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Public debt as private liquidity: the Poincaré experience (1926–1929)

AURÉLIEN ESPIC
Banque de France and Aix-Marseille University

In the follow-up to the 1926 political and monetary crisis in France, a new government led by Raymond Poincaré attempted to restore monetary stability by restructuring public debt. A sinking fund was missioned to withdraw short-term public bills from money markets. This policy disorganized the largest Parisian banks of the time, as they relied on these bills to manage their liquidity. Without developed domestic money markets, no other asset could absorb the excess liquidity freed by the withdrawal of these bills, and these leading banks faced a low-rate environment. In search of yield, they expanded their activities abroad a few months before the 1929 crash. These findings renew our understanding of the expansion of France's banking sector in the 1920s. In addition, they shed new light on the role of public debt in financial stability in an open economy.

Keywords: public debt, liquidity, international finance, interwar

JEL classification: N14, N24, E44, G21

Following World War I (1914–18), France's public debt grew to unprecedented levels in the context of deep political instability. This culminated in a financial and government crisis in the spring of 1926. A new government, led by veteran centre-right politician Raymond Poincaré, took office in July 1926 with a clear intention to stabilize public debt. This resulted in a drastic change in the maturity of government bonds, with short-term bills nearly vanishing. I show that this policy severely destabilized French money markets and the leading banks of the time, which relied heavily on such bonds. Indeed, short-term public debt repayment triggered a cash inflow for banks, pushing interest rates down. During the first half of 1927, without alternative short-term instruments to manage their liquidity, banks deposited incoming funds at the French Treasury, a practice allowed since World War I. Looking for higher yields,

Aurélien Espic, Banque de France, 75001 Paris, France, and Aix-Marseille School of Economics, Aix-Marseille University, 13005 Marseille, France, email: aurelien.espic@banque-france.fr. For their very insightful comments and suggestions the author thanks the editors, two anonymous reviewers, Pierre-Cyrille Hautcoeur, Eric Monnet, Angelo Riva, Pierre Sicsic and Stefano Ungaro. The author would like to acknowledge his debt to archivists at the Banque de France, the Ministry of Finance and Crédit Lyonnais. The views expressed in this article are those of the author and do not necessarily reflect the views of the Banque de France, nor of the Eurosystem.

the largest Parisian banks successfully pushed the government to end the ban on capital exports that had been in place since 1918. This legal change contributed to the sizeable expansion of leading banks' balance sheets. This episode also had a compositional effect by reallocating capital from public domestic assets to private foreign assets. Overall, this sequence brought French capital to the forefront of international finance in the run-up to the Great Crash of 1929 and the banking panics of the early 1930s.

The contributions of this article are twofold. First, it bridges a gap between classical studies on France in the 1920s, focusing on debt and monetary management (Sargent and Wallace 1981), and a more recent strand of literature focusing on the sudden decrease in banking activity in 1930–1 (Baubeau *et al.* 2021). The Poincaré government has been studied mainly as the outcome of the political instability that followed the war or for its role in international monetary relations. By focusing on debt restructuring, I explore how much this policy destabilized the main banks of the time. Indeed, withdrawing short-term bills reduced the supply of liquid and safe assets in money markets when demand for such assets increased because of the monetary stabilization.

Second, this article provides a case study of the link between financial stability and publicly produced liquid and safe assets and their degree of substitutability with private assets. Taking a historical standpoint enables one to assess the external validity of existing theories (for instance, Angeletos *et al.* 2023). By studying a dramatic attempt by the state to retreat from financial markets, this article departs from the marginal changes in the supply of short-term public debt that underpin most theoretical contributions. Following the Poincaré Stabilization, as the state was the leading producer of safe and liquid assets for French banks, the repayment of short-term public debt greatly disorganized their activity in money markets. As a reaction, some projects were discussed to foster the supply of domestic private liquid and safe assets. The French central bank considered developing a deeper interbank market, notably by introducing open market policies. Nevertheless, its hesitation was detrimental, and foreign money markets remained a more attractive option.

These findings have broader implications for debt management and financial stability. They underline the importance of public financial instruments for private actors, especially in economies experiencing a 'saving glut' and structural instability (Caballero 2006). The underdevelopment of the money market in France during the interwar period was instrumental in the expansion of foreign credit, highlighting how the effect of debt management on financial stability depends on the structure of financial markets and, thus, the need to account for such a structure in policymaking.

This article first contributes to the literature on the 1926 French financial crisis. The origins of the crisis have received considerable attention, notably through the lens of the fiscal theory of the price level, which states that the price level is determined by the stance of the fiscal authority as long as the monetary policy is passive (Sargent 1981; Sargent and Wallace 1981; Bordo and Levy 2020). The rise in inflation in 1924–6 is thus attributed to budgetary deficits and passive monetary policy. This view has been qualified by studies showing that state budgets were, in fact, balanced. These

studies promote a political economy interpretation of the period, stressing the role of inflation and taxation expectations (Makinen and Woodward 1989; Alesina and Drazen 1991; Prati 1991; Hautcoeur and Sicsic 1999).

Regarding the policies of the Poincaré government, the literature focused on the monetary stabilization of June 1928. Although the new franc was undervalued and thus boosted French exports in the late 1920s (Mouré 1991), the stabilization level was not deliberate (Sicsic 1992). Fiscal reactions to the crisis have received less attention. They have been summarized as 'substantive, although short-lived fiscal austerity measures' (End 2019, p. 158), therefore playing down their radicalism. Some studies have examined the political context surrounding the creation of the amortization fund used to restructure public debt (Eichengreen 1986; Toytot 1991; Delalande 2010) but never studied its consequences for French financial actors.

Second, by studying the impact of public debt management on banks, this article is related to another strand of the literature focusing on French banks in the interwar period. This literature has emphasized the dramatic change in the relationship between the State and banks that occurred in the 1920s, notably through the supply of short-term public debt that banks massively purchased (Blancheton 2001; Feiertag 2003; Quennouelle-Corre 2013; Duchaussoy and Monnet 2019). Nevertheless, this short episode of public debt restructuring and private credit boom (Teneul 1961; Saint Marc 1983) is an exception to this narrative. Thus, this study is closer to those that focused on the source of credit expansion in the 1920s. If growing inflation is the traditional explanation (Jonker and Zanden 1995), inflation was under control after 1926, but credit kept expanding. Bonhoure *et al.* (2023) found that the development of bank branches can explain this. Baubeau *et al.* (2021) suggest that the boom occurred 'partly because the stabilization fuelled confidence and booming activity and partly because the repayment of war bonds by the state increased liquidity in the market' (p. 233). This study further investigates the link between the repayment of war bonds and the rise in credit and connects it to the global history of international finance. Myles (2021) studied how the architecture of international trade finance interacted with national financial systems in the United Kingdom, the United States and Germany in the 1920s. This article also shows how national actors attempted to rebuild global capitalism following World War I (Tooze 2014) and highlights the crucial role of central banks in allowing private actors to compete in international credit markets (Eichengreen 1992; James 2001).

