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**“Private bank notes, central
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Private bank notes, central banking and monetary policy: Sweden, 1834 – 1913

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ABSTRACT

The discourse on money and banking during the existence of Private note issuing banks (1831-1903) focused on the Private bank notes as destabilizing. It was claimed that they impeded the Bank of Sweden's possibility to run monetary policy. This was not the case in reality as the Private bank notes were endogenous bank money based on the issuance of Bank of Sweden notes and thus served to amplify the Bank of Sweden's monetary policy. As policy indicator the National Bank focused on foreign exchange rates rather than to adapt its policy to the activities of the commercial banks. But the belief that Private bank notes were currency affected Bank of Sweden's monetary policy in relation to the withdrawal of the Private banks' note issuing right. The ending of the Private bank note issuance led to a hasty and large expansion of the monetary base aiming to replace the Private bank notes in circulation. This base money expansion, funded by increased central bank liabilities and foreign sovereign debt, directly led to increased commercial banking credit.

Introduction

In this paper I draw on two kinds of literature in economics and economic history; one is on regulation and the other one on free banking. I also add economic thought to the analysis as part of this paper concern how regulatory changes based on a theoretical understanding may end up with an unanticipated outcome due to a lack of understanding of the economic practicalities. In short how the strength of circulating economic theories, the *zeitgeist* in economic thinking, may influence agents to make flawed policy decisions when theories do not correspond to the actual case. Keynes formulated this theory versus practice dilemma in economic policy in 1936:

“... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist.”¹

In the case of this paper the gap between theory and practice concerned how the banking and monetary system functioned in the late 19th and early 20th century Sweden.²

Sweden has been portrayed as a successful case of free banking.³ But what is not discussed in this literature is the private note issuing banks' relationship to the monetary authority, the Bank of Sweden. As Sweden between 1831 and 1903 experienced the parallel existence both of the Bank of Sweden, issuing legal tender, and private note issuing commercial banks, it is a good case for studying issues on the interaction between a monetary authority and private note issuing banks.

In the contemporary debate there was a large focus on the private bank notes. It was believed that the possibility for the private banks to issue notes was a source of financial and economic instability and that it made it impossible for the Bank of Sweden to run efficient monetary policy. As a result of the criticism against the Private banks' note issuance their right to issue notes ended as the Banking act of 1897 stipulated an end to Private bank note issuance by the end of 1903 providing Bank of Sweden with monopoly on note issuance. Even if these views on the impact of the private banks' note issuance often are repeated, they are not based on empirical observations but on a

¹ Keynes, J.M. (1936) [2007], pp. 383-4

² There are more recent examples such as the impact Basel II regulations coupled with the rating agencies had on the demand for CDO's. Coval, J., Jurek, J., and Stafford, E. (2009)

³ See for instance Schuler (1992) and Selgin (1988)

general theoretical discourse concerning the instability of bank notes, and in particular private bank notes.

The basic question in this paper is what impact the private banks' note issuance had on the monetary policy of the Bank of Sweden. Did the private note issuing banks, as stated in the historical banking literature⁴, make the monetary policy of the Bank of Sweden inefficient? Did the private banks' note issuance, as argued in free banking theory⁵, force Bank of Sweden to adjust its monetary policy in a disciplining manner? Did the ending of the private bank note issuance mark the beginning of modern central banking?⁶ I study this from two angles:

1) As it was claimed that the Bank of Sweden was bound in its monetary policy by the Private banks note issuance I measure what variables that in a systematic manner affected the monetary policy of the Bank of Sweden. More precisely I ask what factors made the Bank of Sweden more or less lax in its monetary policy. In order to do so I have constructed a measure of monetary discipline developing the methodology used by Lawrence H Officer in his 2002 JEH article.⁷

2) I estimate the consequences of the instigation of Bank of Sweden's note issuing monopoly on its monetary policy. The question is to what extent the ending of private bank note issuance changed the way the Bank of Sweden's monetary policy affected the situation on the credit market through the commercial banking system.

The findings were that as in practice Bank of Sweden notes served as base money whereas the Private bank notes were bank money issued on the basis of the Bank of Sweden's issuance of notes. At the contrary of making Bank of Sweden's monetary policy inefficient, the private banks' note issuance amplified the effects of it. Seemingly the private bank note issuance only had a small disciplining effect on the monetary policy run by the Bank of Sweden, which is explained by the fact that the private banks note issuance relieved the Bank of Sweden of the task of providing liquidity. What the monetary policy targeted in reality was movements in foreign exchange rates. The ending of the private banks' note issuance had some specific consequences. It made the Bank of Sweden triple its supply of base money between the years 1900 and 1903. Clearly this was driven by a fear for a lack of liquidity as a result of the ending of

⁴ See Brisman (1931), Simonsson (1931), Söderlund (1964), Nilsson (1981), Larsson (2010)

⁵ See Selgin (1988), Selgin & White (1994)

⁶ See Brisman (1931), Simonsson (1931)

⁷ Officer, L.H. (2002)

private bank notes. But the Bank of Sweden had misjudged the different roles of its and the private bank notes, as base and bank money, so instead of Bank of Sweden notes replacing private bank notes to circulate as liquidity among the public almost all the Bank of Sweden notes ended up in the private banks' reserves. The private banks in turn did not sterilize this flood of base money by increasing their reserve ratio, as the increased reserves were directly transmitted into increased lending. Consequently the action taken by the Bank of Sweden to mitigate the believed effects of the ending of the private bank notes led to a direct, and almost linear, upsurge in credit which was not intended nor in line with economic fundamentals. Consequently, the private banks continued to use Bank of Sweden notes as base money. The only change concerning Bank of Sweden's role as a "modern" central bank was cosmetic, as it in reality the change only made the private banks substitute the issuance of deposits for notes.

Private bank notes in theory and practice

Issuance of notes has historically, and not without reason, been seen as a source of monetary and financial instability, a fact that is well illustrated by Adam Smith's famous quote:

*"The commerce and industry of the country, however, it must be acknowledged, though they may be somewhat augmented, cannot be altogether so secure, when they are thus, as it were, suspended upon Daedalian wings of paper money, as when they travel about upon the solid ground of gold and silver."*⁸

The argument is that debasements of coins are bad enough but with the printing press this problem becomes more severe as it is easier to print out of debt. A way out of this problem was to anchor the money supply to a fixed value in specie. The Swedish monetary system was from 1834 until 1914 based on specie (silver standard 1834 until 1873 and gold standard between 1874 and 1914) upheld by the Bank of Sweden. Even though a differential reserve was used from the 1840s the cover ratio of legal reserves were around forty percent of issued notes.⁹

In an international context the Swedish money stock to a large extent consisted of notes and less of coins. Also notes were issued in comparably low denominations, 1

⁸ Adam Smith, *An Inquiry into the Nature and Causes of The Wealth of Nations* (Chicago: The University of Chicago Press, 1976), 341.

⁹ For a more detailed description of the Bank of Sweden's monetary policy see Ögren, A. (2012)

SEK (0.055 GBP) for the Bank of Sweden and 5 SEK (0.274 GBP) for the private banks. The high reliance on notes was seen as a remnant of a disorganized and backwards monetary system.¹⁰

This view that notes were destabilizing, and especially so private bank notes, was present in the Swedish parliamentary debate during the nineteenth century. In the legal rhetoric of the time, differences were made between the private bank notes that were labeled as deposit certificates, promissory or bank IOUs (*Bankonoter*), credit notes (*credit sedlar*), and the notes issued by the Bank of Sweden that were representing coins (*myntrepresentativer*). The clause in the constitution that was meant to secure the monopoly right to issue legal tender notes for the Bank of Sweden stated that:

“; does the Parliament alone hold the right to through the Bank issue notes that as coins within the country may be admitted.” (§72 in the Constitution of 1809).

