The Chicago Plan Revisited

Jaromir Benes, International Monetary Fund
Michael Kumhof, International Monetary Fund

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1 Introduction

- The Great Recession revealed serious weaknesses in the financial system and triggered significant reform.
- The Great Depression is a useful reference point: It provoked a very deep intellectual debate about how to make the financial system safer, culminating not only in the 1933/35 Banking Acts but also in the Chicago Plan.
- The Chicago Plan was supported by Irving Fisher, Henry Simons, Frank Knight, Milton Friedman, many others.
- In a nutshell, the Chicago Plan proposed:
  - Separation of the monetary and credit functions of banking.
  - Deposits/money backed 100% by public reserves.
  - Credit cannot be financed by creation, ex nihilo, of bank deposits.
- Comparing key characteristics of the Chicago Plan and of today's financial system may provide useful insights for policy.

2 Understanding Banks: Key Insights

2.1 Key Function: Money Creation, not Intermediation

- The key characteristic of today's banks is money creation/destruction.
- "Intermediation" is incidental/secondary.
- The intermediation story misses the monetary nature of financing.

Money and Banks A: Bond Finance

- A wants to buy goods (or assets), B wants to sell goods (or assets).
- A issues bonds to B, B gives A the goods.
- It never happens that way in practice.
- Because the bonds need to be bought using **money**, and the party that has the money need not be B, it could be C.
- Claudio Borio (BIS) has recently emphasized this, and he is absolutely right.
- So this story is very abstract, and potentially misleading or wrong.
- But at least it is **possible** that we can ignore the need for money (if B happens to have both money, and goods to sell).

Money and Banks B: "Intermediation"

- A wants to buy goods (or assets), B wants to sell goods (or assets).
- B dumps the goods on the bank's forecourt, and a deposit is recorded.
- The bank gives the goods to A, and a loan is recorded.
- You have to argue as above if you argue that banks intermediate funds, because that implies that deposits come before loans.
- The only exception is cash deposits, but these do not play a significant role in the real world.
- The intermediation story is not only abstract, it is completely **impossible**.
- It misses the monetary nature of all financing.
- The key question is this: When a customer walks into a bank to "make" a non-cash deposit, what is it, exactly, that the bank "collects" from him/her? If it appears that there is no good answer to that question, it is because there is none.

Money and Banks C: Money Creation - Process

- A wants to buy goods (or assets), B wants to sell goods (or assets).
- A goes to the bank to get financing, B stays at home.
- A gets a new loan of $1m, and a new deposit of $1m.
- The bank has created its own funds, deposits, in the act of lending.
- This is an extraordinary privilege that is not enjoyed by any other type of business.
- A then uses the new deposit to pay B.
- This is not abstract, not impossible, and in fact it **<u>happens every single time</u>** banks make a loan.

Money and Banks C: Money Creation - Implications

- Key: New loans involve no intermediation whatsoever.
- No funds are being withdrawn from previous uses as saving.
- Third parties are therefore not needed, except to accept the newly created money in payment. This is a given by legal fiat.
- Banks can therefore easily start a lending boom: They simply expand the money supply by growing their balance sheets. They do not have to attract deposits of existing money.
- For the aggregate banking system it makes no difference if the new deposit is subsequently transferred to another bank: So long as the loan remains outstanding at some bank, so does the deposit, at some other bank.
- Reserves or cash balances impose no limits on this process (see below).
- The only constraints are solvency and profitability: The key is banks' potentially very volatile sentiment concerning their borrowers' creditworthiness.

Bank Money Creation Exhibit A: Schumpeter (1954)

But this ... makes it highly inadvisable to construe bank credit on the model of existing funds' being withdrawn from previous uses by an **entirely imaginary act of saving** and then lent out by their owners. It is much more realistic to say that the banks ... **create deposits in their act of lending**, than to say that they lend the deposits that have been entrusted to them. ... The theory to which economists clung so tenaciously makes [depositors] out to be savers when they neither save nor intend to do so; it attributes to them an influence on the 'supply of credit' which they do not have.

Nevertheless, it proved extraordinarily difficult for economists to recognize that bank loans and bank investments do create deposits. In fact, throughout the period under review they refused with practical unanimity to do so. And even in **1930, when a large majority had been converted** and accepted that doctrine as a matter of course, Keynes rightly felt it to be necessary to re-expound and to defend the doctrine at length ...

Bank Money Creation Exhibit B: Central Banks

- Keister and McAndrews (2009), Federal Reserve Bank of New York: "Suppose that Bank A gives a new loan of $20 to Firm X ... Bank A does this by crediting Firm X's account by $20. The bank now has a new asset (the loan to **Firm X**) and an offsetting liability (... **Firm X**'s deposit at the bank)."

- Graham Towers (1939), former Governor of the central bank of Canada: "**Each and every time** a bank makes a loan, new bank credit is created – new deposits – brand new money."

- Berry et al. (2007), Bank of England: "When banks make loans, they **create additional deposits for those that have borrowed the money**."

- Bundesbank (2009): "In the Eurosystem, money is primarily created through the extension of bank credit . . . The commercial banks can create money themselves . . . "

2.2 Saving Does Not Need to Come Before Investment

- Aggregate saving only arises when new physical investment is financed.
- But before any saving or investment come a new loan and a new deposit.
- The new deposit is obviously not (yet) saving.
- But by providing new purchasing power, it allows investment to go ahead.
- When investors pay for goods, the seller of the goods acquires the deposit.
- This is saving.
- It is a **consequence** of lending, creation of money, and investment.
- This is a fundamental insight for economic development:
  - Saving is not a precondition for investment.
  - Rather it is a by-product of (efficient) investment financing.

2.3 The "Deposit Multiplier" is a Myth

- Deposit Multiplier:
  - Central bank fixes narrow money aggregates first.
  - Broad money aggregates are the endogenous result.

- Kydland and Prescott (1990) referred to this as a myth. Why?
  - It turns the actual monetary transmission mechanism on its head.
  - Monetarist Era:
    - Broad money aggregates lead the cycle: M2-M1 by 3 quarters.
    - Narrow money aggregates lag the cycle: M1 by 1 quarter.
  - Inflation Targeting Era:
    - If you control a price (the interest rate), ...
    - then you have to let quantities (reserves) adjust.

- The evidence for this, both institutional and empirical, is overwhelming.

Exhibit A: Alan Holmes, Vice President of the New York Federal Reserve, 1969

The idea of a regular injection of reserves controlling the growth of the money supply suffers from a **naïve** assumption that the banking system only expands loans after the System (or market factors) have put reserves in the banking system.

