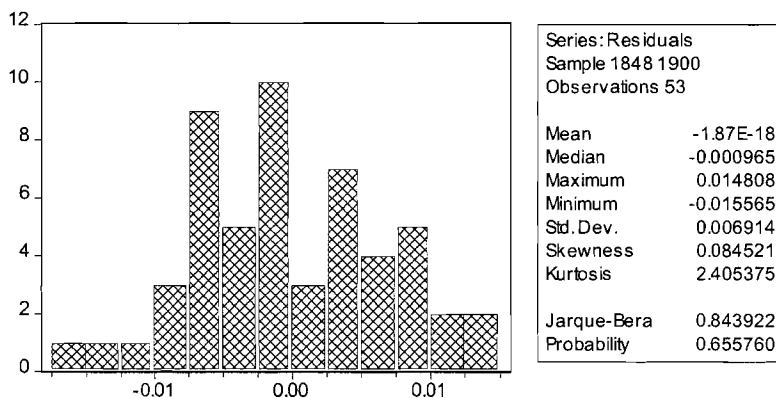
Appendix B – testing the OLS model determining liquidity reserves (time series)*Appendix Figure 6: Complete readout from the Time Series OLS Regression
Determining Liquidity Reserves*

Dependent Variable: D(LIQUES)				
Method: Least Squares				
Sample: 1848 1900				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000329	0.001197	-0.274696	0.7848
D(NOTES)	0.374589	0.054964	6.815180	0.0000
D(DDEP)	0.233642	0.115118	2.029597	0.0485
D(TDEP)	0.186586	0.070322	2.653305	0.0110
D(EQCAP)	-0.411678	0.067226	-6.123787	0.0000
D(NETBANKS)	-0.354857	0.059962	-5.917981	0.0000
D(BONDS)	-0.654004	0.144980	-4.511005	0.0000
D(BOE)	-0.703533	0.083705	-8.404890	0.0000
D(LEND)	-0.569022	0.065145	-8.734735	0.0000
R-squared	0.929814	Mean dependent var		-0.004021
Adjusted R-squared	0.917052	S.D. dependent var		0.026099
S.E. of regression	0.007517	Akaike info criterion		-6.789900
Sum squared resid	0.002486	Schwarz criterion		-6.455322
Log likelihood	188.9324	F-statistic		72.86266
Durbin-Watson stat	2.076707	Prob(F-statistic)		0.000000

All series, except for NETBANKS, are un-stationary when not differenced. The series NETBANKS is stationary at a 5 percent significance level, and hence can be implemented in the model as it is. But, as all other variables are set as annual changes in relation to total assets or liabilities, this is also chosen for this variable so that it can be interpreted in the same manner as all other independent variables.

Appendix Figure 7: ADF-test NETBANKS, intercept and no lags

ADF Test Statistic	-3.113860	1% Critical Value*	-3.5312
		5% Critical Value	-2.9055
		10% Critical Value	-2.5899

Appendix Figure 8: Distribution of Residuals, Histogram Normality Test on the Time Series OLS Regression Determining Liquidity Reserves*Appendix Figure 9: Breusch-Godfrey Serial Correlation LM Test*

F-statistic	0.139145	Probability	0.710965
Obs*R-squared	0.170951	Probability	0.679268

As seen above, the model goes clear from the problem of serial correlation, and as the first differentiate of all variables are used this is expected. A change in the dependent variable LIQRES, should not be dependent on changes in this variable in the foregoing year.

Appendix Figure 10: White Heteroskedasticity Test (including cross-terms)

F-statistic	1.437783	Probability	0.306590
Obs*R-squared	47.05016	Probability	0.348761

It was earlier mentioned that heteroskedasticity was an expected problem of the model. And to some extent it probably was. The test, however, indicates that it is not corrupting the model, perhaps a result of the fact that the model starts in 1848.

Appendix Figure 11: Ramsey RESET Test (general stability and specification test)

F-statistic	1.570622	Probability	0.216889
Log likelihood ratio	1.901366	Probability	0.167926

The Ramsey RESET test shows that even though the p-value is not that high, it is sufficient to exclude the problems of missing variables, model specification and serial correlation.

Appendix Figure 12: Testing for multicollinearity (Correlations between independent variables)

	DBOE	DBONDS	DDDEP	DEQ CAP	DLEND	DNOTES	DTDEP	DNET BANKS
DBOE	1.00	0.09	-0.08	-0.09	-0.34	0.00	0.39	-0.05
DBONDS	0.09	1.00	0.38	-0.41	-0.49	0.22	-0.05	0.19
DDDEP	-0.08	0.38	1.00	-0.26	-0.16	0.08	-0.21	0.06
DEQCAP	-0.09	-0.41	-0.26	1.00	-0.03	-0.53	-0.10	0.19
DLEND	-0.34	-0.49	-0.16	-0.03	1.00	-0.13	0.06	-0.54
DNOTES	0.00	0.22	0.08	-0.53	-0.13	1.00	-0.23	0.12
DTDEP	0.39	-0.05	-0.21	-0.10	0.06	-0.23	1.00	-0.01
DNETBANKS	-0.05	0.19	0.06	0.19	-0.54	0.12	-0.01	1.00

One problem that could be experienced, especially as all variables already are interlinked through the definition of balance sheets, are that the independent variables could be suffering from multicollinearity. When viewing the correlation between annual changes in the independent variables, multicollinearity was not detected.

Appendix Figure 13: Chow Breakpoint tests of the model for the years 1864 & 1865

Chow Breakpoint Test: 1864			
F-statistic	1.961591	Probability	0.074773
Log likelihood ratio	21.64521	Probability	0.010074
Chow Breakpoint Test: 1865			
F-statistic	1.904044	Probability	0.083952
Log likelihood ratio	21.12131	Probability	0.012123

*Appendix Figure 14: Complete readout from the Time Series OLS Regression
Determining Liquidity Reserves with Liabilities only*

Dependent Variable: D(LIQRES)				
Method: Least Squares				
Sample: 1848 1900				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002252	0.002028	-1.110731	0.2722
D(NOTES)	0.729477	0.061884	11.78789	0.0000
D(DDEP)	0.686631	0.166980	4.112049	0.0002
D(TDEP)	0.249116	0.097206	2.562764	0.0136
D(LBANKS)	0.479656	0.111262	4.311054	0.0001
R-squared	0.768498	Mean dependent var		-0.004021
Adjusted R-squared	0.749206	S.D. dependent var		0.026099
S.E. of regression	0.013070	Akaike info criterion		-5.747410
Sum squared resid	0.008200	Schwarz criterion		-5.561533
Log likelihood	157.3064	F-statistic		39.83535
Durbin-Watson stat	2.279469	Prob(F-statistic)		0.000000

The OLS-regression above shows that the model original model (figure 17) was not corrupted by the inclusion of assets in the model (even though these are defined in relation to the dependent variable, liquid reserves.).

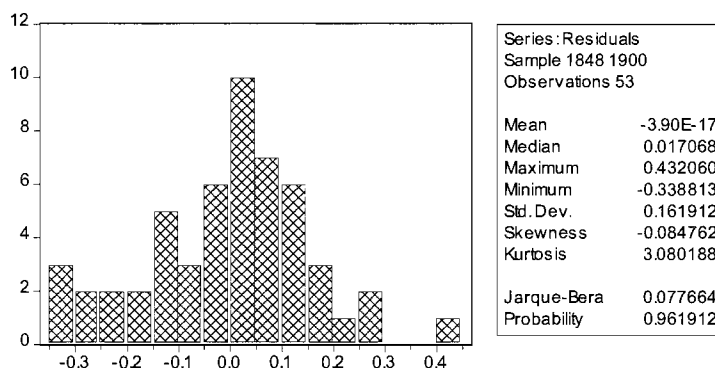
Appendix C – testing the OLS model determining Bond holdings (time series)*Appendix Figure 15: Complete readout from the Time Series OLS Regression Determining Bond Holdings*

Dependent Variable: LOG(BONDS)				
Method: Least Squares				
Sample: 1848 1900				
Included observations: 53				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.489785	0.203332	-2.408797	0.0199
DLOG(M3)	1.388260	0.402205	3.451620	0.0012
DLOG(GDP)	-1.064474	0.541654	-1.965229	0.0552
LEND	-2.166584	0.595783	-3.636532	0.0007
LOG(BONDS(-1))	0.552661	0.085126	6.492282	0.0000
R-squared	0.828695	Mean dependent var		-2.929539
Adjusted R-squared	0.814420	S.D. dependent var		0.391197
S.E. of regression	0.168524	Akaike info criterion		-0.633891
Sum squared resid	1.363213	Schwarz criterion		-0.448014
Log likelihood	21.79811	F-statistic		58.05068
Durbin-Watson stat	1.737505	Prob(F-statistic)		0.000000

Appendix Figure 16: ADF-test for stationarity of series Log(BONDS) & LEND

ADF Test Statistic	-6.657701	1% Critical Value*	-3.5457
For series LOG(BONDS)		5% Critical Value	-2.9118
		10% Critical Value	-2.5932
ADF Test Statistic	-2.898698	1% Critical Value*	-3.5312
For series LEND		5% Critical Value	-2.9055
		10% Critical Value	-2.5899

Appendix Figure 17: Distribution of Residuals, Histogram Normality Test on the Time Series OLS Regression Determining Bond Holdings



Appendix Figure 18: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.585383	Probability	0.448035
Obs*R-squared	0.651992	Probability	0.419401

Appendix Figure 19: : White Heteroskedasticity Test (including cross-terms)

F-statistic	1.261033	Probability	0.288173
Obs*R-squared	9.885290	Probability	0.273170

Appendix Figure 20: Ramsey RESET Test (general stability and specification test)

F-statistic	0.132356	Probability	0.717633
Log likelihood ratio	0.149043	Probability	0.699452

Appendix Figure 21: Testing for multicollinearity (Correlations between independent variables)

	DLOGM3	DLOGGDP	LEND	LOGBONDLA
DLOGM3	1.000000	0.484658	-0.457045	0.283169
DLOGGDP	0.484658	1.000000	-0.152426	0.176362
LEND	-0.457045	-0.152426	1.000000	-0.489657
LOGBONDLA	0.283169	0.176362	-0.489657	1.000000

Appendix Figure 22: Chow Breakpoint tests of the model for the years 1864 & 1865

Chow Breakpoint Test: 1864			
F-statistic	4.085446	Probability	0.004015
Log likelihood ratio	20.60074	Probability	0.000963
Chow Breakpoint Test: 1865			
F-statistic	5.037635	Probability	0.001014
Log likelihood ratio	24.43676	Probability	0.000179

– Chapter 4 –

Expansion of the Money Supply with a Fixed Exchange Rate:

“Free Banking” in Sweden under the Silver and Gold Standards, 1834 – 1913

Keywords: *Classical specie standard, endogenous money approach, fractional reserves, free banking, and money supply*

ABSTRACT

This paper studies the role of bank notes issued by the private Enskilda banks in the expansion of the Swedish monetary stock under the classic specie standard maintained during the period 1834-1913. The use of balance sheets has made possible the estimation of more accurate and continuous series of the Swedish money stock and bank reserves. The conclusion of the paper is that the Enskilda banks contributed to Swedish economic expansion and integration, through the provision both of credit and of generally accepted means of payment, beyond what would have been possible for the central bank, constrained as the latter was by specie convertibility requirements. The re-establishment of the silver standard was crucial for this process, since it allowed the Enskilda banks to hold central bank notes instead of specie as reserves. The level of backing required for the Enskilda bank notes was determined by the demands of the public rather than by legal rules. The notes issued by the Enskilda banks were accepted as deposits in the banking system (including from 1869 in the Riksbank). Thus, the Enskilda bank notes was a main ingredient in the monetization that took place in the late 1860's.

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Introduction

In 1834 Sweden re-established the silver standard it had abandoned in 1809. This action marked the beginning of a fixed exchange rate regime that lasted for more than eighty years until the outbreak of World War I. During this entire period, the maintenance of the specie standard was the principal duty of the central bank. Despite being the poorest European country operating under a convertible standard, Sweden in 1873 followed Germany in converting from silver to gold. According to Eichengreen and Flandreau, the adherence of a country to any convertible specie standard was more important for economic growth than whether that standard was based on silver or on gold.¹ They would thus argue that it was the specie standard as such that was of fundamental importance for Swedish economic growth.

The nineteenth century witnessed great changes in the Swedish economy. Local, national and international markets were integrated during this epoch. These changes affected not only the money market, but also the very nature of the money in circulation.² Sweden's specie standard guaranteed international integration, but it

¹ Eichengreen, B. & Flandreau, M. (1994) pp. 2-3, 6-8, Figure 1 & 2

² For a discussion of the effects of ongoing economic and financial integration on the role, as well as the form, of money (see Goodhart, C. (1995) pp. 2-5).

sometimes impeded the provision of credit and acceptable means of payment in larger sections of the Country.

The extent of Swedish poverty during this period is well illustrated by the very limited and stagnant circulation of metallic coins, as well as a supply of specie metal insufficient to provide the Country with an adequate supply of generally accepted money and credit. Instead, the Swedish economy relied heavily on personal credits, IOUs and other types of informal money, accepted only on a personal or regional basis, thus hindering more widespread economic integration. During this era of rapid economic expansion, Sweden was able to preserve a specie standard while simultaneously replacing the money substitutes originally in circulation with money accepted throughout the Country.

In accord with the assumptions of free banking theory, previous studies of the private note issuing banks (the Enskilda banks) as a system have visualized them as if they were working in an economic vacuum. Incorporating the demands of the specie standard, as well as the actual condition of the economy and the credit market, has resulted in two new conclusions: 1) In some fundamental respects, the system of Enskilda banks did not fit the theoretical concept of a free banking system, and, more important, 2) The Enskilda banks, in concert with the central bank (the Riksbank) and its issuance of notes backed by specie, were essential to Swedish monetization.

As demonstrated in this chapter, the demand for generally accepted means of payment was partly satisfied by a type of domestic specie exchange system that loosened the money supply restrictions imposed by the international specie standard. The key Swedish actors in this system were the Enskilda Banks and the Riksbank. The Riksbank, being the sole issuer of legal tender, supplied high powered notes in response to the international demand resulting from specie convertibility. The Enskilda banks issued what can be described as "medium powered notes" primarily backed by Riksbank notes. As was essential during a period of national market integration, the Enskilda bank notes came to be accepted nation wide. This domestic specie exchange system permitted an expansion of the Swedish money supply of what can be considered as currency beyond what might have been expected under an international specie convertibility regime.

The supplying of Sweden with credit and generally accepted means of payment can be simplified into a two step process: first, regional "unofficial" money in circulation was replaced by Enskilda bank notes and, second, these notes, together with circulating Riksbank notes, provided a sufficient quantity of currency accepted nationwide to allow the banking system, starting in the late 1860's, to balloon the money supply by the use of deposits.

Quantitative information on the Enskilda banks was obtained from their end of year balance sheets published during the period 1834-1906.³ With only a few exceptions, data was found for the entire period. It thus became possible to analyze developments over time. The balance sheets are unique in that they include vital information concerning the precise composition of reserves, as well as the extent to which the Enskilda banks utilized their legal ability to issue notes.⁴

Bank Note Substitutes, Free Banking and Endogenous Money

By definition, the money supply consists of bank notes and coins in circulation. Bank notes, in turn, are defined as non-interest bearing credit instruments transferable among actors as payment. Note substitutes, however, are usually not defined as part of the money supply.

A problem immediately encountered is that this definition of the money stock seems to have little relevance to the Swedish nineteenth century experience. The most striking feature of the Swedish money market of the day was the shortage of specie, coins and other official means of payment.⁵ Indeed, contemporary observers considered this shortage to be a constraint on economic growth. Although their circulation was negligible, coins were regarded as real money by the authorities and by scholars. Notes were thought of as "representing" coins.⁶ Clearly, the lack of official forms of money forced the practical Swedish concept of money to be quite elastic.

Authorized assignments constituted the permissible value of checks drawn on the Riksbank. Such checks circulated as means of payment just like bank notes, and, since

³ These were published in *Post & Inrikes Tidning* for the years 1834-1870 and *Sammandrag af Bankernas Uppgifter* 1871-1906. For the years 1836 -1842 and 1867, the figures have been supplemented with data from Brisman, S. (1924) pp. 246-247 and Sveriges Riksbank (1931) p. 177. The figures for 1866 refer to September 30, rather than December 31, of that year (see Chapter 1).

⁴ The accuracy and reliability of the figures reported by the Enskilda banks might be questioned, but when differences were detected compared to other sources, the balance sheets reported less favorable (lower) ratio of reserves to notes issued. See BaU 1853/54, Brisman, S. (1924) pp. 246-247, Finanskommittén 1858 and Sveriges Riksbank (1931) pp. 172-185. Brisman listed the Enskilda banks' holdings of legal tender for the years 1834-1856, but he did not provide the source (although it probably was the Financial Committee of 1858). Jonung relied on Brisman's data for the years it was available. For the years 1857-1870, he assumed that Enskilda bank holdings of Riksbank notes remained constant at ten million SEK (Jonung, L. (1989)).

⁵ Heckscher, E.F. (1965) pp. 294-296

⁶ Agardh, J.M. (1865) pp. 78, 146, BaU 1834/35 No8 p. 9, 1879 No8 pp. 2-3, Kock, K. (1931) p. 18, Nordström, J.J. (1853) p. 90, Rosenberg, C.M. (1878) p. 84, Wennberg, J.O. (1829) p. 7, Ögren, A. (1995) p. 14. The Riksbank's right to issue one SEK notes was rescinded in 1878 to pave the way for a more "civilized usage of coins" (BaU 1879 No8 p.3).

their value could exceed the drawer's deposits and credits with the Riksbank, they added further to the money supply.⁷ Promissary notes issued by companies or individuals were commonly used, and were widely accepted by the public, as means of payment. In the 1790's, the issuance of private promissary notes with engraved or printed denominations was banned. Until the 1820's, the deposit certificates of discount companies circulated as bank notes.⁸ In addition to various types of IOUs, bonds, despite their interest bearing nature, also circulated as a means of payment.⁹ Thus, informal money and credit in the form of notes substitutes were supplied in response to demand. Their quality (or lack thereof), however, restricted their circulation to a relatively narrow geographic region or personal network.

Despite the contextual definition of money embedded in orthodox economic theory, (i.e. money is whatever serves as a means of payment or exchange), economists usually use a static definition to determine which items are to be included in various measures of the money supply. Because of the state of the means of payment in circulation, as well as the circular definition of money, it is important that the various monetary concepts used in this chapter be strictly defined.

A central measure used in this chapter is the par value money circulating throughout the Country, that is to say, currency or M1. It consists of the public's holdings of Enskilda bank and Riksbank notes. This definition is justified by the finding in this chapter that Enskilda bank notes were not just a claim on central bank reserves. More importantly, there were acceptable for bank deposits, starting in 1869, even in the Riksbank. Thus, when in circulation, these notes were not only commercial bank liabilities, as were demand deposits, but they also constituted a prerequisite for the emergence of a deposit based banking system.¹⁰

A second measure used in the thesis is M2. It is defined as consisting of M1 plus the public's deposits in the commercial banks. The measure is not original and has to some extent been used in previous research.¹¹ Its practical importance, however, is questionable. Since the offices of commercial banks were both few and seldom open, bank notes were vastly more convenient for transactions than were deposits. If the

⁷ BaU 1850-1851 No 2, p. 18. Formally, authorized assignment could be over issued because the velocity of circulation could be taken into account. Informally, it was realized that a reduction of assignments in circulation would severely dampen economic activity. See also Engdahl, T. (2002).

⁸ Brisman (1924) pp. 47-51, 244, Lindgren, H. (2002), Sveriges Riksbank (1931) pp. 44-45. The ban on private notes with engraved or printed denominations was renewed in the nineteenth century. During the period 1810-16, the three existing discount companies circulated promissary notes with a value of up to 35 percent of the Riksbank notes in circulation.

⁹ Post & Inrikes Tidning 7/7-1840. The use of domestic bonds as means of payments payment was discussed relative to the growing money stock.

¹⁰ The measure M1 is today usually defined as monetary liabilities of the central bank, i.e. its demand deposits, circulating notes and coins, plus the public's demand deposits in commercial banks.

¹¹ See Jonung, L. (1984) & (1989). The measure M2 was defined in the same way when used by Jonung but has since then been altered, illuminating the problem of using static definitions for such measures.

deposits of the Swedish public are to be included, a more appropriate measure also would include deposits in savings banks, since these banks for the most part functioned as commercial banks.¹²

Free Banking Theory

A true free banking system is based on the principal that banking should not be subjected to any legislation distinct from that which applies to any type of business. Thus there is no need for restrictions on note issue, barriers to entry or legislation regulating reserves. Naturally, no State sponsored central bank is required.¹³ Other than these basic principles, however, free banking theory varies among authors.¹⁴

The most common version of free banking is based on the experience of Scotland, at least as interpreted by Selgin, Smith and White.¹⁵ This model is of a system operating under a specie standard and with fractional reserves. It is thus quite similar to the Swedish institutional setting, and it is the version of free banking that is referred to in this chapter.¹⁶

The theory assumes a banking system operating with fractional reserves under a specie standard. Such a system is believed to be fully self-adjusting, with the supply of notes matching the demand. Any bank that over issues notes will lose reserves due to a public reluctance to hold their notes. The bank's reputation will suffer and the public will choose higher quality notes; i.e. those of banks with a higher reserve ratio. Thus,

¹² See Lilja, K. (2000), Petersson, T. (2000) and Sjölander, A. (2000). Thus Swedish savings banks differed in that respect from the savings banks in many other countries, for instance UK and US.

¹³ Selgin, G.A. & White, L.H. (1994) pp.1718-1719

¹⁴ The most pedagogical way of viewing the differences is through the basis of note issuance and the choice of a unit of account. Some advocates of commodity-based money backed up to one hundred percent, argue that smaller reserves are fraudulent. Yet others, argue that a free banking system can be provided without the use of commodity money or reserves, other than holdings of financial instruments, with an unit of account pegged to a basket of commodities. See Dowd, K. (1993) pp.62-67, Rothbard, M.N. (1985) pp.13-14, Sechrest, L.J. (1993) pp.150-154.

¹⁵ Sechrest argues that both Smith and White have overvalued the freedom of the Scottish system. Usury laws, privileged chartered banks among other things limited the free banking of Scotland (Sechrest, L.J. (1993), p.92).

¹⁶ Also for Sweden, the Scottish banking system served as an example. The Minister of finance C. D. Skogman, wrote that the Swedish system had the same ideals as the Scottish system. The reason the Scottish system was not fully adopted in Sweden, he wryly observed, was the difficulty of transforming Swedes into Scots (Skogman, C.D. (1846:2) pp. 53-54). See also Agardh, J.M. (1865) pp. 295-322, Nilsson, G.B. (1981) pp. 30-34, Nordström, J.J. (1853) pp. 193-205.

even in the absence of formal rules, a consensus concerning a sound reserve-to-notes ratio will emerge over time.¹⁷

In theory banks are assumed to operate with gold reserves, thus linking the theory of free banking to the monetary approach to the balance of payments as a model of the workings of the gold standard.¹⁸ Inter regional specie flows will establish monetary equilibrium. Over issuance of bank notes in a given region will result in a geographic outflow of reserves, an increase in public holdings of specie or both, thus lowering the banks' reserve ratio.¹⁹

Such a system could be expected to be problematic for an expanding economy, causing it to suffer from a shortage of specie and, consequently, of notes. According to free banking theory, the reserve ratio of the banks could change in response to public demand. That, however, would be contrary to the requirements of the specie standard. A conflict would thus arise between maintaining the reserve ratio in order to safe guard specie convertibility and satisfying the domestic demand for money.²⁰

Prior to the establishment of the Enskilda banks, this conflict was resolved through the utilization of note substitutes. These substitutes were totally independent of the specie standard. The challenge facing the financial system that emerged in connection with the Country's economic integration, was replacing these note substitutes with more reliable, nationally accepted, means of payment, without, however, endangering the convertibility that was the corner stone of the international monetary regime.

The theory of free banking posits an ideal, fully developed banking system functioning according to the law of adverse clearing. The holder of bank notes has the ability to choose notes of higher quality if his or her bank lets the quality of its notes deteriorate by reducing its level of reserves.

In 1989, Lars Jonung published an influential paper concerning the Enskilda banks: "The Economics of Private Money: The experience of private bank notes in Sweden, 1831-1902". Jonung's free banking perspective caused him to view the Enskilda banks as a private alternative to notes issue by the State via the Riksbank. Since the notes issued by the Enskilda banks displaced the Riksbank notes from circulation, Jonung concluded that the public preferred the former. The impact of the fixed exchange rate regime, the scarcity of trustworthy means of payment and the consequences of

¹⁷ Sechrest, L.J. (1993) p. 14, Selgin, G.A. & White, L.H. (1994) p. 1720, White, L.H. (1985) pp. 119-121, White, L.H. (1989) pp. 21-22, 27-28, 23-36. Theoretically, the bank has a contractual obligation to the bearer of the bank note to exchange it on demand.

¹⁸ Regarding the MABP, see McCloskey, D.N. & Zecher, R.J. (1984) & McCloskey, D.N. & Zecher, R.J. (1985).

¹⁹ White, L. H. (1989) pp. 21-22, 27-28, 32-36. It is even argued that the international adjustment mechanism is not fully operational without a pure free banking system (White, L.H. (1985) pp. 119-121).

²⁰ Swedish 19th century economic debate fully recognized the difficulty of combining a fixed exchange rate with a growing demand for money and credit. See for instance Agardh, J.M. (1865) p. 154, Wennberg, J.O. (1829) p. 7.

Gresham's Law were not considered by Jonung in his analysis of the struggle for market shares between the Enskilda banks and the Riksbank.

Moreover, as in the case of Scotland, it is maintained that the Swedish experience of this alleged free banking system was one of inherent stability. Supposedly none of these banks experienced financial difficulty or came to require State assistance. These conclusions appear to be based directly on the theory, rather than on historical facts. Nonetheless, among writers in this field, they have been accepted as representing the Swedish experience of free banking.²¹

The Endogenous Approach to Money

This Swedish case seemed illustrative of an endogenous money creation mechanism. The basic assumption of such a theory is that money in fact is a debt instrument, that is a transfer of future purchasing power to the present. When one party is willing to incur debt, and the other to hold it, the consequence is the creation of money. Thus, money will be supplied in response to demand. If a third party accepts this debt as payment, then it has become a circulating means of payment. Institutional features affect the acceptability of the means payment among larger groups. Thus, the value of a means of payment, that is its quality, is determined by the ability to transfer it to other parties, not by the reserves held by the issuer.²²

The domestic volume of informal money and credit was demand driven. Consequently, there was a close relationship between the quantities of credit and means of payment. The quality of the latter also varied in accordance with their acceptability within various regions and to various groups of actors. Since the specie standard limited the supply of money and credit of the highest quality, money and credit of lower quality were supplied as substitutes.

The Riksbank and the Issuance of "High Powered Notes"

The principal credit and means of payment problem was to convince consumers that these could be transferred without risk of loss. One way of doing so was to guarantee that bank notes could be converted into specie. The Swedish central bank, the Riksbank,

²¹ See Schuler, K. (1992) pp. 31-32, 40, Selgin, G.A. (1988) p. 7. Where Selgin also views absence of regulations as a parameter in the Swedish case.

²² See Bell, S. (2001) Chick, V. (1992) and Wray, L.R. (1990).

followed the dictates of the currency school; the economy was based on a specie standard, thus stressing the quantity theory of money and the specie flow mechanism.²³

The Riksbank was owned and administered by the Parliament (the Riksdag), not the Crown, and it had the exclusive right to issue legal tender notes. In addition to splitting the Parliament into factions, the granting of note issuing rights to the Enskilda banks became the metaphorical banking question in the struggle between Parliament and Crown. One of the official arguments against the Enskilda banks was that allowing them to issue notes would endanger international convertibility into specie. In 1850/51, the Parliament acted to create a new type of commercial bank without note issuing privileges, the Filial banks. These were instead dependent on credits from the Riksbank. It was hoped that they would facilitate the replacement of circulating Enskilda bank notes with Riksbank notes. When it became apparent that this hope was futile, the Parliament in 1860/61 withdrew its support for the Filial banks.²⁴

In 1869, the Riksbank began accepting Enskilda bank notes at par, as long as these notes could be redeemed for Riksbank notes in a city where the Riksbank maintained an office.²⁵ The Banking Law of 1897 granted the Riksbank a note issuing monopoly. The Enskilda banks were required to cease issuing notes by the end of 1903, and all of their notes were to be withdrawn from circulation by the end of 1906.²⁶

It was the fundamental duty of the Riksbank to maintain specie convertibility. At the same time, however, it was also expected to supply Sweden with an adequate supply of credit. This dual role of guardian of international convertibility and provider of credit made the level of Riksbank reserves a matter of the utmost importance.

Riksbank Reserves

According to the banking legislation of 1834, note issuance of the Riksbank was to be based on a fractional reserve system. Reserves were supposed to cover 40 % of issued notes, and only specie metals were valid as cover for note issue.

Regulatory changes introduced in 1845 permitted the Riksbank to include foreign holdings such as deposits in foreign banks and banking firms, and treasury bills among its reserves and to utilize them as backing for its note issue. The system of fractional reserves was changed to one of differential reserves, the issue of Riksbank notes being limited to reserves plus thirty million SEK. This change reduced the Riksbank's note issuance flexibility and, since they used Riksbank notes as part of their reserves, that of the Enskilda banks as well. The new regulations were motivated by a belief that falling

²³ BaU 1840/41 No4 p. 27, Ögren, A. (1995) p. 12

²⁴ Montgomery, A. (1934) p. 7. Regarding the political struggle, see Chapter 2 and Nilsson, G.B. (1981), (1989) and (1994).

²⁵ Ögren, A. (1995) pp. 12-15

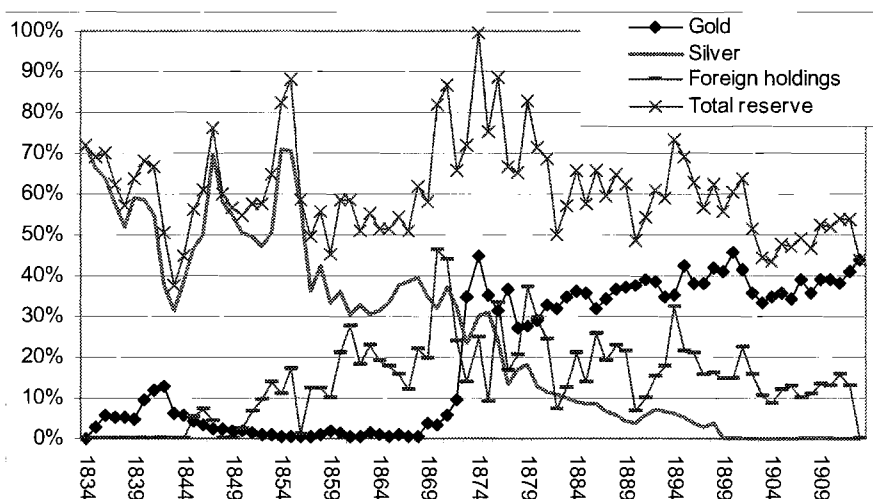
²⁶ Brisman, S. (1931) pp. 193-196, RdSkr 1898 No 66

reserves would cause a smaller shrinkage of the note issue with a differential, than with a fractional, reserve system.

In addition to outstanding notes, the Bank's reserves were supposed to cover its demand deposits, all types of written assignments and (until 1872) unutilized funds that were designated for loans and credits to specific social groups. Including these categories within the money stock ensured that the Riksbank's notes would be covered to an internationally sufficient degree. Starting in 1860, the Bank was permitted to hold up to ten percent of its reserves in gold. In preparation for adoption of the gold standard, all restrictions on the gold percentage were dropped in 1869.²⁷

In 1879, the maximum Riksbank note issue was increased to reserves plus thirty five million SEK. This change was made at the same time as the Enskilda banks were prohibited from issuing notes of less than ten SEK.²⁸ The clear intent was that the increased Riksbank note issue was to replace the low denomination Enskilda bank notes.

Figure 4. 1: Backing of Riksbank Notes Issued, 1834 – 1913 (in percentages)



Source: Sveriges Riksbank (1931) pp. 54-71

²⁷ Brisman, S. (1931) pp. 75-78, 161-165, Davidsson, D. (1931) pp. 38-39, 44, Sveriges Riksbank (1931) pp. 54-71

²⁸ PrAK. 1879 Vol IV No 50, PrFK 1879 Vol. III No 35, RdSkr 1879 No 52.

Throughout the period 1834 – 1913, even though a differential reserve system was used, the specie reserves of the Riksbank covered approximately forty percent of the Bank's note issue. As early as 1845, the Riksbank began to intervene in the currency market by buying and selling foreign bills of exchange. The principal motivation for these actions was the shortage, and high import cost, of specie.²⁹ Consequently it was the foreign component of the Riksbank's reserves that fluctuated the most, while its specie reserves remained relatively stable.

Taking an international perspective, the Riksbank maintained a lower coverage of its notes than did the principal European countries. Its coverage, however, was similar to that Finland, another peripheral country.³⁰ The legal tender status of the Riksbank notes, making them acceptable for tax payments, as well as their specie backing made them a form of domestic "high powered" money. Thus the Riksbank notes also served as backing for the Enskilda bank notes. Since the Riksbank's obligation to preserve international specie convertibility limited its ability to supply credit and means of payment, this task was instead undertaken by the Enskilda banks.

Enskilda Banks and the Issuance of "Medium Powered" Notes

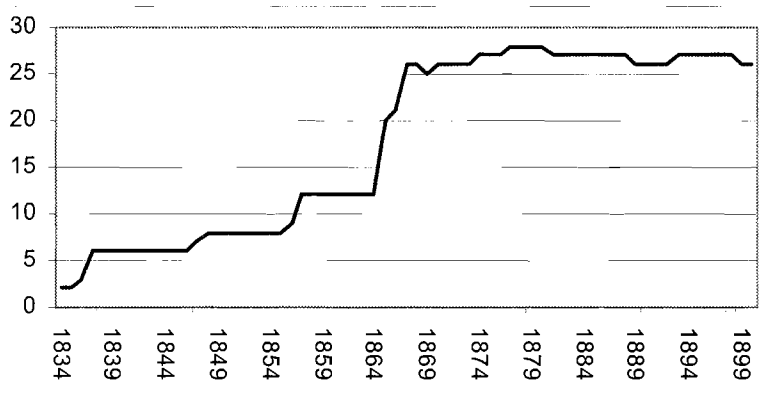
Two distinct features characterized the Enskilda banks: the right to issue notes and the unlimited liability of their share holders. The first Enskilda banks had been established in the early 1830's, but their numbers grew only slowly until after 1865, to a large extent as the result of restrictions on their establishment. Entry into banking was far from free.³¹ Their formal, legal acceptance as a distinct banking system came only with the Bank Law of 1864. Most importantly, this Law assured that all new bank charters that met standard criteria would be approved and that the renewal of existing bank charters would be virtually automatic. Still, the limits on note denominations and the taxes on note issuance that were imposed by the Parliament prevented the creation of a "full fledged" free banking system.³²

²⁹ BaU 1868 No2 pp. 2-3, Lobell, H. (1999) pp. 89-92

³⁰ Flandreau, M. (2000), Pipping, H.E. (1961) pp. 509, 512, Pipping, H.E. (1969) p. 432, Sveriges Riksbank (1931) pp. 45-49

³¹ Kock, K. (1931) pp. 103-104. The Crown twice, in 1841 and in 1849, rejected Skåne Enskilda Bank's request for an extension of the redemption time limit on its notes, in view of its pending charter renewal application.

