

Responding to a Shadow Banking Crisis: the Lessons of 1763

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Presented in Honor of Warren Weber

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Motivation

**To better identify
the persistent properties
of shadow bank instability**

Method

**To reconstruct a historical episode
that is similar to,
but not identical to the recent crisis.**

Similarities

| | 1763 | 2007-8 |
|---------------------------------|--------------------------|------------------------|
| Securitization | Bill of exchange | Many (ABCP) |
| Shocking failure | Neufville | Lehman |
| Rollover crisis? | Yes | Yes |
| Central bank | Bank of Amsterdam | Federal Reserve |
| CB Lender to guarantors? | Yes | Yes |
| CB Emergency facilities? | Bullion | Numerous |

Differences

1763

2007-8

Regulation

Settlement

Prudential

Bailouts

None

Too big to fail

International liquidity

None

Currency swaps

Open Market Operations

None

Quantitative Easing

Outline

1. **Shadow Banking**
2. Data
3. Shock
4. Run and Response

Table 1: stylized ABCP conduit

Period 0: (a) *D* creates and sells an ASSET to *B*
(b) *B* creates and sells ABCP1 to *C1*

Period 1: (a) *B* creates and sells ABCP2 to *C2*
(b) *B* repays *C1* for ABCP1

Period 2: (a) *D* repays *B* for ASSET
(b) *B* repays *C2* for APCP2

Shadow Run

Period 0: (a) *D* creates and sells an ASSET to *B*
(b) *B* creates and sells ABCP1 to *C1*

Period 1: (a) ~~*B* creates and sells ABCP2 to *C2*~~
(b) *B* repays *C1* for ABCP1

Period 2: (a) *D* repays *B* for ASSET
(b) *B* repays *C2* for APCP2

Table 2: stylized acceptance loan, 1763

In Hamburg

In Amsterdam

Period 0: (a) *D* draws BILL1 on *B*
(b) *D* sells it to *C1*

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Period 0: (a) *D* draws BILL1 on *B*
(b) *D* sells it to *C1*
C1 travels to Amsterdam

Table 2: stylized acceptance loan, 1763

| | In Hamburg | In Amsterdam |
|-----------|--|----------------------------|
| Period 0: | (a) <i>D</i> draws BILL1 on <i>B</i> (b) <i>D</i> sells it to <i>C1</i> <i>C1</i> travels to Amsterdam | |
| Period 1: | | (a) <i>B</i> accepts BILL1 |

Table 2: stylized acceptance loan, 1763

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| Period 1: | | (a) <i>B</i> accepts BILL1 (b) <i>B</i> draws BILL2 on <i>D</i> (c) <i>B</i> sells BILL2 to <i>C2</i> |

Table 2: stylized acceptance loan, 1763

| | In Hamburg | In Amsterdam |
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| Period 0: | (a) <i>D</i> draws BILL1 on <i>B</i> (b) <i>D</i> sells it to <i>C1</i> <i>C1</i> travels to Amsterdam | |
| Period 1: | | (a) <i>B</i> accepts BILL1 (b) <i>B</i> draws BILL2 on <i>D</i> (c) <i>B</i> sells BILL2 to <i>C2</i> <i>C2</i> travels to Hamburg |
| Period 2: | (a) <i>D</i> accepts BILL2 | (b) <i>B</i> settles BILL1 with <i>C1</i> |
| Period 3: | (a) <i>D</i> settles BILL2 with <i>C2</i> | |

Numerical Example

Period 0

- *C1* gives 100 Hamburg thalers for BILL1.
- BILL1 obliges *B* to pay 165 bank guilders in two months at the Bank of Amsterdam. The exchange rate is 1.65:1.

Period 1

- *B* sells BILL2 to *C2* for 166 bank guilders. 165 will settle BILL1 and 1 is a service fee.
- BILL2 obliges *D* to pay 101.8 thalers in Hamburg in two months. The exchange rate is 1.63:1.

Period 3

- *D* pays an annualized 4-month rate of 5.4 percent

Phase 1: Rollover Crisis

In Hamburg

In Amsterdam

Period 0: (a) *D* draws BILL1 on *B*
(b) *D* sells it to *C1*
C1 travels to Amsterdam

Period 1:

(a) *B* accepts BILL1
(b) *B* draws BILL2 on *D*
~~(c) *B* sells BILL2 to *C2*~~
C2 travels to Hamburg

Period 2: (a) *D* accepts BILL2

(b) *B* settles BILL1 with *C1*

Period 3: (a) *D* settles BILL2 with *C2*

Phase 2: Acceptance Collapse

In Hamburg

In Amsterdam

Period 0: (a) *D* draws BILL1 on *B*
(b) *D* sells it to *C1*
C1 travels to Amsterdam

Period 1:

~~(a) *B* accepts BILL1~~
(b) *B* draws BILL2 on *D*
~~(c) *B* sells BILL2 to *C2*~~
C2 travels to Hamburg

Period 2: (a) *D* accepts BILL2

(b) *B* settles BILL1 with *C1*

Period 3: (a) *D* settles BILL2 with *C2*

Phase 3: Securitization Collapse

In Hamburg

In Amsterdam

Period 0: (a) *D* draws BILL1 on *B*
~~(b) *D* sells it to *C1*~~
C1 travels to Amsterdam

Period 1:

~~(a) *B* accepts BILL1~~
(b) *B* draws BILL2 on *D*
~~(c) *B* sells BILL2 to *C2*~~
C2 travels to Hamburg

Period 2: (a) *D* accepts BILL2

(b) *B* settles BILL1 with *C1*

Period 3: (a) *D* settles BILL2 with *C2*

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- 2. Data**
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Recorded at the Bank of Amsterdam?

In Hamburg

In Amsterdam

Period 0: (a) *D* draws BILL1 on *B*
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C1 travels to Amsterdam

Period 1:

(a) *B* accepts BILL1
(b) *B* draws BILL2 on *D*
(c) ***B* sells BILL2 to *C2***
C2 travels to Hamburg

Period 2: (a) *D* accepts BILL2

(b) ***B* settles BILL1 with *C1***

Period 3: (a) *D* settles BILL2 with *C2*

Bank of Amsterdam Balance Sheet

August 1, 1763, in bank guilders

| Assets | | Liabilities | |
|---------------------------|------------|-------------|------------|
| Metal | 21,895,124 | Accounts | 22,660,145 |
| Under Receipt ("Repo") | 21,606,690 | | |
| Unencumbered | 288,434 | | |
| Loans | 527,264 | Capital | -237,757 |
| Total | 22,422,388 | Total | 22,422,388 |

Data for 1763

- **Weekly gross payments between**
 - each of the 8 largest merchant bankers
 - each banker with the rest of the Bank of Amsterdam
 - each with the Bank of Amsterdam's master account
- **Week-start balances of the same.**

Data Shows

- **New bills financed acceptances before the crisis.**

Table 3. Bank of Amsterdam transactions, January-July 1763

Weekly Means in Thousands of Bank Guilders

| Merchant bank | Starting balance | Total Payments | Payments/ Balance |
|-------------------------------|------------------|---------------------|----------------------|
| Hope & Compagnie | 439.3 | 473.9 | 1.12 |
| Andries Pels & Zoonen | 359.7 | 245.8 | 0.70 |
| George Clifford & Zoonen | 277.1 | 392.3 | 1.49 |
| Gebroeders de Neufville | 103.3 | 241.3 | 2.69 |
| Vernede & Compagnie | 99.0 | 179.5 | 2.75 |
| Raymond & Theodoor de Smeth | 77.7 | 164.5 | 2.57 |
| Horneca Hogguer & Co. | 69.7 | 146.7 | 2.51 |
| Charles & Theophilus Cazenove | 68.7 | 227.7 | 4.25 |
| Total 8 large banks | 1,494.5 | 2071.7 | |
| (Rest of the Bank accounts) | 21,686.0 | 1925.3 ¹ | |

¹ Sum of coin withdrawals plus transfers to eight most active accounts.

Data Shows

- **New bills financed acceptances before the crisis.**
- **The failure of Neufville caused a sudden drop in bill creation.**
- **Liquidity creation prevented additional failures.**

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May 1763

1. decline in commodity prices.
2. demonetization of Prussian coins.

Debtors suddenly lacked means to pay bills.

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2. demonetization of Prussian coins.

Debtors suddenly lacked means to pay bills.

- ➔ So debtors draw and sell new bills on Amsterdam.
- ➔ Silver bullion follows in hopes of paying the new bills.

Lehman Moment

Aron Joseph fails on July 28.

Neufville's exposure? 163,000 guilders.

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Neufville's average weekly funding requirement?
241,000 guilders.

Neufville suspends payments on July 30.

Too Big to Fail?

This morning ... we received a fatal express, with the terrible news that you, the gentlemen of Amsterdam, would leave the Neufvilles to sink, by which we were all thunderstruck; never dreaming that so many men in their senses in your city could take such a step ... which will infallibly plunge all Europe in an abyss of distress, if not remedied by you whilst it is still time.