In the real world, **banks extend credit, creating deposits in the process, and look for the reserves later** . . .

The reserves required to be maintained by the banking system are predetermined by the level of deposits existing two weeks earlier. [This was in 1969. Now the lag is one month.]

Exhibit B: Carpenter and Demiralp, Fed Board WP, 2010

While the institutional facts alone provide compelling support for our view, we also demonstrate empirically that the
relationships implied by the money multiplier do not exist in the data ...

Changes in reserves are unrelated to changes in lending, and open market operations do not have a direct impact on lending. We conclude that the **textbook treatment of money in the transmission mechanism can be rejected**.

Exhibit C: ECB Monthly Bulletin, May 2012

The occurrence of significant excess central bank liquidity does not, in itself, necessarily imply an accelerated expansion of MFI credit to the private sector. If credit institutions were constrained in their capacity to lend by their holdings of central bank reserves, then the easing of this constraint would result mechanically in an increase in the supply of credit. **The Eurosystem, however, ... always provides the banking system with the liquidity required to meet the aggregate reserve requirement.** In fact, the ECB's reserve requirements are backward-looking, i.e. they depend on the stock of deposits (and other liabilities of credit institutions) subject to reserve requirements as it stood in the previous period, and thus after banks have extended the credit demanded by their customers

The Deposit Multiplier: Conclusions

- When banks ask for reserves, the central bank obliges.

- Transmission **starts** with loan creation = deposit creation, and **ends** with reserve creation.

- Banks are therefore almost fully in control of the money creation process.

- The only tool the Fed has for affecting the money supply is very blunt:

  The policy rate works by making potential borrowers not creditworthy.

3 The Six Advantages of the Chicago Plan

The Four Advantages Identified by Fisher (1936)

1. Much better control of bank-lending-driven business cycles.
2. Complete elimination of bank runs.
3. Dramatic reduction of the (net) public debt.
4. Dramatic reduction of private debts.

The Two Additional Advantages Identified in This Paper

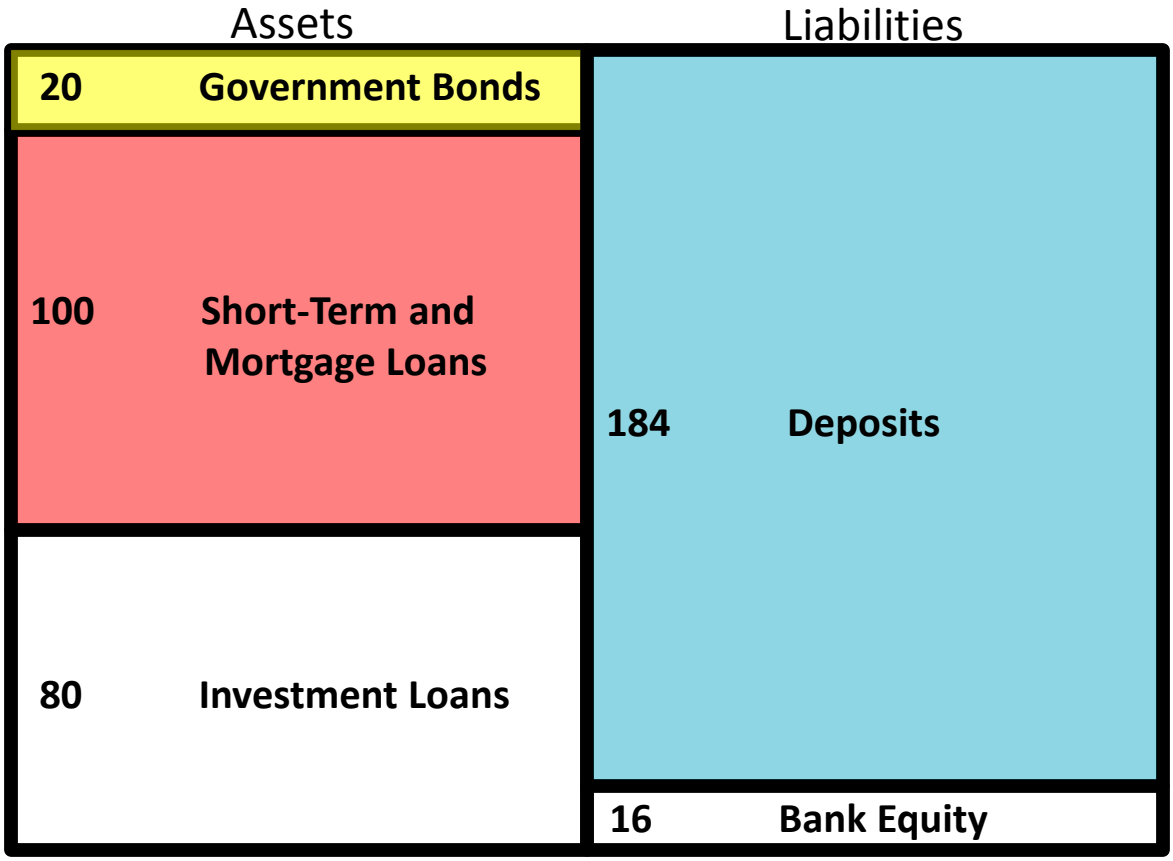
5. Large output gains, during the transition, approaching 10%.
6. No liquidity trap problems, zero long-run inflation attainable.

Six Advantages of the Chicago Plan: Detail

1. **Dramatic reduction of the (net) public debt** (80% to -30% of GDP)

2. **Dramatic reduction of private debts** (180% to 90% of GDP)