In parliament certain groups strongly opposed the note issuing banks and legal restrictions were imposed on private bank note issuance. The law of 1864 forced the banks to redeem their notes (but implemented an option clause in case they could not meet it on demand). From the 1860s taxes on note issuance started to be levied¹¹ and in the 1870s legal steps were taken to further limit the possibility to issue notes in the smallest denominations. Thus the law of 1874 prepared for raising the minimum denomination for private bank notes from 5 SEK to 50 SEK with the stated purpose to promote the circulation of coins. With the same argument the Bank of Sweden lowest denomination note of 1 SEK note was banned in 1879. The board of the Bank of Sweden argued that:

*“...that it would not be healthy to keep this remnant from a disorganized monetary system, that the one-crown-note, that in Sweden fulfil the function of the token coin, contribute to with the public keep the conception that the note is coin, ... ”*¹²

¹⁰ See for instance BaU 1879 Memorial No 2

¹¹ SFS 1864:31 §§ 1, 26. Tax on note issuance was imposed by 0.2 percent in 1861, 0.3 percent in 1887, 0.5 percent in 1892 and 1 percent in 1893. (RdSkr 1887 No 49, 1892 No 98, 1893 No 45, SFS 1861:34 §15)

¹² *“... att det ej vore nyttigt att behålla denna kvarlefa från ett oordnad penningeväsen, att enkronerssedlarna, som i Sverige fullgöra skiljemyntets funktion, bidra att hos allmänheten bibehålla det föreställningssätt att sedeln är mynt,”* (Registratur Rbnr 429. 20/2-1879 No 11 s.3.) Authors translation. The underlining is in the original.

In 1880 the 5 SEK private bank note was banned (to be effective from 1881).¹³ To prepare for the impact of this limit to the private banks note issuance Bank of Sweden instigated a special credit to be drawn upon by the note issuing private banks.

As was the case in parliament the members of the Bank of Sweden's board repeatedly viewed the private bank notes as sources of instability. Moreover they also expressed their concern that the private banks' note issuance constrained the activities of the Bank as they viewed them ultimately to be based on the Bank of Sweden reserves.¹⁴

The discourse regarding regulations and risks in banking during the entire nineteenth century was pre-occupied with the risks in relation to the note issuance. Deposits were not considered risky and subsequently regulations only targeted how banks should back their issued notes and not their deposits. This despite the fact that demand deposits outgrew notes in the early 1860s and that the crisis in 1878/79 led to a run for deposits at the Stockholm Enskilda Bank – a private note issuing bank but which chose to operate almost exclusively on deposits. This run was logical in the sense that Stockholm Enskilda Bank carried a comparably very high portion of systemic risk in its portfolio in the form of private railroad bonds, and thus the public realized that losing out on notes or deposits is the same thing. The special committee on banking that was instigated as a result of this crisis, however, came to the conclusion that private bank notes should be banned in order to increase banking stability.¹⁵

If any bank had experienced a run for notes the option clause included in the law of 1864 gave the banks the possibility to delay note redemption with up to six months (against five percent interest) making notes a kind of time demand liability as well. Despite the obvious similarities between notes and deposits, deposits remained untouched by reserve requirements in regulations until the enactment of the extensive regulatory package in 1911, when note issuance by private banks had been abolished.

Thus the focus on the Private banks note issuance had a large impact on the legal framework that governed the commercial banking system which also meant that the private note issuing banks from the outset of the system had to publish their position with a special focus on their note issuance and its backing. Legally notes had to be

¹³ "Banksedlar få enbart lyda å Femtio, Hundra, Femhundra och Tusen kronor samt tillsvidare och intill dess wi annorlunda förordne jemväl å Tio och Fem kronor." SFS 1874:44 §27.

¹⁴ BaU 1840/41 Registratur Rbnr 428. No 1 och No29 1873

¹⁵ Bankkomitén 1883

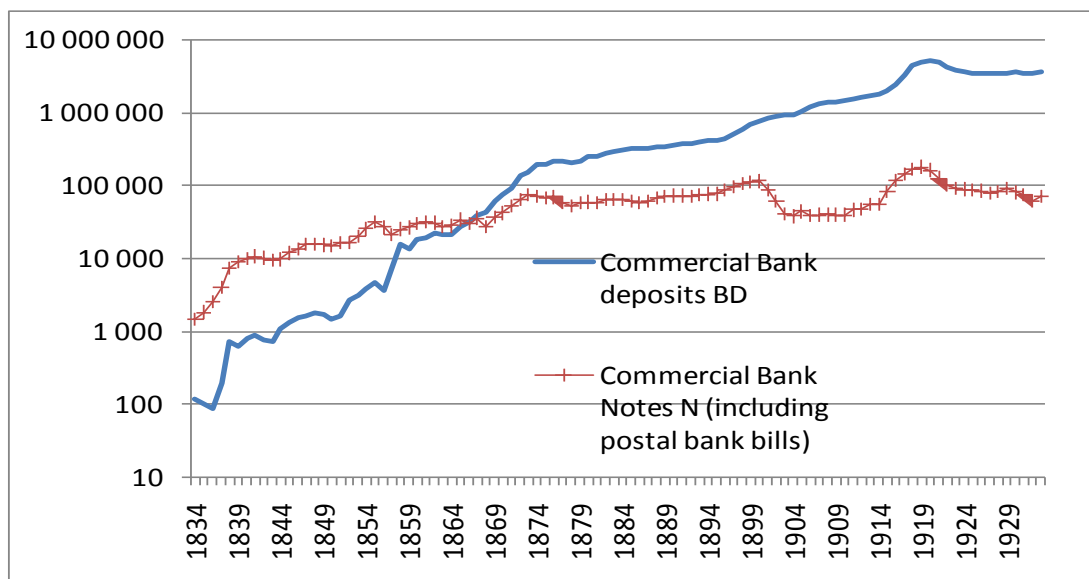
backed by legal tender reserves, certain kind of secure bonds and gold or silver. Before 1874 there was quite large liberty on how the Private banks backed their note issuance as they in addition to the other three assets also could include collaterals for granted credits, making their note issuance possible to adjust after demand. After 1874 Bank of Sweden notes lost their status as legal backing, instead the private banks' had to hold gold to at least ten percent of the equity capital to cover for their note issuance. The practical result of this legal change was that all Private banks, with one exception, steadily kept their gold holdings at this limit. Bank of Sweden notes continued to be the main part of the reserves and also the reserve item that the private bank notes were redeemed for. The implementation of the law of 1874 that denied the Private banks the possibility to count Bank of Sweden notes as formal backing of their note issuance shows that the idea existed that the Private bank notes, as Bank of Sweden notes, were currency and as such should be based on specie. As a consequence of the law of 1874 there were demands to make Private bank notes legal tender but this was never realized.¹⁶

With this focus on notes it may seem surprising that it was possible to end the Private banks right to issue notes without it being a major problem for the banking system. Especially as the peak of commercial bank note issuance in absolute terms occurred in the year 1900 – that is three years after the Banking Act of 1897 had declared that commercial bank notes should be out of circulation by the end of 1906 and no notes should be issued after 1903.

The absolute increase in note issuance was not matched in relative terms. When this Banking Act was instigated, notes were of marginal importance as source of funds for the note issuing Private banks after the mid 1890s. As seen in figure 1, deposits surpassed notes as source of public funds already in the mid 1860s.

¹⁶ Ögren, A. (2006)

Figure 1: Deposits and notes issued by private note issuing commercial banks, 1834-1933 (1000's SEK). Semi-logarithmic scale.



