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**Article (Accepted version)
(Refereed)**

Original citation:

Macher, Flora (2018) *The Hungarian twin crisis of 1931*. [Economic History Review](#). pp. 1-28.

ISSN 0013-0117

DOI: [10.1111/ehr.12659](https://doi.org/10.1111/ehr.12659)

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Available in LSE Research Online: June 2018

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The Hungarian twin crisis of 1931

Flora Macher¹

The Economic History Review. doi:10.1111/ehr.12659

Even though Germany, Austria, and Hungary experienced a major financial crisis simultaneously in 1931, of the three, only Germany's and Austria's episodes have been investigated in depth. This paper offers a thorough assessment of the missing piece. It finds that, just as Germany, Hungary also experienced a twin crisis. The primary reason for the weakness of the financial sector was banks' excessive exposure to agricultural loans. The fragility of the currency was the result of an early balance-of-payments crisis in 1928/9. The vulnerability of the banking and monetary systems culminated in a twin crisis in 1931.

The Great Depression has served as a general reference point for the Great Recession and Europe's recent debt crises. The interwar depression was a global, and in many countries, a prolonged recession which had a turning point: 1931. This year saw a series of financial crises first emerging in Austria with the announcement of the Credit-Anstalt's losses on 11 May 1931, subsequently in Germany and Hungary, and ultimately reaching Britain. Just as recent financial crises have brought into question long-held tenets about core policy issues, including the viability of the euro currency or the independence of monetary policy, 1931 was also an affront to contemporary principals, such as the gold-exchange standard and the free flow of capital. Why and how did Central Europe get into the crisis of 1931?

For Germany and Austria, this question has already been investigated in depth. Researchers demonstrate that government policy was not the exclusive, or not even the leading cause of the crisis. It has been shown that in both countries the fragility of the banking system led to the disaster.² For Hungary, however, the third country to experience a meltdown at the very same time, an equally rigorous assessment is yet to be established. This is what this paper aims to accomplish.

The first section offers a review of the literature on the Hungarian crisis of 1931. This is followed by a section which describes the data and the methodology. The subsequent two sections analyse the pre-crisis period in the late 1920s and assess the factors that had contributed to the weakness of the monetary and banking system, respectively. The fifth section investigates in detail the events before and around the crisis, and the last section concludes.

¹ I would like to thank Professor Max-Stephan Schulze and Dr. Tamás Vonyó, my two supervisors for their guidance on this work. This paper has evolved through feedback from a number of people. In particular, I would like to thank Dr. Olivier Accominotti, Professor Peter Eigner, Dr. Clemens Jobst, Dr. Nathan Marcus, Dr. Matthias Morys, Professor Albrecht Ritschl, and Dr. Tobias Straumann. Workshop and conference participants have also provided valuable insights to my work. I want to thank the participants of the EHES Summer School in Berlin in Sep. 2014, the Economic History Thesis Workshop at the London School of Economics in Jan. 2015, the WEast workshop in Budapest in Jan. 2015, the LSE Interwar Economic History Workshop at the London School of Economics in May 2015, and the SEEMHN Conference in Vienna in Oct. 2015. I would also like to express my appreciation for the support I received from Veronika Katz Kálniczkyne, archivist at the Hungarian National Archive. I am grateful to everyone who has helped. All the errors are mine.

Funding from the Economic and Social Research Council is gratefully acknowledged.

² Germany: James, 'The causes'; Balderston, 'German banking'; Schnabel, 'The German twin crisis'; 'The role of liquidity'; 'Reply'; Temin, 'The German crisis'; Ferguson and Temin, 'Made in Germany'. Austria: Schubert, *The Credit-Anstalt*; Weber, 'Vor dem großen Krach'.

I

Most of the existing literature identifies Hungary's 1931 episode as a currency crisis, highlighting two exogenous factors behind the event.³ On the one hand, falling agricultural prices had a powerful negative impact on the balance-of-payments as they sharply reduced export revenues. Since export earnings directly influenced the foreign exchange reserves of the Hungarian National Bank (HNB), their decline caused reserves to fall and weakened the stability of the currency. On the other hand, access to foreign capital became limited prior to the crisis. Since the Hungarian state had a large debt denominated in foreign currency and was accumulating a budget deficit that had to be financed from external sources, the decline in foreign capital inflows was a shock to the spendthrift state and placed pressure again on the reserves of the central bank. 'Doubts consequently arose about whether the central bank would be able to continue defending the gold standard parity. Those doubts prompted the withdrawal of foreign deposits to avoid the capital losses that would be suffered in the event of devaluation.'⁴

The flight of foreign creditors is essential to this interpretation. Nevertheless, regarding its timing, the literature seems to disagree. Earlier works stress the importance of the Wall Street Crash,⁵ more recent studies identify the change in the policy stance of the Federal Reserve that shifted the direction of capital flows towards the United States and away from Europe.⁶ Yet others seem to imply that the mass capital flight started a few months prior to the Credit-Anstalt's collapse⁷ or was invoked by the Credit-Anstalt's distress.⁸

Regarding the trigger, most agree with Eichengreen, who argues that 'Hungary's financial crisis was directly connected to events in neighbouring Austria.'⁹ Due to the collapse of Austria's largest bank, foreign capital began fleeing from Hungary as well.¹⁰ The foreign capital flight was a shock to the HNB's reserves and led to a currency crisis. A bank holiday was introduced, effective from 14 July 1931, lasting for three days.¹¹ Capital controls followed on 17 July, and from 23 December, Hungary stepped on the route towards defaulting on its foreign currency debt.¹²

Since most of the literature regards the distress of the banking system as a consequence of the currency crash, there is limited investigation into how banks performed during the 1920s and what role they played in 1931. Tomka argues that the banking sector was strong and resilient and that Hungarian financial institutions had not gone to similar excesses as their Austrian counterparts. He suggests that the swiftly-contained distress that the banking sector experienced in 1931 was the result of the currency crisis.¹³ Pogány posits that the country experienced 'multiple financial crises' in 1931, and she traces the causes back to the '...difficult situation of the Hungarian public finances, the significant foreign indebtedness, severe export

³ The key studies on the matter are Berend, *Decades of crisis*; Berend and Ránki, *Magyarország gazdasága*; Berend and Szuhay, *A tőkés gazdaság*; Eichengreen, *Golden fetters*; Ferber, 'Lépéshátrányban'; James, *The end of globalization*; Pogány, 'Válságok és választások'; 'Financial crises'; Tomka, *A magyarországi pénzügyintézetek*

⁴ Eichengreen, *Golden fetters*, p. 261.

⁵ Botos, *Az önálló jegybank*, p. 90; Berend-Szuhay, *A tőkés gazdaság*, p. 226

⁶ Accominotti and Eichengreen, 'The mother of all sudden stops'; Eichengreen, *Golden fetters*, p. 226; Tomka, *A magyarországi pénzügyintézetek*, pp. 114-5.

⁷ Pogány, 'Financial crises' p. 8.

⁸ Pogány, 'Válságok és választások', pp. 33, 35.

⁹ Eichengreen, *Golden fetters*, p. 270.

¹⁰ Pogány, 'Párhuzamos történetek', p. 1224; Pogány, 'Válságok és választások', p. 33; Tomka, *A magyarországi pénzügyintézetek*, p. 116.

¹¹ *HF*, 15 July 1931.

¹² Botos, *Az önálló jegybank*, p. 124; Ellis, 'Exchange control', p. 89.

¹³ Tomka, *A magyarországi pénzügyintézetek*, pp. 122-3.

difficulties and low level of bank liquidity.’¹⁴ She provides some evidence for the symptoms of banking fragility but does not identify the mechanisms behind the crisis.

Although this is not explicitly stated, most authors seem to imply that the Hungarian crisis in 1931 can be best fitted into the first-generation theoretical models of financial crises.¹⁵ According to first-generation models, financial crises emerge as a result of currency problems arising from the internal and external imbalance of the fixed exchange rate system, and the collapse of the banking system is only collateral damage. This paper, however, argues that the Hungarian crisis better qualifies to the category of third-generation models, which assign an important role to the banking system.¹⁶ I claim that just as Germany in Schnabel’s interpretation, Hungary experienced a twin crisis in June-July 1931.

I will demonstrate that the weakness of the banking system and the vulnerability of the currency developed independently during the second half of the 1920s. The lead cause of the latter was a balance-of-payments crisis in 1928/9, which depleted the HNB’s reserves. The reason behind the banking system’s distress was the excessive exposure to agricultural loans, which, due to the sector’s deteriorating export performance, were degenerating into non-performing loans from as early as 1927. The crisis of 1931 emerged in the banking system. Financial and monetary weaknesses became interconnected between 15 June and 15 July 1931, culminating in a severe twin crisis. This, due to the fixed exchange rate system and hence the conflicting motives of the central bank, placed pressure on the already vulnerable currency and led to a currency crisis. The latter, in turn, further deepened the bank panic, activating a ‘vicious circle’, in which the two crises reinforced one another.

II

To thoroughly reassess the genesis and the evolution of the Hungarian crisis, I have built a complex database, which includes the balance sheets and profit and loss statements of financial institutions for 1926-33.¹⁷ I have collected banks’ financial accounts from the *Compass* which was a compilation of the annual reports of joint-stock banks, savings banks, and credit cooperatives.¹⁸ My database includes the joint-stock banks and the savings banks. They together cover 71-95 per cent of the entire financial system.¹⁹

The database includes 950 financial institutions in total: 24 ‘issue banks’, 482 ‘other banks’, and 444 ‘savings banks’.²⁰ In 1926 there were 947 financial institutions, three more were established in subsequent years. Not all financial institutions reported their balance sheet and profit and loss account for each year, as Table 1 indicates. Institutions that chose not to report their accounts for a given year were small in size and were usually in distress. Therefore, the database is biased, if at all, towards well-performing banks.

In connection with Austrian, and especially Viennese banks, it became clear after the 1931 crisis that there were egregious misrepresentations in their financials. Based on a contemporary assessment, the financial accounts of Hungarian institutions did not suffer from

¹⁴ Pogány, ‘Financial crises’, pp. 3, 18; Pogány, ‘Zwillingskrisen’.

¹⁵ Krugman, ‘A model’.

¹⁶ Kaminsky and Reinhart, ‘The twin crises’.

¹⁷ With the term financial system/sector, banking system/sector, or financial institutions/banks, I refer to all three types of players.

¹⁸ Historians of the topic often use statistical yearbooks instead. These report only aggregate data. The *Compass* supports the reconstruction of the data at the level of aggregation that this analysis requires.

¹⁹ Please see Appendix 1 on the representativeness of the database.

²⁰ Issue banks are ‘emissziós intézetek’ in Hungarian. Their Hungarian name and the English translation might be misleading: these banks were not note issuing banks; they were underwriters, i.e. they had the right to issue securities.

similar misstatements. What this investigation did point out, and what I must take into consideration, is that Hungarian banks did not write off non-performing loans.²¹

Table 1 Description of the bank database

	Number of balance sheets reported			Total
	Issue banks	Other banks	Savings banks	
1926	20	228	361	609
1927	20	231	361	612
1928	20	218	341	579
1929	19	204	328	551
1930	19	201	313	533
1931	20	182	297	499
1932	20	160	277	457
1933	20	158	260	438
	Number of profit & loss accounts reported			Total
	Issue banks	Other banks	Savings banks	
1926	20	99	216	335
1927	19	109	224	352
1928	20	129	234	383
1929	19	118	230	367
1930	19	114	227	360
1931	20	105	215	340
1932	19	105	206	330
1933	20	103	194	317

Source: *Compass*, 1925/6 - 1934/5.

The annual database of bank financials is complemented with a higher frequency dataset. I collected weekly data on the main aggregates that describe the performance of the country's monetary system: the reserves of the central bank, the volume of the rediscount, banknotes in circulation, and the gold cover, which is the ratio of the foreign currency and the gold reserves of the central bank and the total banknotes in circulation. The data run from 1927 through 1933.²² In addition, I also constructed a monthly deposit dataset aggregated for the 13 (later 12) largest issue banks, the 35 (later 34) largest savings banks, as well as for the Postal Savings Bank.²³ The dataset is balanced from 1929 through 1933.