Finally, this study is also related to the literature on the role of public debt for financial actors in money markets. Theoretical contributions emphasized the importance of public bonds for private actors to overcome financial frictions, as these assets are liquid (Woodford 1990; Holmström and Tirole 1998; Angeletos *et al.* 2023) and safe (Gorton 2016).[1] Private actors can produce liquid and safe assets (Flandreau

[1] The two concepts are closely linked: a safe asset is a low credit-risk asset, but also a rather liquid asset, as credit-risk assessment is always reversible.

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et al. 2009; Gorton *et al.* 2012; Gorton 2016), although nowadays, short-term government bonds are the reference safe assets (Krishnamurthy and Vissing-Jorgensen 2012). In addition, this literature stressed that the degree of substitution between privately and publicly produced safe assets in modern money markets is imperfect, especially in periods of stress: a lower share of publicly produced assets may threaten financial stability (Stein 2012; Krishnamurthy and Vissing-Jorgensen 2015; Kacperczyk *et al.* 2021). Although the French money markets of the interwar period differ widely from those studied by these authors, a similar conclusion can be reached for the episode studied in this article.

The remainder of this article is organized as follows. Section I describes the public debt restructuring under the Poincaré government. Section II studies the impact of this policy on interest rates and the margins of the largest Parisian banks. Section III shows that this domestic environment pushed these banks to expand abroad. Section IV concludes.

I

This section describes how the Poincaré government (1926–9) attempted to restructure public debt. Despite the lack of a preconceived plan, this government's endeavors turned out to have sizeable consequences, with the withdrawal of *Bons de la Défense nationale* (BDN) – i.e. short-term public bills – from money markets.

During World War I, France faced a huge need to finance its war efforts and was unwilling to raise taxes. An income tax was introduced in 1913, but it was mainly symbolic, especially given the huge rise in expenditure. Consequently, the French state mainly used two debt instruments: *Avances* of Banque de France (BDF) – a credit line opened by the BDF for the Treasury, with a maximum amount voted by Parliament – and short-term bills, BDNs, which were freely available for subscription at any time to banks and the general public alike (Blancheton 2012; Duchaussoy and Monnet 2019). In 1919, French public debt amounted to 32 years' worth of tax revenue (End 2019) and had a very different composition compared to the pre-World War I period. Before 1914, France relied mostly on long-term bonds; after 1918, short-term debt played a considerable role (Quennouelle-Corre 2013). The post-war period did not witness any dramatic change in this debt structure, partly because of the political instability that impeded any consistent reform of public finance. Indeed, left-wing parties argued for more taxes on the wealthy, while the center-right coalition defended budget cuts but had to finance reconstruction and the first premises of a welfare state. Finally, the firmly anchored belief that Germany would pay for reconstruction delayed stabilization. In short, by 1924, France still faced sizeable short-term debt and significant inflation despite having retrieved its 1913 level of production in 1923 (Guieu 2015).

At that time, a relatively stable center-left coalition emerged, the *Cartel des Gauches*. Under the leadership of Edouard Herriot, the coalition intended to stabilize the public budget. However, the proposition of a one-off capital levy met strong

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opposition, and the government had to resort to *Avances* (Hautcoeur and Sicsic 1999). After being stabilized at a little over 20 billion francs since 1922, representing one year of state income (Sauvy 1965, p. 513), *Avances* rose again in 1925, reaching nearly 40 billion francs in the summer of 1926 (Baubeau 2018). These inflationary pressures led to a run on the franc and a decreasing subscription to BDN. The coalition fell in July 1926, and a center-right government under the leadership of Raymond Poincaré took power. This majority had no choice but to succeed in its alternative stabilization plan, as it would otherwise have faced the threat of a capital levy that had been successfully avoided a few months before. The coalition was then endorsed to conduct an austerity plan to anchor the franc back to gold and attract foreign capital (Mouré 1991). However, the means to do so were uncertain; the return to gold occurred at a devalued parity because of historical contingencies (Sicsic 1992). Even though this period of surplus budgets was short-lived and the amplitude of the decrease in public debt is debatable, its simple existence in a time of increasing state commitment is noticeable.

Figure 1 displays the evolution of domestic debt in nominal and real terms, broken down by maturity. Data are drawn from the League of Nations' memorandum on public debt (League of Nations 1948, pp. 74–5), which gathered official figures provided by governments of the time. Scholars commenting on these figures have long focused on the contribution of inflation to reduce the debt burden in real terms, building on the fiscal dominance thesis (Sargent and Wallace 1981; End 2019): although nominal debt slightly increased in the 1920s, it decreased in real terms. This was still true under Poincaré, when inflation remained far from insignificant at 3 percent in 1927, 0.5 percent in 1928 and 6 percent in 1929.[2] Nevertheless, part of the reduction in real terms came from a decrease in the quantity of public debt, with overall domestic debt being cut by roughly 10 percent in nominal terms over a relatively short horizon. However, the dramatic shift in the maturity of public debt is more striking.

Poincaré's term saw long-term term debt evicting floating debt, i.e. public debt with short duration and thus exposed to a sudden tightening of rollover conditions. Indeed, the political and financial crisis of 1926 had its roots in a debate revolving around debt structure rather than fiscal sustainability. Makinen and Woodward (1989) argue that the public deficit, resulting in constant short-term borrowing between 1922 and 1926, was being closed under the *Cartel*. Deficits amounted to 9 and 11 billion francs in 1921–3 before declining under the *Cartel*: 7.1 billion francs in 1924 and 1.5 billion in 1925. From 1926 and until the end of 1929, the state made a surplus (Sauvy 1965, p. 513). In fact, the *Cartel*'s debt management, rather than fiscal policy, was detrimental to its survival. The sharp monetary expansion of 1925 did not hide fiscal imbalance but ended up placing the determination of interest rates in the political rather than in the financial sphere. Indeed, most short-term bills

[2] According to the consumption price index reported by Sauvy 1965, p. 501.