³² SFS 1864:31 §§1, 26. The Parliamentary opposition to the Enskilda banks did not stand idly by as the notes of these banks in circulation rapidly expanded. In 1861, a tax of 0.2 percent, later increased to 0.3 percent in 1887, 0.5 percent in 1892 and finally to 1.0 percent in 1893, was imposed on the issuance of such notes (RdSkr 1887 No49, 1892 No98, 1893 No45, SFS 1861:34 §15).

Figure 4. 2: The Number of Enskilda banks, 1834 – 1913

Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af bankernas uppgifter 1871-1900, Sveriges Riksbank (1931) pp. 172-179.

The first Royal proclamation concerning the right to engage in banking had been issued in 1824, but the first Enskilda bank (Skåne Enskilda Bank) was not established until 1831. A puzzling question is why seven years elapsed between the proclamation and the first application for a charter.³³ The answer, quite simply, is that re-establishment of the specie standard was a prerequisite for the opening of private banks. The definitive Parliamentary decision to re-adopt the silver standard, thus setting the base value of the currency in terms of that metal, as well as to when notes would become exchangeable for silver coins, was taken in March of 1830. The first application for a bank charter then followed six months later in September of 1830.³⁴

The establishment of the silver standard was essential for the establishment of a note issuing banking system during the nineteenth century. It provided the public confidence that was absolutely vital, at least until the Enskilda banks had become firmly established. Thus, the notes issued by the Enskilda banks would not have achieved nearly the same level of acceptance had they not been backed by legal tender. Had the Riksbank notes not been secured by a fixed quantity of specie, the Enskilda banks would have had to

³³ According to Jonung, the explanation lay in a combination of the usury law's limitation on bank loan interest rates and the existence of an unrestricted, non-bank capital market. Given this situation, the banks found it difficult to compete effectively for funds (Jonung, L (1989) p. 7).

³⁴ Kock, K (1931) pp. 45-50. The fundamental importance of the specie standard for the ability to establish banks, was conveyed to Parliament by the founders of Skåne Enskilda Bank. See also Bankkomitén (1883) p. 138, Nordström, J.J. (1853) p. 245, Rosenberg, C.M. (1878) p. 81, Wennberg, J.O. (1829) p. 31.

operate with specie reserves. The Swedish supply of specie, however, was insufficient to allow the Enskilda banks to operate directly with specie.

The Royal proclamation of 1824 did not mention the right to issue notes, nor was any such right mentioned in Skåne Enskilda Bank's first charter, it was, however, permitted to issue printed, non-interest bearing certificates of deposit payable on demand. These could be transferred from person to person in denominations below 20 Rdr. Banco. In practice, these CDs were identical to bank notes.³⁵ Starting with the third Enskilda bank, established in 1836, requirements for bank note issuance were written into the charters. In 1846, uniform such requirements were enacted into law.

A fundamental aspect of free banking is the evolution of an inter-bank clearing mechanism. The safer system associated with the Enskilda banks, as well as their practice of accepting each other's notes, can be dated back at least to the legislation of 1846.³⁶ Still, no regular clearing institution emerged until the establishment of Stockholm Enskilda Bank in 1856. Previously existing Enskilda banks outside the Capital had recognized the importance of having a single clearing institution. Instead this function had been performed by a number of financial actors in Stockholm.³⁷

Two features closely associated with the Enskilda banks during the gold standard period were already contained in the 1864 legislation. First, their notes were to be exchangeable for Riksbank notes or specie at their main office and, second, while they were given the option of delaying such an exchange for six months, such action would result in an interest penalty of six percent per annum. These rules were probably aimed at increasing the stability of the Enskilda bank system, thus decreasing the probability of bank runs.³⁸

³⁵ Skogman, the Crown's representative, did not concede that either Skåne Enskilda Bank, or the second such bank, Wermland Enskilda Bank, had any right to issue notes. This despite the fact that Wermland Enskilda bank in its charter, as well as its balance sheets, used the term "notes" (Skogman, C.D. (1846:1) pp. 181-182, 196-199, Post & Inrikes Tidning 29/4-1835). Both Brisman and Jonung describe the note issuing right as unintended (Brisman, S. (1924) pp. 90-92, Jonung, L. (1989) p. 14). Given the open and positive attitude on private bank note issuance in the Parliament, Skogman must have known that this was the only possible use for these "certificates of deposit" (See Chapter 2, see also Nilsson, G.B. (1981) pp. 26, 399 note 17).

³⁶ Kock, K. (1931) pp. 80, 93-103, Rosenberg, C.M. (1878) pp. 83-84, SFS 1846:1 §11, Skogman, C.D. (1846:1) pp. 196-199

³⁷ Nilsson, G.B. (1989) pp. 107-110, Söderlund, E. (1964) pp. 115-119. Starting in the 1870's, *Skandinaviska Kreditaktiebolaget*, a joint stock bank, assumed clearing responsibilities for the Enskilda banks.

³⁸ SFS 1864:31 §§27-28. Thus, these features were not implemented just to protect the gold holdings of the Enskild banks, but to protect their reserves generally. See Flux, A.W. (1910) pp. 61-63, Jonung, L. (1984) pp. 371-372. The option clause has been presented as an example of how to create stability in a free banking system. Dowd, K. (1993) pp. 31-33, Gherity, J.A. (1995) pp. 722-724, Selgin, G.A. & White, L.H. (1997) pp. 270-272. Despite explicit statements, both in the Law and the bank charters, that the bank's were not entitled to any public support, such support was in fact provided in several critical situations (Brisman, S. (1934) pp. 102-103, 105-106, Schön, L. (2000) p. 165, Ögren, A. (2000) pp. 103-104).

Enskilda Bank Reserves

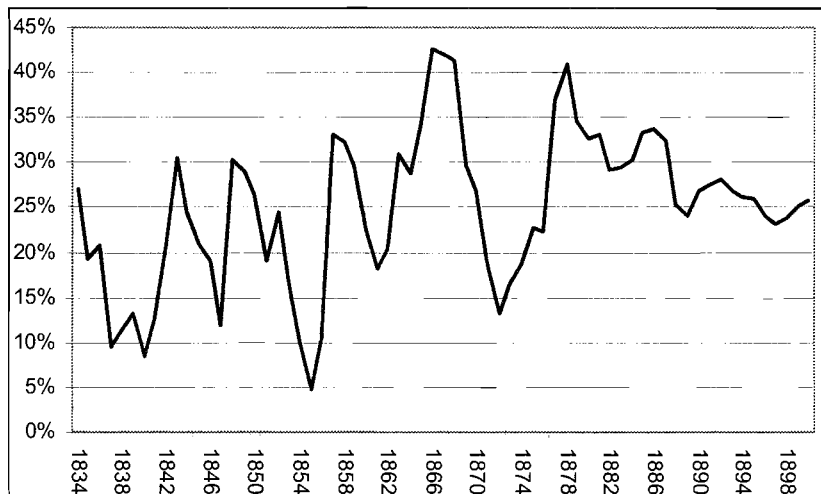
According to the Law of 1846, as well as pre-existing bank charters, the principal basis for their note issuance was the Enskilda bank's equity capital. Entered on the asset side of the bank's balance sheet, this equity capital was divided into two parts. Between sixty and seventy five percent consisted of bonds and shares. These were either deposited in a municipal office or were kept in the bank's safe. The rest was legal tender cash. The bank's note issue had to be fully backed by the sum of: 1) the securities held as part of the bank's equity capital, 2) the legal tender held by the bank, either at its exchange office or with the Riksbank, 3) the silver held by the bank and 4) collateral for the bank's loan up to an amount not to exceed fifty percent of the bank's equity capital.³⁹

Accompanying the switch from the silver to the gold standard, new bank legislation was enacted in 1874. According to the new rules, the bank's note issue had to be fully backed by the sum of: 1) the securities portion of the bank's equity capital, 2) the reserve fund of the bank, 3) the claims of the bank, not to exceed fifty percent of the bank's equity and on the condition that the bank's main office held gold coin equal to at least ten percent of the bank's equity and 4) any gold holdings in excess of ten percent of the equity capital.

In practice, these rules did not constrain the note issuance of the Enskilda banks. Indeed, they continually failed to reach their allowable note issue limits.

³⁹ SFS 1846:1 §§8, 11, Skogman, C.D. (1846:2) pp. 38-42, 50-54. In its early days, a bank could count the owners' personal promissary notes as part of its equity capital (Post & Inrikes Tidning 2/2, 9/5-1843). The two earliest banks counted their own notes as equity during 1834-39, and until 1846 all the banks counted the notes of other Enskilda banks (Post & Inrikes Tidning 1835-1847, especially 21/3, 29/4-1835, 9/3, 26/4-1836).

Figure 4. 3: Unutilized Note Issuing Rights of Enskilda banks, 1834 – 1900 (in percentages of Total Note Issuing Right)



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900

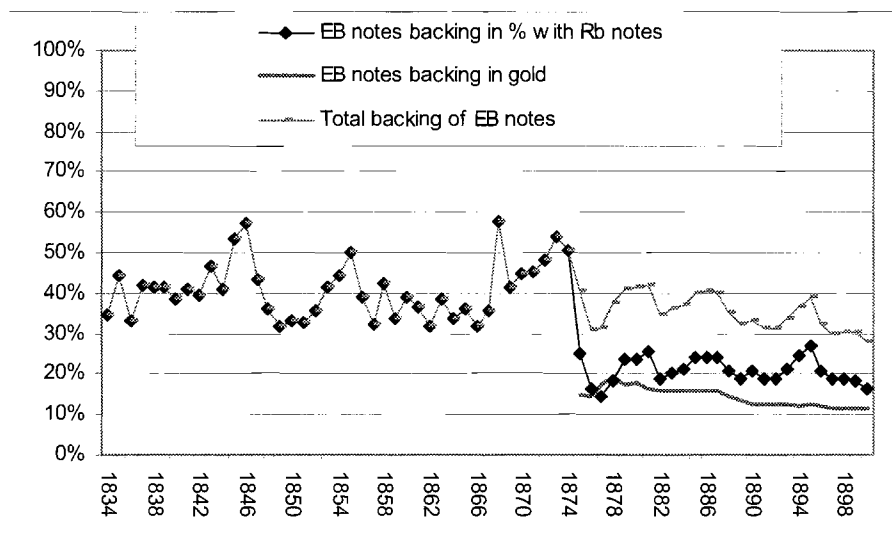
Instead, what effectively limited their note issuance were the liquid reserves they had available for redeeming their notes for legal tender. Even prior to the 1874 legislation, the banks were free to exchange their notes either for coins or for Riksbank notes. At no point did the law, or the bank charters, prevent the banks from limiting their reserves to specie, thus making them independent of the Riksbank. Even after 1874, the Enskilda banks continued principally to hold Riksbank notes as reserves. They did so despite the fact that the Riksbank itself had started accepting Enskilda bank notes in 1869.

According to the Banking Law 1874, the formal backing of the Enskilda banks' notes did not include any holdings of Riksbank notes.⁴⁰ Despite the fact that Riksbank notes legally were as useless for note coverage as were Enskilda bank notes, the Enskilda banks continued to hold large amounts of Riksbank notes, but only negligible amounts of notes issued by other Enskilda banks. Competition was one reason for not holding the notes of other Enskilda banks, but why favor the Riksbank by holding large quantities of its notes? The answer was that the public literally considered the Riksbank notes to be as good as gold. As a result, the effective reserves of the Enskilda banks consisted of Riksbank notes and, to a lesser extent, of specie. In figure 4.4 below, these

⁴⁰ SFS 1874:44 §§26-28. The legislation that required the redemption of notes with gold coins can be seen as limiting the legal tender status of Riksbank notes. Indeed, it was suggested that the constitutional clause conferring such status should be revoked (Flux, A.W. (1910) p. 63, Nilsson, G.B. (1994) p. 101).

effective reserves have been computed as the Enskilda banks' holdings of specie and Riksbank notes, plus their Riksbank notes deposited with exchange agents or in the Riksbank.

Figure 4. 4: Gold and Riksbank Note Backing of Enskilda Bank Notes, 1834 – 1913 (in percentages)



Sources: Brisman (1924) pp. 246-247, Post & Inrikes Tidning, 1835-1871, Sammandrag af Bankernas Uppgifter, 1871-1900.

After 1874, the Enskilda banks held gold equal to between eleven and nineteen percent of their note issue. If Riksbank notes are also counted, their notes were approximately thirty to thirty five percent backed. With the single exception of Stockholm Enskilda Bank, they all held gold equal to between ten and fourteen percent of their total equity capital. Stockholm Enskilda Bank held gold equal to between twenty eight and thirty percent of its equity capital. This made the Bank more attractive to the foreign lenders on whom it depended for many of its operations. Consequently, those banks that wished to attract foreign credits were especially dependent on specie reserves.

Despite this rather low gold backing, the Enskilda banks never came close to their legal note issuing limits. The sources concerning the post 1874 issuance of Enskilda bank notes make it clear that their holdings of Riksbank notes continued to be a matter

of importance. Indeed, the ratio of Enskilda bank holdings of Riksbank notes, coins and gold bullion to their note issue was published throughout the period.⁴¹ The 1874 legislation effectively forced the Enskilda banks to hold gold since having ten percent of their equity capital in gold entitled them to issue notes equal to a full fifty percent of that equity capital.⁴² Regression analysis, however, indicates that they continued to base their note issuance on Riksbank notes, even after implementation of the 1874 legislation.

Figure 4. 5: Determinants of Enskilda Bank Note Issuance, 1874 – 1900 (OLS Regression)

Dependent Variable: LOG(EBNOTES)				
Sample: 1874 1900				
Included observations: 27				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.376193	0.089828	-4.187937	0.0004
LOG(EBRBNOTES)	0.122716	0.041610	2.949195	0.0072
EBSPECIE	4.543155	1.454567	3.123372	0.0048
LOG(EBNOTES(-1))	0.649499	0.069424	9.355526	0.0000
R-squared	0.958363	Mean dependent var		-2.009537
Adjusted R-squared	0.952932	S.D. dependent var		0.191921
Log likelihood	49.67964	F-statistic		176.4656
Durbin-Watson stat	1.998017	Prob(F-statistic)		0.000000

* Significant at least at the 5% level

Source: Sammandrag af Bankernas Uppgifter, 1871-1900.

The Enskilda banks were not willing to exchange Riksbank notes for gold. This policy has two implications: 1) holding Riksbank notes as reserves provided the banks with more business opportunities than did specie reserves and 2) the Swedish public was prepared to accept Riksbank notes in exchange for Enskilda bank notes. The generally declining level of reserves can be explained by growing confidence in the banking system, making the public willing to accept a lower level of reserves, together with an increasing demand for credit.

⁴¹ Sammandrag af Bankernas uppgifter 1875-1906, SFS 1874:44 §26.

⁴² The Enskilda banks waited for the adoption of the gold standard in 1873 before starting to purchase large quantities of gold, increasing their holdings from virtually zero to nearly nine million SEK in only two years (Jonung, L. (1984) p. 372). When their right to issue notes was withdrawn, the Enskilda banks reduced their gold holdings from 9.5 million SEK in 1900 to little more than one quarter million in 1903 (Sammandrag af Bankernas uppgifter 1875-1906).

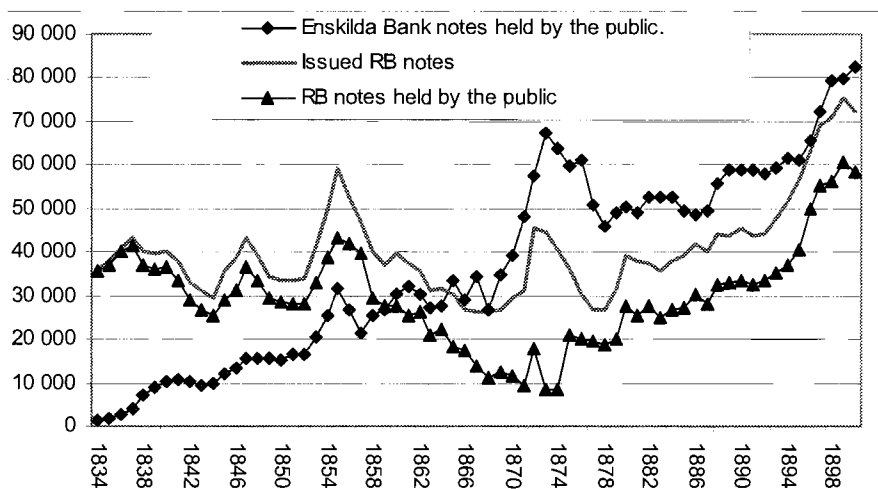
It can be argued that the Enskilda banks maintained the level of reserves demanded by their customers. The level of demand for means of payment and credit prevented the Enskilda banks from operating exclusively with specie reserves. Arguably, since the reserves were essential for maintaining the status or quality of the Enskilda bank notes, the public also had an interest in maintaining the "medium powered" characteristic of the notes. This did not require that their issuance be limited to the same extent as required to make them "high powered", i.e. sufficiently backed by specie. Thus, more "medium powered" notes could be supplied. By extension, the use of Riksbank notes as Enskilda bank reserves created a claim on the Riksbank's reserves. Thus the Enskilda banks benefited from the trust in the currency that had been created by the Riksbank's dedication to maintaining specie convertibility.

From the inception of the system, the Enskilda banks had had the opportunity to practice free banking based exclusively on specie reserves. So doing would have made them independent of the Riksbank, and thus capable of competing with the Riksbank notes. Indeed, that is how the experience of the Enskilda banks is described in the free banking literature. In fact, however, even after they were legally required to hold specie rather than Riksbank note, reserves, the Enskilda banks clearly preferred the Riksbank notes. The public, and therefore the banks, preferred more "medium powered" than fewer "high powered" notes. Thus it can be concluded that, under the circumstances, the actual specie exchange system was more efficient than a hypothetical free banking system.

The Circulation of Currency

The circulation of currency within Sweden during the period 1834 to 1900 depended largely on the note issuance of the Enskilda banks. The Riksbank notes, in turn, provided the base for the total amount of circulating notes. Deducting the Riksbank notes held by Enskilda banks at their exchange offices or on deposit at the Riksbank from the total issue of such notes, ought to provide an accurate estimate of the public's holdings of Riksbank notes.

Figure 4. 6: *Enskilda Bank and Riksbank Notes in Circulation, 1834 – 1900 (1000's of SEK)*



Sources: Brisman (1924) pp. 246-247, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900, Sveriges Riksbank (1931) pp. 45-49

Starting in the 1860's, Enskilda bank notes became the principal form of circulating means of payment, surpassing the Riksbank notes. Indeed, as early as 1859, the circulation of Enskilda bank notes exceeded that of Riksbank notes. That is, twelve Enskilda banks, three of which were only recently established, jointly managed to out circulate the Riksbank. The five year period 1869-1874 witnessed an economic boom in Sweden. Partly as a consequence, note issuing activity increased resulting, in turn, in a growing demand by the Enskilda banks for Riksbank notes as backing. The amount of Riksbank notes held by the Enskilda banks grew to exceed the amount in circulation. The weaker relationship between Enskilda bank holdings of Riksbank notes and their own note issue, starting in the 1880's, implies both a greater demand for credit and a growing level of public confidence in the banking system. A result of this was an increase in the quantity of Riksbank notes available for circulation.

Enskilda bank note issuing activity reached a peak in 1900 and then declined. The Banking Law of 1897 banned further issue of Enskilda bank notes after 1903 and required their withdrawal from circulation by the end of 1906. The data in Figure 4.6 ends in 1900 because of the rapid increase in Riksbank notes at the beginning of the 1900's, and the breaking of the relationship between Riksbank and Enskilda bank notes. This expansion was not just the result of the withdrawal of Enskilda bank notes since total note circulation increased by one hundred fifty percent between 1900 and 1913.

There is an important distinction between the banks' ability to issue notes and their ability to keep them in circulation.⁴³ Keeping notes in circulation depended on three factors: 1) the geographical distance between the point of issue and the areas of circulation, 2) the denomination of the notes (smaller denominations tended to circulate longer) and 3) alternative available means of payment.

Throughout the period, the Riksbank was authorized to issue smaller denominations than were the Enskilda banks. This increased the incentive of the latter to spread their notes throughout the Country. In order to accomplish this, the banks opened branch offices or engaged other financial actors as exchange agents. These were usually merchants, private banking firms or savings banks. During their short history, the Filial banks also functioned as distributors of Enskilda bank notes. An often asserted strategy of the Enskilda banks was to get their notes into circulation in isolated areas, thus reducing the chance of quick redemption for legal tender.⁴⁴

In connection with the establishment of an inter bank clearing system, Stockholm Enskilda Bank invented the so-called "postal bank bill" (*postremissväxel*) to substitute for the mailing of bank notes. Instead of mailing bank notes, a postal bank bill was purchased at the nearest bank and sent by ordinary mail. The recipient could then cash the bill at any conveniently located bank. Payable on demand, and not being subject to any discount, the postal bank bill functioned as a lubricant in the clearing machinery. Instead of locking up bank notes in postal bags, and thus removing them from circulation for several days, these written payment orders were utilized. By cashing these postal bank bills, a bank had an opportunity to place its own notes on the market.⁴⁵

The Enskilda banks were willing to bear some discount costs in order to make their notes closer substitutes for Riksbank notes. In order to assure holders of the convertibility of Enskilda bank notes into legal tender, the exchange agents were compensated in positive relation to the quantity of the bank's notes that they exchanged for legal tender.⁴⁶ Furthermore, in at least some parts of the Country, the Enskilda banks paid a small fee to the municipal tax authorities to act as exchange agents in connection with tax payments.⁴⁷ Thus, despite their non-legal tender status, these notes could be used to pay taxes.

⁴³ Dowd, K (1993) p. 29, White, L.H. (1989) p. 21

⁴⁴ Brisman, S. (1934) pp. 23-25, Petersson, T. (1999) p. 64 Note 136

⁴⁵ Nilsson, G.B. (1989) pp. 113-119. Trust in the postal bank bills as a way of transferring payments is unquestioned. They were even accepted in the countries neighboring Sweden (Flux, A.W. (1910) p. 56).

⁴⁶ Engdahl, T. (2002)

⁴⁷ Nilsson, G.B. (1989) pp. 135-136, Smålb 1840, 1845. In 1841, a Parliamentary bill proposing the acceptance of Enskilda bank notes for tax payments, was defeated (StU 1840/41 No 143, 209).

In view of the large circulation of Enskilda bank notes starting in the 1860's, it seems likely that they succeeded in becoming acceptable nation wide. Previously, in 1855, legislation had standardized the size of Enskilda bank notes of a given denomination.⁴⁸ Judging by the large quantity of Enskilda bank notes in circulation by 1869, it seems probable that the Riksbank had been forced to accept them as the Riksbank had been forced to accept them as the principal circulation means of payment.⁴⁹

The achievements of the Enskilda banks were not limited to successfully competing with State issued notes on a fully monetized market. Deliberately or not, the Enskilda bank notes came to replace the widely used local, non-specie connected, substitute means of payment.⁵⁰

It is possible to derive a quality grid among various means of payments with the same face value. The Enskilda banks had an advantage in not being subordinated to the specie standard and therefore not having to cover their critical liabilities, such as demand deposits and bank-post bills, to nearly the same extent as the Riksbank. Since the latter's ultimate responsibility for preserving the specie standard prevented it from holding insufficient reserves, its notes were of a higher quality than the Enskilda bank notes.⁵¹ These banks could then use the Riksbank notes as a base for issuing their own notes, and, as a consequence, they tended to hoard Riksbank notes.

For the ordinary Swede, however, the Enskilda bank notes were a close substitute for Riksbank notes. While not as well backed as the latter, the Enskilda bank notes were of much better quality than other circulating instruments. The Enskilda bank notes were not only related to the specie standard, being backed by Riksbank notes, but they were also guaranteed by the bank's equity capital and the unlimited liability of the owners. These were confidence inducing features that other substitutes lacked.

From this analysis it can be concluded that the Enskilda bank notes did not displace Riksbank notes because they were preferred by the public. The Swedish need for credit and means of payments institutionalized two types of notes, exchangeable at par. The Riksbank notes were legal tender and could be used as a base for issuing Enskilda bank

⁴⁸ Rosenberg, C.M. (1878) p. 85

⁴⁹ A bill requiring the Riksbank to accept Enskilda bank notes was rejected during the 1865/66 session (BaU 1865/66 No18). In 1869, the chairman of the Standing Committee on Banking was still opposed (BaU 1869 No6 p. 3).

⁵⁰ An example of this development concerns the right to over issue authorized assignments. In 1834, the Riksbank raised this as a problem, but opposed any corrective measures since their effect would be to harm the rural economy. The abolition of such rights in 1851 was justified by the claim that there no longer was any rural shortage of small denominations (Bankkomitén (1883) pp. 149-151, BaU 1850/51 No2 p. 18). In fact, however, public confidence in authorised assignments had been undermined by a number of frauds that occurred during the crisis of 1847/48. Enskilda bank notes were considered more trustworthy (see Engdahl, T. (2002)).

⁵¹ Ögren, A. (2000) p. 49

notes. These notes, in turn, could be used for virtually all domestic transactions, as well as be used for bank deposits.

Expanding the Money Supply

There are two important aspects to the domestic creation of money. The first is the amount of circulating currency that can be used for deposits, and the second is the sophistication of the financial system in terms of being able to create credit through deposits. The amount of currency, or M1, consisted of Riksbank and Enskilda bank notes held by the public. The level of development of the banking system then determined the amounts of M2 (M1 plus commercial bank deposits) and M3 (M2 plus savings bank deposits) that could be based on a given level of M1.

The Total Backing of Currency

If the commitment to the specie standard is viewed as a commitment to an international monetary regime, then it becomes useful to compare the Swedish ratio of total specie reserves to total note circulation with that in other countries. During the period 1880 to 1900, this ratio was lower in Sweden than in the core European countries. The Riksbank also maintained a somewhat lower backing for its notes than did the central banks of England, France and Germany.⁵² The peripheral status of the Swedish economy probably allowed the Country to maintain lower reserves than was the case for the major European economies. Another peripheral economy, Finland, covered its central bank note issue to approximately the same degree as did the Riksbank.

If circulating Enskilda bank notes and their specie backing is included in reserves, then up until the late 1890's, with the single exception of 1874, the backing of notes in circulation was less in Sweden than in Finland. This implies that Sweden's peripheral position is not the entire explanation for the relatively low note coverage.

⁵² Flandreau, M. (2000) Sveriges Riksbank (1931) pp. 45-49, 54-71

Figure 4. 7: Specie Coverage of Notes Circulating in Sweden (1834 – 1900) and Finland (1841 – 1900) (in percentages)



Sources: Brisman (1924) pp. 246-247, Pipping, E.H. (1961) pp. 509, 512, Pipping, E.H. (1969) p. 432, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900, Sveriges Riksbank (1931) pp. 45-49, 54-71

The cessation of note issuance by the Enskilda banks early in the twentieth century did not lead to any major increase in total Swedish reserves. The Riksbank's backing of its own notes decreased drastically, suggesting that such notes replaced the previously circulating Enskilda bank notes. It can be argued that the requirements of the specie standard previously would have prevented such a development.

The rather special Swedish system, combining the Riksbank as an issuer of high powered notes and with the ultimate responsibility for preserving international specie convertibility with the private Enskilda banks as note issuers, allowed a greater expansion of the money supply (M1) than otherwise would have been the case. Furthermore, the choice of the Enskilda banks (tolerated by the public) to rely more on Riksbank notes than on specie for their reserves led to a greater expansion of the total money supply than otherwise would have been possible.

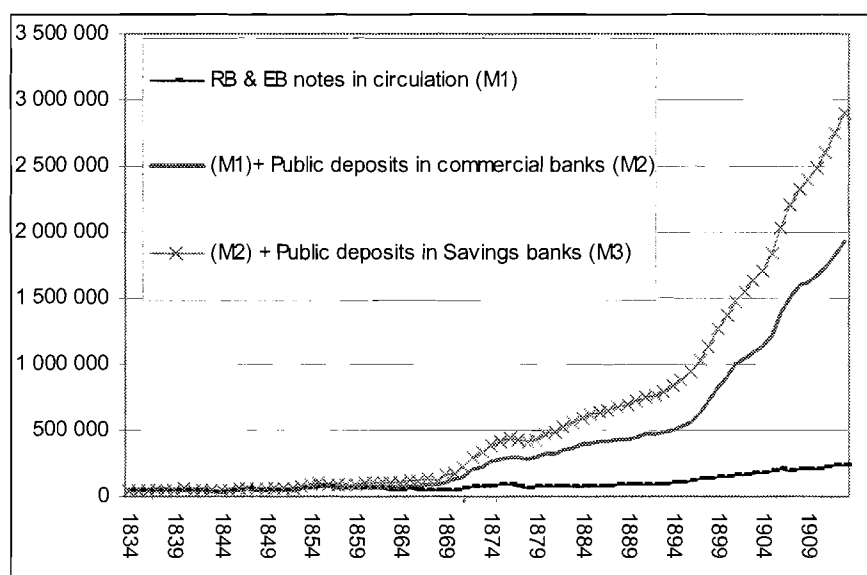
Instead of allowing the Enskilda banks to pump up the domestic money supply, the Riksbank could have borrowed on the international money market in order to purchase specie, as it did during the crisis of 1857, to be used as backing for a greater note issue. Not only would such a course of action have been costly, however, it was believed that

it would damage the reputation of the Swedish currency. Consequently, Parliament refused permission for such a course of action.⁵³

Swedish Monetization

Although Enskilda bank notes were not regarded as legal tender during this period, they were accepted by other Enskilda banks at least as early as 1846 and probably earlier.⁵⁴ The savings banks had begun accepting deposits of Enskilda bank notes early in their history and the Riksbank followed suit in 1869.⁵⁵ This made the Enskilda bank notes as effective in expanding the money supply through deposits as were the Riksbank notes.

Figure 4. 8: The Swedish Money Stock, 1834 – 1913 (M1, M2 and M3 in 1000's of SEK)



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1900, SCB (1960) pp. 99, 102-103 Sveriges Riksbank (1931) pp. 45-49, 172-179

⁵³ Ögren, A. (2000) p. 95

⁵⁴ Rosenberg, C.M. (1878) pp. 83-84

⁵⁵ Lilja, K. (2000) p. 53 note 168, Petersson, T. (2000) p. 24 note 2, Sjölander, A. (2000) p. 4. Aside from their active participation in local credit markets, the savings banks were also entangled with the area's commercial banks. They had overlapping boards, savings bank deposits were made available to the commercial banks and the savings banks functioned as distributors of Enskilda bank notes.

Figure 4.8 shows that, starting in the 1870's, the money stock inclusive of commercial bank deposits (M2) and also savings bank deposits (M3) started to grow rapidly, with a second "take off" occurring in 1895. By 1867, Enskilda bank deposits exceeded the value of Enskilda bank notes in circulation.⁵⁶ From that year forward, the principal source of bank business financing was deposits.

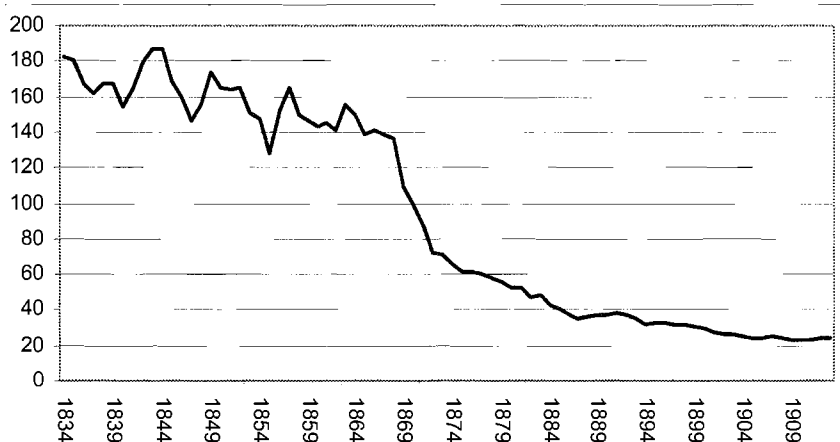
The remarkable growth of the Swedish money supply is well illustrated by the fact between 1834 and 1913, M3 per capita increased nearly forty times. To a considerable degree, this was a result of the low starting point for credit money (it increased from thirteen SEK per capita in 1834 to over five hundred SEK in 1913). Obviously, not all components of the money supply grew that rapidly. The money stock in terms of circulating notes (M1) increased three and one half times over during the period. The difference between the extremely rapid growth of M2 and M3 compared to M1 definitely underscores the crucial role played by the banking system in the process of expanding the money supply during these eight decades of profound economic transformation.

Before deposits could become a major source of resources for the banks, a means of payment more official than note substitutes had to circulate as money. In all probability, the creation and issuance of "medium powered" notes was a prerequisite for the creation of a deposit financed banking system, and thus for the monetization of Sweden. A measure of monetization utilized by Fisher and Thurman is the velocity of circulation of means of payments. A decrease of this velocity implies increased monetization.⁵⁷

⁵⁶ Sveriges Riksbank (1931) p. 177

⁵⁷ Fisher, D. & Thurman, W.N. (1989) pp. 629-631. Velocity is calculated from the quantity theory equation; $V = P \cdot Y / M$. All the series are in index form with 1870=100.

Figure 4. 9: *Velocity of Means of Payment (M3), 1834 – 1913 (index form, 1870=100)*



Sources: Krantz, O. (1997) pp. 20-22, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 45-50, 172-185.

Decreased velocity is associated with increased monetization, as it is assumed to result from the substitution of formal for informal means of payments. In terms of monetization, a major acceleration appears to have occurred in the late 1860's, coinciding, not surprisingly, with the rapid establishment of new banks and an increased emphasis on financing banking activity with deposits. In overall economic terms, the 1860's were not a prosperous decade in Sweden. Nonetheless, the foundations for the economic growth experienced during the latter part of the nineteenth century were laid during these years. The increased monetization that occurred may also explain the relative stability of velocity under the gold standard.

Conclusions

The Swedish experience with private note issuance was more than a competition between the Enskilda banks and the Riksbank. To a great degree, the success of the Enskilda bank notes depended on the Riksbank acting to effectively maintain their convertibility into specie. Between 1834 and 1900, it was possible to combine international specie convertibility with the monetary needs of a growing economy. The supply of money expanded at a rate that would not have been possible without the special features of the Swedish financial system.

At least after 1859, Enskilda bank notes became dominant in circulation. At the same time, these notes replaced other means of payment that were independent of the specie standard. Thus, as the principal, nationally accepted, means of payment, the Enskilda bank notes played a major role in the economic integration of Sweden. Such integration would have been impossible without a means of payment having nation wide acceptability, a quality most of the note substitutes lacked.

In addition to the "high powered" Riksbank notes backed by specie, large amounts of "medium powered" Enskilda bank notes, backed by Riksbank notes, were in circulation. Since these were exchangeable at par and were accepted nationwide, they are considered to be currency (M1) and are evaluated in relation to the total specie reserves of Riksbank and the Enskilda banks. Compared to Finland, another peripheral country but with a different monetary system, Sweden enjoyed a higher currency in circulation to specie holdings ratio. The Riksbank alone would not have been able to circulate such a large quantity of currency without increasing its reserves, and thus its costs.

Moreover, the Riksbank and the Enskilda banks together circulated enough currency (M1) to lay the basis for a deposit financed banking system. Thus, Swedish monetization in terms of a circulating money supply accepted nationwide mainly occurred during the late 1860's.