Finally, I use a number of macroeconomic indicators to monitor the overall foreign currency exposure and economic performance of the country: annual balance-of-payments, monthly balance-of-trade statistics, national income, annual fiscal deficit, and national debt.²⁴

Using this rich dataset, I conduct two levels of analyses. Using primarily annual data, first, I investigate how and why the weakness of the monetary system and the banking system cumulated from the second half of the 1920s. Second, relying predominantly on high frequency data, I reassess the sequence of events in the banking system and the monetary system just before and around the eruption of the crisis. While the purpose of the first analysis is to find

²¹ *KB*, 1. p. 14; *KB*, 7. p. 6.

²² *REA*, 1. 1929, pp. 14-5; 6. 1930, p. 10; 11. 1931, p. 27; 14. 1932, p. 18; HNA, file Z12, bonds (in Hungarian: csomó) 128-9.

²³ *REA*, 2. 1929, pp. 24-5; 6. 1930, pp. 16-7; 14. 1932, pp. 24-6.

²⁴ Budget: *SR* 1938. 4.; balance-of-payments: *SR*, 9. 1931; 8. 1932; 9. 1933; balance-of-trade: *MSR*, XXXI, 1-3, 1928; XXXIV, 1-3, 1931; national income: Eckstein, *National income*, Table 1, p. 14; national debt: various sources indicated in Table 3.

the causes, this second, event analysis aims to identify the trigger and clarify the timing of the episode.

III

The literature argues that three factors had been behind the weakness of the currency: fiscal deficits, an excessive national debt in foreign currency, and balance-of-payments difficulties. I will review the evidence for these three factors and assess the extent to which they contributed to the vulnerability of the monetary system prior to 1931.

Fiscal deficit

From 1924, Hungary's public finances were closely monitored by the League of Nations (LoN) due to the fact that the country's economy, just like Austria's, was stabilized through a LoN reconstruction scheme. In the post-war turmoil, the state, being unable to raise funds from any other source, resorted to financing itself through the printing press of the central bank, and this had led to hyperinflation.²⁵ The years of instability were ended by a large foreign loan arranged by the LoN.²⁶ The financing was provided under strict conditions: the requirement of a balanced budget and an independent central bank, the introduction of the fixed exchange rate system and free capital flows, and the acceptance of the surveillance of the LoN to ensure that all these conditions were met. International control lasted until mid-1926 but could return in case Hungary deviated from disciplined public finances.

Table 2 Budget deficit (million pengő)

	Public revenues	Public expenses	Revenues of state- owned companies	Expenses of state- owned companies	Total balance	Total balance as % of national income
1924/5	736.7	644.0	338.8	361.9	69.6	1.4%
1925/6	822.7	729.3	413.0	418.1	88.3	1.5%
1926/7	954.8	806.5	446.3	443.5	151.1	2.6%
1927/8	987.1	891.1	461.0	463.2	93.8	1.5%
1928/9	983.9	974.4	499.3	498.4	10.4	0.2%
1929/30	951.6	974.0	472.3	504.2	-54.3	-0.8%
1930/1	916.7	1,074.9	481.9	553.2	-229.5	-4.0%
1931/2	805.6	954.1	402.4	433.6	-179.7	-3.6%
1932/3	741.1	781.2	334.5	402.9	-108.5	-2.4%
1933/4	765.5	755.4	353.5	429.9	-66.3	-1.5%

Source: SR, 1938, 4.; national income figures from Eckstein, *National income*, Table 1, p. 14.

First-generation financial crisis models suggest that budgetary imbalances foretell future currency depreciation.²⁷ The literature argues that the country had a fiscal problem already in the 1929/1930 budget and financing the deficit was a challenge. Based on that, authors imply that there was pressure on the fixed rate and they emphasize that the matter was

²⁵ Banknote issue functions were at the time fulfilled by the Magyar Királyi Állami Jegyintézet. (Bácskai, *Az Osztrák Nemzeti Banktól*, pp. 944-75).

²⁶ Ormos, *Az 1924. évi államkölcson*; Péteri, *Global Monetary Regime*.

²⁷ Krugman, 'A model'.

so severe that it even brought into question the sustainability of the state because ‘Covering the deficit became an insurmountable problem.’²⁸

Table 2 provides evidence for Hungary’s budget matters. Hungary had a deficit of 54.3 million pengős in the 1929/1930 financial year which amounted to 0.8 per cent of the national income. Losses increased in 1930/1931 to four per cent of the national income. The deterioration of the deficit was due primarily to rising expenses, whereas revenues only marginally declined this year. The fundamental reason behind the increase in state expenses in the 1930/1931 financial year was the government’s countercyclical measures. As the country’s national income dropped by 11 per cent in nominal terms, the government introduced subsidies and public work programs to alleviate the impact of the downturn.²⁹ Then in the 1931/1932 budget year the state suffered a significant revenue decline due to worsening economic circumstances. This was mitigated by state austerity which brought the level of the deficit to below that of 1930/1931.

Should this deficit be considered high? An international comparison provided by James suggests that Hungary’s deficit was not outstanding.³⁰ Further, there is evidence that Hungary’s main creditor, the London Rothschilds (NMR) - on whom the burden of deficit financing was to fall - did not consider the state’s losses excessive in April 1931. The Hungarian state received an advance of 87 million pengős from the NMR syndicate in December 1930 which was supposed to finance investments.³¹ In reality, however, the money was spent on financing increased state expenses. After finding this out, NMR sent a consultant to review Hungary’s finances.³² Per Jacobsson issued his report on 4 April 1931 and pointed out that while there was in fact a deficit, this amounted only to 85 million pengős and was manageable.³³ The financiers’ optimistic view of the situation was underscored by the fact that both Jacobsson and Bank of England officials recommended that, since the difficulty was temporary, the deficit may be financed with the help of the central bank.³⁴ The Prime Minister and the President of the HNB however, refused to do that.³⁵ Instead the government set out to manage the situation by increasing taxes and lowering expenditures.

The importance of the Jacobsson report cannot be overstated. It was a statement on behalf of one of Hungary’s largest foreign financiers on the stability of the country’s state finances as late as April 1931.³⁶ Further, the fact that the Bank of England, the monument of contemporary liberal orthodoxy, suggested that the HNB may finance the deficit confirms that the losses were minor. Finally, if the deficit as of April 1931 was only 85 million pengős, then, arguably, the difference between the 85 million in April and the 229.5 million pengős as of 30 June 1931 (the end of the fiscal year, see Table 2) must have been accumulated primarily as a result of the crisis. This suggests that the deficit of four per cent of the national income was largely an outcome, rather than a cause of the crisis.

²⁸ Pogány, ‘Válságok és választások’, p. 33; Pogány, ‘Financial crises’, p. 9 (quote from here).

²⁹ BoEA, file OV33/79, Note of a conversation between Jacobsson and Jakabb, 26 Mar. 1931; Eckstein, *National income*, Table 1, p. 14.

³⁰ James, ‘Financial flows’, p. 608.

³¹ HF, 19 Nov 1930; BoEA, file OV33/79, Note of conversations between Siepmann and Popovics, 10 Feb. 1931.

³² BoEA, file OV33/79, Note of conversations between Siepmann and Popovics, 10 Feb. 1931.

³³ BoEA, file OV33/79, Letter from Jacobsson to Siepmann, 4 April 1931.

³⁴ *Ibid.*; Note of conversations between Siepmann and Popovics, 10 Feb. 1931.

³⁵ BoEA, file OV33/79, Note of a conversation between Jacobsson and Popovics, 1 April 1931; Note of a conversation between Jacobsson and Bethlen, 31 March 1931.

³⁶ Pogány, ‘A Jacobsson-jelentés’ reports on the Jacobsson paper but does not use it as an argument for limited fiscal problems and in Pogány, ‘Válságok és választások’ and ‘Financial crises’ the author argues that the country had serious fiscal problems.

National debt

The second factor that the literature pinpoints as a cause behind the currency crisis in 1931 is the national debt. Authors argue that Hungary had unsustainably large, foreign currency denominated liabilities, mostly short-term.³⁷ The foreign currency denominated debt service again imposed pressure on the fixed exchange rate and raised doubts about its sustainability, in accordance with first-generation crisis models.

Table 3 summarizes the findings of all studies reviewed for this paper which have expressed a position on the level of Hungarian debt denominated in foreign currency. Most items listed refer to debt at the end of 1931 and there are only two which address the pre-crisis situation: items one and two. Based on item one, whose ultimate source is the Bank of England Archive, the country's foreign debt was 2,020 million pengős at the end of 1927 which was approximately 33 per cent of the national income. According to item two, Hungary's foreign national debt was 2,573 million pengős at the end of 1929 which was approximately 37 per cent of the national income. Using these two sources as well as the country's balance-of-payments, I estimated the foreign national debt for 1930, which I present in the last row of Table 3. Based on my calculations, it amounted to 2,875 million pengős, i.e. 42 per cent of the national income and under 50 per cent of the GNP.³⁸

Table 3 National debt denominated in foreign currency (million pengő)

Ref. number	Ref. date	State debt	Municipality and private debt	Total debt	Term of loan	Notes on sources
1a	1927	762	708	1,470	Long	a)
1b	1927			550	Short	a)
1 total	1927			2,020	Long & short	a)
2	1929	1,337	1,236	2,573	Long	b)
3	1931	1,629	2,465	4,094	Long & short	c)
4	1931			3,700	Long & short	d)
5	1931			4,094	Long & short	e)
Estimate	1930			2,875	Long & short	The author's estimate. ^{f)}

Note: a) BoEA, file OV9/234, Copy of a letter received by Sir William Goode from Dr Iklodi Szabo of the Hungarian Finance Ministry, 17 Dec. 1927; b) Botos, *Az önálló jegybank*, pp. 33-34, based on HNA, file Z12, item 8; Ránki (1976); Óvári Papp (1934); c) Botos, *Az önálló jegybank*, pp. 123-4, based on League of Nations; d) Ferber, 'Lépeshátrányban', p. 45. Ultimate source not provided due to restrictions; e) Pogány, 'Párhuzamos történetek', p. 1223, based on Károlyi Gyula miniszterelnök jelentése; f) BoEA figure (item 1 total) increased with the change in the balance-of-payments for 1928-1930 based on Table 2.4.

Again, the same question arises: should this be regarded a high debt figure? Compared to Germany (70-90 per cent) Hungary's debt burden does not seem excessive.³⁹ Further, the debt level that is unsustainable in the midst of a crisis is not necessarily unsustainable prior to the crisis. The balance-of-payments in Table 4 actually reveals that Hungary had no problem servicing its foreign currency obligations in and before 1930. In 1930, the country's current account shows that it paid 195 million pengős on interest and dividends and, based on its capital account, debt amortization was 112 million pengős. That is, the total debt service was 307

³⁷ Berend, *Decades of crisis*; Berend and Szuhay, *A tőkés gazdaság*; Ferber, 'Lépeshátrányban'; 'Vita'; Pogány, 'Financial crises'.

³⁸ Eckstein, *National income*, Table 1, p. 14; James, 'Financial flows', p. 608.

³⁹ Ritschl, 'Reparations', pp. 5, 37 - referring to foreign debt/GDP.

Table 4 Balance-of-payments (million pengő)

			1926	1927	1928	1929	1930	1931	1932
Inflow	Current account	Trade	878	801	819	1,066	945	596	343
		Gold	0	0	0	0	0	1	0
		Interest and dividends	9	22	20	15	13	15	1
		Other items	63	74	148	157	153	122	53
		Total	950	897	987	1,238	1,111	733	397
	Capital account	Mid- & long-term capital	206	364	446	319	377	120	10
		Short-term capital	0	230	187	58	12	515	8
Total		206	593	633	376	389	634	18	
Total			1,156	1,490	1,621	1,614	1,500	1,368	415
Outflow	Current account	Trade	954	1,149	1,189	1,107	883	582	352
		Gold	1	2	5	5	8	6	4
		Interest and dividends	97	140	163	171	195	218	19
		Other items	46	86	132	168	163	152	47
		Total	1,098	1,376	1,489	1,451	1,249	958	422
	Capital account	Mid- & long-term capital	38	86	131	100	179	100	9
		of this: debt amortisation			42	45	112	63	9
		Short-term capital	21	28	0	68	0	247	3
		Total	59	114	131	168	179	347	12
	Total			1,157	1,490	1,620	1,619	1,428	1,305
Balance-of-payments	Current account	Trade	-76	-348	-370	-41	62	14	-9
		Gold	-1	-2	-5	-5	-8	-5	-3
		Interest and dividends	-87	-117	-143	-157	-182	-203	-19
		Other items	17	-12	16	-11	-10	-30	6
		Total	-148	-479	-502	-213	-138	-225	-25
	Capital account	Mid- & long-term capital	167	278	315	218	198	20	1
		Short-term capital	-21	202	187	-10	12	268	5
		Total	147	480	502	208	210	287	7
		HNB reserves	-24	-27	54	182	3	258	5
		Private capital	170	506	448	26	206	29	2
Overall balance			-1	0	1	-6	71	62	-18

Note: 1929 and 1931 figures for HNB reserves take into consideration bailout loans received.