Sources: Ekonomisk Tidskrift 1899-1933, Ögren, A. (2003) Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185

Given the focus on the Private bank note issuance a common interpretation is that the transformation of the Bank of Sweden from a national commercial bank competing for market shares with other commercial banks to a central bank occurred with the implementation of Bank of Sweden's note issuing monopoly through the enactment of the 1897 law.¹⁷ The idea behind this interpretation is that the Private banks note issuing right prevented the Bank of Sweden from running efficient monetary policy as the private banks could undo it by using their own right to issue notes. In free banking literature the fact that more private bank notes than Bank of Sweden notes circulated among the public has been interpreted as the private bank notes were preferred by the market and thus were deemed as superior to the Bank of Sweden notes.¹⁸ But empirical tests shows that the higher amount of Private bank notes in circulation was a result of the fact that the commercial banks' sucked up the Bank of Sweden notes and utilized them as reserves, unlike Private bank notes. Thus rendering the status as base money exclusively for the Bank of Sweden notes. Thus, the Bank of Sweden notes were not

¹⁷ In the words of Sven Brisman: "the great modernisation process of turning the Riksbank into a central bank was finally accomplished." (Brisman, S. (1931), pp.193-196). In the history of the Bank of Sweden the period 1897-1904 was labeled "The Bank of Sweden as a Central Bank" (Sveriges Riksbank (1931)).

¹⁸ See Jonung, L. (1989), Schuler, K. (1992)

competing on equal footing with the private banks as they fulfilled different functions; that is as base money and bank money respectively.¹⁹

Regressions that are summarized in table 1 below shows that the main reserve item backing up the Private banks' note issuance throughout the period was Bank of Sweden notes. The result is the same for the whole period using annual data and also when dividing into two subperiods for the silver standard (1834 – 1873) and the gold standard (1874-1900) (see equations 1 – 3).

Using monthly data (equation 4) for the period 1878 – 1900, when all private note issuing banks were subject to the law of 1874 that declared that Private banks officially could not base their note issuance on Bank of Sweden notes, and that instead gold holdings should be the main reserve item, shows the gold holdings of the Private banks was completely unrelated to note issuance, and that the private bank note issuance continued to be based on Bank of Sweden notes.

Table 1: OLS-regressions on the determinants of Private banks reserves (dependent variable). Variables in logarithmic changes.

Dependent variable: Enskilda Bank Reserves DLOG(EBRES)	Eq. 1: annual data 1835 1900 (66 obs.) Silver and Gold standards		Eq 2: annual data 1835 1873 (39 obs.) Silver standard		Eq. 3 annual data 1874 1900 (27 obs) Gold standard		Eq. 4: monthly data 1878 1900 (275 obs.) Gold standard	
	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
C	0.05	0.07	0.12	0.01	-0.04	0.06	0.00	0.83
DLOG(ISSRBNOTES)	0.96	0.00	1.10	0.00	0.80	0.00	0.50	0.00
DLOG(GDP)	-0.36	0.65	-0.97	0.40	0.36	0.54		
DLOG(CPI)	0.62	0.28	0.82	0.35	-0.02	0.96		
R-sq.	0.22		0.24		0.48		0.14	
Ad.R-sq.	0.18		0.17		0.42		0.14	

Sources: Edvinsson, Jakobsson & Waldenström (2011) , Krantz & Schön (2007), Ögren (2003, 2006)

As seen in the results of the regressions that are summarized in table 2 below, even if there were other factors influencing the Private banks note issuance the part of the reserves that was the practical basis of the Private bank notes note issuance was Bank of Sweden notes, and not gold. As the sign is positive, the Private banks did not sterilize the effect of the Bank of Sweden note issuance, if anything they served to amplify it. Thus the practice and the theory on which the law of 1874 was based on were in clear conflict – the note holders and the Private banks were not interested in exchanging the notes for gold, neither in the form of bullion or as coins. And the fact is that the Private

¹⁹ Ögren (2006)

banks since their beginning in 1831 had had the possibility to base their note issuance on specie but that was never practiced by the banks nor demanded by the note holders.

Table 2: OLS-regressions on the determinants of Enskilda banks note issuance (dependent variable). Variables in logarithmic changes.

Dependent variable: Enskilda Bank Note Issuance DLOG(ISSEBNOTES)	Eq. 1: annual data 1835 1900 (66 obs.) Silver and Gold standards		Eq 2: annual data 1835 1873 (39 obs.) Silver standard		Eq. 3 annual data 1874 1900 (27 obs) Gold standard		Eq. 4: monthly data 1878 1900 (275 obs.) Gold standard	
Independent Variables	Coeff.	Prob.	Coeff	Prob.	Coeff.	Prob.	Coeff.	Prob.
C	0.03	0.10	0.03	0.28	-0.00	0.82	0.00	0.59
DLOG(EBRESRBNOTES)	0.38	0.00	0.48	0.00	0.05	0.29	0.06	0.00
DLOG(EBRESGOLD)	NA	NA	NA	NA	NA	NA	0.14	0.48
DLOG(GDP)	0.69	0.11	0.88	0.14	0.44	0.27		
DLOG(CPI)	-0.08	0.81	0.05	0.92	-0.79	0.01		
R-sq.	0.45		0.55		0.40		0.03	
Ad.R-sq.	0.42		0.51		0.32		0.03	

Sources: Edvinsson, Jakobsson & Waldenström (2011), Krantz & Schön (2007), Ögren (2006)

An important feature of the Swedish system with Private note issuing banks was that the notes circulated at par value, thus there was no discount on the market between different Private bank notes or between Private bank notes and the Bank of Sweden notes. This goes in line with the argument that the Private Bank notes were not currency but endogenous bank money based on Bank of Sweden notes. Studies of money transfers in Sweden during the nineteenth century has showed that all kinds of accepted means of payments were circulating at par, that includes private merchants IOUs, assignments, Private bank notes, postal bank bills on different banks, Bank of Sweden notes and so on.²⁰ Thus all these different kinds of means of payments were endogenous money anchored by the Bank of Sweden, just as was the case with Private bank deposits.

Private bank notes and monetary policy

The following question is to what extent the note issuance conducted by the Private banks served to discipline the monetary policy of the Bank of Sweden. If so, this would be consistent with the idea that the Bank of Sweden had to adapt its monetary issue to the Private banks. To test this I have to construct a measure on monetary discipline. To do so I have followed Officer's definition used in his seminal work on the US monetary

²⁰ Engdahl, T. & Ögren, A. (2008)

arithmetic; i.e. the ratio of the monetary base to the stock of specie (MBASE/SPECIE) as measure of monetary discipline.²¹ The more the monetary base is allowed to expand relative to the stock of specie, the less strict the specie standard. The specie stock used for the purpose of measuring Sweden's monetary discipline should be the sum of the specie holdings acceptable for use as reserves by the Bank of Sweden.

An alternative perspective on monetary discipline results from focusing on the operations of the central bank. It can be argued that specie holdings more are a measure of how well the Country followed the rules of the specie standard than of how well the specie standard was protected.²² It was more efficient for smaller countries to hold reserves in the form of foreign government bonds that could be bought and sold on international markets, or to hold deposits in foreign banks (most notably in London) to draw on when needed. In reality few international transactions were settled with specie and the holders of Swedish currency were seldom interested in exchanging it for gold or silver. Thus, holders of Swedish currency were not interested in exchanging it for specie. The measure of monetary discipline in this case should be the monetary base in relation to the Bank of Sweden reserves officially acknowledged as reserves. I therefore also look at to what extent the Bank of Sweden utilized its legal right to issue base money (MBASE/LEGRIGHT).

The problem with this measure is that the definition of what constitutes legal reserves changes over time. Thus this measure may be more prone to capture what is the perception of risk and prudence through the legal view. As a consequence I use both measures.