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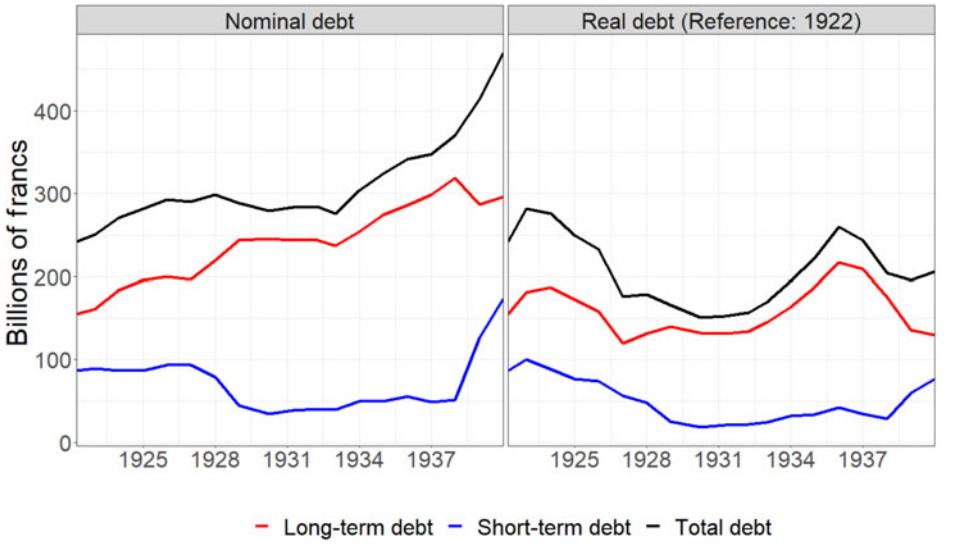

Figure 1. *French public debt in nominal and real terms*
Source: League of Nations, *Public Debt, 1914–1946* (1948).

had nominal interest rates fixed by governmental decrees, which had remained unchanged since March 1923 despite inflation. In addition, the government tried to rely more on the BDF's *Avances*. Thus, these two decisions can be construed as attempts to avoid paying a market-based interest rate. This impression was reinforced by the revelation that the true extent of the *Avances* had been concealed from the public to bypass the cap fixed by Parliament (Blancheton 2012). Therefore, the success of the Poincaré government in mitigating the 1926 crisis lay in the perception that it would be ready to pay a fair interest rate by limiting its use of *Avances* and short-term bills with fixed interest rates.

Once in power, the Poincaré government felt the need to deliver, partly to anchor expectations and partly to stand out from the *Cartel*'s malpractices. Moral considerations were likely to underpin the sanitation of this debt regime. In any case, there was considerable uncertainty regarding the plan to pursue. *Avances* were partly repaid in 1927 (from 40 billion to 25 billion francs, that is, back to the pre-*Cartel* crisis level) and by the monetary law of 24 June 1928. By establishing a new gold parity for the franc, the law revaluated the BDF's stock of gold so that *Avances* were regarded as paid off. The issue was more complex for short-term bills. The bulk of these bills were BDNs, which amounted to roughly 45 billion francs in July 1926.[3] They had a maturity of between a month and a year and could be freely subscribed without the state launching a yearly emission. The Poincaré government thus targeted

[3] Service des Archives Économiques et Financières [henceforth SAEF]: Dette publique de l'État et Caisse Autonome d'Amortissement: Situations (1925–1938) [henceforth Situations].

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these bills with very strong symbolic measures during its first weeks in office. Indeed, as early as 7 August 1926, it created a sinking fund, the *Caisse Autonome d'Amortissement* (CAA). The fund was endowed with fiscal resources, and its mission was to terminate the existence of BDNs. These resources were further protected by the constitutional law of 10 August 1926. Although there was no constitutional court in the republican regime of the time, introducing an amendment to the constitution seemed to have conferred some republican sanctity to the text, such that it was unimaginable to decrease the CAA's resources. The CAA received the ability to manage the monopoly on tobacco and use its profits (around 3.5 billion francs). The other key resources were revenues of inheritance taxes and taxes on real estate transactions (between 2.5 and 3.5 billion francs), budgetary surpluses (in 1929 and 1930 only, with respectively 1.5 and 2 billion francs), and the results of two bond emissions (in particular, 3.5 billion francs at the end of 1926). With a total of roughly 7 billion francs devoted to the CAA,[4] one can measure the weight of the scheme in fiscal terms: it amounted to 15 percent of the total budget between 1926 and 1932 (Sauvy 1965, p. 513).

However, if its mandate was clear – that is, to decrease the circulation of BDNs and consolidate them – the means to achieve it were less so. Toytot (1991) provides a detailed account of the debates at the board meetings of the CAA during the second half of 1926. Initially, the aim was to emit long-term bonds in exchange for BDNs directly. However, the October 1926 issuance was a complete failure, with half of the bonds being bought by the *Caisse des Dépôts et des Consignations*, a state-sponsored institution whose director was a member of the CAA board. This led to a change in its strategy: the CAA would rather lower the rates of BDNs and lengthen their maturity, paying back holders who would refuse these new terms. The governor of the BDF and member of the CAA board, Emile Moreau, opposed these proposals in the name of the banking sector, which relied heavily on those bonds, before giving in: the political context that sanctified the restructuring of public debt was too strong (Toytot 1991). The CAA then enacted changes in the rates and maturity of BDNs, which are reported in Table 1. Two-year bills ended up replacing all other maturities. In addition, when the CAA did not directly convert short-term bills into long-term bonds, the Treasury compensated for the decrease in income by issuing Treasury bills and redeemable long-term bonds in 1927 and 1928 (see Table 2). Overall, the circulation of BDNs progressively decreased from 49 billion francs in December 1926 to 33 billion francs in June 1928.[5]

Some scholars have already emphasized the debt restructuring operations conducted under Poincaré (Eichengreen 1986; End 2019). This study contributes to the literature by investigating the system-wide implications of this policy. Focusing

[4] Banque de France [henceforth BDF]: Caisse Autonome d'Amortissement. Rapport au Ministre des Finances (1926–1931); 7 ORD BIB 61052.

[5] SAEF: Situations.