Source: SR, 9. 1931; SR, 8. 1932; SR, 9. 1933.

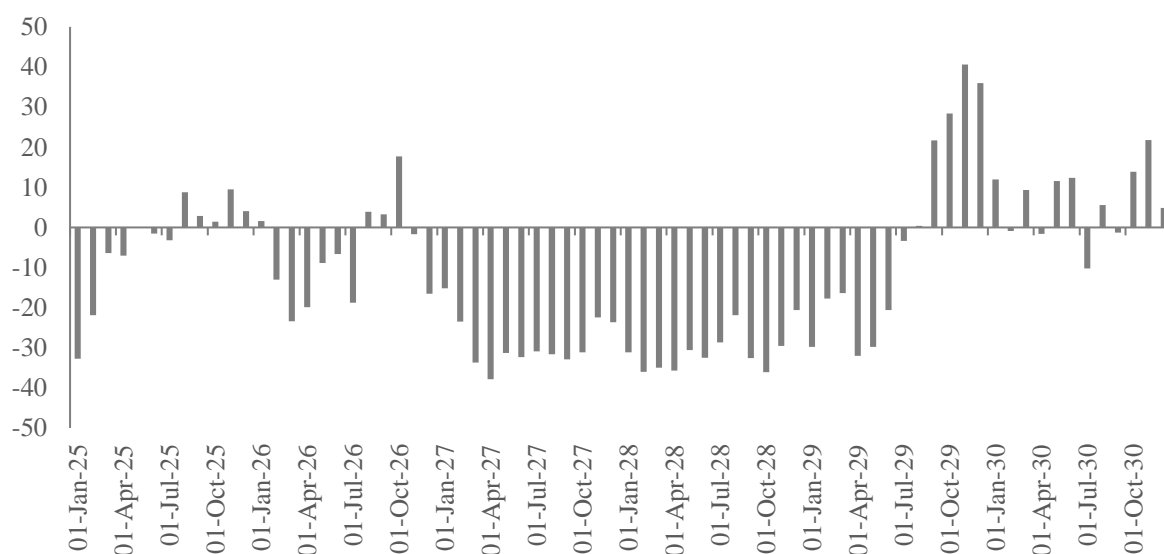
million pengős. At the same time, during 1930, the country received 389 million capital and, since its trade account was in surplus, this proved sufficient for covering its foreign capital need related to the debt service. There is hence no indication that the debt level was unsustainable in 1930.

Debt was a concern because the country was dependent on foreign capital. Its current account was not strong enough to generate the necessary foreign currency capital to cover the financing need related to debt service. As long as 300 million pengős of foreign capital was flowing in (four per cent of the national income in 1930), the country's finances were sustainable. However, once the inflow stopped, the 300 million pengős put pressure on the reserves of the central bank. In the weeks before the crisis, however, there is no indication that the inflow of capital was threatened. In fact, the opposite was the case. As Table 4 depicts, the net private capital inflow increased from 1929 to 1930. Further, right before the crisis, the Jacobsson report confirmed that NMR was willing to provide further financing to the state later in 1931 and newspapers also reported on the fact that the conditions on the new state loan had been settled.⁴⁰ It thus appears that foreign indebtedness was a problem during and after the crisis but not before.

Balance-of-payments

The literature's third argument regarding the causes of the currency crisis in 1931 points out that the fall in commodity prices and the flight of US capital from Europe as a result of the rate increase of the Federal Reserve in 1928 were a shock to primary producers like Hungary.⁴¹ Péteri refers to this period as the 'small crisis of 1929'.⁴²

Figure 1 Trade account (million pengő)



Source: MSR, XXXI, 1-3, 1928; MSR, XXXIV, 1-3, 1931.

I argue that in fact, the situation was so serious that between late 1928 and mid-1929 Hungary experienced a balance-of-payments crisis. This early episode was a typical emerging market, post-stabilization crisis, as it is described by Reinhart and Végh and recently discussed

⁴⁰ BoEA, file OV33/79, Note of a conversation between Jacobsson and Bethlen, 31 March 1931; Letter from Jacobsson to Siepmann, 4 April 1931.

⁴¹ Eichengreen, *Golden fetters*, pp. 226-31.

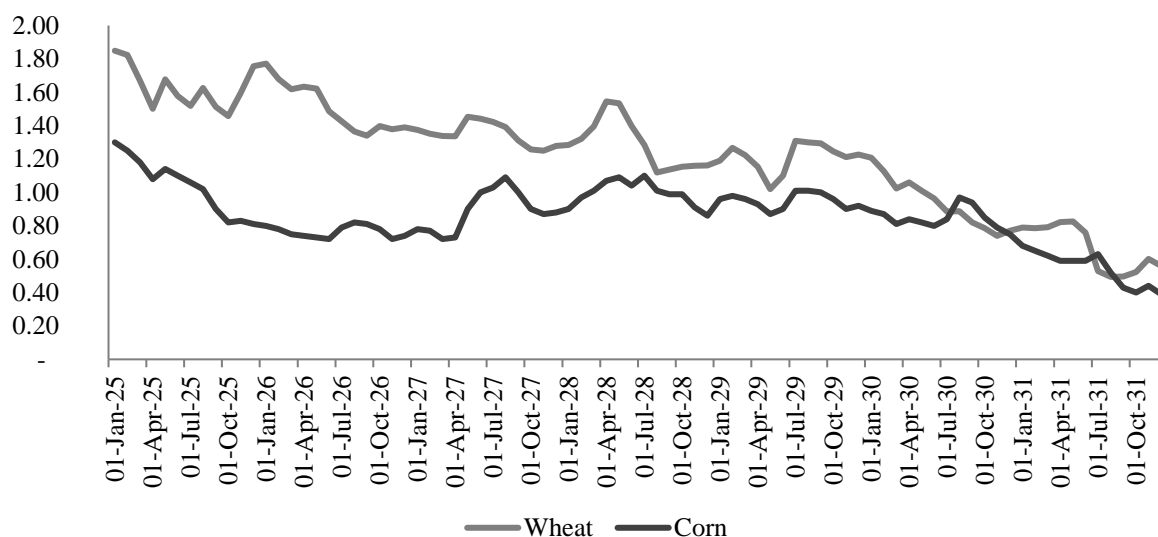
⁴² Péteri, *Global monetary regime*, pp. 165-92.

in connection with the interwar period by Accominotti and Eichengreen.⁴³ The pattern described by Reinhart and Végh is exactly the path that had led Hungary to the balance-of-payments crisis in the late 1920s.⁴⁴

The success of the League of Nations' reconstruction program in Hungary brought with it a large inflow of foreign loans. Table 4 shows that after 1926 there was a substantial increase in the inflow of foreign capital and during 1927 and 1928, a total of 1,226 million pengős entered the country, equivalent to 10 per cent of the national income each year. The inflow of foreign capital during the two years after the stabilization enabled the country to finance the imbalances of its trade account. Figure 1 shows that the balance-of-trade was in a deficit throughout the whole of 1927 and 1928. The total deficit in these two years was 718 million pengős.

The problem was that the volume of foreign capital inflow significantly dropped in 1929. Whereas in 1928 the total inflow was 633 million pengős, by the end of 1929 it fell to 376 million pengős. This created a liquidity crunch in the economy in late 1928, early 1929. Former high import levels could not be further sustained and the country was forced to sharply reduce the volume of goods it imported. The economy quickly adjusted and by the second half of 1929 these actions translated into a trade account surplus and thus the current account deficit was reduced. Nevertheless, the last quarter of 1928 and the first half of 1929 were critical. Since foreign capital was available to a more limited extent than before, the economy had to resort to utilizing the reserves of the central bank to meet these immediate foreign currency obligations. As Table 4 shows, since net private foreign capital inflows declined from 448 million pengős in 1928 to 26 million pengős in 1929, 182 million pengős of the central bank's reserves were depleted. As predicted by Reinhart and Végh's model, this led to a balance-of-payments crisis.

Figure 2 U.S. wholesale price of wheat and corn in Chicago (US dollar/bushel)



Source: <http://www.nber.org/databases/macroeconomic/rectdata/04/m04001a.dat>; accessed on 22 March 2016.

The root cause of this episode was the sudden stop of foreign capital flows while the decline in agricultural prices did not play into this event. As Figure 2 shows, the prices of Hungary's main agricultural export products had been declining from as early as 1925. Neither the price of wheat nor that of corn experienced a sudden change during the period from late

⁴³ Accominotti and Eichengreen, 'The mother of all sudden stops'; Reinhart and Vegh, 'Do exchange'.

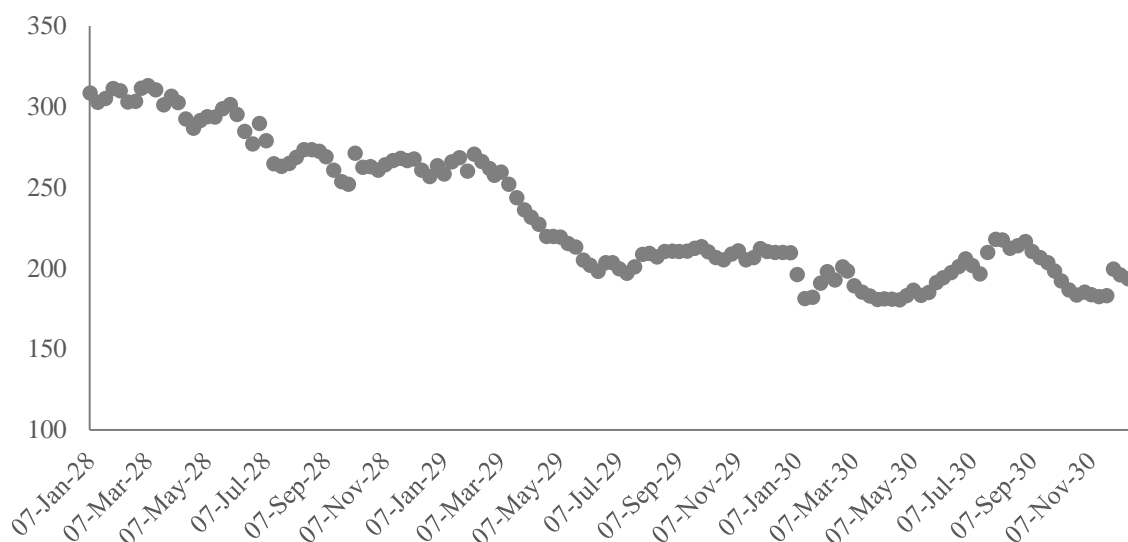
⁴⁴ Reinhart and Végh, 'Do exchange', p. 4.

1928 to mid-1929. The ability of the economy to carry out a sudden reversal of the trade account in mid-1929 also suggests that agricultural prices did not play into the deficit of the trade account. Prices were just as low before and after the adjustment. That is, the trade account had a deficit until mid-1929 simply because capital was available to finance the imports. Once this capital dried up, the economy was forced to adjust, and it quickly adapted to the new circumstances by more than halving its financing need. In 1930, when agricultural prices were just as low as before the balance-of-payments adjustment, the export surplus was 77.5 million pengős.

