

# Competition Necessarily Tends to Produce Excess: The Experience of Free Banking in Switzerland

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**Abstract.** According to McCulloch, Longfield and Loyd, a free banking system is always prone to overissues of bank notes. Their view is supported by the free banking era in Switzerland (1826–1907), where, due to competitive pressures within the banking community and the absence of note-brand loyalty on the part of the general public, overissues (causing a rise in the foreign exchange rates above the upper gold and silver points) finally became permanent. Free competition, therefore, had to give way to collusive action and, in 1907 (with the open consent of the issuing banks), to the establishment of the Swiss National Bank.

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**Keywords:** Free banking; overissues of private bank notes.

## 1. INTRODUCTION

Recent case studies of free banking have mainly concentrated on the antebellum United States and Scotland, whereas the free banking era in Switzerland (1826–1907), though well documented and of the utmost importance, has been almost completely neglected. The Swiss experience, however, may be extremely helpful in clarifying some of the central issues of the so-called ‘free-banking question’ (cf. Friedman and Schwartz, 1986, p. 41), and it may also put a curb on the enthusiasm of the still growing number of academic economists, who argue in favor of monetary deregulation and the revival of *laissez-faire* banking.

Using the depressed state of the Swiss franc on the foreign exchange markets in and after 1885 as a starting point, this article specifically explores the widely discussed possibility of an overissue of bank notes under conditions of free entry, convertibility and competition. After briefly reviewing the theoretical arguments of the free banking school and its early opponents, it

presents empirical evidence which indicates that in industrially advanced economies a system of free banking may indeed be liable to excessive note issues which, due to competitive pressures within the banking community, might even become permanent. In the Swiss case, therefore, free competition finally had to give way to collusive action and government intervention.

## **2. CONVERTIBILITY, ADVERSE CLEARINGS AND NOTE-BRAND LOYALTY**

Free banking is usually defined as an unregulated banking system which allows for the free issue of bank notes redeemable on demand into specie or into an irredeemable government paper money, whose total amount is fixed by law or subject to some kind of growth rule. The controversy about the viability of such a system so far has concentrated on the possibility of an overissue of bank notes. Yet, those who believe that monetary and banking arrangements should rather be left to the market have always maintained that under free banking conditions overissues will not occur, because individual banks, as well as the banking community as a whole, will always be disciplined by the convertibility of their notes and the eventuality of adverse clearings (Dowd, 1993, p. 14).

The role of convertibility has already been thoroughly discussed in 1776 by Adam Smith. According to him, a bank issuing paper money 'over and above what the circulation can easily absorb and employ' will soon have to suffer a serious loss of reserves, because the unwanted notes will return upon it 'for payment ... almost as fast as they are issued' (Smith, 1937, pp. 285–286). The effect of the clearing mechanism as a control on the overissue of notes, on the other hand, was attested for the first time by the witnesses of the 1826 Parliamentary Committee on Promissory Notes in Scotland and Ireland. On that occasion, Blair, a representative of a major Scottish bank of issue, for instance, declared that he thought it 'impossible that there should be an over issue of our notes under the system of note exchanges which exists at present' (cf. Munn, 1975, pp. 59–60).

As has been repeatedly stressed by the modern free banking school, these checks against overissues presuppose the existence of note discrimination on the part of the general public. Note discrimination, as Selgin (1994, p. 1450) puts it, implies that 'consumers favour particular brands of notes ... by retaining them as part of their asset portfolios, spending or depositing unwanted notes'. Yet, his assertion that this kind of behavior is 'consistent with historical free banking experience' (ibid.), does not wholly comply with the facts. As may be demonstrated in the Swiss case, the evolutionary process driven by market forces will eventually lead to a complete disappearance of note-brand discrimination as free banking systems become more mature, thus undermining one of the essential prerequisites for the maintenance of monetary stability.

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Already in the first half of the nineteenth century, McCulloch (1831) and Longfield (1840) had demonstrated that, in the absence of note-brand loyalty (and thus in the absence of note discrimination), an effective check against overissues no longer exists. For non-discrimination implies that in the case of a bank note supply exceeding demand, the public would present any notes for payment to the banks that first come to hand, not asking at all which particular bank was responsible for the overissue and which one was not. Under these conditions the non-expanding conservative issuers will also be affected by the reflux of notes, and due to the law of large numbers the individual share of each issuer in the total reflux will now correspond to his respective market share. McCulloch and Longfield have shown that the convertibility constraint then almost ceases to be binding and that adverse clearing balances as a consequence of an overexpansion no longer occur. Non-discrimination would thus create a profit incentive especially for smaller banks to issue more notes than the public is willing to hold, since they would be able to pass on most of the detrimental effects of their destabilizing behavior (i.e. the reserve losses caused by the ensuing reflux of notes) to their larger competitors (cf. also Selgin, 1988, p. 45). In the absence of note discrimination, therefore, many (if not all) banks will be tempted to appropriate, at the expense of their rivals, a larger part of the whole note circulation to themselves. Such efforts, according to Loyd (1858, pp. 98–99), will not only

lead each party to meet an expansion of issue on the part of others by a corresponding expansion on his own part; but it will also lead him to look upon contraction in any quarter as a favourable opportunity ... for expanding his own issues, ... in the hope of possessing himself of the ground from which his rival has receded.

Overissues of bank notes thus may become a permanent threat to the stability of any free banking system.

