



Theories of Money & Finance

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Structure

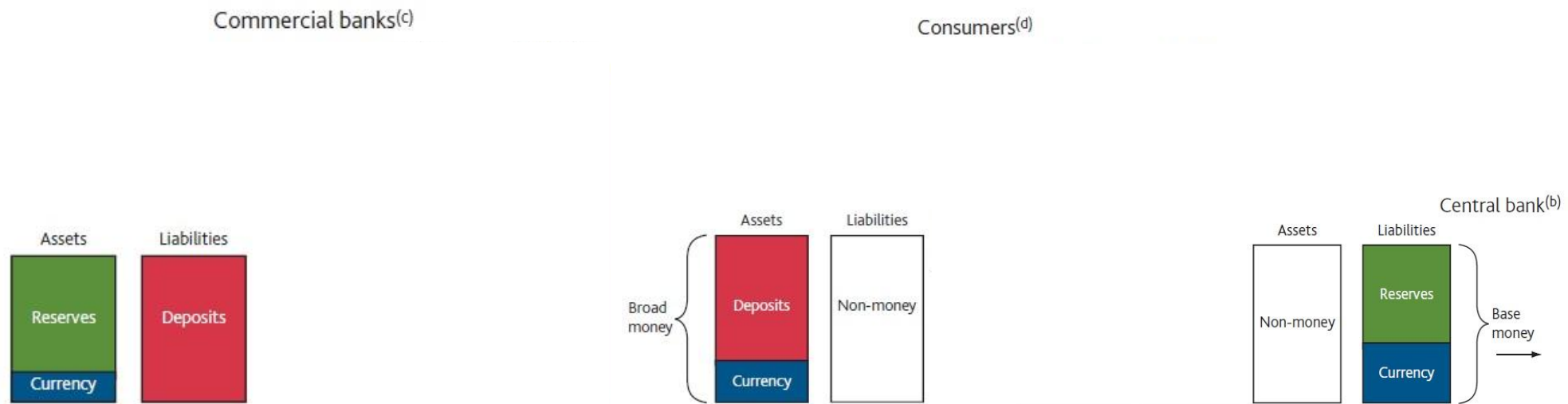
1. Endogenous money and post-Keynesian economics
2. Endogenous money and shadow banking
3. Modern Money Theory (MMT)
4. Minsky's Financial Instability Hypothesis (FIH)
5. Modelling Minsky's FIH

1. Endogenous money and post-Keynesian economics

- According to the traditional **mainstream** approach, banks are **financial intermediaries**: they receive deposits from households and provide loans using these deposits.
- For many decades, **post-Keynesians** have called the money multiplier approach into question, arguing that money is created endogenously and, therefore, banks do not need to wait for receiving deposits to provide loans (see e.g. Moore, 1988; Fontana, 2003).
- According to the **endogenous money approach**, loans are created ex nihilo as long as the borrower is creditworthy. Banks are not passive and their lending decisions can affect economic activity.
- Since the **Global Financial Crisis**, the view of post-Keynesians about the money creation process has been increasingly accepted in academia and the central banking community (see e.g. McLeay et al., 2014; Unger, 2016; Bundesbank, 2017; Jakab and Kumhof, 2018).

1. Endogenous money and post-Keynesian economics

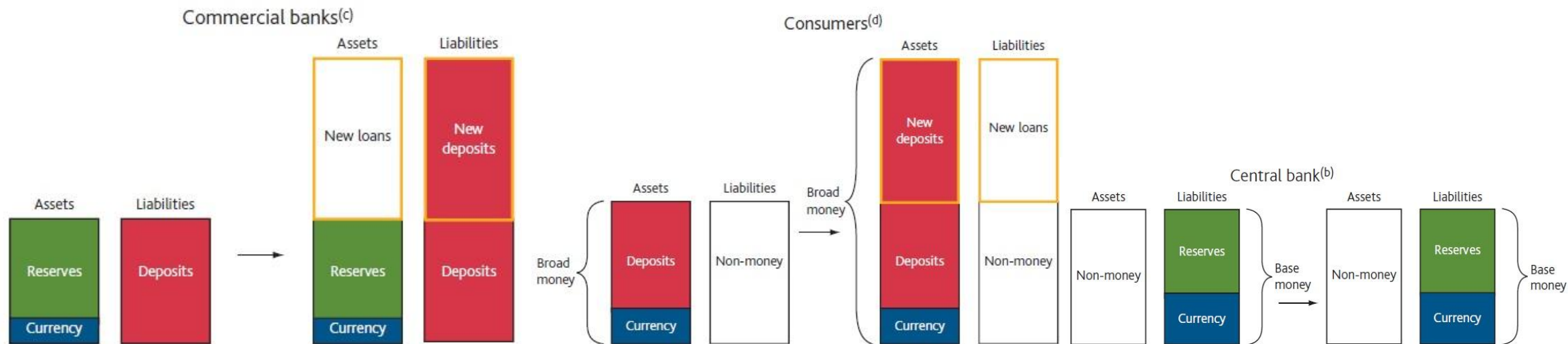
Suppose the following **balance sheets** of commercial banks, consumers and the central bank.