The impact of the early balance-of-payments crisis

Figure 3 shows the HNB's metallic reserves for 1928-30. The central bank's safety cushion suffered a big blow in the 1928/29 crisis. Whereas at the beginning of 1928 the HNB's reserves were around 300 million pengős, they declined to approximately 200 million pengős by mid-1929. That is, the national bank had lost one third of its reserves within just one year. It was due to the decline in the volume of available foreign capital and the subsequent balance-of-payments crisis that the reserves of the HNB were significantly depleted.

Figure 3 Reserves of the Hungarian National Bank (million pengő)



Source: HNA, file Z12, bonds 128-9.

In response to falling reserves, the HNB started to gradually increase the base rate from six per cent on 14 July 1928 to eight per cent until 3 November 1929.⁴⁵ It also became ever more selective when it came to rediscounting bills, i.e. providing liquidity for the economy.⁴⁶ In May 1929 the pressure on the currency was so serious that the central bank had to request international emergency support from the Bank of England⁴⁷ and subsequently from a group of international central banks.⁴⁸ These foreign currency loans were sufficient to stabilize the currency.

The 1928/9 balance-of-payments crisis had shaken the foundation of the Hungarian currency. Table 4 shows how significant the depletion of HNB reserves was in 1929 when the

⁴⁵ ANB *Mitteilungen*, 1926-33.

⁴⁶ HNA, file Z6, box (in Hungarian: doboz) 2 - 28 Nov. 1928, 26 June 1929.

⁴⁷ *Ibid.*, 22 May 1929.

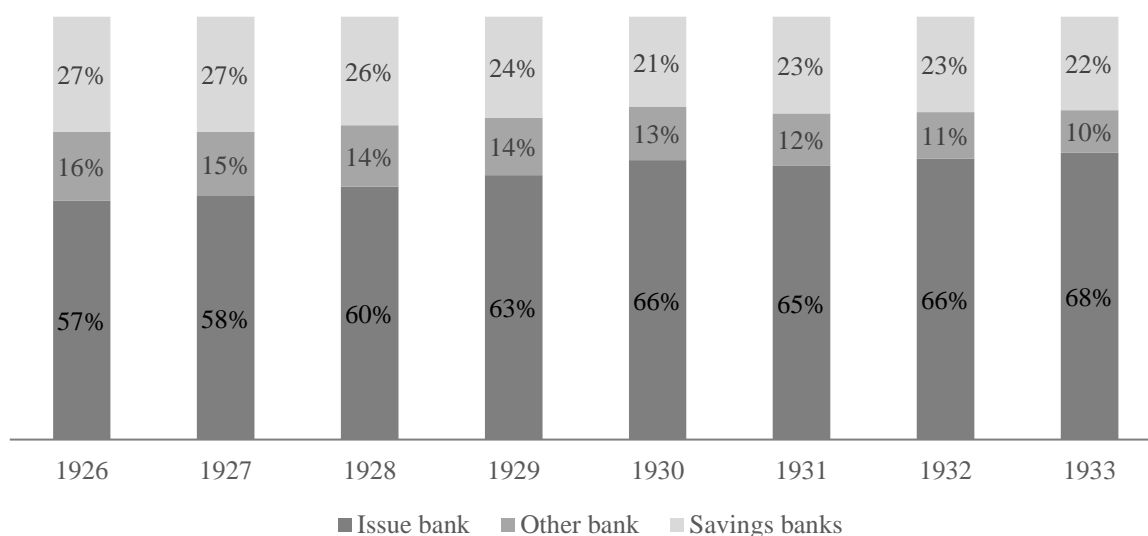
⁴⁸ *Ibid.*, 30 Aug. 1929.

net inflow of private capital was almost non-existent. From a monetary point of view, the 1928/9 crisis was comparable to the one in 1931: 29 per cent less HNB reserves were sacrificed and the net inflow of private capital was the same. After this early crisis event, the HNB's reserves were less than three per cent of the country's national product, while the same for the Austrian National Bank was closer to eight-nine per cent in 1930.⁴⁹ Although reserves were stable in the aftermath of the early crisis, banknotes in circulation were kept under control by the restrictive HNB, and net private capital inflows improved in 1930, even a minor volatility could blow away the stable but very fragile Hungarian currency.

IV

Figure 4 turns to the financial system and depicts the structure of the banking sector by total assets. Issue banks were the largest players at the aggregate level, accounting for approximately 60 per cent of the total assets, rising to over two-thirds towards the end of the period under investigation. Since there were only 19-20 issue banks, they were large individually as well. The second largest players were the savings banks which made up approximately 20-25 per cent of the system's total assets but this ratio was declining over the years. Savings banks fulfilled banking functions, were located mostly in the countryside, and they were predominantly agricultural lenders. The database includes the financial accounts of some 300 savings banks implying that whereas they were significant at the aggregate level, they were largely small institutions. The same applies to other banks: there were around 200 of them and they made up approximately 15 per cent of the total assets of the whole system.

Figure 4 The structure of the Hungarian banking system by total assets^{a)}



Note: a) Joint-stock banks and savings banks. Credit cooperatives are not included.

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

The economic and monetary stabilization which was brought about by the LoN reconstruction scheme had a great impact on the financial system. Table 5 shows that whereas in 1926 there were 947 institutions which reported some sort of existence (going concern or

⁴⁹ Hungarian figures calculated based on *REA*, 1. 1929, pp. 14-5; 6. 1930, p. 10; 11. 1931, p. 27; 14. 1932, p. 18; James, 'Financial flows', p. 608; Eckstein, *National income*, Table 1, p. 14. Austrian figures calculated based on *ANB Mitteilungen*, 1926-33; WIFO, 'Österreichs Volkseinkommen'.

distress), by 1930 there were only such 567 entities. That is, in terms of the number of institutions, in 1930 the financial system was at 60 per cent of the 1926 level. Total assets on the other hand increased enormously. As the economy and along with it, the financial system stabilized, people were returning to banks and banks could start lending again. Total assets in 1930 were 231 per cent of those in 1926. The years before the 1931 crisis thus saw a period of consolidation and high growth in the banking sector.

Table 5 Growth and consolidation in the banking sector

		No. of institutions	No. of failures	No. of institutions as a % of 1926	Change in total assets	Total assets as a % of 1926
1926	Total	947		100%		100%
1930	Issue banks		-4		2.7x	
vs.	Other banks		-267		1.8x	
1926	Savings banks		-109		1.9x	
	Total		-380		2.3x	
	Total	567		60%		231%
1933	Issue banks		1		0.9x	
vs.	Other banks		-40		0.7x	
1930	Savings banks		-48		0.8x	
	Total		-87		0.8x	
	Total	480		51%		195%

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

The literature has pinpointed three factors that contributed to the Hungarian financial sector's weakness and thereby its crisis in 1931: the banking system's inability to recover from the years of hyperinflation in the early 1920s, its excessive short-term foreign indebtedness, and non-performing industrial loans.⁵⁰ The first two of these refer to equity and liability side issues while the third blames banks' asset side. The next paragraphs review both in turn.

The equity and liability side

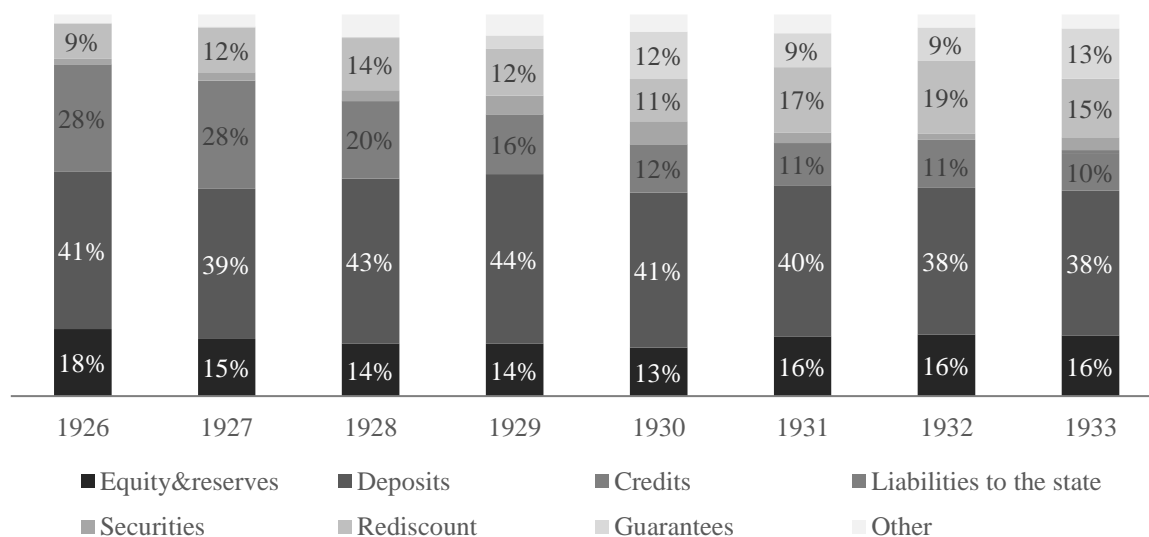
Figure 5 presents the equity and liability side of the financial system's aggregate balance sheet. It shows that banks financed themselves from four main sources: equity, deposits, short-term credits, and the rediscount provided by the central bank or other financial institutions. For the analysis of the foreign currency exposure, only depositors and creditors are relevant because only these were both short-term and potentially foreign currency denominated items. Even though some banks did have foreign owners who may have placed their equity into Hungarian banks in foreign currency, equity is a source of long-term financing that cannot be immediately retrieved from an entity. The rediscount on the other hand was denominated in domestic currency. Therefore, to understand how much foreign currency capital was withdrawn and whether this increased the vulnerability of the banking system, the analysis must focus on depositors and creditors.

Figure 6 depicts the annual change in aggregate deposits and credits. The figures show that these two sources of financing were increasing significantly between 1927 and 1929. In these three years the change from the previous year was 41, 22, and 4 per cent, respectively. The figures for 1927 and 1928 underscore the findings of Table 5 earlier: as the banking sector

⁵⁰ Pogány, 'Financial crises', p. 18.

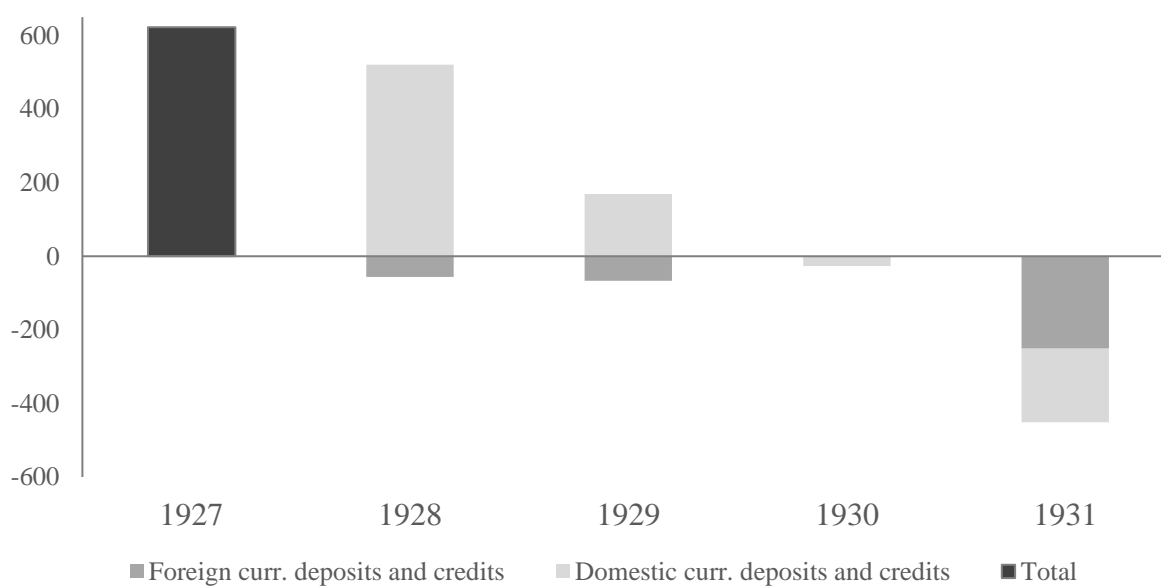
was re-established after the war and the years of hyperinflation, depositors' and creditors' confidence was also rebuilt towards financial institutions and this gave rise to the enormous growth of the sector.