### **3. THE DEPRECIATION OF THE SWISS FRANC AND THE ROLE OF THE ISSUING BANKS**

The term 'overissue' refers to a situation in which the total supply of bank notes exceeds demand at a domestic price level corresponding to its long-term equilibrium value. Bank note supply and bank note demand, however, cannot be measured separately. Overissues, therefore, have to be traced by using different criteria. The one most in use has long since been the state of the foreign exchanges. Already in 1832, Norman pointed in this direction: 'I should describe the currency as being full when the exchanges were at par, or rather on the point of becoming unfavourable' (cf. Mints, 1945, p. 84).

Almost 70 years later, Mägis, then at the head of one of the Swiss banks of issue, expressed a similar view (cf. Gygax, 1901, p. 83):

Where then, is the saturation point? This limit cannot be expressed in amounts or in proportions. Nevertheless, there exists a criterion: that is the parity of our currency. The paramount task of discount policy is to regulate the circulation of bank notes in such a way, that this boundary line will not be transgressed permanently.

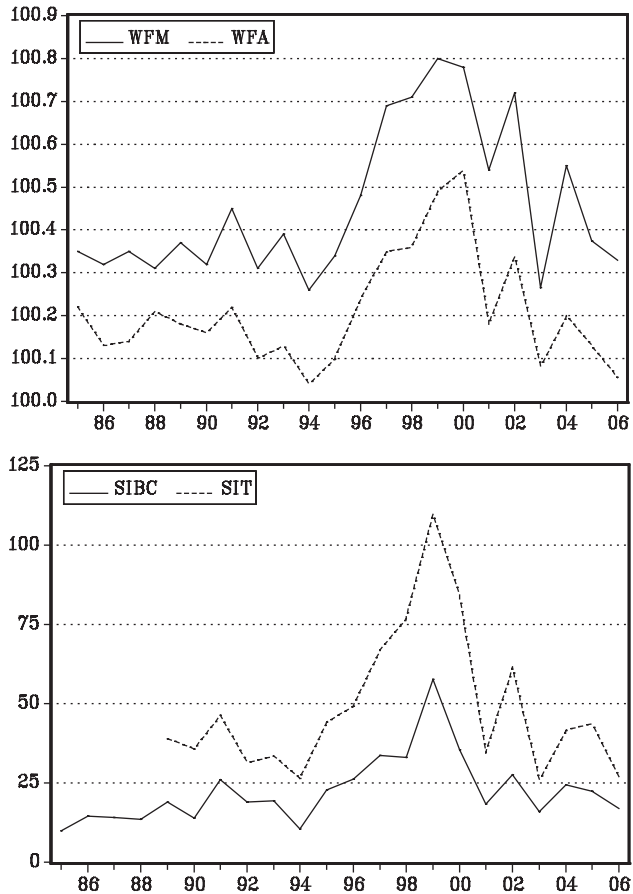
Judged by the Swiss franc–French franc exchange rate, there must have occurred considerable overissues of bank notes in Switzerland at least since the mid-1880s. Since the country then was a member of the Latin Monetary Union and hence (like France) had accepted a bimetallic standard, the movements of this particular rate were in theory confined by two upper limits: the upper gold and the upper silver point. Of these two, the latter was by far the more important. First, there was a widespread belief that Switzerland would soon adopt a pure gold standard. The issuing banks, therefore, were unwilling to part with their gold reserves and thus had decided to redeem their notes almost exclusively in five-franc pieces consisting of silver, which – according to the rules of the Latin Union – possessed a legal tender status also in France. Second, the Swiss banks were also often prevented from paying out gold by the so-called gold premium policy of the Bank of France. As long as gold was sold at a premium in France, par redemption of Swiss bank notes in gold coins or bullion would have created profitable arbitrage opportunities between the two countries, and the issuing banks would thus sooner or later have lost most, if not all, of their gold reserves. Note holders who wanted to acquire gold, therefore, had to buy it against silver coins at a premium in France (Ernst, 1903, p. 805) or turn to the domestic free market.

In the 1880s the silver export point *vis-à-vis* France is said to have varied around 100.20 Swiss francs for 100 French francs (Blaum, 1908, p. 162; Ernst, 1903, p. 795; Nüscheler, 1912, p. 81). Transport costs, even at that time, were extremely low (cf. the estimate given by Kalkmann, 1900, p. 21), because specie arbitrage transactions could always be effected between various places close to the common border which, like Pruntrut and Delle, were often situated only ‘two steps apart’ (Meyer, 1903, p. 251). The upper gold point, on the other hand, is usually given as 100.15 or 100.20 Swiss francs for 100 French francs (Ernst, 1903, p. 795). Yet, since the issuing banks usually refused to provide gold at par, we must look at the free gold market if we want to derive a ‘clean’ gold export point. Quite often gold was available on the domestic market only at prices above the official parity. The intrinsic premium was then either determined by the gold premium charged by the Bank of France (Weill, 1903, pp. 79–80) or by the current Swiss franc–French franc exchange rate (Gygax, 1901, p. 378). In the first case, the upper gold point was left formally unaffected. In the second case, it automatically moved

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ahead of the exchange rate and thus ceased to represent an effective boundary line. However, since silver could still be obtained at par, the level and the economic significance of the silver export point remained unchanged.

