Journal of Financial Crises

Volume 4 | Issue 2

2022

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Recommended Citation
Leonard, Natalie (2022) "United States: Y2K Special Liquidity Facility," *Journal of Financial Crises*: Vol. 4 : Iss. 2, 1410-1425.
Available at: https://elischolar.library.yale.edu/journal-of-financial-crises/vol4/iss2/64

United States: Y2K Special Liquidity Facility[1,2]

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Yale Program on Financial Stability Case Study
June 15, 2022

Abstract

As the United States prepared for the century date change (Y2K) on January 1, 2000, uncertainty about computer functioning generated uncertainty in capital markets. The Federal Reserve (Fed) grew particularly concerned that computer malfunctioning would cause disruptions in the short-term federal funds and repurchase (repo) markets. Many market participants indicated early in 1999 that they would restrict their normal trading activities and curtail credit in the weeks leading up to Y2K, which contributed to the Fed's anticipation that liquidity might dry up. To ease pressures, the Fed created two special facilities through the Open Market Trading Desk of the Federal Reserve Bank of New York (FRBNY). The Special Liquidity Facility (SLF) provided term collateralized funding to depository institutions to "ensure that [they had] adequate liquidity to meet any unusual demands in the period around the period date change." The Fed designed the facility to have a spread high enough to discourage its use, while still providing a backstop. Daily borrowing at the SLF peaked at $1.2 billion on December 30, 1999. The Fed also created the Standby Financing Facility (SFF) to auction options for overnight repos for dates around the year-end to primary dealers, which we describe in a separate YPFS case (see Leonard 2022).

Keywords: broad-based emergency liquidity, century date change, discount window, open market operations, repurchase agreements

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[1] This case study is part of the Yale Program on Financial Stability (YPFS) selection of New Bagehot Project modules considering broad-based emergency lending programs. Cases are available from the *Journal of Financial Crises* at
https://elischolar.library.yale.edu/journal-of-financial-crises/.

[2] The author would like to thank Peter Fisher and Deborah Perelmuter, who worked at the Federal Reserve Bank of New York when the SFF was operational and provided helpful comments on an early draft of this case study. Their views do not necessarily reflect those of the Federal Reserve Bank of New York or the Board of Governors.

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Overview

As the United States prepared for the century date change (Y2K) on January 1, 2000, uncertainty about computer functioning generated uncertainty in capital markets. In anticipation of Y2K, the Federal Reserve System (Fed) undertook significant preparations—it examined "approximately 90 million lines of [the Fed's] own code contained in thousands of programs and had to remediate approximately 10 percent of them" (Kelley 2000).

Despite such efforts and similar efforts undertaken by banks, the Fed grew particularly concerned that computer malfunctioning would cause disruptions in the short-term federal funds and repurchase agreement (repo) markets (Kelley 2000; Drossos and Hilton 2000, 1). In early 1999, many market participants indicated that they would restrict their normal trading activities and curtail credit in the weeks leading up to Y2K, which contributed to the Fed's anticipation that liquidity might dry up (Drossos and Hilton 2000, 1). Additionally, in the weeks leading up to the century date change, currency in circulation increased substantially, as banks prepared for a possible surge in demand (see Figure 1).

