

Chapter 10

The *rentenmark* miracle and the German stabilization

10.1) Introduction

The German inflation, though by no means the biggest ever¹, was hailed by Lionel Robbins as "the most colossal thing of its kind in history"²; and at least as judged by the incredibly vast amount of research devoted to the episode, the very same applies to the end of the German inflation. The German stabilization is one of the most challenging and most discussed episodes of this sort. It is often referred to as a "miracle"³, which is somewhat indicative that the episode has not yet been fully understood, especially as far as the nature and workings of the monetary experiment represented by the *rentenmark* is concerned. This chapter attempts to offer a modest addition in this regard.

Previous chapters have provided important pieces of the German stabilization puzzle. The advancement of indexation and dollarization was discussed in Chapter 6. The nature of the fundamental external "imbalances" involved, namely the payment of reparations, the difficulties posed by the decisive commitment of the German labor movement in recovering the pre-war levels of real wages, and the solution for the problem provided by the Dawes Plan were examined in Chapter 3. Finally, Chapters 4 and 7 provided a case against inflationary finance as a determinant of the hyperinflation and also against the notion of fiscal "reforms" as the key to stabilization. Like in the other cases the missing step is the process by which the exchange rate was fixed, and especially how this could be accomplished much before the solution of the fundamental "imbalance" was even visible.

There are all sorts of myths and misunderstandings about the German stabilization, some related to fiscal policy - that we hope to have dismissed in Chapter 7 - but most of which referring to the role played by the *rentenmark* experiment. Indeed, no adequate explanation has ever been offered for the German public to accept the *rentenmark* as a "stable-valued" currency in November of 1923. Traditionally this alleged "miracle" is associated to a limit imposed on the total *rentenmark* issue which would force the

¹ In terms of monthly inflation rates at the peak, the German inflation ranks 3th behind the Hungarian and the Greek episodes of 1944, cf. P. Cagan (1956) p. 26.

² C. Bresciani-Turroni "The Economics of Inflation: a study of currency depreciation in post-war Germany" (London, 1937) p. 5.

³ ³ The term has been used by many authors, for example G. Stolper "The German Economy, 1870-1940, Issues and Trends" (New York, 1940) p.164 and C. Bresciani-Turroni, The Economics of Inflation, p. 336.

government to live "within its own means"; this would characterize what has been called a "regime change"⁴. It is not often observed, however, that such limit was not binding as the *rentenmark* had a fixed exchange rate with the ordinary Reichsbank notes that were neither demonetized nor subject to any limit by the reform. An explanation for this old enigma is therefore very clearly lacking.

This chapter will attempt to provide this explanation, along with some indispensable elements for a comprehensive explanation for the German stabilization. The basis for this explanation is to be found in the extraordinary advancement of indexation, its further degeneration into a process of "dollarization", and on the monetary innovations generated during the hyperinflation period. These developments are reviewed in the next two sections, which also offer a detailed account of the experience with the "stable-valued" monies and their possible bearing to the inflationary explosion observed after June of 1923. With the stage thus set, section 10.4 discusses more specifically the mechanism that made the *rentenmark* a "stable" currency", and also the process by which its introduction permitted the pegging of the exchange rate. Section 10.5 examines the existing views on the *rentenmark* mechanism and its role to the German stabilization. The next section discusses mostly the problem of sustaining the exchange rate fixed during the few months before the reparations issue was given a solution by the Dawes Plan. Quite like in the other cases, real wages quickly regained pre-war levels after the stabilization, thus determining a sharp deterioration in competitiveness and an equally sharp increase in the current account deficit.

10.2) The "stable valued" monies

It is commonly observed that high inflations destroy the store of value function of the national money, but it is less often observed that the unit of account function is also weakened, as the monetary unit becomes inappropriate for reckoning real values. The systematic publication of prices indexes transforms the way the national money performs

⁴Especially T. Sargent "The Ends of Four Big Inflations" in R. Hall(ed.) "Inflation, Its Causes and Effects" (Chicago, 1982) p. 83 and K. L. Holtfrerich "Germany and Other European Countries in the 1920s" in J. Williamson (ed.) "Inflation and Indexation: Argentina, Brazil, and Israel" (Washington, 1985) p. 134.

the unit of account function, as payments start to be reckoned in terms of the index, and no longer in terms of the standard monetary unit. With the dissemination of the practice of stipulating prices, wages and payments according to one standard - dollars, Swiss francs or some price index - but the actual payments being made with the depreciated national money, what basically happens is that indexation is performing a monetary function.

That indexation involved the "principle of the dissociation of the two functions of money, as a standard of value and as a medium of exchange", as observed by a contemporary report on wage indexation⁵, was the key to the monetary innovations introduced during the hyperinflations. Price indexes and "imaginary currencies" like the Polish Zloty in 1923 or the pre-war metallic units, worked like "money of accounts" for they were "money" only to the extent that they performed the unit of account function . The Polish Zloty was introduced during the summer of 1923 to be used in the assessment of taxes wherever they involved valuations and was generally adopted as an unit of account.

It is interesting to observe that notes could be issued corresponding to these "monies" (zloty notes, for example) and in this circumstance the problem would become one of securing value for these notes. As "promises to pay" they could be backed 100%, or up to an acceptable cover ratio, by gold. But nothing necessarily implies that these "promises" or "debts" should be redeemable in gold; it is the very principle of fiduciary currencies that the truly important aspect of these "debts" is that they should be repaid in purchasing power over goods and services independently of the "convertibility" aspect or of the means of payment with which the "debt" is "repaid". Even if the "debt" is not repaid or redeemable in gold the "promise to pay" might be sound so long as the same purchasing power implied by full convertibility is surrendered at redemption; it might even be the case of the redemption be made using paper currency. That means basically that an indexed debt is as good as a debt repayable using the good whose price is taken as the index. That implies, for instance, that, if the real exchange rate is constant, indexed bonds should have constant gold prices. If these bonds, for some reason assume monetary properties, such as to serve as means of payment, these indexed monies should have a constant exchange rate

⁵ ILO (1925) p. 74.

⁶ The Polish zloty was introduced in mid 1923 but was only fully "monetized", in the sense of having Zloty notes issued, in 1924.

with gold.

These were the basic principles on which, for instance, the Hungarian *sparkrone*, or the "thrift crown", introduced in February of 1924 was based. Like the zloty, the *sparkrone* was also a "money of account" but it would also be used for the assessment of taxes (also with insignificant effects) and most importantly accounts in *sparkrone* could be opened in the Hungarian Note Institute . The experiment lasted very little and no indication could be found that more ambitious schemes of monetary reform were under consideration. The negotiations with the League were very advanced at this point so that it appeared that the idea was to relieve some of the pressure on the exchanges until the floatation of the reconstruction loan by offering an alternative to foreign currencies. The scheme worked fairly well while it lasted, which stimulated Hungarians to repeat the experiment in 1946 during their second hyperinflation .