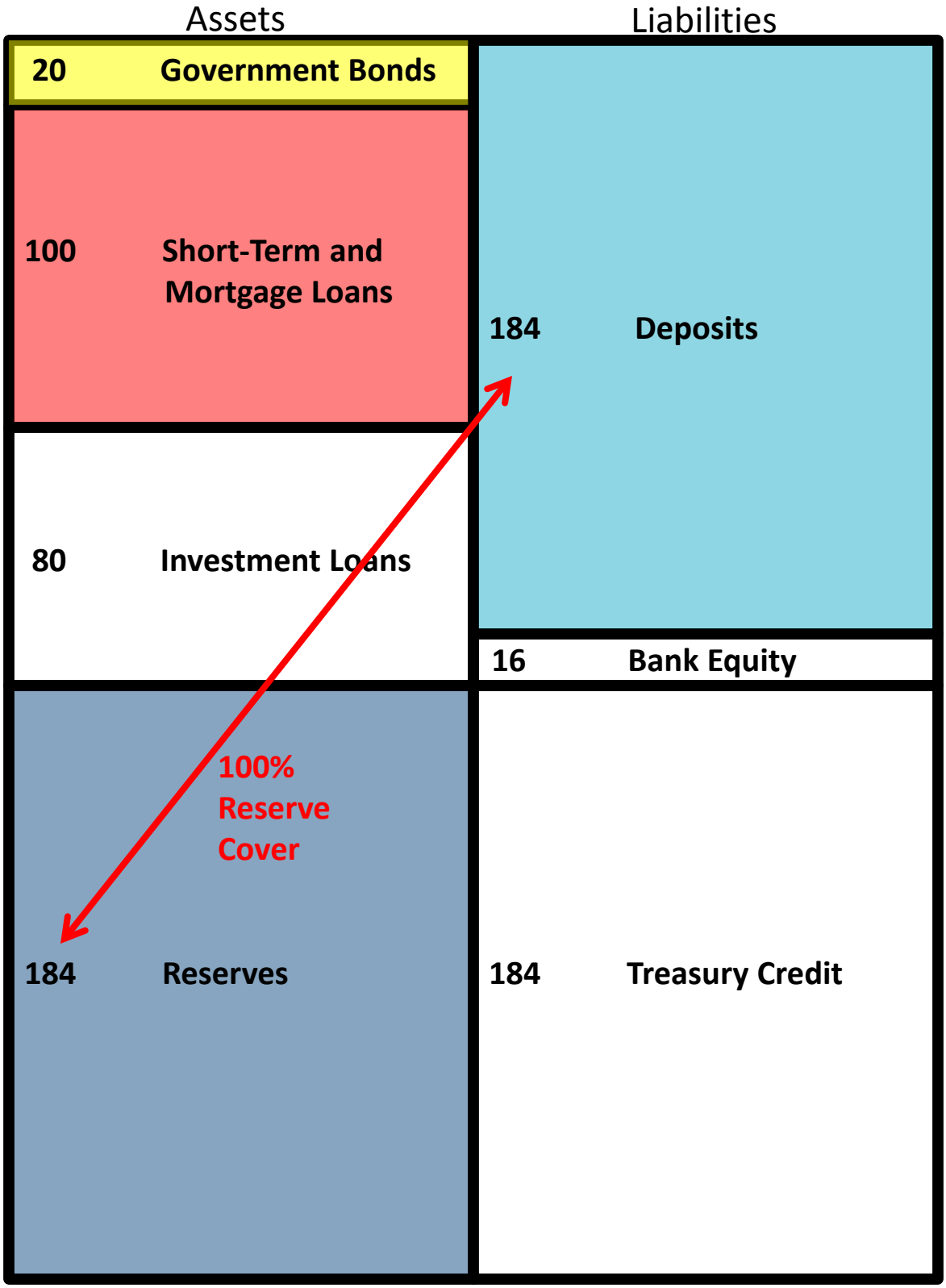
Current Banking System Balance Sheet



All numbers are in percent of U.S. GDP

Transition to Chicago Plan Step 1

Banks purchase 100% reserve cover against treasury credit IOU



Transition to Chicago Plan Step 2

Banks are split into money banks and credit investment trusts

Credit Investment Trusts

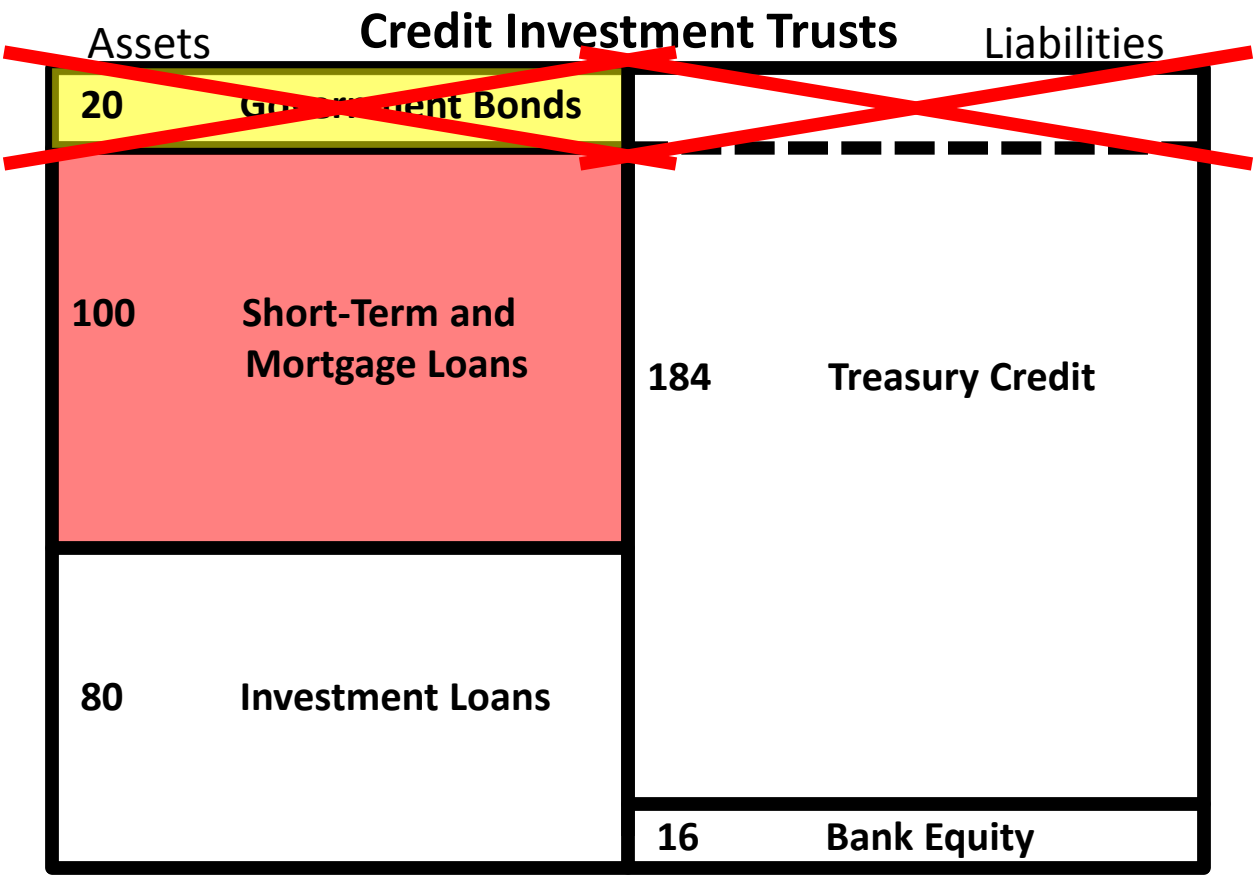
Assets		Liabilities	
20	Government Bonds	184	Treasury Credit
100	Short-Term and Mortgage Loans	16	Bank Equity
80	Investment Loans		