--- Petition from Hamburg, August 4, 1673

From Tooke (1838, 149-150).

Consequences of Neufville Failure

Direct

Consequences of Neufville Failure

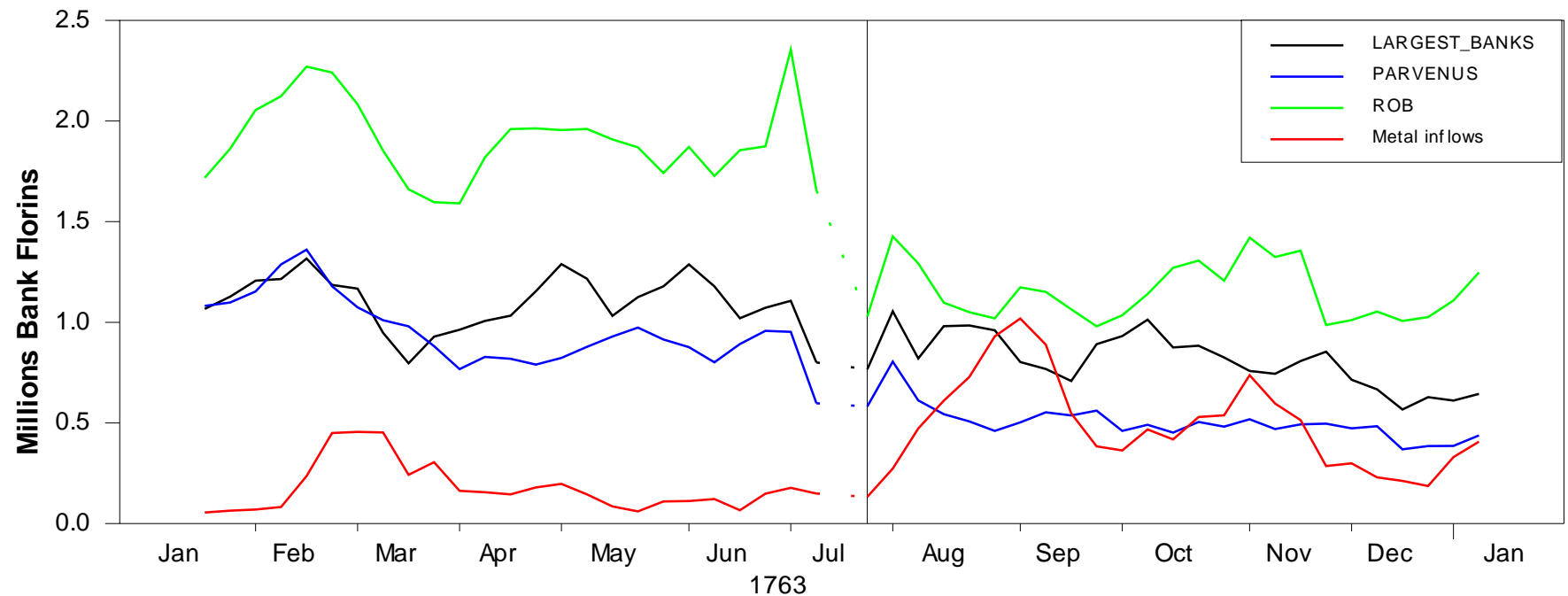
Direct

Indirect

- Scramble for coin**
- Run on deposit banks**
- Rollover crisis**

Rollover Crisis

Payments value by source, 1763:1-1764:1



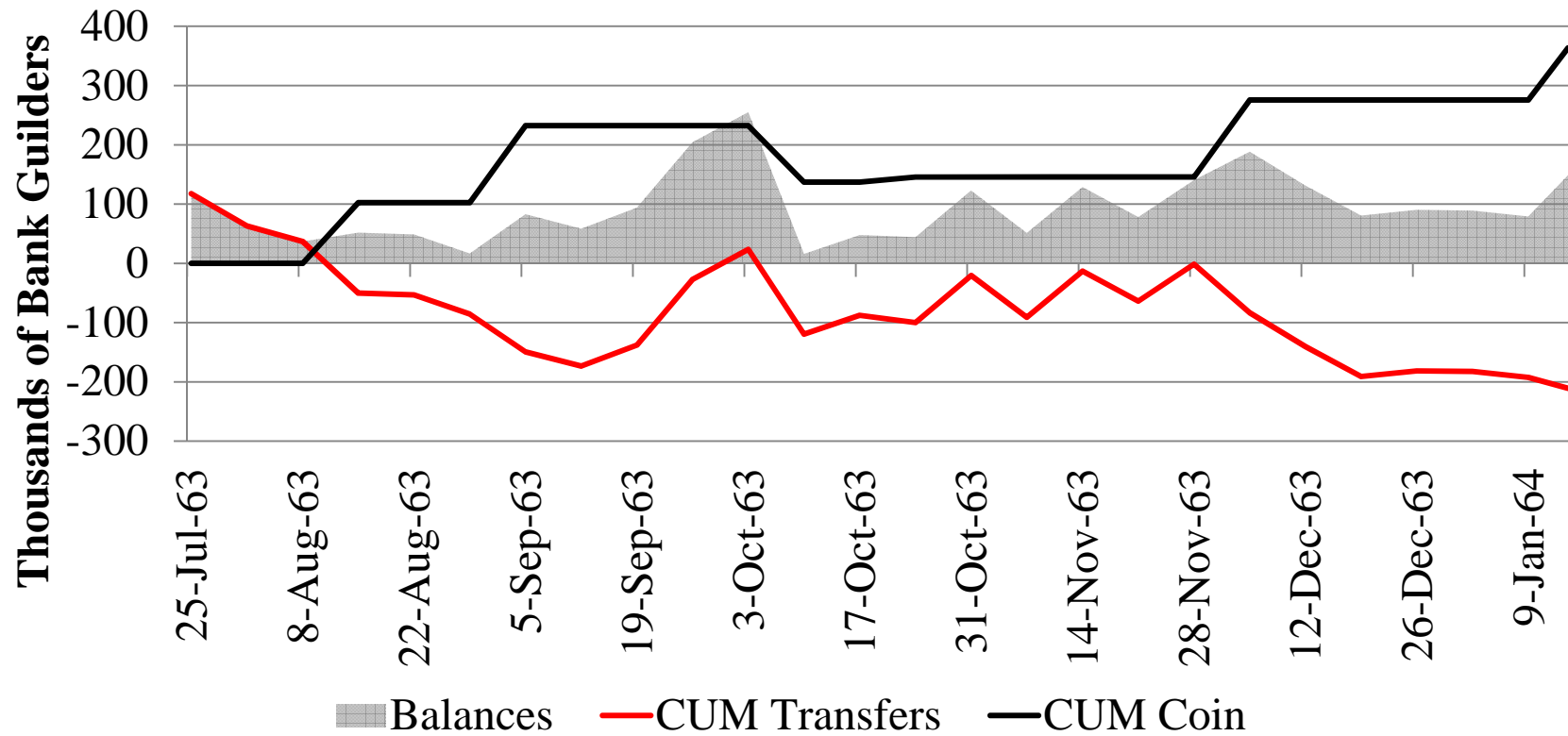
3-week moving averages. Source: Stadsarchief Amsterdam 5077.