In 1885, the mean value of the average exchange rate, for the first time in Swiss history, exceeded the silver export point. As may be seen from Figure 1, the annual mean of the average exchange rate (*WFA*) again moved beyond



**Figure 1** Average and maximum rate of exchange of the Swiss franc *vis-à-vis* the French franc, Swiss imports of silver coins and imports of silver coins by the Banque du Commerce de Genève, annual data, 1885–1906

*Notes:* The exchange rate is measured as the Swiss franc price of 100 French francs, the silver imports are expressed in millions of Swiss francs. The silver (gold) points are 99.80 and 100.20 (99.85 and 100.15) respectively. *WFA* = average rate; *WFM* = maximum rate; *SIT* = total Swiss imports of silver coins; *SIBC* = imports of silver coins by the Banque du Commerce.

*Sources:* Debes (1909), Gyax (1907), Jöhr (1915) and Kalkmann (1900).

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100.20 in 1888, 1891, 1896–1900 and 1902, reaching its historic maximum of 100.54 in 1900. The annual maximum of the exchange rate (*WFM*), moreover, exceeded the silver export point during the whole period, rising to a record high of 100.80 in 1899. The rates against the German mark and the British pound followed a similar pattern (Ernst, 1903, pp. 795–796; cf. also Kalkmann, 1900, pp. 108–137), but owing to the circumstances then prevailing in Switzerland, the rate against the French franc was by far the most important (Blaum, 1908, p. 160; Debes, 1909, p. 70).

Contemporary observers, though, have often been quite reluctant to attribute the depreciation of the Swiss currency, the continuing violations of the gold and silver points, and the ensuing specie outflows exclusively to monetary causes and, therefore, have been hesitating to put all of the blame on the issuing banks. They also referred to (i) the existence of a persistent deficit in the Swiss balance of trade, mostly of a structural nature and partly aggravated by the introduction of protective tariffs in the neighboring states, and (ii) to the accumulation of a high foreign debt (especially *vis-à-vis* France; cf. the figures given by Geering, 1904, pp. 13 and 42) and extensive foreign investments in Swiss stock, causing substantial transfers of interest payments

**Table 1** Determinants of the exchange rate of the Swiss franc *vis-à-vis* the French franc; monthly data

	1885–99	1885–99	1885–92	1893–99	1885–99
Equation	1:1	1:2	1:3	1:4	1:5
Constant	99.504 (731.49)	100.386 (1,151.16)	100.209 (1,437.11)	100.628 (553.62)	100.154 (1,767.07)
$NZS_{-3}$	$0.381 \times 10^{-2}$ (5.15)	–	–	–	–
$NZST_{-3}$	–	–	–	–	$0.571 \times 10^{-2}$ (3.69)
<i>IBS</i>	–	–0.070 (4.30)	–0.038 (2.17)	–0.136 (4.57)	–
$IPF_{-1}$	0.074 (3.71)	0.081 (3.98)	0.067 (3.34)	0.158 (3.24)	0.065 (3.22)
$\bar{R}^2$	0.74	0.74	0.56	0.78	0.74
DW	1.55	1.65	1.64	1.75	1.62
$AR(1)$	0.745 (14.75)	0.892 (25.30)	0.726 (9.67)	0.902 (19.28)	0.822 (19.04)

Notes: *t*-statistics in parentheses.  $AR(1)$  is the estimated first-order serial correlation coefficient. Dependent variable is the Swiss franc price of 100 French francs;  $NZS$  = Swiss note circulation (in billions of Swiss francs);  $NZST$  = deviation of  $NZS$  from its secular trend (in billions of Swiss francs); *IBS* = 'official' short-term discount rate of the Swiss issuing banks (in per cent p.a.);  $IPF$  = private bank discount rate in Paris (in per cent p.a.). All time series are monthly averages of weekly data.

Sources: Kalkmann (1900) and *Bundesblatt* (1885–1900).

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and dividends from Switzerland into various foreign countries (Landmann, 1910, pp. 69–70; Meyer, 1903, pp. 220–227).

Whatever may have been the contribution of these last two factors, the fatal role played by the note issuing behavior and the discount policy of the banking sector was almost universally acknowledged. In 1897, for instance, the director of the Banque cantonale neuchâteloise, one of the leading issuing banks of that time, openly admitted that a ‘surplus of bank notes ... artificially kept in circulation’ had provoked a downward pressure on the domestic discount rates and that ‘the lowering of the discount rates ... has its equivalent in a rise of the exchange rate on Paris. It is in this way, by inflation of the note issue, that the specie is driven out of the country’ (cf. Gygax, 1901, p. 6).

The regression results presented in Table 1 strongly support this view. The five equations all represent variants of the so-called monetary or asset approach to the foreign exchange rate (Frankel, 1979, pp. 610 and 619) and have been estimated by ordinary least squares with Cochrane–Orcutt data transformation using monthly (seasonally unadjusted) observations for the period 1885–99, the remaining years having to be excluded because of the lack of a consistent data set. The dependent variable is always defined as the Swiss franc price of 100 French francs; the explanatory variables comprise the total amount of Swiss bank notes in circulation (*NZS*), the ‘official’ short-term discount rate of the Swiss issuing banks (*IBS*), and the private bank discount rate in Paris (*IPF*).