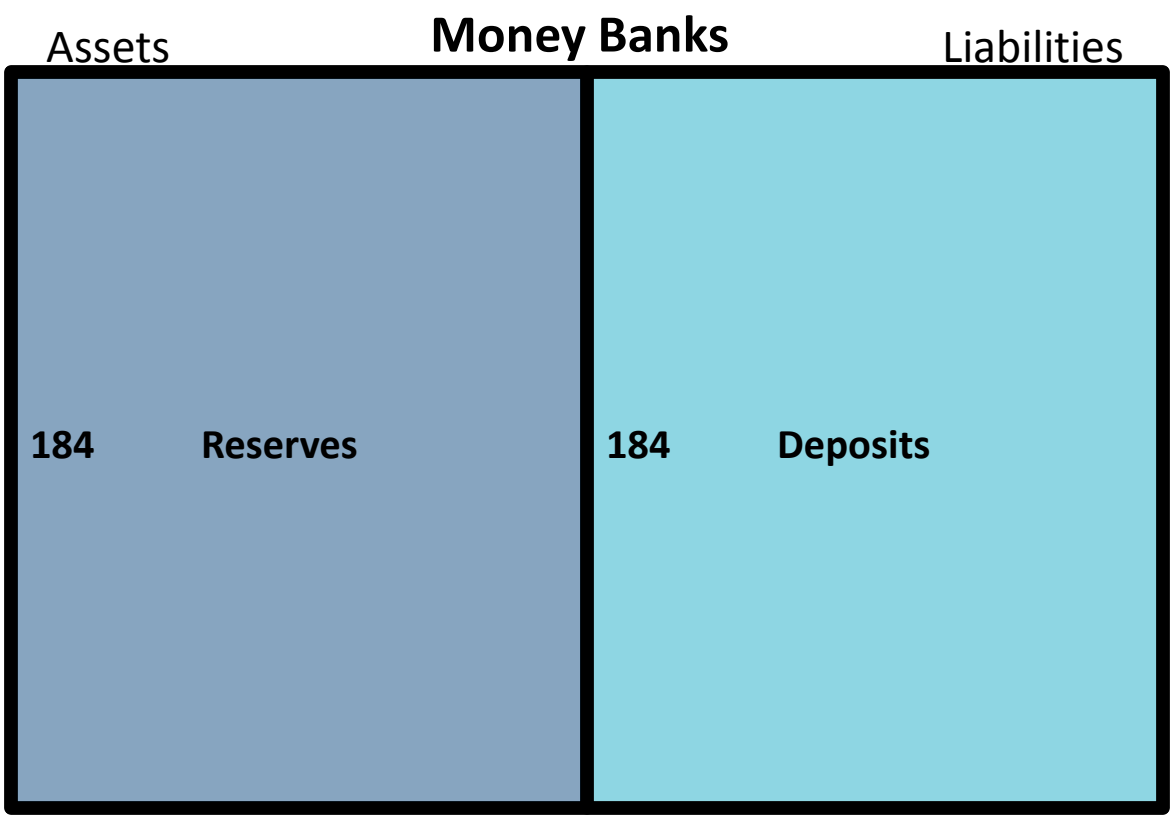
Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 3

Bank-held government bonds are cancelled against treasury credit





Transition to Chicago Plan Step 3 - completed

Bank-held government bonds are cancelled against treasury credit

Credit Investment Trusts

Assets		Liabilities	
100	Short-Term and Mortgage Loans	164	Treasury Credit
80	Investment Loans	16	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 4

Part of treasury credit is distributed as a citizens' dividend

Credit Investment Trusts

Assets		Liabilities	
100	Short-Term and Mortgage Loans	100	Citizens' Accounts
80	Investment Loans	64	Treasury Credit
		16	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 5

Mandatory first use of citizens' dividend is repayment of any debts

Credit Investment Trusts

Assets		Liabilities	
100	Short-Term and Mortgage Loans	100	Citizens' Accounts
80	Investment Loans	64	Treasury Credit
		16	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 5 - completed

Mandatory first use of citizens' dividend is repayment of any debts

Credit Investment Trusts

Assets		Liabilities	
80	Investment Loans	64	Treasury Credit
		16	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 6

Bank equity distribution due to reduced balance sheet size

Equity replaced by additional treasury credit

Credit Investment Trusts

Assets		Liabilities	
80	Investment Loans	71	Treasury Credit
		9	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

Transition to Chicago Plan Step 7 - Optional

Treasury credit used to repay all remaining government debt held outside the financial system

- This is shown to illustrate that there is no need for government to have a dominant role in credit provision
- But the drawback is that this completely removes an important financial market benchmark and saving instrument

Credit Investment Trusts

Assets		Liabilities	
80	Investment Loans	60	Long-Term Non-Monetary Private Deposits
		11	Treasury Credit
		9	Bank Equity

Money Banks

Assets		Liabilities	
184	Reserves	184	Deposits

The Chicago Plan Is Completely Non-Inflationary

Prior to Chicago Plan

20 Gov. Bonds	184 Deposits
100 Short-Term and Mortgage Loans	
80 Investment Loans	16 Equity

Chicago Plan: 100% Reserve Backing

20 Gov. Bonds	184 Deposits
100 Short-Term and Mortgage Loans	
80 Investment Loans	16 Equity
184 Reserves	184 Treasury Credit

Chicago Plan: Final Balance Sheet

184 Reserves	184 Deposits
80 Investment Loans	71 Treasury Credit
	9 Equity

Deposits in private hands remain <u>completely unchanged</u> throughout. Inflation is determined by the relative supplies of deposits versus goods and services.

What changes is what deposits represent: <u>Indestructible</u> public money rather than volatile, destructible private money.

Changes in Government Balance Sheet in Transition Period

Prior to Chicago Plan

80 Other Net Assets	80 Gov. Bonds (Debt)

Chicago Plan: 100% Reserve Backing

80 Other Net Assets	80 Gov. Bonds (Debt)
184 Treasury Credit (Financial Asset)	184 Reserves (Equity)

Chicago Plan: Final Balance Sheet

80 Other Net Assets	91 Reserves minus Loan Buy-Backs (Equity)
11 Net Treas. Credit	

Net government debt becomes negative.