It would be in Germany, though, that monetary experimentation would advance towards real innovation. Several types of private and semi-official issues of money could be observed during the hyperinflation. In 1922 a private rye *rentes* bank (*Roggenrentebank*) was founded; it issued its first bill of exchange denominated in pounds of rye in December of 1922 . In the beginning of 1923 several public bodies - cities, states and public utilities' companies - started to issue loans denominated in commodities such as rye, coal, and others as shown in Table 10-1, but priced and serviced in marks according to the current commodity prices .

Table 10-1
Germany: Material values loans, 1922-1923
(as quoted in the Frankfurt Gazzette at August 12th 1923)

Number	Issuing body	Commodity	Total dollar value	Subscription date
1	Roggenrentenbank	rye		
	series I		400.000	Dec.30th,1922
	series II		400.000	Feb.5th
	series IIIa		400.000	April 25th

⁷ L. L. Ecker-Rácz (1933b) p. 472.

⁸ See W. A. Bomberger & G. E. Makinen (1983) and especially B. Nogaro (1948).

⁹ H. Schacht(1927) p. 78. See Table 6-1 . In July 1922 the government had passed legislation authorizing and regulating the issue of these privately issued monies known as "emergency monies" or notgeld. Cf. Republic of Germany (1924) p. 67.

		series IIIb		130.000	May 5th
		series IV		114.000	June 7th
2	Oldenburg State Bank		rye	220.000	June 1st
3	State of Macklemburg		rye		
		series I		50.000	Dec 31st,1922
		series II		70.000	May 24th
4	Prussian State		rye		
		series I		230.000	May 18th
		series II		244.000	May 25th
5	State of Anhalt		rye	40.000	April 23th
6	City of Berlin		rye	53.000	June 16th
7	City of Dresden		rye	32.000	July 18th
8	City of Gottingen		rye	10.000	July 1st
9	City of Bernburg		rye	4.900	Mar.23th
10	State of Saxony		rye	500.000	June 28th
11	District of Sandershaausen		rye	70.000	Mar.31st
12	Thuringian Evangelical Church		rye	30.000	Mar.31st
13	Anhalt Evangelical Church		rye	18.000	Mar.26th
14	City of Hannover		wheat	30.000	June 18th
15	City of Aschorsleben		wheat	12.000	April 23th
16	Badenwerk		coal		
		series I		650.000	Feb.10th
		series II		650.000	Mar.10th
17	Grosskraftwerk Mannheim		coal	420.000	Feb.13th
18	State of Westphal		coal		
		series I		490.000	May 12th
		series II		490.000	June 23rd
19	City of Breslau		coal	240.000	April 20th
20	City of Zwickau		coal	100.000	Mar.5th
21	State of Saxony		lignite		
		series I		500.000	Feb.10th
		series II		500.000	Mar.10th
22	State of Hessen		lignite	65.000	April 15th
23	Badenbürgische Kreis Elekt.		lignite	120.000	Mar.17th
24	Mitteldeütschland-Cassel Elekt.		lignite	350.000	Feb.
25	Städtischenlicht Wasserwerke		coke		
		series I		n.a.	Feb.15th
		series II		n.a.	Feb.28th
26	City of Goppingeen		coke	n.a.	n.a.
27	Prussian State	potash			
		series I		230.000	May 14th
		series II		520.000	May 25th
		series III		520.000	June 12th
28	Rheniland-Main-Donau		gold	500.000	April 18th
29	Neckar		gold	250.000	May
30	Suddeütsche Fesvertband Stüttgart		gold	365.000	July 7th
31	Schleswig-Holsteinische Elektrizit.		gold	66.500	n.a.
32	Bayer Grosskraftwerke		gold	n.a.	June 20th
33	State of Hamburg		sterling	4.326.500a	August
34	City of Lübek		Swed.Crown	530 312b	October

TOTAL 14,741.212

SOURCE and OBSERVATIONS: (a)Converted in dollars at the rate of 4.3265 to the pound. (b)Converted at the rate of 3.7744 Swedish crowns to the dollar. (c)1923 unless otherwise stated. Compiled from data from J. M. Robert(1926) pp.94-104 .

These "loan" notes were made in small denominations so as to circulate as means of payment which was actually their main purpose. The Oldenburg issue in Table 10-1, for example, would be of bonds priced in marks at the equivalent to 125 kg of rye and redeemable in four years at the marks equivalent of 150 kg of rye, which meant a "own" rate of interest of 5% a year payable at redemption . Along the same line the company supplying the province of Baden with electricity issued its "coal value loan" in bonds equivalent to 1/2, 1, 2, 5 and 10 tons of coal serviced and redeemed in marks according to the average price of coal observed in the 6 months preceding the payment . Similar issues followed: several other "commodity" loans were issued by the most various of bodies and a variety of other commodities - e. g. wheat, potash, lignite, sugar, beer and even kilowatts - were used for backing, or what was in fact indexing, "stable value" loans .

The value of these bonds remained stable for no other reason than the fact that holding these notes was equivalent to holding commodities with stable dollar prices often quoted in international markets. But the important fact was that these notes were not really convertible in the commodities of reference. In fact the commodities served only to provide a price index to which the notes were pegged, the payments were actually made in depreciated marks at the current quotation of the commodity. In fact these loans represented a very interesting class of indexed bond, not only in view of the type of price index used but mainly because their small denominations gave them functions of a means of payment. Being reserves of value and means of payments these loans circulated as unrestrictedly as money but with the important feature of being "stable-valued". The experiment, according to Schacht, "spontaneously evolved by the natural course of events"; these loans "enjoyed great popularity, unaffected by the fluctuations in the prices of commodities concerned, and the practice of expressing the values in terms of commodities had a long vogue" .

⁷ K. Helfferich (1927) p. 509.

⁸ Ibid. p. 510.

⁹ H. Schacht (1927) p. 78, J. M. Robert(1926) p. 101 and R. R. Kuczynski(1923) p. 764.

¹⁰ H. Schacht (1927) p. 78.

10.3) Official "stable valued" monies and inflationary explosion

The government was attentive to the development of private "stable valued" monies and perceived the opportunity of using the experience to help the support of the exchange rate initiated in March in connection with the passive resistance at the Ruhr . In an attempt to stem the outflow of reserves, the government decided to issue a dollar denominated "stable valued" loan, i. e. a dollar indexed bond, with the purpose of securing foreign exchange for the continued support of the mark . This gold loan represented an advance over the "material value loans" of the last section as it would be indexed to the dollar; indexation to the dollar was chosen so that it would be reserve of value and means of payment like the others, but would employ a much less confusing and already widely used unit of account. These notes appeared to have all characteristics of money in addition to being "stable valued" or *wertbeständiges*.