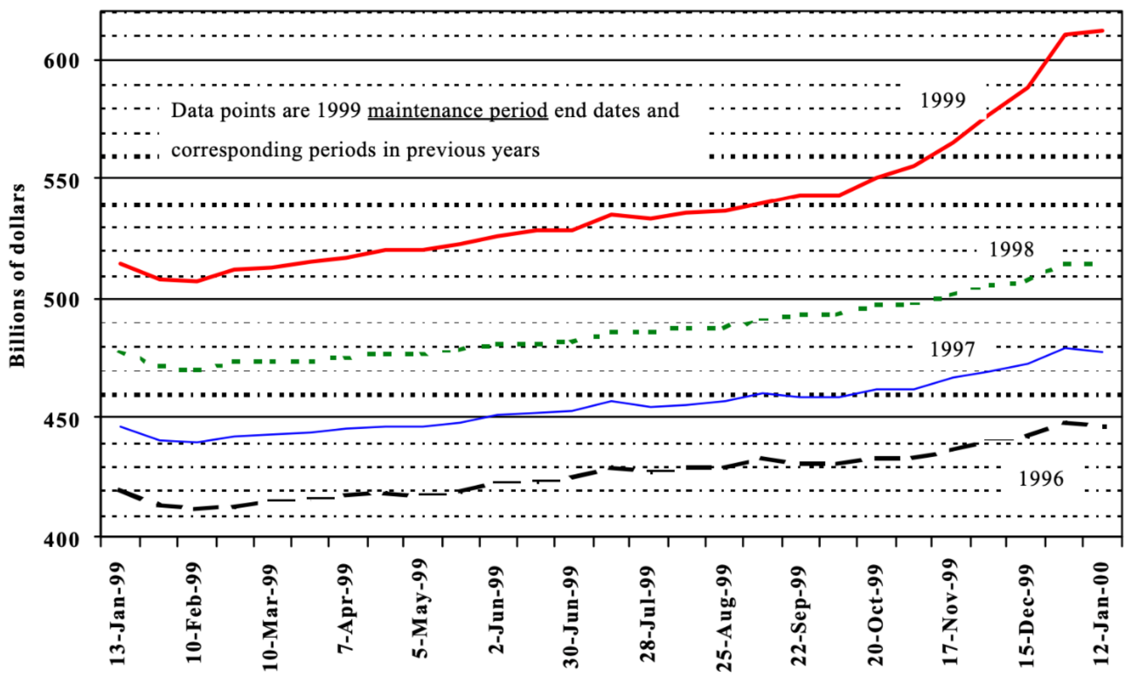
Key Terms

Purpose: To "ensure that depository institutions have adequate liquidity to meet any unusual demands in the period around the century date change" (Board of Governors 1999a)	
Launch Dates	July 20, 1999 (Announcement) October 1, 1999 (Operational)
Expiration Date	April 7, 2000
Legal Authority	Federal Reserve Act of 1913
Peak Outstanding	Peak daily $1.2 billion on December 30, 1999
Participants	Depository Institutions
Rate	Penalty rate (150 bps) over federal funds rate (FFR)
Collateral	Discount-window collateral
Loan Duration	Repayable any time before April 7, 2000
Notable Features	2003 discount-window changes mirrored SLF design
Outcomes	Limited borrowing, market calmed

Providing liquidity around the century's end was complicated by a concurrent shift in monetary policy. Between September and November 1998, the Fed cut rates three times, including one inter-meeting cut, to anticipate spillover credit tightening from the Russian Ruble crisis and the Asian Financial Crisis (CNN Money 1998b; 1998a). However, by spring 1999, the Fed grew concerned about overheating and initiated a tightening cycle, hiking rates in June and August 1999 (CNN Money 1999b; 1999a).

To ease market liquidity, the Fed created two special facilities through the Open Market Trading Desk of the Federal Reserve Bank of New York (FRBNY): the Special Liquidity Facility (SLF), which provided collateralized funding to depository institutions; and the Standby Financing Facility, which auctioned options to primary dealers on overnight repurchase agreements as collateral (Drossos and Hilton 2000, 1). (See Leonard 2022 for a discussion of the Standby Financing Facility.)

Figure 1: Currency in Circulation



Source: FRBNY 2000, 6.

The Fed created the SLF to "ensure that depository institutions [had] adequate liquidity to meet any unusual demands in the period around the period date change." However, the Fed designed the facility to have a spread "high enough to encourage institutions to make private-sector arrangements" outside of the discount window, while still providing a backstop (Board of Governors 1999a; Board of Governors 1999d). The SLF accepted the same collateral as the discount window and charged a facility fee 150 basis points above the Federal Open Market Committee (FOMC)'s target federal funds rate (FRBNY 2000, 3). SLF loans did not have the same use and duration restrictions as discount-window loans. For example, borrowers were not required to certify that they sought funds elsewhere first[4] (FRBNY 2000, 3).