Table 1. *Rates of* Bons de la Défense nationale

	1 month	3 months	6 months	1 year	2 years
1 August 1926	3.6%	5%	5.5%	6%	–
2 December 1926	3%	5%	5.5%	6%	–
16 December 1926	–	4%	4.5%	5.5%	–
1 January 1927	–	4%	4.5%	5.5%	6%
13 January 1927	–	–	4.5%	5.5%	6%
29 January 1927	–	–	–	5.5%	6%
3 February 1927	–	–	–	5%	6%
11 April 1927	–	–	–	4%	5%
6 May 1927	–	–	–	3%	5%
2 June 1927	–	–	–	–	5%
22 June 1927	–	–	–	–	4.5%
24 April 1928	–	–	–	–	4%
10 December 1929	–	–	–	–	3.5%

Source: BDF, Décisions de la Caisse Autonome de Gestion des Bons de la Défense nationale, de l'exploitation industrielle des tabacs et de l'amortissement de la dette.

Table 2. *Outstanding amount of public debt issuance, in billions of francs*

	1926	1927	1928	1929
1927 Rentes	–	18.2	18.1	17.9
1928 Rentes	–	–	21.5	19.9
1927 Bonds	–	4.6	4.6	4.6
CAA Bonds	–	2.5	2.3	7.5
1926 Treasury Bills	1.4	1.3	1.2	1.1
1927 Treasury Bills	–	3.6	3.5	3.3

Source: SAEF, Dette publique de l'État et Caisse Autonome d'Amortissement: Situations (1925–38).

on the identity of those buying these instruments enables us to document redistribution effects. Indeed, as suggested by Moreau's intervention, traditional holders of BDNs, mainly banks, were not keen on these new instruments: the lengthening of maturity did not come with higher market liquidity, as no significant repo market was organized for them.

More broadly, the public debt restructuring scheme interacted with the special features of French money markets to produce a liquidity shortage. Before World War I, *reports* were the most liquid instruments supplied by the four largest banking networks of the time (Crédit Lyonnais, Société Générale, Comptoir Général d'Escompte, Crédit Industriel et Commercial). *Reports* were debt instruments with a very short

maturity (from 15 days to a month), which fueled speculation on the burgeoning Paris financial market. Conversely, these *reports* were crucial for banks' liquidity management, thus creating a deep link between these banks and the Paris financial market (Flandreau and Sicsic 2003). Therefore, its demise after World War I and the dramatic increase in public floating debt overhauled banks' business model (Baubeau 2016). As one of the main money markets vanished, banks resorted massively to the discount of short-term bills for agents in need of liquidity, known as *escompte hors banque* (Bonin 2000). Banks could then hold these bills until maturity or ask the Banque de France to discount them only if their maturity was shorter than three months. Other money markets in France were underdeveloped at this time. In particular, interbank loans, repo transactions and certificates of deposits were not widespread, in line with the BDF's refusal to pursue open-market policies and prioritization of discounting.

Thus, short-term bills were the only instruments banks had to manage their liquidity (Laufenburger 1940; Aulagnier 1971). Among such bills, BDNs were perfectly suited for this system: their one-month or three-month maturity enabled banks to satisfy their liquidity needs. According to Teneul (1961, p. 208), public bills amounted to 51 percent of banks' commercial portfolios by 1925. By restructuring public debt, monetary stabilization deprived banks of their main liquidity management tool, as other short-term bills failed to substitute. The remainder of this article thus studies the unintended consequences of this political sequence on money markets.

II

This section studies the plan's impact on banks' portfolios and margins. It demonstrates that banks struggled to find substitute assets for disappearing BDNs. This propagated to interest rates, which fell dramatically in 1927, thus compressing banks' margins.

I first show that banks decreased their aggregate credit, finding no alternative to BDNs, by using monthly balance sheets of the four largest banks for the first half of the twentieth century (Crédit Lyonnais, Société Générale, Comptoir Général d'Escompte, Crédit Industriel et Commercial).[6] These four banks represented approximately 60 percent of deposits (Baubeau *et al.* 2021). The novelty of this archive is not to extend the set of banks covered (Teneul 1961; Saint Marc 1983). However, its monthly frequency enables the investigation of infra-year movements, which are crucial for understanding the period.

Figure 2 presents an aggregate decomposition of banks' assets. Credits are divided into three categories. 'Advances' gathers advances against collateral and is a minor category. 'Overdrafts' gathers current accounts and assets held by banks' correspondents. 'Commercial portfolio' is the largest category and gathers discounted short-term bills. Archives do not distinguish between private and public papers, as noted by Teneul (1961). The last item presented is banks' reserves, i.e. their most liquid assets held as

[6] BDF: Bilans des sociétés de crédit; 1370199401.

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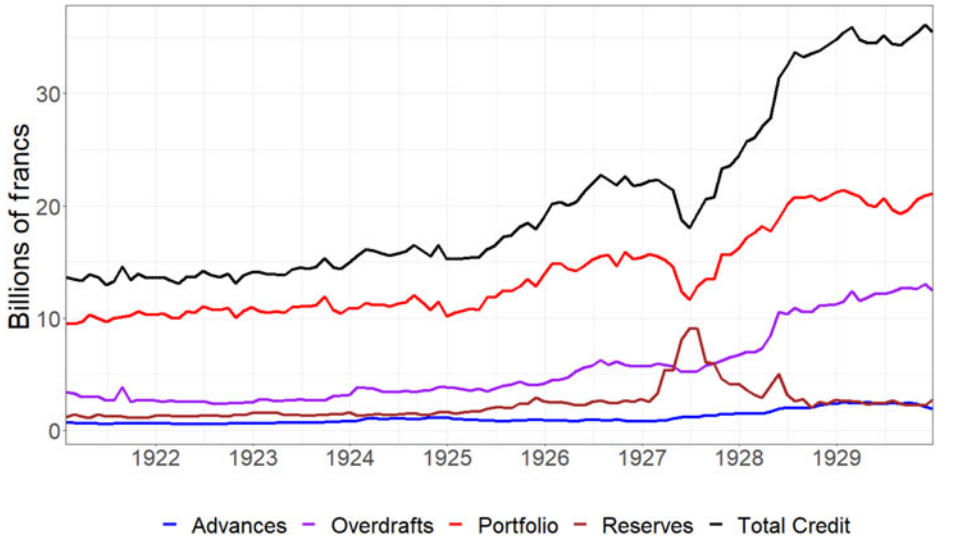

Figure 2. *Assets of the four main French banks*
Source: BDF, Bilans des sociétés de crédit.

cash in their vaults or as deposits at the BDF and, more surprisingly, perhaps, at the Treasury.