Yet, the government seemed to misunderstand the causes of the popularity of the *wertbeständiges* loans, and issued the loan in large denominations which rendered it unsuitable for means-of-payments functions. The loan was actually considered a failure for it could not provide a sizable increase in international reserves: only one half of the total issue of US\$ 50 million was subscribed immediately and the stock of reserves at this point stood around US\$ 240 million. Yet the *notgeld* law authorized banks to issue their own *wertbeständiges* currencies against deposit of such bonds, so that to the extent that the subscribing banks did make issues the loan would have fulfilled its functions.

In August, the government decided to repeat the experience but this time the purpose was not to obtain foreign currency to support the mark but was very close to the idea of monetary reform . The new "loan" had denominations as low as 1/10, 1/4, 1/2, 1, 2 and 5 dollars, in addition to the ordinary large denominations. The total issue was of

¹¹ Parallel to the strategy of passive resistance, the German government had decided to employ the hitherto untouched Reichsbank reserve to stabilize the exchanges. The move appeared to be an attempt to further wear down the French initiative and possibly win the British, who had been insisting on the Reichsbank using its reserve to check the depreciation for quite some time. Cf. C. Maier(1975) p. 366.

¹² See Republic of Germany (1924) p. 72.

¹³ According to Havenstein quoted by C. Maier (1975) p. 367.

¹⁴ The loan was issued on August 14th; and by this time Helfferich's plan of monetary reform, which would later be put into operation , had already been offered to Cuno's attention. Cf. J. G. Williamson(1971) pp. 386-

approximately US\$ 120 million, an amount nearly as large as the gold value of the outstanding Reichsbank notes at this point . Around US\$ 72 millions of the total issue corresponded to subscriptions of small denominations . Shortly thereafter the Railway system issued a "stable-value" loan of approximately US\$ 40 million guaranteed by a deposit of the gold loans or of a Gold Treasury Bond especially created to serve as backing for *wertbeständiges* currencies . These official issues would have extraordinary consequences as regards the composition of the money supply and the dynamics of inflation.

The composition of the money supply, broadly understood as the collection of all monetary assets with means of payment properties, is shown in Table 10-2. Private *wertbeständiges* experienced a tremendous "boom" after the official issues but there is little information on the amounts in circulation by the end of 1923. Table 10-2 considered the total value of US\$ 14.7 million reported in Table 10-1 and an ad-hoc estimate of US\$ 30 million for December. The amounts reported for gold loans and the railway issue show a sharp increase as a substantial part of the subscriptions - actually their final installments - were made during this period. The amount of foreign currencies in circulation reported in the table is an estimate based on the following: German historian C. L. Holtfrerich estimated it as between US\$ 476 million and US\$ 715 million and Bresciani-Turroni established somewhat wider bands at US\$ 120 million and US\$ 950 million . According to the balance of payments figures available an amount of approximately 286 million dollars of foreign banknotes was "exported" during 1924 and 1925 . This certainly accounted for a substantial portion of the stock of foreign currencies hoarded or in circulation in Germany by the end of 1923. Most likely a comparable portion of these hoards appeared in the balance of payments statistics as "unaccounted" inflows, which totaled 176 million dollars in 1925 . For the purpose of Table 10-2 a conservative estimate of US\$ 450 million was adopted. Lastly, Table 10-2 includes *rentenmarks* as stable-currencies, which will be

387 and K. Helfferich (1924b).

¹⁵ In July, the gold value of the outstanding Reichsbank note issue was 131 million dollars. Cf. J. P. Young(1925) vol. I pp. 537-538.

¹⁶ See Republic of Germany (1924) pp. 57 and 72.

²⁰ Ibid. p. 68

¹⁷ C. L. Holtfrerich (1985) p. 125 and C. Bresciani-Turroni (1937) p. 345. See also H. Schacht (1927) p. 106 and W. Baumgartner (1925) p. 95.

¹⁸ Table 10-5.

explained below.

Table 10-2
Germany: Proximate composition of the money supply ,
November/December of 1923
(millions of dollars)

	November 15th	December 15th
Private <i>wertbeständiges</i>	14.7	30.0
Gold loan notes ³	65.6	113.0
Railway stable valued notes	2.4	33.8
Foreign currencies ²	440.0	440.0
<i>Rentenmarks</i> ²	-	199.4
Stable currencies total	522.7	816.6
Regular currency ^{3,4}	41.2	125.8
TOTAL	563.9	942.4

SOURCES and OBSERVATIONS: (1) From Table 10-1. (2) Estimates, see text. (3) From Republic of Germany (1924) p.20. (4) Includes Reichsbank notes and legal non-stable notgeld.

A remarkable fact documented in Table 10-2 is the insignificance of the circulation regular "non-stable" currencies by the time of the stabilization. If money substitutes were said not to allow the elimination of the paper-mark in 1922 , by the fall of 1923, after the August gold loan Schacht argued that "the Reich may be said officially to have abandoned the paper mark" . The dissemination of stable monies, in conjunction with the remarkable increase in the amount of foreign currencies in circulation, resulted in a decisive blow in the "moneyness" of the national money as its means of payments function, the only one it retained at that point, was destroyed by the "stable valued" currencies . The consequences of this "abandonment" of the mark as regards the dynamics of inflation are by all means

¹⁹ Ibid idem.

²⁰ R. R. Kuczynski (1923) pp. 768-769.

²¹ H. Schacht(1927) p. 77. The dissemination of "stable value" currencies such as Wertbeständiges , foreign currencies, and metallic coins seems to provide an alternative explanation for the rise in real money balances detected by P. Cagan (1955) and R. Flood and P. Garber (1980), which they attributed to "rumors of monetary reform". Cf. Cagan(1955) p. 56. It is true that there were rumors of monetary reform and actually more than that as the governments intentions to undertake a currency reform became very clear to the public much before it came into being. The question is whether this would make anybody any more prone to hold nominal balances while inflation was running at such wild levels.

²² J. Robinson(1938) p. 512 and J. M. Keynes (1923) p. 50.

extraordinary, as shown in Table 10-3:

Table 10-3
Germany: Inflation rates, January-November, 1923
(% per month)

month	CPI	Wholesale	Ex. rates
January-March†	69	59	49
April-June†	44	67	81
June	100	132	137
July	395	221	285
August	1,459	1,208	1,162
September	2,46	2,035	2,432
October	24,28	24,432	29,607
November	17,865	8,6	10,121

† averages for the quarter. Source: C. L. Holtfrerich (1986) pp. 24-33.

The table shows a decisive twist in the evolution of the German inflation after June, when it seems to enter an "explosive" trajectory. That coincides with the dissemination of "indexed monies", and seems to be reinforced by the second government internal loan in August. Of course, this meant an important change in the nature of the inflationary process; the "explosion" is not to be described by the model of Chapter 5, that was seen to explain fairly well the evolution of the German inflation up to then. The inflationary explosion occurs as the marks ceases to be the only means of payment available, so that agents would only accept payments in marks at sky-rocketing premia. The mark becomes a "hot potato", and the exploding inflation rates reflect simply the "lethal" shock on the demand for marks - which presumably had reached a minimum in the spring of 1923 - represented by the dissemination of indexed monies.