Table 3: Monetary Pyramid Ratios Mean Values

	MBASE/SPECIE incl EB Gold	MBASE/SPECIE	MBASE/LEGRIGHT
Specie std 1834 – 1913	2.39	2.69	0.83
Silver std 1834-1873	2.51	2.51	0.81
Gold Std 1874 – 1913	2.28	2.88	0.85
Private bank notes 1834 – 1900	2.34	2.70	0.83

Sources: : Ekonomisk Tidskrift 1899-1933, Davidsson, D. (1931) pp. 205, 211, Officer, L.H. (2002), Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

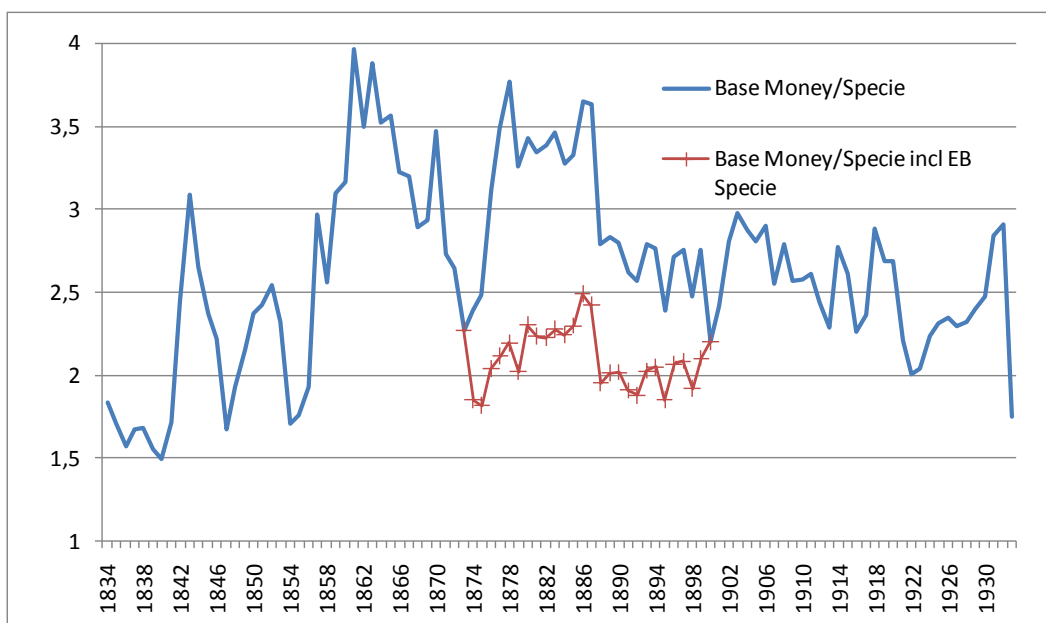
²¹ Officer, L.H. (2002) pp. 136-137

²² The fact that the Bank of Sweden 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 Private banks held specie in their reserves. But the measure of monetary discipline focusing on specie will conclude otherwise.

The measures concerning the monetary discipline of the Bank of Sweden does not reveal any period to be significantly different from any other. It is also interesting to compare with the measure for US as calculated by Officer, where the US held a ratio of 2.17 during the gold standard – that is considerably lower than in the Swedish case. It should be noted, however, that the discipline shows quite different figures if the gold holdings of the private banks that were forced through by law in the period 1874 – 1900 are included as specie reserves. But since the question is what made the Bank of Sweden discipline its monetary issuance it is not evident to include the gold holdings of the Private banks in this study.

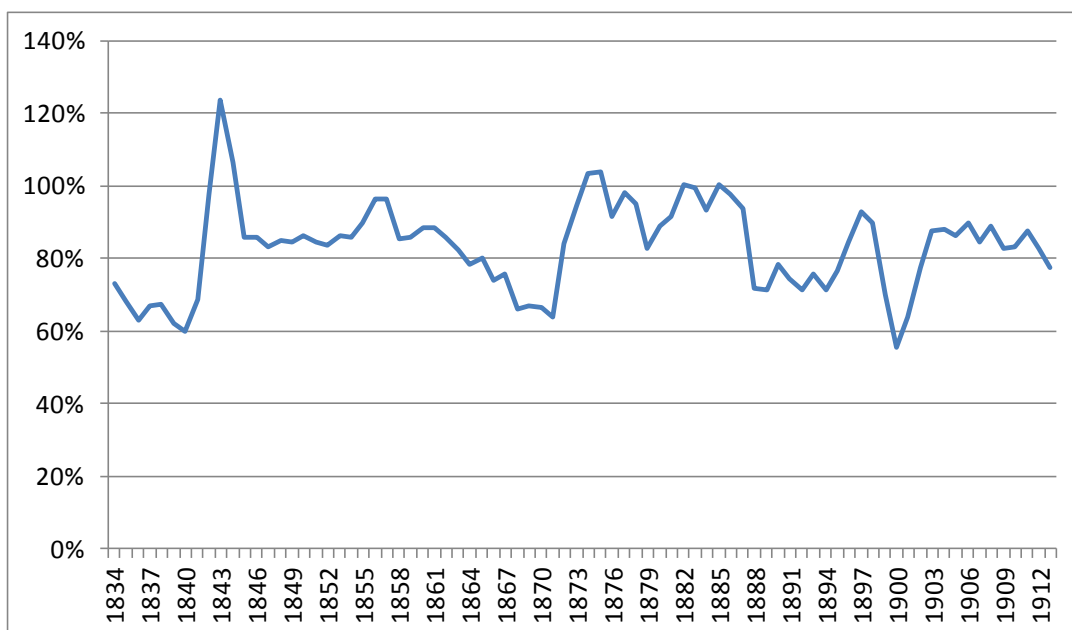
The fact is that monetary discipline varied quite significant within each period. Figures 2 and 3 below shows how the monetary discipline varied over time both in relation to pure specie reserves and to total right to issue base money. This tells us that the monetary discipline was less affected by the reigning monetary regime than it was by the present economical circumstances (provided the fact that the whole period constitutes a period of fixed exchange rates).

Figure 2: Annual monetary pyramid ratios, 1834 – 1933



Sources: : Ekonomisk Tidskrift 1899-1933, Davidsson, D. (1931) pp. 205, 211, Sammandrag af Bankernas Uppgifter 1874-1900, Sveriges Riksbank (1931) pp. 18-31, 54-71

Figure 3: Issued monetary base in percentage of total issuance right, 1834 - 1913



Source: see figure 2 above

Since it is possible to construct series on monetary discipline it is also possible to test to what extent increased Private bank note issuance and/or other variables systematically affected monetary policy expressed as monetary discipline. I have therefore made tests with the three different measures as dependent variables. As independent variables I have chosen Private bank notes (PBNOTES) as these were viewed as destabilizing the Bank of Sweden's monetary policy and thus should be of concern for the bank of Sweden monetary policy wise, GDP as it is reasonable to assume that monetary policy may be affected by the economic performance, State debt (STATEDEBT) as increased debt should make the Bank of Sweden more concerned about the situation, exchange rate in £ Sterling (PST) as a representative for the impact of movements among foreign currencies as policy target and finally consumer price index (CPI) which is included as a measure of the domestic economic trend.

Table 3: OLS-regressions for determining monetary pyramiding ratios (Monetary Base/Specie), 1834 – 1905

71 obs.	Eq. 1		Eq. 2		Eq. 3		Eq. 4		Eq. 5	
Variable	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
C	0.01	0.46	0.01	0.43	0.01	0.38	0.01	0.56	0.01	0.64
DLOG(CPI)	-0.37	0.28	-0.37	0.26	-0.37	0.26	-0.34	0.29		
DLOG(PBNOTES)	-0.09	0.11	-0.09*	0.10	-0.09*	0.10	-0.09*	0.09	-0.10*	0.06
DLOG(GDP)	0.04	0.92	0.04	0.93						
DLOG(PST)	2.72***	0.04	2.63***	0.02	2.63***	0.02	2.49***	0.03	2.13**	0.05
DLOG(STATEDEBT)	-0.11	0.39	-0.11	0.38	-0.11	0.37				
DLOG(MB2SP(-1))	0.00	0.98								
R2	0.13		0.13		0.13		0.12		0.10	
Adj R2	0.04		0.06		0.08		0.08		0.08	

* 10%, **5% and *** 1% significance level

The result of the regression shows that private bank notes were negatively correlated to the monetary pyramiding ratio. This can be interpreted as the private bank note issuance disciplined Bank of Sweden's monetary policy. However the Bank of Sweden benefitted from the Private banks' note issuance as a larger part of its share of note issuance were used as reserves to cover for private bank notes in circulation and consequently it relieved the bank of Sweden from having to issue notes to circulate as liquidity. What the regression shows is that the single most important variable for monetary discipline was foreign exchange rate, represented by the £ Sterling exchange rate. This means that the bank of Sweden kept close attention to foreign exchange rates, and less to domestic variables, when conducting its monetary policy; or in other words that the monetary policy was indeed an exchange rate policy.