Outline

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4. **Run and Response**

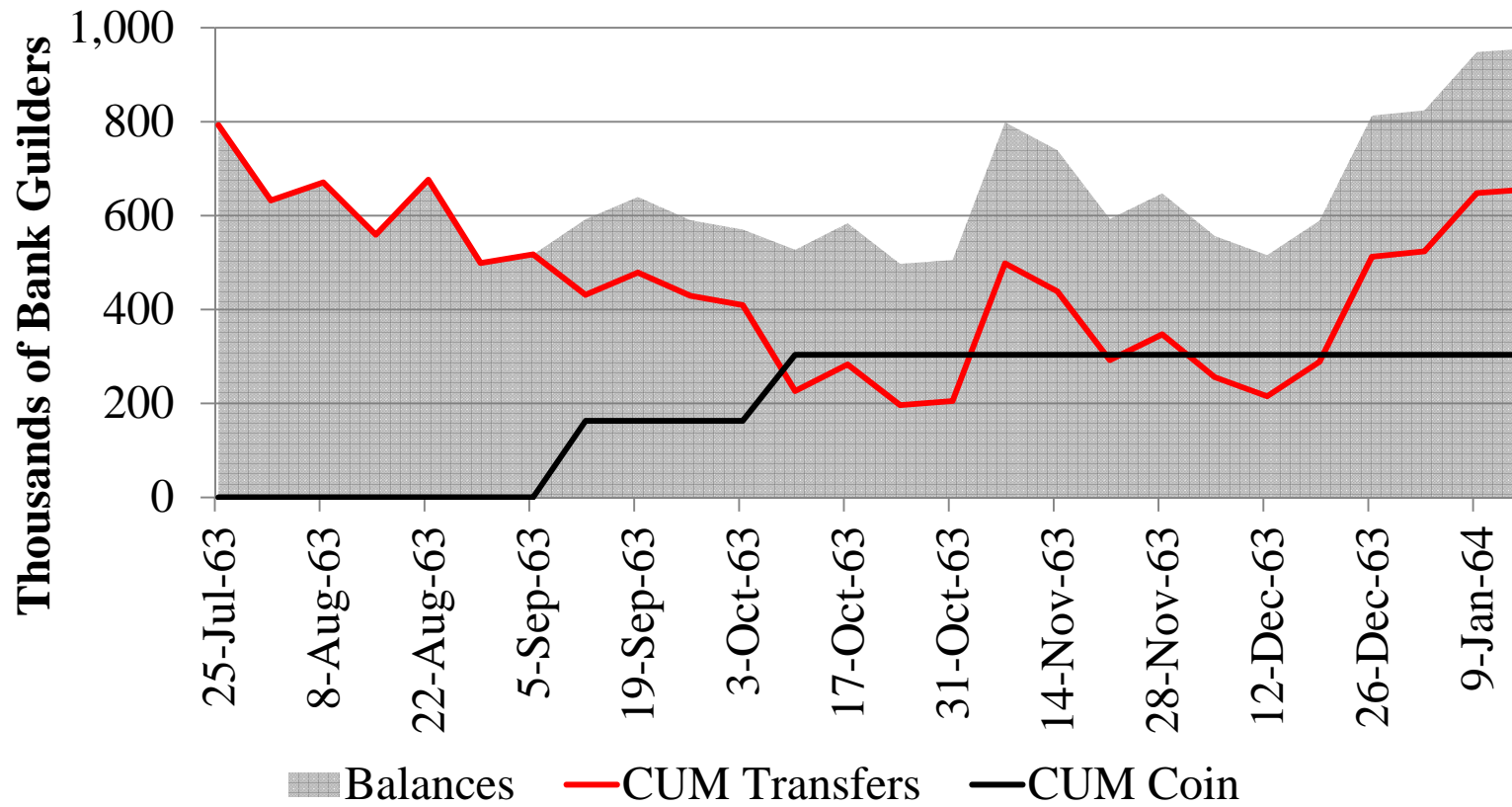
Run and Response

Weekly position of Horneca Hogguer



Run and Response

Weekly position of Hope

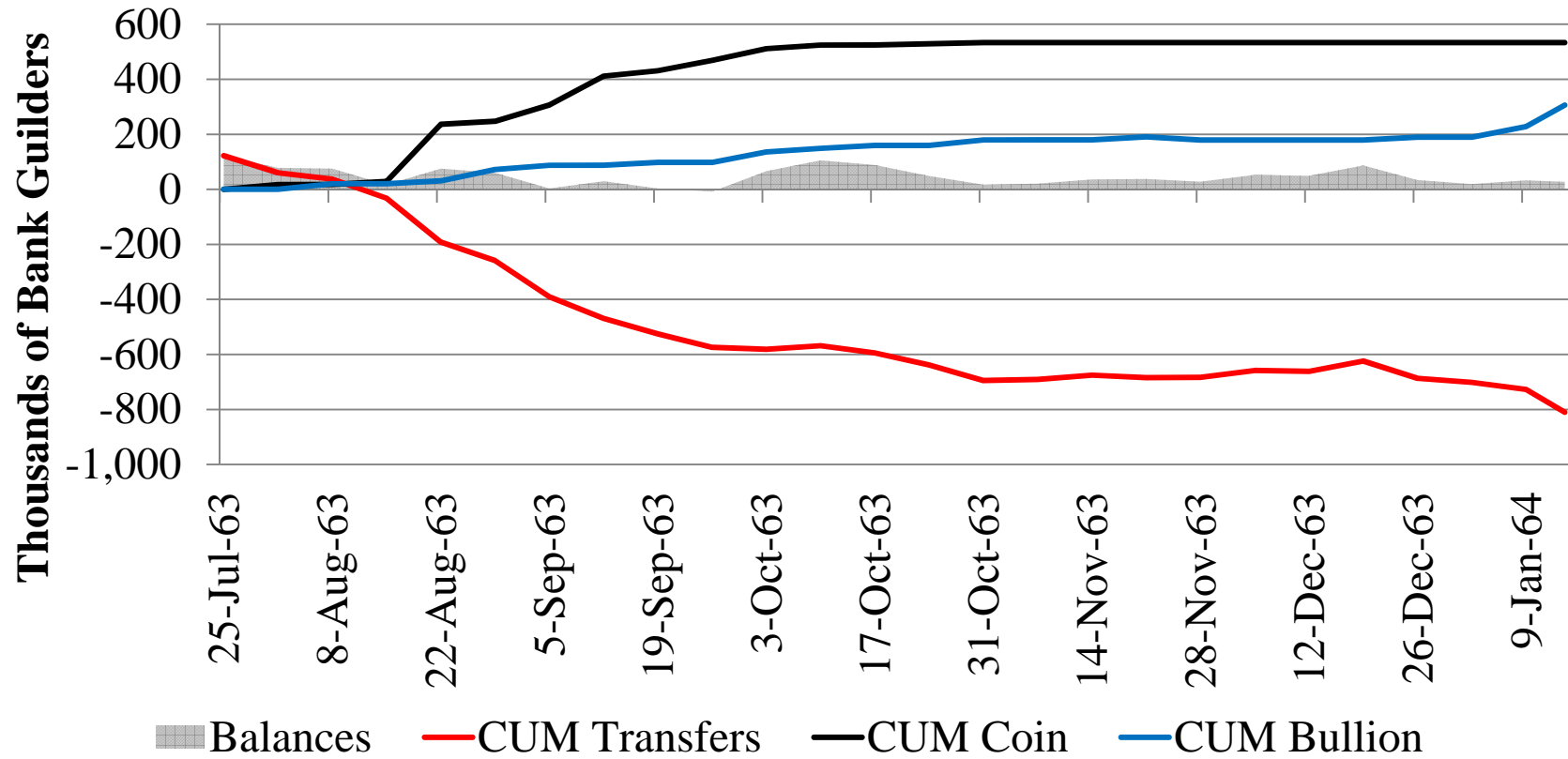


Additional Response

- **Open Market Operations?**
- **Ad hoc bullion repo window**
 - **unlimited amounts**
 - **low interest rate**
 - **large haircut**