It is interesting to note that all of the coefficients reported carry the expected sign and that all of them are statistically significant, with only one exception even at the 1 per cent level. According to equations 1:1 and 1:2, an increase in the quantity of Swiss bank notes and a rise in the interest rate in Paris have generally been accompanied by a depreciation of the Swiss currency, whereas a rise in the Swiss discount rate has – other things remaining equal – usually been followed by a movement of the exchange rate in the opposite direction. As may be seen from equations 1:3 and 1:4, the effect of interest rate changes upon the exchange rate seems to have become even more pronounced (and more relevant) in the second half of the sample period, since the coefficients of *IBS* and *IPF* have now more than doubled in absolute value and  $R^2$  corrected for degrees of freedom has risen from 0.56 to 0.78.

Since *BSP* data are not available for the time period before 1900, a demand function for bank notes cannot be estimated separately. The series for *NZS*, though, display a marked upward trend which may be mainly due to a secular rise in the bank note demand on the part of the general public. In order to allow for that eventuality and to assess the possible bias involved, equation 1:1 has been re-estimated using the deviations of the total note circulation from its trend (*NZST*) instead of *NZS* as an explanatory variable. The resulting equation 1:5, however, does not materially differ from equation 1:1. The coefficient of *NZST* is again positive and highly significant, and the

coefficient of the interest variable and  $R^2$  adjusted for degrees of freedom remain almost unchanged.

#### **4. COMPETITIVE PRESSURES AS THE SOURCE OF MONETARY INSTABILITY**

The depreciation of the Swiss currency immediately led to sizable exports of specie and, as a consequence, to considerable redemptions of bank notes and a corresponding drain on the issuing banks' metallic reserves. Exact figures, however, cannot be given since the available statistics (e.g. Kalkmann, 1900, p. 186; Landmann, 1910, p. 78; Roeder, 1906, p. 56) are generally defective. Owing to a bad conscience, it was 'sought to keep the drainage concealed from official notice', so that 'by far the greater part of the exports' of specie escaped the observation of the customs officers who were supposed to record them (Landmann, 1910, p. 78 note). Contemporary writers, nevertheless, agree that the specie movements caused by the drain had at times reached 'phantastic dimensions' (Jöhr, 1915, p. 240), that silver money was exported to France 'in large amounts' (Blaum, 1908, p. 162) and that, by 1899, the specie drain had attained 'unbelievable proportions' (Meyer, 1903, p. 243). Between 1897 and 1899, the Banque du Commerce in Geneva, according to its annual reports, was forced to deliver a total of 132.4 million francs in silver money to the '*draineurs*', though its average note circulation had only risen slightly above 20 million francs during that period (cf. its *Rapports*, 1898–1900).

According to the theory of free banking, these specie exports should soon have brought about a recovery of the foreign exchange rates and at the same time induced the banks under pressure to raise their discount and loan rates, in order to lower their circulation and to replenish their diminished stock of specie reserves. Yet, neither of these consequences occurred. This was due to the fact that the Swiss population had eventually ceased to differentiate among bank notes according to their respective issuers. 'The public', we learn from Meyer (1903, p. 178), 'nowadays accepts all notes indiscriminately, without taking trouble to examine their origin'. Non-discrimination had gradually developed for various reasons: during the whole period of free banking, no note holder had ever lost a single franc, so that in the course of the years all Swiss bank notes could be equally regarded as being safe beyond doubt. In 1876, moreover, the majority of the issuing banks had come to an agreement to mutually accept and redeem their notes at par, and two years earlier, a group of major banks had even started to standardize the outward appearance of their paper issues by creating the so-called 'club note' ('*Vereinsnote*'; cf. Bleuler, 1911, p. 278).

In 1881, a new Federal Banking Law made compulsory what had already begun to become common practice. The law called for a uniform design of all bank notes of the same denomination, and each issuing bank was



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henceforward liable to accept foreign notes at par and (within three days' notice) to mediate their redemption, provided that the banks which had issued them were willing and able to settle any resulting negative clearing balances in specie promptly. However, since the various notes still carried the name and the signatures of their respective issuers, and since their redemption still was not collectively guaranteed, they were neither indistinguishable nor perfect substitutes on the supply side.

The general public, nevertheless, had decided to regard the different types of bank notes as perfect substitutes on the demand side. Hence, notes were not presented for redemption to those banks who had been discounting freely and thus caused (or at least contributed to) the rise in the foreign exchange rates, but for the most part to the three issuers with the greatest market shares, the Banque du Commerce de Genève, the Bank in Basle and the Zürcher Kantonalbank. At least two of these were conveniently located close to the French border, thus almost inviting the exporters of specie to satisfy the bulk of their needs at their counters. For the same reason, the Banque de Genève and the branch office of the Kantonalbank in Berne in Pruntrut later also became victims of the external drain.

The regional aspect, however, turned out to be less important than the complete disappearance of note-brand loyalty. Accordingly, the banks already under pressure were soon joined by a growing number of issuers situated further away from the French border in the more eastern part of the country (Debes, 1909, p. 76; *Rapport Banque du Commerce*, 1900, p. 6), and their respective specie losses were (in conformance with theoretical expectations) increasingly determined by individual market shares.

Faced with heavy competitive pressures, the specie losing banks decided not to curtail their lendings and reduce the amount of their notes in circulation, but to procure additional reserves by re-importing specie (mostly five-franc pieces consisting of silver) from France. Some of them even redeemed part of their notes by delivering bills of exchange payable in Paris at exchange rates more favorable than those of the market, hoping to prevent major exports of specie and in this way avoiding the (even more costly) re-importation of silver money from abroad. In both cases, however, they were forced to exchange Swiss francs for bank notes or bills of exchange payable in French francs, thus again driving up the exchange rate and setting a vicious cycle in motion, which eventually led to the foundation of the Swiss National Bank.