The ending of the Private bank note issuance

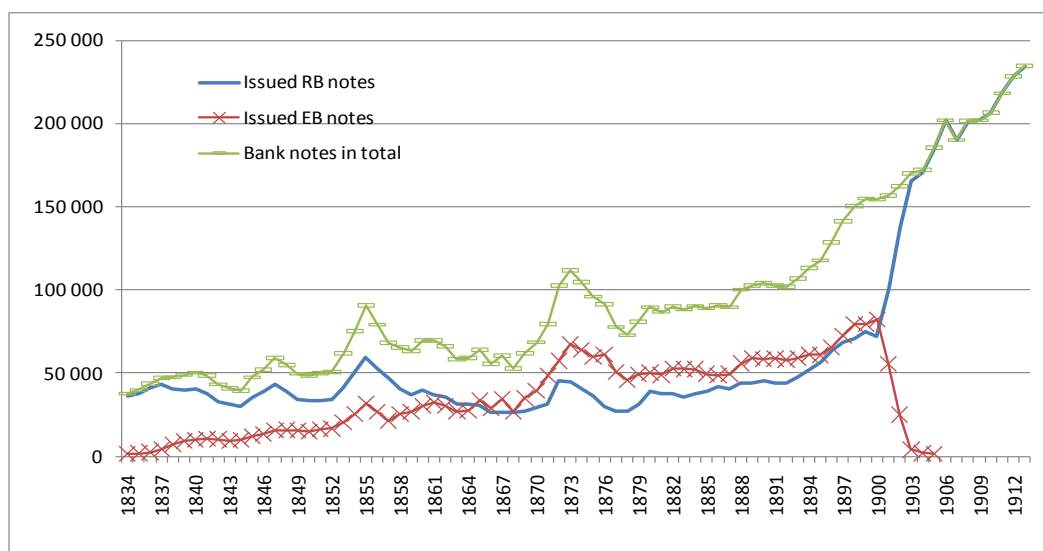
The Bank of Sweden response

The response by Bank of Sweden to the decision to end the Private banks' note issuance was a direct result of the view that Bank of Sweden notes and Private bank notes both were currency, i.e. had the same monetary role. Bank of Sweden acted on the believed effect the withdrawal of Private bank notes would have on the demand for liquidity and in extension on economic activity. A big inquiry was launched as to what extent the manufacturer of the Bank of Sweden notes, *Tumba bruk*, could manage to print notes for the bBnk of Sweden to the extent that was needed to replace the private bank notes

in circulation. The amount of Private bank notes circulating in different denominations were estimated with the outspoken need for the Bank of Sweden to fill this feared gap of liquidity in notes on a one-to-one basis.²³

As a result of the ending of the commercial banks note issuance the Bank of Sweden increased its note issuance rapidly (see Figure 5 below). During the years 1900 to 1906 the Bank of Sweden almost tripled the amount of base money driven by the idea that it needed to replace the private bank notes as liquidity. This increase in base money was a main reason behind the expansion of the commercial banking system until the outbreak of WWI. The 1907 crisis led to a temporary halt but after the supply of base money continued to increase.

Figure 5: Notes issued by commercial banks and the Bank of Sweden, 1834-1913 (1000's SEK)



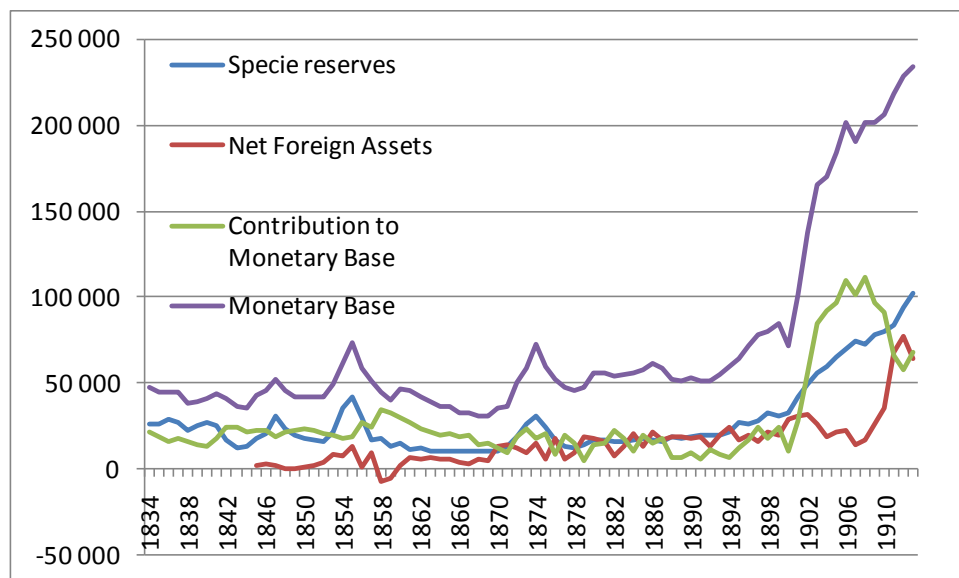
Sources: Ögren, A. (2003) *Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185*

Given the gold standard the Bank of Sweden was limited in its ability to create base money, or at least should have been. By looking at the different components of the base money issued by the bank of Sweden we can see how they chose to fund this increase in base money issuance. As seen in figure 6 below from 1900 until 1907 the Bank of Sweden increased its contribution to the monetary base without increasing reserves to cover for them. In addition to this the Bank of Sweden from the year 1900 also filled up its specie reserves, a policy which continued until WWI. We also see a sharp increase in

²³ RbProt 1897 July 22 §11 pp 487-495

the Bank of Sweden's net foreign assets from 1907 until 1911 and when this falls again this is met by an increase in the Bank of Sweden's contribution to monetary base.

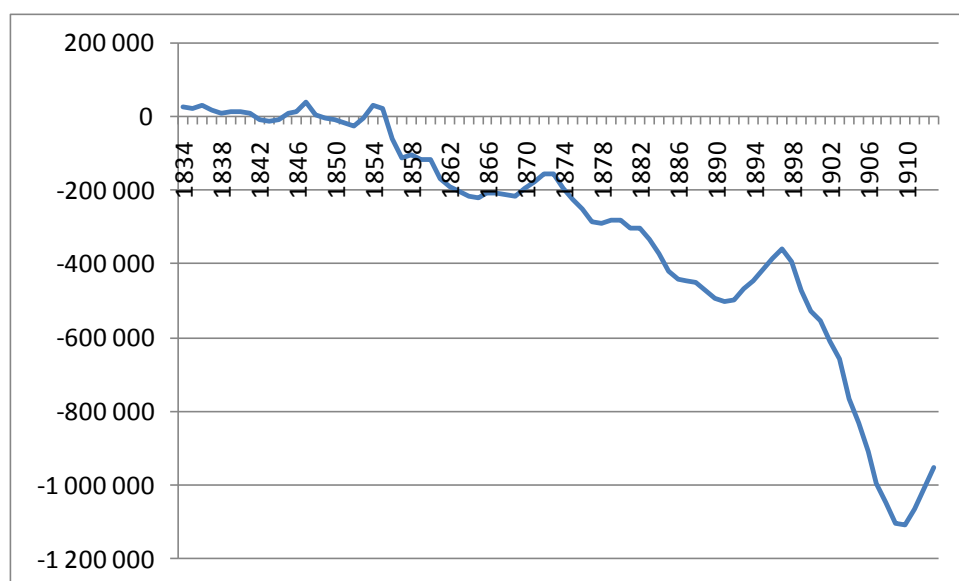
Figure 6: Components of the Bank of Sweden's Base Money, 1834 – 1913 (1000s SEK)