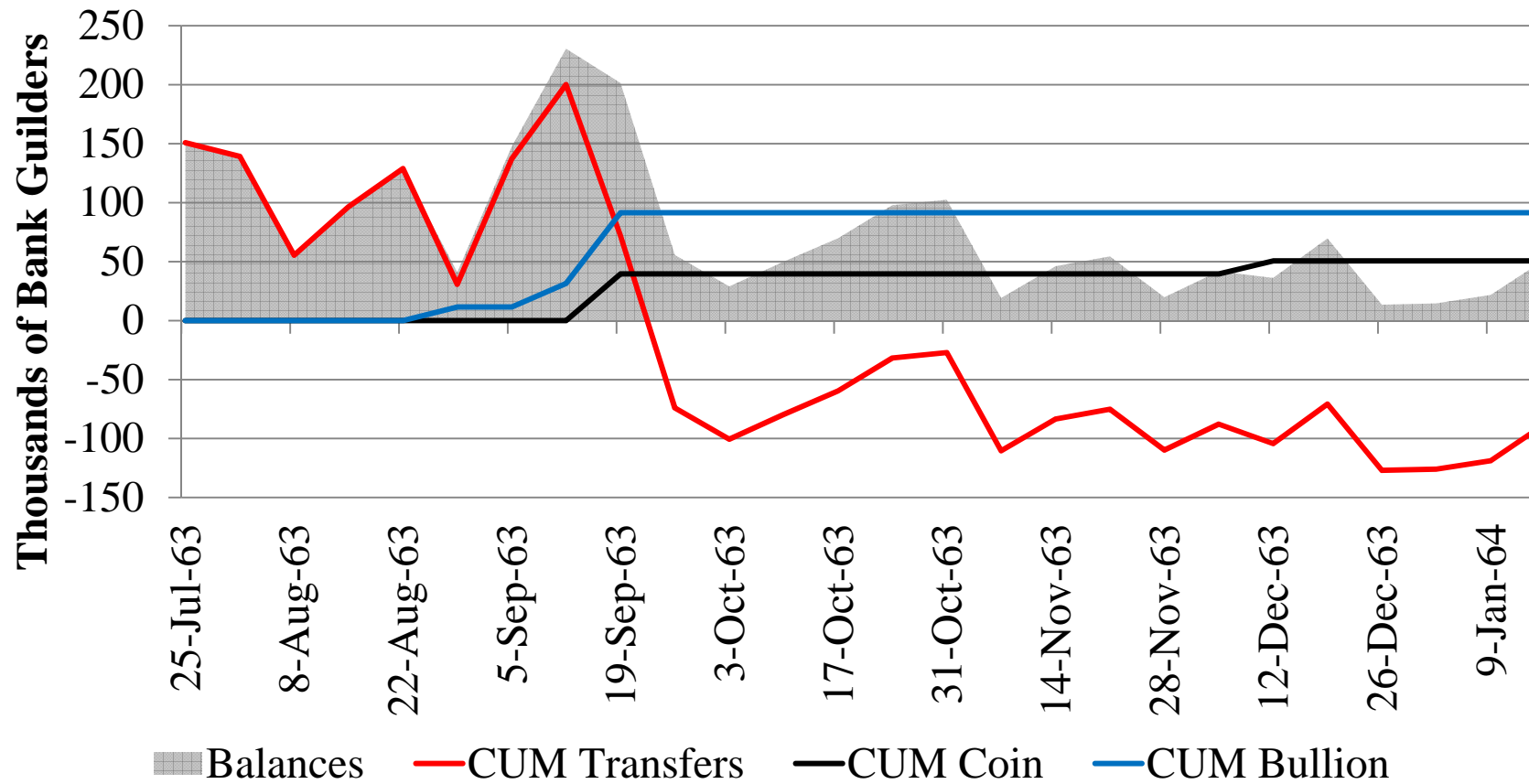
Run and Response

Weekly position of Cazenove



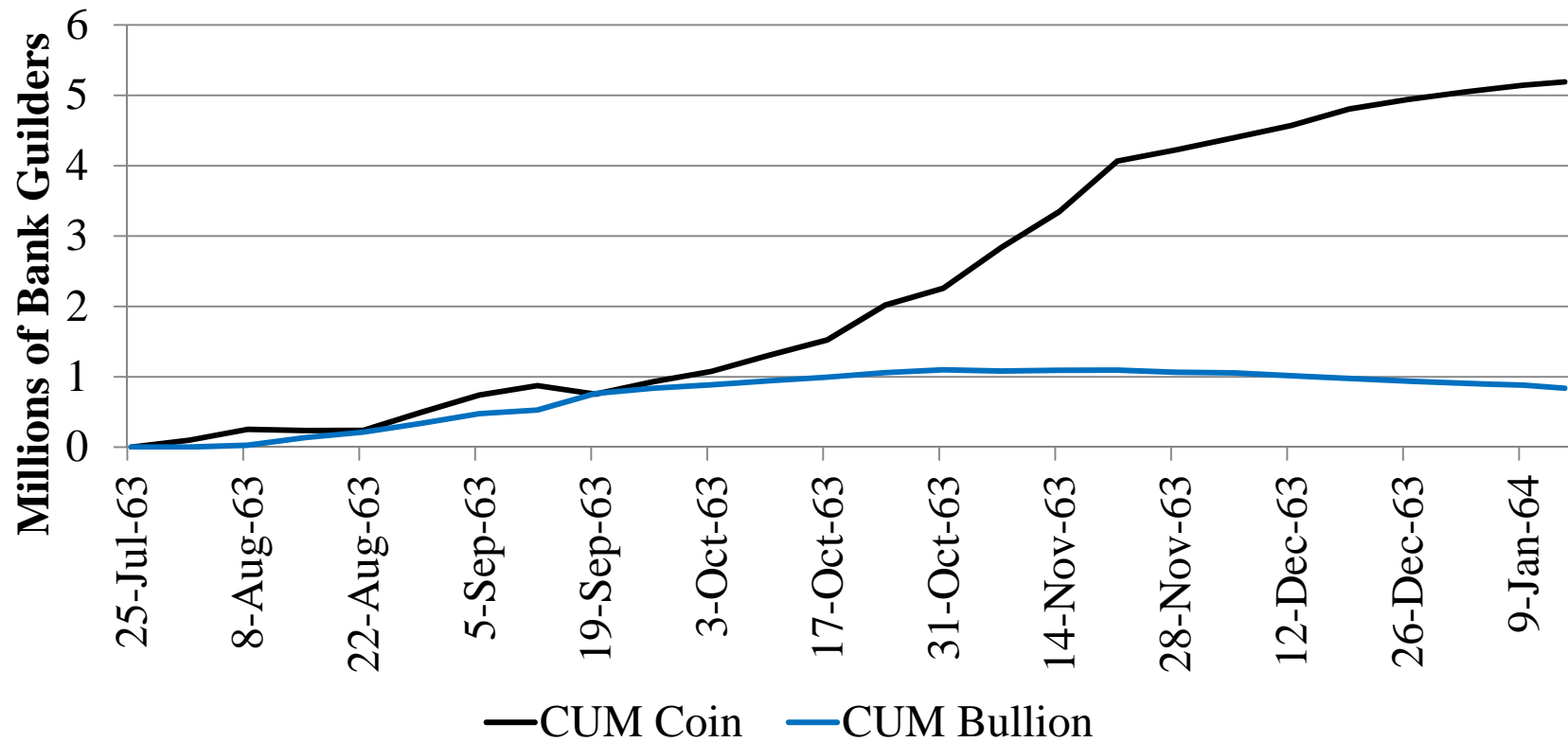
Run and Response

Weekly position of Smeth



Non-Bank Response

Weekly cumulative positions for the rest of the Bank



Lessons

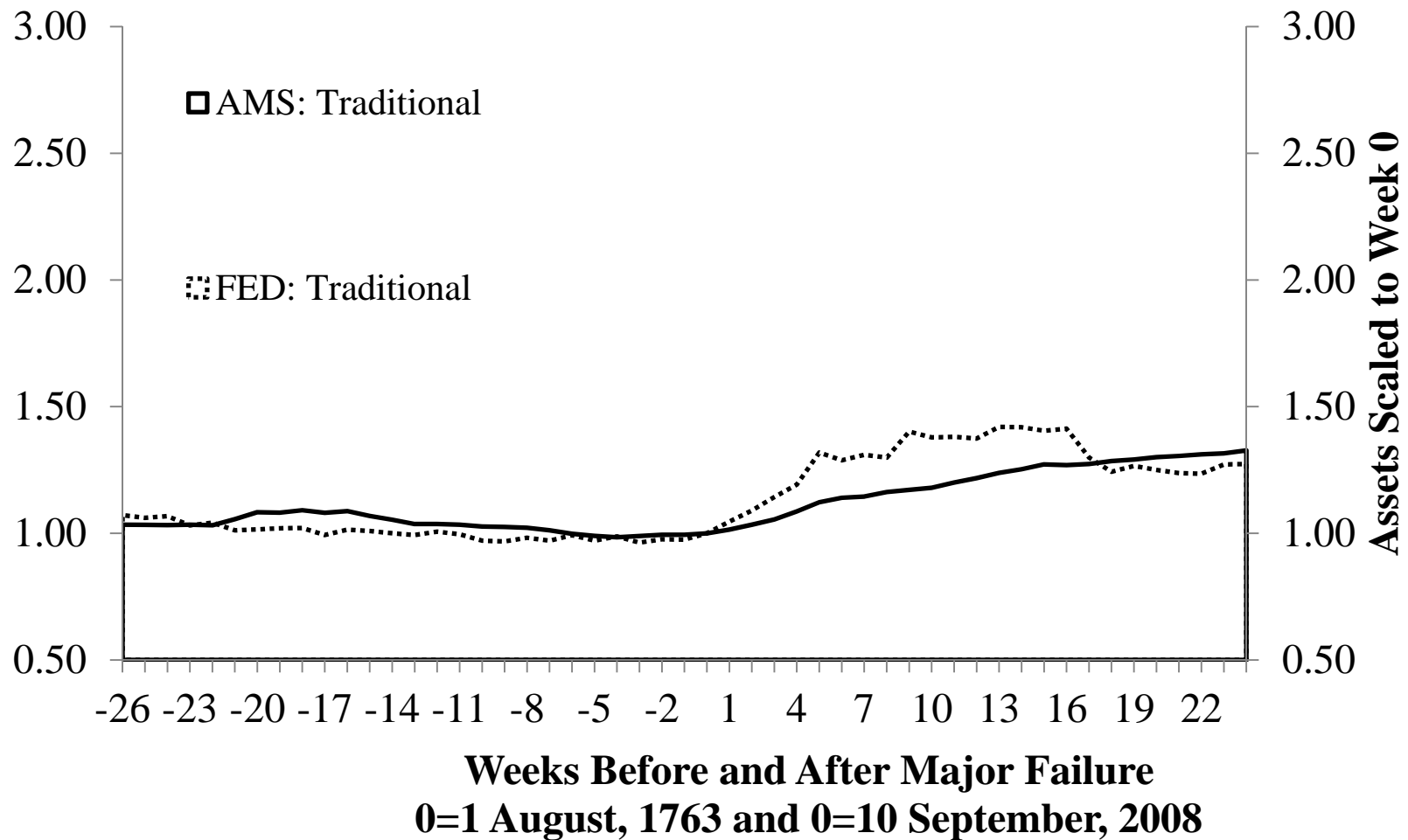
1763 confirms that a shadow run is a rollover crisis.