Figure 1 makes apparent that the total of Swiss imports of silver coins (*SIT*) has been highly correlated with the movements of the Swiss franc–French franc exchange rate. According to Jöhr (1915, p. 240), *SIT* may be safely regarded as being identical with the silver imports of the issuing banks, since due to the depressed state of the Swiss franc nobody should have felt inclined to settle his liabilities against Switzerland by using silver or gold coins.

In 1899, when the maximum annual exchange rate had risen to 100.80, the silver imports of the issuing banks reached their maximum and they

again declined as soon as the Swiss franc began to recover. Figure 1 also shows that the amount of silver coins imported by the Banque du Commerce in Geneva (*SIBC*) alone accounted for some 50 per cent of the total, though the discount and loan policy of this particular issuer had by no means been unduly expansive.

With regard to the main culprits, earlier writers have mostly pointed to those issuers, whose market shares had been rather low. Landmann (1910, p. 248), for instance, maintains that the

smaller banks ... had a pecuniary interest in keeping as many notes in circulation as possible; these notes then weighed heavily on the market, depressing the private discount rate and driving cash out of the country, thereby also exercising an influence ... on the rates of exchange ...

Gygax (1905, p. 184), in a similar statement, also refers to the group of the smaller banks in general, whereas Kalkmann (1900, p. 32) more specifically draws our attention to some petty issuers in Estavayer, Weinfelden and Lichtensteig, who 'don't care at all if the big banks in Geneva, Basle, Berne, or Zurich lose specie for exportation'.

The specie-losing banks, however, had been exposed to heavy pressures from still another side, for they also had to endure the ridiculous competition ('*Spottkonkurrenz*') of the non-issuing credit banks (Mangold, 1909, p. 239). In their effort to protect and enlarge their share in the loan market, the credit banks often undercut the discount rates of their note-issuing rivals, thus forcing them to pursue a less restrictive course, in order not to be thrown out of business (Gygax, 1901, p. 197).

Yet, even in the absence of those rather aggressive competitive actions, the specie-losing banks would have been more or less helpless (Kalkmann, 1900, p. 60): they had to fear that a rise in their discount rates would only bring about considerable losses of market shares, because their less affected rivals would not have followed their example but instead continued to discount cheaply. The external drain, therefore, would not have abated, and they would still have been obliged to provide the non-banking public with the necessary amounts of specie.

Faced with the alternative to reduce the volume of their business or to sacrifice part of their earnings for the re-importation of specie, the majority of them decided to follow the latter course. Those who were not ready to submit to these pressures, sooner or later had to retire. Thus, in March 1898, the Kantonalbank in Berne finally closed its profit-consuming branch in Pruntrut, after having furnished it more than once with major amounts of specie (2.3 million francs in 1896, and another 5 million francs in 1898; cf. Leuenberger, 1912, p. 101); and in April 1899 the Banque de Genève gave up its note business altogether, since even substantial reductions in its circulation had not been successful in stopping the continuous drain on its reserves (Jöhr, 1915, p. 241).

## 5. A CLOSER LOOK AT THE EMPIRICAL EVIDENCE

The unequal distribution of specie losses, the absence of a close connection between the circulation of the various issuing banks and the amounts of notes presented to them for redemption, and the continuous fight for market shares between the specie-losing banks and their rivals, will become more apparent, if we take a more detailed look at the available statistical evidence.

For the years 1890–1904, annual time series for the total of Swiss imports of silver coins and for the silver imports of the three banks most affected, i.e. the Banque du Commerce, the Zürcher Kantonalbank and the Bank in Basle, may be obtained from a relatively broad variety of contemporary sources. Table 2 shows that the individual import shares have always considerably exceeded the respective market shares which, for their part, have been generally declining over the period taken as a whole.

There are, however, reasons to believe that the figures given for the import shares of the last subperiod, may be slightly biased upwards. At least after the turn of the century, the specie imports of the issuing banks have also comprised considerable imports of gold (cf. *Bericht*, 1904–07), which in their annual statistical reports have not been separated from their imports of silver coins. In order to get an idea about the magnitude of the error involved, cost shares are also given for the third subperiod. These can be found in the bottom row of Table 2. They have been defined as the individual shares in the total expenditures for specie imports and for the prevention of specie exports, and thus may be directly compared to the corresponding import shares. Though the differences between the two lines suggest that the specie imports of the Zürcher Kantonalbank and the Bank in Basle, between 1900 and 1904, must have also included a large amount of gold coins, it is of particular

**Table 2** Imports of silver coins and market shares

	Imports of silver coins (in per cent of total imports of silver coins)			Mean value of annual market shares (amounts of notes issued in per cent of total note circulation)		
	Banque du Commerce	Zürcher Kantonalbank	Bank in Basle	Banque du Commerce	Zürcher Kantonalbank	Bank in Basle
1890–94	51.23	16.63	18.56	11.60	12.39	10.55
1895–99	49.88	23.27	16.99	10.88	11.86	11.34
1900–04	49.27	21.41	26.04	10.08	11.68	10.03
1900–04	48.25	15.67	16.96			

*Note:* The time series for the silver imports of the Bank in Basle have been constructed by dividing its expenditures for specie imports by the respective unit costs of the Zürcher Kantonalbank.

*Sources:* Debes (1909), Jöhr (1915), Kalkmann (1900), Mangold (1909), Nüscheler (1912) and *Statistisches Jahrbuch* (1891–1910).

importance to note that the cost shares, too, always exceeded the respective market shares.