Source: McLeay et al (2014), available at: <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/money-creation-in-the-modern-economy.pdf>

1. Endogenous money and post-Keynesian economics

New lending affects the balance sheets as follows:



Source: McLeay et al (2014), available at: <https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2014/money-creation-in-the-modern-economy.pdf>

1. Endogenous money and post-Keynesian economics

- At the **individual level**, however, the issue is a bit more complicated.
- Consider this hypothetical balance sheet of a bank:

Assets	Liabilities
Loans: 90 Reserves: 10	Deposits: 100

If the bank decides to **create new loans**, the change on its balance sheet is as follows: →

Assets	Liabilities
Loans: 90 (+50) Reserves: 10	Deposits: 100 (+50)

- What will happen if the borrower of the bank buys goods and services from a depositor of another bank? Even if there are no reserve requirements, the **bank needs to get £40**.

1. Endogenous money and post-Keynesian economics

- These are 3 ways via which the **bank can address** this issue:

1) Loans from other banks

Assets	Liabilities
Loans: 90 (+50)	Deposits: 100 (+50)
Reserves: 10 (+40)	Loans from other banks (+40)

2) Loans from the central bank

Assets	Liabilities
Loans: 90 (+50)	Deposits: 100 (+50)
Reserves: 10 (+40)	Loans from the central bank (+40)

3) Deposits of other banks

Assets	Liabilities
Loans: 90 (+50)	Deposits: 100 (+50+40)
Reserves: 10 (+40)	

- Therefore, even at the individual level, the lending behaviour of banks is **not restricted by reserves**.

1. Endogenous money and post-Keynesian economics

What drives money creation and the terms of credit?

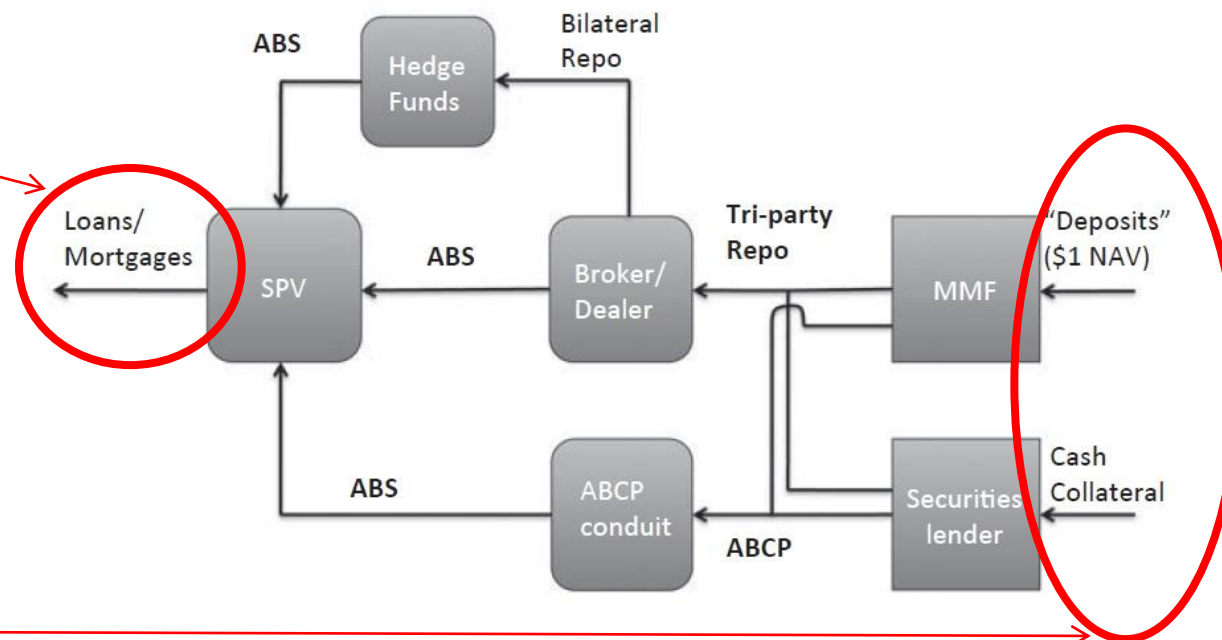
1. **Demand** for credit (how much firms and households want to borrow)
 2. **Supply** of credit which depends on (a) the financial position of borrowers and (b) the financial position of lenders.
- Traditionally, **horizontalists** (e.g. Moore, 1988; Lavoie, 1992) have focused on (1) and 2 (a), while **structuralists** (e.g. Dow, 1996; Palley, 1996) have also concentrated on 2 (b).
 - **Interest rates** are affected by 2 (a) and 2 (b), but also by the oligopoly power of banks and the central bank policy.