10.4) The Rentenmark mechanism

The incredible dimensions of the price inflation observed in the Summer of 1923 after the dissemination of "stable valued" currencies and the perspective of complete economic collapse of the Reich forced the German government to consider what appeared then a seemingly hopeless stabilization attempt without a settlement of the reparations

issue . The proposals discussed in the late summer and early fall of 1923 bore no relation with the negotiations that started later on and would lead to the Dawes loan late in 1924; the alternatives discussed then were basically "unaided" ones. There was a number of ideas under consideration, most of which hinging on the establishment of a new gold backed currency, such as those of socialist theorist Rudolf Hilferding, banker Hjalmar Schacht, the Federation of Industries and State Secretary Julius Hirsch, among others . An obviously decisive handicap to all of them was the very reduced stock of *divisen* at the *Reichsbank*, and the fact that a foreign subscription of a new bank of issue, as much as a domestic one, even if mandatory, were both regarded as unfeasible .

One important point to observe as regards Germany was that reserves were never depleted, much to the contrary, so that at some points the real value of the money stock fell as low as to reach values for which the cover ratio was very close to 100%. In the late summer of 1922, for example, the *Reichsbank* reserve stood at US\$ 220 million and the real value of the money supply had been reduced to approximately the same value . Similarly in July of 1923 the real value of *Reichsbank* notes in circulation was estimated to be approximately US\$ 130 million while international reserves were worth about US\$ 120 million . Yet in both occasions the real value of the money supply was very small compared to the stable prices demand for money; considering the money stock observed during 1925-26, for instance, the cover ratios assured by existing reserves at these moments would be 17.5% and 9.5% . These values would be too small to assure a gold convertibility in normal conditions, or under stable prices; but as observed by many authors, including Keynes and Bresciani-Turroni , the government could declare convertibility at a fixed

²³ J. M. Keynes (1923) p. 50.

²⁴ In this respect Helfferich argued in February 1924 that "we had to try the experiment without being able to wait either for an amelioration of the general economic and political conditions or for a solution of the Reparations problem ... although such a reconstruction and solution form the condition sine qua non for a permanent salvation of our monetary system". He added that "the experiment that has been realized in the *Rentenbank* is an enterprise of deadly risk; it is a jump over a precipice, the opposite ledge being veiled in clouds." C. Helfferich (1924a) p.261.

²⁵ See C. L. Holtfrerich (1985) p. 129, V. D'Abernon (1927) p. 24, H. Schacht (1927) p. 82 passim and W. Baumgartner (1925) pp.16-19.

³⁰See W. Baumgartner (1925) pp.16-19.

²⁶ J. P. Young (1925) vol. I p. 537 and Republic of Germany (1924) p. 65. See also C. Maier (1975) p. 296

²⁷ J. P. Young (1925) vol. I, p. 538 and Republic of Germany (1924) p. 65.

²⁸ Considering the average money supply of 1260 million dollars.

²⁹ J. M. Keynes (1923) pp. 46-47 and C. Bresciani-Turroni (1937) p. 346.

exchange rate, thus stopping the hyperinflation, and sustain it at least for a short period of time. Experience would show, though, that such period of time was indeed very short, for in a couple of months the cover ratio had already fallen to unsustainable levels . Besides, the failure of the exchange rate stabilization attempt enforced simultaneously with passive resistance at the Ruhr had convinced the German authorities that gold reserves were not enough to sustain a continued intervention to support the mark without additional sources of foreign exchange. These arguments, and in particular the notion that a 100% gold convertible currency would allow a total issue regarded as insignificant and unsustainable in view of the probable "needs of trade" following the stabilization , were instrumental to defeat Hilferding's proposal of creating a gold department at the *Reichsbank* .

The available alternative was actually quite unusual. Helfferich's proposal of a new currency indexed, but not convertible, to rye was basically a development or an extension of the experience with the "material value" loans and the gold loans described in the last two sections. The idea was that the several distinguished representatives of Germany's agriculture, industry and commerce, would be obliged to subscribe a new bank of issue; and the subscription would be made in paper marks, and in this respect it differed very fundamentally from the founding of banks of issue in Austria, Hungary and Poland, where the subscription was an attempt to capture gold hoards. The participation of each group of subscribers in the new bank would be proportional to its respective wealth or property and a mortgage on such wealth would serve as a guaranty against the failure of the new institution. This is nothing more than usual for companies of unlimited responsibility; by no means the new institution was meant to be an incarnation of the German national wealth as it seemed to be the popular view. This might have been an useful notion for public relation purposes, but had no economic basis whatsoever.

³⁰ It is interesting to observe that if we consider only the ordinary *Reichsbank* notes and the alleged "paper" issue of *rentenmarks* in December, the gold cover ratio, that had been nearly 100% in the end of November, had already been reduced to 28% (ignoring the probable reserve losses of December that are not reported in the *Reichsbank* returns, though admitted by Schacht (1927) p. 129 in the end of December.

³¹ The legendary reluctance of German officials, Havenstein in particular, in committing the *Reichsbank* reserves to stabilization attempts becomes thus understandable. Besides, a strong reserve position represented a strong bargaining instrument in the reparations-stabilization imbroglio, so much that Havenstein once referred to using the reserve for less than a definitive stabilization effort as "cutting Samson's hair", as quoted by C. Maier (1975) p. 297.

³² J. G. Williamson (1971) p.390.

This new institution's main task would be to issue a mortgage bond indexed to rye prices (*rentenbriefe*), in the same fashion as the other "material values" *wertbeständiges* loans and gold loans were issued. A significant difference would be that instead of issuing the bonds in small denominations to circulate as means of payments, the proposal suggested the issuance of notes called *roggenmarks*, in small denominations so as to become means of payment, but also 100% convertible on the rye indexed bonds. The proposed *roggenmarks* would therefore be a "stable valued" currency by the same, at this point widely known, mechanism that made the several other "material values" loans "stable valued", examined in detail in the last two sections .

It was ingenious, though certainly not conventional, and the success of the *wertbeständiges* loans together with the unfeasibility of the other alternatives made it very appealing. So much that in the early days of August the Cuno government, and especially its finance minister Luther, was quite willing to implement the plan . The Cabinet fell, however, and the Minister of Finance of the Stresemann's cabinet, Rudolf Hilferding, was frankly hostile to the idea . Hans Luther, now minister of food, brought the plan to Stresemann's attention, and the project slowly gained ground; even before Hilferding was replaced by Luther the plan had been accepted. The only significant amendment to the project was that instead of rye as an index for the *rentenbriefes*, gold was to be used. After all the new currency was not to be convertible in rye but only pegged or indexed to rye prices, so there was no reason not to index it to gold which was superior as a price index . In light of this change the notes backed by the indexed bonds had their name changed to *rentenmarks*, and in November 15th the especially empowered government issued the

³³ See W. Baumgartner (1925) pp.24-36; H. Schacht (1927), p. 80 and A. Fourgeaud (1926) pp. 199-201 passim.