For the year 1900, cost figures for a much broader range of issuers may be obtained. In Table 3, all those banks are listed whose share in the total outlays for specie imports and the prevention of specie exports has amounted to at least 1 per cent. Except for the Banque du Commerce, the Zürcher Kantonalbank and the Bank in Basle, none of these shares has been greater than its corresponding market share. Yet, eight banks with a combined share in the market of about 60 per cent had to bear more than 90 per cent of the aggregated expenditures, whereas the remaining 27 issuers had been able to limit their cost share to less than 10 per cent, though they had provided more than 40 per cent of the total quantity of bank notes in circulation.

With regard to the competitive process between the issuing banks themselves, the figures reported in the last column of Table 3 seem to corroborate the views expressed by Landmann, Gygax and Kalkmann: at least in the year 1900, relatively high expenditure shares have coincided with relatively high market shares and negative rates of change of the note circulation, while a large group of rather small banks had to bear only a negligible expenditure share though it had expanded its circulation by almost 7 per cent. The majority of the issuing banks, thus obviously had been ready to follow a more or less expansive discount and loan policy, while their troubled rivals had to suffer most of the consequences.

**Table 3** Expenditures for specie imports and for the prevention of specie exports, market shares and rates of change of note circulation, 1900

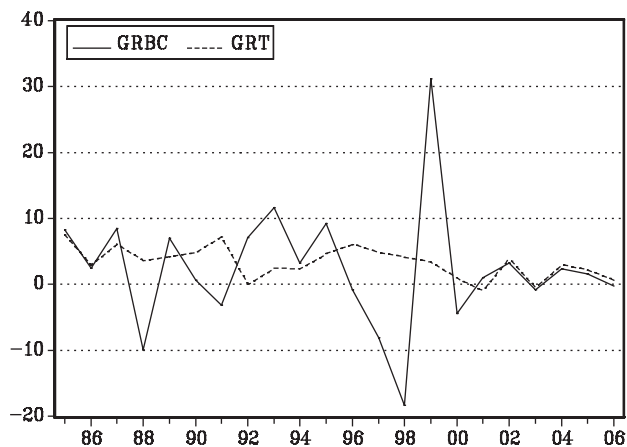
Issuer	Expenditures for specie imports and for the prevention of specie exports (in per cent of total expenditures)	Market share (amount of notes issued in per cent of total circulation)	Rate of change of note circulation
Banque du Commerce	43.20	9.98	- 4.38
Zürcher Kantonalbank	16.71	10.76	- 5.30
Bank in Basle	15.05	10.16	- 2.51
Kantonalbank von Bern	6.01	8.12	- 3.16
Banque cantonale vaudoise	3.48	4.88	- 1.88
Banque commerciale neuchâteloise	2.89	3.61	- 0.79
Bank in St. Gallen	2.39	8.10	- 1.20
Solothurner Kantonalbank	1.03	2.26	- 0.55
27 remaining issuers	9.24	42.13	+ 6.95
Total	100.00	100.00	+ 0.93

Sources: Gygax (1901), Nüscherer (1912) and *Statistisches Jahrbuch* (1910).

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If we look at the period covered by Table 2 as a whole, however, the statistical evidence points in a somewhat different direction. Only six of the 34 issuing banks already existing in 1890 were able to permanently increase their market shares by more than 1 percentage point, the most successful being the Bank in St. Gallen, whose share in the total circulation rose from 5.4 per cent in 1889 to 7.4 per cent in 1904. Moreover, only four of those banks may really be regarded as having been 'small', among them the Thurgauische Kantonalbank in Weinfelden already mentioned by Kalkmann. Most of the competitive pressure came from a steadily growing number of newcomers, especially from the Basler Kantonalbank which in its fifth year of operation already provided 4 per cent of the total circulation. On the other hand, not all of the specie-losing banks had to suffer sustained reductions in their market shares. Only the two geographically most exposed issuers, the Banque du Commerce and the Banque de Genève, had been seriously affected, the former having lost about 2 percentage points over the period 1890–1904, while the latter gave up its note business altogether.

Contrary to Selgin's (1988, p. 45) assertion that in the absence of note-brand loyalty the 'best strategy' of the larger banks 'would be to stand pat while their smaller rivals whittle away their circulation', the larger Swiss banks obviously had fought back. This fact may be illustrated by Figure 2, which shows the path of the annual rate of change of the total note circulation (*GRT*), and the path of the annual rate of change of the note circulation of the Banque du Commerce in Geneva (*GRBC*). The strong fluctuations of *GRBC* suggest that the larger banks were not only ready to



**Figure 2** The fight for market shares: rate of change of total note circulation and rate of change of the note circulation of the Banque du Commerce de Genève, annual data, 1885–1906

*Note:* *GRT* = rate of change of total note circulation; *GRBC* = rate of change of the note circulation of the Banque du Commerce.

contract their issues when they had been under heavy pressures from specie demands caused by expansive actions on the part of their rivals, but that they also tried to make good their previous losses as soon as the competitive pressures abated. In 1899, the Banque du Commerce even raised its circulation by more than 30 per cent, after having suffered a reduction of its market share from 12.9 per cent in 1895 to 8.3 per cent in 1898. The issuing behavior of its fellow sufferers, the Bank in Basle and the Zürcher Kantonalbank, displays a similar pattern.