Reserves are equity in the commonwealth, not debt.

3. **Complete elimination of bank runs**

- Monetary liabilities must be fully backed by reserves of public money: This is of course true under the Chicago Plan.
- Credit assets must be funded by non-monetary liabilities - 3 options:

(a) Loans from the treasury.

(b) Bank equity: As in Simons' (1948) "financial good society" or Kotlikoff's (2012) "limited purpose banking".

(c) Private debt – with provisions designed to prevent the emergence of money substitutes:

- Not acceptable for any payments to the government, incl. taxes.
- Not covered by any kind of deposit insurance.
- Strict limits on maturity mismatches.
- Possibly even penalties for use as a means of payment.

4. **Large output gains approaching 10% - three reasons**:

(a) Lower interest rates:

- Government and private debt levels are much lower.
- This leads to lower risk premia.

(b) Lower tax rates:

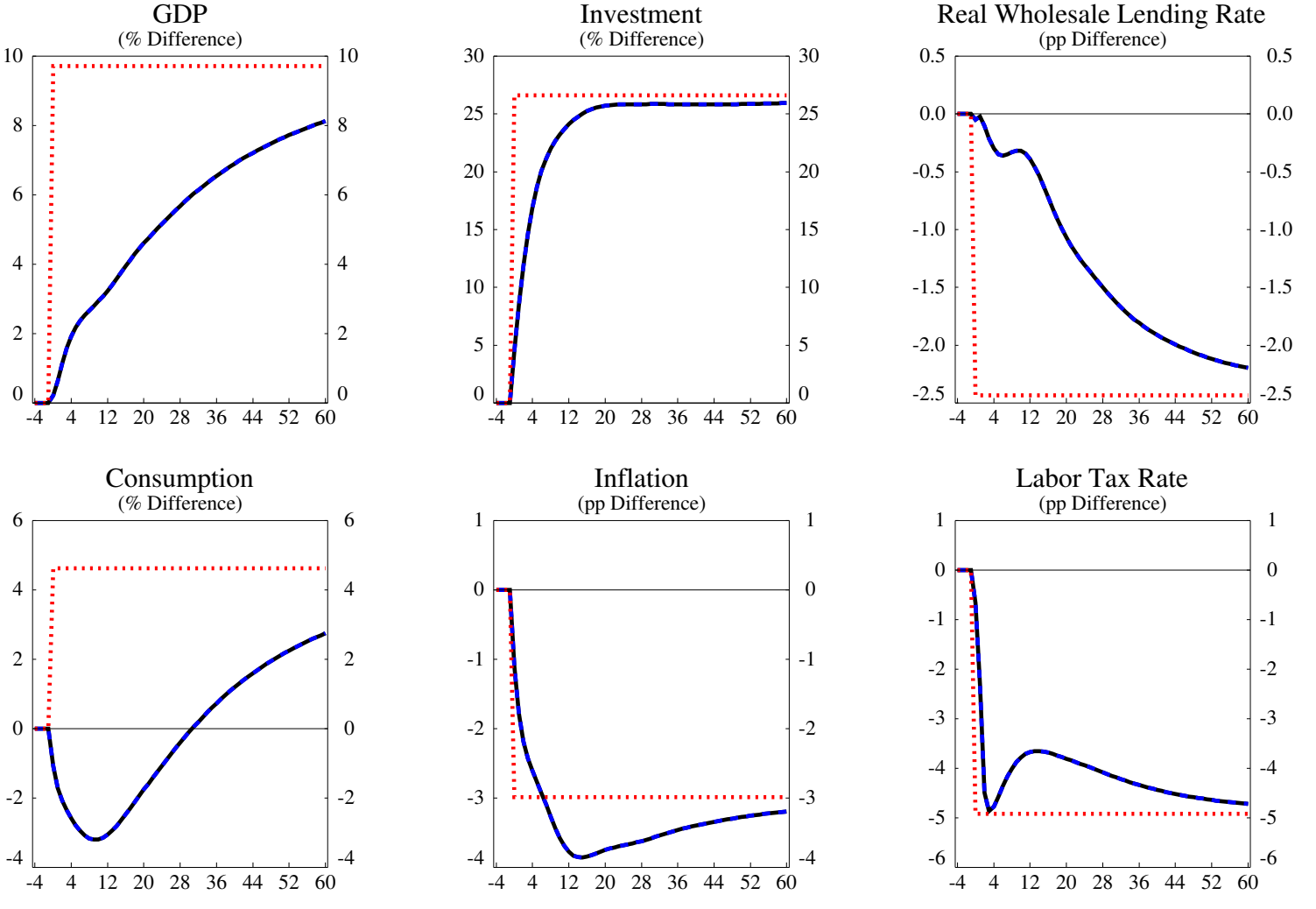
- Seigniorage revenue accrues to government instead of private banks.
- This revenue can be used to lower taxes.

(c) Lower monitoring costs:

- Money creation no longer requires debt and thus monitoring.
- This saves a lot of resources that can be used elsewhere.