³⁴ K. Helfferich (1925a and b).

³⁵ Hilferding considered the plan a "theoretical monstrosity", cf. J. G. Williamson(1971) p. 390. According to Hilferding money took its value from the labor required to produce it, so that to have value at all money had to be convertible on some substance having "intrinsic value", such as gold. That this made him a "rather old-fashioned" metallist was observed by H. Ellis (1934) pp. 93-101. It was also observed by Schumpeter and even by Lenin, W. A. Darity Jr & B. L. Horn (1985) p. 365. It is somewhat paradoxical that in this debate that socialists endorsed Hilferding's reactionary views on money and the innovative view was authored by a distinguished politician of the right. On this paradoxical monetary conservatism of the left see C. P. Kindleberger (1984) p. 327.

³⁶ Schacht observed that indexing with respect to rye "was calculated in a masterly manner to appeal to the psychology of the agricultural community", on whose political support the government depended. H. Schacht (1927), pp. 85-87. It was more than that however. Rye indexing assured that the "contribution" from agriculturalists to the *Rentenbank* would be indexed to the same prices relevant to the determination of the

monetary reform decree.

From the beginning, the new currency enjoyed a very high demand. Schacht reported that the public was "anxious" to exchange his paper-marks into *rentenmark* and that "in the first few days of the *rentenmark* issue long queues, stretching out into the street, were formed where the notes were being issued" . The public seemed to be well aware that the *rentenmark* had a fixed parity to the dollar, which followed from it being a *wertbeständiges* or a "stable valued" currency as many others already in circulation, and enthusiastically accepted it as such. The introduction of the *rentenmark* appeared to the public like the introduction of another gold loan; in this respect it is interesting to note that after the new law was passed there would still be a month delay until the *rentenmark* notes would be ready for distribution, and during this period the government did issue another gold loan to bridge the gap and, like for the other gold loans, the public's reaction was very positive .

Two important provisions would make the *rentenmark* issue much more than simply the issue of another, though very large, gold loan. First, it seemed implicit that the old paper mark would be demonetized at some uncertain point in the future, but its issuance was not to be interrupted until much later. In this manner the *rentenmark* and the old paper mark would coexist in circulation and there would be nothing to prevent the old mark from depreciating with respect to the *rentenmark* the same way it was depreciating with respect to the dollar and to the other "stable valued" currencies.

The introduction of the *rentenmark* , or the fact that the public saw it as a "stable valued" currency, allowed the authorities an opportunity for the fixing of the exchange rate. The second fundamental feature of the *rentenmark* experiment was that the exchange rate between the old paper mark and the *rentenmark* was fixed at the convenient rate of a trillion to one. It should be clear that this was by all means equivalent to fixing the exchange rate between old paper marks and the dollar as illustrated by the diagram .

agrarians income, thus preventing possibly sweeping windfall gains or losses.

³⁷ Although most people were eager to get rid of its old marks, even some devisen were offered in exchange for the new currency, H. Schacht (1927), p.99.

³⁸ Republic of Germany (1924) p. 72.

³⁹ This mechanism is explained by Schacht in a similar fashion, *ibid.* pp. 114-115.

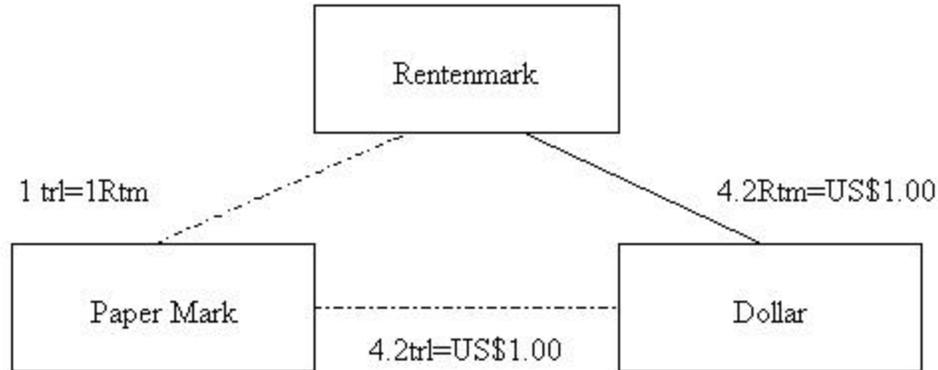


Diagram 10.1: The *rentenmark* mechanism

As *rentenmarks* started to be issued on November 15th, the government acted in two fronts: given that the *wertbeständiges* mechanism warranted that one *rentenmark* was exchanged for 10/42 dollars, as shown in the diagram by the continuous arrow, the government simultaneously exchanged *rentenmarks* against old paper marks at the rate of a trillion to one; simultaneously it employed its international reserves to intervene in the foreign exchange market and sustain the rate of 4.2 trillion paper marks to the dollar .

It is important to note that since the *rentenmark* was a "stable-valued currency, its issuance could be seen as equivalent to a sale of indexed bonds with means of payments properties or more simply as an external loan. Yet small external loans could very well be insufficient to secure currency stabilization for obvious reasons; similarly a total issue that was too high could become problematic. The total authorized issue was limited to US\$ 762 million; this amount, if added to the stock of international reserves in November of 1923 would sum US\$ 870 million, which would provide a "cover" of stable currencies for approximately 70% of the stable prices demand for money as measured by the 1926-27 average value of US\$ 1,260 million dollars. The *rentenmark* "loan" was then very substantial, even when compared to stabilization loans floated by other countries. It was not as big as the Austrian loan floated under the League of Nations auspices, which represented more than 100% of the stable prices demand for money; but it was bigger than the

Hungarian one, which represented less than 50 % of the value of the stable prices money demand. In sum, as a result of this twofold attack - the use of the international reserves and the distribution of *rentenmark* - the exchange rate was stabilized; as indexation transmitted it to domestic prices inflation was stopped in one stroke.

10.5) Alternative interpretations of the *rentenmark* experiment

The *rentenmark* experiment marks one of the most extraordinary monetary experiments of all time, yet most historians of the episode seem to have misunderstood the mechanism and its role to the stabilization. Bresciani-Turroni, for example, argued that there was no reason for the "stable value loans" to have a stable value because their guarantees were "purely fictitious...[b]eing mere paper without any cover". With respect to the gold loans he argued that "the public allowed itself to be hypnotized by the word *wertbeständiges* written on the new paper money" . He argued further that the *rentenmark* was an inconvertible paper currency like the old paper mark only with a different name , a point which is basically endorsed by Thomas Sargent; according to Sargent "while great psychological significance has sometimes been assigned to this unit change, it is difficult to attribute any substantial effects to what was in itself only a cosmetic measure" . Other authors, even the non-monetarists, have put forth similar analyses: Angell referred to the *rentenmark* as a "confidence trick" . For Stolper it was a "psychological device" and for Graham "nothing more than a new tenor of inconvertible paper" . More recently Karl Hardach argued that the "backing" for the *rentenmark* notes were "fictitious", though it was enough to generate the "desired psychological effect" . Steven B. Webb termed it a "fable" . Rudiger Dornbusch too, in a recent paper, does not offer any explanation for the public's acceptance of the gold loan as hard currency despite it having "no backing", but

⁴⁰Ibid. p. 112.