Lessons

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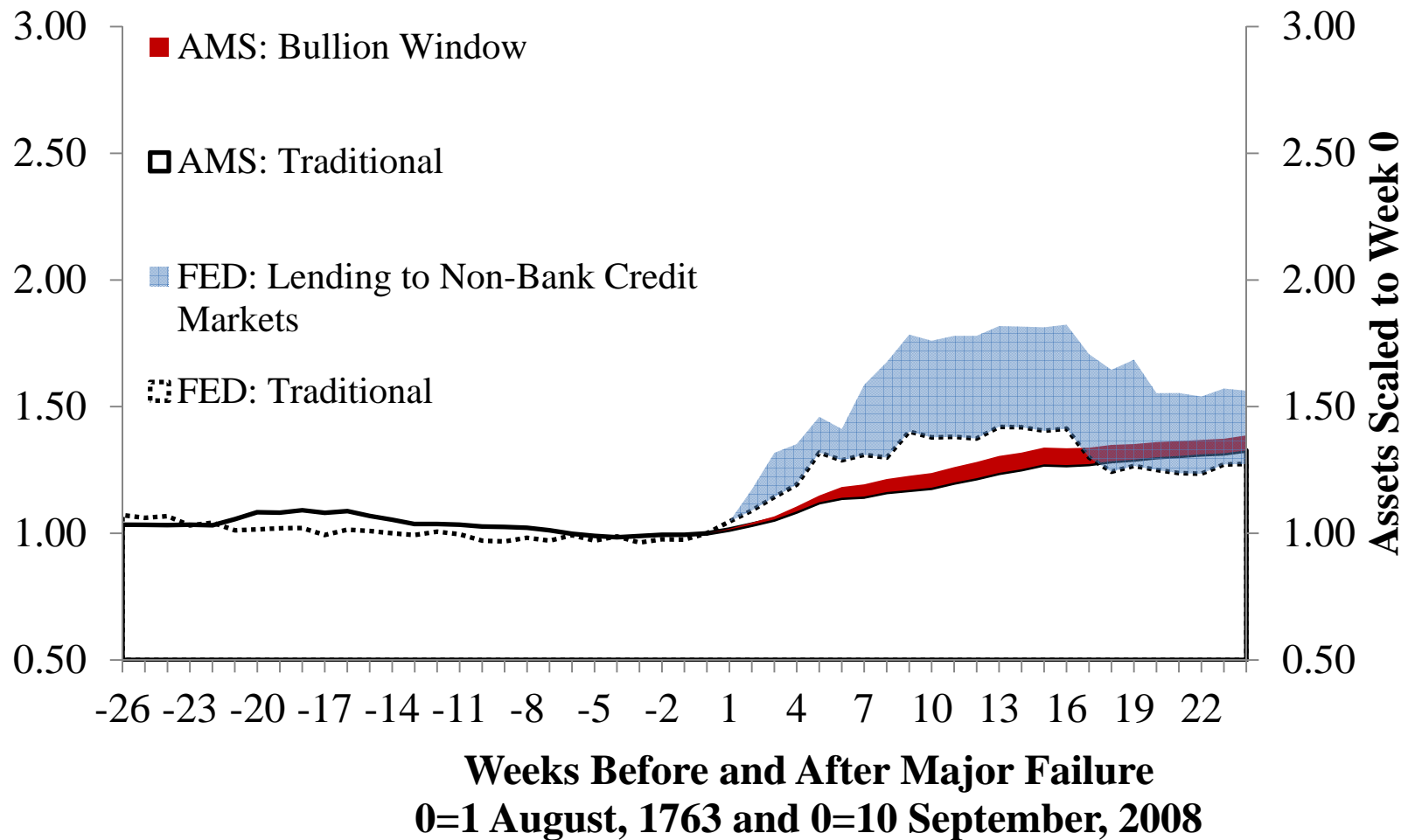
**1763 suggests that a smaller scale of central bank response
can be sufficient for local effectiveness.**

Weekly Central Bank Assets in 1763 and 2008



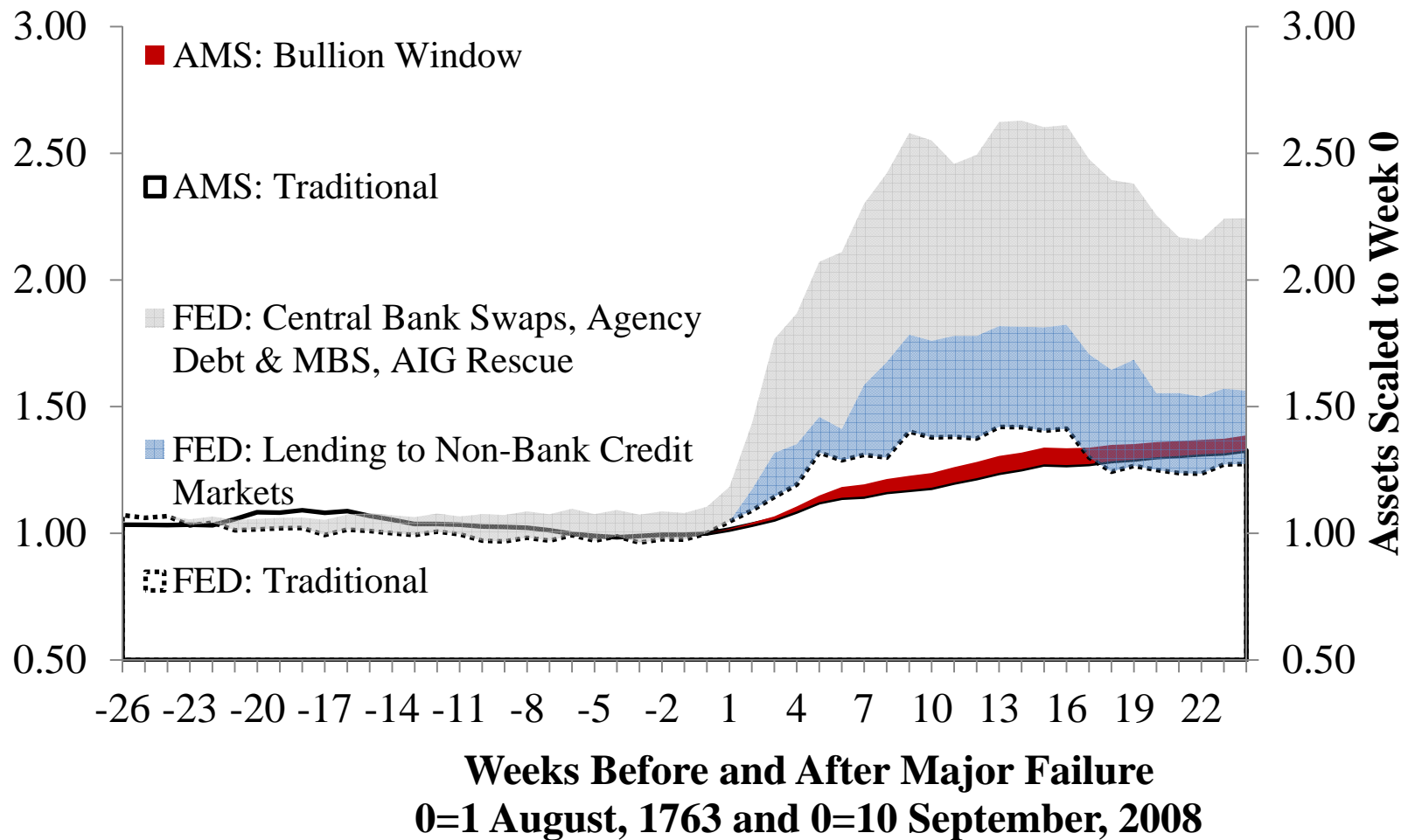
Sources: Federal Reserve and Stadsarchief Amsterdam 5077

Weekly Central Bank Assets in 1763 and 2008



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Weekly Central Bank Assets in 1763 and 2008



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Questions?