Borrowing from the SLF was limited except on five days: November 4, December 16, December 27, and December 30, 1999; and January 10, 2000 (Board of Governors n.d.a). December 31 fell on a Friday; the Fed said that fewer than a dozen banks approached the

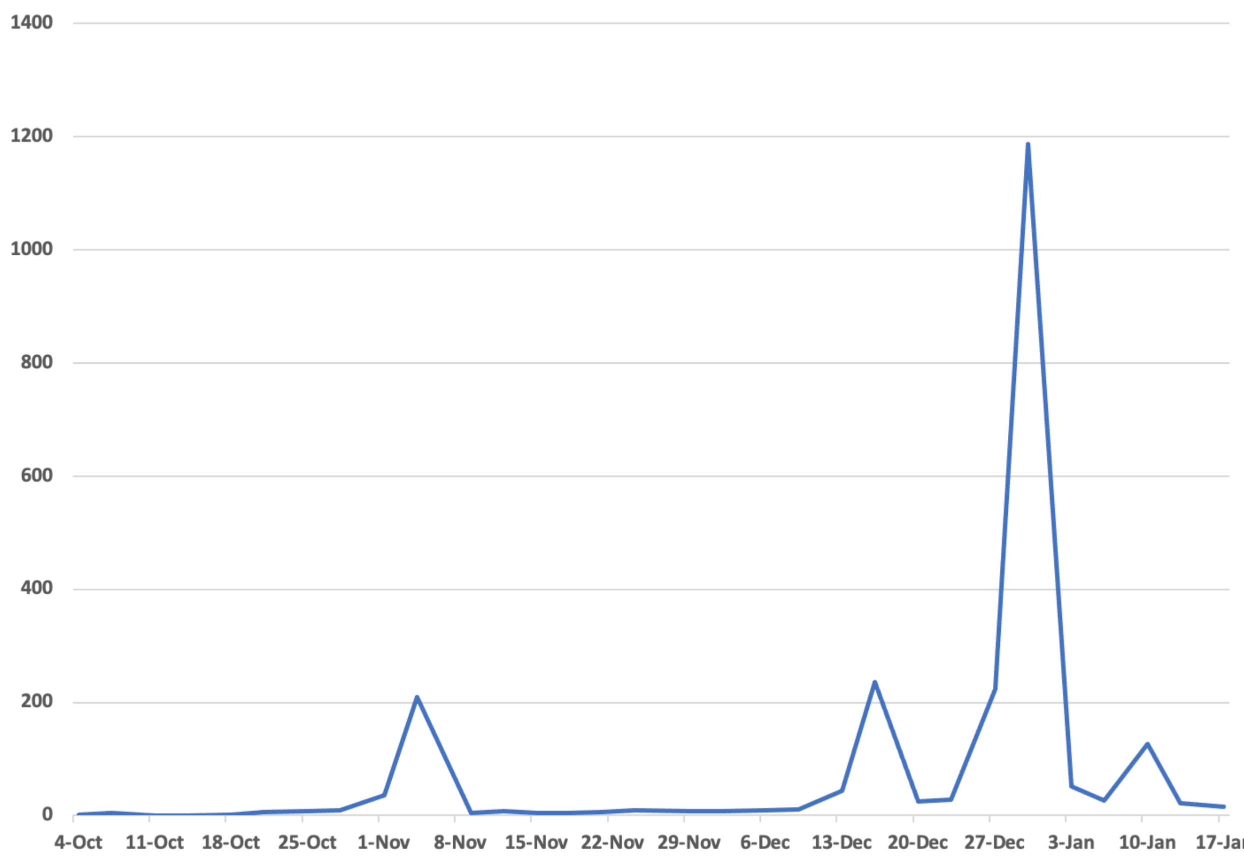
[4] Discount-window loans are generally overnight. Prior to 2003, the rate for adjustment credit (replaced by primary credit in 2003) was set below the target federal funds rate. Partly to discourage arbitrage, borrowers were required to show that they had exhausted all market sources for credit and were prohibited from borrowing to fund sales of federal funds. These terms were amended in 2003 (FRBNY 2015; Carlson and Rose 2017).

discount window for special liquidity loans over the last weekend of the year (American Banker 2000):

> On two occasions during these maintenance periods around the CDC [century date change] when reserves were particularly deficient, once before and once after the year-end, market arbitrage activity of large banks that borrowed at the SLF helped moderate late-day upward rate pressures that emerged. There had been two earlier episodes between October 1 and December 15 when arbitrage activity by large banks that borrowed at the SLF had helped contain late-day rate pressures. (FRBNY 2000, 34)

The Fed published usage of the SLF in its weekly H.4.1 releases. Daily borrowing peaked at $1.2 billion on December 30, 1999. Daily drawdowns are displayed in Figure 2.