⁴¹C. Bresciani-Turroni (1937) p.344.

⁴²Ibid. p. 348.

⁴³T. Sargent (1982) pp.82-83. This diagnostic is fully endorsed by German historian C. L. Holtfrerich (1985) p.134.

⁴⁴J. Angell (1932) p. 24.

⁴⁵*Apud* F. Ringer(1969) p. 86.

⁴⁶Frank Graham (1930) p. 12.

⁴⁷K. Hardach (1980) p. 29.

⁴⁸S. B. Webb (1985) p. 18.

concedes that the *rentenmark* was stable-valued because it was convertible 1:1 on the gold loan . Even Gerald Merkin, who suggested that inflation had been stopped with the fixing of the exchange rate through the dollarization mechanism, argued that the *rentenmark* was "psychologically an advantage", the "real act of stabilization [b]eing the intervention of the Reichsbank in the foreign exchange market" .

Most observers of the phenomena thus have emphasized the pathological aspect of the *rentenmark* not being convertible to or backed by gold. Indeed, an interesting element of continuity between old and new monetarist interpretations to the "miracle" can be found in the continuous search for a "backing" for the *rentenmark* which would justify it having value at all. It is commonly argued that its only "real" backing was the mortgaged property of the Rentenbank's subscribers and recalled that the disastrous experiences of the Assignats and of John Law's Banque Royale notes was a lively reminder that the *rentenmark* system assured no real backing for the new currency . It was also argued, however, that even an unbacked "paper" currency could maintain a fixed relation with gold or other currencies if sufficiently limited in quantity, which was actually what many authors presented as an explanation for the "miracle of the *rentenmark* ": the public accepted it at a fixed relation with the dollar because its issue was fixed in quantity, or at least because it would force the government to live within its means.

The more sophisticated form of this argument is unquestionably its more recent rational expectations version, according to which the real "backing" for inconvertible currencies, and even gold currencies under fractionary reserves, would be the present value of current and future government surpluses or the government's capacity to "make good on its debt" . This "backing" obviously depended on the "fiscal policy regime" followed by the government and "the public's perception of the fiscal regime, he argues, influenced the value of government's debt through private agents' expectations about the present value of the revenue streams backing that debt" . A change in the "fiscal policy regime" - which

⁴⁹ R. Dornbusch (1985) pp. 9-10.

⁵⁰ G. Merkin (1982) p. 46.

⁵¹ See for example C. P. Kindleberger(1984) p. 326; H. Schacht (1927), p. 85; J. P. Young (1925) vol.I p.426; A. Fourgeaud (1926) p. 202; V. D'Abernon(1927) p.36 and F. Graham (1930) p.12ff.16.

⁵² T. Sargent(1982) p. 45.

⁵³ Ibid. p. 46. Note, in this connection that according to Sargent the difference between the wild money growth experienced before the stabilization and the slightly less wild one verified afterwards was that the former was "unbacked" and thus inflationary, while the latter was "backed" so did not disturb price stability.

would be determined by a limit imposed on the government access to the printing presses - would be like creating a backing for the currency, so that the announcement of such change would exert such a powerful influence on the public expectations as to bring about the abrupt end of the hyperinflation.

Two observations should be made about this "limited issue" or "regime change" argument. First, given that the exchange rate between *rentenmark* and old marks was fixed, any limit on the *rentenmark* issue would be meaningless without a corresponding limit on the issue of old "paper" marks. In fact, there was no limit on the Reichsbank note issue on the basis of discounting private commercial bills, which actually nearly tripled during 1924. No "bullionist", or their modern monetarist successors, would ever concede that excessive money growth could be prevented under a "real bills" rule. Ricardo had made it clear long before that the only check to "overissues" in such an "inconvertible paper" world would be the "prudence" or the discretion of the bank of issue. It is very likely that this prudence could be found in Schacht's Reichsbank presidency, but the important point is that excessive monetary growth would not be curbed by some well defined quantitative limit on money creation, but by something more subjective and elusive, namely Schacht's reputation and the strength of his commitment to a "sound" monetary management. Whether this commitment could be taken for granted in October of 1923 is not merely a matter of Schacht's convictions and the strength of the government: if a settlement for the reparations issue, for instance, was not to be found monetary management, no matter how "sound", could do little to prevent the collapse of the stabilization.

A second observation regarding the "limited issue" argument is related to the fact that the *rentenmark* was accepted by the public at a fixed rate to the dollar because it was convertible into a gold indexed bond and this fact would not be changed if no limits had been placed on its total issue . As explained in the last section the exchange rate was

He concludes then that "it was not simply the increasing quantity of central bank notes that caused the hyperinflation, since ... the note circulation continued to grow rapidly after the exchange rate and the price level had been stabilized. Rather it was the growth of fiat currency which was unbacked, or backed only by government bills, which there never was a prospect to retire through taxation". Ibid. pp. 89-90.

⁵⁴ This obviously does not mean that *rentenmark* overissues could not happen. The supply of *rentenbriefes* could be so much enlarged (after all they were "paper" or "fiat" guarantees), and so could the *rentenmark* issue, that a point would be reached where the public would be no longer willing to accept additional quantities of the indexed bond. At this point the *rentenbriefes* would most likely fall to a discount, in case of which they would be underindexing the purchasing power used to buy them, so the *rentenmark* would

stabilized as the government launched a two-pronged attack on the public's desire for "flight" from the mark by offering *rentenmarks* and foreign exchange at fixed rates to the old paper marks. If the *rentenmark* issue had been limited to some binding number, one of the "arms" of the attack would have been weakened and the responsibility for preventing the "flight" from the currency would have been placed mostly upon the limited *Reichsbank* reserve. Since the stock of international reserves alone was too small for the task, as it was argued against the Hilferding's stabilization proposal, it follows that there would be a minimum *rentenmark* issue which would make the stabilizing intervention feasible at all .