As shown in Figure 2, credit decreased from 22 billion francs to 18 billion francs between March and June 1927, a 20 percent drop over three months. However, total assets remained fairly stable, as the increase in reserves offset the decrease in commercial portfolios. In addition, this drop in credit was short-lived: credit bounced back between June 1927 and July 1928, from 18 billion to nearly 34 billion francs, a 90 percent increase over a year. These aggregate movements were common to all banks in the sample. For instance, they all saw their cash holdings multiplied by at least three: they represented between 30 and 40 percent of their assets in mid 1927 before returning to less than 10 percent by the end of 1927.

Although balance sheets do not single out BDNs in banks' assets, there is evidence that this drop in credit can be attributed to the CAA's policy. First, most of the decline in credit can be attributed to the contraction of commercial portfolios in which BDNs were included. Second, the timing of the decrease matches the CAA's decisions regarding BDN circulation. Third, this assumption is in line with Teneul (1961), who estimated that the share of public bills in commercial portfolios for French commercial banks went from 46 to 24 percent between the end of 1926 and the end of 1929. Finally, there is no evidence of a significant commercial slowdown in 1927, which would account for such a large drop in commercial portfolios. Everything thus points to the withdrawal, extended maturity and reduced rates of BDNs.

This narrative is emphasized by financial commentators of the time, who argued that the restructuring policy released considerable liquidity, along with

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the renewed appreciation of the franc attracting investors. For instance, the yearly special edition of *Revue d'économie politique* emphasized this aspect. Paul Ricard, writing the money markets section in 1927, summarized the situation this way:

> The two following factors drove the dynamics of the money market in 1927. On the one hand, a quick decrease in investment opportunities. On the other hand, a sharp increase in available liquidity following the inflow of foreign currencies. The first factor is the consequence of the maturity lengthening conducted by the BDN fund. This measure, which reached its most critical phase with the abolition of one-year bills, pushed Defence bills out of banks' portfolios and into private coffers … At the time, some people were pleased with this state of affairs, saying that it would finally force banks to do their job: lend capital to commerce and industry. The issue was that commerce and industry did not need more capital, at least not under the short maturities banks could supply. (Ricard 1928, pp. 499–502)

Therefore, private actors did not compensate for the drop in the supply of liquid and safe assets, while demand increased with upcoming monetary stabilization. Indeed, firms' demand for liquidity could not match the magnitude and speed of the state's retreat from money markets, given the relatively modest growth in firms' activity: industrial production declined sharply in 1927 (−12.7%) before reaching its 1926 level in 1928 (Sauvy 1965, p. 465). Moreover, Bonin (2000, pp. 33–8) emphasizes the reluctance of firms to rely too much on this type of credit, especially after a period of sustained inflation incentivizing suppliers to require cash payments. Short-term bills guaranteed by banks (*acceptations*) were another asset that could have replaced BDNs. However, they were not widespread instruments in the French money market (Laufenburger 1940). Therefore, banks had no liquidity management tool while serving interest on deposits. This situation highlights the imperfect substitutability between publicly and privately produced safe assets and the risks implied by a change in public debt instruments (Kacperczyk *et al.* 2021).

Banks converted these assets into cash in the first half of 1927. Deposits at the BDF were a potential destination; however, as reported in Table 3, the series does not match the increase in banks' reserves, according to the BDF's weekly balance sheets (Baubeau 2018). Moreover, daily accounts of the BDF's operations reveal that the overwhelming majority of the increase in deposits came from the CAA, which had to pay back maturing BDNs. According to its daily accounts, of the 10.5 billion francs the BDF had in deposits, 8.5 billion came from the CAA.[7]

Instead, banks' funds flew to the Treasury. Table 3 reports the time series for deposits at the Treasury,[8] confirming that the timing matches the increase in banks' reserves. Paul Ricard confirms this destination for banks' funds in his yearly report (Ricard 1928, pp. 518–19). This was also discussed at length in the financial press:

[7] BDF: Statistique journalière – Circulations; 1370201203 AR 35.
[8] SAEF: Situations.

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Table 3. *Destination of banks' reserves, in millions of francs*

	BDF deposits	Treasury deposits	Banks' reserves
January 1927	4.37	8.09	2.54
February 1927	3.51	9.63	3.36
March 1927	2.45	12.26	5.38
April 1927	3.51	13.25	5.33
May 1927	7.81	16.01	8.04
June 1927	10.26	17.78	9.15
July 1927	11.04	16.91	9.04
August 1927	10.45	13.46	6.08
September 1927	9.32	13.04	5.93
October 1927	9.14	11.72	4.60
November 1927	8.96	11.13	4.10
December 1927	8.99	11.20	4.15

Source: For deposits at the BDF: Baubeau 2018. For deposits at the treasury: SAEF, Dette publique de l'État et Caisse Autonome d'Amortissement: Situations (1925–38). For banks' reserves: BDF, Bilans des sociétés de crédit.

The issue of floating debt could have been solved if … a new form of on-sight debt had not been introduced. This debt is made of deposits at the Treasury, about which we have reported, more than once, to our readers … The repayment of 1-year BDN … may lead, given the current inflationary pressures on domestic money markets, to a further inflow of liquidity to banks and, hence, to the Treasury.[9]

Indeed, the Treasury could act as a deposit-taking institution – reminiscent of World War I, when the state had to attract funds by any means. These deposits remained active in the 1920s but had limited utility, given the small rates they served. However, the accumulation of idle liquidity put them back in the foreground before being terminated by the monetary law of June 1928. The original decree (11 December 1914) stated that rates would be fixed by governmental decree and mentioned no deposit ceiling. The 18 April 1918 decree also stated that the facility was offered to all banks and credit institutions. I found no evidence that these instruments were restricted to a particular subset of banks. Banks could bring funds either to the *Caisse Centrale* (meaning directly to the Treasury) or to the *trésoriers-payeurs généraux* (who served as local agencies of sorts for the Treasury and whose funds were guaranteed by the state). Both served the same interest rates subject to an 18 percent income tax, except between April and December 1927, where those of *trésoriers-payeurs généraux* were slightly higher (+ 50 bps). These deposits were on-sight, although funds were available only three days

[9] *Le temps économique et financier*, 6 June 1927. This is the weekly supplement to *Le temps,* a reference newspaper read by French élites.