Sources: Ögren, A. (2003), Sveriges Riksbank (1931)

As we see a steady increase in Bank of Sweden's specie reserves and a sharp increase in the net foreign assets an issue related to the Bank of Sweden's policy to increase the base money supply is how this development was funded. In figure 7 below we see that foreign debt rose with a remarkable speed from year 1898 – thus the increase in specie reserves and net foreign assets were results of the increased foreign debt and not funded by positive current account balances. The policy to increase base money issuance by almost 250 percent from 1900 until 1913 was paid by a massive increase in unbacked liabilities of Bank of Sweden coupled with a large increase in foreign debt.

Figure 7: Sweden's net foreign assets, 1834 – 1913. (1000s SEK)



Sources: Based on calculations from Schön, L. (1999) Ögren, A. (2012)

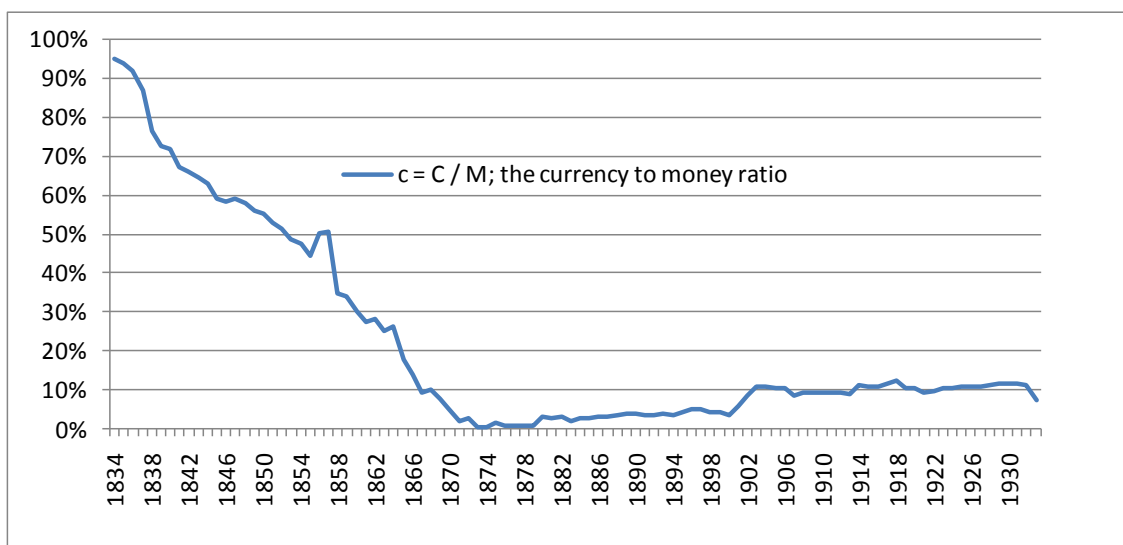
Base money and the banking system

To first sort out the effects of the increased issuance of base money by the Bank of Sweden as a result of the enactment of the law of 1897 I use the Friedman identity of the money supply and its different components. I adjusted the equations to fit with the specificity of the Private bank notes, as they were inside money created by the banking system they are defined as issued deposits and not as currency; thus they are not part of the public's holding of currency but of public deposits. Base money, notes issued by the Bank of Sweden, could either be held as reserves or be held by the public as liquidity whereas the private bank notes could not be held as reserves and thus could not increase the money supply through the money multiplier any more than public deposits could.²⁴

An increase in Bank of Sweden notes that served to increase public holding of liquidity should lead to an increase in the currency to money ratio. As seen in figure 4 below the currency to money ratio did increase – but not to the extent needed to sterilize the effects of the increase of Bank of Sweden's issuance of base money (currency)

²⁴ See also Jonung, L. (1975) pp. 13, 29, 208-215. Jonung did not discuss the problem of how to characterize the Private bank notes, as part of the public's preference for holding money or part of the public's deposits in the banking system. He included Private 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).

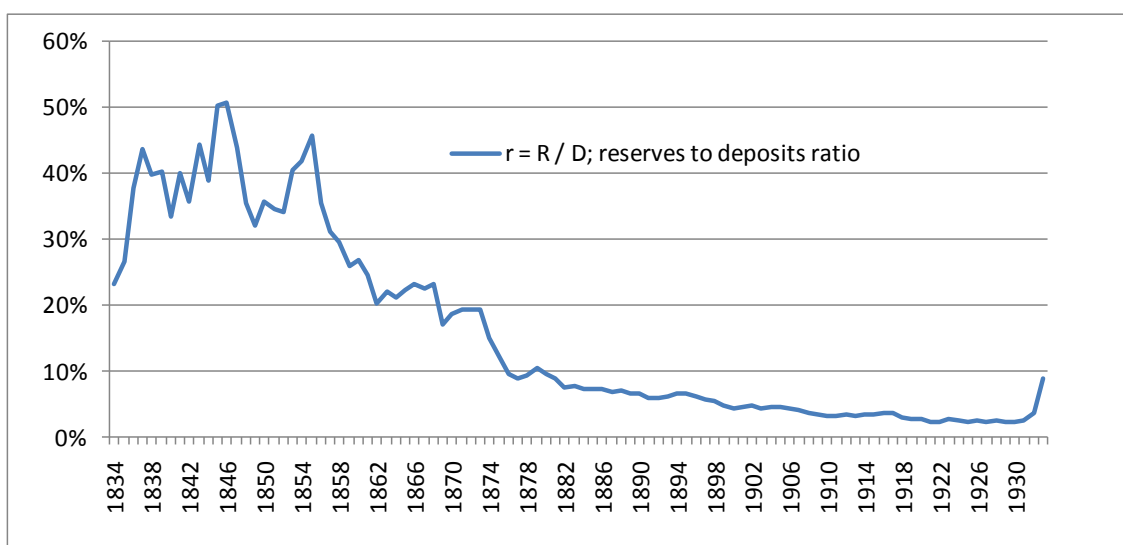
Figure 8: The currency to money ratio, 1834-1933



Sources: Ekonomisk Tidskrift 1899-1933, Ögren, A. (2003) Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185

Another way the banking system could have dealt with the extended supply of base money would have been to increase reserve ratios. This did not happen, on the contrary commercial banks reserve ratios continued to decrease (see figure 9 below). And thus the fact that most of the base money issued by the Bank of Sweden was not circulating as liquidity meant that it was deposited at banks, and that the commercial banks then in their turn used these deposits to fund their lending instead of consolidating their reserves.