10.6) The "fundamentals" of the stabilization

The German stabilization involved, like in the other cases, an immediate problem of fixing the exchange rate, to which the *rentenmark* "loan" would play a major role. It would also involve, of course, a problem of solving the more fundamental "imbalances" behind the inflationary process. The true nature of these imbalances has been the matter of great controversy over the years, there being different "schools of thought" on the issue emphasizing fiscal deficits or, alternatively, balance of payments problems . Yet independently of what was the original driving force of the inflationary process it seems clear that, for stabilization purposes, most likely both issues were crucial and the solution of both should be seen as necessary ingredients of the stabilization. It was seen in Chapter 7 that the fiscal battle was won in the very act of stabilization thanks to the Oliveira-Tanzi effect. Yet, to judge from contemporary German opinion, fiscal balance was by no means a sufficient condition to assure a lasting stabilization without a major rescheduling-recycling of reparations payments . This is reinforced by the fact that, immediately following the

consequently depreciate with respect to the dollar. In this sense there would be a "critical point" beyond which additional issues of indexed bonds would characterize an "overissue" and would result in depreciating the new currency.

⁶⁰ Considering a stable-prices demand for money of US\$ 1,260 million and an acceptable convertibility rate of 40%, a minimum reserve of US\$ 500 million would be required to establish a gold standard. Since the stock of international reserves in November of 1923 was about US\$ 111 million the necessary, or the minimum *rentenmark* issue would be of approximately US\$ 389 million or 1.633 billion *rentenmark*, about half of the authorized issue.

⁶¹ For revisions of this debate see C. P. Kindleberger (1984) pp. 310-311 and C. L. Holtfrerich (1986) p. 138 passim.

⁶² G. D. Feldman(1982) pp. 192-193, S. Schuker (1978) pp. 351-356, C. Maier (1975) pp. 286-287 passim and F. Ringer (1969) p. 92.

stabilization workers managed to recover their pre-war levels of real wages, as shown in Table 10-4, despite the very high (and declining) levels of unemployment:

Table 10-4
Germany: indexes of real wages and unemployment , October 1923 /June 1924
(1914=100)

	date	Skilled	Non-skilled		Unemployment
1923-	October	52	52	65	19.1
	November	53	53	66	23.4
	December	70	70	85	28.2
1924-	January	74	81	95	26.2
	February	78	83	94	25.1
	March	79	90	92	16.6
	April	81	97	97	10.4
	May	86	101	104	8.6
	June	91	102	108	10.5

SOURCES: The first series for wages in each category is from ILO(1925) pp. 16-17; the second is from P. M. Garber (1982) p. 19. Unemployment figures refers to percentages of unionized workers from J. Tinbergen (1934) pp. 83-86.

In contrast to other cases, in Germany the exchange rate was fixed at a level below the market rate, thus generating a sharp one-shot appreciation of the real exchange rate. While in Poland, for instance, the option of freezing the market rate was convenient to economize their meager hard currency reserves, the Germans, on the contrary, were interested in selling the *rentenmark* "reserve" or in putting *rentenmarks* in circulation as quickly as possible. The result, however, was currency appreciation, which was actually reinforced by the relatively small inflation experienced during 1924 - around 100% for the year. This sharp deterioration in competitiveness reflected very clearly in the trade accounts. While Germany enjoyed monthly small trade surpluses of 68 million and 93 million gold marks in the last two quarters of 1923, in the first two quarters of 1924 average monthly trade deficits of 212 million and 323 million gold marks were observed . The trade deficit deteriorated further in 1924 and in 1925, as seen in Table 10-5, as the current account deficit reached nearly 5% of GDP even though reparations payments were drastically reduced, as seen in Chapter 3. It is interesting to observe that this worsening of the current account preceded the inflows of capital brought by the Dawes Plan, so that at

⁶³ J. P. Young(1925) vol. I p. 539.

least originally, these deficits were not generated by some transfer mechanism a la Machlup, but had its origins on the wage push following the stabilization. In any event the deterioration of the trade balance and the restart of the reparations payments could be more than compensated by the inflows of capital into Germany observed during the late 1920s as discussed in Chapter 3.

Table 10-5
Germany: Balance of payments, 1924-1926
(millions of gold marks)

	1924	1925	1926
exports ^a	7,825	9,467	10,633
imports	9,604	11,807	9,667
trade balance	-1,779	-2,34	966
services	198	158	394
interest & reparations ^{a,b}	-193	-908	-1,36
current account	-1,774	-3,09	-57
loans			
long term ^c	900d	1,124	1,376
commercial credits ^e	500	29	-33
total capital	1,4	1,153	1,343
gold	-149	-678	-578
export of foreign banknotes	1	200	-
change in reserves	-1,217	394	-14
unaccounted	740	2,021	-694

SOURCES and OBSERVATIONS: (a)Reparations in kind are entered as exports and as payments on reparations account. (b)Interest income was of 83 , -87 and -193 million gold marks respectively in 1924 , 1925 and 1926. (c)Net of amortization payments. (d)Securities floated abroad computed at market prices. The total par value of these issues was of 1,002 million gold marks, 960 million of which corresponded to the Dawes loan. (e)Includes net inflows of short term capital of 104 million and 118 millon gold marks respectively in 1925 and 1926. From LN (1927) pp. 81-90.

It should be clear that in the context of a dollarized economy the success of the stabilization was crucially dependent on maintaining the exchange rate fixed, which by its turn depended on having international reserves not too severely pressured. The public's acceptance of the *rentenmark* as hard currency worked, in the context of the model of

Chapter 5, just like an increase in international reserves, or a large external loan, to the extent that the public was willing to surrender their hard currency hoards in exchange for *rentenmarks*. This can be seen in the balance of payments accounts as "unaccounted inflows" and "export of foreign banknotes" - in values equivalent to US\$ 414 million - both of which probably expressing dishoarding of foreign currencies that eventually found their way out of the country through the current account deficit. This meant that the current account deficit in 1924 was partly financed by private sector's "reserve losses" and also by official reserve losses of around US\$ 289 million. It should be very clear that external balance thus achieved was temporary and accomplished mostly by the once and for all effect of the "sale" of *rentenmarks* . After this, the protection of international reserves, and consequently of the exchange rate, would have to rely on more conventional instruments and besides, it was unclear at the moment of the stabilization how long it would take for a lasting solution for the external accounts to be found. In fact, meaningful steps towards the Dawes Plan would only be announced nine months after. In this connection, the very high interest rates practiced in the few months after the stabilization, seen in Table 10-6, played an important role for the stabilization.

Table 10-6
Germany: Weekly interest rates, 1923-1924
 (% per year)

date			daily money	14 days loans	monthly loans
1923-	November-	3rd week	3,23	4,238	4,74
		4th week	765	3,276	3,636
	December-	1st week	578	1,248	1,512
		2nd week	360	641	695
3rd week		328	391	522	
4th week		360	459	488	
1924 -	January -	1st week	81	255	300
		2nd week	56	159	198
		3rd week	36	75	149
		4th week	15	36	36
	February-	10th	12	37	31
		20th	18	43	50
		29th	25	42	50
	March-	10th	32	43	37
		20th	34	42	48
		30th	29	44	49
	April-	10th	35	-	44
		20th	27	-	28
		30th	52	-	61
	May-	10th	48	-	67

	20th	11	-	42
	30th	12	-	28
June-	10th	12	-	35
	20th	10	-	34
	30th	10	-	24
July-	10th	12	-	23
	20th	9	-	17
	30th	11	-	17
August-	10th	10	-	15
	20th	9	-	12

SOURCES: S. Flink (1930) pp. 91, 104, 122- 124 and G. Demis(1927) p. 21.