Except for the Banque de Genève, none of the participants in this struggle was ready to yield. In accordance with the predictions of McCulloch, Longfield and Loyd, the general overissue of bank notes, the depressed state of the Swiss currency, and the useless specie flows back and forth across the Swiss border, therefore, continued. In order to cope with this crisis, free competition in the note-issuing industry finally had to give way to collusive action and government intervention.

## 6. SUSTAINED OVERISSUES WITHOUT SUSPENSION

In a setting where there are no checks on competition and where, due to an evolutionary process driven by market incentives, bank notes are finally treated as perfect substitutes on the demand side, the outcome of a money-issuing game should be a 'full' collapse of the currency, i.e. a suspension of convertibility. The fact that in the Swiss case convertibility could nevertheless be maintained, may be explained by several reasons.

First, as has been demonstrated in a seminal paper by Tobin (1963), there exists at any moment a natural economic limit to the scale of the commercial banking industry. The aggregate demand for bank notes (and deposits) can increase only if the yields of other assets fall, and the fall in these yields is bound to restrict the profitable lending and investment opportunities available to the banks themselves.

Second, not all specie arbitrage opportunities were fully exploited. For patriotic reasons, non-issuing commercial banks and most of the major trade firms who had to settle financial obligations denominated in French francs deliberately refrained from extracting specie from the issuing banks, even if it was profitable for them to do so (*Rapport Banque du Commerce*, 1899, p. 7; Esslinger, 1907, p. 166).

In addition, the issuing banks had in several ways tried to effectively internalize the externalities of note issues by collective action. In their effort 'to protect the specie reserves of the country' (cf. Gyax, 1901, p. 192), the majority of the issuers in 1893 decided to follow a common interest rate policy by regularly fixing a uniform 'official' discount rate. This first step, though, soon proved to be inadequate. In 1894, therefore, the participating banks also agreed upon a uniform minimum for the so-called private discount rate. In 1898, this '*Convenium*' (or cartel) once more became effective, since

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the 'ongoing depreciation of the currency' (Gygax, 1901, p. 205) again called for common action. Because of the 'permanent deterioration of the foreign exchange rate' (ibid., p. 79), moreover, the issuing banks agreed to reduce their circulation in concert from now on if necessary, after (upon a proposal of the Banque du Commerce) they had already consented to redistribute part of the expenditures for specie imports and the prevention of specie exports between them.

Finally, specie (i.e. base money) was at all times obtainable in almost any amount from France, because the Bank of France was ready to act as a *de facto* lender of last resort also for Switzerland (cf. Gygax, 1907, pp. 328–329, for the technical details).

### 7. 'THE SWISS HOME IS ON FIRE'

Though the coordinated actions of the issuing banks brought some relief, the basic difficulties remained, which soon gave rise to a steady growing public concern: businessmen as well as government officials and representatives of the issuing banks expressed their growing dissatisfaction with the prevailing conditions on the foreign exchange market and the monetary arrangements which, as they saw it, had caused them. In a rather pathetic statement, Geering, then a member of the Chamber of Commerce in Basle, even declared that 'the Swiss home is on fire' and that everybody really loving the country should vote for the immediate abandonment of free banking and the establishment of a monopolistic central bank (cf. *Protokoll*, 1900, p. 46). Other statements emanating from the business sector were less dramatic, but already in 1890, the Swiss Union of Trade and Industry, in one of its reports, referred to the 'extraordinary intensive and persistent increase in the exchange rate *vis-à-vis* France' which 'did not fail to raise anxieties within the Swiss business community' (Gygax, 1901, p. 16). In later years, 'especially those entrepreneurs dealing with France' often complained about 'the premium which has to be paid to the banks when purchasing French paper', that is, when they had to buy bills of exchange payable at sight in Paris (ibid., p. 243).

Compared with the price fluctuations on the foreign exchange markets since the abandonment of the Bretton Woods system, the movements of the Swiss franc–French franc exchange rate before and immediately after the turn of the century (and their possible effects upon prices, profitability and foreign trade) might, nevertheless, look rather harmless. Yet, the permanent transgressions of the gold and silver points constituted a serious threat to the stability of the banking sector and the maintenance of the metallic standard as such, as may be seen from a statement by Ernst who, at that time, occupied a leading position within the Swiss Department of Finance. The issuing banks, he wrote, 'will fail to perform the Danaidean labor of continually replenishing their specie reserves and thereby be driven to the verge

of insolvency, or the country will move towards suspension' (Ernst, 1903, p. 812). Out of a similar feeling, the Banque de Genève, in its *Rapport* for the year 1897 (p. 14), had already clearly predicted the coming major institutional changes: 'The question of the bank note circulation and the foreign exchange rates will certainly tip the balance in favor of a central bank of issue'.

Since the problem was basically one of internalizing the externalities of uncoordinated action, one may wonder why the issuing banks had not been successful in finding a solution that would have completely avoided further government intervention. However, the cartel (or bankers' club) formed for that purpose, soon proved to be relatively unstable. The commonly agreed 'official' discount and private rates, for instance, were often undercut by some of its members, and several issuers in the course of the years had even left the accord, arguing that applying the rates set by the cartel would sooner or later deprive them of most of their more profitable customer relationships. Inside and outside the cartel it therefore soon became obvious that 'it is extremely difficult to induce thirty issuing banks to march in the same direction' (cf. *Protokoll*, 1900, p. 24).