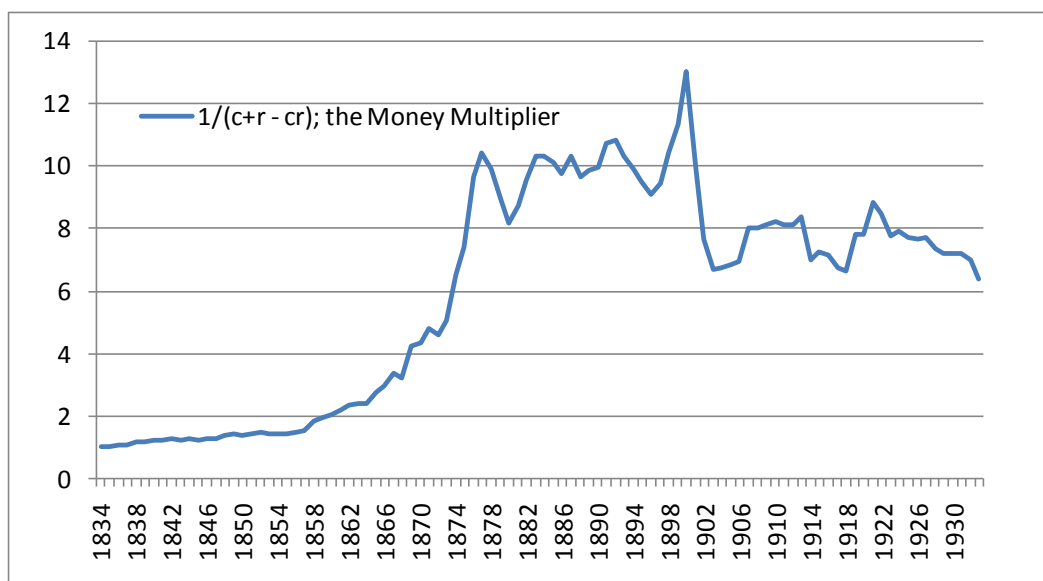
Figure 9: The Reserves to Deposits ratio, 1834-1933



Sources: Ekonomisk Tidskrift 1899-1933, Ögren, A. (2003) Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185

So even though some of the base money issued by the Bank of Sweden actually did end up as liquidity, the commercial banking system did not alter its behavior. Risk assessments and views on prudent reserves stayed the same. This would be the explanation why the money multiplier (see figure 10 below) only partly adjusted after the ending of the commercial bank note issuance.

Figure 10: The money multiplier, 1834-1933



Sources: Ekonomisk Tidskrift 1899-1933, Ögren, A. (2003) Post & Inrikes tidning 1835-1871, Sammandrag af Bankernas Uppgifter, 1871 – 1911, Sveriges Riksbank (1931) pp. 172-185

In extension the limited drop in the money multiplier around the turn of the century would explain why public liabilities, lending and bank assets all could explode the way they did between the years 1900 and 1913. Just as the increase in banking activities seems to have coincided with the large issuance of base money the drop in the banking expansion seems to have coincided with the rapid fall in base money issuance by the Bank of Sweden between 1918 and 1919 (see figures 1 and 4). As seen in table 5 below OLS regressions support the importance of the supply of base money for the expansion of the banking system.

Table 5: OLS-regressions with public liabilities, lending, reserves and bank assets as dependent variables, 1834 – 1933

	Eq. 1 dlog(liabilities)	Eq. 2 dlog(lending)	Eq. 3 dlog(reserves)	Eq. 4 dlog(bankassets)
C	0.116	0.104	0.022	0.096
Prob.	0.179	0.160	0.879	0.197
DLOG(BASEMONEY(-1))	0.348***	0.412***	0.294*	0.345***
Prob.	0.002	0.000	0.099	0.003
DLOG(GDPCP)	0.163	0.142	0.528	0.063
Prob.	0.609	0.606	0.316	0.819
REGREGIMEI (1834 – 1843)	-0.004	0.004	0.077	0.018
Prob.	0.9656	0.961	0.600	0.814
REGREGIMEII (1865 – 1896)	-0.052	-0.035	-0.005	-0.030
Prob.	0.550	0.640	0.975	0.685
REGREGIMEIII (1897 – 1910)	-0.096	-0.075	-0.046	-0.069
Prob.	0.296	0.342	0.761	0.384
REGREGIMEIV (1911 – 1933)	-0.097	-0.100	0.036	-0.079
Prob.	0.270	0.185	0.804	0.301
R-squared	0.158	0.249	0.070	0.198
Adj. R-squared	0.103	0.200	0.008	0.145

* 10%, **5% and *** 1% significance level

The immediate conclusion is that the sudden increase in the supply of base money in relation to first the ending of the Private banks' note issuance was not insulated by the banking system. Instead it served to increase the money supply and the amount of bank credit many times over – serving the boom before and during WWI, but also the fall in the aftermath that came to be expressed in the severe financial crisis of 1920-21.

Conclusions

Bank notes can have different functions and in the case of nineteenth century Sweden the private bank notes served to meet liquidity demand – whereas Bank of Sweden notes were base money serving as reserves in the commercial banking system. However in the monetary discourse the two were viewed as having the same functions.

The Bank of Sweden may have expressed concern for the Private bank note issuance but in reality the business of the private note issuing banks was well under control of the Bank as their reserves were directly affected by Bank of Sweden's alterations of the base money supply. The Private bank notes relieved the Bank of Sweden from having to provide more base money to be circulating as liquidity. The actual concern for the Bank of Sweden monetary policy wise was external, monetary policy was a matter of

exchange rate policy as fluctuations in exchange rates was the most determining factor for monetary policy.

The focus on notes as destabilizing and dangerous (in the discourse more so than demand deposits) made policy makers work against private bank note issuance even though it was not a source of instability. When the private bank note issuance eventually was abolished, the Bank of Sweden took immediate action to increase its note issuance to cover for the believed lack of liquidity the missing private bank notes would lead to. During a few years Bank of Sweden almost tripled its note issuance. But as the Bank of Sweden notes were base money they ended up as reserves in the commercial banks instead of serving to uphold liquidity, feeding the economy with further credit through the banking system as the commercial banks did not alter their behavior. The result besides the rapid increase in bank credit was an increased foreign debt and a higher degree of unbacked central bank liabilities.

References

- Bankkomitén (1883) *Bankkomiténs betänkande I. Bankkomiténs underdåniga förslag till förändrad organisation af bankanstalterna*. Norstedts. Stockholm, Sweden. [Special Committee on Banking – Proposed Changes in Bank Organization]
- BaU – Bankoutskottet 6:e Samlingen 1823 – 1898 [Standing Committee on Banking]
- Beck, T., Coyle, D., Dewatripont, D., Freixas, X., and Seabright, P. (2010) *Bailing out the Banks: Reconciling Stability and Competition An analysis of state-supported schemes for financial institutions* CEPR
- BeU – Bevillningsutskottet 5:e Samlingen 1823 – 1898 [Standing Committee on Ways and Means]
- Brisman, S. (1924) *Sveriges Affärsbanker. Grundläggningstiden*. Svenska Bankföreningen. Norstedts. Stockholm, Sweden
- Brisman, S. (1931) Den stora reformperioden 1860-1904. in *Sveriges riksbank 1668-1918-1924. Bankens tillkomst och verksamhet*. Part IV. Norstedts Stockholm.
- Brisman, S. (1934) *Sveriges affärsbanker. Utvecklingstiden*. Svenska bankföreningen. Norstedts. Stockholm, Sweden.
- Broberg, O. (2010) “Incorporation and Financial Modernization” in Ögren, A. (Ed.) *The Swedish Financial Revolution* Palgrave Macmillan
- Broberg, O. and Ögren, A. (2008) “Making money, creating credit: Swedish commercial banking and lending against shares, 1870 – 1938” Unpublished paper presented at the European Business History Association Conference in Bergen, August 21-23
- Coval, J., Jurek, J., and Stafford, E. (2009) “The Economics of Structured Finance” *Journal of Economic Perspectives* **23:1** Pages 3–25