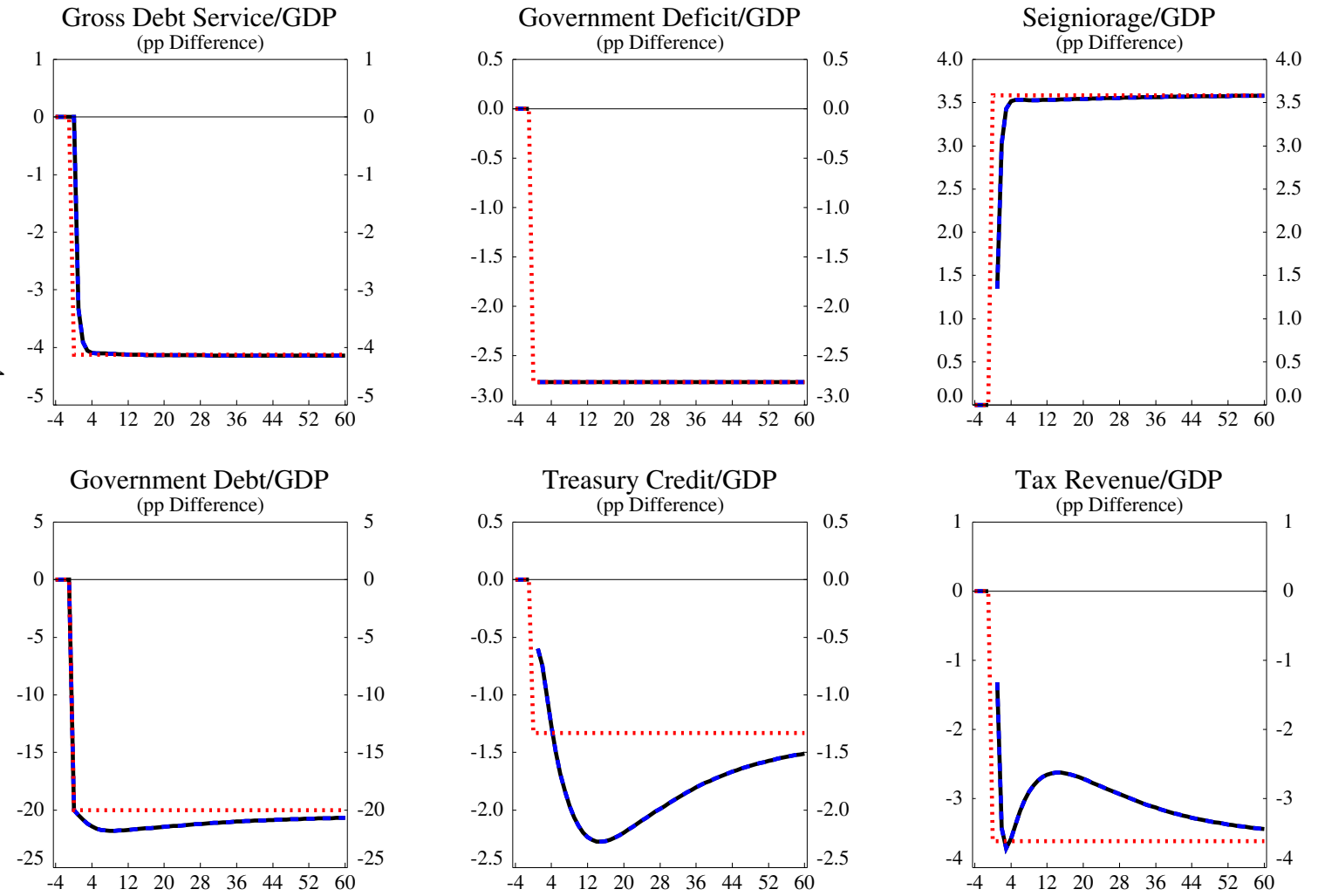
Main Macroeconomic Variables

___ = Transition to Chicago Plan, ... = Final Values after Transition



Fiscal Variables

___ = Transition to Chicago Plan, ... = Final Values after Transition

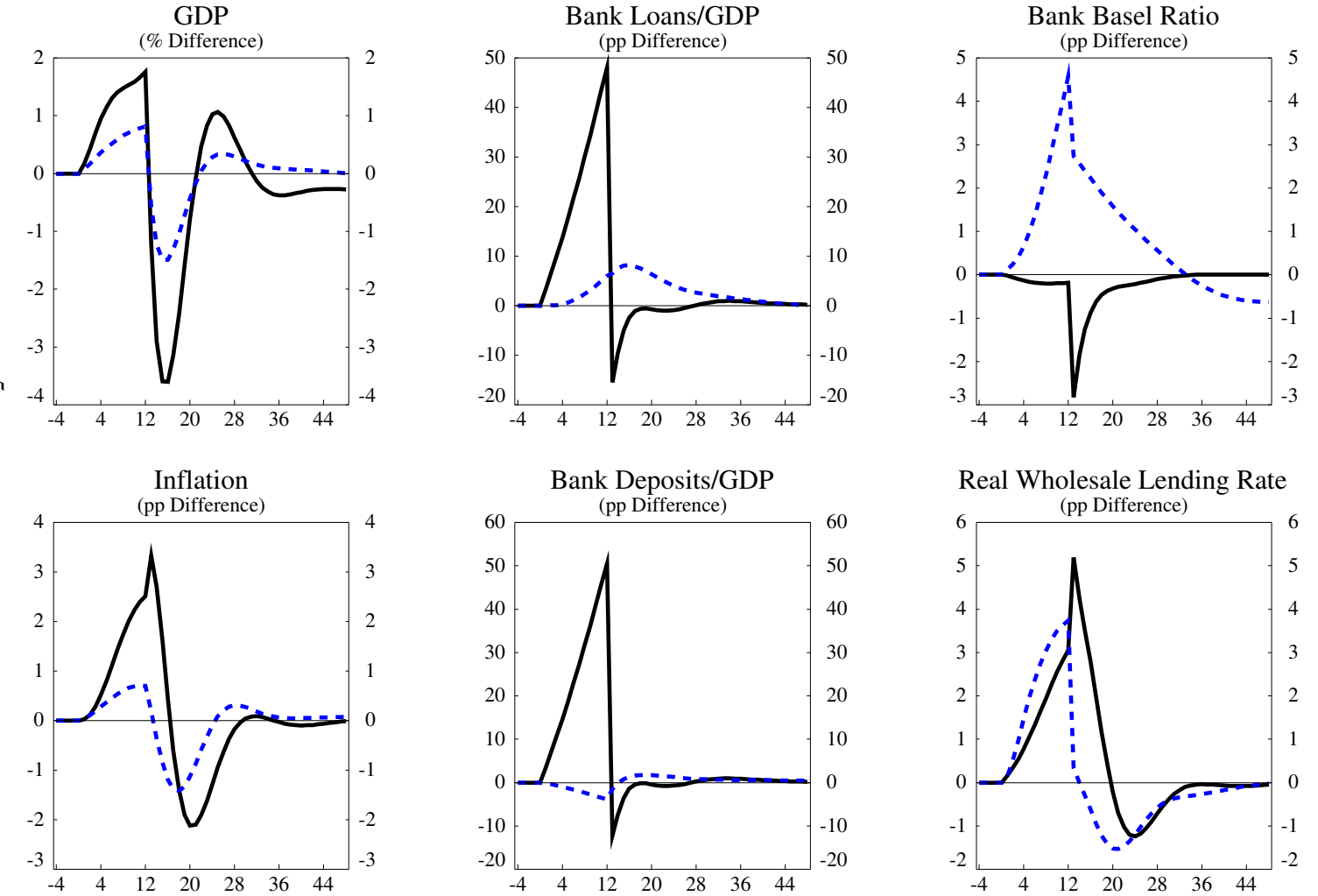


5. **Much better control of bank-lending-driven business cycles**

- Under the Chicago Plan bank money creation becomes impossible.
- Banks now become true intermediaries rather than money creators.
- This makes it much easier to dampen the real effects of credit cycles.
- It also makes the financial system much more resilient to shocks.