This experience, combining the issuance of "high powered" money in accord with international reserve standards with the circulation of lower quality monetary alternatives, points in the direction of an endogenous money system. Throughout the period, money and credit were closely linked to, and followed, movements in the level of demand. If the restrictions of the specie standard constrained the supply of high powered money, then credit and lower quality means of payment were supplied instead. The principal improvement in monetary quality resulted from the replacement of note substitutes with Enskilda bank notes, which also could serve as deposits. To make their notes exchangeable with Riksbank notes at par, the Enskilda banks had to bear part of the discount costs.

The system of Enskilda banks resembled a theoretical free banking system in that their issuance of notes resulted in the emergence of clearing activities and offices. Furthermore, it was the requirements of the public, not any legal regulations, that effectively limited the note issue. After 1864, a relatively liberal attitude towards the establishment of banks prevailed. Nonetheless, there were special banking laws, including rules limiting the issuance of notes. The most important argument for rejecting the free banking label, however, is that not only was there a central bank but the Enskilda banks voluntarily choose to back their notes with Riksbank notes. The fact that more Enskilda than Riksbank notes circulated among the public was a result of the law of adverse monetary selection: Gresham's Law.

Nothing prevented the Enskilda banks from accumulating specie reserves. Throughout the period, however, they preferred to hold their reserves in the form of Riksbank notes. Even after the legislation of 1874 formally made the Enskilda bank notes redeemable only for domestic gold coins, they continued to base their note issuance on Riksbank notes. Most of the Enskilda banks held gold only as a response to the requirements of the 1874 law. For most domestic note holders, Riksbank notes were a close and acceptable alternative to gold reserves. Thus, allowing the Enskilda banks to issue their own notes, backed by Riksbank notes, was not only preferred by the public. Given the circumstances, it probably was more efficient than a pure free banking system would have been.

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StU – Statsutskottet 4:e Samlingen 1834-1900 [Standing Committee on Supply]

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Appendix – The Note Issuance Determination Model

Appendix Figure 1: Complete readout from the OLS Regression

Dependent Variable: LOG(EBNOTES)				
Sample: 1874 1900				
Included observations: 27				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.376193	0.089828	-4.187937	0.0004
LOG(EBRBNOTES)	0.122716	0.041610	2.949195	0.0072
EBSPECIE	4.543155	1.454567	3.123372	0.0048
LOG(EBNOTES(-1))	0.649499	0.069424	9.355526	0.0000
R-squared	0.958363	Mean dependent var		-2.009537
Adjusted R-squared	0.952932	S.D. dependent var		0.191921
S.E. of regression	0.041638	Akaike info criterion		-3.383677
Sum squared resid	0.039875	Schwarz criterion		-3.191701
Log likelihood	49.67964	F-statistic		176.4656
Durbin-Watson stat	1.998017	Prob(F-statistic)		0.000000

The dependent variable is Enskilda bank notes in circulation (EBNOTES), the independent variables are the Enskilda banks' total holdings of Riksbank notes (EBRBNOTES), specie (EBSPECIE), and issued Enskilda bank notes lagged one year (EBNOTES(-1)). The model includes the lagged value of issued Enskilda bank notes

since it is reasonable to assume a certain stickiness in the issuance of notes, i.e. the amount of notes in circulation the previous year affects the amount of notes current year.

The series are set in relation to total assets/liabilities of all banks. A problem is the series of the Enskilda banks holdings of specie (EBSPECIE), since this series as logarithmic is not significantly stationary. The original series is stationary and has been used in the model.

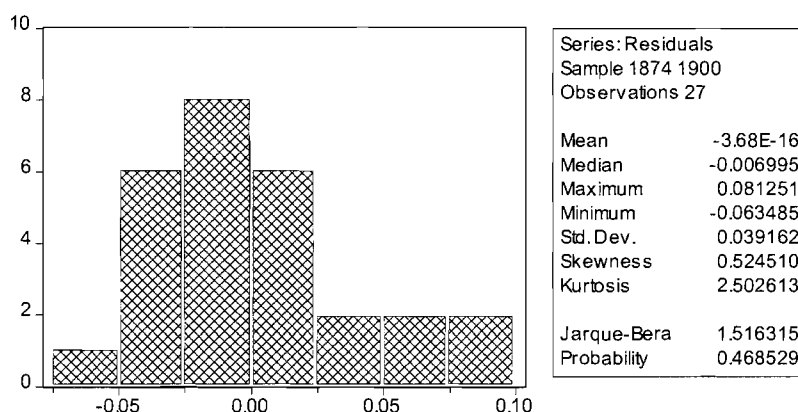
Appendix Figure 2: ADF test of unit roots up to five lags, most significant values.

ADF Test Statistic for series LOG(EBNOTES)	-3.619380	1% Critical Value*	-3.6959
		5% Critical Value	-2.9750
		10% Critical Value	-2.6265
ADF Test Statistic for series LOG(EBRBNOTES)	-4.640437	1% Critical Value*	-3.6959
		5% Critical Value	-2.9750
		10% Critical Value	-2.6265
ADF Test Statistic for series EBSPECIE	-3.339449	1% Critical Value*	-3.6959
		5% Critical Value	-2.9750
		10% Critical Value	-2.6265
ADF Test Statistic for series LOG(EBSPECIE)	-0.520820	1% Critical Value*	-3.8067
		5% Critical Value	-3.0199
		10% Critical Value	-2.6502

*MacKinnon critical values for rejection of hypothesis of a unit root.

The residual is normally distributed, the model does not suffer from serial correlation or heteroscedasticity, and is stable according to the Ramsey RESET test.

Appendix Figure 3: Distribution of Residuals, Histogram Normality Test on the Cross Sectional OLS Regression



Appendix Figure 4: Breusch-Godfrey Serial Correlation LM Test, White Heteroskedasticity Test (including cross-terms), Ramsey RESET Test (general stability and specification test)

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.000119	Probability	0.991382
Obs*R-squared	0.000146	Probability	0.990343
White Heteroskedasticity Test (cross terms):			
F-statistic	1.241716	Probability	0.334270
Obs*R-squared	10.70922	Probability	0.296168
Ramsey RESET Test:			
F-statistic	0.008583	Probability	0.927023
Log likelihood ratio	0.010532	Probability	0.918260

One problem is multicollinearity, as seen in Appendix Figure 5 below there is a high degree of correlation between the lagged value of issued Enskilda bank notes and the Enskilda banks' holdings of Riksbank notes.

Appendix Figure 5: Testing for multicollinearity (Correlations between independent variables)

	LOG(EBNOTES(-1))	LOG(EBRBNOTES)	EBSPECIE
LOG(EBNOTES(-1))	1.000000	0.772762	0.300077
LOG(EBRBNOTES)	0.772762	1.000000	-0.055942
EBSPECIE	0.300077	-0.055942	1.000000

However, running the model without the lagged value of issued Enskilda bank notes does not make the holdings of Riksbank notes insignificant in determine the issuance of Enskilda bank notes. Consequently this multicollinearity does not corrupt the observed importance of Riksbank notes functioning as basis for issuance of Enskilda bank notes (although, the size of the impact of Riksbank note holdings seems to be higher than shown in figure 5).

Appendix Figure 6: Regression to test if Multicollinearity corrupts the results

Dependent Variable: LOG(EBNOTES)				
Sample: 1874 1900				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.648080	0.182402	-3.553038	0.0016
LOG(EBRBNOTES)	0.445430	0.049939	8.919473	0.0000
EBSPECIE	11.91539	2.623730	4.541391	0.0001

– Chapter 5 –

Reserves, Money Supply and Prices

The International Adjustment Mechanism in Sweden under the Silver and Gold Standards, 1834 – 1913

Keywords: *Balance of Payments, Central Bank Reserves, Monetary Base, Money Supply, Prices, Specie Standard*

ABSTRACT

This chapter explores how international capital movements affected the domestic money supply. This requires that the causality at work in the adjustment process be analyzed. For this purpose, series of central bank reserves, the monetary base, the money supply and the balance of payments were constructed. The methodological problems encountered in estimating such monetary measures in a transitional economy where much of the circulating money consists of private banks notes, and which is dependent on foreign loans, is discussed. The relationship between central bank (Riksbank) reserves and international capital flows is then studied. The overall growth of the money supply, while not accompanied by a growth in reserves, is found to correspond closely to such growth in other countries operating under a specie standard. This growth also was related to the growth of the real economy. Qualitative evidence aside, statistical results indicate a relationship among reserves, the money supply and prices that is consistent with the price specie flow mechanism. Changes in reserves were positively related to the money supply and changes in the money supply had a lagged positive effect on changes in the level of consumer prices.

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Introduction

The Swedish central bank, the Riksbank, together with the private note issuing banks, the so called Enskilda banks, circulated notes exchangeable at par. These notes could be used to make deposits throughout the banking system, and they were backed by the Riksbank's reserves. In Chapter 4, it was demonstrated that this arrangement, whereby the Enskilda banks backed their note issuance with holdings of Riksbank notes, allowed Sweden to maintain more currency in circulation, denoted as M1, than otherwise would have possible.

From the readoption of the silver standard in 1834 until the outbreak of World War I, Sweden experienced an unbroken period of eighty years with a fixed exchange rate system. The specie standard as such was of basic importance to Swedish economic growth.¹ The two questions addressed in this paper are if and how the Swedish money supply was affected by international capital flows, and what were the consequences of changes in that money supply.

¹ The conversion from silver to gold in 1873 was an uneventful adaptation to the European economic reality of the time. According to Eichengren and Flandreau, a country's adherence to a convertible specie standard was more important for economic growth than was the choice between gold and silver (Eichengreen, B. & Flandreau, M. (1994) pp. 2-3, 6-8).

One particular aspect of the specie standard is its role as an international adjustment mechanism with a fixed world supply of high powered money, whether gold or silver, serving as reserves and the basis for note issuance. The notion of a fixed stock of reserves has been used as the basis for explaining the functioning of the economic adjustment mechanism among countries. The channelling of these reserves from one country to another served to transfer purchasing power.

There are two theories of how the adjustment mechanism functioned. Although related, they have very different implications for the causality at work. According to the price specie flow model, the money supply is determined by the balance of payments through changes in central bank reserves which, in accord with the quantity theory of money, then affects the domestic price level. Finally, changes in the price level will encourage or discourage exports, thereby correcting imbalances in the current account. The monetary "rules of the game" called for this process to be allowed to proceed, or even to be accelerated by using monetary policy to amplify the effects of the capital flows.²

The alternative, related but causally different, theory is the monetary approach to the balance of payments. In its purest form, the monetary approach to the balance of payments assumes the law of one price, perfect international capital mobility and price flexibility in all markets.³ Changes in central bank reserves, however, illustrate that the money market is not in equilibrium, the balance of payments being one of the mechanisms for restoring such equilibrium. The causality is the opposite of that in the specie flow mechanism. Increased (decreased) demand for money eventually will lead to an inflow (outflow) of reserves. Monetary policy has little or no effect. As with prices, domestic interest rates and money incomes ultimately are set in the global arena.⁴

No student of the determinants of the Swedish money supply can fail to be inspired by the work of Lars Jonung. His book, "Studies in the Monetary History of Sweden" (1975), utilizes the theoretical framework of the quantity theory as developed by Friedman and Schwartz for the United States in their classic work "A Monetary History of the United States". Briefly put, Jonung argues that in Sweden the money supply and the stock of gold reserves grew in parallel, and that the money stock appears to have impacted prices both in the long and in the short run, thus lending support to the quantity theory of money.⁵ In 1984, Jonung published a paper entitled "Swedish

² Bloomfield, A.I. (1978) pp. 47-49, Bordo, M.D. (1984) pp. 25-26, Gomes, L. (1993) pp. 18-21

³ Although McCloskey & Zecher argues that the monetary approach can do without the law of one price (McCloskey, D.N. & Zecher, J.R. (1984) p. 122)

⁴ Gomes, L. (1993) pp. 10, 148, 160, 163-166, Kenwood, A.G. & Loughheed, A.L. (1999) pp. 114-115, McCloskey, D.N. & Zecher, J.R. (1984) p. 126, McCloskey, D.N. & Zecher, J.R. (1985) pp. 65-66, 76

⁵ Jonung, L. (1975) pp. 144-146, 191-195, 203, 208-211. Under the silver standard, the money stock grew with 16.1 percent every year, in contrast to prices that only grew with 1 percent. Under the gold standard 1874-1913 the money stock increased with 5.2 percent yearly and prices with only 0.2 percent.

Experience under the Classical Gold Standard, 1873-1914". In it he argued that the Swedish experience under the classical gold standard fit well within the monetary approach to the balance of payments.⁶

Nowhere in this work, however, does Jonung test the direction of the causality at work. Thus he leaves it unclear whether changes in reserves preceded changes in the money supply, as implied by the quantity theory, or vice versa. He also presents no test of whether or not the monetary base and the money multiplier were related to the money supply. These questions are addressed in this Chapter, starting with the re-adoption of the silver standard in 1834. An additional advantage of the work presented here is that it is based on revised, more accurate, estimates of central bank reserves, the monetary base and the money supply.⁷

This chapter is divided into four sections. The first of these contains estimates of the monetary measures, as well as a methodological discussion of the problems of defining these concepts in a consistent manner. The second section focuses on the reserves of the Swedish central bank, the Riksbank, and how the Bank managed the classical specie standard, as well as the impact of foreign debt. It ends with an attempt to measure the degree of monetary discipline practiced under the silver and gold standards. Next, in the third section the growth of the money supply is examined in relation to the fixed exchange rate regime. Finally, the fourth section concerns the causality among changes in reserves, the money supply and prices. On the assumption that these causal relationships were complex and movements in the variables interrelated, Vector Auto Regressions were utilized.⁸

The Theoretical Framework and Monetary Definitions

In orthodox economic theory, three sets of actors determine the domestic money supply in a fractional reserve banking system: 1) the monetary authorities, 2) the banking sector, and 3) the public. Under a fixed exchange rate regime, the ability of the monetary authorities to alter the money supply is constrained by their need to maintain reserves. These, in turn are affected by the balance of payments. The theoretical relation

⁶ Jonung, L. (1984) pp. 389-393.

⁷ See also Chapter 4

⁸ The VAR test differs from the Granger test in that it besides form including several independent variables, also includes values of the dependent values from prior periods. Still, as is the case with the Granger causality, its predictive power is based on precedence and not actual causality, which of course is impossible to prove in a statistical test.

between the domestic money supply and its determinants are summarized in five equations:

- (1) $M = C + D$; where M denotes the money supply, C the public's holding of currency and D the public's deposits in the banking system.
- (2) $B = C + R$; where B is base money, usually defined as the monetary liabilities of the authorities. These liabilities are balanced by a corresponding amount of assets that actually, or potentially, can be used as reserves by the banking system. The R denotes reserves held by the banking system.
- (3) $r = R / D$; r is the reserve to deposits ratio of the banks. It is through this mechanism, being part of the money multiplier, that the banking system affects the size of the money supply.
- (4) $c = C / M$; c is the currency to money ratio. It measures the public's desire to hold currency. It is through this part of the money multiplier that the public's preferences affect the money supply.
- (5) $M = B / (c + r - cr)$; this is the equation that relates the supply of base money (B), through the money multiplier ($1/(c+r-cr)$), to the total money supply M . This last equation is often written as $M = mB$; where m denotes the multiplier.

Two serious concerns arise when making this theoretical framework operational for purposes of research: 1) Equations 1 and 2 together indicate that currency not consisting of the public's deposits, by definition, has to be base money. Conversely, all liabilities held by the public that are not issued by the monetary authorities must be deposits, and 2) Consequently, the outcome of the research is to a large degree dependent on what these monetary components actually consist of.

In Jonung's work, the money supply was defined as the public's holdings of Riksbank and Enskilda bank notes, plus their deposits in commercial banks. The monetary base consisted of the sum of 1) the Riksbank note holdings of the public and the commercial banks, 2) the specie holdings of the commercial banks and 3) the deposits of the commercial banks with the Riksbank and the National Debt Office.⁹

The Monetary Base

In this section, the quantity of base money and the balance of payments are estimated utilizing the approach of Jonung (1975) for Sweden and of Officer (2002) for the United States. The definition of the monetary base is straightforward: It consists of those assets

⁹ Jonung, L. (1975) pp. 13, 29, 208-215. Jonung did not discuss the problem of how to characterize the Enskilda bank notes, as part of the public's preference for holding currency or part of the public's deposits in the banking system. He included Enskilda bank notes in the money stock as part of the public's holdings of notes when defining the measure, but did include it in commercial bank deposits when calculating the currency money ratio (Jonung, L. (1975) p. 13, 54, 71, 78, 215).

that actually, or potentially, could be used as reserves by the commercial banking system. It is closely related to the balance of payments, any imbalance in which constitutes the effects of international transactions on the monetary base.¹⁰

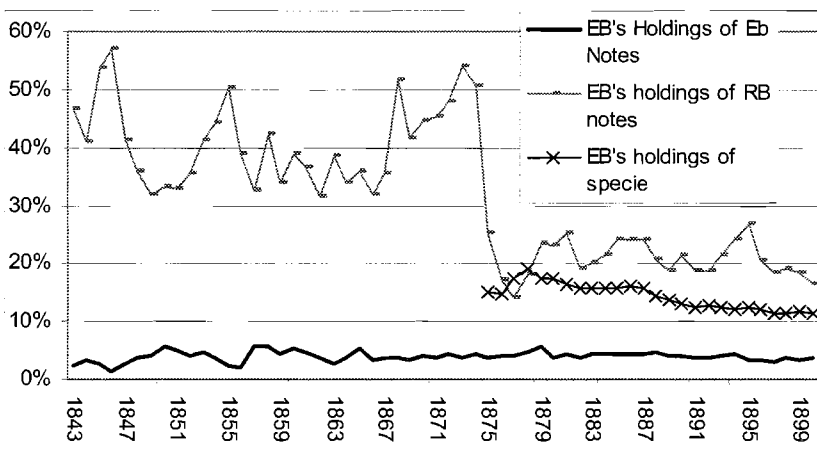
This general definition of the monetary base, however, does not make the measurement of its components a simple task. Still, three types of assets can arguably be said to have constituted the Swedish monetary base under the classical specie standard: specie, the net foreign assets of the Riksbank and Riksbank notes.¹¹

Throughout this period, specie was the principal ingredient of the Riksbank's reserves. It was also utilized by the Enskilda banks after the implementation of the Banking Act of 1874. Indeed, this legislation required that the Enskilda bank notes be redeemable in specie even though these notes did not receive legal tender status. It could be argued that the Enskilda bank notes should be counted as part of the monetary base starting in 1874, but in fact the commercial banks only held such notes to a minor extent. While it might have been felt that holding the liabilities of other commercial banks tended to give the issuing bank a competitive advantage, the principal reason was probably the public's preference for access to legal tender. Quantitative evidence supports the contention that specie and Riksbank notes, but not Enskilda bank notes, served as potential commercial bank reserves.

¹⁰ Officer, L.H. (2002) pp. 114-115, 119

¹¹ Officer, L.H. (2002) p. 127. The Treasury in Sweden, the National Debt Office, only issued notes between 1789 and 1818. Instead the NDO raised capital by issuing bonds from the late 1850s. This was mainly done in the capital markets of Frankfurt am Main, Hamburg, London and Paris (see chapter 6).

Figure 5. 1: The Enskilda banks' Holdings of Specie, Riksbank and other Enskilda bank Notes in a Percentage of Issued Enskilda bank Notes, 1843-1900



Sources: Post & Inrikes Tidning, 1844-1871, Sammandrag af Bankernas Uppgifter 1871-1900

Figure 5.1 indicates that the Enskilda banks preferred to hold Riksbank notes rather than the notes of other Enskilda banks. Despite the 1897 decision that all the Enskilda bank notes were to be withdrawn from circulation by 1906, the holdings of these notes was unchanged as late as 1903. Clearly these notes were held in anticipation of an opportunity to redeem them. The specie holdings recorded starting in 1874, was obviously at the expense of Riksbank notes. The Enskilda banks were simply exchanging Riksbank notes for specie to the extent legally required.¹²

Thus, in a nutshell, even though the Enskilda bank notes could be used for deposits in other banks, starting in 1869 even in the Riksbank, these notes did not satisfy the requirements for serving as potential reserves for the commercial banking system. This remained the case even after they were made redeemable in specie in 1874.

Notes issued by the central bank, however, served as potential reserves for the banking system. Indeed, Riksbank liabilities other than notes formally contributed to the money stock. These included demand deposits, cheques, postal bank bills and, until 1872, a fund dedicated to certain types of loans. Deposits in the Riksbank were used as bank reserves, including as backing for Enskilda bank notes. Riksbank cheques and postal bank bills circulated just like notes and were backed by specie.¹³ The unutilized

¹² See Chapter 4.

¹³ Sveriges Riksbank (1931) pp. 18-31, 54-71. Regarding so called postnotes in the US, see Officer L.H. (2002) pp. 123-124.

part of the loan fund specifically dedicated to certain types of loans, which was of considerable size by its ending in 1872, should be deducted from the monetary base.

Foreign assets of the Riksbank utilized as backing for note issuance included holdings in banks and banking firms abroad, as well as foreign treasury bonds. Starting with the crisis of 1857/58, foreign bills of exchange became part of the reserves, even though this practice had originated as a way of circumventing the demands of the specie standard. One reason it was abandoned in 1872 was that commercial banks held bank credits abroad and then had the Riksbank discount bills drawn on these credits. Ending the inclusion of these bills in the formal reserves of the Riksbank, however, did not end the discounting of such bills. Indeed, the Riksbank holdings of such bills increased throughout the period. Since the Riksbank used foreign bills of exchange to influence the exchange rate through open market operations, these bills should be included in the monetary base.¹⁴

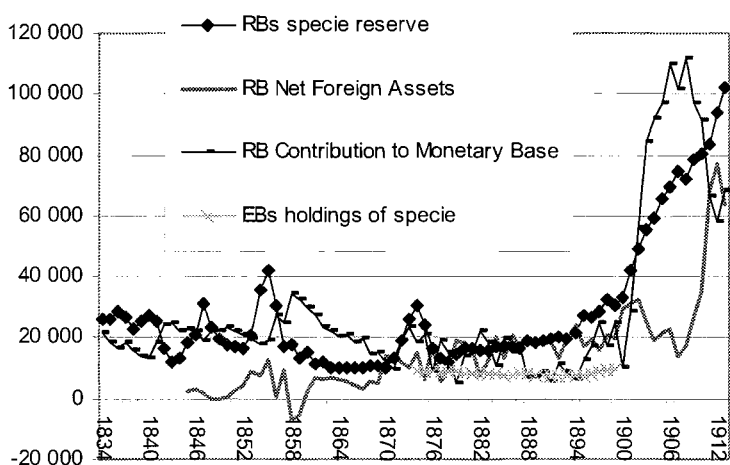
One difficulty with the Swedish case is the absence of data on the circulation of coins, including specie. Since contemporary sources complain about the shortage coins, I have accepted the assumption of prior works that this circulation was insignificant. Between 1834 and 1843, Riksbank notes circulating in Finland also should be deducted from the Swedish monetary base.¹⁵ Thus, the net contribution of the Riksbank to the monetary base was its issue of money, minus the sum of: 1) its notes circulating abroad, 2) the “dedicated” loan fund, 3) its holdings of specie, and 4) its net foreign assets.¹⁶

¹⁴ See chapter 6. Regarding the active use of the bills of exchange to stabilize the exchange rate of the Swedish currency, see Lobell (2000), and about the commercial banks use of foreign credits see Söderlund, E. (1964). The locked loan fund was abandoned at the same time as bills of exchange were banned from being used as reserves in 1872, as part of the modernization of the Riksbank (see Brisman, S. (1931)).

¹⁵ This was made by assuming that the entire trade deficit towards Finland was paid in Riksbank notes from 1834 until 1840, and then using Davidsson’s figures for repayments. This means that 3 million SEK was already circulating in Finland at the beginning of the period. See Davidsson, D. (1931:1) pp. 205-517

¹⁶ This is one way of specifying how the monetary authorities adds to the stock of base money.

Figure 5. 2: Components of the Monetary Base, 1834-1913, (1000's SEK)



Sources: Davidsson, D. (1931:1) pp. 205, 211, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

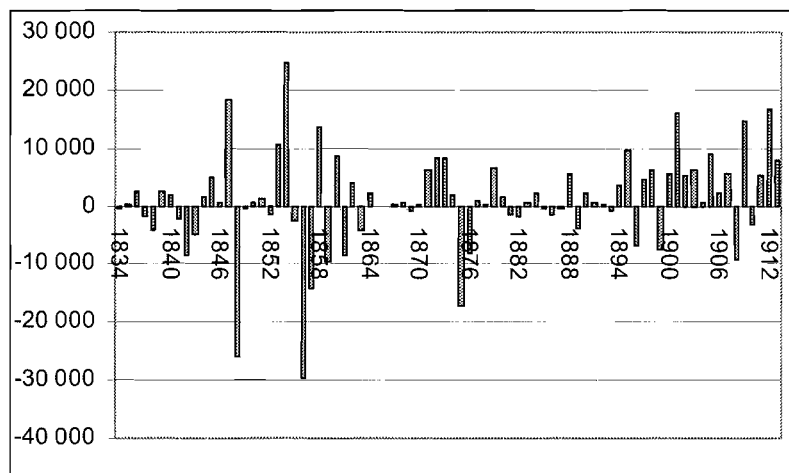
As figure 5.2 indicates, the monetary base was fairly stable until it took off during the closing years of the nineteenth century. Both specie reserves and the Bank's contribution to the monetary base, started to increase rapidly during the late 1890s. As demonstrated in Chapter 3, this was only partly a result of the cessation of Enskilda bank note issuance. The specie part of the monetary base mainly increased during the booms of the 1850s and the 1870s.

The Monetary Balance of Payments

The monetary balance of payments is closely linked to the monetary base. Indeed, the most direct way to view the balance of payments is as changes in central bank reserves. The monetary balance of payments is defined as net specie imports plus the change in net foreign assets held by the authorities. Thus it is the sum of all international transactions that affect the size of the monetary base. The balance of payments series for the United States estimated by Officer includes net changes in the foreign holdings of both the Treasury and the central bank.¹⁷

¹⁷ Officer, L.H. (2002) pp. 132-133

Figure 5. 3: Annual Monetary Balance of Payments, 1834-1913 (1000's SEK)



Source: Sveriges Riksbank (1931) pp. 18-31, 54-71

In Figure 5.3 above, the balance of payments consists of changes in the Riksbank's specie and its net foreign holdings. Capital flows related to the foreign liabilities of the National Debt Office are not included. Thus this series does not include the current account deficits financed by the importation of capital. A further discussion of the relationship of the foreign debt to the monetary base and the balance of payments now follows.

Methodological Problems of Estimating the Monetary Base

It should now be apparent that the concepts of monetary base and the balance of payments are not problem free. Two principal difficulties arise: 1) what constitutes potential commercial bank reserves, and 2) what is to be included among the net foreign assets of the authorities?

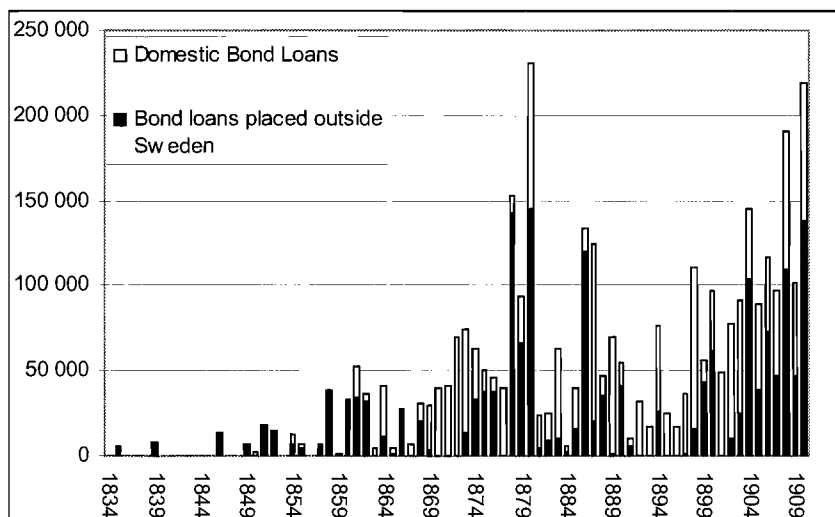
As highlighted by the discussion of how to classify Enskilda bank notes, the definition of potential banking reserves is plagued by the problem of evaluating the liabilities of domestic financial actors. One aspect of the monetary base is that it is provided by so-called outside agents. Thus, its size can be altered only through international transactions and the domestic production of specie.¹⁸ Thus, domestic

¹⁸ Officer, L.H. (2002) p. 119

financial assets and liabilities, other than notes issued by the central bank, should not be considered part of the monetary base.¹⁹

Nonetheless, the Swedish banks were allowed to use bonds issued by the National Debt Office, local governments and mortgage associations both as part of their equity capital and as legal backing for their notes.²⁰ If such financial assets were to be included in the monetary base, it would increase in step with the domestic demand for credit.

Figure 5. 4: Swedish Domestic and International Bond Loans, 1834 – 1910



Source: Flodström, I. (1912) pp. 812-815

Figure 5.4 demonstrates that the level of outstanding bond loans, both foreign and domestic, was substantial. In addition to the problem of categorizing the domestic bond holdings of the commercial banks as arguably being utilized as reserves, there is the problem of deciding which types of net foreign assets held by the authorities should be included in the monetary base. The National Debt Office placed its bonds on the international capital market. In the case of the United States, Officer concluded that the contribution of net foreign assets to the monetary base was of little importance.²¹ For

¹⁹ This is not at all self evident. One argument may be that the notes were redeemable for specie, but so were notes issued by Enskilda banks after 1874.

²⁰ It should also be noted, that legal reserve requirements for Enskilda banks concerned backing of notes, and not any other liability. For joint stock banks, without the right to issue notes, a minimum size of equity capital was specified. Furthermore, Jonung included some liabilities of the National Debt Office in the monetary base, namely the commercial banks' deposits in this authority (Jonung, L. (1975) p. 29).

²¹ Officer, L.H. (2002) p. 128

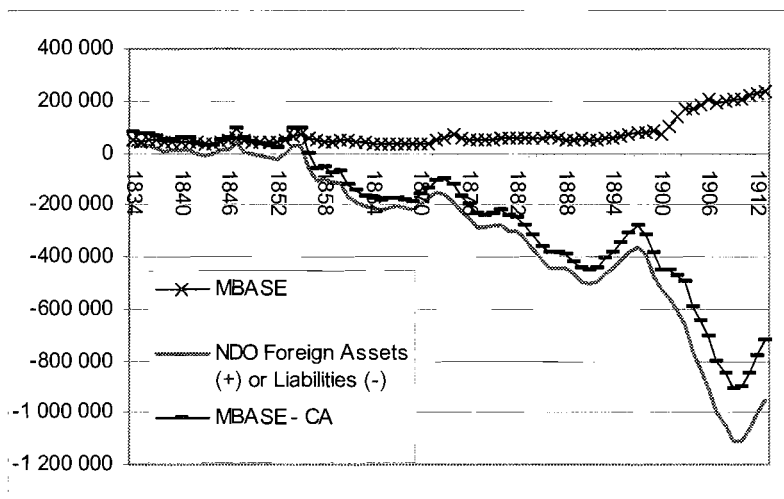
Sweden, a small, open, capital importing economy, however, this certainly was not the case.

In particular the foreign borrowing of the National Debt Office brought this question to the fore. Officer included the net foreign assets of the central bank and Treasury currency held by foreigners in the US monetary base.²² On that basis, it is unclear why the foreign liabilities of the National Debt Office should be excluded from the Swedish monetary base. Granted, the bonds issued by the Office were long term and neither the Office or the Riksbank guaranteed their instant convertibility into currency. Even so, had they been issued directly by the issued by the Riksbank on behalf of the State, instead of the National Debt Office, they would have been included.

Consequently, the net foreign assets component of the monetary base has been calculated in two alternative ways: with and without the foreign liabilities of the National Debt Office, the principal capital importer. If it is assumed that the Office's foreign borrowing equaled that part of the current account deficit not covered by changes in the reserves, or non-reserve foreign assets, of the Riksbank, then the foreign liabilities of the Office can be calculated as the annual difference between the current account and the reserves, minus the non-reserve financial assets of the Riksbank. To convert this into a measure of net foreign assets, this series has been summed over the period.

²² Officer, L.H. (2002) p. 127

Figure 5. 5: The Monetary Base Including (MBASE-CA) and Excluding (MBASE) Net Foreign Assets of the National Debt Office, 1834-1913 (1000's SEK)



Sources: Davidsson, D. (1931:1) pp. 205, 211, Lindahl et al. (1937:2) p. 585, Sammandrag af Bankernas Uppgifter 1874-1900, Schön, L. (1999), Sveriges Riksbank (1931) pp. 18-31, 54-71

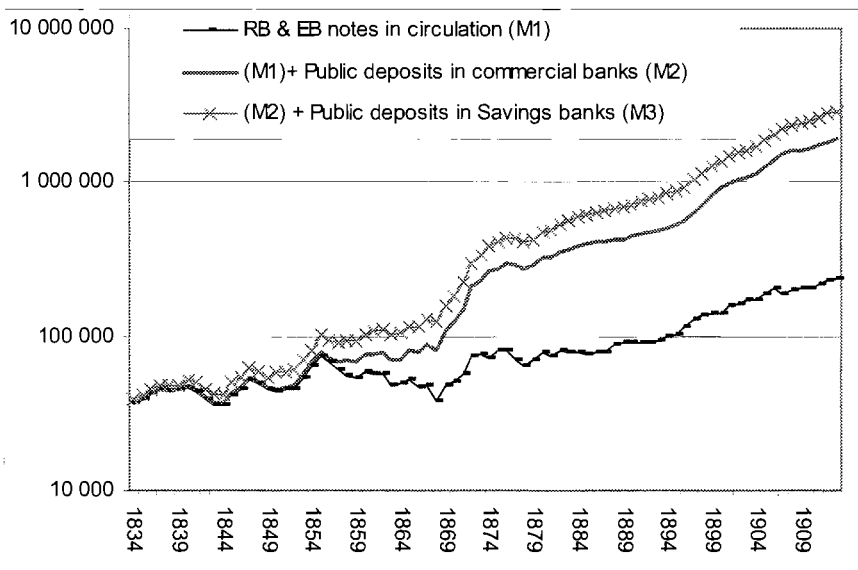
The not so surprising result of this exercise in calculating official net foreign assets from the current account is that Sweden had a negative monetary base. This poses an intriguing question: If official long term borrowing is not part of the monetary base, how should the capital flows associated with such borrowing be treated? Can the foreign debt position of the National Debt Office be ignored simply because the Office had no responsibility for the specie standard? Clearly, methodological issues arise when defining the monetary situation of a country dependent on international capital and a large part of whose money supply consists of private bank notes. This exercise demonstrates that spatially and chronologically independent monetary concepts can become problematic when they are to be made operational. There will always be some questions as to what items are to be included. Inevitably, these monetary measures will have to be considered on a case by case basis.

The Money Supply

In addition to the so called monetary base, a more appropriate measure of the circulating money supply was the quantity of Riksbank and Enskilda bank notes outstanding, minus the Riksbank notes held as reserves by the Enskilda banks. As a result of the

small number banking offices and their limited hours of operation, demand deposits in commercial banks were not readily accessible in nineteenth century Sweden.²³

Figure 5. 6: The Swedish Money Supply in terms of M1, M2 and M3 in logarithmic form, 1834-1913 (1000's SEK)



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 54-71, 172-185

No matter what the theoretical definition states, there was a clear difference between money circulating as Enskilda bank notes and being held as deposits. Under these circumstances, the above measure of the total stock of notes in circulation is labeled M1. M2 is defined as M1 plus the public's deposits in commercial banks and M3 as M2 plus the public's deposits in savings banks. The considerable business activity of the Swedish savings banks makes M3 a more useful measure than M2.²⁴ The two periods of substantial commercial bank establishment, the late 1860's and the mid 1890's, both

²³ See Chapter 4

²⁴ See Lilja, K. (2000), Petersson, T. (2000). The money stock 1871-1971 calculated in the study of Jonung, consisted of the volume of Enskilda and Riksbank notes held by the public plus deposits from the non-banking sector in commercial banks (Jonung, L. (1975) pp. 13, 208-211).

display a marked acceleration in the growth of the two money supply measures, M2 and M3.