Figure 5 The equity and liability side of the banking system's aggregate balance sheet



Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

Figure 6 The annual change in foreign and domestic currency deposits and credits (million pengő)



Note: Foreign and domestic currency cannot be disentangled for 1927.

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5; *SR*, 9. 1931; *SR*, 8. 1932; *SR*, 9. 1933; *REA*, 2. 1929, pp. 24-5; *REA*, 6. 1930, pp. 16-7; *REA*, 14. 1932, pp. 24-6.

Figure 6 also differentiates between foreign and domestic currency deposits and credits where data availability allows. Since financial institutions did not individually report their foreign currency exposure and even aggregate figures have limitations, in order to disentangle the share of foreign currency deposits and credits, a number of assumptions had to be applied. Foreign currency deposits were reported by *REA* for 1929-33 but only as aggregates for the 12

(later 11) largest Budapest institutions, the 35 (later 34) largest non-Budapest institutions, and the Postal Savings Bank. I have assumed that no other financial institution had deposits denominated in foreign currency and all remaining deposits were in domestic currency.⁵¹ A further challenge is that there is no information available on the currency denomination of short-term creditors. Therefore, it has been assumed that all credits of issue banks (the largest institutions) were denominated in foreign currency, while other banks and savings banks did not have foreign currency creditors.⁵² To ensure that figures are robust despite the described data limitations, they have also been checked against the capital account figures of the country's balance-of-payments.

The results indicate that from 1928 foreign currency denominated capital was flowing out of the banking system but its volume was insignificant until 1931. Foreign currency credits and deposits declined in 1928 and 1929 at a volume which was approximately 1.4 and 1.5 per cent of the total assets of the system, respectively. Further, the decline in 1928 and 1929 was more than compensated for by the increase in domestic currency capital in those years. Then in 1930 there was no change and foreign currency financiers only renewed their flight in 1931. The 251 million pengős of foreign currency denominated capital that left the banking system in 1931 was approximately 5.7 per cent of total assets in 1930. It thus appears that the banking system enjoyed high levels of liquidity until 1930 and very low levels of flight in foreign currency-based capital before 1931.

Based only on the assessment of the equity and liability side of the balance sheet, one could thus easily conclude that the banking system was healthy and it only fell victim to the problems of the currency in 1931. The analysis of the asset side, however, reveals that this would be a hasty assessment to make.

The asset side

Figure 7 presents the asset side of the Hungarian financial system's aggregate balance sheet. The figures show that the enormous deposit growth that the banking sector experienced between 1926 and 1930 was predominantly channelled into agricultural lending. Whereas other lending increased by 50 per cent, loans to agriculture increased more than threefold. Although the data are not disaggregated to such detail, it can be safely assumed that almost all of these loans were placed domestically. After the war, even the largest Hungarian banks became much less international as their assets in the neighbouring Successor States suffered confiscation and dissolution.⁵³ Other asset items remained stable during the period.

Hungary was a heavily agricultural economy in the interwar period: agriculture accounted for the dominant part of the national income and this sector was the main employer with 58 per cent of the labour force working here.⁵⁴ The health of the real economy was hence largely dependent on two factors: the harvest and agricultural prices. The production of the main agricultural goods was relatively stable around 20 million quintals for wheat and 17 million quintals for corn from 1924/5 through 1929/30.⁵⁵ Prices, however, were continuously declining. The domestic wholesale price of wheat was 32.85, 31.7, 25.38, 24.6, and 14.03

⁵¹ This assumption might underestimate the volume of foreign currency deposits since there may have been other institutions which were relying on such a financing source. On the other hand, this underestimation is presumably of low significance because, arguably, only the largest institutions were involved in businesses based on foreign currency and thus my data includes the dominant majority of foreign currency deposits.

⁵² This assumption may overestimate foreign currency creditors since while it is unlikely that small other banks and savings banks had any foreign currency creditors, it is also unlikely that all credits of the large banks were in foreign currency.

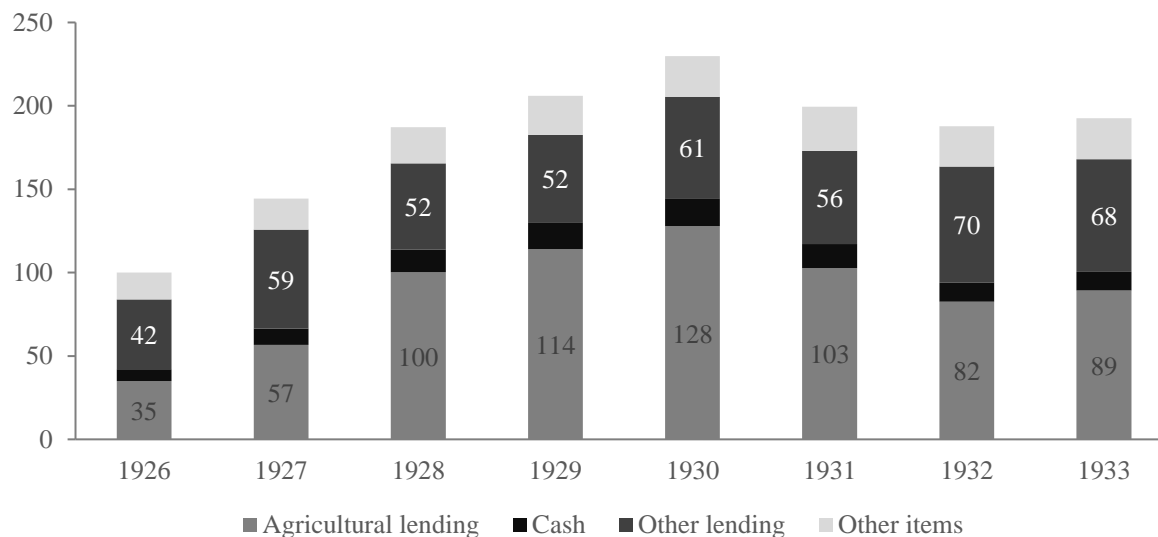
⁵³ Ránki and Tomaszewski, 'The role of the state', pp. 7-8.

⁵⁴ LoNSY, 1927. National income based on Eckstein, *National income*, Table 1, p. 14.

⁵⁵ MSR, XXXI, 1-3, 1928, p. 114; XXXII, 10-12, 1929, p. 693; XXXIV, 1-3, 4-6, 1931, p. 222.

pengős for 31 January from 1927 through 1931, respectively.⁵⁶ As lending to agriculture was rising, banks became increasingly exposed to a sector of the economy whose profitability was shrinking.

Figure 7 The asset side of the financial system's aggregate balance sheet (1926=100)



Notes: Other items include trade in securities and commodities, interests, fixed assets, and other.

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

There is abundant indirect evidence that the financial sector was influenced by declining agricultural profit margins through an increase in non-performing loans (NPLs). For instance, the number of insolvencies rose from 1,097 to 1,580, 2,226, and 2,472 from 1927 to 1930, respectively.⁵⁷ A contemporary source also estimated that in 1930 at least 25 per cent of all agricultural loans were in default.⁵⁸ Further, the General Council of the HNB had been discussing the financial system's NPLs in agriculture from late 1928 and in 1930 they put the volume of delinquent agricultural loans which were funded through debentures at 70-75 per cent.⁵⁹ Finally, from early 1930 newspapers also started reporting about loan defaults.⁶⁰

However, direct evidence on NPLs is unavailable. Financial institutions did not account for degrading loan quality and even though a loan was delinquent, it still remained on banks' balance sheets at par value. NPLs were thus unreported. There is, nonetheless, a method through which it is possible to produce a close approximation of the proportion of banks' NPLs. The key insight in this approach is that the change in banks' net interest margin to their total lending indicator (NIM/TL) can be used as a proxy for loans in delay or in default.⁶¹

The year on year change of the NIM/TL ratio may be the result of three drivers. First, the changing interest levels of the general economy could influence the interest earned by banks. Nonetheless, since the indicator uses interest margin, i.e. the spread between revenues

⁵⁶ Price of wheat from the Tisza region (78 kg) per quintal. *MSR*, XXX, 1-3, 1927, p. 107; XXXI, 1-3, 1928, p. 109; XXXII, 1-3, 1929, p. 111; XXXIII, 1-3, 1930, p. 101; XXXIV, 1-3, 1931, p. 91.

⁵⁷ Based on *REA*, 14. 1932, p. 38.

⁵⁸ Surányi-Unger, *Magyar nemzetgazdaság*, pp. 268-70.

⁵⁹ HNA, file Z6, box 1 - 30 Oct. 1928, 26 June 1929, 30 April 1930, 18 June 1930, 19 Dec. 1930, discussion on the volume of delinquent loans: 8 Jan. 1930.

⁶⁰ *HF*, issues dated 7 Jan. 1930, 14 Jan. 1930.

⁶¹ The net interest margin is the difference between a bank's interest revenues and interest expenses. This is then divided by the given bank's total lending to arrive at the net interest margin to total lending ratio.

and expenses, the impact of this factor should be largely eliminated. Second, changes in the market structure and competition could influence the interest margin: increasing competition could reduce interest margins. Nevertheless, all available metrics point towards the opposite in the observed case. The number of banks was declining during the period, total assets in 1930 were 2.3 times those of 1926 (Table 5), and the Herfindahl-Hirschmann index also indicates stagnating or declining competition for the critical years of this analysis.⁶² These suggest that competition for clients was not intensifying in the sector and hence it could not have been the reason for any fall in margins. Finally, the third factor that could explain changes in the net interest margin to lending is the increasing proportion of loans in delay or in default. Delinquencies reduce banks' interest revenues and decrease their net interest margin. While the first two possible drivers do not explain what occurred in the examined period, this third factor is in line with contemporary general observations about loan quality. Therefore, I use the observed decline in the net interest margin as a proxy for estimating the volume of NPLs.

Table 6 Non-performing loan (NPL) calculation for all financial institutions

Year	Total				Issue banks			
	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity
1926	3.8%				3.4%			
1927	2.9%	-24.3%	24%	122%	2.6%	-24.8%	25%	116%
1928	2.9%	-0.7%	19%	105%	2.6%	2.1%	17%	86%
1929	2.8%	-1.2%	18%	77%	2.5%	-5.7%	20%	74%
1930	2.4%	-14.9%	30%	88%	2.0%	-20.1%	36%	94%
1931	2.5%	4.7%	32%	98%	2.2%	10.9%	34%	84%
1932	2.2%	-14.2%	47%	175%	2.0%	-8.0%	43%	129%
1933	1.8%	-16.6%	61%	224%	1.6%	-18.5%	58%	179%
Year	Other banks				Savings banks			
	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity
1926	4.6%				4.9%			
1927	3.7%	-19.2%	19%	102%	3.6%	-25.0%	25%	172%
1928	3.6%	-3.6%	19%	110%	3.4%	-5.8%	25%	185%
1929	4.1%	13.8%	4%	22%	3.7%	7.7%	16%	113%
1930	3.7%	-8.9%	13%	59%	3.8%	3.8%	11%	81%
1931	3.5%	-7.8%	22%	102%	3.5%	-9.4%	21%	141%
1932	2.8%	-20.2%	46%	190%	2.6%	-26.0%	49%	307%
1933	2.6%	-5.9%	52%	209%	2.2%	-12.7%	63%	382%

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

Table 6 presents the results of the NIM/TL calculation. The data illustrate that as early as 1927, financial institutions saw their NIM/TL decline from the previous year by 24.3 per cent, implying that the quality of banks' loan portfolio substantially worsened. The situation was detrimental at issue banks with a NIM/TL decline of 24.8 per cent, but other banks, the best performers along this metric, also saw their NIM/TL fall by 19.2 per cent from the previous year. The NIM/TL of the whole sector continued to decline between 1928 and 1930 by 0.7 per

⁶² In the Herfindahl-Hirschmann index I calculated market share based on total lending.

cent, 1.2 per cent, and 14.9 per cent, respectively. The NIM/TL improvement of 4.7 per cent in 1931 indicates the post-crisis clean-up of issue banks' balance sheets: by the end of 1931, issue banks' lending was reduced by approximately 30 per cent which suggests a substantial write-off of NPLs. 1932 and 1933 saw further significant declines in the NIM/TL ratio.