With the sudden end of inflation the demand for money would be very significantly increased, as the velocity of circulation would be very considerably slowed. Yet the growth of money supply was slow to accommodate this "remonetization". This was due in part to the fact that the government decided to redeem the official issues of "stable valued" loans , thus reducing the amount of means of payments in circulation. Another possible vehicle for a quick increase in the money supply was the budget deficit, but this channel was actually blocked. The Treasury was only given an advance of approximately US\$ 286 million in *rentenmarks* to finance the "temporary" budget deficits and to retire its outstanding debt with the *Reichsbank*. Already in December, as it is well known, the Treasury approached the *Reichsbank* for accommodation indicating that much of the advance had already been put into circulation. In December 31st it has been estimated that approximately US\$ 250 million in *rentenmarks* were circulating along with US\$ 147 million in gold loan notes and US\$ 145 million in ordinary *Reichsbank* notes⁶⁵. This total - US\$ 542 million - even if added to private *wertbestandiges* and foreign currencies in circulation, was very small⁶⁶ compared to the stable prices money demand. The first few weeks of the stabilization were moments of acute monetary stringency, as indeed shown in Table 10-6.

The situation was alleviated in the next few months as the money supply was rapidly increased: the total authorized *rentenmark* issue was quickly reached in the beginning of 1924, and the stock of *Reichsbank* notes was increased from a total of approximately US\$ 120 million in January of 1924 to US\$ 220 millions in May and to US\$

⁶⁵ Republic of Germany (1924) p. 20

⁶⁶ The gold cover ratio that had been nearly 100% in the end of November had already been reduced to 28% in December (ignoring reserve losses)

423 million in October⁶⁷. The money supply would actually approach the "normal" stable prices level money demand, assumed to be around US\$ 1.260 million⁶⁸, only by the fall of 1924⁶⁹.

In March of 1924, when interest rates, especially for daily money, had fallen to normal levels, some pressure was felt upon international reserves and tight credit crunch was enforced from mid April. From then to the first week of August international reserves increased by US\$ 158 million⁷⁰, mostly by virtue of commercial credits and also by means of private dishoarding of foreign currencies. Great importance has been assigned to the April's credit crunch by some of the recent rational expectations explanations of the German stabilization. It was argued that the fundamentals of the stabilization problem were solved as the budget was quickly balanced but the credibility necessary to make the "regime change" produce the end of the hyperinflation was not *a priori* assured⁷¹. The final piece of the "regime change" or the element that definitively established credibility to the government's plan was the very high interest rates enforced during the first semester of 1924 and especially the credit restrictions implemented in April⁷². It is interesting to observe in this connection that foreign currencies remained in circulation within Germany in considerable amounts during 1924 and 1925, at least to judge from the unaccounted inflows reported in Table 10-5 for these years. Indeed, the orders of magnitude involved are fully compatible with the estimates of the amounts of foreign currencies hoarded or in circulation within Germany in 1923 reported in Table 10-2. It was only in 1925 that there was a massive return of funds, as measured by the very large unaccounted capital inflow of approximately US\$ 481 million shown in Table 10-5. This seems to suggest that the

⁶⁷ J.P.Young (1925) vol I p. 529

⁶⁸ At least this is the base value around which the money supply seems to stabilize in the late 1920s, controlling for real growth. Cf.B.R. Mitchell (1978)p.358.

⁶⁹ One might surely suggest that the monetary stringency was less a deliberate policy choice than a consequence (possibly undesired) of the fact that the increase of the money supply through the discounting of "real bills" take some time. If the government had been running a fiscal deficit the stringency could certainly have been abbreviated. This should not, however, invalidate the idea that dear money was necessary for balance payments reasons.

⁷⁰ S. Flink (1930) p. 91.

⁷¹ According to Dornbusch the monetary-fiscal stabilization is, of course, a central part of the stabilization and indeed the fundamental factor. But this does not really answer the more basic question: how does a government that plans to do all the right things and, indeed, puts them on paper, secure the credibility that then makes it possible to live with the policies. *Ibid*, p.15

⁷² R. Dornbusch (1985), S. Webb (1985a) p. 19. The same point has also been made by P. M. Garber (1982) p. 27.

decisive factor in securing confidence on the stabilization was not the spell of dear money enforced in the spring of 1924 but some event taking place later in 1924, most likely the approval of the Dawes plan in August and the floatation of the Dawes loan in October.

It is clear from Table 10-6, on the other hand, that a premia on long (monthly) loans over short (daily) loans - an unambiguous indication of expected inflation - lasted longer than the credit crunch of April; the term structure slopes sharply upwards until the late summer of 1924 when the negotiations around the Dawes plan reached its final moments. It is very significant in this respect that the German public was very pessimistic about the state of stabilization seemingly until the Reparations Commission approved the Dawes Plan in August. There are indeed many accounts in this respect⁷³, which provides an indication that despite all possible government demonstrations of sincerity in its commitment to "sound" finances, including actual budget balance and the credit restrictions of April 1924, the public still distrusted the program and waited for the solution for the reparations problem.

10.7) Summary and conclusions

This chapter's purpose was to assemble the several elements that composed the German stabilization. Its emphasis was mostly directed to the workings of the "indexed currencies" mechanism that was put into effect by several private and semi-official bodies and was eventually adopted by the government through the introduction of the *rentenmark*. The fact that the *rentenmark* was a stable valued currency thanks to the "indexed money" mechanism furnishes a solution to an old and hitherto unsolved enigma namely why the *rentenmark* was accepted as a hard currency by the German public in November of 1923. This solution for "rentenmark miracle" played a key role in the German stabilization but other elements were also essential. The advance of dollarization was important to the extent that it meant that the fixing of the exchange rate assured that the hyperinflation would be ceased instantaneously. Regarding "fundamentals", the solution to the fiscal imbalance provided by the operation of the Oliveira-Tanzi effect was certainly important, though seen

⁷³ See for example C. Bresciani Turrone (1937) pp. 360-361, R. Dornbusch (1985) pp. 22-23 and H. Schacht (1927) p.152

as insufficient without a settlement of the reparations issue. In Germany one also observes a sharp improvement in real wages following the stabilization and a corresponding deterioration on the current account. Since it would take a few months for the Dawes Plan to be effectively agreed, the stabilization was sustained by the high unemployment and extreme monetary stringency, which thus made a significant contribution to bridge this crucial gap. By far, however, the most important and the most characteristic element to the German stabilization was the *rentenmark* miracle, a monetary innovation with no parallel in monetary history.