Weekly "funding gap" with non-banks

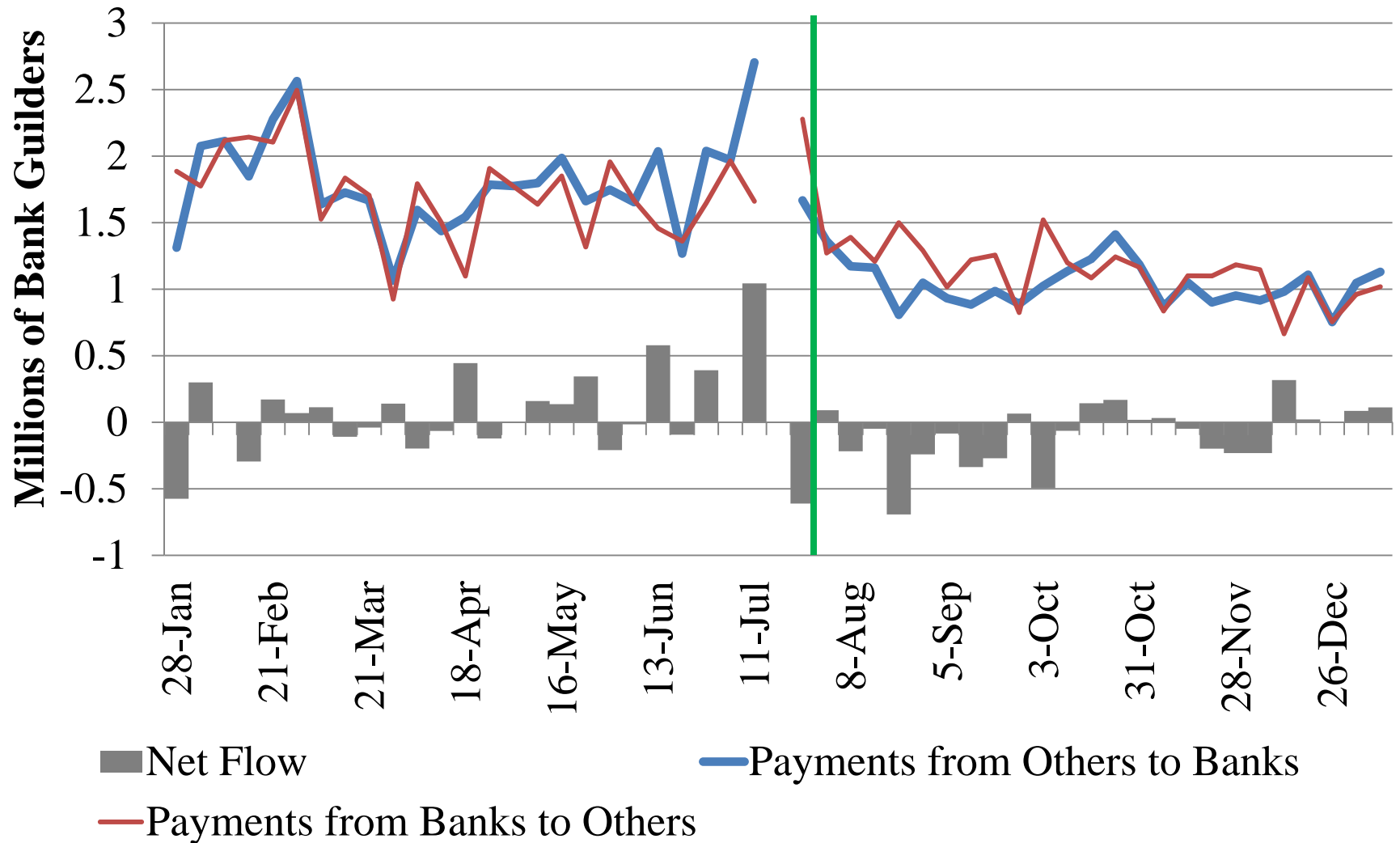


Figure 10: Simulated balances with no bullion window + 2 failures

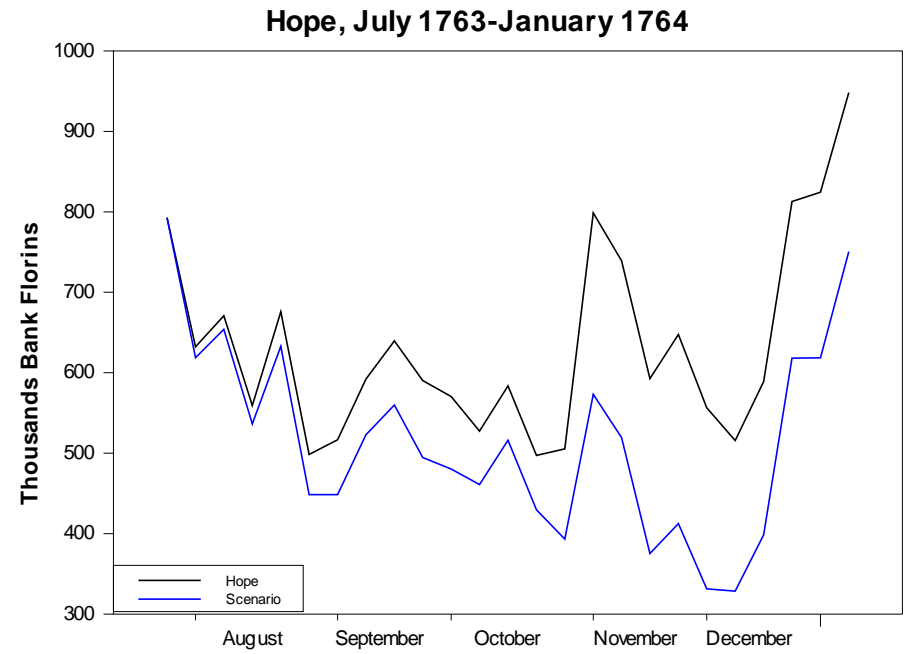
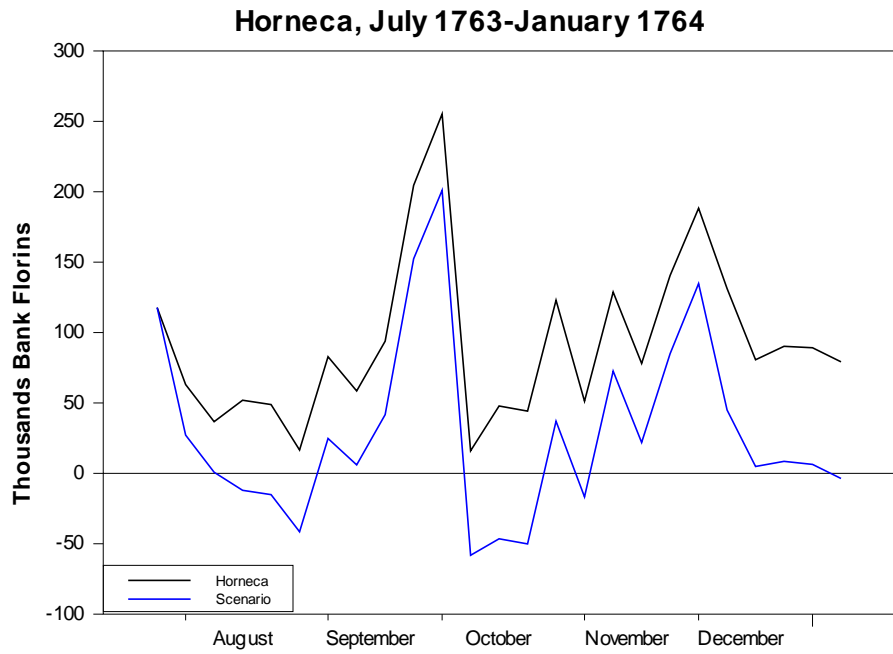