The Flexibility of the Riksbank's Reserves and the Practice of Monetary Discipline

Qualitative sources clearly demonstrate that changes in the size of the Riksbank's reserves was the signal that action to preserve convertibility was required. Frequently, the initial reaction of the Board of the Riksbank was to add to those reserves considered as legal backing for the Bank's notes. When the outflow of reserves persisted, however, the Board was forced to decrease its notes in circulation, that is to say, the money supply.²⁵

International Capital and the Riksbank's Reserves

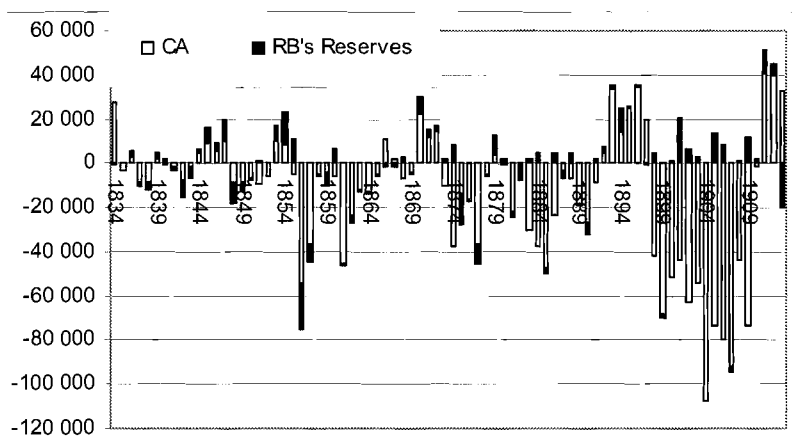
Starting in the late 1850's, the National Debt Office imported capital to finance the building of the national railway system. In addition, some of these loans were taken to alleviate distress on the domestic credit market. It has been estimated that by 1910 the average Swede owed more to foreign countries than did the residents of any other country in the world. Sixty years of chronic current account deficits had increased the foreign debt to an amount equal to three quarters of the Country's entire GDP.²⁶

As can be seen in Figure 5.7, changes in the reserves of the Riksbank were small compared to the current account balance. Moreover, the reserves did not consistently move in the opposite direction of the current account, illustrating the importance of capital imports. Indeed, to simultaneously sustain imports, maintain the money supply and protect the specie standard would have been impossible without the international capital market.

²⁵ See BaU 1834 – 1900 No 1 (Reports from the Board of the Riksbank to the Parliament), Davidsson, D. (1931:2) pp. 145-146, RbFP 1856 – 1859, 1869 – 1881, RbFSP 1869 – 1881, Ögren, A. (1995) pp. 18, 30, 36. See also Chapter 6.

²⁶ Schön, L. (2000) p. 270. In spite of this, the National Debt Office that very same year launched a large bond loan on the foreign market to ease the constrained situation on the Swedish money market (Schön, L. (2000) p. 262). See also Chapter 6.

Figure 5. 7: Annual Current Account and Changes in Riksbank Reserves, 1834 – 1913. 1000's SEK



Sources: Schön, L. (1999), Sveriges Riksbank (1931) pp. 54-71

The Swedish experience was that business fluctuations impacted trade activities. During years of crisis, imports declined more than exports, while during years of rapid economic growth, imports increased more than exports. Between 1834 and 1913, annual changes in imports were more closely correlated with changes in GDP, measured either in current prices or in volume, than were changes in exports.

Figure 5. 8: Correlations Between Annual Changes in Imports and Exports with Annual Changes in GDP, 1834-1913.

	D(EXPORTS)	D(IMPORT)
D(GDPCV)	0.30	0.76
D(GDPVOL)	0.17	0.52

Sources: Krantz, O. (1997) pp. 12-14, 20-22, Lindahl, E. et al. (1937:2) p. 585, Schön, L. (1999)

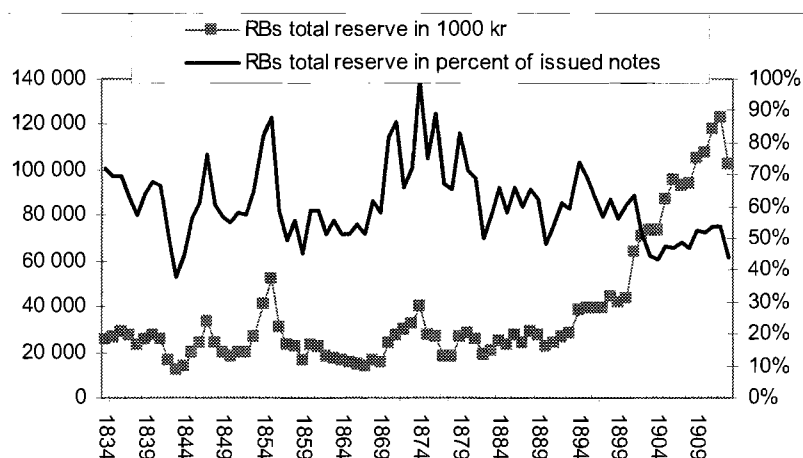
From a pure balance of trade perspective, the recessions were beneficial. At the same time, however, there was a shrinking of the Riksbank's reserves. Throughout the period from 1834 until 1913, the Riksbank's reserves were positively associated with the international business cycle. That is to say, foreign crisis were reflected in Sweden through decreasing reserves. Despite theoretical predictions to the contrary, in an

international exchange rate system based on specie it was possible for reserves in various countries to shrink, or increase, simultaneously.²⁷

The Flexibility of Riksbank Reserves

Try as it might, the Riksbank was not able to insulate the Swedish economy from the effects of international capital flows. This became increasingly apparent after foreign borrowing started to rapidly increase beginning during the 1850's. What the Bank could do, however, was to protect the relationship between its note issue and its reserves which served as the basis for international convertibility.

Figure 5. 9: The Reserves of the Riksbank at Current Prices (1000 SEK), and the Percentage Reserve Backing of Its Note Issue, 1834-1913.



Source: Sveriges Riksbank (1931) pp. 54-71

Since the capital imports were long used to finance the import of good and services, the reserves of the Riksbank did not start to grow until the end of the nineteenth century. The reason that a small, capital importing, country such as Sweden could mitigate the effects of the international business cycle can possibly be traced to the composition of the Riksbank's reserves. Despite the theoretical mechanisms of the specie system, based as it was on a finite, world wide, stock of high powered money to be used as reserves

²⁷ The correlations between monthly changes in percent of the reserves of Bank of England, Banque de France and the German Reichsbank for the period 1880 until 1913 were not negative. A small positive correlation was found between the reserves of the German Reichsbank and the Banque de France (0.190), and a stronger correlation between the German Reichsbank and the Bank of England (0.463), both these were significant at the 1 % level. No significant correlation was found between the reserves of Bank of England and Banque de France. (Flandreau, M. (2000)).

and a fixed relationship between those reserves and the money supply, the system in fact had a degree of elasticity. The reserves of the Riksbank deviated from the "ideal" specie standard model in three regards:

First, during the business cycle the Riksbank could vary its note issue within certain legal parameters. That is, it could utilize its right to issue notes to a different extent during periods when capital was flowing in or out. During most of the period between 1834 and 1913, the Bank allowed the degree of backing for its notes to vary with the size of its reserves.²⁸

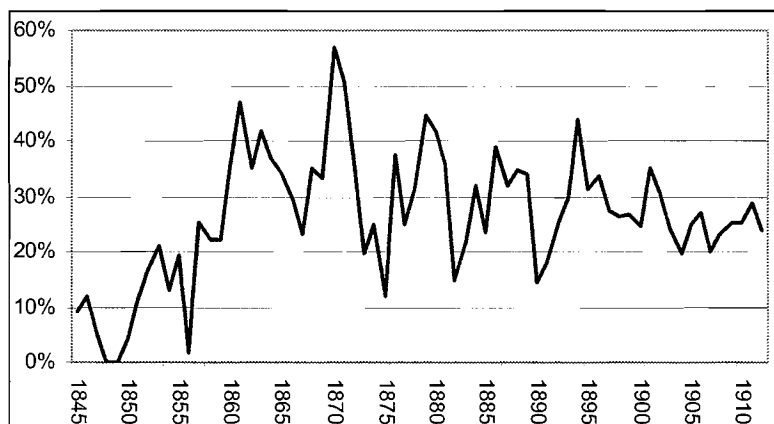
Second, the Riksbank could alter the composition of its formal reserves and other assets, as well as of its liabilities. Thus the Bank could hold assets that did not qualify as backing for notes but which could be transformed into reserves through sale in the domestic or the international capital market. In 1872, the Riksbank established a fund consisting of assets that did not qualify as reserves but which were to be used to offset, and thus sterilize, outflows of reserves.²⁹ In addition the bank utilized open market operations to increase the demand for Swedish currency. This was done to preserve the Swedish currency's value and even, to the extent possible, reduce its variability.³⁰

Third, starting in 1845, foreign assets, as well as specie, were considered to be part of the Bank's formal reserves. It is possible that the fact that the Riksbank was the central bank of a small peripheral country allowed it make its reserves more elastic than otherwise would have been possible under the specie standard. Credit instruments outside the finite, theoretical, world stock of specie could be used as reserves. The Riksbank's foreign assets that counted were foreign national government bonds, deposits with banks and banking firms and, between 1858 and 1872, foreign bills of exchange.

²⁸ Correlations between percentile changes in the size of the reserves and the backing of notes were highly positive and significant at the 1 % level for both the silver and the gold standard period.

²⁹ Brisman, S. (1931) pp. 116-119, 143-145, Ögren, A. (1995) pp. 22-23, 34-40. The Riksbank acted in this manner during the entire period, and it should be noted that besides ensuring convertibility the Riksbank was meant to provide credits in a stable manner. This was of course far from as important as maintaining international convertibility, but it shows that the working of the Riksbank under the classical specie standard did not admit to any 'rules of the game'.

³⁰ See Lobell, H. (2000)

Figure 5. 10: Foreign Holdings as a Percentage of Total Riksbank Reserves, 1845-1912

Source: Sveriges Riksbank (1931) pp. 54-71

The Swedish experience was that if the Riksbank transferred purchasing power by purchasing the State bonds of one of the core countries of the specie standard, this would not force the Bank to reduce its note issue. It only constituted the exchange of one type of reserve for another. If the central banks of other specie standard countries also held the bonds of other specie standard governments as formal reserves, then such purchases would increase total reserves, at least as long the supply of such assets was increased in line with demand. In addition, if expectations concerning further growth of these economics was positive, then the value of these items used as reserves would also increase. Furthermore, the holding of reserves in the form of bonds and deposits had the additional advantage that they yielded interest, thus further helping to consolidate the Riksbank's reserve position.

Measuring Monetary Discipline

Assuming that the specie standard worked in accordance with the monetary approach to the balance of payments makes it possible to evaluate the degree of monetary discipline exercised during various periods. The measure of monetary discipline used is the ratio of the monetary base to the stock of specie. The more the monetary base is allowed to expand relative to the stock of specie, the less strict the specie standard.³¹ The specie stock used for this purpose is the sum of the specie holdings acceptable for use as reserves by the Riksbank and by the Enskilda banks.

³¹ Officer, L.H. (2002) pp. 136-137

An alternative perspective on monetary discipline results from focusing on the operations of the central bank. It can be argued that specie holdings per se are more a measure of how well the Country followed the rules of the specie standard rather than of how well the fixed exchange rate was protected.³² It was more efficient for a small Country to maintain reserves in the form of British and German Government bonds. In reality, international transactions were not settled with specie. Thus, holders of Swedish currency where not interested in exchanging it for specie.

Figure 5. 11: The Mean Value of the Ratio of the Monetary Base to the Stock of Specie and to the Reserves of the Riksbank

Mbase/Specie	Mean Value	Period	Mean Value	Period	Mean Value
Silver Std, 1834-1873.	2,51	1834-39	1,67	1870-79	2,32
Gold Std, 1874-1913 S	2,28	1840-49	2,17	1880-89	2,25
Gold Std US., 1879-1913	2,17	1850-59	2,37	1890-99	1,99
		1860-69	3,38	1900-13	2,63
Mbase/Rbreserves	Mean Value	Period	Mean Value	Period	Mean Value
Silver Std, 1834-1873	2,26	1834-39	1,67	1870-79	1,93
Gold Std, 1874-1913	1,80	1840-49	2,12	1880-89	2,29
		1850-59	1,98	1890-99	1,93
		1860-69	2,42	1900-13	2,00

Sources: Davidsson, D. (1931:1) pp. 205, 211, Officer, L.H. (2002) p. 137, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

Discipline was somewhat less strict under the silver than under the gold standard. Judging the entire period, discipline was strictest in connection with the readoption of the silver standard in 1834 and the most lax during the economically gloomy 1860's. During that decade, reserves flowed out during the Danish-Prussian War of 1864, as the result of international crises and to pay for the food imports required to mitigate the famine caused by the crop failures between 1866 and 1869.³³ The relatively low

³² The fact that the Riksbank held sufficient British, and German, Governmental bonds in the reserves was probably more important for adhering to the silver and gold standards, than was the fact that the Enskilda banks held specie in their reserves. But the measure of monetary discipline by holding specie will conclude otherwise.

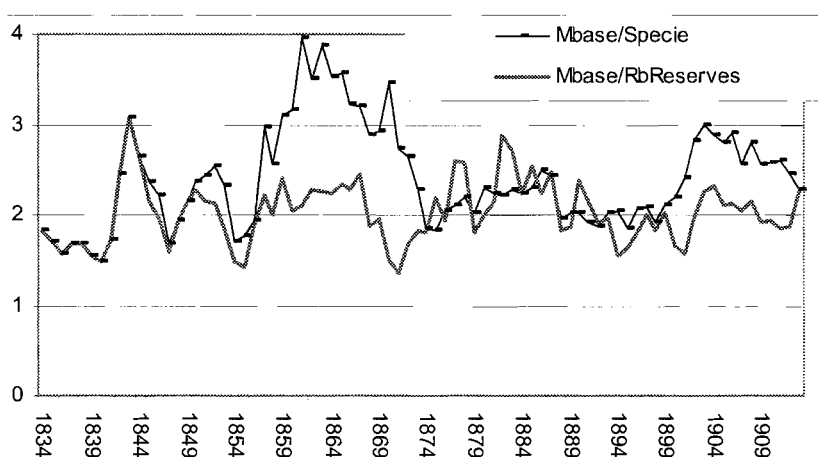
³³ Under the flag of Scandinavianism, Sweden had promised to support Denmark in case of war. As this war became a reality 1864, Swedish reserves rapidly decreased until Sweden withdrew this "promise". The great famine 1866 until 1868 was a supply crisis, reserves were deployed to import food, but prices remained high and transactions low. Besides the lack of food to trade there was no capacity to transport food to the areas most in need. See Davidsson, D. (1931:2) and Ögren, A. (2000) p. 95 note 43.

discipline observed during the early years of the twentieth century can only partly be blamed on the replacement of Enskilda bank notes since the total supply of notes in circulation increased.³⁴

Starting in the 1850's, the measures of monetary discipline changed significantly. Overall, the gold standard was a less "pure" specie standard than was the silver standard. Interestingly enough, the National Debt Office began to borrow on international markets at about the same time that it became possible to substitute foreign assets for specie reserves.

Despite the crisis of 1857/58, and the measures the Riksbank took to deal with it, the 1850's do not seem to have been characterized by a specific lack of monetary discipline. Figure 5.12 below shows the monetary pyramid ratio for each year during the entire period.

Figure 5. 12: Monetary Pyramid Ratios, 1834 – 1913



Sources: Davidsson, D. (1931) pp. 205, 211, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

A review of the annual monetary pyramid ratio of the monetary base to the stock of specie yields several interesting observations concerning the measurement of monetary discipline. First, the peak indicating lax monetary discipline in the early 1840's can be credited to the redemption with specie of the Riksbank notes circulating in Finland. This episode of reduced monetary discipline also coincided with the practical abandonment of the fixed exchange rate. Here the pyramid ratio indicates decreased monetary discipline by the central bank.

³⁴ See Chapter 4.

Second, the sharp rise, once again indicating reduced monetary discipline, starting with the crisis of 1857 coincides well with the actions of the Riksbank during the crisis itself.³⁵ The short term loan taken in Hamburg in January 1858 to sustain the domestic credit market, however, indicates a higher degree of monetary discipline than during the following years. Given the definition of the monetary base, raising foreign capital, thus decreasing the net foreign assets of the Riksbank, decreases the ratio of the monetary base to the stock of specie. This, in turn, indicates a higher degree of monetary discipline. When the loan is repaid, the opposite happens. This effect is doubled if the foreign loan is used to import specie. In that case, not only does the monetary base decrease, but the holdings of specie increase. Thus, when the international capital market is utilized to maintain domestic liquidity, while still preserving the fixed exchange rate, the measure of monetary discipline is distorted, or at least the effect is lagged. That is why monetary discipline appears to be at its weakest during the 1860's when the crisis loan was being repaid.³⁶

Third, with the private banks scheduled to begin holding specie in 1874, the ratio decreased rapidly from 3.5 in 1870 to less than 2.3 in 1873, possibly as a consequence of the conversion to the gold standard in 1873. The ratio then remained reasonably stable until the turn of the twentieth century when the Riksbank greatly expanded its note issue.

Differences in the results of the two measures of monetary discipline was most significant from the mid 1850's to the mid 1870's. Measuring monetary discipline solely by specie holdings creates problems when other assets also are important. Nevertheless, as the experience of the crisis of the late 1850's demonstrates, measuring discipline by including the formal reserves allows the authorities to tamper with the size of the reserves. Monetary discipline was imposed by foreign lenders, it did not follow

³⁵ See Chapter 6.

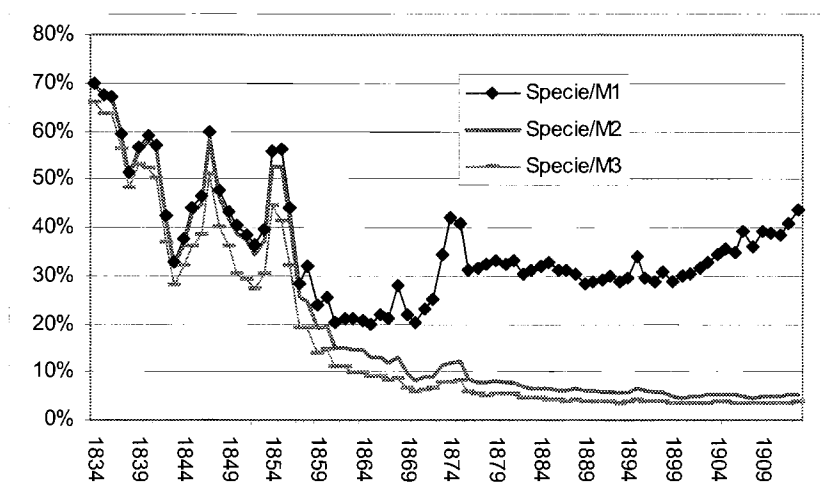
³⁶ The choice of how to fund increases in the monetary base affected the measure of monetary discipline. This stresses the difficulty of definitions, and their impact on results, even more. Consider the two likely scenarios: 1) the central bank selling off domestic treasury bonds abroad, then using the funds to purchase specie. This will increase monetary discipline. As specie is part of the monetary base, the monetary base as well as the central bank's holdings of specie will nominally increase equally in size. But, since specie is a smaller portion than the monetary base, the relative increase in specie holding increases more than the relative increase in the monetary base increasing monetary discipline. 2) The central bank borrowing money from abroad to purchase specie. As in the former example this will increase both specie holdings and the monetary base. However, since net foreign assets of the central bank is included in the monetary base, the decrease in net foreign assets will cancel out the import of specie, that is the increase in the monetary base. Thus, in the latter example the disciplinary effect of the central bank action will be higher than in the former since the amount of specie increases but not the total amount of the monetary base.

automatically from adopting the gold standard. Instead, the decision to adopt the gold standard was taken in order to remain in harmony with the most important lenders.

The Growth of the Money Supply

The question is, how was the growth in the issue of Riksbank notes and the money supply related to specie holdings, to the Riksbank's reserves and to the monetary base? In theory, the specie standard emphasizes specie holdings as the basis for expansion of the money supply. Even under the gold and silver standards, however, specie became a less and less important part of the money supply as the banking system expanded and other items increasingly served as reserves.

Figure 5. 13: Ratios of the Stock of Specie to the Money Supply (M1), (M2), and (M3), 1834-1913



Sources: Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 54-71, 172-185

The money supply measure used by Jonung in his study is what is here labeled M2, that is the public's holdings of Riksbank and Enskilda bank notes plus its deposits in commercial banks. Based on five year averages, Jonung determined that under the gold standard there was stable parallel growth in the gold reserve and the money supply. He offered this result as evidence supporting Cassel's theories of price level movements.

Cassel's theories are based on the quantity theory, and they focus on the importance of maintaining specie reserves in order to prevent price distortions. He relates long term price movements to changes in the relative gold stock. Cassel emphasized that his

framework was to be viewed in an international context. He introduced the purchasing power paradigm, according to which countries under the gold standard can be expected to have similar price levels in the long run. Of course, within this framework all countries were to maintain a stable gold to money supply ratio. If the gold ratio were to decrease, so would prices.³⁷ Figure 5.13, however, raises doubts about such a relationship since prices did not move in the same direction as the ratios pictured. The figure also puts into question the importance of focusing on the specie part of the money supply in explaining the workings of the adjustment mechanism.

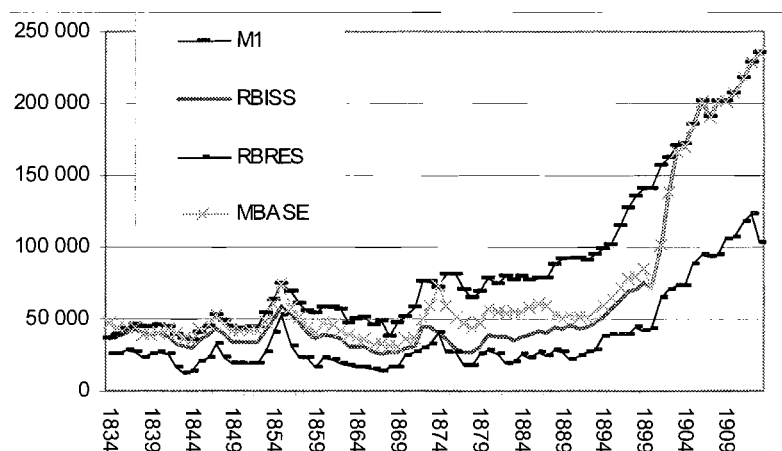
According to the monetary approach to the balance of payments, a relationship exists between the monetary base and the various measures of the money supply, including the public's bank deposits. Jonung also noted a pattern indicating that the growth of the money supply was largely dependent of the growth of the monetary base.³⁸ In fact, however, the Swedish money supply in terms of M1, M2 or M3 did not grow in accord with the expansion of Riksbank reserves, Riksbank notes issued or the monetary base.³⁹

³⁷ Jonung, L. (1975) pp. 139-142, 144-147, 153

³⁸ Jonung, L. (1975) pp. 37, 48-50, 63

³⁹ For the entire period 1834 until 1913, all the series on money supply, issued Riksbank notes, the monetary base and Riksbank reserves were non-stationary. Even though all series are non-stationary over the entire period 1834-1913, a cointegration analysis might be misleading, as the non-stationarity seemed to be the result of a structural break late in the period. Still, an attempt to conduct a Johansen's test for cointegration over the entire period 1834 until 1913 does not indicate any long term relation with M1, M2 or M3 for any of the variables of RBISS, RBRES or MBASE. In lack of a better method, cointegration tests started with a large number of lags that was decreased (see Maddala, G.S. & Kim, I-M. (1998) p. 191)

Figure 5. 14: Money Supply (M1), Issued Riksbank Notes (RBISS), Formal Reserves of the Riksbank (RBRES) and the Monetary Base (MBASE), 1834-1913 (1000's SEK).



Sources: Davidsson, D. (1931:1) pp. 205, 211, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

While the Riksbank's note issue increased at the same rate as its reserves under the silver standard, this was not the case under the gold standard. Instead the issuance of notes greatly exceeded the increase in the Bank's reserves. This new development can be credited largely to the issuance of Riksbank notes, not accompanied by any increase in reserves, intended to replace the Enskilda bank notes that were being withdrawn from circulation at the turn of the twentieth century. Clearly these Enskilda bank notes earlier had played a major role in providing the money that the convertibility requirements had prevented the Riksbank from supplying.⁴⁰

⁴⁰ See Chapter 4.

Figure 5. 15: Growth in Percentage of the Money Supply (M1), (M2), (M3) Issued Riksbank Notes (RBISS), Formal Reserves of the Riksbank (RBRES) and the Monetary Base (MBASE)

Growth under Period	M1	M2	M3	RBISS	RBRES	MBASE
1834-1913	633%	5184%	7345%	650%	395%	493%
1834-1900	380%	2456%	3453%	199%	167%	151%
1834-1873 (Silver Std.)	204%	610%	841%	124%	124%	124%
1874-1913 (Gold Std.)	325%	731%	749%	578%	253%	322%
1901-1913	150%	194%	197%	232%	159%	232%

Sources: Davidsson, D. (1931:1) pp. 205, 211, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 18-31, 54-71, 172-185

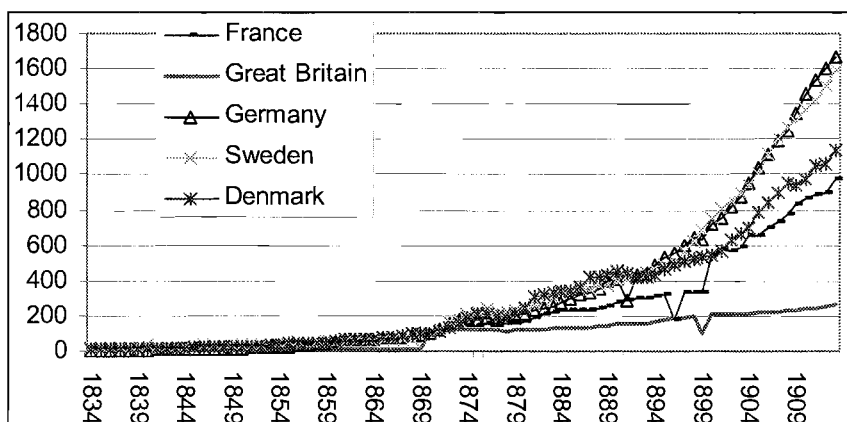
Since virtually no Enskilda bank notes were in circulation at the beginning of the period, and none at all after 1906, for the entire period there is a virtual identity between the increase in M1 and the issue of Riksbank notes. Looking at sub periods, however, makes it clear that M1 grew more or less independently of the other variables in Figure 5.15.

If the money supply grew independently of the level of reserves, how was the specie standard maintained? Triffin has argued that the gold standard era was more a period of credit money than of gold. Thus, the focus on the international adjustment mechanism overshadowed the forces that controlled the overall rate of monetary expansion, a rate which all the individual countries had to accept. When the credit economy was growing, all countries with stable exchange rates were bound to experience approximately the same pace of money supply growth. If that had not been case, it would have been impossible to maintain stability in international exchange rates. According to the monetary approach to the balance of payments, inflationary pressure would have led to a balance of payments deficit which, in turn, would have weakened the reserve position of the domestic economy.⁴¹

This argument made by Triffin also validates the importance of the composition of central bank reserves. In particular, the use of foreign financial assets as part of formal reserves, and thus as backing for note issuance, partly could explain the overall monetary expansion under the gold standard.

⁴¹ Kenwood, A.G. & Loughheed, A.L. (1999) p.118, Triffin, R. (1985) pp.121, 128-129, 133

Figure 5. 16: *Circulating Notes plus the Public's Deposits in Commercial and Savings Banks (M3) in Sweden and Some of Its Principal Trading Partners, 1834 – 1913. Current Value Indexes, 1870=100.*



Sources: Mitchell, B.R. (1998) pp.784-789, 793-195, 800-803, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 54-71, 172-185

The indexes of the money supply in various countries over the period 1834 to 1913 clearly display an upward trend. Among the countries in Figure 5.16, this is particularly striking for Sweden and Germany. Since Germany was the foreign economy with the greatest impact on Sweden, this similarity might indicate a long run relationship in the growth of the money supply.⁴²

This argument might explain why the growth of the money supply in the various countries on the classical specie standard was so similar. Nonetheless, maintaining convertibility in the long run probably would not have been possible had the growing money supply not been related to economic growth. The results of Johansen's test indicates that GDP at constant prices (GDPVOL) and the measure of the money supply consisting of circulating Riksbank and Enskilda bank notes were cointegrated. Economic growth, as measured by GDPVOL, however, was not cointegrated with any other measure of the money supply.⁴³ In addition, neither of the various measures of the money supply were cointegrated with growth in the commercial banking sector, measured as commercial bank assets and commercial bank credit.

⁴² Johansen's test indicates that cointegration, a long run relationship, existed between the Swedish money supply and that of Denmark, France, Germany and Great Britain in nominal values. But the likely problems of what these figures actually contain makes it risky to draw any conclusions based on this test.

⁴³ I thank Camilla Josephsson for performing this cointegration test for me.

Figure 5. 17: Johansen's test on Cointegration between Real Output (GDPVOL) and the Money Supply in terms of Circulating Notes in stable prices (MIDEF), 1834-1913.

Sample(adjusted): 1837 1913				
Series: GDPVOL M1DEF				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test				
Hypothesized		Trace	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None **	0.296869	30.57333	15.41	20.04
At most 1	0.043854	3.453022	3.76	6.65
*(**) denotes rejection of the hypothesis at the 5%(1%) level				
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels				

Sources: Krantz, O. (1997) pp. 20-22, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 172-185

The existence of a cointegration vector implies that there was a stable, stationary, relationship in the residual between economic growth and the money supply. Thus, in the long run, economic growth and the growth of the money supply in terms of circulating Riksbank and Enskilda bank notes were related.⁴⁴ The lack of a measurable relationship between growth in the money supply and in the reserves, or the monetary base, does not mean that no relationship existed. The question raised by existing theory is what was the relationship among changes in reserves, changes in the money supply and changes in prices.

What Caused Changes in the Money Supply?

Theoretically, both the monetary approach to the balance of payments and the price specie flow mechanism, focuses on an internal relationship between changes in reserves (the monetary base) and changes in the money supply. The difference between the two lies in the causality. While the price specie flow model in conjunction with the quantity theory of money leads to the result that changes in reserves due to international capital flows induces changes in the money supply, the monetary approach to the balance of

⁴⁴ The Vector Error Correction on these variables actually suggests that the output (GDP) was dependent, or at least preceded, by the money supply (see Appendix Figure 3 in Appendix A to this Chapter).

payments concludes that changes in the money supply results in changes in reserves. A study comparing the gold standard with other international monetary arrangements by Bayoumi and Eichengreen supports the latter view. That is, under the gold standard the money supply adjusts through the balance of payments, thereby restoring equilibrium in asset and commodity markets.⁴⁵

Furthermore, as noted above, the minutes of the Riksbank Board, as well as the Board's reports to Parliament, support the validity of the monetary approach to the balance of payments. Sufficient notes were supplied and, initially, reserves were increased as needed. Only when convertibility was threatened would the note issue be constrained.

A question is whether the money supply caused price to move or vice versa? One tendency supporting the monetary approach to the balance of payments is the existence of the positive interlinking of price movements among countries predicted by the purchasing power parity hypothesis.⁴⁶ Swedish wholesale prices and, to a slightly lesser degree, consumer prices were indeed correlated with those of the Country's trading partners.

Figure 5. 18: Correlations Between Annual Percentage Changes in Swedish Wholesale and Consumer Prices with Those of her Principal Trading Partners, 1834-1913

Wholesale Price indices	France	Great Britain	Germany	
Sweden, 1861-1913	0.731*	0.780*	0.753*	
Consumer Price indices	France	GB (England)	Germany	Denmark
Sweden, 1834-1913	0.373*	0.360*	0.515*	0.601*
Sweden, 1834-1873 Silver std	0.458*	Not significant	0.541*	0.532*
Sweden, 1874-1913 Gold std	Not significant	0.549*	0.544*	0.739*

* Significant at least at 5 %

Sources: Mitchell, B.R. (1998) pp. 856-859, 863-865, Myrdal, G. & Bouvin, S. (1933) pp. 196-199

For the entire period 1834-1913, Swedish consumer prices closely tracked those in Germany and Denmark well. During the gold standard period, the correlation with British prices increased while that of French prices became statistically insignificant. During the entire period, Sweden's place in the "German economic bloc" was of considerable significance. Starting with the adoption of the gold standard, Swedish consumer prices were remarkably closely synchronized with those in Denmark.⁴⁷

⁴⁵ Bayoumi, T. & Eichengreen, B. (1995) pp. 7-11, 20-21. This study included seven countries, among them Sweden

⁴⁶ Gomes, L. (1993) pp.166-167, McCloskey, D.N & Zecher, J.R. (1985) pp. 69-71. Here it would also be expected that wholesale prices were more prone to internationally move together than consumer prices, since the latter holds a larger amount of internationally less tradable goods than the former (for instance housing).

⁴⁷ This might be explained with the fact of Denmark and Sweden being neighboring countries, but perhaps more significant was the Danish and Swedish establishment of the Scandinavian Currency Union

These correlations definitely support the existence of international integration. They are insufficient, however, to prove that the monetary approach to the balance of payments was valid in all respects. In order to sort this problem out, the question has been subjected to a VAR-model causality test.

The measure of the monetary base utilized is that excluding the net foreign assets of the National Debt Office. The test applied to the relationship between the monetary base and the money supplied revealed no significant causality whatever. The balance of payments series in stable prices, however, had a positive effect on changes in the money supply (M1) measured at stable prices. This result was not statistically significant when the gold standard period was treated separately.⁴⁸

There are significant results of the test of the casual link between Riksbank reserves, the money supply and prices. The somewhat puzzling outcome of this VAR causality test is that while the money supply increased in response to increased reserves during the previous year, it also increased if the money supply in terms of circulating notes (M1) had decreased. Changes in the money supply in terms of notes in circulation plus the public's deposits in commercial banks (M2) had a positive effect on reserves two years later. But, changes in circulating Riksbank and Enskilda bank notes (M1) after two years negatively affected reserves.⁴⁹

(*Skandinaviska Myntunionen*) in connection with the switch from the silver to the gold standard in 1873, where also Norway joined in 1875. The union made coins convertible at par, but did not include notes. In 1894 notes became convertible at par between Sweden and Norway, and in 1901 with Denmark. See Henriksen, I & Kærgård, N. (1995) and Talia, K. (2001).

⁴⁸ See Appendix Figures 9, 10, 11, and 12 in Appendix B to this chapter. This result stresses the difficulty of estimating the monetary base in accordance with a static set of rules and still making it a significant measure for different types of economies.

⁴⁹ See Appendix B to this chapter for tests and a complete read out of the model. VAR models with five lags have been tested. The 2-lag model was selected due to its relatively high adjusted R² value and relatively low Akaike and Schwartz values.