- Ekonomisk Tidskrift 1924 – 1933 (Volumes 27 – 35)
- Finanskommittén 1858 Riksarkivet – ÄK No 496 Vol. 1 – 4 [Swedish National Archive – the Temporary Committee on Finance 1858]
- Flux, A.W. (1910) *The Swedish Banking System*. National Monetary Commission. Washington, USA
- Gasslander, O. (1956) *Bank och industriellt genombrott - Stockholms enskilda bank kring sekelskiftet 1900* Part I. Esselte Stockholm 1956.
- Hildebrand, K-G. (1971) *I omvandlingens tjänst. Svenska Handelsbanken 1871-1955*. Stockholm.
- Jonung, L. (1984) “Swedish experience under the Classical Gold Standard 1873-1913” in Bordo M.D. and Schwartz, A. (eds.) *The Classical Gold Standard in Retrospective* University of Chicago Press/National Bureau of Economic research 1984.
- Jonung, L. (1989) “The Economics of Private Money. Private Bank Notes in Sweden 1831-1902.” Unpublished Research Report Stockholm School of Economics
- Keynes, J.M. (1936) [2007]. *The General Theory of Employment, Interest and Money*. London: Macmillan
- KFO – Kunglig Förordning 14/1 1824. *Angående inrättandet av enskilda Banker eller Diskonter*. [Royal Decree concerning the establishment of private banks or Discount companies. January 14, 1824]
- KFO 1855 – Kunglig Förordning 10/11 1855. *Om vissa ändringar och tillägg vid Kongl. Kungörelsen den 9 Januari 1846, angående Enskilda Banker som Utgifva egna Kreditsedlar*.
- Kindleberger, C. P. (2005) *Manias, Panics, and Crashes: A History of Financial Crises* (5th Edition) Palgrave Macmillan
- KKS – Kunglig Konselj Skrift 15/8 1842 (tryckt). *Om Banker*. Skrift, meddelad i Conseljen. [About Banks. Royal Print for the Cabinet Meeting August 15, 1842]
- Kprop – Kungliga Propositioner 1:a Samlingen 1823 – 1898 [Royal Propositions]
- Krantz, O. and Schön, L. (2007) *Swedish Historical National Accounts 1800-2000*, Lund
- KU – Konstitutionsutskottet 3:e Samlingen 1823 – 1898 [Standing Committee on the Constitution]
- Larsson, M. (2010) “The State and the Financial System – Regulation and Regime Change around 1900” in Ögren, A. (Ed.) *The Swedish Financial Revolution* Palgrave Macmillan
- Lilja, K. (2010) “The Deposit Market Revolution in Sweden” in Ögren, A. (Ed.) *The Swedish Financial Revolution* Palgrave Macmillan
- Montgomery, A. (1934) “Riksdagen och Riksbanken efter 1809” in *Sveriges Riksdag, senare avdelningen*. Part XIII. Stockholm, Sweden.

- MotAK – Andra Kammaren Motioner 1:a Samlingen 2:a Avdelningen 1866 – 1898 [Proposals of the Second Chamber, Part 2, Vol. 2]
- MotFK – Första Kammaren Motioner 1:a Samlingen 2:a Avdelningen 1866 – 1898 [Proposals of the First Chamber, Part 2, Vol. 1]
- Nilsson, G.B. (1981) *Banker i brytningstid. AO Wallenberg i svensk bankpolitik 1850-1856*. EHF. Stockholm School of Economics. Stockholm, Sweden.
- Officer, L.H. (2002) “The U.S. Specie Standard, 1792–1932: Some monetarist arithmetic.” *Explorations in Economic History* **39**, Pages 113–153
- Ögren, A. (2006) “Free or Central Banking? Liquidity and Financial Deepening in Sweden, 1834 – 1913.” *Explorations in Economic History* **43:1** Pages 64-93
- Ögren, A. (2009) “Financial revolution and economic modernisation in Sweden” *Financial History Review* **16:1** Pages 47 – 71
- Ögren, A. (2012) “Central Banking and Monetary Policy under the Long Nineteenth Century” in Ögren, A. & Øksendal, L-F. (Eds.) *The Gold Standard Peripheries. Monetary Policy, Adjustment and Flexibility in a Global Setting* Palgrave Macmillan, London
- Post & Inrikes Tidning 1835-1871 [Official Swedish Gazette]
- PrAd – Ridderskapets och Adelns 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]
- PrP – Presteståndets Protokoll 1823 – 1865 [Minutes of the Clergy]
- RbProt – Riksbankens protokoll 1834 – 1900 [Minutes of the Board of the Bank of Sweden]
- RdSkr – Riksdagens Underdåniga Skrifvelser 10:e Samlingen 1823 – 1898 [Parliamentary Resolutions]
- Rousseau, P.L. & Sylla, R. (2003) “Financial systems, economic growth and globalization” in Bordo, M.D., Taylor, A.M. and Williamson, J.G. (Eds.) *Globalization in Historical Perspective*. University of Chicago Press.
- Rousseau, P.L. & Sylla, R. (2005) “Emerging financial markets and early US growth” *Explorations in Economic History*, Vol. **42** pp 1-26
- Rousseau, P. L. & Wachtel, P. (1998) “Financial Intermediation and Economic Performance: Historical Evidence from Five Industrialized Countries” *Journal of Money, Credit and Banking* **30**, pp. 657-678
- Sammandrag af Bankernas Uppgifter 1871-1911 [Summary of Bank Reports]
- Schuler, K. (1992) “The world history of free banking” in Dowd, K. (Ed.) *The experience of free banking*. Routledge. London,UK

- Schön, L. (1994) *Omvandling och obalans - Mönster i svensk ekonomisk utveckling. Bilaga 3 till LU 1994*, SOU 1995:4 Bilaga 3. Norstedts Stockholm 1994.
- Selgin, G.A. (1988) *The Theory of Free Banking. Money Supply under Competitive Note Issue*. Rowman & Littlefield. USA
- Selgin, G. A. & White, L. H. (1994) "How Would the Invisible Hand Handle Money?" *Journal of Economic Literature* **32**, pp. 1718-1749
- SFS [Swedish Code of Statues]: 1846:1, 1861:34, 1864:31, 1874:44
- Simonsson, K.G. (1931) "Riksbanken som centralbank 1904-1924" in *Sveriges riksbank 1668-1918-1924. Bankens tillkomst och verksamhet*. Part IV. Norstedts Stockholm.
- Skogman, C.D. (1846:1) *Anteckningar om Rikets Ständers Bank och allmänna lånerörelsen i Sverge. Sednare delen. I. Ifrån och med år 1809 till och med år 1833*. Hjerta. Stockholm, Sweden.
- Skogman, C.D. (1846:2) *Anteckningar om Rikets Ständers Bank och allmänna lånerörelsen i Sverge. Sednare delen. II. Ifrån och med år 1834 till och med år 1845*. Hjerta. Stockholm, Sweden.
- Smith, A. (1776) [1976] *An Inquiry into the Nature and Causes of The Wealth of Nations* The University of Chicago Press, Chicago
- Söderlund, E. (1964) *Skandinaviska banken 1864 – 1914*. Esselte. Stockholm, Sweden
- StU – Statsutskottet 4:e Samlingen 1823 – 1900 [Standing Committee on Supply]
- Sveriges Riksbank (1931), "Statistiska tabeller" [Statistical tables] in *Sveriges Riksbank 1668-1924. Bankens tillkomst och verksamhet*. Part V. Norstedts. Stockholm, Sweden.
- Wachtel, P. (2001) "Growth and Finance: What Do We Know and How Do We Know It?" *International Finance* **4**, pp. 335-362
- White, E.N. (2009) "Lessons From The History of Bank Examination and Supervision in the United States, 1863-2008" in Gigliobianco, A. and Toniolo, G. (Eds.) *Financial Market Regulation in the Wake of Financial Crises: The Historical Experience* Bank of Italy
- White, L.H., (1984) *Free Banking in Britain. Theory, Experience, and Debate, 1800–1845*. Cambridge University Press, USA
- White, L.H., (1985) "Free banking and the gold standard" In: Rockwell, L. (Ed.), *The Gold Standard—An Austrian Perspective*. Lexington Books, Toronto, Canada.
- White, L.H., 1989. "Free banking as an alternative monetary system" In: White, L.H. (Ed.), *Competition and Currency. Essays on Free Banking and Money*. New York University Press, New York, USA.