Figure 6: Weekly total banker balances in 1763

with accumulation by channel

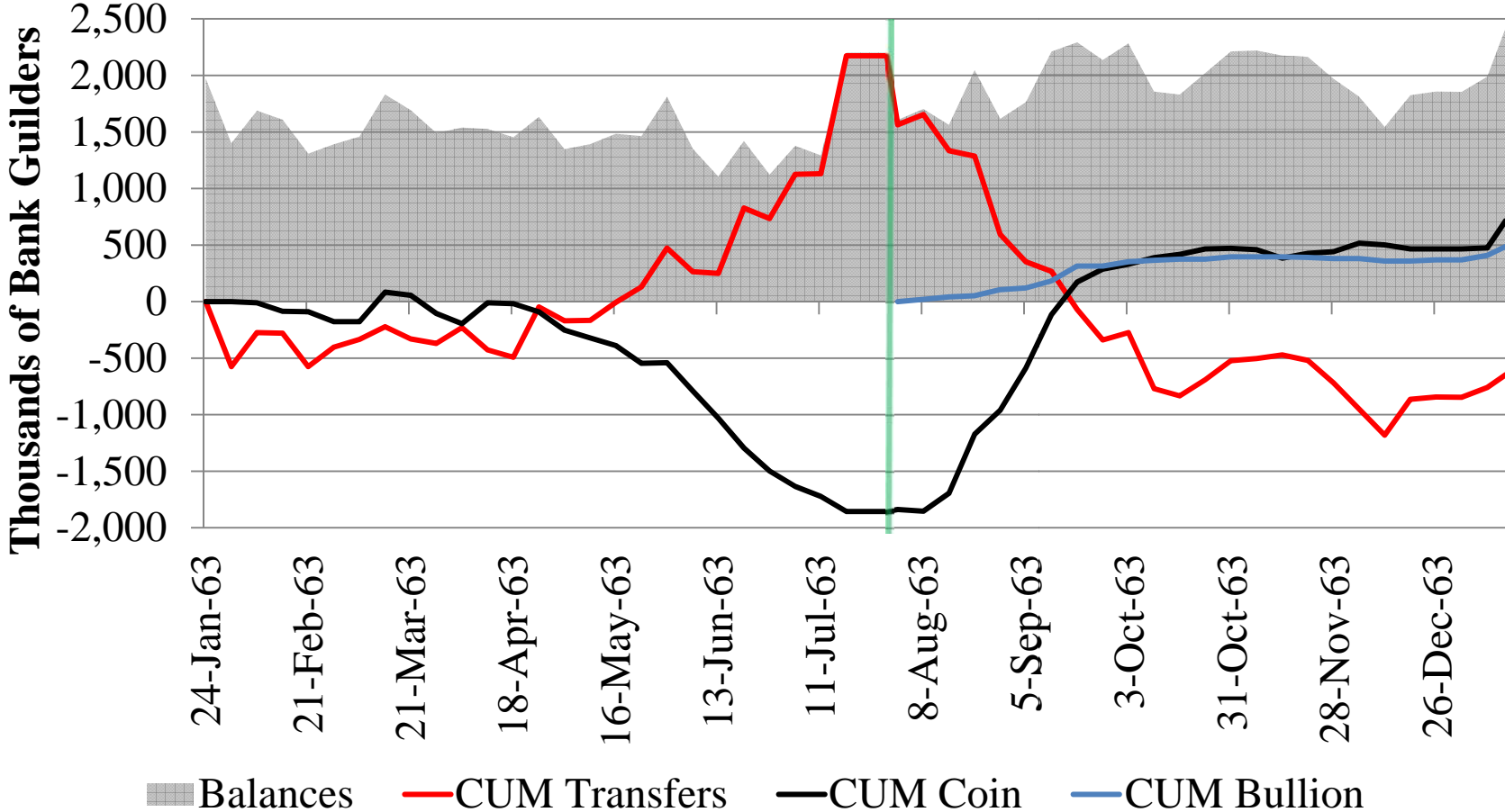


Figure C3. Weekly balances of Pels

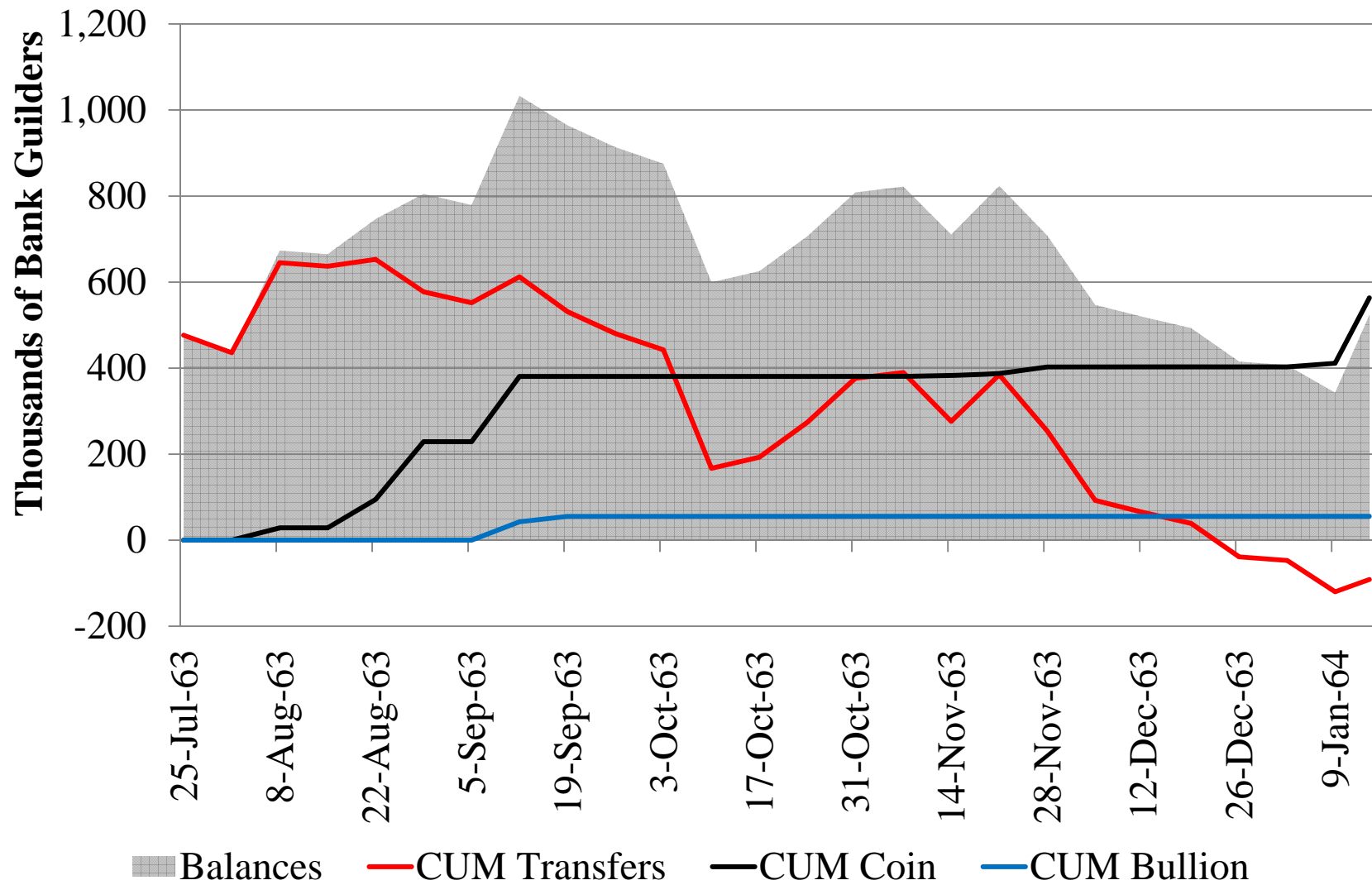


Figure C4. Weekly balances of Clifford