The annual declines in NIM/TL already indicate that - assuming that the structure of the market was not unfavourable to interest margins - banks were struggling under an increasing volume of NPLs. They were receiving less and less interest from their borrowers due to the latter's defaults and, at the same time, they still had to pay interest on their own financing. Moreover, these results are very likely to be positively biased as the database only includes the healthiest banks. The reason for this is that banks that had gone bankrupt or were liquidated simply dropped out of the database and weak banks tended not to report any financials or only their balance sheet. Further, since only those banks have been included in the analysis which provided their accounts for all of the years under observation, the NIM/TL calculation works with the top-performing 203 financial institutions. Declining NIM/TL ratios in Table 6 thus imply that even the strongest entities were facing a serious profitability decline from 1927 due to NPLs.

The change in NIM/TL can also be applied for making an estimate of the volume of NPLs. Appendix 2 explains the simple theoretical approach which is in the background of this analysis. The NPL/lending column in Table 6 uses this approach to calculate the non-performing loan portfolio of the banking sector. The figures reveal that between 1927 and 1930, the proportion of the loan portfolio that was in some level of default, increased from 24 per cent to 30 per cent. The situation was the worst at issue banks with 36 per cent of their lending delinquent in 1930, rising from 25 per cent in 1927. Table 6 also calculates the loss of capital that these defaults gave rise to. In 1930, approximately 88 per cent of the financial sector's equity was lost through non-performing loans. In 1927 the figure was even worse, 122 per cent. Since the NPL/lending was increasing, the decline in NPL/equity suggests that in the late 1920s the banking sector's capitalization improved. Issue banks were in the biggest trouble with approximately 94 per cent of their equity lost by 1930. A pre-post analysis also reveals that the more NPLs a bank had in 1930, the bigger losses it suffered to its creditors and the higher capital increase it had to implement in 1931, with a correlation coefficient of 0.43 and 0.84, respectively. This confirms that the volume of NPLs was an essential driver of bank distress. While NPL figures are only estimates, they illustrate the extremely fragile, very likely insolvent state of the banking sector already from 1927.

Panel 1 of Table 7 carries out the same analyses but restricts the sample to those financial institutions whose agricultural loans accounted for over 75 per cent of their total lending. The results reveal the detrimental impact of banks' increasing agricultural exposure. In 1927 already 170 per cent of these heavily agricultural banks' equity was lost to NPLs whereas the same figure for the whole sample was 'only' 122 per cent. In 1929 and 1930, NPLs further increased and by the end of 1930, 55 per cent of the portfolio was non-performing which amounted to a loss of 2.4 times of the equity of these financial institutions. The same figures for the whole sample were significantly lower at 30 per cent and 88 per cent, respectively.

The sub-sample of the heavily agricultural banks is dominated by two financial institutions: the Magyar földhitelintézetek országos szövetsége and the Magyar földhitelintézet. These two banks account for over 50 per cent of the total lending of the agricultural sub-sample. The remaining approximately 45 per cent of the sample is highly fragmented. The lending performance of the two large agricultural lenders is depicted in Panel 2 of Table 7. The loan portfolio of these two banks was extremely weak. Between 1926 and 1928 their NIM/TL was positive but was less than half of that of the whole agricultural sub-sample. In 1929 and 1930 their NIM/TL ratio turned negative implying that they were losing money on their core activity and were in need of support to finance their operational expenses.

Table 7 Non-performing loan (NPL) calculation for institutions with agricultural lending over 75 per cent

Year	Panel 1				Panel 2			
	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity	NIM/TL	Change in NIM/TL	NPL/lending	NPL/equity
1926	4.0%				1.9%			
1927	3.0%	-25.7%	26%	170%	1.2%	-35.5%	36%	362%
1928	3.1%	3.2%	17%	107%	1.4%	15.3%	12%	86%
1929	2.1%	-33.5%	46%	266%	-0.6%	-145.3%	a)	a)
1930	1.6%	-20.9%	55%	239%	-0.3%	-45.7%		
1931	2.2%	35.1%	36%	99%	0.6%	-273.3%		
1932	1.9%	-16.0%	52%	222%	1.0%	72.2%		
1933	1.3%	-31.6%	75%	336%	0.5%	-48.8%		

Note: a) Calculations cannot be carried out due to negative NIM/TL ratio in 1929 and 1930.

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

The above analyses confirm that the banking sector at the aggregate level, and especially those banks whose agricultural exposure was high, was very likely insolvent as early as 1927. The reason why the insolvency did not turn into a general banking crisis in 1927 was that until 1930 banks enjoyed a high and steady inflow of deposits and credits. This was also the reason why the significant cut in the HNB's rediscount in the aftermath of the 1928/9 currency crisis did not create problems for the banks. The liquidity was able to hide the fact that NPLs were on the rise on banks' balance sheets.

V

The currency and the banking system were both vulnerable as early as 1929 and 1927, respectively. The great crisis, however, only erupted in 1931. To understand the exact timing and the trigger of the crisis, the following paragraphs analyse banking and currency pressures in more detail before and around the crisis, using high frequency data, distilled into three indicators. My proxy for banks' equity and liability side problems is the monthly change in foreign and domestic currency deposits (Figure 8). Unfortunately, monthly data are not available for short-term credits but their annual change can be used as a reference. My reference for banks' asset side position is the rediscount provided by the HNB to the financial system (Figure 10). My proxy for the stability of the currency is the change in the reserves of the HNB (Figure 9). To increase the level of detail, I divided up the crisis into five periods as indicated on Table 8. For each period I am tracing banking and currency events through my three indicators.

Figure 8 shows that the volatility of the banking system's short-term liabilities already started in October 1930 as domestic deposits declined significantly. This signifies the first period of the crisis and it had been triggered by a speech by Prime Minister Bethlen. Afterwards, rumours started circulating that the government would confiscate deposits from financial institutions and invest them in the economy.⁶³ As a result, approximately 94 million pengős of domestic deposits left the banking system in September and October (Table 8).

⁶³ HF, 15 Oct. 1930; 29 Oct. 1930; 28 Jan. 1931.

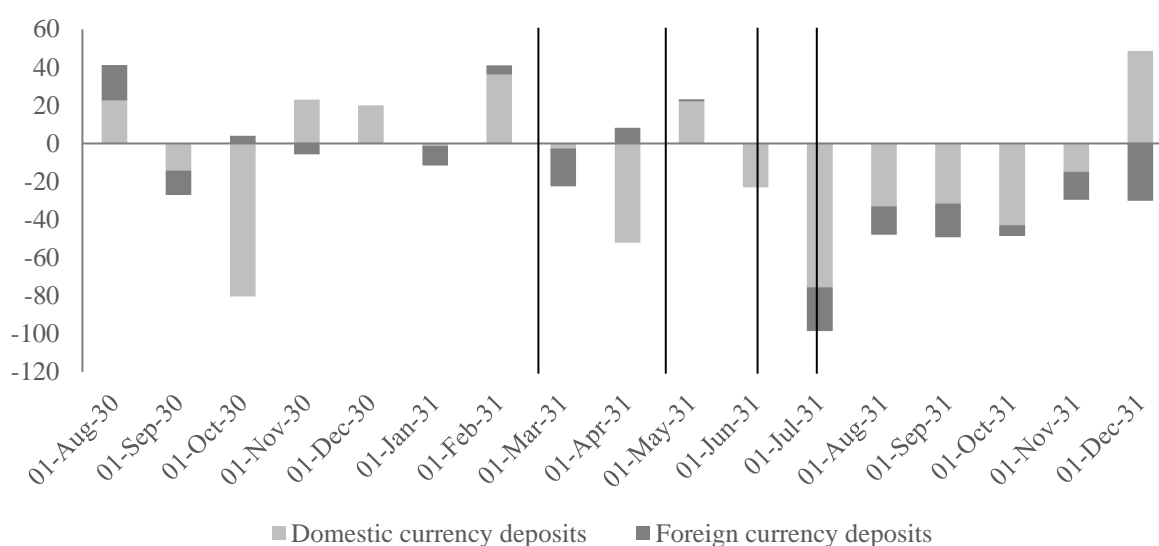
Table 8 Trigger analysis (million pengő)

	Beginning of period (BoP)	End of period (EoP)	Type of event				
Period 1	Sep 1930	Oct 1930	Banking				
Period 2	7 Mar 1931	30 Apr 1931	Banking & currency				
Period 3	30 Apr 1931	15 Jun 1931	Banking & currency				
Period 4	15 Jun 1931	15 Jul 1931	Banking & currency				
Period 5	15 Jul 1931	31 Dec 1931	Banking & currency				
Reserves of the central bank							
	Beginning of period (BoP)	End of period (EoP)	Reserves BoP	Reserves EoP	Change	Int'l support	Change without int'l support
Period 1	Sep 1930	Oct 1930	198	185	-13		-13
Period 2	7 Mar 1931	30 Apr 1931	188	173	-15		-15
Period 3	30 Apr 1931	15 Jun 1931	173	134	-39	77	-116
Period 4	15 Jun 1931	15 Jul 1931	134	138	4	100	-95
Period 5	15 Jul 1931	31 Dec 1931	138	125	-13		-13
Short-term liabilities of the banking system							
	Beginning of period (BoP)	End of period (EoP)	Change in foreign curr. deposits	Change in foreign curr. credits - estimate	Change in domestic curr. deposits	Change in domestic curr. credits - estimate	
Period 1	Sep 1930	Oct 1930	-9		-94		
Period 2	7 Mar 1931	30 Apr 1931	-12		-55		
Period 3 ^{a)}	30 Apr 1931	15 Jun 1931	1	-101	-1	-15	
Period 4 ^{b)}	15 Jun 1931	15 Jul 1931	-23	-28	-75		
Period 5 ^{c)}	15 Jul 1931	31 Dec 1931	-84		-73		

Note: a) May-June figures for bank deposits; b) July figures for bank deposits; c) Aug figures for bank deposits.

Source, HNA, file Z12, bonds 128-9; SR, 9. 1931; SR, 8. 1932; SR, 9. 1933; REA, 2. 1929, pp. 24-5; 6. REA, 1930, pp. 16-7; REA, 14. 1932, pp. 24-6.

Figure 8 The monthly change in foreign and domestic currency deposits (million pengő)



Source: REA, 2. 1929, pp. 24-5; REA, 6. 1930, pp. 16-7; REA, 14. 1932, pp. 24-6.

It is unlikely that these deposits were converted into foreign currency since, as Table 8 shows, during the same period the HNB's reserves decreased only by 13 million pengős. This change in reserves seems to have followed the normal course of the economy as reserves experienced similar minor declines during the same weeks in previous years only to climb back to higher levels by the end of the year. This suggests that depositors were withdrawing their money due to their fear of a banking crisis rather than due to their fear of currency devaluation, making the change in deposits a banking rather than a currency event. As such, the event was probably unrelated to Germany's Reichstag elections in September because that would have been ensued by not only domestic deposit withdrawals but by conversions as well.⁶⁴ The panic was not permanent and, as Figure 8 shows, what had left the financial system in September and October slowly returned in the subsequent months.