Figure 2: Daily SLF Drawdowns, in $millions



Source: Board of Governors n.d.a.

Outside the SLF, regular discount-window borrowing remained limited throughout the episode, totaling $233 million in the fourth quarter of 1999 and $236 million in the first quarter of 2000 (Board of Governors n.d.b).

Summary Evaluation

The Fed analyzed the effectiveness of the SLF when proposing updates to discount-window administration in 2002 (Board of Governors 2002, 8). The Fed noted that there were 42 instances of institutions borrowing for a period of two to 10 days and 14 instances of institutions borrowing for more than 10 consecutive days. The report further stated:

> This suggests that the SLF was an attractive source of longer-term, rather than overnight, funding for some institutions despite the 150-basis-point spread above market rates, which in turn suggests that those financially sound institutions might not have had access to cheaper funding in the open market (Board of Governors 2002, 8)

Sources at FRBNY emphasized that the program calmed markets primarily through the announcement effect. Moreover, they emphasized that there was some concern among the primary dealers following the SLF announcement that the Fed wouldn't create a facility specifically targeted to primary dealers; this was calmed with the announcement of the Standby Financing Facility (SFF) on August 24, 1999.

Context: United States 1999–2000	
GDP (SAAR, nominal GDP in LCU converted to USD)	\$9.900 trillion in 1999 \$10.436 trillion in 2000
GDP per capita (SAAR, nominal GDP in LCU converted to USD)	\$34,514 in 1999 \$36,335 in 2000
Sovereign credit rating (five-year senior debt)	Data for 1999: Moody's: Aaa S&P: AAA Fitch: AAA Data for 2000: Moody's: Aaa S&P: AAA Fitch: AAA
Size of banking system	\$5.378 trillion in 1999 \$5.775 trillion in 2000
Size of banking system as a percentage of GDP	54.33% in 1999 55.34% in 2000
Size of banking system as a percentage of financial system	27.48% in 1999 29.63% in 2000
Five-bank concentration of banking system	Data not available Data not available
Foreign involvement in banking system	Data not available Data not available
Government ownership of banking system	0% in 1999 0% in 2000
Existence of deposit insurance	Yes, up to \$100,000 in 1999
Sources: Bloomberg, World Bank Global Financial Development Database, World Bank Deposit Insurance Dataset.	

Key Design Decisions

1. **Purpose: The Board of Governors of the Federal Reserve created the Century Date Change Special Liquidity Facility (SLF) as a contingent liquidity facility to provide liquidity to depository institutions around the century date change.**

The Fed first proposed the SLF on May 21, 1999, in a proposed rule change (Board of Governors 1999f). The Fed received 93 comments from financial institutions through July 2, 1999, with all but three supporting the proposal (Board of Governors 1999a).

In the initial proposal, the SLF was to be active from November 1, 1999, to April 7, 2000 (Board of Governors 1999a). However, in response to comments, the Fed started the facility a month earlier (Board of Governors 1999a). The Fed published the final rule in the Federal Register on August 2, 1999 (Board of Governors 1999e).

The Fed created the facility to "ensure that depository institutions [had] adequate liquidity to meet any unusual demands in the period around the period date change," though the Fed designed the facility to have a spread "high enough to encourage institutions to make private-sector arrangements" outside the discount window while still providing a backstop (Board of Governors 1999a; Board of Governors 1999d). In the FOMC discussion, committee members said they expected the SLF to provide "a means for the System's balance sheet to expand as we lend to small banks, who may be perceived to be less well prepared than the large banks to handle any Y2K problems" (FOMC 1999, 4).