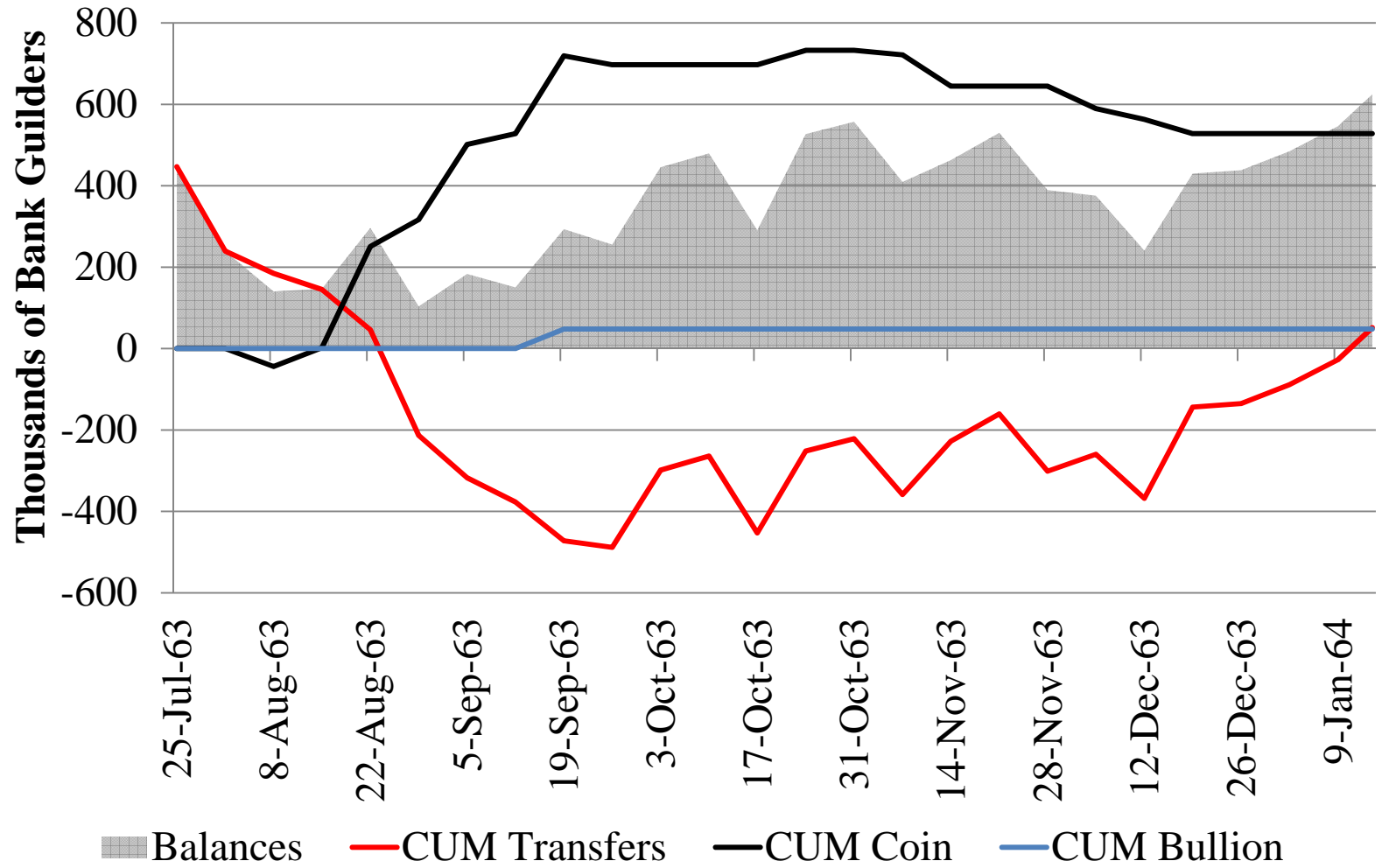


Figure C6. Weekly balances of Verne

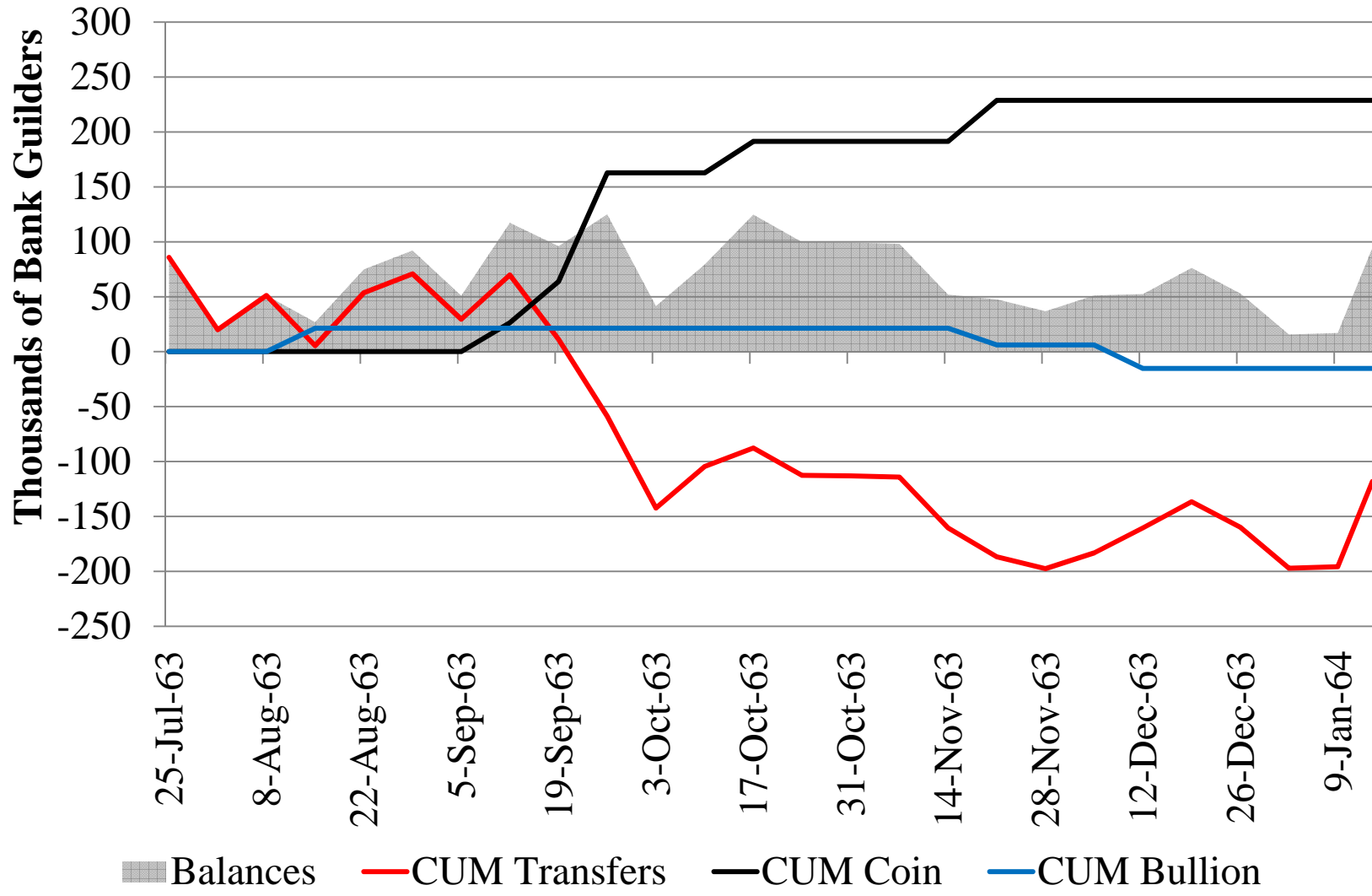
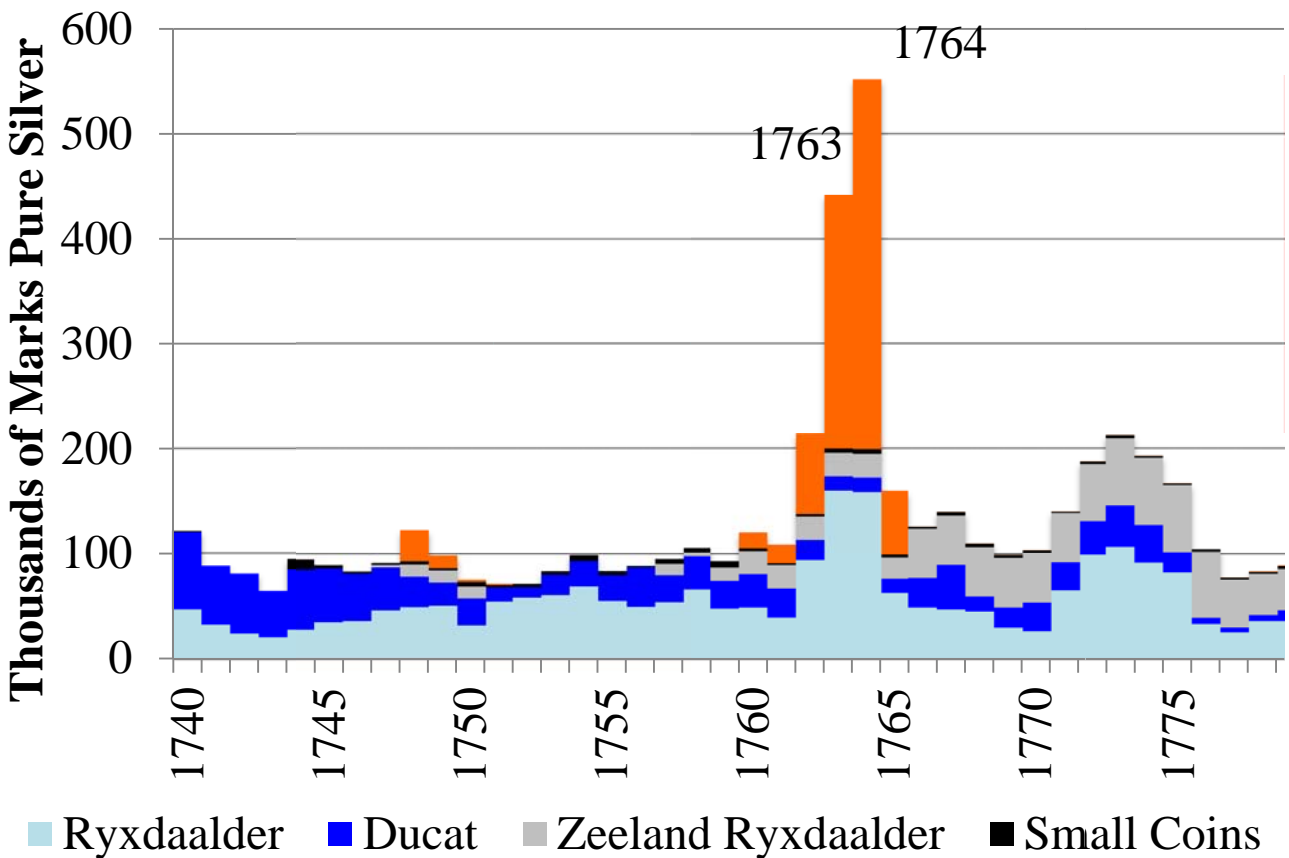


Figure C2. Mint production of silver coins, 174



Source: Derived from Polak 1998.