Figure 5. 19: Vector Auto Regression on the Consumer Price Index (CPI), Money Supply (M1DEF), (M2DEF), (M3DEF), and Riksbank Reserves (RBRESDEF), 1834-1913. 2 lags, variables deflated by the consumer price index and in logarithmic form.

Sample(adjusted): 1837 1913					
Included observations: 77 after adjusting endpoints					
t-statistics in []					
	DLOG (CPI)	DLOG (M1DEF)	DLOG (M2DEF)	DLOG (M3DEF)	DLOG (RBRESDEF)
DLOGCPI(-1)	0.505055 [4.02344]*	-0.675919 [-2.07237]*	-0.187056 [-0.60316]	-0.197512 [-0.72937]	0.013963 [0.01853]
DLOGCPI(-2)	-0.179828 [-1.52134]	-0.033946 [-0.11053]	-0.071144 [-0.24362]	-0.075151 [-0.29471]	-1.353373 [-1.90702]
DLOGM1DEF(-1)	0.242374 [2.99483]*	-0.424197 [-2.01728]*	-0.393267 [-1.96687]	-0.331455 [-1.89847]	0.378014 [0.77797]
DLOGM1DEF(-2)	0.092010 [1.11138]	-0.404555 [-1.88070]	-0.476446 [-2.32941]*	-0.436789 [-2.44565]*	-1.616502 [-3.25219]*
DLOGM2DEF(-1)	-0.235246 [-1.34616]	0.508077 [1.11896]	0.684517 [1.58548]	0.714533 [1.89535]	1.624533 [1.54836]
DLOGM2DEF(-2)	-0.010351 [-0.05813]	0.502378 [1.08574]	0.753044 [1.71161]	0.716169 [1.86419]	2.916830 [2.72812]*
DLOGM3DEF(-1)	0.236773 [1.25482]	-0.613903 [-1.25217]	-0.545323 [-1.16979]	-0.586789 [-1.44154]	-2.123717 [-1.87463]
DLOGM3DEF(-2)	0.000233 [0.00123]	-0.262593 [-0.53380]	-0.285237 [-0.60981]	-0.280705 [-0.68727]	-1.718486 [-1.51181]
DLOGRBRESDEF(-1)	0.005985 [0.26055]	0.221332 [3.70838]*	0.121543 [2.14172]*	0.104796 [2.11478]*	0.058659 [0.42534]
DLOGRBRESDEF(-2)	-0.006199 [-0.25846]	0.118159 [1.89599]	0.010979 [0.18529]	-0.008273 [-0.15988]	-0.139690 [-0.97004]
R-squared	0.489402	0.291574	0.223869	0.251119	0.282417
Adj. R-squared	0.412038	0.184237	0.106273	0.137652	0.173693

* Denotes significant values at least at 5%

Sources: Myrdal, G. & Bouvin, S. (1933) pp. 196-199, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, SCB (1960) pp. 99, 102-103, Sveriges Riksbank (1931) pp. 54-71, 172-185

There were also significant results concerning prices, changes in the money supply in terms of circulating Riksbank and Enskilda bank notes (M1) resulted in a change in

consumer prices with a one year lag. The rate of change of prices was also affected by previous prices changes, but these did not have a significant effect on the money supply. Even though the tendency was the same throughout the eighty year period, it was stronger under the gold than under the silver standard.⁵⁰

The results of the VAR test of causality can be summarized in a model designed to explain changes in domestic prices as depending on changes in domestic monetary variables. The neo classical quantity theory predicts that price effects due to growth in the money supply may be off set by growth in real income. The growth of real output was related to the growth of the money supply measured in terms of circulating notes (M1). Therefore, changes in real GDP is also included in the model determining price movements. Moreover, changes in consumer prices in Germany (GERCPI) is incorporated as a proxy for international price movements.

Figure 5. 20: OLS-regression determining changes in domestic prices (CPI), as dependent on current and prior changes in the variables the German Consumer Prices (GERCPI), the Money Supply (MIDEF), and GDP (GDPVOL), 1834-1913

Dependent Variable: DLOG(CPI)				
Method: Least Squares				
Sample(adjusted): 1836 1913				
Included observations: 78 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000148	0.004142	0.035695	0.9716
DLOG(MIDEF(-1))	0.208837	0.038308	5.451567	0.0000*
DLOG(CPI(-1))	0.431343	0.082337	5.238730	0.0000*
DLOG(GDPVOL)	-0.136901	0.103992	-1.316460	0.1921
DLOG(GERCPI)	0.176576	0.038591	4.575629	0.0000*
R-squared	0.545961	Mean dependent var		0.005182
Adjusted R-squared	0.521083	S.D. dependent var		0.040856
Durbin-Watson stat	2.148764	Prob(F-statistic)		0.000000

* Denotes significant values at least at 5%

Sources: Krantz, O. (1997) pp. 20-22, Mitchell, B.R. (1998) pp. 863-865, Myrdal, G. & Bouvin, S. (1933) pp. 196-199, Post & Inrikes Tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 172-185

⁵⁰ Although not significant at the 5% level, changes in consumer prices seemed to have a negative impact on the Riksbank's reserves. If so, this supports the idea that the balance of payments was used to restore equilibrium on the money market. The R2 value, the explanatory power (or the goodness of fit value), suggests changes in CPI as being dependent upon changes in the money supply. For tests of the model see Appendix B to this chapter.

As predicted by the theory, changes in prices were related to concurrent changes in GDP (by volume). If significant, growth in the GDP acted to cushion the effect of a growing money supply on prices.⁵¹ Prices were positively affected by the money supply in terms of circulating notes (M1) lagged one year. International price movements also clearly affected domestic prices. The largest impact came from domestic price changes lagged one period.

This result is consistent with both the quantity theory, and thus with the price specie flow mechanism, and the monetary approach to the balance of payments. It concludes that prices are set in international markets. At same time, however, it was also the case that domestic price changes were connected to domestic changes in the money supply. This was a result of the simultaneous money supply growth experienced by the countries operating under the specie standard. This money supply expansion, however, was not associated with any growth in specie holdings in these countries.

It was argued above that the use of foreign financial liabilities issued in specie standard countries as formal reserves allowed the total supply of reserves to increase, subject only to the existence, as indeed was the case, of a liquid secondary market for these assets. Expectations also affected the value of the reserves. Gold standard economies experienced a simultaneous growth in their money supply. At least in the Swedish case, and in the short run, changes in the money supply preceded changes in consumer prices. That, however, is still consistent with a large share of these consumer prices being determined in international markets.

Conclusions

At the outset of this chapter, the causal relationships among the parameters associated with fixed exchange rates were discussed. This discussion was predicated on the observation that the Swedish experience under the gold standard has been presented both within the confines of the price specie flow mechanism and its more recent variant, the monetary approach to the balance of payments. Since the causality inherent in these two theories is mutually incompatible, questions arose concerning how the money supply reacted to changes in international relations as reflected in changes in central bank reserves or the more inclusive balance of payments series.

Following the lead of Jonung and Officer, series of the monetary base and the balance of payments were constructed for the period 1834 - 1913. This section includes a methodological discussion of how best to treat the foreign debts of the authorities as well as the substantial volume of notes issued by private Swedish banks. This discussion underscored the difficulties encountered when applying a static definition of

⁵¹ GDPVOL does not appear to be significant and this is not due to problems with multicollinearity (see Appendix C to this chapter).

economic concepts to the reality of various types of economies and especially to transitional economies. Indeed, a detailed knowledge of the monetary arrangement of the particular time and place is essential.

The following section dealt with the nature of the international capital transactions that affected the Swedish economy and its level of monetary reserves. Since Sweden was dependent on international capital for imports, economic crises were actually beneficial for her trade balance. The capital flows related to trade in goods and services, however, were small compared to those connected to international borrowing, at least starting in the late 1850's. It was also noted that a common specie standard did not prevent the central bank reserves of these countries from all increasing simultaneously. This was partly due to the elasticity inherent in the system, which left the central bank with some ability to fudge the rules of the game. Of importance for the overall growth of central bank reserves was the inclusion of financial assets held in other specie standard countries.

Foreign assets were a major component of the Riksbank's reserves. This reality has affected the measurement of monetary discipline. Considering only actual holdings of specie results in discipline appearing remarkably lax during the 1860's. If instead discipline is measured in terms of the monetary base to Riksbank reserves ratio, things look somewhat better. Nonetheless, monetary discipline seems to have become more stringent after the international debt became significant starting the late 1860' and early 1870's. Apparently, it was the foreign debt situation, rather than the adoption of the gold standard, that influenced behavior in this regard. What was important was not the switch from silver to gold but the increasing dependence on the international capital market.

The growth of the money supply did not depend on specie holdings, Riksbank reserves or even the monetary base. The only cointegration result that could be identified was between the circulation of bank notes (M1) and real GDP. It does seem as if other monetary aggregates grew simultaneously with the money supply in other countries operating under the specie standard and of major importance to the Swedish economy.

The causality inherent in the system was then tested. Did changes in certain variables effect the money supply or did the opposite relationship hold? Changes in the monetary base or in specie holdings were unrelated to changes in any of the monetary aggregates. Contrary to the qualitative evidence, the statistical tests tended to support the specie flow hypothesis. Changes in central bank reserves, as well as in the balance of payments, positively affected the money supply. Changes in the money supply, in turn, were positively related to the level of consumer prices. At the same time, however,

domestic prices were changing in line with international prices, thus tending to support the monetary approach to the balance of payments hypothesis.

The result was summarized in an OLS-regression model in which current changes in domestic prices were dependent on current changes in international prices. Changes in the money supply in terms of circulating notes (M1) lagged one period and, most importantly, price changes lagged one period also affected price changes positively.

The Swedish money supply grew in line with that of other countries operating under the specie standard. This growth in the money supply, in turn, resulted in increasing international prices during periods of credit expansion that were not also characterized by rapid economic growth. Thus, prices, in addition to being connected to international markets, responded to prior increases in the money supply. This growth in the money supply, however, may only have been tolerated because of the similar monetary growth experienced in other specie standard countries.

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Appendix – Testing the Models

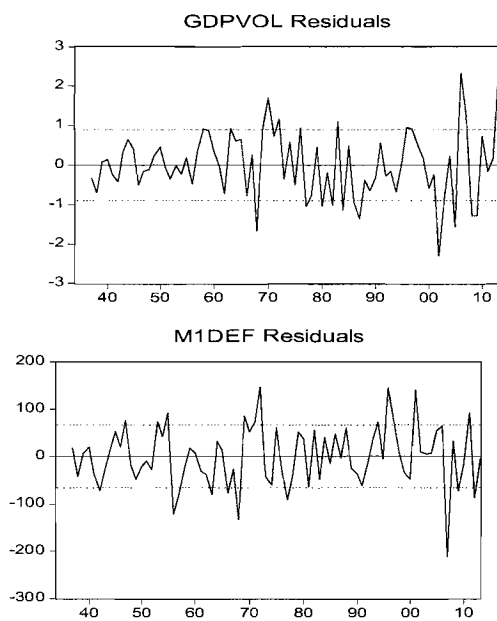
Appendix A – Johansen's test for Cointegration

Appendix Figure 1: Complete readout from Johansen's test on Cointegration.

Sample(adjusted): 1837 1913				
Included observations: 77 after adjusting endpoints				
Trend assumption: Linear deterministic trend				
Series: GDPVOL M1DEF				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test				
Hypothesized		Trace	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None **	0.296869	30.57333	15.41	20.04
At most 1	0.043854	3.453022	3.76	6.65
*(**) denotes rejection of the hypothesis at the 5%(1%) level				
Trace test indicates 1 cointegrating equation(s) at both 5% and 1% levels				
Hypothesized		Max-Eigen	5 Percent	1 Percent
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None **	0.296869	27.12031	14.07	18.63
At most 1	0.043854	3.453022	3.76	6.65
*(**) denotes rejection of the hypothesis at the 5%(1%) level				
Max-eigenvalue test indicates 1 cointegrating equation(s) at both 5% and 1% levels				
Unrestricted Cointegrating Coefficients (normalized by b'*S ⁻¹ *b=I):				
GDPVOL	M1DEF			
0.059857	0.001305			
-0.254602	0.008094			
Unrestricted Adjustment Coefficients (alpha):				
D(GDPVOL)	0.534560	0.047250		
D(M1DEF)	15.33175	-12.37360		
1 Cointegrating Equation(s):		Log likelihood	-525.5739	
Normalized cointegrating coefficients (std.err. in parentheses)				
GDPVOL	M1DEF			
1.000000	0.021794			

	(0.00953)			
Adjustment coefficients (std.err. in parentheses)				
D(GDPVOL)	0.031997 (0.00606)			
D(M1DEF)	0.917712 (0.45197)			

Appendix Figure 2: Cointegration Residuals



Appendix Figure 3: Vector Error Correction Model with the Variables GDP in Volumes and money supply in stable prices (M1DEF).

Vector Error Correction Estimates		
Sample(adjusted): 1837 1913		
Included observations: 77 after adjusting endpoints		
Standard errors in () & t-statistics in []		
Cointegrating Eq:	CointEq1	
GDPVOL(-1)	1.000000	
M1DEF(-1)	0.021794	
	(0.00953)	
	[2.28762]	
C	-44.92972	
Error Correction:	D(GDPVOL)	D(M1DEF)
CointEq1	0.031997	0.917712
	(0.00606)	(0.45197)
	[5.28013]	[2.03048]
D(GDPVOL(-1))	-0.310264	-8.883852
	(0.12653)	(9.43679)
	[-2.45216]	[-0.94141]
D(GDPVOL(-2))	-0.250381	-0.829902
	(0.12178)	(9.08257)
	[-2.05605]	[-0.09137]
D(M1DEF(-1))	0.003095	-0.068725
	(0.00162)	(0.12051)
	[1.91570]	[-0.57026]
D(M1DEF(-2))	0.002625	-0.096526
	(0.00171)	(0.12719)
	[1.53950]	[-0.75892]
C	0.959174	27.90645
	(0.16124)	(12.0259)
	[5.94868]	[2.32053]
R-squared	0.385828	0.072504

Adj. R-squared	0.342576	0.007187
Sum sq. resids	56.03423	311698.1
S.E. equation	0.888377	66.25794
F-statistic	8.920541	1.110037
Log likelihood	-97.02132	-429.0387
Akaike AIC	2.675878	11.29971
Schwarz SC	2.858513	11.48234
Mean dependent	0.707792	18.46150
S.D. dependent	1.095657	66.49734
Determinant Residual Covariance		3421.270
Log Likelihood		-525.5739
Log Likelihood (d.f. adjusted)		-531.8206
Akaike Information Criteria		14.17716
Schwarz Criteria		14.60330

Appendix B – Vector Auto Regression Tests on Causality (precedence)

Appendix Figure 4: Complete read out from the VAR test on CPI, Money Supply and Riksbank Reserves

Vector Autoregression Estimates					
Sample(adjusted): 1837 1913					
Included observations: 77 after adjusting endpoints					
Standard errors in () & t-statistics in []					
	DLOG(CPI)	DLOG (M1DEF)	DLOG (M2DEF)	DLOG (M3DEF)	DLOG (RBRESDEF)
DLOGCPI(-1)	0.505055 (0.12553) [4.02344]*	-0.675919 (0.32616) [-2.07237]*	-0.187056 (0.31013) [-0.60316]	-0.197512 (0.27080) [-0.72937]	0.013963 (0.75365) [0.01853]
DLOGCPI(-2)	-0.179828 (0.11820) [-1.52134]	-0.033946 (0.30713) [-0.11053]	-0.071144 (0.29203) [-0.24362]	-0.075151 (0.25500) [-0.29471]	-1.353373 (0.70968) [-1.90702]
DLOGM1DEF(-1)	0.242374 (0.08093) [2.99483]*	-0.424197 (0.21028) [-2.01728]*	-0.393267 (0.19995) [-1.96687]	-0.331455 (0.17459) [-1.89847]	0.378014 (0.48590) [0.77797]
DLOGM1DEF(-2)	0.092010 (0.08279)	-0.404555 (0.21511)	-0.476446 (0.20453)	-0.436789 (0.17860)	-1.616502 (0.49705)

Chapter 5 – Reserves, Money Supply and Prices

	[1.11138]	[-1.88070]	[-2.32941]*	[-2.44565]*	[-3.25219]*
DLOGM2DEF(-1)	-0.235246 (0.17475)	0.508077 (0.45406)	0.684517 (0.43174)	0.714533 (0.37699)	1.624533 (1.04920)
DLOGM2DEF(-2)	[-1.34616] -0.010351 (0.17808)	[1.11896] 0.502378 (0.46271)	[1.58548] 0.753044 (0.43996)	[1.89535] 0.716169 (0.38417)	[1.54836] 2.916830 (1.06917)
	[-0.05813]	[1.08574]	[1.71161]	[1.86419]	[2.72812]*
DLOGM3DEF(-1)	0.236773 (0.18869)	-0.613903 (0.49027)	-0.545323 (0.46617)	-0.586789 (0.40706)	-2.123717 (1.13287)
DLOGM3DEF(-2)	[1.25482] 0.000233 (0.18933)	[-1.25217] -0.262593 (0.49193)	[-1.16979] -0.285237 (0.46775)	[-1.44154] -0.280705 (0.40844)	[-1.87463] -1.718486 (1.13671)
	[0.00123]	[-0.53380]	[-0.60981]	[-0.68727]	[-1.51181]
DLOGRBRESDEF(-1)	0.005985 (0.02297)	0.221332 (0.05968)	0.121543 (0.05675)	0.104796 (0.04955)	0.058659 (0.13791)
DLOGRBRESDEF(-2)	[0.26055] -0.006199 (0.02399)	[3.70838]* 0.118159 (0.06232)	[2.14172]* 0.010979 (0.05926)	[2.11478]* -0.008273 (0.05174)	[0.42534] -0.139690 (0.14400)
	[-0.25846]	[1.89599]	[0.18529]	[-0.15988]	[-0.97004]
C	-0.003106 (0.00613)	0.028164 (0.01592)	0.035467 (0.01514)	0.041023 (0.01322)	0.026989 (0.03678)
	[-0.50700]	[1.76936]	[2.34335]	[3.10403]	[0.73378]
R-squared	0.489402	0.291574	0.223869	0.251119	0.282417
Adj. R-squared	0.412038	0.184237	0.106273	0.137652	0.173693
Sum sq. resids	0.065506	0.442236	0.399829	0.304855	2.361241
S.E. equation	0.031504	0.081857	0.077833	0.067963	0.189146
F-statistic	6.326016	2.716426	1.903718	2.213146	2.597546
Log likelihood	162.9145	89.39086	93.27193	103.7132	24.89953
Akaike AIC	-3.945831	-2.036126	-2.136933	-2.408134	-0.361027
Schwarz SC	-3.611001	-1.701297	-1.802104	-2.073305	-0.026197
Mean dependent	0.005380	0.016714	0.044039	0.048666	0.011147
S.D. dependent	0.041086	0.090630	0.082331	0.073187	0.208079

Determinant Residual Covariance	1.15E-13			
Log Likelihood (d.f. adjusted)	600.8268			
Akaike Information Criteria	-14.17732			
Schwarz Criteria	-12.50317			

Appendix Figure 5: Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)				
H0: residuals are multivariate normal				
Sample: 1834 1913				
Included observations: 77				
Component	Skewness	Chi-sq	df	Prob.
1	0.260182	0.868748	1	0.3513
2	-0.304470	1.189673	1	0.2754
3	0.333877	1.430585	1	0.2317
4	1.598821	32.80495	1	0.0000
5	-0.008145	0.000851	1	0.9767
Joint		36.29481	5	0.0000
Component	Kurtosis	Chi-sq	df	Prob.
1	2.131540	2.419797	1	0.1198
2	3.065657	0.013830	1	0.9064
3	2.700615	0.287567	1	0.5918
4	6.846068	47.45843	1	0.0000
5	1.741933	5.077934	1	0.0242
Joint		55.25756	5	0.0000
Component	Jarque-Bera	df	Prob.	
1	3.288545	2	0.1932	
2	1.203503	2	0.5479	
3	1.718152	2	0.4236	
4	80.26339	2	0.0000	
5	5.078785	2	0.0789	
Joint	91.55237	10	0.0000	

Appendix Figure 6: Test for Serial Correlation

VAR Residual Serial Correlation LM Tests		
H0: no serial correlation at lag order h		
Sample: 1834 1913		
Included observations: 77		
Lags	LM-Stat	Prob
1	17.00311	0.8817
2	21.79500	0.6476
3	21.17949	0.6826
4	20.96463	0.6946
5	51.24433	0.0015
6	32.13726	0.1541
7	45.79427	0.0068
8	28.74145	0.2749
9	25.76564	0.4202
10	31.19452	0.1827
11	22.96344	0.5797
12	27.51382	0.3307
Probs from chi-square with 25 df.		

Appendix Figure 7: VAR test on CPI, Money Supply and Riksbank Reserves, 1834-1873 (Silver Standard).

Sample(adjusted): 1837 1873					
Included observations: 37 after adjusting endpoints					
Standard errors & t-statistics in parentheses					
	DLOG(CPI)	DLOG (M1DEF)	DLOG (M2DEF)	DLOG (M3DEF)	DLOG (RBRESDEF)
DLOG(CPI(-1))	0.459713 (0.18592) (2.47267)*	-0.789539 (0.54443) (-1.45020)	-0.221404 (0.53687) (-0.41240)	-0.212514 (0.46711) (-0.45496)	0.998484 (1.06878) (0.93423)
DLOG(CPI(-2))	-0.247281 (0.17907) (-1.38088)	-0.043396 (0.52439) (-0.08275)	-0.146659 (0.51711) (-0.28361)	-0.102237 (0.44992) (-0.22724)	-1.141393 (1.02944) (-1.10875)
DLOG(M1DEF(-1))	0.280349 (0.18006) (1.55696)	-0.282025 (0.52729) (-0.53486)	-0.526117 (0.51996) (-1.01184)	-0.366415 (0.45240) (-0.80994)	1.519916 (1.03512) (1.46835)
DLOG(M1DEF(-2))	-0.008705 (0.18677) (-0.04661)	-0.770717 (0.54692) (-1.40919)	-1.139886 (0.53932) (-2.11356)*	-1.050876 (0.46924) (-2.23951)*	-3.070226 (1.07366) (-2.85958)*
DLOG(M2DEF(-1))	-0.397689 (0.27840) (-1.42849)	0.569096 (0.81525) (0.69806)	0.831276 (0.80392) (1.03402)	0.974372 (0.69946) (1.39302)	0.818974 (1.60042) (0.51172)
DLOG(M2DEF(-2))	0.092611 (0.28717) (0.32249)	0.891182 (0.84094) (1.05974)	1.193747 (0.82926) (1.43954)	1.280903 (0.72151) (1.77532)	3.680434 (1.65086) (2.22941)*
DLOG(M3DEF(-1))	0.318081 (0.25574) (1.24378)	-1.058410 (0.74889) (-1.41330)	-0.875232 (0.73849) (-1.18517)	-1.089274 (0.64253) (-1.69529)	-2.655263 (1.47015) (-1.80611)
DLOG(M3DEF(-2))	0.027128 (0.27095) (0.10012)	-0.282357 (0.79344) (-0.35586)	-0.184345 (0.78242) (-0.23561)	-0.300744 (0.68075) (-0.44178)	-1.153751 (1.55761) (-0.74072)
DLOG(RBRESDEF(-1))	0.016982 (0.03990) (0.42564)	0.358471 (0.11683) (3.06823)	0.270300 (0.11521) (2.34615)*	0.235449 (0.10024) (2.34886)*	0.311724 (0.22936) (1.35913)
DLOG(RBRESDEF(-2))	-0.005013	0.122325	0.039041	-0.017746	-0.285356

	(0.04643)	(0.13598)	(0.13409)	(0.11666)	(0.26694)
	(-0.10796)	(0.89960)	(0.29116)	(-0.15211)	(-1.06900)
R-squared	0.583455	0.364859	0.369369	0.407774	0.428508
Adj. R-squared	0.423245	0.120574	0.126819	0.179995	0.208704

Appendix Figure 8: VAR test on CPI, Money Supply and Riksbank Reserves, 1874-1913 (Gold Standard)

Sample: 1874 1913					
Included observations: 40					
Standard errors & t-statistics in parentheses					
	DLOG(CPI)	DLOG (M1DEF)	DLOG (M2DEF)	DLOG (M3DEF)	DLOG (RBRESDEF)
DLOG(CPI(-1))	0.139380 (0.23304) (0.59811)	-0.387043 (0.54317) (-0.71256)	-0.542497 (0.37046) (-1.46438)	-0.229961 (0.30210) (-0.76121)	-2.468987 (1.46242) (-1.68829)
DLOG(CPI(-2))	0.393627 (0.21660) (1.81726)	-0.235505 (0.50487) (-0.46646)	0.517276 (0.34434) (1.50222)	0.222097 (0.28080) (0.79095)	-1.257659 (1.35931) (-0.92522)
DLOG(M1DEF(-1))	0.316570 (0.08199) (3.86122)*	-0.429019 (0.19110) (-2.24501)	-0.060244 (0.13034) (-0.46222)	-0.085607 (0.10629) (-0.80545)	-0.078433 (0.51451) (-0.15244)
DLOG(M1DEF(-2))	0.259840 (0.09528) (2.72707)*	-0.409347 (0.22209) (-1.84318)	-0.012236 (0.15147) (-0.08078)	-0.114383 (0.12352) (-0.92603)	-0.803059 (0.59794) (-1.34304)
DLOG(M2DEF(-1))	1.097646 (0.46898) (2.34050)*	-0.626759 (1.09312) (-0.57337)	0.635186 (0.74555) (0.85197)	-0.312780 (0.60797) (-0.51447)	-1.675661 (2.94309) (-0.56935)
DLOG(M2DEF(-2))	-0.741689 (0.40868) (-1.81483)	0.378830 (0.95258) (0.39769)	0.268423 (0.64969) (0.41315)	0.535720 (0.52980) (1.01117)	7.222212 (2.56470) (2.81601)*
DLOG(M3DEF(-1))	-1.442504	0.658706	-0.797592	0.477402	1.338781

	(0.64231)	(1.49712)	(1.02109)	(0.83266)	(4.03081)
	(-2.24582)*	(0.43998)	(-0.78112)	(0.57334)	(0.33214)
DLOG(M3DEF(-2))	0.899027	-0.567413	0.111130	-0.304367	-7.126188
	(0.54217)	(1.26372)	(0.86190)	(0.70285)	(3.40241)
	(1.65820)	(-0.44900)	(0.12894)	(-0.43305)	(-2.09445)*
DLOG(RBRESDEF(-1))	0.026606	0.105057	0.025515	0.015744	-0.145594
	(0.02864)	(0.06675)	(0.04552)	(0.03712)	(0.17971)
	(0.92909)	(1.57395)	(0.56047)	(0.42409)	(-0.81017)
DLOG(RBRESDEF(-2))	0.007141	0.113968	-0.006682	0.001162	-0.134234
	(0.02596)	(0.06050)	(0.04126)	(0.03365)	(0.16289)
	(0.27511)	(1.88374)	(-0.16193)	(0.03452)	(-0.82407)
R-squared	0.611864	0.388137	0.256810	0.310863	0.466140
Adj. R-squared	0.478024	0.177149	0.000538	0.073229	0.282051

Appendix Figure 9: VAR test on Causality between the Monetary Base and different Money Supply measures

Sample(adjusted): 1837 1913				
Included observations: 77 after adjusting endpoints				
Standard errors & t-statistics in parentheses				
	DLOG(MBASEDEF)	DLOG(M1DEF)	DLOG(M2DEF)	DLOG(M3DEF)
DLOG(MBASEDEF(-1))	0.266340	0.115037	0.013939	0.037152
	(0.15387)	(0.12267)	(0.10776)	(0.09478)
	(1.73097)	(0.93775)	(0.12935)	(0.39198)
DLOG(MBASEDEF(-2))	-0.039195	0.149851	0.077718	0.030109
	(0.14889)	(0.11871)	(0.10427)	(0.09172)
	(-0.26324)	(1.26235)	(0.74532)	(0.32828)
DLOG(M1DEF(-1))	0.189004	-0.280256	-0.360762	-0.309932
	(0.27093)	(0.21600)	(0.18974)	(0.16689)
	(0.69762)	(-1.29748)	(-1.90139)	(-1.85713)
DLOG(M1DEF(-2))	-0.582646	-0.403142	-0.423008	-0.403614
	(0.28063)	(0.22374)	(0.19653)	(0.17286)
	(-2.07623)*	(-1.80187)	(-2.15238)*	(-2.33488)*
DLOG(M2DEF(-1))	0.541515	0.254739	0.634004	0.643862
	(0.60036)	(0.47865)	(0.42044)	(0.36981)

	(0.90199)	(0.53221)	(1.50794)	(1.74105)
DLOG(M2DEF(-2))	1.004013	0.639253	0.799186	0.746806
	(0.61790)	(0.49264)	(0.43273)	(0.38062)
	(1.62487)	(1.29762)	(1.84683)	(1.96207)
DLOG(M3DEF(-1))	-0.905861	-0.051759	-0.286690	-0.355129
	(0.64544)	(0.51459)	(0.45202)	(0.39758)
	(-1.40349)	(-0.10058)	(-0.63425)	(-0.89322)
DLOG(M3DEF(-2))	-0.380648	-0.478166	-0.456905	-0.405638
	(0.64756)	(0.51628)	(0.45350)	(0.39889)
	(-0.58782)	(-0.92618)	(-1.00750)	(-1.01692)
C	0.013651	0.011011	0.029140	0.035612
	(0.02080)	(0.01658)	(0.01457)	(0.01281)
	(0.65628)	(0.66391)	(2.00029)	(2.77931)
R-squared	0.142538	0.105410	0.163562	0.181084
Adj. R-squared	0.041660	0.000164	0.065157	0.084741
Sum sq. resids	0.878563	0.558449	0.430896	0.333364
S.E. equation	0.113666	0.090623	0.079603	0.070017
F-statistic	1.412971	1.001555	1.662135	1.879578
Log likelihood	62.96273	80.40803	90.39092	100.2712
Akaike AIC	-1.401629	-1.854754	-2.114050	-2.370681
Schwarz SC	-1.127678	-1.580803	-1.840098	-2.096730
Mean dependent	0.016045	0.016714	0.044039	0.048666
S.D. dependent	0.116111	0.090630	0.082331	0.073187
Determinant Residual Covariance		3.38E-11		
Log Likelihood		491.2444		
Akaike Information Criteria		-11.82453		
Schwarz Criteria		-10.72872		

Appendix Figure 10: Vector Auto Regression on Balance of Payments (BOPDEF) and Money Supply (M1DEF), (M2DEF), (M3DEF), 1834-1913. 1 lag, variables deflated by the Consumer Price Index

Sample(adjusted): 1836 1913

Included observations: 78 after adjusting endpoints				
Standard errors & t-statistics in parentheses				
	BOPDEF	D(M1DEF)	D(M2DEF)	D(M3DEF)
BOPDEF(-1)	-0.131540 (0.11821) (-1.11279)	0.219091 (0.08862) (2.47237)*	0.492983 (0.30716) (1.60498)	0.727992 (0.42503) (1.71281)
D(M1DEF(-1))	0.115429 (0.18096) (0.63789)	-0.220659 (0.13566) (-1.62660)	-1.573284 (0.47021) (-3.34593)*	-2.119373 (0.65065) (-3.25733)*
D(M2DEF(-1))	0.009853 (0.13310) (0.07402)	-0.189128 (0.09978) (-1.89545)	0.558760 (0.34585) (1.61559)	0.031320 (0.47857) (0.06545)
D(M3DEF(-1))	0.043778 (0.09944) (0.44024)	0.170193 (0.07455) (2.28300)*	0.158253 (0.25840) (0.61244)	0.753409 (0.35755) (2.10712)*
C	-5.280886 (12.3206) (-0.42862)	7.748013 (9.23636) (0.83886)	72.54861 (32.0148) (2.26610)	113.0354 (44.3003) (2.55157)
R-squared	0.078877	0.141728	0.429800	0.425870
Adj. R-squared	0.028405	0.094700	0.398556	0.394410

Appendix Figure 11: Vector Auto Regression on Balance of Payments (BOPDEF) and Money Supply (M1DEF), (M2DEF), (M3DEF), Silver Standard, 1834-1873 Silver Standard. 1 lag, variables deflated by the Consumer Price Index

Sample(adjusted): 1837 1873				
Included observations: 37 after adjusting endpoints				
Standard errors & t-statistics in parentheses				
	D(BOPDEF)	D(M1DEF)	D(M2DEF)	D(M3DEF)
D(BOPDEF(-1))	-0.720332 (0.18526) (-3.88827)*	0.180904 (0.08436) (2.14454)*	0.184776 (0.15228) (1.21340)	0.242120 (0.17850) (1.35641)
D(BOPDEF(-2))	-0.221156 (0.18763) (-1.17869)	0.114159 (0.08543) (1.33621)	0.052292 (0.15423) (0.33905)	0.019871 (0.18078) (0.10992)

Chapter 5 – Reserves, Money Supply and Prices

D(M1DEF(-1))	-0.222415 (0.90789) (-0.24498)	0.101424 (0.41340) (0.24534)	-0.027606 (0.74627) (-0.03699)	-0.388453 (0.87477) (-0.44406)
D(M1DEF(-2))	-2.731893 (1.17327) (-2.32845)*	-0.698882 (0.53424) (-1.30819)	-1.673175 (0.96441) (-1.73492)	-1.935130 (1.13047) (-1.71179)
D(M2DEF(-1))	1.135719 (1.32149) (0.85942)	0.075000 (0.60173) (0.12464)	-0.718792 (1.08625) (-0.66172)	-0.571516 (1.27329) (-0.44885)
D(M2DEF(-2))	1.158251 (1.45525) (0.79591)	0.659572 (0.66263) (0.99538)	1.006682 (1.19620) (0.84157)	1.551423 (1.40216) (1.10645)
D(M3DEF(-1))	-1.196840 (1.11227) (-1.07604)	-0.241179 (0.50646) (-0.47621)	0.460389 (0.91427) (0.50356)	0.597879 (1.07169) (0.55788)
D(M3DEF(-2))	0.341587 (1.01305) (0.33719)	-0.015319 (0.46128) (-0.03321)	0.330799 (0.83271) (0.39725)	0.088305 (0.97609) (0.09047)
R-squared	0.475553	0.266201	0.382786	0.468645
Adj. R-squared	0.325712	0.056544	0.206439	0.316829

Appendix Figure 12: Vector Auto Regression on Balance of Payments (BOPDEF) and Money Supply (M1DEF), (M2DEF), (M3DEF), Gold Standard, 1874-1913. 1 lag, variables deflated by the Consumer Price Index

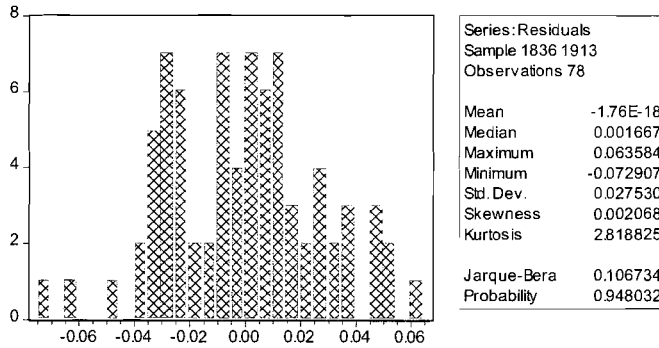
Sample: 1874 1913				
Included observations: 40				
Standard errors & t-statistics in parentheses				
	D(BOPDEF)	D(M1DEF)	D(M2DEF)	D(M3DEF)
D(BOPDEF(-1))	-0.609217 (0.15956)	0.081466 (0.15152)	0.019577 (0.61040)	0.026396 (0.82588)

	(-3.81818)*	(0.53766)	(0.03207)	(0.03196)
D(BOPDEF(-2))	-0.358289	0.043203	0.203052	0.345616
	(0.16151)	(0.15338)	(0.61788)	(0.83599)
	(-2.21836)*	(0.28168)	(0.32863)	(0.41342)
D(M1DEF(-1))	0.219384	-0.223622	-0.969612	-1.227726
	(0.23168)	(0.22001)	(0.88631)	(1.19919)
	(0.94693)	(-1.01642)	(-1.09398)	(-1.02380)
D(M1DEF(-2))	-0.189144	-0.430006	-0.293961	-1.488808
	(0.21376)	(0.20299)	(0.81776)	(1.10644)
	(-0.88484)	(-2.11833)	(-0.35947)	(-1.34559)
D(M2DEF(-1))	-0.026997	-0.185400	0.995339	0.378444
	(0.14679)	(0.13939)	(0.56155)	(0.75978)
	(-0.18392)	(-1.33006)	(1.77249)	(0.49810)
D(M2DEF(-2))	0.083202	-0.052635	-0.414915	-0.312738
	(0.15508)	(0.14727)	(0.59328)	(0.80271)
	(0.53650)	(-0.35741)	(-0.69936)	(-0.38960)
D(M3DEF(-1))	0.038293	0.127923	-0.461418	-0.034255
	(0.11301)	(0.10732)	(0.43233)	(0.58494)
	(0.33885)	(1.19203)	(-1.06729)	(-0.05856)
D(M3DEF(-2))	-0.070653	0.108898	0.570985	0.769604
	(0.11923)	(0.11322)	(0.45612)	(0.61714)
	(-0.59258)	(0.96180)	(1.25182)	(1.24706)
R-squared	0.450242	0.217460	0.345865	0.320863
Adj. R-squared	0.308368	0.015515	0.177056	0.145602

Appendix C – Tests of the OLS-model determining price changes*Appendix Figure 13: Complete Read out of OLS Regression Determining Price Changes*

Dependent Variable: DLOG(CPI)				
Method: Least Squares				
Sample(adjusted): 1836 1913				
Included observations: 78 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000148	0.004142	0.035695	0.9716
DLOG(M1DEF(-1))	0.208837	0.038308	5.451567	0.0000
DLOG(CPI(-1))	0.431343	0.082337	5.238730	0.0000
DLOG(GDPVOL)	-0.136901	0.103992	-1.316460	0.1921
DLOG(GERCPI)	0.176576	0.038591	4.575629	0.0000
R-squared	0.545961	Mean dependent var		0.005182
Adjusted R-squared	0.521083	S.D. dependent var		0.040856
S.E. of regression	0.028274	Akaike info criterion		-4.231804
Sum squared resid	0.058357	Schwarz criterion		-4.080733
Log likelihood	170.0404	F-statistic		21.94482
Durbin-Watson stat	2.148764	Prob(F-statistic)		0.000000

Appendix Figure 14: Distribution of Residuals, Histogram Normality Test on the OLS Regression Determining Price Changes



Appendix Figure 15: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.821904	Probability	0.367648
Obs*R-squared	0.880346	Probability	0.348107

Appendix Figure 16: White Heteroskedasticity Test (including cross-terms)

F-statistic	0.939496	Probability	0.523139
Obs*R-squared	13.47196	Probability	0.489744

Appendix Figure 17: Ramsey RESET Test (general stability and specification test)

F-statistic	0.332781	Probability	0.565825
Log likelihood ratio	0.359682	Probability	0.548683

Appendix Figure 18: Testing for multicollinearity (Correlations between independent variables)

	DLOG (M1DEF(-1))	DLOG (GDPVOL)	DLOG (GERCPI)	DLOG (CPI(-1))
DLOG(M1DEF(-1))	1.000000	0.175461	0.174360	-0.260304
DLOG(GDPVOL)	0.175461	1.000000	-0.212240	-0.136634
DLOG(GERCPI)	0.174360	-0.212240	1.000000	0.057755
DLOG(CPI(-1))	-0.260304	-0.136634	0.057755	1.000000

Multicollinearity does not seem to be a problem in the model, and thus it is questionable whether changes in GDP has any impact on changes in prices

– Chapter 6 –

Lender of Last Resort in a Transitional Economy with a Fixed Exchange Rate:

Financial Crises and Monetary Policy in Sweden under the Silver and the Gold Standards, 1834 – 1913

Keywords: *Classical silver and gold standards, Financial Crises, Fractional Reserves, Lender of Last Resort, Monetary Policy.*

ABSTRACT

According to the classical view, an economy's lender of last resort should be its central bank. For brief periods of time, the bank might suspend convertibility in order to provide the liquidity needed to support the domestic credit market. Recent experience of financial crises demonstrates the conflict between maintaining a fixed exchange rate and serving as a lender of last resort. The lesson of Sweden's history of crises under the classical specie standard is that a transitional, capital importing economy has to pay closer attention to the specie standard rules than do capital exporting economies. While the Swedish central bank, for a limited time, could support the credit market within the limits of the specie standard, if the crises persisted support mechanisms other than abandoning convertibility were required. The solution adopted was to import high powered money through loans guaranteed by the Swedish State.