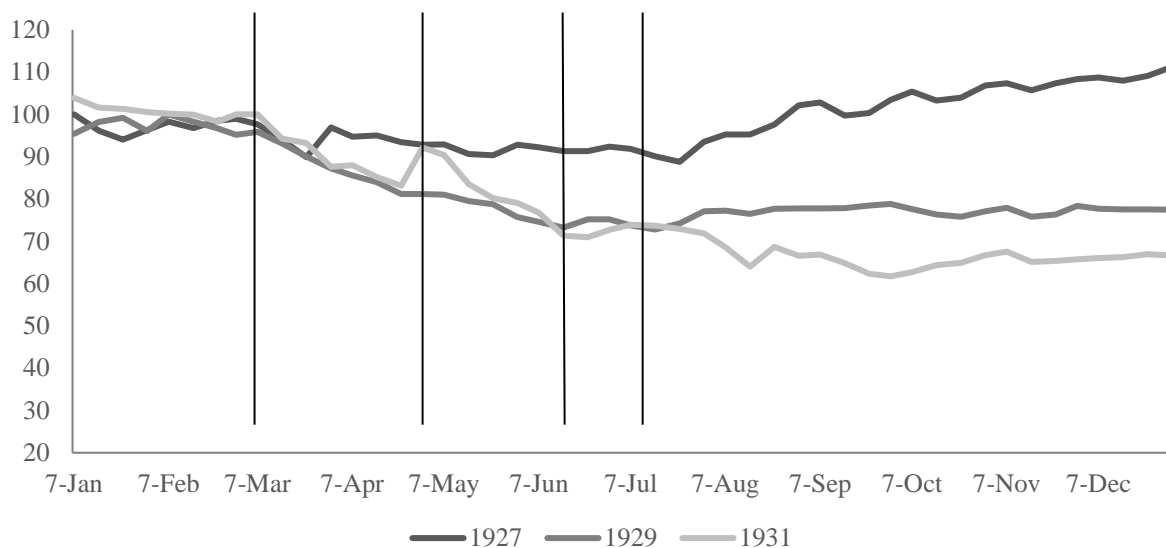
Then during what Table 8 refers to as the second period of the crisis, banks experienced renewed volatility. In March, foreign currency deposits started leaving the banking system and only some of them returned in April (Figure 8). The net impact of the foreign currency deposit flight was negative 12 million pengős.

The same volatility can be traced through the HNB's reserves. As Table 8 shows, a drop of a similar magnitude, 15 million pengős, can be identified in the reserves of the central bank. Figure 9 shows the changes in the HNB's metallic reserves for 1927, 1929, and 1931. To make the reserve levels of the three years comparable, Figure 9 relies on index numbers.⁶⁵ The year 1927 is used as a benchmark here in order to illustrate how central bank reserves evolved in a period which was free of currency problems. The 1929 and 1931 curves are both burdened with the weight of a currency crisis. In the early days of March, the 1931 curve closely follows that of 1929 as reserve levels steeply declined. However, towards the end of the period, in late April, the 1931 curve climbs back and becomes aligned with the no-crisis curve of 1927. The drop in March and the rise in April are very similar to the pattern that foreign currency deposits followed on Figure 8.

⁶⁴ It has been suggested by contemporaries that the reason for the flight may have been the Germany election. BoEA, file OV33/79, Data sent by Jakabb to Jacobsson, 25 Mar. 1931, p. 8.

⁶⁵ The reference level for the 1927 curve is 7 Jan. 1927. The same for the 1929 and 1931 curves is the start of the crisis which is the date when reserves started to undergo a decline. For 1929 this was 7 Feb. for 1931 it was 7 Mar. in 1931.

Figure 9 The reserves of the Hungarian National Bank (100 = 7 Jan. 1927, 7 Feb. 1929, 7 March 1931)



Source: HNA, file Z12, bonds 128-9.

What was the driver of the anxious behaviour of foreign currency denominated capital in March and April? A significant event that occurred during this period was the proposal of a potential customs union between Austria and Germany.⁶⁶ However, since the Austrian National Bank's reserves reacted to this circumstance with an increase, it would be difficult to explain why the remotely impacted Hungary's reserves should behave in the opposite way.⁶⁷ What I believe may provide an explanation to the behaviour of the HNB's reserves is the Jacobsson visit and report. Jacobsson arrived to Budapest on 23 March and submitted his report on 4 April. The moves of the reserves seem to follow the events of his mission and the subsequent change in perception. During March, as financiers learnt about Hungary's potential budgetary difficulties, they became doubtful and sent an envoy to investigate matter. During these days, foreign currency deposits declined as rumours were probably spreading in financiers' close circle that there may be problems with Hungary's state finances. However, when in early April Jacobsson confirmed that Hungary's case was manageable and the government was willing to make decisive steps, both deposits and reserves climbed back. Should this be the correct interpretation, it would imply that during this period of the crisis Hungary was experiencing a mild and temporary pressure on its currency which dissipated by the end of the period.

In addition, this second period of the crisis also saw volatility in the banking system as domestic currency depositors started a short flight during April. The withdrawals were out of the ordinary but somewhat lower in volume than the drop in late 1930 (Figure 8). Unfortunately, I do not have an obvious explanation to this volatility. I can only conclude that the decline was not followed by the change in reserves, that is, domestic currency was not converted into foreign currency. This implies depositors' fear for banking rather than currency stability.

In the second period of the crisis, from 7 March to 30 April, thus both banking and currency problems came to the surface but only to a limited extent. The third period, however, which covers the time of the Credit-Anstalt crisis in Austria, amplified both. In the weeks

⁶⁶ HNA, file Z12, box 2 - 27 Mar. 1931.

⁶⁷ ANB *Mitteilungen*, 1926-33.

between 30 April and 15 June, as Figure 9 shows, the central bank's reserves were continuously declining. Table 8 has the actual figure: the net change in reserves was 39 million pengős. However, it should be taken into consideration that in these weeks, the Hungarian central bank received support from a number of sources and did not report the impact of these credits in its official reserves. The Bank for International Settlements and the Reichsbank lent a total of 10 million US dollars and 700 thousand pound sterling to the HNB during this period.⁶⁸ When the foreign capital inflow from these sources is taken into consideration, then the actual reserve loss of the HNB comes to 116 million pengős during this third period of the crisis. This figure was 58 per cent of the total reserves of the HNB at the beginning of the year, implying how shocking the drain was.

Even though this money had to somehow pass out from the banking system, unfortunately, it is not detectable on Figure 8. The likely reason is that Figure 8 only shows the change in depositors but does not include creditors since monthly data are unavailable for the latter. What we do know from annual figures is that for 1931 the net change in foreign and domestic currency creditors was negative 129 and 15 million pengős, respectively. To account for the change in reserves, this creditor flight, at least partially, must have occurred during this third period of the crisis. Table 8 assumes that all of the 15 million pengős of domestic currency and 101 of the 129 million pengős of foreign currency creditors left the banking system during this period. These can account for the 116 million pengő decline of the HNB's reserves during these weeks.

The flight of capital in the months of the Credit-Anstalt crisis was predominantly driven by banking fears but some currency fears may also have been present. Since the 101 million pengős of credits were denominated in foreign currency, these investors did not have to fear devaluation. Their flight can thus be explained on the one hand by their fear that just as the Credit-Anstalt, Hungarian banks would also fall. On the other hand, they may have been concerned that just as Austria, the Hungarian government would also have to organize a bailout for its banking system, become bankrupt itself, collapse, and may even default on its loans or introduce capital controls. Further, if, as assumed, the 15 million pengős of domestic currency deposit were also converted into foreign currency, this would suggest that devaluation may also have been among investors' fears. That is, the flight of capital in May through 15 June was likely driven by anxiety about both the banking sector and the currency.

In the fourth period of the crisis from 15 June until 15 July both currency and banking problems persisted. The HNB received an additional 16 million US dollar and 300 thousand pound sterling credit through the Bank for International Settlements.⁶⁹ The total change in central bank reserves amounted to 95 million pengős in these days. The 51 million pengős of foreign currency deposits and credits withdrawn indicate fears for the banking system. The remaining 44 million pengős of reserve change indicates that the 75 million pengős of domestic currency depositors were converting their money into foreign currency in their fear for the pengő's stability.

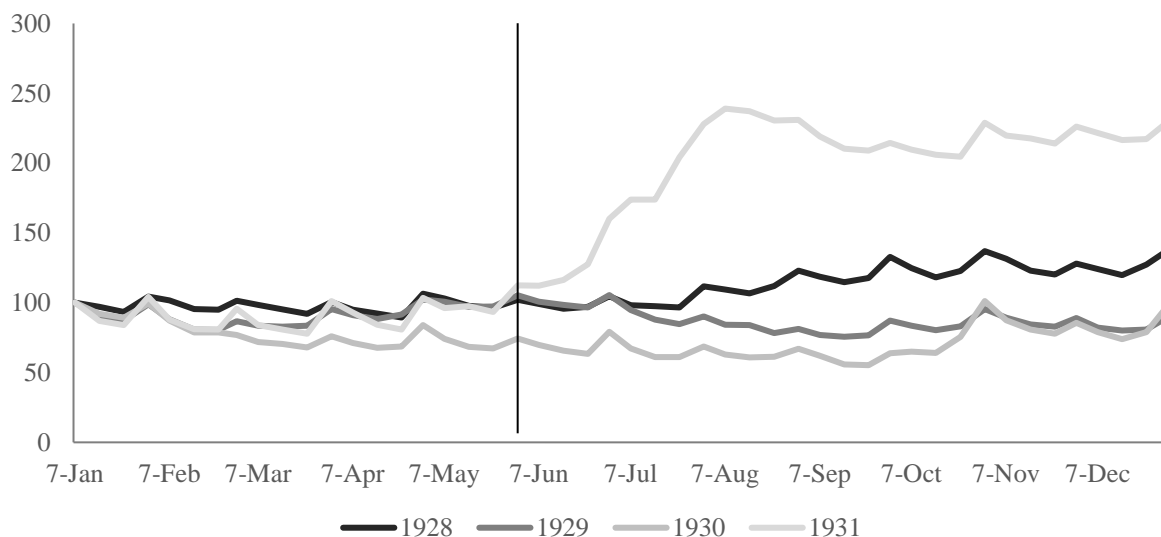
The weeks between 15 June and 15 July can clearly be characterized by deepening banking problems. As Figure 10 shows, the financial system's use of the central bank's rediscount started to steeply rise from early June. Figure 10 depicts the rediscount through index numbers for the years of 1928, 1929, 1930, and 1931 where the reference points are 7 January for each year. While the curves of 1928, 1929, and 1930 follow the same trend, the slope of 1931 becomes very different from the rest from early June and embarks on a steep increase until mid-August when it stabilizes. The financial system's demand for increased rediscount suggests that banks had serious liquidity problems. The HNB could have responded

⁶⁸ BoEA, file C40/171, Credits for the National Bank of Hungary, 14 July 1931.

⁶⁹ BoEA, file C40/171, Credits for the National Bank of Hungary, 14 July 1931; The Second Central Bank Credit, 14 Aug. 1931.

to this with restrictive measures as it did after the early currency crisis in 1928/9. The fact that it chose a different course, despite having seen its reserves haemorrhage just days earlier, underlines that there were serious problems in the banking system.

Figure 10 Rediscount (100 = 7 January for each year)



Source: HNA, file Z12, bonds 128-9.

The very period when banks' demand for rediscount more than doubled was the time of the wheat harvest. It appears that the harvest of 1931 was followed by a series of defaults. The global price of wheat depicted on Figure 2 dropped from 82.6 cents on 31 May to 52.8 cents per bushel on 31 July; a decline of 36 per cent. Previous years' same figures do not suggest that such a high post-harvest price decline was normal: the drop was 9, 12, 2, 16, 28, and 12 per cent in the years from 1925 through 1930, respectively. Domestic wheat prices followed a similar course and fell from 14.78 to 11.08 pengős.⁷⁰ This implies that the sudden and sharp decline of agricultural prices immediately made a large number of agricultural borrowers insolvent. As borrowers defaulted on their loans, Hungarian banks did not receive their expected income, became insolvent and illiquid themselves, and turned to the HNB for support.

Authorities responded to the fourth period's banking shock by introducing a number of radical crisis management measures. The fifth period of the crisis hence started with a three-day bank holiday from 14 July and when banks opened on 17 July, their depositors had to face serious restrictions on capital withdrawals. On 17 July capital controls were also introduced. However, instead of achieving stability, these measures actually worsened the situation. In the fifth period of the crisis, the flight of foreign and domestic currency deposits became continuous (Figure 8), reserves started to decline again (Figure 9), and the rediscount continued to rise for a few more weeks (Figure 10). Until the end of the year, the country was struggling with the weakness of its banking and monetary systems, simultaneously.

Hungary's crisis thus emerged in the banking system and banking and currency problems became gradually interconnected. The currency, despite the enormous reserve losses, seems to have been stabilized by the international loans. Nonetheless, this stability was undermined as the banking crisis further deepened between 15 June and 15 July. The steep rise

⁷⁰ Price of wheat from the Tisza region (78 kg) per quintal. *MSR*, XXXIV, 4-6, 1931, p. 217; 7-9, 1931, p. 401.

in the rediscount was the last nail in the coffin of the Hungarian currency and the country became entangled in a severe twin crisis.