2. **Legal Authority: The Fed derived the legal authority for the SLF through a temporary amendment to Regulation A, which it issued under the authority of the Federal Reserve Act.**

The SLF operated alongside the discount window and derived its legal authority from a temporary amendment to Regulation A (Board of Governors 1999e). The Fed issues Regulation A under the authority of sections 10A, 10B, 11(i), 11(j), 13, 13A, 14(d) and 19 of the Federal Reserve Act (Federal Reserve Act 1913). On May 27, 1999, the Fed first published a proposed update to Regulation A in the Federal Register containing the proposed rule for comment (Board of Governors 1999d). On August 2, 1999, the Fed published the final rule in the Federal Register to establish the SLF and specify its terms of operation (Board of Governors 1999e, 64:4).

3. **Part of a Package: The SLF was announced alongside three other measures to expand discount-window operations around the century date change.**

The SLF was part of the Fed's broad, multi-year preparations for the century date change (Kelley 2000). On August 24, 1999, one month after the Federal Reserve Board announced the SLF, the FOMC agreed on a number of further measures. These measures included: expanded accepted collateral at the discount window, authorization to execute repurchase agreements with up to 90-day maturities, and the Standby Financing Facility (SFF) (FRBNY 1999). In a press release on September 8, 1999, the FRBNY announced these measures. It said their purpose was to facilitate "the smooth functioning of money and financing markets and . . . to manage banking system reserves" with respect to Y2K (FRBNY 1999).

4. Management: The Federal Reserve Banks managed the SLF.

The Fed authorized the SLF, announcing it through the Federal Register on August 2, 1999 (Board of Governors 1999e). Disclosure and oversight for the SLF were consistent with open market operations disclosure: the Fed published aggregated data in its weekly H.4.1 reports (FRBNY 2000, 4). The SLF was administered by the Federal Reserve Banks alongside the discount window (Board of Governors 1999e).

5. Administration: The SLF was administered alongside the discount window by the Federal Reserve Banks.

The SLF was managed by the regional Federal Reserve Banks. An eligible institution could approach its regional Bank to receive a loan as long as the institution could fully collateralize the loan, as determined by the regional Bank (Board of Governors 1999e). There were no minimum or maximum limits imposed on a borrowing bank (Board of Governors 1999e).

6. Eligible Participants: Depository institutions in "sound financial condition in the judgment of the lending Federal Reserve Bank" were eligible for the SLF.

In the proposed update to Regulation A, the Fed suggested that the SLF would be available only to depository institutions in sound financial condition (Board of Governors 1999d). Under the proposal, depository institutions that were undercapitalized or critically undercapitalized, as per ratios set under the Federal Deposit Insurance Act, would not be able to access the SLF. The Fed similarly proposed that only credit unions with a net worth ratio of at least six percent ("adequately capitalized" as per the Federal Credit Union Act) would qualify. Several commentators on the proposal warned that "denying access to [the] institutions [that did not meet these criteria] could cause a public reaction that would increase the institution's vulnerability and precipitate customer withdrawals" (Board of Governors 1999e, 64:41767).

In response to comments, the Fed left the determination of "soundness" at the discretion of the Reserve Bank. Eligible institutions for the SLF were depository institutions that were in "sound financial condition in the judgment of the lending Federal Reserve Bank" (Board of Governors 1999e, 64:41766). In determining soundness, the Reserve Bank was to "take into account whether the decline owed to temporary balance sheet distortions with the century date change, as well as the financial conditions of the institution before those distortions occurred" (Board of Governors 1999e).

7. Funding Source: The SLF was funded through an expansion of the Fed's balance sheet.

The SLF was funded through the Fed's balance sheet (Board of Governors n.d.a).

8. Program Size: The SLF did not have a pre-determined program size.

The SLF did not have a pre-determined program size (Board of Governors 1999e). Daily borrowing peaked at $1.2 billion on December 30, 1999. Average daily drawdowns are displayed in Figure 2.

9. Individual Participation Limits: The SLF did not impose individual borrowing limits on eligible borrowers.

The Fed stated that borrowers at the SLF would be able to "adjust the amount they borrow as frequently as they desire" as all loans were fully collateralized and charged a penalty rate (Board of Governors 1999e). Banks were therefore limited only by the quantity of eligible collateral they had.

10. Rate Charged: The SLF charged a rate 150bps above the FOMC's targeted federal funds rate.

The SLF charged 150bps over the FOMC's targeted federal funds rate (Board of Governors 1999d, 64:41766). Between October 1, 1999, and November 16, 1999, the SLF charged a rate of 6.75% (Board of Governors 1999b). This was raised to 7% on November 16, 1999, and then again to 7.25% on February 2, 2000, in line with revisions to the FOMC's target for the FFR (Board of Governors 1999b).