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after the first deposit. The Treasury also created one-month deposits at a higher rate, but this facility was short-lived (between December 1926 and February 1927; Ricard 1928, p. 519). Although they served low interest rates, these deposits became very attractive during the first half of 1927.

These interest rates are reported in Figure 3, along with the rates paid by the largest banks on deposits (Ricard 1928, 1929).[10] This figure shows why when the supply of short-term state bills decreased, demand did not. Indeed, banks used the closest asset possible to these bonds, namely deposits at the Treasury, as they enabled them to maintain a profit from financial intermediation. This allocation of resources conflicted with Poincaré's mandate. These deposits were part of a regime deemed unsound and ended by the monetary law of June 1928. As Paul Ricard put it: 'State borrowing adopted many forms; some were long-term, other very short-term or on-sight, as if floating debt, which was expelled by the door, was struggling to come back through the window' (Ricard 1928, p. 503).

Despite the transitory assistance provided by the Treasury, banks faced compressed margins. The excess supply of funds created by the shortage of liquid and safe assets and the inflow of foreign funds with ongoing monetary stabilization led to a decline in interest rates. To support this mechanism, I reconstruct the domestic financial environment faced by banks. In addition to the rates for deposits at the largest banks and the Treasury, Figure 3 plots two central interest rates for banks. The BDF discount rate can be construed as an upper bound for the market discount rate and, thus, an upper bound for short-term loans to the real economy. The French discount rate (*escompte hors-banque*) is the rate at which top-quality banks discounted each other's bills in their portfolios and represents a lower bound for interest rates. The rate is drawn from a ledger found in the archives of BDF, gathering money market rates at a daily frequency starting in 1926.[11]

Figure 3 shows a sharp decrease in the discount rate that seems to be stopped only by rates on deposits at the Treasury. The cuts in the BDF policy rate did not drive this decline. For instance, the discount rate fell in the second half of 1927 without any action from the BDF. Therefore, the excess supply of funds drove interests down, with the policy rate following domestic and international cycles. Ultimately, banks faced compressed margins as their funding costs decreased slower than the market and BDF discount rates. This situation became critical when the spread between the discount rate and rates on deposits reached zero in the summer of 1927, meaning that banks struggled to make a profit. This low-rate environment may have favored search-for-yield behavior, but which assets could have attracted banks' funds is

[10] Maximum rates on deposits were fixed by the Union syndicale des banquiers de Paris et de la Province for three different categories of banks. Figure 3 plots the rates paid by tier-one banks, that is banks on which this article focuses.

[11] BDF: Cours des Changes; 1377200101. Most of the time there are two different monetary rates for one observation. I interpret this as the minimum and the maximum rate and thus base my computations on the average of those two rates.

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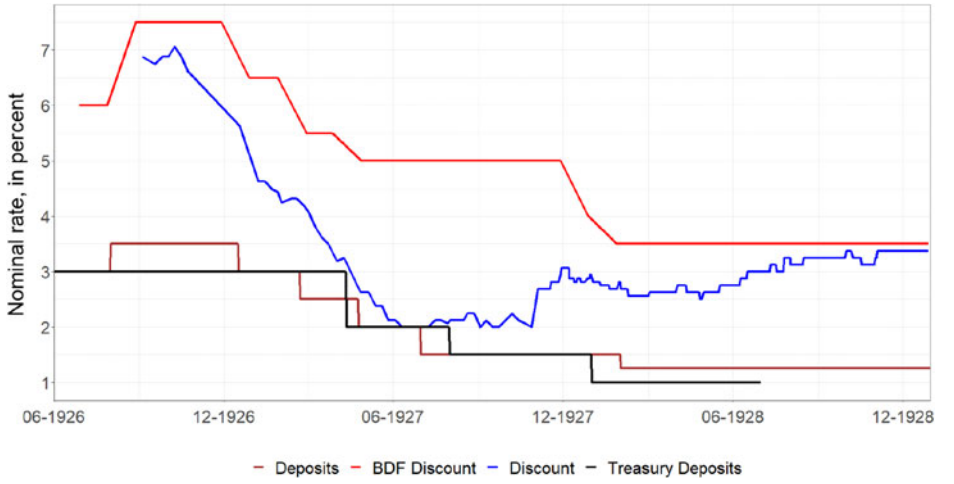

Figure 3. *Domestic rates*
Source: For BDF discount rates, Treasury deposit rates and deposit rates: Ricard (1928, 1929). For discount rate: BDF, Cours des Changes.

unclear. After the increase in reserves, commercial portfolios bounced back, suggesting no rebalancing between short-term and long-term credit. In addition, it is unlikely that this increase was driven by an increase in the domestic demand for short-term credit, whether private (discount rate remained at a low level until the last quarter of 1927) or public (the emissions of floating debt in 1927 were limited to 3.5 billion francs and the secondary market is regarded as inactive by financial commentators). To further investigate the risk-taking channel of this safe and liquid asset shortage, one must turn to foreign markets, where banks found a way out of the slump.

III

Indeed, the banking industry saw an opportunity abroad, where short-term rates remained relatively high. In addition, the upcoming monetary stabilization led to an inflow of foreign currencies. These two events led to significant foreign exposures for large Parisian banks rather than the development of domestic money markets.

The fall in domestic interest rates, the stability of foreign interest rates, and the stability of the exchange rate with upcoming monetary stabilization provided French banks with some arbitrage opportunities. Denoting i_d the domestic rate of returns, i_f the foreign rate of returns, S the spot price of a foreign currency in terms of domestic currency, and F the corresponding forward price, banks had incentives to invest abroad as long as:

$$1 + i_d \leq \frac{F}{S}(1 + i_f) \Rightarrow i_f - i_d \geq \ln\frac{S}{F}$$

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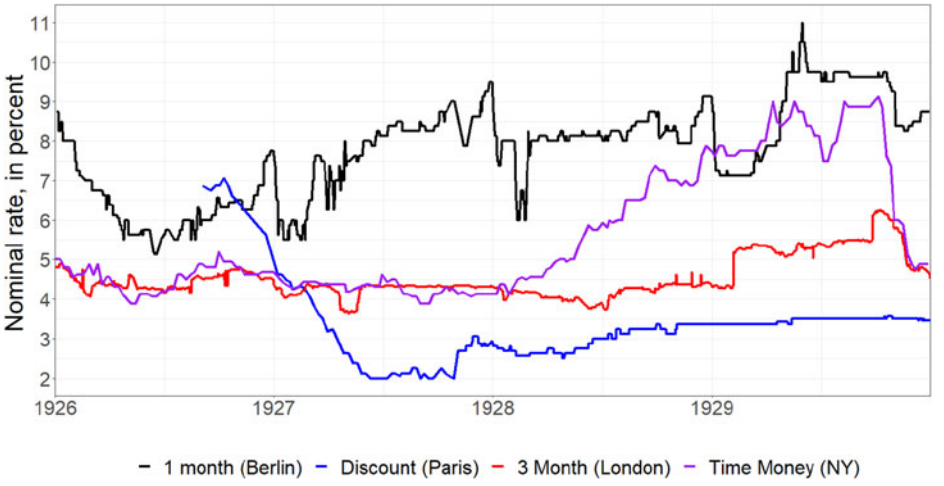