Bank-Driven Business Cycles

__ = Pre-Transition, - - - = Post-Transition, with Quantitative Lending Guidance



6. **No liquidity traps**

Main tools of monetary policy under the Chicago Plan:

1. Nominal money growth rule (on very broad money) that controls inflation.

2. Interest rate rule that controls the price of treasury credit to banks.

\+ Countercyclical Basel capital adequacy rule that controls the quantity of bank lending.

With these rules there can be no liquidity trap:

1. Money is directly controlled by government, rather than by banks.

2. Interest rate on treasury credit can become negative $\Rightarrow$ no zero interest rate floor (ZIF).

- Implications for steady state inflation $\bar{\pi}$:
  - Under the current regime policy rate needs to stay above the ZIF.
  - Higher $\bar{\pi}$ needed to permit safe distance between policy rate and ZIF.
  - This is no longer an issue under the Chicago Plan.
  - Therefore $\bar{\pi} = 0$ is perfectly feasible.
- In other words, Chicago Plan is less, not more, inflationary than the current system!

Any Disadvantages of the Chicago Plan?

1. Reasonable Concern: Transition Could be Difficult:

   - Important economists did not think so: Fisher (1935), Friedman (1960).
   - Many today agree that major reform is needed anyway.
   - If we need to bite the bullet of a difficult transition, we might as well have a reform that maximizes the long-run benefits.

2. Unnecessary Concern: Banking System Could Become Uncompetitive

- Banking system remains private.
- Deposit banks: State-of-the-art payments system without loan worries.
- Lending banks: Efficient capital allocation without risk of bank runs.
- Lending banks operate as in today's textbooks:
  - First attract deposits of reserves, then lend them out.
  - Supplemented by a highly flexible treasury credit line.
- Only change: No more credit proliferation to create the money supply.

4 Chicago Plan in History of Monetary Thought

- A long line of distinguished **thinkers** has advocated government money issuance under the rule of law.

- Historical **experience** is very strongly in favor of it:
  - Periods of private money issuance: Constant financial crises.
  - Periods of government money issuance: Stability, very few crises.

- Are the many financial crises of the last 100 years a counter-argument?
  - This would be a very serious logical error.
  - Over the last 100 years governments have only ever been in charge of narrow money, and private banks in charge of overall money.
  - If anything, recent financial crises must thus have been caused by <u>banks</u>.

5 The Model under the Current Monetary System

- Agents:
  - Two household groups: Financially constrained and unconstrained.
  - Multiple productive sectors.
  - Single banking sector.
  - Government.

5.1 Banks

- Bank balance sheets and bank net worth are central in the model.
- Acquiring fresh capital is subject to imperfections: Lots of evidence.
- Banks are lenders, not investors: Loan book, not trading book, matters.
- Bank lending is subject to endogenous, non-diversifiable aggregate risk:

  Non-contingent optimal loan contracts, with possibility of losses.
- Bank capital is subject to realistic, Basel-III regulation.
- Banks maintain endogenous capital buffers to avoid regulatory penalties

- Optimization Problem: Choose loans to maximize the sum of
  - Interest income on all loans.
  - Minus interest expense on deposits.
  - Minus loan losses.
  - Minus costs of regulatory penalties.

- Optimality conditions:
  - Wholesale lending rate $r_{\ell,t}$ at premium over deposit rate $r_{d,t}$.

    Premium is a function of **capital adequacy regulation**.

  - Retail lending rates $r^x_{r,t}$ at another premium over $r_{\ell,t}$.

    Premium is a function of **borrower risk**.

5.2 Bank Assets: Lending Technologies

- Similar Bernanke-Gertler-Gilchrist-type problems for all loan classes.
- Optimal loan contract: Borrowing cost increases with borrower leverage.
- Bank's zero profit condition only has to hold in ex-ante terms.

  Because banks have to fix interest rates one period ahead of shocks.

- This means that ex-post banks can make loan losses.
- They will react to loan losses by raising lending rates to rebuild their capital.

5.3 Bank Liabilities: Transactions Cost Technologies

- This is critical to generate a demand for money balances.

- Interpretation: Larger money balances $\Rightarrow$ lower transactions costs.

- Transactions cost is increasing in velocity as in Schmitt-Grohe and Uribe (2004).

- Velocity:
  - For households: Consumption expenditure/deposits.
  - For manufacturers: Expenditure on inputs/deposits.

5.4 Government

- Monetary Policy: Inflation forecast-based interest rate rule as currently used by the Fed.

$$i_t = (i_{t-1})^{m_i} \left(\frac{x}{\beta_u} \bar{\pi} \right)^{(1-m_i)} \left(\frac{\pi_{4,t+3}}{(\bar{\pi})^4} \right)^{\frac{(1-m_i)m_\pi}{4}}$$

- Quantities of Credit and Money: Determined almost exclusively by banks.

6 The Model under the Chicago Plan

6.1 Banks

- Money Banks: 100% reserve backing of deposits $\check{d}_t$ by reserves $\check{m}_t$:

$$\check{d}_t = \check{m}_t$$

- Credit Investment Trusts: Investment loans financed by bank equity $\check{n}_t^b$ and treasury credit $\check{f}_t$:

$$\check{\ell}_t^k = \check{f}_t + \check{n}_t^b$$

6.2 Government

- Quantity of Money: Friedman money growth rule for π_m

$$\check{d}_t = \pi_m \frac{\check{d}_{t-1}}{x\pi_t}$$

- Price of Credit: Treasury credit interest rate

$$i_{f,t} = \left(\bar{\imath}_f\right)^{1-m_i} \left(i_{f,t-1}\right)^{m_i} \left(\frac{\pi_{4,t+3}}{(\bar{\pi})^4}\right)^{(1-m_i)m_\pi}$$

- Quantity of Credit: Quantitative lending guidance
  - Government penalties through countercyclical MCAR.
  - MCAR raised when investment is high.

7 Application: Central Bank Purchase of NPL

- There are several successful historical examples for this policy:
  - United Kingdom in 1914 (large bank loans to Continental powers).
  - Japan in 1945 (almost all bank loans were non-performing).
- It simultaneously improves the balance sheets of the government, banks and private borrowers.
- Understood correctly, this policy amounts to a small-scale version of the Chicago Plan.