Solicited comments from market participants generally advocated for a lower spread over the FFR (Board of Governors 1999e, 64:41766). About 70% of comments suggested that the spread be decreased, with 20% advocating a 50bps spread. Commentators gave a few reasons for favoring a lower spread. Some stated that the penalty would put an undue burden on financial institutions, as the rate significantly exceeded their typical cost of funds. Others stated that the penalty rate would discourage use until "liquidity problems had become acute." Some emphasized that the rate would contribute to stigma, discouraging use (Board of Governors 1999e, 64:41766).

Ultimately, however, the Fed set the SLF's spread at 150bps, saying that:

> The Board believes that a spread of less than 150 basis points might not be sufficient to assure that many depository institutions still would have incentives to make private-sector arrangements to meet potential shifts in the supplies of, and demands for, liquidity. Furthermore, a spread of 150 basis points probably is low enough to provide a reasonable backstop if concerns about the century date change or disruptions associated with the change itself begin to put strains on funding and credit markets, especially if these strains are short-lived. (Board of Governors 1999e, 64:41766)

The Fed stated that one difficulty in selecting the spread was that there were "no close analogues to the facility against which to compare the pricing," given that the SLF offered loans without fees and with repayment at any time over the life of the facility without penalty (Board of Governors 1999e). The Fed compared SLF loans to some Federal Home Loan Bank (FHLB) advances to members which were priced comparably. The Fed also compared the

150 basis point spread to the pricing small banks faced through secured lines of credit with commercial banks (Board of Governors 1999e).

11. Eligible Collateral: Eligible collateral for the SLF was identical with the discount window.

Eligible collateral for the SLF was identical to the discount window (Board of Governors 1999e). Several commenters on the draft regulation for the SLF requested expansions of eligible collateral beyond the collateral accepted at the discount window, but the Fed ultimately kept collateral requirements identical with the discount window. Borrowers were required to pre-position collateral, to have appropriate authorization to access credit the day of a request, and all loans were to be "fully collateralized to the satisfaction of the Reserve Bank" (Board of Governors 1999e). The Board stated, however, that "Staff [would] work aggressively to expand the range of acceptable collateral and to make collateral procedures more expeditious and flexible" (Board of Governors 1999e).

12. Loan Duration: SLF loans implicitly had maximum durations equal to the lifetime of the facility, or until April 7, 2000.

SLF loans could be outstanding "until the program expires," which was April 7, 2000, so they had a maturity of up to six months (Board of Governors 1999e). However, section 10B of the Federal Reserve Act requires that discount-window loans not exceed four months; as the SLF was authorized under discount window authority, it was subject to section 10B (Board of Governors 1999e). In the Regulation-A amendment specifying the SLF's operations, the Fed stated that as the loans were "payable on demand . . . their maturities do not exceed four months" (Board of Governors 1999e).

13. Other Conditions: SLF loans were not subject to the same usage requirements as discount-window adjustment credit.

SLF loans differed from adjustment credit in a few ways.[5] First, borrowers at the SLF were not required to prove that they had exhausted all alternative liquidity sources. Second, the use of SLF funds was not limited in the same way as adjustment credit. Third, loans from the SLF did not come with a requirement that "credit be repaid expeditiously; credit [could] remain outstanding until the program" expired (Board of Governors 1999e, 64:41678).

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[5] Prior to 2003, adjustment credit allowed banks to meet reserve requirements on a short-term (typically overnight) basis by borrowing from their Federal Reserve Bank. Interest rates for adjustment credits were typically lower than the federal funds rate. Because of stigma at the discount window, very few banks borrowed adjustment credit from the Fed (FRBNY 2015).

14. Impact on Monetary Policy Transmission: The Fed did not mention the impact of the SLF on monetary policy transmission.

The Fed did not explicitly mention the impact of the SLF on monetary policy; it did not discuss plans to sterilize operations in authorizing the facility.

15. Other Options: The Fed took comments on the proposed design of the facility. The Fed also created the SFF to provide liquidity to primary dealers.