Figure 4. *International money market rates*
Source: BDF, Cours des Changes.

Determining whether or not there were arbitrage opportunities requires a study of two series: international interest rates spread and exchange rates. Figure 4 plots the spreads between different monetary market rates. The fall of French rates until the summer of 1927 and its limited recovery in 1928 led to a sizeable international spread until the end of 1929. In September 1927, for instance, there was a 250 basis points difference between returns in Paris and New York or London. This spread was barely affected by changes in exchange rates. Indeed, Parliament allowed the BDF to purchase pounds sterling by the law of 7 August 1926. This enabled the BDF to prepare for the upcoming monetary stabilization by pegging the franc against the pound. Political contingencies led to a stabilization level of around 124 francs for one pound (Sicsic 1992). This peg policy was deemed credible. Therefore, exchanging pounds, dollars and francs spot and forward was nearly free. The ratio between spot and forward rates was thus virtually close to one for the pound and the dollar, with the spot rate slightly above the forward rate in both cases. For instance, Ricard reports a deport on the pound of around 0.5 percent starting in October 1927 (Ricard 1928, pp. 527–8), meaning that $\frac{S}{F} = 1.005$. This meant that a spread greater than 50 basis points was sufficient for an arbitrage opportunity to occur. This distortion to currency markets made expansion abroad a credible option for banks.

There remained a key obstacle to the outflow of funds on profitable foreign markets. From 3 April 1918, capital exports were banned in order to channel funds towards France's reconstruction. However, the banking industry found a way to avoid this restriction and started investing in foreign markets before the ban's repeal. The role of the BDF was central, as its interests met those of the large Parisian banks. Indeed, the BDF intended to regain control over monetary policy,

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as the discount rate was losing its edge. It thus saw in the inflow of foreign currency on its balance sheet a way to adopt an 'open market' policy. Beginning in July 1927, the BDF lent French banks the pounds it had accumulated since the end of 1926. The operation was named *reports sur devise* and consisted of selling foreign currencies against francs, before buying them back after one or three months at a pre-agreed price. This, however, directed foreign exchange risks to the BDF's balance sheets, but the Treasury compensated potential losses for the BDF. This solution helped to direct excess liquidity abroad, before the official repeal of the capital export ban on 10 January 1928.

This solution was, however, controversial and gave rise to fierce debates. Governor Emile Moreau and assistant governor Charles Rist emphasized the excess supply of funds with the inflow of foreign money and the decreased supply of BDN (Rist 1931, pp. 256–60; Moreau 1954, p. 238). However, if loans in foreign currencies were a potential solution, both were initially reluctant. The issue was first addressed at the BDF's general board meeting in April 1927, when the industrialist François de Wendel pushed for the repeal of the law of April 1918 but faced the prudent answer of Moreau:

> Mr. François de Wendel drew the Board's attention to the abnormal situation created by the inflow of capital into the French market. The law of 3 April 1918, being opposed to any outflow, the BDF found itself obliged, in order not to compromise the stability of the exchange rate, to absorb these considerable quantities of foreign currency, which did not fail to present certain disadvantages. He believes that it would be in the interest of the Banque to repeal the law of 3 April 1918, and he wonders if the Banque should not try to provoke this repeal. … The Governor is in complete agreement with Mr. de Wendel on the advantages in principle of the free international circulation of capital. However, he does not believe that it is the Banque's place to take the initiative to repeal the law of 3 April 1918, which could be criticized later, should the favorable trend of the foreign exchange market change very significantly.[12]

In the next session, the issue was again the first to be vividly discussed, with the board concluding that the repeal should be the government's responsibility.[13] It was not until July 1927 that the board addressed the subject again. Moreau then reported that he proposed to Poincaré his alternative to repealing the law, the *reports sur devises*.[14] Poincaré and Moreau then exchanged various letters before the government's agreement on 28 July 1927 (Moreau 1954, p. 378). According to Moreau, the facility enabled banks to enjoy 'sizeable profits', for instance, in Berlin (Moreau 1954, p. 386).

The subject finally came back on the table at the end of 1927, with every entry of Moreau's diary discussing it between the end of December 1927 and the beginning of

[12] BDF: Procès-Verbal du Conseil Général, vol. 117, 28 April 1927, pp. 25–6 [henceforth PVCG].
[13] BDF: PVCG, vol. 117, 5 May 1927, p.31.
[14] BDF: PVCG, vol. 117, 21 July 1927, p.133.

January 1928. At the BDF's general board meetings of 22 December 1927 and 5 January 1928, some participants pushed for the complete repeal of the law, as the BDF's operations were no longer sufficient to absorb the inflow of foreign currencies. Tensions reached their climax when Moreau privately met Rothschild, who blamed him for the repeal delay. Under pressure from Rothschild and de Wendel, Moreau finally agreed to the repeal, his interview with Poincaré on 9 January being the final turning point. After repealing the ban on capital export, banks replaced the BDF as the main actors in currency markets.

Quantifying the foreign exposure of French banks more precisely is difficult. Banks' monthly balance sheets do not distinguish domestic and foreign exposures. The BDF's balance sheets are not very informative on this matter, as its accounting standards were not in line with its new role on currency markets: 'Sundry Assets' jumped from 5 to 35 percent of total assets between December 1926 and June 1927 (Baubeau 2018). Literary evidence is also scant but confirms that these operations were not marginal for banks, representing 11 billion francs by mid 1928 when capital exports were fully legal.[15] Charles Rist reported that a few days before the vote of the monetary law of June 1928, Poincaré declared in an address to Parliament, that *reports sur devises* reached 15 billion francs (Rist 1931, pp. 256–60). Given the size of commercial portfolios in 1927–8 (39.3 billion francs in 1927 and 46.8 billion francs in 1928, according to Baubeau *et al.* 2021), this is far from negligible.