VI

This paper has shown that just as Germany, Hungary also experienced a twin crisis in 1931. It has demonstrated that the Hungarian currency and banking systems were both vulnerable due to events and conditions that occurred several years before 1931, and in the weeks of the crisis, currency and banking problems were super-imposed on one another.

The evidence also suggests that without banks' distress, Hungary's crisis may not have been disastrous. Although the fixed exchange rate was weakened by the 1928/9 balance-of-payments crisis, it was still able to survive the weeks of reserve drain between 15 May and 15 July through international support. Had the country not had a banking system with a mountain of non-performing loans, the crisis may not have further deepened from 15 June and the fixed exchange rate may have even survived. However, nosediving agricultural prices and subsequent loan defaults fatally weakened the already struggling financial system and banks pulled the currency with them. Within months, the banking system lost almost one billion pengős of capital for the country; approximately 20 per cent of banks' total assets or approximately 15-18 per cent of the country's national income.

At Jacobsson's visit, the envoy and Hungarian authorities were discussing ways and means through which they would be able to trim off a few millions of pengős from state expenses here, or give a bit of boost to state revenues somewhere else.⁷¹ Little did they know that the banking system was already like an overheated pressure cooker. By focusing on government austerity to ensure that the LoN surveillance would not be reinstated in Hungary, they lost sight of where the actual problems were.

Appendix 1

Three publications of the *Statisztikai Szemle* (in English: Statistical Review, abbreviation in the text: SR) offer an overview of the Hungarian financial system.⁷² The one from January 1931 covers the years 1928-29, the second from January 1932 adds the year 1930. These two publications cover the whole financial system, including joint-stock banks, savings banks, and credit cooperatives. The third source from August 1933 discusses the years 1930-32 and includes the same types of financial institutions as my database: joint-stock banks and savings banks. These sources only report aggregate figures on the size of the financial system and do not detail the representativeness of their sources. I am using these reports to test the representativeness of my own database compiled bottom-up through aggregating the balance sheets and profit and loss statements of individual joint-stock financial institutions. The comparison is reported below.

I am comparing the total assets, total equity, total earnings, and total lending of my own database to the three sources. The coverage of my database is between 71 and 95 per cent of the financial system when compared to the database including credit cooperatives. Coverage ratios are naturally much better when my dataset is compared to the source which includes only

⁷¹ BoEA, file OV33/79, Note of a conversation between Jacobsson and Jakabb, 23, 24, 26 March 1931.

⁷² Dr. Szőnyi, Gyula: A magyarországi pénzüzetek az 1929. évben (Title in English: Hungarian financial institutions in 1929), *SR*, 1. 1931; Dr. Szőnyi, Gyula: A magyarországi pénzüzetek az 1930. évben (Title in English: Hungarian financial institutions in 1930), *SR*, 1. 1932; Dr. Szőnyi, Gyula: Magyarország részvénytársasági formájú hitelintézeteinek tőkeállapota és üzleteredményei az 1932. évi zárszámadások szerint (Title in English: The capitalization and earnings of Hungarian joint-stock financial institutions based on 1932 financial statements), *SR*, 8. 1933

joint-stock banks and savings banks. Compared to this source, I am actually capturing more of the population than the contemporary author did.

The representativeness of the bank database

Panel 1 - Calculating representativeness based on total assets			
	Based on <i>SR</i> , 1. 1931	Based on <i>SR</i> , 1. 1932	Based on <i>SR</i> , 8. 1933
1928	79%		
1929	71%	71%	
1930		73%	111%
1931			104%
1932			100%
Panel 2 - Calculating representativeness based on total equity			
	Based on <i>SR</i> , 1. 1931	Based on <i>SR</i> , 1. 1932	Based on <i>SR</i> , 8. 1933
1928	94%		
1929	91%	91%	
1930		89%	112%
1931			118%
1932			113%
Panel 3 - Calculating representativeness based on total earnings			
	Based on <i>SR</i> , 1. 1931	Based on <i>SR</i> , 1. 1932	Based on <i>SR</i> , 8. 1933
1930			99%
1931			99%
1932			144%
Panel 4 - Calculating representativeness based on total lending			
	Based on <i>SR</i> , 1. 1931	Based on <i>SR</i> , 1. 1932	Based on <i>SR</i> , 8. 1933
1928	82%		
1929	80%	80%	
1930		95%	126%
1931			116%
1932			115%

Source: *SR*, 1. 1931; *SR*, 1. 1932; *SR*, 8. 1933; The author's own calculations based on *Compass*, 1925/6-1934/5.

Appendix 2

This analysis makes an approximation of the volume of non-performing loans. The theory is that a 10 per cent decline in the net interest margin over a year suggests that on average 10 per cent fewer loans paid interest than in the previous year. The assumption behind this theory is that the fall of the net interest margin can be fully attributed to the deterioration of the quality of the loan portfolio and changes to the structure of the market do not affect it. Panel 1 of the below table explains the calculations behind this theoretical approach.

The model in Panel 1 assumes a loan portfolio of 100 (column 1) and an annual net interest margin of 10 per cent paid on a monthly basis (column 2).⁷³ Under these assumptions, the completely healthy bank of period 1 has net interest earnings of 10 for the whole year which translates to 0.83 on a monthly basis (column 3). If, however, the bank's loan portfolio deteriorates and some of its loans stop paying interest, then its net interest margin declines.

⁷³ In the table, NIM stands for net interest margin, NPL stands for non-performing loans.

Background information on the non-performing loan (NPL) estimation

Panel 1		Period 1			Period 2			
	1	2	3	4	5	6		
Month	Lending	Net interest margin	Net interest earnings	Non-performing loans	Performing loans	Net interest earnings		
1	100	0.83%	0.83	10.00	90.00	0.75		
2	100	0.83%	0.83	10.00	90.00	0.75		
3	100	0.83%	0.83	10.00	90.00	0.75		
4	100	0.83%	0.83	10.00	90.00	0.75		
5	100	0.83%	0.83	10.00	90.00	0.75		
6	100	0.83%	0.83	10.00	90.00	0.75		
7	100	0.83%	0.83	10.00	90.00	0.75		
8	100	0.83%	0.83	10.00	90.00	0.75		
9	100	0.83%	0.83	10.00	90.00	0.75		
10	100	0.83%	0.83	10.00	90.00	0.75		
11	100	0.83%	0.83	10.00	90.00	0.75		
12	100	0.83%	0.83	10.00	90.00	0.75		
			10.00			9.00		
Panel 2		Period 1			Period 2			
	1	2	3	4	5	6		
Month	Lending	Net interest margin	Net interest earnings	Non-performing loans	Performing loans	Net interest earnings		
1	100	0%	0.00	0.00	100.00	0.00		
2	100	0%	0.00	0.00	100.00	0.00		
3	100	0%	0.00	0.00	100.00	0.00		
4	100	0%	0.00	0.00	100.00	0.00		
5	100	0%	0.00	0.00	100.00	0.00		
6	100	0%	0.00	0.00	100.00	0.00		
7	100	10%	10.00	10.00	90.00	9.00		
8	100	0%	0.00	10.00	90.00	0.00		
9	100	0%	0.00	10.00	90.00	0.00		
10	100	0%	0.00	10.00	90.00	0.00		
11	100	0%	0.00	10.00	90.00	0.00		
12	100	0%	0.00	10.00	90.00	0.00		
			10.00			9.00		
Panel 3		1	2	3	4	5	6	7
Year	NIM/lending	Change	New NPL	NPL cumulative	Ungnt'd NPL	NPL/equity	NPL/lending	
1926	3.8%							
1927	2.9%	-24.3%	490	490	483	122%	24%	
1928	2.9%	-0.7%	19	509	497	105%	19%	
1929	2.8%	-1.2%	37	546	400	77%	18%	
1930	2.4%	-14.9%	529	1,075	478	88%	30%	
1931	2.5%	4.7%	-138	937	564	98%	32%	
1932	2.2%	-14.2%	409	1,346	990	175%	47%	
1933	1.8%	-16.6%	497	1,844	1,287	224%	61%	

Source: The author's own calculations based on *Compass*, 1925/6 - 1934/5.

Period 2 assumes a 10 per cent decline in the net interest margin which reduces net interest earnings by 10 per cent on a monthly basis (column 6). Net interest earnings of 10 per cent less imply that 10 per cent fewer loans are paying the annual 10 per cent interest margin. Thus, while the bank's total lending is still 100 in total, it is now divided into a 10 non-performing (column 4) and a 90 performing part (column 5). In this period 2, only column 5 loans earn interest, column 4 loans are non-performing. The net interest earnings generated are thus 10 per cent less on a monthly basis and on the aggregate level as well.

Panel 2 carries out the same analyses but assumes that interest payment occurs only once a year. For this analysis, it has been assumed that debt service takes place in July, after the period of the wheat harvest. Presumably, this was the general course in an agricultural country like Hungary. The overall impact of a 10 per cent decline in the net interest margin on the loan portfolio is the same. The difference is on the bank's balance sheet. Only in July does the bank have a clear understanding of the share of delinquent loans within its portfolio (columns 4 and 5). Since in other months there is no interest service, the bank does not obtain information on the health of its lending. Therefore, if interest was paid on an annual basis in July, then this theoretical approach likely underestimates the volume of non-performing loans for the end of the year.

Panel 3 shows the detailed calculations behind Table 6 and 7 of the paper which apply the theoretical approach explained above. The calculations are made here for the whole financial system. The details are the following:

- Column 1 calculates the net interest margin to total lending ratio (referred to as *NIM/TL* in Tables 6 and 7)
- Column 2 calculates the year on year change of the NIM/TL ratio (referred to as the *Change in NIM/TL* in Tables 6 and 7).
- Column 3 calculates the volume of new non-performing loans for the end of each financial year. Applying the theoretical approach explained above, the change in the NIM/TL can be used as a proxy for the share of new non-performing loans within the whole lending portfolio of the banking system. As explained, if interest was paid only once a year, e.g. in July - which is much more likely than the monthly payment, especially for agricultural loans - then this approach underestimates the volume of new non-performing loans at the end of the year.
- Column 4 calculates the cumulative sum of non-performing loans to arrive at the stock of non-performing loans for the end of each financial year.
- Column 5 calculates the stock of unguaranteed non-performing loans. Some financial institutions' lending was guaranteed, meaning that if these loans were to default, the arising losses were incurred not by the bank but by the guarantor. The biggest guarantor was the Hungarian state: in 1930 approximately two-thirds of the total guarantees were provided by the state to two state-owned institutions, the Magyar földhitelintézetek országos szövetsége and the Magyar földhitelintézet.⁷⁴ Other financial institutions also enjoyed guarantees and the largest sums were on the balance sheet of four issue banks: the Magyar Általános Hitelbank, Pesti Magyar Kereskedelmi Bank, Magyar Leszámítoló- és Pénzváltó-Bank, and the Angol-Magyar Bank.⁷⁵ They together accounted for 50 per cent of the remaining one-third of the guarantees. Based on archival evidence, it is possible that the guarantees of these private institutions were also state-backed but there is no firm evidence for this.⁷⁶ Unfortunately, there is very limited information on these guarantees: whether they were used or not. My

⁷⁴ *Compass*, 1931/2, pp. 110-3, 171-4.

⁷⁵ *Ibid.*, pp. 97-107, 113-26, 129-35, 151-8.

⁷⁶ BoEA, file OV33/79, Note of a conversation between Jacobsson and Szcitovszky, 24 March 1931.

understanding based on archival evidence is that the guarantees were not called before the crisis.⁷⁷ In the calculations, the stock of non-performing loans in column 4 is reduced by these guarantees to arrive at the unguaranteed portion of non-performing loans in column 5.

- Column 6 calculates the ratio of unguaranteed non-performing loans and equity (referred to as *NPL/equity* in Tables 6 and 7).
- Column 7 calculates the ratio of non-performing loans and total lending (referred to as *NPL/lending* in Tables 6 and 7).

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