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Introduction

In his paper entitled "*The Lender of Last Resort: Some Historical Insights*", Bordo concludes that successful lender of last resort policies, on several historical occasions, have prevented banking panics.¹ Since banking panics are expensive, avoiding them is certainly a good thing. Unfortunately, supporting banks in distress also is not free. Trust in the banking system may be both more valuable and more costly to achieve and maintain in an economy with illiquid capital markets, since such an economy is likely to suffer from volatility both in the price and in the accessibility of credit. How the lender of last resort activities are administered and financed thus affects not only the banking system but the economy as a whole. This paper examines how such policies were implemented in Sweden under the classical specie standard during the period 1834-1913.

An important aspect of lender of last resort policy in Sweden was the Country's poverty, which resulted in a continuous deficit in the current account from the 1850's until well into the 20th century. Massive capital imports were essential to the financing

¹ Bordo, M.D. (1989) p. 22.

of the industrial transformation and, thus, specie convertibility was also of crucial importance.²

The historical experience of lending of last resort under the gold standard in Europe, including Sweden, is generally described as being compatible with Bagehot's classical prescriptions on the subject.³ This implies that the country's central bank, being the only issuer of high powered money, injected liquidity into the economy, even when so doing temporarily required abandoning the specie standard.

The question posed in this paper is whether or not this method of supporting the capital markets utilized in strong economies also was applied in transitional economies such as Sweden? If Bagehot's recipe for acting as a lender of last resort could be followed by any country operating under the classical specie standard without concern for the exchange rate, then preserving convertibility would not be a central bank problem. Phrased alternatively, the classical gold and silver standards were sufficiently automatic to be insensitive to pressures on convertibility.

Taking account of the impact and importance of the specie standard leads to the straightforward proposition that transitional economies are more constrained with regard to lender of last resort policies than are stronger economies. While an economy with a strong currency, such as Britain, was able to follow lender of last resort policies in accord with the classical prescription, this was not the case with Sweden. Instead the Swedish authorities had to find alternative ways of providing lender of last resort services, while still protecting the fixed value of a currency that lacked the trust foreign actors accorded to Sterling.⁴

This discussion leads to three questions: 1) Was there any gold or silver standard so trusted by international markets that any currency operating under that system was considered inherently stable?, 2) Were lender of last resort services provided according to Bagehot's classical prescription? and 3) If not, how were such services financed and administered when defending the fixed exchange rate was the primary goal?

The first section of this paper contains an analysis of the theory of lending of last resort lending. Swedish monetary policy under the classical specie standard is then considered. This is followed by an examination of how lender of last resort actually functioned during the nineteenth century, especially during the most severe crises. Finally the paper ends with a discussion of how its findings might contribute to an understanding of how lender of last resort can best be provided in a transitional economy.

² See Eichengreen, B. & Flandreau, M. (1994)

³ Bordo, M.D. (1989) p. 20

⁴ Bills of exchange denominated in Sterling were considered "as good as gold" or even better (Kenwood, A.G. & Loughheed, A.L. (1999) pp. 114-115). The Bank of England's maintenance of the gold reserve was, according to Sayers, "*the nation's and the world's assurance that claims in pound sterling were convertible on demand into gold at a price fixed by law.*" (Sayers, R.S. (1976) p. 28).

Lender of Last Resort in Theory

An implication of including a fixed exchange rate constraint when formulating a theory of last resort lending is that there must be more than one appropriate way of supplying and administering such lending. What the optimal policy is can only be decided on a case by case basis, depending on the state of the economy. Arguably, the theory of last resort lending emerged from a particular economic environment and has changed over time as conceptual difficulties were encountered. According to Bordo, the concept of lender of last resort can be divided into classical and evolutionary approaches.⁵ The classical and the evolutionary approaches are here discussed in greater detail. In addition, there is some discussion of what light the lessons of last resort lending during the 1980's and 1990's throws on the theory applied to the nineteenth century experience.

The classical view on lender of last resort

Bagehot, Goschen and Thornton are often viewed as the originators of lending of last resort theory.⁶ In their eyes, a lender of last resort was needed in a system of fractional reserve banking. Preferable it should be the monetary authority responsible for issuing high powered money, i.e. the central bank. Ideally, this lender of last resort would lend freely, albeit at a penalty rate, to solvent, but illiquid, banks with the value of the collateral offered being set at pre crisis prices.

It should be noted that the classic view of lending of last resort, being derived from the writings of Bagehot, was largely based on the English situation. Bagehot's original aim was to create awareness of how the Bank of England, on the basis of experience from 1848 and 1857, could limit the banking crisis of 1866.⁷ First as editor of *The Economist* during the 1860's, and later in his classic book *Lombard Street* (1873), Bagehot gave expression to many insights concerning how the central bank should act to limit the spread of panics and crises resulting from a lack of liquidity and of trust in the financial system.

Bagehot's ideas have since been distilled into four basic rules: 1. The central bank should be the sole lender of last resort. 2. During panics, illiquid banks should be

⁵ In his paper, Bordo presents three views on lending of last resort: these can be classified as the classical, the evolutionary and the free banking views. Since the last of these argues that such lending is just another way that central bank intervention contributes to instability, free banking theory can not be said to deal with the question of successful lending of last resort.

⁶ For an analysis of the historical development of the concept of lender of last resort, see Wood, G.E. (2000) pp. 204-209.

⁷ It is therefore somewhat unfair to criticize Bagehot's views from a more general perspective. Regarding Bagehot and central banking see Rockhoff, H. (1986).

granted loans backed by any collateral that would be marketable under normal conditions. 3. The central bank should provide large loans and advances, but at above market interest rates. 4. The previous three rules should be clearly stated before hand and strictly followed during crises.⁸

There are two reasons why central banks often are labelled as the lender of last resort. First, the function of the ultimate issuing authority is to provide the market liquidity needed to prevent financial crises and collapses of the money stock. Thus, if there is a monopoly issuer of base money, it becomes the issuer a last resort by default. Second, assuming an information advantage of the central bank makes it most suitable to be the lender of last resort. Most probably the central bank will be the first actor to realize that some bank is getting into difficulties that might trigger a general financial crisis. Thus, it is also best that the central bank possess the means to avert such a development.⁹

Bagehot distinguished between crises resulting from internal and those due to external drains. In the first case, the above description applies. In the latter, the central bank should intervene by raising the discount rate, thus preventing the outflow of reserves through the mechanism described by Goschen.¹⁰ Since external and internal drains often coincided, raising the discount rate would both attract foreign capital and, at the same time, lay the foundation for lender of last resort activities. It was also agreed that discount policy was the central banks' least harmful policy tool for decreasing the amount of money in circulation and thus restoring balance between the level of reserves and the amount of notes in circulation.¹¹

As a consequence, the description of appropriate lender of last resort policy under the gold standard was closely related to the "rules of the game" discourse. These concerned how central banks worked to maintain the classical specie standard, a context in which lender of last resort behavior played a natural role. In brief, the rules of the game concept prescribed that central banks should not act to sterilize the effects of international capital flows on the domestic business cycle.

Although, lending of last resort tends to sterilize international capital flows, McKinnon described how central banks under the international gold standard were able to maintain convertibility while at the same time serving as a lender of last resort. So doing involved a number of actions. In addition to the basic rules of the gold standard, McKinnon listed two rules concerning lending of last resort. One of these was the so

⁸ Bordo, M.D. (1989) p. 25 Footnote 6. (From Meltzer, A. (1986) "Financial Failures and Financial Policies" in Kaufman, G.G. & Kormendi, R.C. (Ed) *Deregulating Financial Services: Public Policy in Flux*. Ballinger Publishing Company. Cambridge. p. 83), see also Goodhart, C.A.E. (1999) pp. 340-341.

⁹ Capie, F. & Wood, G. (1995) pp. 215, 223

¹⁰ Bagehot, W. (1866) pp. 236-237, Bagehot, W. (1919) pp. 265-267, 270 "The notion that the Bank of England can stop discounting in a panic, and so obtain fresh money, is a delusion."

¹¹ Sayers, R.S. (1976) p. 28.

called Bagehot's rule, according to which central banks facing a short run liquidity crisis resulting from an international gold drain were to lend freely to domestic banks, but only at a premium interest rate. The other rule stated that, if free convertibility between gold and the domestic currency had to be temporarily suspended, then the central bank was to restore convertibility at the previous parity rate as soon as possible.¹²

McKinnon thus acknowledged the existence of a conflict between adherence to a fixed exchange rate and acting as a lender of last resort. The same can be said of Bagehot when he argued that a thirty percent reserve cover for notes in circulation was insufficient in case of a panic. While a fixed exchange regime complicated lending of last resort, however, it also laid the foundation for how to do it. The traditional definition of last resort lending, derived from Bagehot's argument in *Lombard Street*, is still considered the basis of how it functioned under the classical specie standard. Indeed, recent research also emphasizes that the classical approach, with the central bank being responsible for lending of last resort, is still the best recipe.¹³

The conflict between maintaining a fixed exchange rate and providing lender of last resort services was present also under the classic specie standard. Due to the strong position of the Sterling, the Bank of England might have had the ability to temporarily suspend the fixed exchange rate. Germany, with another strong currency, solved its lender of last problem in an alternative fashion, but that country also violated the rules of the gold standard.¹⁴

The evolutionary view on lender of last resort

During the last thirty years, the classical approach to lending of last resort has been expanded to what, in this paper, is called the evolutionary view. Goodhart argued that, even in the absence of a government designated central bank, an expanding banking system will eventually confer central bank functions, particularly acting as the lender of

¹² McKinnon, R.I. (1993) p. 4

¹³ Wood, G.E. (2000) pp.222-223. Or in Wood's words: "Reconsideration of the role of lender of last resort shows revision of it to be unnecessary".

¹⁴ Following the implementation of the gold standard in 1871 and the establishment of the Reichsbank as a central bank in 1876, Germany constructed a system of lending of last resort that operated outside the requirements of the specie standards. The Reichsbank operated a type of giro, or checking, system for the transfer of funds. Since these checks were non-note liabilities, the Reichsbank was not required to back them with reserves, the gold cover rules only being applicable to the issuance of bank notes. This giro system guaranteed the liquidity of the credit banks. The Reichsbank provided liquidity by discounting the credit banks' holdings of bills of exchange, thus allowing these to function as substitutes for Reichsbank notes. The discount rate was volatile, reaching high levels during periods of capital shortage. Nonetheless, this policy allowed the Reichsbank to function as a lender of last resort for the private banking system (McGouldrick, P. (1984) p. 313, Tilly, R.H. (1986) pp. 195-196).

last resort, on a single bank. The possibility of incurring credit losses, together with the right of the public to make quick withdrawals or to redeem notes, obviously makes banks vulnerable to a lack of short term capital. The banking system therefore requires the special services of a central bank or, more specifically, of a lender of last resort that can support them in case of difficulties.¹⁵

The focus of the evolutionary literature has been on the practical difficulties of providing lending of last resort according to the classical recipe. Since the basic function of a lender of last resort is to overcome the public's lack of trust, which is the principal cause of bank runs, Goodhart and others argue that even insolvent banks should be rescued. Underlying this view is an information problem: First, the borderline between illiquidity and insolvency is not as clear as suggested in the classical view. Thus the lender of last resort inevitably will face a difficult problem in deciding which actors on the credit market are worth saving and which are not. This problem is further complicated as the market value of a bank's portfolio fluctuates with the business cycle. Second, bank customers are frequently unable to determine whether their particular bank is just suffering from illiquidity or is actually insolvent.¹⁶

In light of this information problem, and given the importance of trust in the financial system, the evolutionary view maintains that lender of last resort services should be available to all banks. In thus arguing that even insolvent banks should be assisted, it, of course, differs from the classical view.¹⁷

The question of moral hazard is one of the most intensively discussed problems with extending lender of last resort services to all credit institutions, regardless of their financial condition. If banks know they will be rescued, what incentive is there for them to administer their affairs prudently? Indeed, the protection offered to actors within the financial sector by the lender of last resort might even encourage the former to speculate and to take unnecessary risks. This, in turn, might actually precipitate a financial crisis.¹⁸ Bordo, however, pointed out that bailouts of insolvent banks were an exception, at least before the 1970s. Thus, lender of last resort services can be said to have been provided in accordance with the classical view during the nineteenth century.¹⁹

Lender of last resort and currency crises

In theory, the central bank is the lender of last resort simply because it is the ultimate issuer of high powered money. Thus it is perceived to be the only actor capable of

¹⁵ Goodhart C.A.E. (1987) pp. 3-4

¹⁶ Goodhart, C.A.E. (1999) pp. 343-344

¹⁷ Bordo, M.D. (1989) pp. 9-10

¹⁸ Bordo, M.D. (1998) pp. 16-17, Fisher, S. (1999) pp. 92-94, Freixas, X. et al. (2000) pp. 73-78. Goodhart argues that the prevalence of moral hazard is exaggerated and that it does not constitute a valid reason for refraining from lending of last resort (Goodhart, C. A.E. (1999) pp. 352-356).

¹⁹ Bordo, M.D. (1989) pp. 22-23

preventing panics by injecting liquidity into the economy.²⁰ This holds true for economies with strong currencies. In a transitional economy, however, the domestic currency ceases to be high powered if the central bank's commitment to a fixed exchange rate is unconvincing. Under such circumstances, high powered money instead is issued by the central banks in strong currency countries. If the central bank in a transitional economy spends enough reserves by acting as a lender of last resort so as to put the maintenance of the fixed exchange rate into doubt, then the public will exchange its domestic currency for reserves, i.e. for the more stable foreign currency.²¹ An advance announcement by the central bank that it intends to support the banking system within the guidelines of the classical system might make its commitment to a fixed exchange rate less trustworthy.

The experience of the more recent bank crises of the 1980's and 1990's, also points to the key problem examined in this paper: how to provide lender of last resort services with a fixed exchange rate in an emerging economy. Briefly put, this experience suggests that there is indeed an incompatibility between a fixed exchange rate and the central bank acting as the lender of last resort. This is especially the case for transition economies where illiquidity is a major concern. If the central bank acts as the lender of last resort, a banking crisis involving a run on bank deposits will be transformed into a run on the domestic currency. Thus, a fixed exchange rate leaves little room for intervention by the central bank, with the exception of reducing its reserve requirements. Even that, however, will put increased pressure on the exchange rate. For an emerging economy, the problem is double faceted: First, the fixed exchange rate can only be sustained with fresh foreign capital. Second, any doubts about the value of the currency makes access to international capital markets more difficult.²²

The inherent conflict between serving as a lender of last resort and maintaining convertibility has been discussed, and even included in the description of such a lender, for the period of the classical specie standard. It has not, however, been presented as part of the reality facing vulnerable economies. This may partly be the case because a currency crisis is generally defined as one that forces the currency off its pegged value or, if it is floating, to depreciate drastically.²³ Since this did not occur under the classical specie standard, the assumption has been that exchange rates remained constant and that

²⁰ The idea is that liquidity within a country only can be provided by the central bank, see Wood, G.E. (2000) p. 222.

²¹ Fischer, S. (1999) p. 94, Goodhart, C.A.E. (1999) pp. 348-352

²² Chang, R. & Velasco, A. (1998) pp. 2-5, 35-39, see also Eichengreen, B. (2000).

²³ Bordo, M.D. & Schwartz, A.J. (1996) p. 2

lending of last resort could be offered in accordance with classical theory. In fact this required that the exchange rate system was stable and that imbalances between economies were automatically adjusted to restore exchange rate parity, thus eliminating the possibility of currency depreciation.

The argument of this paper is that principal features of late twentieth century crises do not differ substantially from the workings of the classical specie standard. The choices available for providing lender of last resort services in a small, emerging economy, such as that of Sweden in the nineteenth century, involved the same set of problems. If the conflict between lending of last resort and maintenance of the specie standard was a harsh reality, the fundamental question raised in this paper is if the classical theory on lender of last resort was followed in Sweden? If not, the question is how last resort lending was financed and administered during Sweden's nineteenth century economic transition?

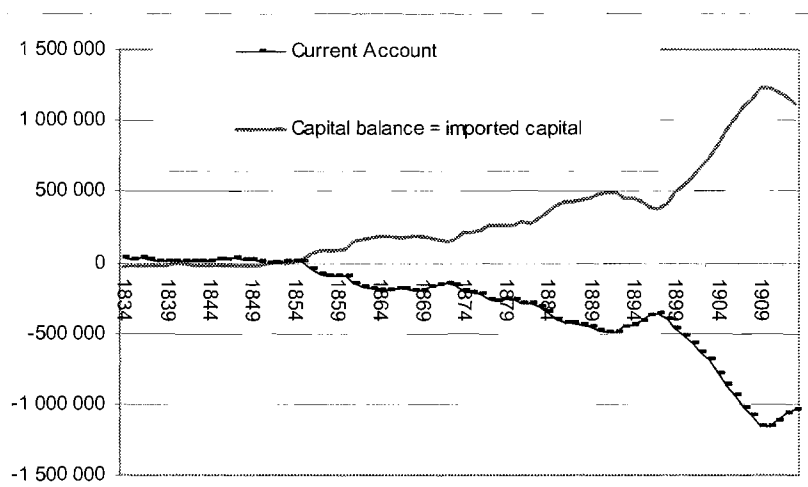
Swedish Monetary Policy During the Nineteenth Century

The ability of the Swedish central bank, the Riksbank, to implement monetary policy was constrained by two considerations. The first was the monetary regime, that is the choice of a fixed or a floating exchange rate. The second was the state of the economy, that is the need for foreign borrowing to finance Swedish imports. The silver standard was re-established in 1834. It was then replaced by the gold standard in 1873, a monetary regime that was retained until the outbreak of World War I.

As can be seen in Figure 1, Swedish trade, as represented by the current account, did not provide for the inflow of any foreign reserves. Until the crisis of 1857, capital flows affecting foreign reserves were principally trade related. Starting in 1858, after the Parliamentary decision of 1853/54 calling for accelerated Swedish railroad construction, however, Swedish capital imports principally consisted of National Debt Office borrowing.²⁴

²⁴ Flodström, I. (1912) pp. 812-815, Schön, L. (1989:1) pp. 19-20, Schön, L. (1989:2) pp. 243, 249, 255. The importance of foreign capital to Swedish industrialization has been a controversial subject. In 1947 Gärdlund's study of industrial financing during the period 1830 - 1913 concluded that Swedish firms had been largely independent of foreign capital. Only modest amounts of foreign direct credits were utilized by the industrial companies studied by Gärdlund (Gärdlund, T. (1947) p. 128). This result has since been questioned, especially by Schön, who pointed to the great importance of foreign capital to Swedish industrialization (Schön, L. (1989:2) pp. 238-242).

Figure 6. 1: Cumulative Current Account Balances and Foreign Debt, 1834-1913.
1000's SEK



Sources: Lindahl, E., Dahlgren, E. & Kock, K. (1937) pp. 268-269, Schön, L. (1999), Sveriges Riksbank (1931) pp. 54-71

Until the borrowed funds were required by the government, the National Debt Office invested then on the domestic capital market, often as loans to banks and other financial actors. The Riksbank reacted negatively to this policy, arguing that the fluctuations in the money supply resulting from the National Debt Office's investments weakened the Bank's ability to maintain the specie standard. Starting in 1876, the National Debt Office channeled most of its borrowed funds through the Riksbank.²⁵

The question thus arises as to whether the international capital markets had such complete faith in the classical specie standard as an exchange rate regime that the risks of currency depreciation were ignored? As might be expected, investors on the international capital markets were just as concerned with exchange rate risks as they are today. Regardless of whether the monetary standard was gold or silver, all foreign loan

²⁵ Nilsson, G.B. (1994) pp. 258-259, Nygren, I. (1989) pp.192-211, RbFSP No 252 June 15, 29 1876, RbR No 429 April 15 1875, June 26 1876. In 1875, the Parliament "decided" that the Riksbank and the National Debt Office were to consult with one another concerning the dispersal of the funds. This "decision" was reached after the Riksbank had pressured Parliament to decide which actor was ultimately responsible for the Swedish currency (see RbR No 429 April 15 1875).

contracts were defined in the lender's domestic currency (see Figure 2 below). Thus, even in the nineteenth century, the monetary policy of central banks acting as lenders of last resort was the subject of great concern.

Figure 6. 2: Bond Issues of the National Debt Office and the Riksbank, 1858-1879

Date	Lenders from	Total loan amount in denominated Currency
Jan 28 1858	Germany	7.6 M Thaler, according to the German Coinage Act of January 24 1857 (§1).
Jan 29 1858	Germany	9 M Hamburger Banko, set in (Cologne) Kölnische Mark Silver (§11). Loan taken by the Riksbank to support the credit market.
April 1860	Germany (and the Riksbank).	10 M Thaler (8.4 M Thalers Borrowed abroad), according to the German Coinage Act of January 24 1857 (§1)
Dec 29 1861	Domestic loan	3 M Rdr Rmt. Riksdaler Specie and Riksdaler Rmt (relationship 1:4)
Oct 23 1863.	England, France and Germany	2 M Livre Sterling. (§1). All payments set to be conducted in English currency.
1865	Domestic loan	8.1 M Mark Hamburg Banko, or 2.7 M Rdr Silfver Specie. (§1) Set in a fixed cours of Cologne (Kölnische) silver as standard. (§10)
Dec 15 1865.	Germany	9 M Vereins Thaler Courant. According to German currency standard of January 24 1857. (§1)
1868	England	1.15 M £ St. Swedish currency not mentioned. (§2)
1870	Domestic loan.	40 M Rdr Rmt.
1872	Domestic loan.	24 M Rdr Rmt
May 26 1874	Denmark	12 M Rdr Rmt (of the 1872 year loan) (= 12 M SEK). Payable in Swedish and Danish currency (1:1) according to currency union of 1873, or gold bullion (at the fixed course of 2480 SEK/kg).
June 22 1875	Austria and Germany	5.625 M German Reichsmarks according to German coinage act of December 4 1871 (equals 50 M SEK).
June 15 1876	England	2M £St. Swedish currency not mentioned.
May 29 1878	England and France	1.5 M £ St or 37.65 M Fr. Fixed course set between £ and Fr (1£=25 Fr 10centimes) for all transfers in connection to the loan. Swedish currency not mentioned.

Sources: RbFP No 152 February 11, 24 1858, RGKLO No 9060 1858 – 1879, RGKLT No 9061 1858 – 1872.

The loan contracts reflect the view of the international capital market on different currencies. If a loan was placed in Germany, the principal and the interest payments were set in German currency and, consequently, the loan was denominated in that currency. If any of the lenders were British, even if German or French lenders were

involved, however, the bonds were denominated in Sterling.²⁶ Not surprisingly, this indicates the lenders' preference ranking among currencies. The very real concern of the lenders resulted in the Swedish State, as the borrower, having to bear the exchange rate risk.

The threat of currency depreciation clearly existed under the silver, as well as the gold, standard. Thus, the monetary authorities had to display prudence with regard to the exchange rate. Since the entire foreign debt was denominated in foreign currencies, Swedish currency depreciation would worsen the Country's debt burden and, perhaps, even endanger its ability to repay the loans. In that perspective, the Swedish shift to the gold standard in 1873 served as a signal to foreign lenders and investors that, as a debtor country, Sweden was determined to honor its commitments.²⁷

The overriding objective of the Riksbank monetary policy at all times was to maintain the specie standard. As with any fixed exchange rate, it was secured by central bank reserves. As long as the note issue was limited to what these reserves could support, pressure on the fixed exchange rate was relieved. Thus it should be kept in mind that, in an international context, the prudence of central bank actions were primarily judged in terms of the preservation of an adequate reserve to note ratio. Clearly, a decline in the size of the reserves signalled the need for Riksbank action to preserve convertibility.²⁸

By definition, if the money stock in circulation was too large in relation to reserves then either reserves had to be increased or the money stock decreased. The monetary policy tools available to the Riksbank all affected the reserve to money stock ratio. The Bank could buy or sell non-reserve assets. In principal these were to be sold to increase reserves, but they could also be sold domestically as money supply altering open market operations or abroad to affect the exchange rate.²⁹ The interest rate charged to discount bills, as well as the ones on deposits in and loans from the Riksbank, were changed in step with the business cycle. In times of increased demand for reserves, the Riksbank

²⁶ RGKLKO No 9060 1858-1879, RGKLKT No 9061 1858-1872. Ingress or §1 in all contracts. In order to satisfy the providers of the 1878 loan, the National Debt Office guaranteed a fixed exchange rate between Sterling and the French Franc.

²⁷ See Eichengreen, B. & Flandreau, M. (1994) p. 11

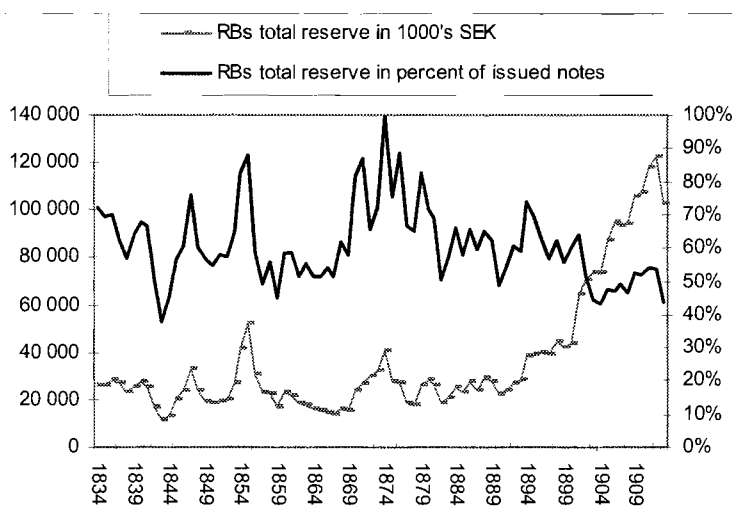
²⁸ BaU 1859/60 No 2, 1867 No 1, 1870 No 3, Davidsson, D. (1931) pp.145-146, RbFP No 169, 172 Mars 25, May 22 1875, January 15, 24 1878, RbFSP No 252 April 22, June 17, 25, July 12 1875

²⁹ In 1872 the Riksbank instigated a reserve fund outside of the reserves, consisting of secure assets, to be used when needed in an outspoken sterilizing manner (RbFP No 166 August 1 1872). From the 1840s, and especially from the 1870s, the Riksbank actively worked to affect the price of the Swedish currency by intervening on the domestic market for foreign bills of exchange, see Lobell, H. (2000).

raised funds abroad, not in order to increase its note issue but to build confidence in its ability to redeem its notes.

Simply decreasing the money supply was not problem free since it required the reduction of credits to private borrowers. Nonetheless, throughout the period 1834 - 1913, the Riksbank periodically intervened directly on the domestic credit market by "strangling credit".³⁰ This deflationary policy thus was one of the options utilized throughout the period to protect the specie standard.³¹

Figure 6. 3: The Reserves of the Riksbank at Current Prices (1000 SEK), and the Percentage Reserve Backing of Its Note Issue, 1834-1913



Source: Sveriges Riksbank (1931) pp. 54-71

As the above table makes clear, the nominal value of the Riksbank's reserves remained surprisingly stable during the period 1834 - 1901. The foreign loans that poured into Sweden starting in the late 1850's did not help to fortify the reserves for the Riksbank until the closing years of the century. By 1855 the economic boom of the early 1850's had allowed the Riksbank to accumulate a level of reserves that was not to

³⁰ Starting in the 1870's, the Riksbank attempted to decrease its note circulation by raising its interest rates, both on deposits and for discounting. Nonetheless, during most crises the Bank had to directly reduce its note circulation by cancelling credit (see Brisman, S. (1931) pp. 189-191).

³¹ The politics of the time also made it possible to maintain specie convertibility at all costs in total disregard of the negative economic consequences of such a policy, including lower output and higher unemployment. See Eichengreen, B. & Iversen, T. (1999) pp. 122-123.

be exceeded in nominal terms until 1901. Similarly, the boom of the 1870's allowed the Riksbank to increase its reserves. Conversely, the crises of the late 1850's and late 1870's were both characterized by declining reserves and, contrary to the "rules of the game", by reduced backing for the notes in circulation.

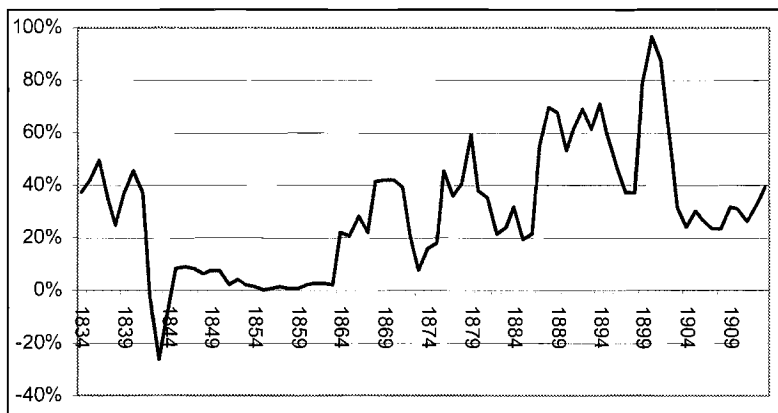
The Lender of Last Resort in Nineteenth Century Sweden

The most obvious way the Riksbank could support distressed banks acting as a classical lender of last resort was to temporarily suspend convertibility through excessive note issue. As can be seen in Figure 4 below, officially this only occurred during the 1840's. In the crisis of 1843, the Riksbank can be said to have adopted certain lender of last resort characteristics since, for a period of two and one half years, it exceeded its legal note issuance limit by more than twenty percent.

It is possible that the Riksbank unofficially followed Bagehot's prescription for brief periods during other crises. These turned out to be too deep and too prolonged, however, to allow as great a reduction of reserves as the Riksbank had permitted during the early 1840's.³²

³² The principal reason for the shrinkage of Riksbank reserves during the early 1840's, however, was not the crisis *per se*, but the forced redemption for silver of all Riksbank notes circulating in Finland (see Davidsson, D. (1931) pp. 205-217 and Chapter 5).

Figure 6. 4: The Riksbank's Unutilized Rights to Issue Notes as a Percentage of Issued Notes, 1834-1913



Source: Sveriges Riksbank (1931) pp. 45-49, 52-59, 62-69

A clear implication of Figure 4 is that sometime in the 1860's or 1870's an underlying change occurred that from then on made it possible for the Riksbank to maintain a higher level of unutilized issuance rights than previously. Although it is tempting to conclude that this change was the adoption of the gold standard in 1873, in fact this is unlikely. Rather, it seems probable that the increase in note issuance and lending by the private banks and the foreign capital imported by the National Debt Office made the economy less dependent on Riksbank notes.