Crédit Lyonnais is an informative case study; its yearly balance sheets were rather detailed.[16] They confirm the full disappearance of French public bills from 1928 to 1930, starting from nearly half of the commercial portfolio at the end of 1925. In addition, if French commercial paper jumped from 35 to 50 percent between the end of 1925 and the end of 1928, foreign commercial paper went from 10 to 30 percent, representing 25 percent by the end of 1927. The weight of private French paper increased between 1928 and 1930, but foreign paper remained above 20 percent until the end of 1930. Sub-year variations are absent from this picture, and the maximum amount of foreign commercial paper was most likely reached in the middle of 1929, before the collapse of international markets. In addition, these figures can be construed as lower bounds as, among the largest Parisian banks, Crédit Lyonnais was far from being the most engaged abroad. It had only one agency in a major foreign financial center, London. Considering that it was the first one hit by financial turmoil, it was no surprise that by 1930, its entanglements abroad were already limited.

The financial press emphasized this renewed interconnection with foreign financial markets, construing it as a sign of financial power. For instance, specialized newspapers

[15] These operations are mentioned by Ricard (1928, p. 504) and by the 1928 general assembly of BDF shareholders (Gallica: Assemblée générale des actionnaires de la Banque de France du 26 Janvier 1928, p.10).

[16] Crédit Agricole SA: Crédit Lyonnais balance sheets; 31 AH 6.

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reported an outflow of capital to Germany when American funds started to retreat in September 1928: 'High money market rates in Berlin have been a powerful attraction for other foreign funds, from countries where liquidity remained abundant'.[17] According to Paul Ricard, France was then back to its pre-1914 glory: 'We believe that the period of eclipse which the Paris market has experienced in its international function for the past fifteen years is now definitively closed' (1929, p. 448).

However, officials and bankers were not completely blind to the risks such large exposures abroad represented. Thus, the period saw some attempts to develop domestic money markets to absorb excess liquidity, whether supply- or demand-driven. For instance, Pierre Quesnay, the head of economic studies at the BDF, pushed for the further development of money markets beyond simply discounting short-term bills. As stated in a policy note in August 1928, he advocated for a broader day-to-day money market with repo transactions to keep excess capital in France: 'It is an obvious national interest, financial and monetary that the Paris market … use these funds directly and not through the intermediary of foreign markets.'[18] According to Quesnay, the development of these markets required a revision of the tax system and the adoption of broader open-market policies by the BDF. Indeed, according to him, the trade of financial assets by the BDF to influence monetary conditions could also foster the emergence of a deep money market.[19] This last point was the subject of lively discussions with assistant governor Charles Rist, who opposed the proposition, seeing it as a 'purely inflationary measure'.[20] The general board of 30 August 1928 acknowledged the issue but decided to postpone the discussion.[21] Nevertheless, the issue reappeared at the end of 1929 and gave rise to the first concrete project, the '*acceptation* plan'. The board acknowledged the enduring issue of excess liquidity being used abroad and decided that the BDF could conduct repo transactions based on the highest-quality banks' *acceptations*, i.e. short-term bills. This plan generated considerable attention and may be regarded as the first attempt by the BDF to convert to open-market monetary policies. The principle had already been introduced by the stabilization law of June 1928, but the BDF's intervention was then limited to bonds emitted by the CAA and to operations on behalf of other central banks (Aulagnier 1971; Duchaussoy and Monnet 2019). This time, the BDF could intervene in markets in its own name, which generated high hopes for a deep French money market. However, these operations occurred too late, as financial conditions had already started to tighten, especially in London. In any case, they remained limited, as the BDF remained reluctant to massively resort to this facility (Aulagnier 1971, p. 43).

[17] *Le temps économique et financier*, 15 October 1928.

[18] BDF: Politique monétaire, open-market; 1069200803 AR 17.

[19] The principle had already been introduced in June 1928, but it was limited to bonds emitted by the CAA and to operations on behalf of other central banks (Aulagnier 1971; Duchaussoy and Monnet 2019).

[20] BDF: Politique monétaire, open-market.

[21] BDF: PVCG, vol. 118, 30 August 1928, p. 314.

Therefore, domestic money markets did not spontaneously compensate for the shortage of liquid Treasury bills. Actions from monetary authorities were required, and although substantial discussions were conducted, they did not prevent the largest Parisian banks from expanding abroad a few months before the Great Crash of 1929.

IV

This article argues that following the 1926 financial crisis, the Poincaré government restructured public debt, deprived banks of their main liquidity management tools since the end of World War I and drove down interest rates. Searching for yield, the largest Parisian banks pushed the government to lift restrictions on capital outflows on the eve of the Great Crash of 1929. The transformation of French money markets, which relied extensively on short-term public bills after World War I, was not radical enough to impede excess liquidity from flowing abroad. These results support the existence of an imperfect substitution between treasuries and private short-term debt in the supply of liquid assets. In addition, this period highlights that private supply can be a challenge, even outside periods of stress, and relies on the voluntarism of public actors. Henceforth, the impact of fiscal policy on financial markets, notably through the term structure of public debt, is highly dependent on the structure of money markets.

This article also contributes to our understanding of the credit boom in France in the 1920s and the banking crises of the early 1930s. If inflation was the main driver of increasing credit in the first half of the 1920s, the withdrawal of BDN changed the environment in which banks were operating. With an increasing number of banks and low interest rates, the industry searched for yield for its excess liquidity, thus leading to enhanced risk-taking. This article provides direct evidence of such behavior for the largest Parisian banks through their expansion abroad a few months before the 1929–31 financial turmoil. Nevertheless, international contagion may have played a limited role in the banking crises. Indeed, these banks were not the most affected by the crises (Baubeau *et al.* 2021), as their exposure remained limited by 1929. In addition, given the underdevelopment of the domestic interbank market, the eventual difficulties faced by Parisian banks were unlikely to spill over to smaller banks. Despite the lack of direct evidence, it is likely that these smaller banks, facing the same low-rate environment but no connection to expand abroad, also adopted risk-taking behavior, which is still to be precisely identified.

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