Application: Central Bank Purchase of Non-Performing Loans (Richard Werner)

1. Initial Balance Sheets

Central Bank

Assets		Liabilities	
20	Other Assets	20	Money

Banks

Assets		Liabilities	
180	Other Loans	184	Deposits
20	Non-Perf. Loans	16	Bank Equity

Application: Central Bank Purchase of Non-Performing Loans (Richard Werner)

2. Purchase of NPL (worth 50%): Banks are now in perfect shape

Central Bank

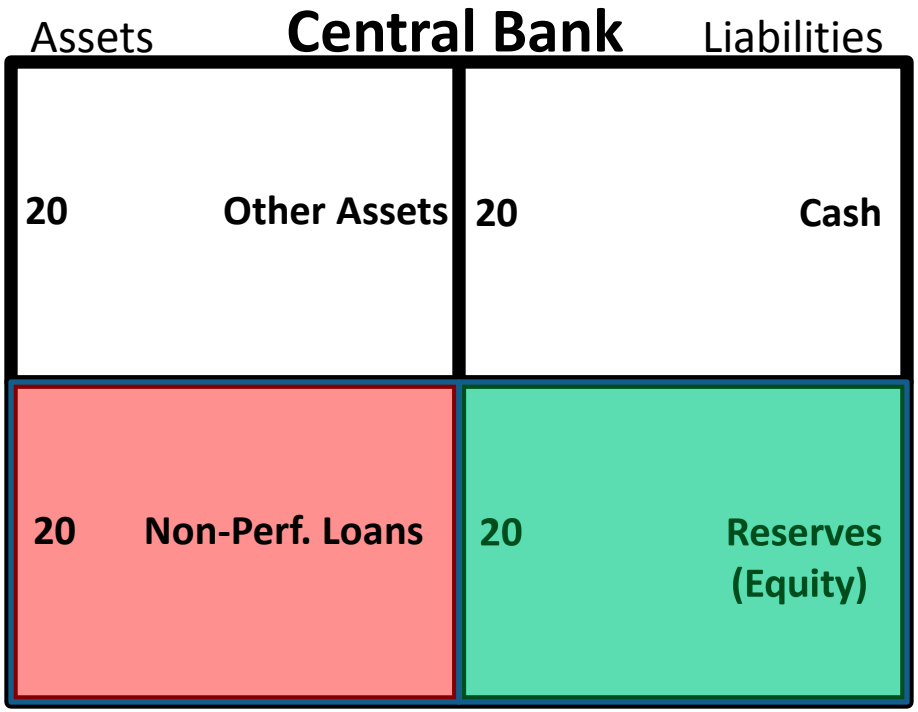
Assets		Liabilities	
20	Other Assets	20	Cash
20	Non-Perf. Loans	20	Reserves (Equity)

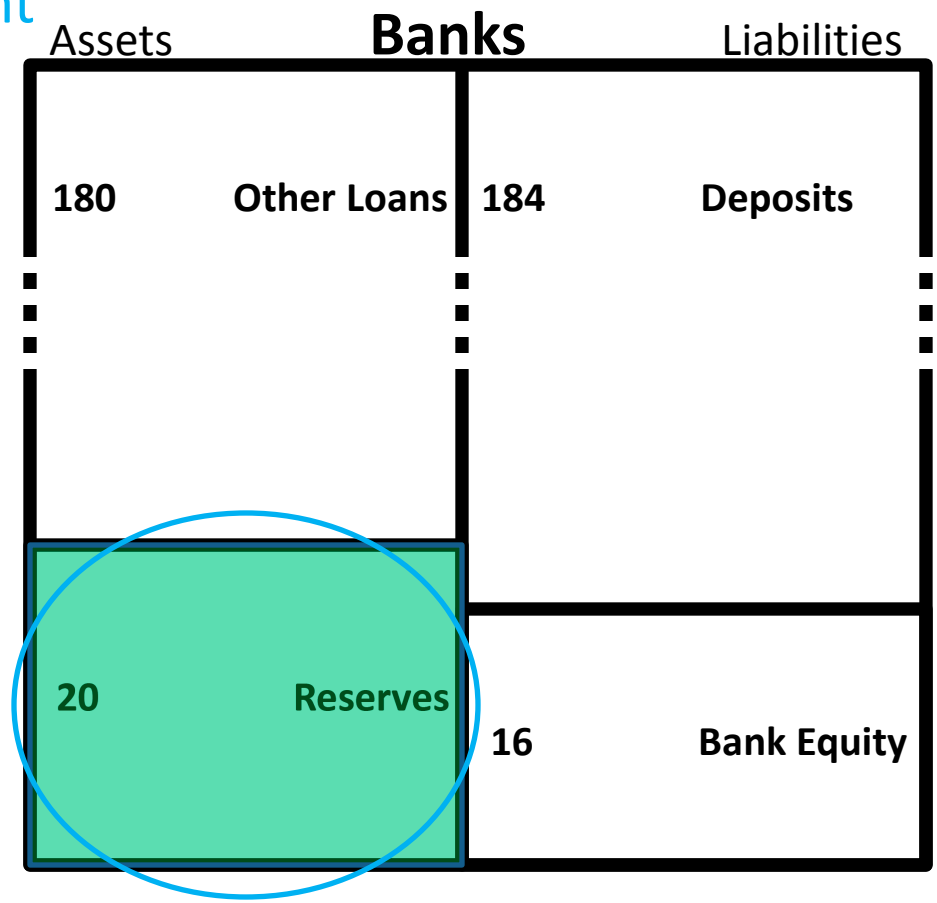
Banks

Assets		Liabilities	
180	Other Loans	184	Deposits
20	Reserves	16	Bank Equity

Application: Central Bank Purchase of Non-Performing Loans (Richard Werner)

3. Raise banks' reserve requirement in line with higher reserves





Application: Central Bank Purchase of Non-Performing Loans (Richard Werner)

4. Write off the NPL against equity
Government net gain = 10 !!!

Central Bank

Assets		Liabilities	
20	Other Assets	20	Cash
10	Recovery on Loans	10	Reserves minus Write-Offs (Equity)

Banks

Assets		Liabilities	
180	Other Loans	184	Deposits
20	Reserves	16	Bank Equity

8 Concluding Remarks and Discussion

- The Great Recession has shown that too much of an "exciting", "innovative" financial system can cause significant problems that distract attention from the real economy.

- What could work better is a really boring financial system:
  - A completely safe, crisis-proof payments system.
  - Banks that act as conservative intermediaries.

- The Chicago Plan has many elements of such a system.