The National Debt Office supplied credit to the banking system from the late 1850's until the early years of the twentieth century. However, since it had to cancel credits when the State required funds, the Office did not function as a lender of last resort.³³

The commercial banking system began to emerge during the 1830's, and by the 1860's it had become nationwide. It depended mainly on note issuance until the 1860's, when deposits became its principal source of financing. Nonetheless, from the late 1850's until 1900, more private commercial bank notes than Riksbank notes were in circulation.³⁴

One feature of the Swedish note issuing experience that has attracted attention is the system's reputed stability.³⁵ Unfortunately, however, this was not always the case. Some Swedish banks in fact encountered financial difficulties during international crises.

³³ Nygren, I. (1989) pp. 176-183. This happened both in the crisis of 1857/58 and in that of 1878/79.

³⁴ Ögren, A. (2000) pp. 33-37

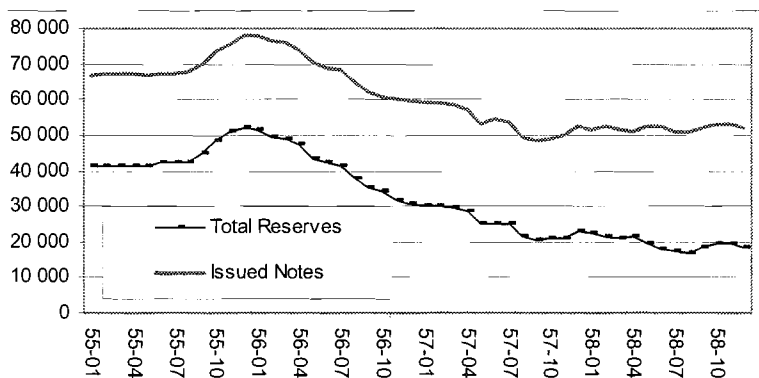
³⁵ Jonung, L. (1984) p. 373, Jonung, L. (1989) p. 29, Schuler, K. (1992) p. 32

Despite the fact that both the law and the bank charters explicitly stated that the Enskilda banks were not entitled to official assistance, some banks were helped during the unusually deep crises of 1857/58 and 1878/79. Consequently, these crises have been subjected to especially detailed study.

Lender of last resort during the crisis of 1857/58

Figure 3 above showed that the reserve holdings of the Riksbank reached their maximum in 1855. After that year, a decline set in during the late 1850's. Starting in early 1856, the Riksbank reserves and, as a result, issued notes decreased rapidly. Indeed, between December 1855 and all time low of the crisis in August 1858 the reserves shrank to a third of its original size.

Figure 6. 5: Monthly Data on Riksbank Reserves and Note Issue, January 1855 – December 1858. 1000's SEK

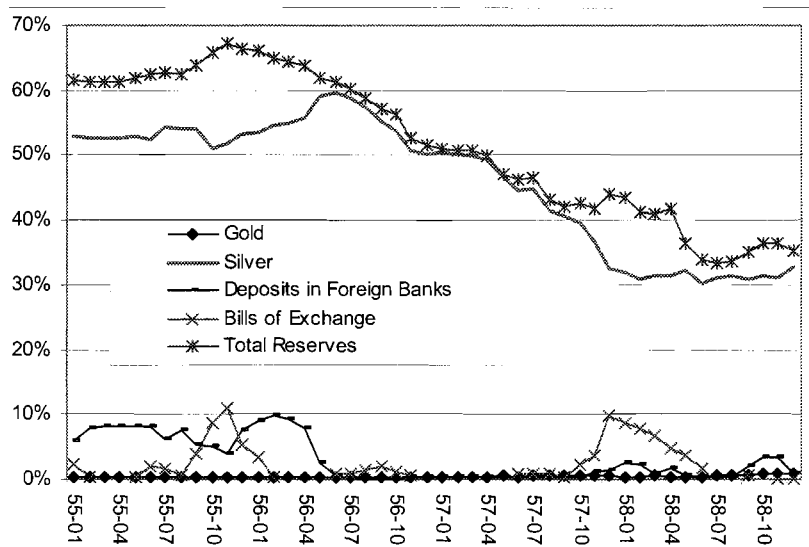


Source: Finanskommittén 1858, Vol I.

In September of 1857, the crisis hit the Hamburg credit market, resulting in the widespread cancellation of Swedish credits. In order to restore trust, the Riksbank worked actively with the actors on the Stockholm capital market. The members of the Stockholm Stock Exchange formed an association to provide credit in cash or Hamburg bills on good collateral. Given the situation in Hamburg, no single firm could perform this service. The credit association established its own banking firm in Hamburg, the Riksbank giving it credence by buying and discounting its bills of exchange. In practice this was a domestic arrangement that served to maintain liquidity within Sweden. By

establishing this firm outside of Sweden, the Riksbank was able to treat its bills as reserves. Thus, the Riksbank could support the domestic credit market without formally reducing its reserve to money stock ratio. These activities of the Riksbank, however, were criticized by the Standing Committee on Banking and by the Parliament. Besides lacking legal support, it was felt that they put the currency under unnecessary stress.³⁶

Figure 6. 6: Monthly Data on the Riksbank's Total and Disaggregated Reserves as Percentages of Issued Notes, January 1855 – December 1858



Source: Finanskommittén 1858, Vol I.

Figure 6 demonstrates how the Riksbank tried to offset some of the effects of the outflow of reserves by reducing the backing of its notes below the peak level of late 1855. The impact of the Riksbank purchasing bills from its own Hamburg firm starting in September 1857 can clearly be seen in its ability to keep notes in circulation. Despite the constraints imposed by specie convertibility, the Riksbank obviously had some room for manoeuvre during the crisis.

The minutes make it clear that despite the determination of the Board members to provide sufficient liquidity to prevent credit market deterioration, issuing notes without regard to reserves was not considered a solution. Even so, the Riksbank's actions during

³⁶ Davidsson, D. (1931) pp. 148-151, 155-159

the crisis of 1857 took it to the brink of bankruptcy.³⁷ When four British trading companies with important ties to Sweden suspended their payments in November of 1857, the Riksbank publicly declared its determination to support the credit market. Instantly seven hundred thousand of the Riksbank's unutilized issue rights of one million SEK were committed to providing additional credit. Despite the drastic circumstances the Riksbank retained its interest rate at 5%, well below international levels.³⁸

Much of the discussion among the Board members of the Riksbank concerned how the money supply could be increased without, at least technically, reducing the reserve cover. Some members argued for classifying all of the Riksbank's assets as reserves. Another possibility for supplying money was to supplement the buying of gold and silver from the public with accepting these metals as collateral for loans, thereby finessing Gresham's Law. In December of 1857, the Board of the Riksbank effectively devalued the currency by paying an add on over par amounting to more than two percent when buying domestic silver. This higher price was justified as accounting for the greater cost of importing silver from abroad.³⁹

While the National Debt Office injected liquidity on four different occasions during 1856 and 1857, its cancellation of credits also had severe consequences. When the crisis was most acute in December of 1857, the Office's only funds were a government grant designated for saving Skåne Enskilda Bank.⁴⁰

The deep and prolonged crisis of 1857 illustrated the need for a State lender of last resort. The largest bank of the time, Skåne Enskilda Bank in southern Sweden, had kept increasing its lending until the summer of 1857, thus putting its reserve under increasing pressure. In October, the Bank turned to the international capital market in Hamburg but concluded that the eight and one half percent interest rate available was too high. In Stockholm interest rates were at eight percent and in Copenhagen they had reached fifteen percent. Skåne Enskilda Bank made do by utilizing a previously approved Hamburg credit and by obtaining a loan from Stockholm Enskilda Bank.

³⁷ Nilsson, G.B. (1989) p. 10. One member of the Board suggested that the Riksbank exceed its legal limit to issue notes by counting as reserves also the future interest to be earned on bonds the Bank held as backing for its notes. This proposal did not receive support from other Board members (RbFP No 151 December 10 1857).

³⁸ RbFP No 151 November 19 1857

³⁹ RbFP No 151 December 10, 17 1857. The Riksbank included in its reserves silver and gold it held as collateral. This was officially motivated by the borrowers having sold them to the Riksbank, subject to the right of repurchase by repaying their loans.

⁴⁰ Nygren, I. (1989) pp. 178-179

In December, the financial distress deepened as all Swedish credits in the Hamburg capital market were cancelled. A general distrust of Swedish private bank notes began to grow, especially in Copenhagen. There Swedish bank notes were accepted only at a substantial discount reflecting their perceived riskiness. The problem was especially serious for Skåne Enskilda Bank. Not only was this Bank located close to Copenhagen, thereby increasing its note circulation in Denmark, it was the single largest note issuer among all Swedish private banks. The result was a rapid decline in the Bank's reserves.

On December 5, 1857, Skåne Enskilda Bank turned to the domestic Swedish capital market but managed only to obtain two small loans from other private banks. With the capital markets in Copenhagen and Hamburg being closed, the Bank had no option but to call on the ultimate lender of last resort, the Swedish State.

Two days later the Bank telegraphed the Minister of Finance threatening to suspend the redemption of its notes. Within three days, a hasty meeting among the Standing Committee on Supply, the National Debt Office, the Board of the Riksbank and the Minister of Finance had resulted in the granting to Skåne Enskilda Bank of a credit, guaranteed by the Riksbank, in the substantial amount of two hundred thousand SEK. In total, Skåne Enskilda Bank was provided with a credit of one half million SEK. It was collateralized by Mortgage Association bonds and a personal note from a Bank representative in Stockholm. The Mortgage Association, in turn, received the collateral Skåne Enskilda Bank held as backing for its outstanding loans.⁴¹ None of these financial assets were sellable on the secondary market during the crisis.

Just when the crisis reached its climax, the King and Parliament instructed the Riksbank to borrow the sum of twelve million SEK on the Hamburg capital market. Despite the prohibition of State support for the Enskilda banks included in the 1846 law, the Standing Committee on Banking primarily viewed the Enskilda banks as the recipients of this emergency credit. The decision authorized the Riksbank to include the entire loan sum in its reserves as soon as the loan contract had been signed, with written instructions immediately to issue Riksbank notes to an equivalent value.⁴²

To administer these borrowed funds, the Riksbank established a special State Loan Fund (*Statslånefonden*). The Riksbank was given Parliamentary permission to exceed the legal interest rate limit of six percent when lending these funds.⁴³ The resulting nine

⁴¹ Kock, K. (1931) pp. 162-169. The actual representative of the bank in Stockholm refused to guarantee the credit in person, instead the founder of the Stockholm Enskilda bank, A.O. Wallenberg, stepped in. See also Brisman, S. (1934) pp. 102-103, 105-106, Nilsson, G.B. (1989) pp. 9-29, Schön, L. (2000) p. 165.

⁴² RbFP No 152 January 7, 28 1858. Some Riksbank board members questioned the idea of supporting the Enskilda banks whom they blamed for the problems of the credit market.

⁴³ RbFP No 152 February 2, 4, 11 1858. In England it was said that an interest rate of 7% would draw gold from the moon (Goodhart, C.A.E. (1999) p. 342).

percent rate, however, did not prevent the entire sum from being dispersed within a year.⁴⁴

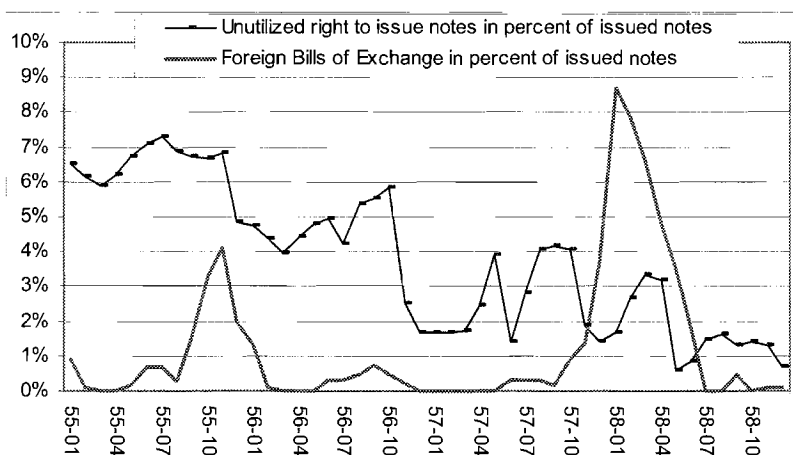
Since the fund was intended to support the domestic credit market, its loans were short term, repayable in less than three years. Meanwhile, the foreign lenders paid close attention to the exchange rate risk. The eleventh paragraph of the loan contract between the Riksbank and the lenders in Hamburg prescribed that both interest and principal were to be denominated in the Mark Hamburg Banko, and its equivalent in Cologne silver.

This loan to the Riksbank was finalized on January 28, 1858, the day before the National Debt Office signed a contract for a twenty million SEK bond loan, not in Hamburg but in Frankfurt am Main. This latter loan was designated to finance construction of the Swedish railway system, but much of it became immediately available to the credit market and to the Riksbank. The very first paragraph of this loan agreement specified that the principal and all loan payments were to be fixed in the German Vereinsthaler, all other valuations of the Swedish currency being disregarded.⁴⁵

⁴⁴ How this was done is not entirely clear. The Riksbank deposited the capital from the Fund in various of its own departments and branches. The General Ledger of the Fund does not reveal what happened to the Fund's assets in Sweden. It began by placing seven million four hundred thousand SEK with the Deposit Department of the Riksbank between February and April. In its own accounts, however, this Department only reported one hundred sixty five thousand SEK from the Fund during the year. RbDA No 4352, Pag. 1810 1858, RbFP No 152 February 4, 8, 11, 1858, RbSLF No 4812 Pag.306 1858, Pag. 306 1859, RbSLFH No 4817 1858.

⁴⁵ RbFP No 152 February 11, 24 1858, RGKLKT No 9061 1858 §1.

Figure 6. 7: Monthly Data on the Riksbank's Unutilized Rights to Issue Notes and Foreign Bills of Exchange as Percentage of Issued Notes, January 1855 – December 1858



Source: Finanskommittén 1858, Vol I.

Figure 7 illustrates the efforts of the Riksbank to maintain liquidity by redeeming bills drawn on Hamburg. Since the Riksbank issue notes under a differential system that allowed it to issue a fixed amount of notes in excess of its reserves, the Bank effectively abandoned the requirements of the specie standard from December 1857 until June 1858. This is apparent from the fact that if bills of exchange had not been treated as reserves the Riksbank would have exceeded its note issuing rights. The use of the bills was limited to bridging the time gap between the decision to borrow internationally and the arrival of the funds. Still, the question remains: would the Riksbank have been able to maintain the specie standard if the Riksbank and the National Debt Office had been unable to borrow high powered money abroad?

In the aftermath of the crisis there was Parliamentary criticism of the Riksbank. It was argued that seeking large foreign loans, by raising doubts concerning the Riksbank's solvency, undermined confidence in the Swedish currency.⁴⁶ Perhaps as a consequence of this criticism, the Riksbank did not intervene to support the domestic credit market during the crises of the 1860's. Instead of stuck to its principal objective; preserving convertibility regardless of domestic credit conditions.⁴⁷

⁴⁶ Davidsson, D. (1931) pp. 163, 166-167

⁴⁷ Davidsson, D. (1931) pp. 136, 147-150, 155-158, 163, 166-167 see also Ögren, A. (2000) p. 95 note 43.

Lender of last resort during the crisis of 1878/79

The most severe Swedish financial crisis under the gold standard was that of 1878 and 1879. Although 1873 witnessed the emergence of an international crisis, it was the very zenith of the Swedish boom. During these good years, the Swedish credit market seemed largely insensitive to the discount rate increases implemented by the Riksbank, and in September 1873 the Bank's note issue exceed permissible levels. Instead of decreasing the money supply, however, the Bank increased its reserves by dipping into the reserve fund. Since these assets largely consisted of National Debt Office Bonds that were sold abroad, thus bringing in fresh capital, the effect was further credit market expansion.⁴⁸

While the economy boomed, the banks extended credit freely. The favorite investment vehicle of the time was private railway bonds. These were issued to finance the construction of private railways that connected to the principal State owned network. As a result, these bonds become one of the major components of private bank portfolios.⁴⁹

As the economy slid into recession in 1875, the private railway bonds rapidly depreciated to half their nominal value. The greater the share of bonds in a bank's holdings, the greater the doubts about its solvency. One of the best known and highly respected private banking firms, C.G. Cervin was forced by it large railroad bond portfolio to suspend payments as early as 1875.⁵⁰

From the start of the recession in January of 1875 until final crisis, the Riksbank actively supported the credit market within the constraints of the specie standard. When the currency came under pressure in February of 1875, the Riksbank had to open a note redemption office in Copenhagen to prevent its notes from trading below par.⁵¹ Despite increased foreign credits, raised interest rates and utilization of the reserve fund to bring in reserves from abroad, in July of 1875 the Riksbank secretly decided to decrease its lending and thus reduce the money supply.⁵²

⁴⁸ RbFP No 167 June 5, September 18, October 23, 25 1873, RbFSP No 251 September 25 1873, see also Ögren, A. (1995) pp. 7, 26

⁴⁹ Söderlund, E. (1964) p. 113

⁵⁰ This particular banking firm, although placed under bankruptcy administrator, was ironically one of the few to survive this crisis.

⁵¹ RbFP No 169 January 20 1875, RbFSP No 252 January 14, February 18, April 22 1875. According to the Board of the Riksbank, the decision to open an office in Copenhagen was motivated by a desire to protect the Riksbank's credit worthiness (RbFSP No 252 February 18 1875).

⁵² RbFP No 169 Mars 25, May 22 1875, RbFSP No 252 June 17, 25 July 9, 12 1875.

Discounting the commercial banks' bills of exchange based on Hamburg credits affected the reserves of the Riksbank. In October 1875, the Board of the Riksbank discussed the possibility of ceasing to discount these bills. This possibility was rejected, however, since it would not only deprive these banks and bankers of a source of credit, but it also would undermine public confidence in the credit market. The Riksbank therefore continued to discount such bills, but at a discretionary lower rate of exchange.⁵³

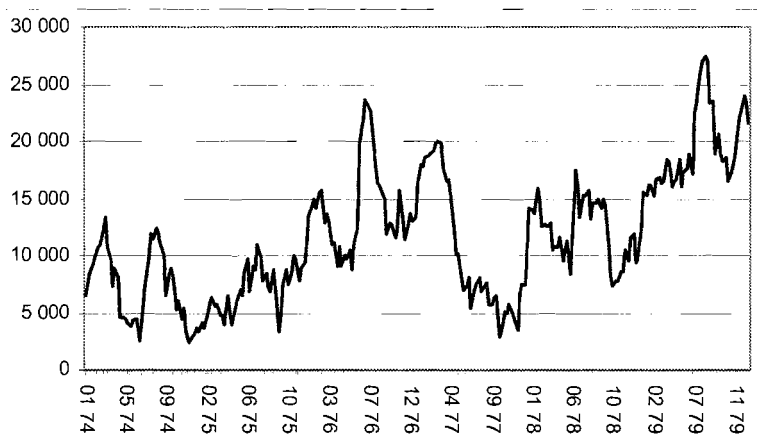
During the recession, the private commercial banks reduced their lending to such an extent that the circulation of Riksbank notes, instead of decreasing, actually increased. The Board of the Riksbank noted that this development helped support the domestic credit market but, since reserves had decreased, it could not continue. In December of 1877, the Riksbank requested that the National Debt Office facilitate the importation of capital, thereby easing the situation on the domestic capital market, by placing bonds abroad. By January 1878, the Riksbank was turning down requests for loans even when collateral considered to be of high quality by the Board was offered.⁵⁴

The question is to what extent the Riksbank was prepared to inject liquidity to support the capital market without regard to its reserve position? Figure 8 below reveals that the Riksbank came closest to exceeding its rights to issue during the boom of 1874 and the recessions of 1875 and 1877. At no time, either during boom or during recession, however, did the Bank actually exceed its note issuing limits. Indeed, even when refusing to discount bills in early 1878, there was some margin left for further note issuance.

⁵³ RbFSP No 252 October 14 1875. The decision stated that "bank and banker bills of exchange on foreign credits were to be sparingly discounted at the lower rate established by the Board." See also Söderlund, E (1964) p. 99).

⁵⁴ RbFP No 170-172 July 1, November 25 1876, March 22, July 12, November 29 1877, January 15, 24 1878, RbFSP No 252-253 June 17, July 9, December 16 1875, June 15 1876 July 5, September 24, November 15 1877, RbR No 429 December 11 1876.

Figure 6. 8: Weekly Data on the Riksbank's Unutilized Rights to Issue Notes in 1000's of SEK, January 1874 – December 1879



Sources: BaU No 1 1875 – 1880, RdRB 1875 – 1880

In December of 1878, one of the major Swedish banks, Stockholm Enskilda Bank, was subjected to a run. Despite the Bank's heavy involvement with railroad bonds, it managed to survive. The initial run ended on December 7, after King Oscar II made a symbolic deposit of ten thousand SEK. When the run re-started and dragged on into 1879, the Bank received a respite from the fact that it mostly had time deposits payable only after six months notice.⁵⁵

As pressure mounted, in February 1879 the dominant "laissez faire" ideal was abandoned in order to prevent further deterioration of the credit market. The Minister of Finance's pronouncement that support for the banks would "free the capital that had been made illiquid" implicitly acknowledged that intervention was needed to relieve the existing credit crunch.

⁵⁵ Nilsson, G.B. (2001) pp. 351-358. In 1879, the National Debt Office cancelled its credits due to a shortage of funds and expected future receipts. The effect on Stockholm Enskilda bank was especially severe because, in addition to the loans of the Bank, its founder and principal owner, A.O. Wallenberg, had a personal debt of 250,000 SEK, collateralized by railroad bonds, to the Office. Having repaid 50,000 SEK, Wallenberg was allowed extend the rest of his loan and with only half of the collateral originally pledged. This after Wallenberg makes reference to this Riksbank credit of 200,000 SEK secured by bonds in the same (Gefle-Dala) railroad company (RGKLP No 4462 January 16, 23 1879).

The solution was the establishment of a special, time limited, fund to provide the banks with lending of last resort. Since railway bonds, for which a functioning secondary market no longer existed, had become the major problem, the fund agreed to issue loans secured by such bonds. Hence, the Fund was named the Railroad Mortgage Fund (*Jernvägshypoteksfonden*), and was to be administered by the National Debt Office.⁵⁶

After months of bureaucratic manoeuvring, the required legislation was finally enacted on May 17, 1879. In brief it stated that loans were to be provided against the security of railroad bonds, promissary notes or IOUs from Swedish railway companies. The total amount of capital at the fund's disposal amounted to twenty three million SEK. At the suggestion of the National Debt Office, unsold bonds from previous flotations were to be used to raise the capital as required. This meant that the Fund was to first approve loans and then obtain the necessary funds. Credit institutions in need of loans were to file applications specifying the amount they wished to borrow, what collateral they had to offer and what kind of payment plan they had in mind to the National Debt Office no later than June 1, 1880.⁵⁷ Formally, the flexibility of the Fund was further limited by the fact that the collateral offered had to be evaluated by representatives of the Royal Railway Traffic Board (*Kungliga Styrelsen för Statens Järnvägstrafik*) before any loan was granted.⁵⁸

The Law did not prescribe whether the Debt Office was to raise funds by selling bonds on the domestic or on the international market. It was thus left at the Office's discretion. It was feared that bonds floated domestically would be used by private parties as collateral for international loans. This, in turn, might damage Sweden's

⁵⁶ Kprop 1879 No 29 pp. 1, 7-10. One result of the lender of last resort activities during the 1878/79 crisis was the consolidation of the commercial banking system at the expense of banking firms and banking houses, who declined during this crisis. This development raises the interesting question of the general effect of last resort lending on the structure of the credit market (see Boksjö, A. & Lönnborg-Andersson, M. (1994) pp.16-18).

⁵⁷ RdSkr No 53 pp. 2-3. The State was to be fully repaid for this commitment and any eventual profit was to be used to repay the loans used to build the State railways or other State debts. The Railroad Mortgage Fund eventually generated a surplus of just over 155,000 SEK (RGKJHFH No 7907 1894 pp. 3-4, 7). The Fund's upper limit had been reduced from thirty to twenty three million SEK at the instigation of those groups in the Parliament who blamed the commercial banks for creating the crisis and who wished to devote the saved amounts to alternative, non credit market, approaches to providing lender of last resort services. Thus, through the *Sågverksegarernas Garantiförening* (Saw Mill Owners' Guarantee Association), the saw mill industry was provided with a fund of three million SEK to be lent on the security of stored timber. The remaining four million SEK were allocated to the purchase of the private *Hallsberg-Motala-Mjölby* railway by the State (StU No 53 pp. 3-5).

⁵⁸ RGKLP No 4462 May 26, June 5 1879. All this was done to prevent misuse of the Fund. Nonetheless, the railway bonds were valued at close to their nominal value, that is at approximately twice their current market value. A special collateral valuation board was also used by the emergency fund established to assist the banks during the crisis of 1992.

crediting standing and make foreign capital unnecessarily expensive.⁵⁹ For once, the Riksbank was charged with administrating the placement of National Debt Office's bonds and thus of raising capital from foreign banking firms.⁶⁰

Although it can be argued that the Fund was established too late, it unquestionably was significant in saving one important bank, Stockholm Enskilda Bank, from bankruptcy. The Stockholm Enskilda Bank had already applied for a loan of five million SEK even before it had officially started accepting applications. In response, the Railroad Mortgage Fund lent the Bank four million SEK, two and half million of which were dispersed within a few days of the establishment of the Fund. The first payment of one million SEK was made on June 4, 1879. Since the Stockholm Enskilda Bank needed funds immediately, the National Debt Office had no time to either evaluate the collateral or to raise the money abroad. Instead the Office borrowed the funds to be lent from the Riksbank.⁶¹

By July of 1879, the Fund had approved loans of over four million SEK to the Stockholm Enskilda Bank, but the Bank limited it self to four million.⁶² By that time, the situation on the capital market had started to improve, as can be deduced from the lower interest rates charged by the Fund.⁶³

⁵⁹ StU No 46 pp. 9-13, 16-17. The Standing Committee on Supply wanted the National Debt Office to raise 86 % of the capital within the country, probably not an optimal solution at a time when credit was in short supply.

⁶⁰ RGKJHFM No 8514 pp. 23-27

⁶¹ RGKLP No 4462 May 30, June 3 1879, RGKJHFH No 7893 1879 pp. 40-41, RGKJHFM No 8514 p. 23. In order to lend such a large amount so quickly, the National Debt Office had to violate the regulations. For a time it even accepted the Bank's own promissary notes as collateral. Two of the Offices's board members noted their reservations in the loan protocol.

⁶² Gasslander (1962) pp. 29-30, RGKJHFM No 8514 pp. 23-24, RGKLP No 4462 May 30, July 24, 31 1879. Once the Fund came into being, Wallenberg switched the railroad bonds he had provided as collateral for his personal loans from the National Debt Office and the Riksbank over to his own bank, Stockholms Enskilda Bank. The certificate of deposit he received from Stockholms Enskilda Bank was then used to back those loans, while the bonds were offered as collateral when Stockholms Enskilda Bank applied for a loan from the Railroad Mortgage Fund (RGKLP No 4462 June 12 1879).

⁶³ RGKLP No 4462 August 24 1879. In late July, the National Debt Office lowered the rate of interest on its loans to the Railroad Mortgage Fund to five percent, since loans at that rate were readily available to the Fund from other sources.

Figure 6. 9: Borrowers from the Railroad Mortgage Fund

Date Granted	Date Paid	Bank	Collaterals (nominal value) in percent of loan	Loan Amount (SEK)
June 3 – July 24 1879	June 4 1879 – Jan. 31 1880	Stockholm Enskilda Bank	149%	4 000 000
June 12 & Nov. 13 1879	18/6 & 5/12- 1879	Stockholm Handelsbank	249%	775 000
June 12 & Aug. 7 1879	June 23 & Aug. 16 1879	Göteborg Köpmannabank	200%	350 000
June 19 1879	July 5 1879	Göteborg Inteckningsgaranti AB	277%	50 000
June 19 1879	July 17 1879	Södermanland Enskilda Bank	200%	115 000
July 24 & Nov. 13 1879	Aug. 4 & Dec. 30 1879	Kalmar Enskilda Bank	207%	470 000
Aug. 13 1879 & May 27 1880	Sept. 12 1879 & July 1 1880	AB Gefle Bank	131%	80 000
Aug. 21 1879	Oct. 1 1879	Sundsvall Enskilda Bank	111%	540 000
Oct. 23 1879	Oct. 31 1879	Kristinehamn Enskilda Bank	134%	180 000
	March 6 1880	Gotland Enskilda Bank	100%	30 000
June 16 1880	July 1 1880	Wermland Enskilda Bank	350%	1 000 000
June 16 1880	July 7 1880	Ulricehamn Folkbank	219%	50 000
July 8 1880	July 26 1880	Skaraborg Län Enskilda Bank	100%	200 000

Sources: RGKJHFH 1879, 1880, RGKJHFL and RGKLP 1879, 1880

A total of thirteen banks received loans from the Fund. Over half of the total of 7.56 million SEK lent, however, went to Stockholm Enskilda Bank alone. That Bank was also the last to repay its loans, waiting as long as possible to do so.⁶⁴

The principal financier of the Railroad Mortgage Fund was the Riksbank. At least 1.4 million SEK were lent directly to the National Debt Office and instantly passed on.⁶⁵ In addition, the Riksbank bought 3.5 million SEK of National Debt Office bonds issued to finance the Fund in 1879.⁶⁶

⁶⁴ In 1890, the account heading for loans from the Fund also was changed from “various borrowers” to “Stockholm Enskilda Bank”. RGKJHFH No 7903-7906 1890 pp. 18-19, 1891 pp. 18-19, 1892 pp. 18-19, 1893 pp. 20-21.

⁶⁵ RGKJHFL No 4851 pp. 22-23, 26-27. These payments were one million SEK on June 4 and 400,000 on October 1 on 1879. They were originally registered as a special entry labeled “The Riksbank”, but this was later changed. Since the Riksbank in fact lent to the National Debt Office which, in turn, lent to the Fund, it is possible that the total credit provided by the Riksbank exceeded these amounts.

⁶⁶ RGKLHFM No 8514 p. 23. In addition to the Riksbank, two other principal actors were instrumental in providing funds for the Railroad Mortgage Fund, the banking firm of Ehrlanger & Söhne, Frankfurt am Main and C.J. Hambro & Son, London.

Although the activities of the Riksbank in connection with credit market difficulties were important, the Bank can not be considered to have been a lender of last resort in the classical sense. As it made perfectly clear, the principal task of the Riksbank was to maintain convertibility. In January of 1878, the Bank refused to provide credit, even against the very best collateral, on the grounds that there simply was not enough money.⁶⁷ It held to the view that its responsibility for the specie standard prevented it from committing itself to always providing even very well secured credit.⁶⁸

The Riksbank continued to focus on maintaining the specie standard and, therefore, relied on other actors, usually the National Debt Office, to import foreign funds when the domestic credit market was in distress.⁶⁹ These bond loans were intended primarily to finance the domestic infrastructure investments, and lower interest rates was the official reason for placing them abroad.⁷⁰ Nonetheless, a number of them, such as those issued during the recessions of 1890, 1899 and 1907, were closely related to distress on the Swedish money markets.⁷¹

Lender of Last Resort in a Transitional Economy: the Argument Refined

If lending of last resort is to succeed according to the classical formula, the injection of liquidity by the central bank must restore faith in the value of collateralized assets and the stability of the financial market. Otherwise it will just lead to an exhaustion of central bank reserves. For strong economies with a trusted and sought after currency, such as Sterling during the nineteenth century, the best lending of last resort policy is surely to stabilize the money stock in accord with the classical view.⁷² In these cases, however, there is no need to worry about the exchange rate. For a capital importing, transitional economy, however, the problem is more complex.

If a modification of the classical lender of last resort concept is to be suggested for transitional economies with fixed exchange rates, it should be that the central bank can lend freely during crises only as long as the value of the currency is not under pressure.

⁶⁷ RbFP No 172 January 15, 24 1878.

⁶⁸ RbR No 430 February 26 1880. In response to Wallenberg's Parliamentary proposal (No. 37) concerning a guaranteed right to borrow from the Riksbank against certain specified types of bonds.

⁶⁹ RbFSP No 252 June 15, 29 1876, RbR No 429 April 15 1875, June 26 1876, December 11 1877, Schön, L. (2000) pp. 262-263, Simonsson, K.G. (1931) pp. 40-41.

⁷⁰ Generally speaking, Swedish interest rates were considerably higher than those in England and Germany (Lindahl, E., Dahlgren, E. & Kock, K. (1937) p. 274).

⁷¹ RbFSP No 252 June 15, 29 1876, RbR No 429 April 15 1875, June 26 1876, December 11 1877, Schön, L. (2000) pp. 262-263, Simonsson, K.G. (1931) pp. 40-41.

⁷² See Freixas, X. et al. (2000) and Wood, G.E. (2000).

If it is, and maintaining the exchange rate is considered the principal goal of monetary policy, then the State should borrow on the international market. Such borrowing does not put pressure on the fixed exchange rate. It does, however, raise questions about public finance, thus increasing the importance of a generally prudent economic policy.

There are three reasons why the State as a whole, not just the central bank, should act as the lender of last resort: 1) The State is more trustworthy as an international borrower because it has the ability to impose taxes, an important collateral for foreign lenders. This fact also increases the importance of a well functioning tax system in transitional economies. 2) The State as a whole is in a better position to bear the risk of accepting the dubious collateral offered to lenders of last resort. The central bank acting alone would exchange reserves for collateral of little or even no market value. 3) The State as a single actor is better suited to bearing the exchange risk, a risk that foreign lenders will not accept. If the State commits itself to borrowing, it is important that fiscal as well as central bank policy be directed at preserving the fixed exchange rate.

Research emphasizing the close relationship between financial and currency crises in transitional economies has led some scholars to advocate the creation of an international body to function as the lender of last resort. Three assumptions underlie their position: 1) International capital mobility is beneficial to the development of transitional economies, but 2) In times of financial panic markets, especially international ones, cease to be rational and they lose their ability to effectively allocate capital and yet, 3) The ultimate goal of such countries' monetary policy remains exchange rate stability.⁷³

The question is, how could Sweden, a nineteenth century transitional economy, successfully rely on international capital markets in times of crisis? Although the cost was higher, it was still possible to borrow on the international market. Is it possible that international capital markets have become less rational in the twentieth, than they were in the nineteenth, century? That hardly seems possible. One important lesson to be drawn from the Swedish experience, however, is that risk sharing is important. Sweden was considered an investment option by international lenders because the Swedish State bore the risks of currency depreciation and bad collateral. The remaining risk was that Sweden would not repay its debts out of future income. The Country's fiscal policies, however, seemed to be in good order, and thus the promise to repay was considered trustworthy. Perhaps it is more important for transitional economies to develop sound fiscal policies than to create an international lender of last resort.⁷⁴

⁷³ Fischer, S. (1999) pp. 88-89, 91, 94-96. Fischer argues that international capital is extremely volatile and contagious in the sense of being susceptible to panic. Goodhart adds the assumption that the IMF, or some other international body, would be better suited to act as lender of last resort than a regionally strong economy, see Goodhart, C.A.E. (1999) pp. 356-358.