In 1907, the newly formed Swiss National Bank finally opened its counters, after a commission of experts appointed by the Financial Department of the Swiss central government had unanimously voted for the monopolization of the note issue, arguing that 'the task of regulating the country's note circulation can only be fully accomplished in a proper way by a strong central bank' (*Protokoll*, 1900, p. 63). Curiously enough, the majority of the commission members had been representatives of the issuing banks. The statement that 'central banks have ... been established unilaterally by governments, without the express consent and often in the face of express disapproval by the banking community' (Selgin and White, 1994, p. 1733), thus is contradictory at least to the course of events in Switzerland.

## 8. SUMMARY AND OUTLOOK

From the Swiss free banking experience, we may conclude that in more or less highly developed industrial societies with solvent banks and advanced communication techniques facilitating the shipment of notes and the distribution of information, the notes of different issuers will soon be treated as perfect substitutes on the demand side. Under these circumstances, competitive pressures emanating predominantly from newcomers and undersized banks will eventually cause a general overissue of bank notes, manifesting itself in a deterioration of the foreign exchange rates and a massive outflow of specie, which weighs heavily in particular on the larger banks. The Swiss example, therefore, indicates that contrary to the expectation of Parnell (1827, p. 35) 'the competition of rival banks' should not be regarded as 'the great check over abuses in issuing paper money'. Instead, the empirical evidence rather supports the well-known verdict of



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Loyd (1858, p. 115) that in the field of money and banking 'competition ... necessarily tends to produce excess'.

A system of free banking, thus, may always be liable to market failures. In the case of Switzerland, the ensuing problems finally led to the self-surrender of the issuing banks and their unanimous approval to the establishment of a central bank under the control of the federal government. To Longfield, this course of events would not have been a great surprise. For he had already predicted more than 60 years earlier that only a monopolistic central bank can, 'without much danger or difficulty, regulate the currency and preserve the par of exchange with foreign countries free from any serious fluctuations, yet several banks of issue, acting in competition with each other, have by no means equal power' (Longfield, 1840, p. 218).

### APPENDIX

There remains, however, the question to what extent the Swiss experience is a special or rather a common phenomenon. In order to answer this question, it may be helpful to take a closer look at the allegedly highly successful (cf. Dowd, 1993, p. 217) free banking episodes in Scotland (1716–1844), Sweden (1831–1903) and Canada (1867–1914).

In any case, before 1765, Scotland (during the period of the so-called small note mania) had been faced with similar problems like those in Switzerland. There had been overissues of bank notes generally in denominations of less than one pound, caused mainly by newly formed banks small in size, a rising exchange rate *vis-à-vis* London, redemptions of bank notes mostly at the expense of the non-expanding larger issuers in Edinburgh and Glasgow, and re-imports of gold by the specie-losing banks which kept the exchange rate from falling. Since the majority of the overissuing small banks did not suffer reserve losses and thus remained unimpaired, this unstable situation continued until a new law had fixed the minimum denomination of bank notes at one pound. Most of the new banks then had to give up their business, which in turn led to a decrease in the total supply of bank notes and a fall in the exchange rate, so that the gold outflows and the gold re-imports finally came to an end (Graham, 1911, p. 92).

In the case of Sweden, according to Eli F. Heckscher (1926, p. 3),

... the position of the gold points was not precisely known; at the beginning of the 1890s the upper gold point amounted to 18.27 against the Pound Sterling ..., to 89.29 against the Reichsmark ..., whereas for later periods considerably lower figures are given (i.e., 18.23 and 89.22 respectively). Yet, if we look at the actual quotations of the Riksbank, it becomes obvious that the rates of exchange have often surpassed even the higher estimates of the gold points.

The maximum rate against the British pound rose above 18.27 in 1882, 1885, 1899 and 1900 (*Sveriges Riksbank*, 1931, pp. 154–157). The maximum rate

against the Reichsmark moved beyond 89.29 during five months in 1885, and again in 1887, 1890, 1891, 1899 and 1900 (*Berliner Börsen-Courir*, 1885–1900). The available evidence, therefore, seems to suggest that also in Sweden temporary overissues of bank notes must have occurred, though their consequences have been far less dramatic than in the case of Switzerland. At least, there are no references to complaints about high and undeserved reserve losses by individual banks or about the necessity of re-importing gold bullion or specie, and in the discussions preceding the creation of a Swedish central bank the issuing behavior of the private banks has not even been mentioned.

In Canada, exchange rate problems have been completely unknown. Especially, the rate against the US dollar has always remained within the boundaries set by the gold points, indicating that during the whole period in question no more notes had been issued than the non-banking sector was willing to hold. In contrast to Switzerland, however, price competition between Canadian banks (which might have produced an excess) had been totally lacking. Or, as Johnson (1910, p. 87) had put it: 'Apparently there are only two things which the banks do not like to do in order to attract business – lower the discount rate, or advance the rate paid on depositors' balances'.

Thus, the Swiss experience obviously does not represent a singular phenomenon: in order to avoid similar problems, Scotland had to take recourse to a drastic legislative intervention (£1 in 1765 was equivalent to £68 in 1994), and as the various violations of the upper gold points indicate, temporary overissues of bank notes must have also been common in Sweden. Even the free banking experience in Canada may not be regarded as proof of the contrary. For in this case, the absence of overissues has mainly been due to the fact that the Canadian banks (other than their colleagues in Switzerland) had voluntarily abstained from potentially destabilizing competitive actions.

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