As part of the regulatory process, the Fed took comment from market participants on the proposed design of the facility and responded to proposed changes including changing the eligibility restrictions to make the program more accessible and lowering the penalty rate (Board of Governors 1999e). The Fed also created the SFF, a facility that sold options on repurchase agreements to primary dealers to ensure market functioning through the century date change (see Leonard, 2022).

16. Similar Programs in Other Countries: Some other countries also took special measures.

Some other countries also took special measures in anticipation of the century date change. The Bank of Canada created its own Special Liquidity Facility, with similar characteristics to the Fed's SLF.[6] The Bank of Canada also expanded the range of collateral accepted in its standard overnight repo operations, like the Fed (Bank of Canada 1999). The Bank of England issued special Treasury bills that matured on December 31, 1999, expanded the range of repo maturities to 90 days, and expanded the range of accepted collateral (Sundaresan and Wang 2006, 22). Sundaresan and Wang could not find an example of another central bank that sold options like the Fed's SFF (Sundaresan and Wang 2006, 22).

17. Communication: Preparations for the century date change began in late June 1995. Chairman Alan Greenspan discussed the facility and the century date change generally on September 17, 1999.

In late 1995, the Fed created the Century Date Change (CDC) project to coordinate Y2K readiness across the Federal Reserve system. As part of this plan, the CDC project reviewed every bank by mid-1998 to assess readiness (Kelley 1997). Between 1997 and 1999, the Fed published contingency planning guides, brochures on bank readiness, and press releases explaining the impact of the century date change (Board of Governors 1999c).

The Fed held a Year 2000 Summit to discuss the century date change event, and the actions that the financial sector and the Fed had taken to prepare for the event. Chairman Greenspan noted that while the financial sector had generally taken the necessary steps to prepare, and

[6] The Bank of Canada's Special Liquidity Facility was available to all financial institutions that used the Large Value Transfer System (LVTS) (Bank of Canada 1999). The facility was created November 1, 1999, and designed to close March 31, 2000. It accepted a "wide range of collateral including securities and assignments on the loan portfolio of the borrowing institution" and charged an interest rate equal to the Bank Rate plus 125 basis points. Like the SLF, loans could be repaid throughout the facility's lifespan, so they had a maximum maturity of five months (Bank of Canada 1999).

that "the technical breakdowns that might occur as a consequence of the CDC are readily containable," there was evidence that borrowers and lenders were building up liquid assets to reduce reliance on credit markets. He said that the SLF and the SFF "should help to ensure an ample supply of liquidity and relieve funding pressures" (Greenspan 1999).

A Fed official spoke to the Wall Street Journal following the announcement of the facility and explained that the facility would help "banks under pressure that ordinarily wouldn't be under pressure" (Newswires 1999).

18. Disclosure: Borrowing at the SLF was published through the Fed's weekly H.4.1 releases.

The Fed published aggregate borrowing from the SLF in its weekly H.4.1 releases for the duration of the facility's operation (Board of Governors n.d.a). Disclosure and oversight for the SLF were consistent with open market operations disclosures.

19. Stigma Strategy: The SLF did not require that borrowers prove that they had exhausted funding sources, likely to limit stigma.

Prior to 2003, discount-window adjustment credit was available for depository institutions at rates below the effective federal funds rate (Carlson and Rose 2017). However, to limit arbitrage, the Fed required that institutions attempt to obtain funding from private sources before accessing discount-window credit. This likely exacerbated the stigma associated with the discount window: to access funds, a distressed institution had to reveal to other market participants that it faced funding shortfalls (Carlson and Rose 2017).

Likely to limit stigma, financial institutions did not need to "exhaust alternative liquidity sources" to access SLF funds (Board of Governors 1999e, 64:41678). Sources at FRBNY indicated that the Fed was aware of stigma and designed the facility to mitigate its effect. In 2003, the Fed implemented changes to the discount window to address stigma—eliminating the requirement that institutions exhaust private funding sources and instead implementing a penalty rate—that mirrored the design of the SLF (Board of Governors 2002, 8).

20. Exit Strategy: The SLF was announced with an end-date.

The SLF was announced with an end-date of April 7, 2000, and expired on that date (Board of Governors 1999e).

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