⁷⁴ One question that arises in the context of an international lender of last resort is whether or not maintaining a fixed exchange rate is always so important that it is preferable for a domestic central bank to refrain from lending of last resort activities in a crisis in order to protect it?

Conclusions

There is no doubt that the overarching concern with the specie standard played a role in the Riksbank not being required to always provide credit against specified collateral, even though the classic view of the lender of last resort required such a commitment. Thus, the switch from the silver to the gold standard does not constitute a dividing line in the Riksbank's lender of last resort policy. The massive importation of capital that began in the late 1850's made it dangerous for the Riksbank to support the credit market by suspending convertibility. A currency devaluation always brought with it large costs when the monetary standard was to be re-adopted. The growing foreign debt also meant that a depreciated currency would result in more expensive loans. The Swedish ability to violate the rules of the classical specie standard thus decreased as the Country became increasingly dependent on foreign capital.

The Riksbank was only able to support the credit market the way it did during the crisis of 1857 because as yet there was little foreign debt. Nonetheless, when the Riksbank came close to bankruptcy (i.e. close to depreciating the currency), it turned to the international capital market. During the crisis of 1878/79, the Riksbank put the maintenance of the specie standard first. The Riksbank did initially support the credit market during the recession of 1875, but as the crisis continued, it refused to let its reserves become exhausted. In both of these crises, the collateral accepted for lending of last resort had no market value whatsoever.

On both occasions, the Riksbank began by supporting the credit market, but as the crises dragged on, the Bank turned to the international capital market to raise high powered money. The risks of acting as a lender of last resort, including that of a depreciated currency, were borne by the Swedish State. The lesson of this experience seems to be that initially the central bank in a transitional economy with a fixed exchange rate can respond to a crisis in the classical manner; that is it can use up reserves to maintain the money stock. If the crisis persists, however, and the fixed rate of exchange has to be defended, then funds must be imported from abroad in order to build up reserves. While this is not an entirely original observation, it can be hoped that international capital markets are more rational than widely thought and might yield better results than an international lender of last resort.

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– En populärvetenskaplig sammanfattning av –

Empiriska studier i pengar, kredit och
bankverksamhet:

Den svenska kreditmarknaden i transition under silver- och
guldmyntfoten 1834 – 1913

Denna sammanfattning tillägnar jag alla de som är intresserade men inte tillräckligt för att bli galna vetenskapsmän. Framför allt tänker jag på min familj, mina släktingar och mina kompisar. Mina barndomskompisar: Johan, Kalle, Mats, Mårten och Ulf, har alla blivit ingenjörer och tycker antagligen att samhällsvetenskap är suspekt. Utom Mats som, trots att han är den mest tekniskt begåvade av oss alla, av någon anledning blev ekonom.

Teoretiskt ramverk

Avhandlingen bygger i metod och teori på en kombination av den historiska metoden, anpassad för att värdera källor och att systematiskt behandla kvalitativt material, och ekonomisk teori. Den historiska metoden fokuserar på betydelsen av den inverkan som miljön, det vill säga de omkringliggande förutsättningarna, har på personers val och göranden. Den ekonomiska teorin bygger på ett antal universella och grundläggande axiom om människors ekonomiska beteende: 1) Rationella val, det vill säga antagandet av att våra preferenser styr våra val. 2) Avtagande marginalnytta, det vill säga att det första paret skor ger oss mer nytta än det hundra. 3) Alternativkostnader, det vill säga att om vi väljer bort någonting till förmån för något annat (vilket vi alltid gör) har vi en kostnad i det vi prioriterade bort.

En teori om politisk ekonomi

I inledningskapitlet framställs ett teoretiskt ramverk för en politisk ekonomi som ligger till grund för tolkningar av det empiriska materialet i avhandlingen. Kort sagt är detta ramverk en kombination av ekonomiska och historiska teorier. Institutionalism i detta hänseende avser inverkan av regler på människors val. Institutioner är helt enkelt alla de regler och normer som vi medvetet eller omedvetet följer i vårt dagliga liv. Det kan

vara formella regler såsom lagar, men det kan också vara informella, mentala regler som man kanske inte reflekterar över (till exempel traditioner).

Det ekonomiska antagandet om så kallat *rational choice*, rationella val i så måtto att individer gör de val de tror kommer att maximera deras nytta är ett grundläggande antagande inom ekonomisk teori och även inom ny institutionell teori, så kallad *New Institutional Economics*. Preferenserna behöver inte vara begränsade till endast materiell nytta, utan även sådana aspekter som psykiskt välmående kan antas spela in.

Tillägget att vi som individer inte har full information och att våra preferenser faktiskt också formas av institutionerna, gör att rationalitetsbegreppet som används är så kallat *bounded* (eller begränsat). Det innebär att man inte kan avgöra om en handling är rationell eller ej utan att känna till omständigheterna. Det innebär också att det inte finns vissa handlingar som per definition är rationella. Man skiljer således på begreppet rationalitet och en rationell handling.

Liksom inom den historiska teorin, och den traditionella så kallade institutionalismen, så fokuseras på makt. Både politisk och ekonomisk makt antas kunna användas för att forma institutionerna på det sätt som de som innehar denna makt önskar, helt i enlighet med antagandena om *Rational choice* och *Bounded Rationality*. Förutom att politisk och ekonomisk makt ger innehavarna möjlighet att påverka sin situation leder detta också till att andra grupper har svårare att få igenom sina institutioner.

I avhandlingen diskuteras bristen på detta perspektiv av denna mer negativa sida av institutioner och makt inom ekonomisk teori. Det finns egentligen ingenting som hindrar att dessa parametrar tas med i ekonomiska modeller. Till detta kan också läggas antagandet att innehavandet av makt, det vill säga kontroll, är positivt relaterat till individernas nytta. Således, argumenterar jag för att maktförhållandena måste beaktas i institutionella analyser, både för att de påverkar möjligheten att forma omgivningens regelverk och även mentalitet, men också av det enkla skälet att makt bör ingå som en grundläggande enhet i de hypotetiska nyttofunktionerna. Vi antas helt enkelt handla på så sätt att vi försöker öka vår makt eftersom det är något vi ser positivt på. Detta har stort genomslag i inte minst i formandet av de institutioner som styr våra ekonomiska mellanhavanden.

En teori om pengar i en ekonomi

Baserat på empiri om de fundamentala mekanismer som styrde ekonomin i 1800-talets Sverige, ifrågasätts i avhandlingen den syn på pengar, den monetära teori, som används i de tongivande ekonomiska teorierna idag.

Traditionell ekonomisk teori ser pengar som något som förs in i ekonomin utifrån för att minska de transaktionskostnader som uppkommer i en hypotetisk bytesekonomi. Man antar att pengar uppkom för att byteshandeln var mycket kostsam. Då person A önskade sälja ett producerat överskott, behövde hon/han inte bara finna en person som

önska de köpa det, utan som också ville sälja något som person A ville ha.¹ I förlängningen antas också de personer som önskar köpa eller sälja överskott vara isolerade individer, utan något socialt nätverk som kan underlätta transaktionerna (detta antagande görs dock mest av tekniska skäl).

Tanken är då att vissa varor, guld, snäckor med mera, så kallade varupengar (*commodity money*), infördes för att minska dessa transaktionskostnader som byteshandeln innebar. På något sätt började värdelösa papperslappar, så kallade *fiat money* cirkulera istället för varupengar. Ekonomisk teori definierar således pengar efter en funktion, det vill säga som bytesmedel för att fungera som smörjmedel inom ekonomin. I förlängningen är det dessa antaganden som också ligger till grund för synen på pengar som neutrala, det vill säga utan någon betydelse för ekonomin på lång sikt, vilket antas i utformandet av många modeller som beskriver penningpolitik med mera. Pengar ges ut av central banken och förs därmed fortfarande in i ekonomin utifrån.

Utifrån empirin, något som också stöds av ett flertal mindre inflytelserika ekonomiska teorier, framstår det klart att pengar och skuldsedlar är samma sak. Den hypotetiska bytesekonomin är en modell som vilar på felaktiga antaganden om människors ekonomiska relationer. Person A producerar ett överskott, person B får lov att konsumera detta överskott mot ett löfte om att B:s överskottsproduktion överläts till A i framtiden. I vissa fall kan ett sådant löfte ges skriftligen, som en skuldsedel. Om person B är en allmänt betrodd person, kan en sådan utfästelse accepteras av tredje part som betalning. Person B:s skuldsedel har då blivit ett bytesmedel (ett betalningsmedel). Vissa allmänt betrodda skuldsedlar, till exempel banksedlar, blir allmänt accepterade som betalningsmedel inom en större krets av människor. Med andra ord, de så kallade bytesekonomierna var liksom våra dagars ekonomier, kreditekonomier. Skillnaden ligger i att vi idag har kreditsedlar som känns igen och har förtroende inom så gott som alla delar av världen. I grunden är dock pengar något som uppstår när köpkraft flyttas från framtid till nutid. Det vill säga, pengar är kredit.

Således ifrågasätts i avhandlingen också distinktionen som allmänt görs inom ekonomisk teori mellan varupengar (*commodity money*) och så kallade fuskpengar (*fiat money*). Eftersom pengar uppkommer som kredit (men inte all kredit cirkulerar som betalningsmedel), är pengar inte neutrala. Det antas också att värdet på olika typer av pengar sätts, precis som för alla andra varor, på marknaden (det finns således inget inneboende värde ens i guldmynt).

¹ Detta uttryck, "*the double coincidence of wants*" är myntat av Stanley Jevons i England år 1875. England, som var världens ledande ekonomi vid denna tid, hade redan en väl utbyggd kredit- och penningmarknad. Det var således inte någon brist på betalningsmedel med allmänt förtroende.

De undersökta problemen och slutsatserna

Denna avhandling handlar om den svenska kreditmarknadens utveckling under den fasta växelkurs som silver- och sedermera guldmyntfoten innebar. Silvermyntfoten inrättades 1834 och byttes 1873 mot en guldmyntfot, något som var en anpassning till den viktigaste ekonomin för Sveriges vidkommande, Tyskland.

I korthet kan en fast växelkurs funktionssätt sammanfattas på följande vis: central banken förbinder sig att växla in sina sedlar (och mynt) mot en fast kvantitet av silver eller guld (alternativt ett fast belopp i utländsk valuta). Central banken är då tvungen att hålla en viss reserv i silver eller guld (eller utländsk valuta) för att vid efterfrågan kunna genomföra växlingen. Det innebär att den penningmängd som centralbanken kan ha cirkulerande är direkt kopplad till storleken på dess egna reserver. För att systemet ska fungera krävs också att det inte finns några hinder för export och import av de valutor eller värdemetaller som utgör reserverna.

Eftersom konvertibilitetskraven innebar en i grunden deflationistisk penningpolitik, om reserverna minskar måste penningmängden minskas i proportion till detta för att inte central bankens möjlighet att upprätthålla den fasta växelkursen ska äventyras, så är en fast växelkurs ett hinder i möjligheten att tillgodose näringslivet med kapital.

Sveriges relativa fattigdom under 1800-talet gjorde att det var brist på formella betalningsmedel (som kunde accepteras i utlandet och användas vid transaktioner med staten) och krediter. I brist på formella betalningsmedel och krediter användes i stor utsträckning personliga reverser och skuldsedlar. Dessa former av betalningsmedel kunde cirkulera inom en region eller ett nätverk, men inte som betalning till personer utanför dessa.

Huvudfrågan i avhandlingen är hur det var möjligt att upprätthålla den fasta växelkursen, samtidigt som Sverige monetariserades och industrialiseringens krav på betalningsmedel och krediter tillgodoseddes. I denna process fokuseras de sedelutgivande affärsbankerna, de så kallade Enskilda bankerna, som började etableras under tidigt 1830-tal och var det dominerande affärsbankssystemet fram till förra seklets slut.

Kapitel 2 – Den politiska stridens betydelse vid etablerandet av ett sedelutgivande affärsbankssystem

Den fasta växelkursen, i detta fall silvermyntfoten, hade övergivits i samband med kriget mot Ryssland 1809. Återknytandet av valutan till silver var av största vikt för de mest inflytelserika grupperna eftersom skatteinkomsterna annars minskade i värde gentemot silvret. Samtidigt var avsaknaden på allmänt accepterade betalningsmedel och krediter hämmande för ekonomin. Med hänvisning till detta beslutades i 1823 års riksdag om rätten att etablera Enskilda, det vill säga privata, banker. Att dessa skulle få finansiera sin verksamhet med sedelutgivning var en politisk majoritet ense om.

Fördelningen av den politiska makten gjorde att kronan och adeln tog kontroll över utdelandet av rättigheter att driva bankrörelser (oktrojer). Den monopolpolitik som präglade utdelandet av dessa tillstånd gjorde att opposition mot de sedelutgivande bankerna, och speciellt mot deras sedelutgivning, växte från 1840-talets mitt och framåt. Vid 1860-talets mitt blev, efter diverse politiska stridigheter, banketablerandet med vissa undantag fritt.

Sedelutgivningsrätten togs dock ifrån de Enskilda bankerna mot slutet av 1800-talet, då staten konsoliderats till en aktör. Riksbanken fick då sedelutgivningsmonopol (1903), mot att kronan, som verkade som regering i den konstitutionella monarkin, fick inflytande över Riksbanken. Riksbanken hade sedan sitt grundande 1668 varit uteslutande kontrollerad av Riksdagen, något som kronan strävat efter att förändra.

Kapitel 3 – De sedelutgivande bankernas fördelar och deras betydelse för framväxten av likvida kapitalmarknader

I tidigare beskrivningar av de sedelutgivande Enskilda bankerna som ett banksystem, har detta system ibland beskrivits som en relik, alternativt ett efterblivet banksystem. Ett modernt banksystem förutsätts inte bara vara modellen för hur banker ska fungera, utan antas också eftersom det är modernt, i enlighet med ett evolutionärt synsätt, vara effektivare. De sedelutgivande bankerna skiljde sig från affärsbanker i dag dels i att de hade rätt att ge ut egna sedlar, och dels i att ägarna var ansvariga för bankens skulder också med sina personliga förmögenheter (så kallat solidariskt ansvar).

Det visar sig dock att de Enskilda bankerna var effektivare just på grund av sin möjlighet att ge ut sedlar än vad icke sedelutgivande aktiebolagsbanker var. De sedelutgivande Enskilda bankerna bidrog i hög grad till skapandet av en likvid nationell kapitalmarknad. Dessa banker hade också blivit inrättade med rätten att ge ut sedlar som ett svar på rådande omständigheter, det vill säga för att få ett banksystem att fungera under vissa givna förutsättningar. Således är synen på ett visst banksystem som effektivare än ett annat på grund av att det uppkommit senare en anakronism. Det vill säga, ett banksystems effektivitet kan inte bedömas utan att de specifika förutsättningar som råder tas i beaktande.

Kapitel 4 – Den fasta växelkursen och de Enskilda bankernas betydelse för den svenska monetariseringen

En studie av det Enskilda banksystemets betydelse måste inkludera den svenska ekonomins brist på betalningsmedel som en variabel. En annan variabel är Riksbankens övergripande ansvar för upprätthållandet av den fasta växelkursen. Detta innebär att de Enskilda bankernas verksamhet, och framför allt sedelutgivning, inte kan tolkas som en

del i en tävlan mellan de Enskilda bankerna och Riksbanken på en marknad för att cirkulera sina sedlar, såsom görs av den så kallade *free banking* skolan. Free banking skolan bygger på antagandet om privata banker som konkurrerar med sedelutgivning. Valutornas stabilitet sätts därmed av dessa privata aktörer utan inblandning av en monopolistisk centralbank. Det visar sig också att ett flertal av de fundamentala förutsättningar som denna teoriskola omfattar inte var gällande i det svenska fallet med de Enskilda bankerna.²

På grund av bristen på betalningsmedel och goda krediter valde de Enskilda bankerna att i stället för att hålla reserver i silver eller guld, hålla reserver i Riksbankens sedlar. Genom att de enskilda bankerna tog på sig en del av växlingskostnaderna, cirkulerade Enskilda bank sedlar till parvärde mot Riksbankens sedlar. På så sätt skapades ett växelkurssystem baserat på Riksbankens reserver.³ Allmänheten föredrog med andra ord ett banksystem som cirkulerade fler sedlar med lägre trovärdighet, än ett som var låst av att hålla reserver till samma nivå som Riksbanken. Den monetarisering som detta system innebar ledde till att Enskilda banksedlar fyllde den plats i penningcirkulation som tidigare hade fyllts med andra former av skuldsedlar som endast kunde cirkulera inom en mindre krets. Enskilda banksedlar kom också att accepteras som insättningar i sagda banksystem, inklusive i Riksbanken. På så sätt lade de Enskilda bankernas sedelutgivning också grunden för det insättningsfinansierade banksystemets genombrott. Det förefaller som att monetariseringen tog fart under senare delen av 1860-talet. Detta sammanföll med en etableringsvåg av Enskilda banker.

Kapitel 5 – Om förhållandet mellan reserver, penningmängd och priser

I detta kapitel studeras kvantitativt hur förhållandet var mellan Riksbankens reserver, olika mått på penningmängden och prisförändringar. Först definieras och uppskattas vissa variabler och i samband med detta diskuteras också svårigheten att på ett universellt sätt definiera sådana mått som "penningmängd", "monetär bas" med mera. Det fundamentala ekvationssystem som analyser av samband mellan penningmängd och monetär bas vilar på i ortodox ekonomisk teori förutsätter ett sådant samband. Om detta ekvationssystem följs slaviskt kommer man dock att få problem med hur man skall definiera olika beståndsdelar i penningmängden. Risken finns, för en ekonomi som inte passar dessa antaganden, att empirin styrs in i detta system och att tolkningen blir därefter.

² *Free banking* skolans beskrivning av det Enskilda banksystemet är drivna av teorins prediktioner och inte av empiriska observationer. Den mycket positiva beskrivningen av det Enskilda banksystemet som ges från ett *free banking* perspektiv är också på ett flertal grundläggande faktapunkter rent felaktig (se Kapitel 4).

³ Ett fast växelkurssystem som på många sätt påminde om det så kallade Bretton-Wood systemet som präglade världen 1946-1973. Där höll de flesta länder reserver i US\$, och USA hade guldreserven i Fort Knox (se James Bond-filmen "Goldfinger").

I det svenska fallet på 1800-talet var en stor del av den inom landet cirkulerade valutan, som läsaren redan vet, i form av Enskilda banksedlar. Tidigare har forskningen inte gjort skillnad på dessa banksedlar och insättningar i dessa banker, helt enkelt därför att teorin förutsätter att cirkulerande sedlar är utgivna av centralbanken.

I denna studie följs definitionen på den monetära basen, men cirkulerande penningmängd beräknas inklusive de Enskilda bankernas sedlar. Det visar sig också att den monetära basen inte hade någon (mätbar) relation till penningmängden. På kort sikt, mätt som årliga förändringar, föregicks förändringar i penningmängden mätt som allmänhetens innehav av Enskilda - och Riksbankssedlar, av förändringar i Riksbankens reserver. Detta styrker det faktum att de Enskilda banksedlarna vilade på Riksbankssedlarnas koppling till den fasta växelkursen.

På lång sikt var dock penningmängdens tillväxt relaterad till BNP-tillväxt. Det fanns ingen koppling mellan silver och guld innehav och penningmängdens tillväxt, så som det skulle ha gjort om man strikt följt konvertibilitetens lagar. En penningmängdstillväxt som delades av de flesta länder som hade fast växelkurs mot silver eller guld.

Kapitel 6 – Om bankstöd i en transitionsekonomi med en fast växelkurs, Sverige under 1800-talet

Det sista kapitlet handlar om bankstöd under djupare finansiella kriser. Den teoretiska modellen för detta anger att för att häva bristen på likviditet och stödja förtroendet för bankerna ska central banken för en kort tid utnyttja sedelpressarna och därmed överge den fasta växelkursen. Denna teori är framställd i en stark ekonomi med en stark valuta. Senare kriser i Sydamerika har visat att detta förfarande kan leda till att en attack mot det inhemska banksystemet leder till en attack mot valutans värde. Om allmänheten tar ut sina medel från banksystemet och samtidigt väntar sig en drastisk nedgång i sin egen valutas värde, kommer de att växla sina inhemska pengar mot reserverna i centralbanken. Detta leder med andra ord till en valutakris.

I detta kapitel visas att det som är verklighet i dag i många länder, var också verklighet under silver- och guldmyntfoten. Dessa växelkurssystem var inte så automatiska som låtit påskina. Det förelåg ständigt en balansgång mellan upprätthållandet av växelkursen och utgivandet av pengar och kredit.

Så fort som den svenska utlandsskulden började accelerera i samband med utbyggnaden av järnvägsnätet, från sena 1850-talet och framåt, kunde inte den fasta växelkursen äventyras. Under djupare kriser fick staten låna ut kapital till banksystemet mot, för tillfället, värdelösa säkerheter. Denna utlåning matchades mot upplåning utomlands för att fylla på Riksbankens reserver. Den svenska Staten i sin helhet, det vill

säga både Riksdag och Kungamakt, garanterade dessa lån. Internationella långivare var utan undantag fokuserade på att låntagarna tog växelkursrisken.

I detta kapitel visas att länder med svagare valutor inte alltid kan följa detta recept för bankstöd. I stället får kapital importeras som kan fylla upp centralbankens och banksystemets reserver. Staten garanterar de internationella långivarna med sina framtida skatteinkomster, samt får ta hela växelkursrisken. Detta medför att Statens finanser och skattesystemets struktur är av vikt för möjligheten att få låna på internationella kapitalmarknader.

Appendix – Numerical Data

Riksbank Reserves and Note Issuance, 1834 – 1913, 1000's SEK

Year	Silver	Gold	Foreign holdings	RBs total reserve	Issued RB notes	RB Postal bank bills	RBs unused right to issue notes	RBs total right to issue notes
1834	25934	23	0	25957	36089		13338	64812
1835	25227	1066	0	26293	37982		15851	65650
1836	26280	2402	0	28683	41090		20528	71617
1837	24790	2167	0	26957	43089		14796	67307
1838	20853	2045	0	22898	40161		10072	57173
1839	23471	1958	0	25429	39790		14918	63493
1840	23544	3818	0	27362	40307		18402	68321
1841	20772	4464	0	25236	37848		13970	63011
1842	12384	4259	0	16643	32979		-872	41556
1843	9899	1955	0	11853	31330		-8243	29596
1844	11492	1751	0	13243	29616		-2104	33066
1845	16531	1585	1818	19933	35587		2999	49908
1846	19373	1361	2850	23583	38835		3545	53554
1847	30145	1105	1793	33042	43365		3618	63001
1848	22637	870	24	23531	39097		2436	53501
1849	18635	727	1	19364	34086		2567	49339
1850	16938	607	764	18309	33544		2526	48286
1851	16727	495	2205	19427	33620		810	49402
1852	15917	395	3197	19508	33862		1409	49484
1853	20805	320	5684	26809	41378		790	56776
1854	35572	276	5365	41213	49969		632	71162
1855	41700	248	10117	52065	59178		142	82000
1856	30006	233	511	30750	52459		417	60712
1857	16992	223	5840	23054	46694		536	53025
1858	17076	409	4969	22454	40247		321	52454
1859	12242	683	3632	16557	36784		148	46557
1860	14337	519	8236	23093	39486		897	53093
1861	11366	200	10235	21800	37267		901	51800
1862	11740	154	6432	18325	35834		992	48325

Year	Silver	Gold	Foreign holdings	RBs total reserve	Issued RB notes	RB Postal bank bills	RBs unused right to issue notes	RBs total right to issue notes
1863	9585	471	7221	17277	31271		581	47277
1864	9965	313	5953	16231	31533	1198	6922	46231
1865	10115	156	5387	15658	30510	278	6286	45658
1866	10015	199	4234	14447	26634	1457	7527	44447
1867	10160	112	3122	13393	26179	1276	5756	43393
1868	10410	158	5722	16289	26363	573	10911	46289
1869	9369	1021	5186	15576	26877	572	11220	45576
1870	9390	958	13592	23940	29309	1099	12281	53940
1871	11621	1754	13728	27102	31279	960	12211	57102
1872	14751	4227	10763	29740	45262	1125	9586	59740
1873	10458	15483	6275	32216	44726	1287	3247	62216
1874	12187	18251	10025	40464	40566	1749	6572	70464
1875	11198	12823	3214	27235	36178	1734	6409	57235
1876	7186	9484	10039	26710	30079	2101	13625	56710
1877	3653	9856	4520	18029	26949	280	9676	48029
1878	4668	7338	5495	17501	26903	678	10878	47501
1879	5768	8684	11674	26126	31587	512	18735	56959
1880	5057	11367	11690	28114	39404	745	14854	63114
1881	4345	12390	9266	26001	37798	1357	13365	61001
1882	4061	11913	2749	18723	37380	1068	7986	53723
1883	3525	12398	4456	20379	35668	669	8553	55379
1884	3351	13713	7971	25035	37993	629	11987	60035
1885	3323	14058	5374	22756	39341	997	7671	57756
1886	3500	13290	10685	27475	41887	909	9052	62475
1887	2586	13673	7653	23912	40157	946	22274	62795
1888	2462	16248	10005	28714	44190	880	30839	72513
1889	1826	16241	9310	27376	43838	852	29549	71913
1890	1757	17088	3123	21967	45399	818	24205	66967
1891	2479	17041	4300	23820	43865	1146	27068	68820
1892	3070	16923	6778	26771	44018	1327	30411	71771
1893	3143	16675	8391	28209	47828	1565	29256	73140
1894	3152	18327	16682	38161	51897	1791	36700	83160
1895	2972	24070	12190	39232	56737	1180	33507	84232
1896	2397	23972	13297	39666	63297	1549	29494	84666

Appendix – Numerical Data

Year	Silver	Gold	Foreign holdings	RBs total reserve	Issued RB notes	RB Postal bank bills	RBs unused right to issue notes	RBs total right to issue notes
1897	2115	26188	10670	38974	68840	2101	25653	83974
1898	2690	29746	11638	44074	70860	1902	26361	89074
1899		30749	11203	41952	75189	3105	59357	121050
1900		32757	10692	43449	71992	2077	69674	129258
1901		41768	22547	64315	100983		88129	157619
1902		48948	21548	70496	137409		78586	177542
1903		55606	17747	73353	165743		52094	188959
1904		59265	14378	73643	170314		40869	192907
1905		65476	21916	87391	183713		55786	212567
1906		69605	25635	95240	201911		53619	224844
1907		74437	18608	93044	190115		45006	224480
1908		72328	21682	94010	201490		47488	226338
1909		78626	26736	105362	201897		64426	243739
1910		80251	26938	107189	206491		64124	247406
1911		83597	33881	117478	218101		56714	249231
1912		93522	29127	122649	228432		73753	276254
1913		102405		102405	234472		92330	302254

Source: Sveriges Riksbank (1931)

Enskilda Bank Reserves and Note issuance, 1834-1905. 1000's SEK

Year	EB's specie Reserves	EBs Reserves of RB notes	EBs total Reserve	Issued EB Notes	EBs unused right to issue notes	EBs total right to issue notes	EB Postal bank bills
1834		506	506	1464	541	2005	
1835		811	811	1835	435	2270	
1836		836	836	2527	658	3185	
1837		1718	1718	4086	428	4514	
1838		3045	3045	7344	905	7485	
1839		3772	3772	9074	1382	10456	
1840		3851	3851	10039	924	10963	
1841		4363	4363	10672	1527	12199	
1842		4019	4019	10195	2642	12837	

Year	EB's specie Reserves	EBs Reserves of RB notes	EBs total Reserve	Issued EB Notes	EBs unused right to issue notes	EBs total right to issue notes	EB Postal bank bills
1843		4400	4400	9450	4131	13581	
1844		3998	3998	9788	3180	12968	
1845		6409	6409	11959	3157	15116	
1846		7652	7652	13399	3166	16565	
1847		6701	6701	15539	2105	17644	
1848		5664	5664	15782	6847	22629	
1849		4884	4884	15400	6301	21701	
1850		5013	5013	15044	5421	20465	
1851		5414	5414	16455	3864	20320	
1852		5889	5889	16649	5365	22014	
1853		8446	8446	20546	4241	24787	
1854		11236	11236	25371	2830	28201	
1855		15878	15878	31608	1575	33183	
1856		10371	10371	26695	3095	29790	
1857		6925	6925	21406	10584	31990	
1858		10639	10639	25260	12027	37287	
1859		8988	8988	26661	11230	37891	87
1860		11727	11727	30219	8787	39006	122
1861		11755	11755	32222	7204	39425	129
1862		9616	9616	30395	7731	38126	495
1863		10447	10447	27105	12172	39277	573
1864		9311	9311	27563	11092	38656	569
1865		12049	12049	33492	17463	50955	704
1866		9268	9268	29036	21568	50604	1134
1867		12223	12223	34496	20141	47962	1357
1868		15327	15327	26605	18714	45319	1503
1869		14502	14502	34949	14768	49718	1583
1870		17544	17544	39230	14382	53612	2087
1871		21888	21888	48303	10886	59189	2586
1872		27437	27437	57345	8760	66105	4337
1873		36185	36185	67213	13183	80397	5180
1874		32305	32305	63923	14607	78530	6229
1875	8943	15080	24024	59826	17486	77312	5243

Appendix – Numerical Data

Year	EB's specie Reserves	EBs Reserves of RB notes	EBs total Reserve	Issued EB Notes	EBs unused right to issue notes	EBs total right to issue notes	EB Postal bank bills
1876	8734	10101	18835	61242	17574	78816	6620
1877	8766	7207	15972	50770	29798	80569	6089
1878	8752	8382	17134	45883	31765	77648	5694
1879	8619	11544	20163	49224	25991	75216	6623
1880	8852	11799	20651	50232	24262	74493	7354
1881	8013	12380	20394	48932	24299	73230	7040
1882	8288	9964	18252	52615	21658	74273	9836
1883	8308	10636	18944	52478	21963	74441	9022
1884	8295	11198	19493	52389	22762	75151	10186
1885	7882	11962	19844	49539	24799	74338	8654
1886	7802	11723	19525	48570	24780	73350	8280
1887	7798	11967	19766	49545	23801	73346	8829
1888	8111	11549	19659	55843	18832	74676	10387
1889	7997	11020	19017	58858	18675	77533	10348
1890	7378	12034	19412	58597	21510	80107	11394
1891	7256	11119	18375	58763	22345	81108	11294
1892	7287	10795	18081	57961	22583	80543	10228
1893	7322	12585	19907	59059	21642	80701	11392
1894	7466	14897	22363	61335	21722	83057	12110
1895	7503	16256	23759	60883	21414	82297	12688
1896	7795	13373	21168	65303	20722	86025	16580
1897	8166	13412	21578	72203	21880	94083	17344
1898	9036	14881	23918	79316	24839	104155	19009
1899	9318	14628	23946	79661	26728	106388	20990
1900	9512	13407	22919	82253	28504	110758	22290
1901	6012	20050	26061	55658	56		
1902	2292	25276	27568	25054	25		
1903	239	20985	21223	4051			
1904	107	23564	23671	1888			
1905				1600			

Sources: Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1906

Total Specie Reserves and Money Supply, 1834 – 1913. 1000's SEK

Year	RB Specie Reserves	EB Specie Reserves	Total Specie Reserves	RB & EB notes in circulation (M1)	(M1)+ Public deposits in commercial banks (M2)	(M2) + Public deposits in Savings banks (M3)
1834	25957		25957	37048	37163	39497
1835	26293		26293	39005	39105	41439
1836	28683		28683	42781	42870	45204
1837	26957		26957	45457	45656	47990
1838	22898		22898	44460	45186	47520
1839	25429		25429	45092	45723	48057
1840	27362		27362	46495	47278	52490
1841	25236		25236	44157	45032	50244
1842	16643		16643	39155	39934	45146
1843	11853		11853	36379	37121	42333
1844	13243		13243	35406	36469	41681
1845	18115		18115	41136	42490	50213
1846	20734		20734	44582	46124	53847
1847	31249		31249	52204	53859	61582
1848	23507		23507	49215	51018	58741
1849	19363		19363	44602	46341	54064
1850	17545		17545	43574	45035	57969
1851	17222		17222	44662	46300	59234
1852	16311		16311	44622	47247	60181
1853	21125		21125	53477	56650	69584
1854	35848		35848	64105	67989	80923
1855	41948		41948	74908	79567	101663
1856	30239		30239	68783	72474	94570
1857	17215		17215	61174	68121	90217
1858	17486		17486	54868	70447	92543
1859	12925		12925	54457	67999	93333
1860	14857		14857	57978	75938	103230
1861	11565		11565	57734	77189	106962
1862	11893		11893	56612	79012	110273
1863	10056		10056	47928	69572	102066
1864	10278		10278	49785	70832	104209
1865	10271		10271	51952	79829	115813

Appendix – Numerical Data

Year	RB Specie Reserves	EB Specie Reserves	Total Specie Reserves	RB & EB notes in circulation (M1)	(M1)+ Public deposits in commercial banks (M2)	(M2) + Public deposits in Savings banks (M3)
1866	10214		10214	46403	78206	115965
1867	10271		10271	48452	87580	127636
1868	10568		10568	37642	81033	123726
1869	10390		10390	47324	108954	156025
1870	10348		10348	50996	125419	182721
1871	13375		13375	57694	150588	222070
1872	18977		18977	75170	209845	297123
1873	25941		25941	75754	226538	332064
1874	30439		30439	72184	263389	387160
1875	24021	8943	32964	80924	273706	406421
1876	16670	8734	25404	81220	296961	439802
1877	13509	8766	22275	70512	288158	432778
1878	12006	8752	20759	64404	272551	411085
1879	14452	8619	23071	69267	289100	424412
1880	16424	8852	25276	77836	324489	470561
1881	16734	8013	24748	74350	329665	489760
1882	15974	8288	24263	80031	353025	526128
1883	15923	8308	24232	77510	367842	558233
1884	17064	8295	25359	79184	389835	595246
1885	17382	7882	25263	76918	395292	614917
1886	16791	7802	24593	78734	407063	638730
1887	16259	7798	24057	77734	409769	650840
1888	18710	8111	26821	88485	421701	676144
1889	18066	7997	26064	91676	425666	694843
1890	18845	7378	26222	91961	443817	719235
1891	19520	7256	26776	91510	463459	755047
1892	19993	7287	27280	91183	471098	769503
1893	19818	7322	27140	94302	484760	800120
1894	21479	7466	28945	98334	505844	837999
1895	27042	7503	34545	101364	528423	883196
1896	26369	7795	34164	115227	560417	935563
1897	28304	8166	36469	127630	629972	1028989

Year	RB Specie Reserves	EB Specie Reserves	Total Specie Reserves	RB & EB notes in circulation (M1)	(M1)+ Public deposits in commercial banks (M2)	(M2) + Public deposits in Savings banks (M3)
1898	32436	9036	41472	135294	716044	1134401
1899	30749	9318	40066	140222	828599	1259449
1900	32757	9512	42269	140838	912644	1363636
1901	41768	6012	47780	156641	994946	1473529
1902	48948	2292	51239	162463	1036831	1545230
1903	55606	239	55845	169794	1084744	1628045
1904	59265	107	59372	172201	1129670	1708146
1905	65476		65476	185312	1227024	1840673
1906	69605		69605	201911	1376143	2033549
1907	74437		74437	190115	1503827	2199142
1908	72328		72328	201490	1596055	2322895
1909	78626		78626	201897	1616271	2390346
1910	80251		80251	206491	1671560	2492451
1911	83597		83597	218101	1734230	2605463
1912	93522		93522	228432	1830358	2750908
1913	102405		102405	234472	1926461	2900899

Sources: Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter 1871-1906, SCB (1960), Sveriges Riksbank (1931)