2. Endogenous money and shadow banking

- **Shadow banking** captures financial intermediaries that conduct maturity, credit and liquidity transformation without access to central bank liquidity or public sector credit guarantees.
- Shadow banking has given rise to the so-called '**originate-to-distribute**' model of banking in which the default risk on granted loans is disconnected from loan originators.
- The originate-to-distribute model comes in contrast to the traditional '**originate-to-hold**' model.
- An important process conducted by shadow banking is **securitisation**.
- Broadly speaking, securitisation is a technique that **transforms illiquid assets into liquid tradable instruments**.

2. Endogenous money and shadow banking

The securitisation process begins when **commercial banks** (the originators) decide to securitise a part of their loans.



The securities are bought by **investors**.

Source: Krishnamurthy et al (2014), available at:
<https://onlinelibrary.wiley.com/doi/abs/10.1111/jofi.12168>
 Note: Special Purpose Vehicle (SPV), Asset-Backed Security (ABS), Asset-Backed Commercial Paper (ABCP), Money Market Fund (MMF)

2. Endogenous money and shadow banking

Links between securitisation and repos

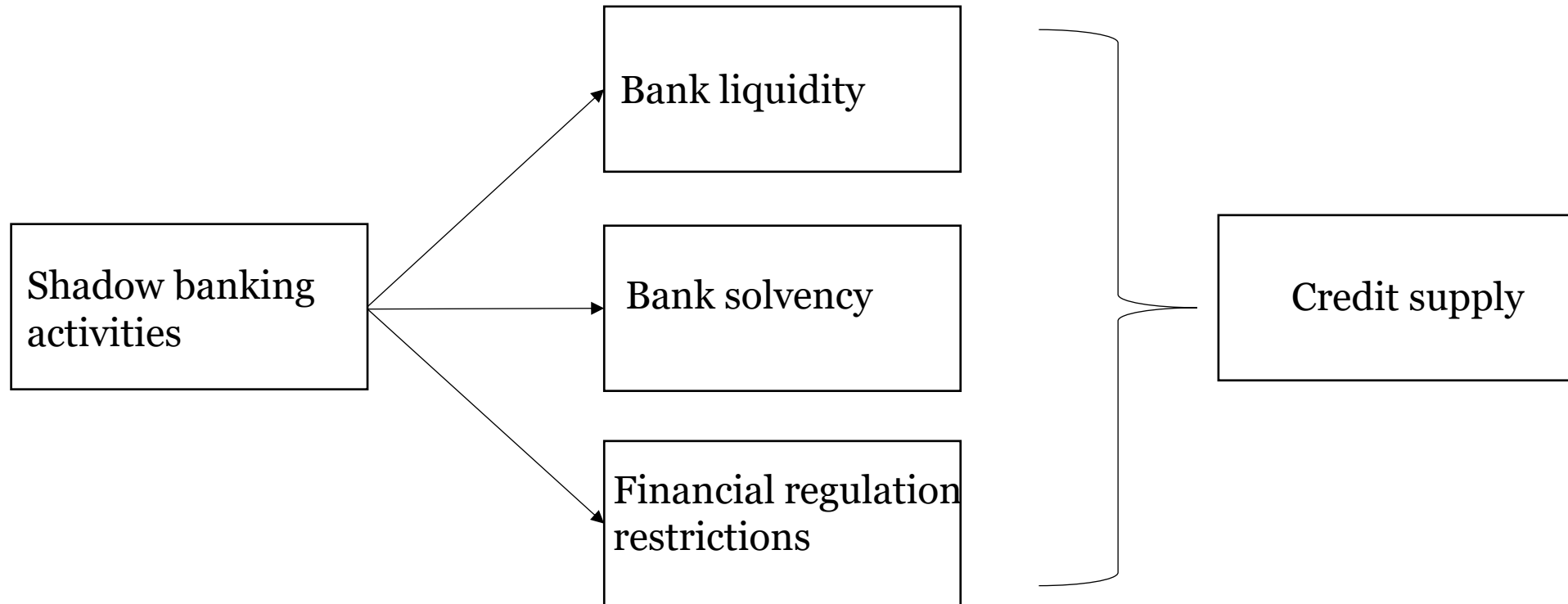
Citybank		Goldman Sachs (GS)		IBM		PIMCO hedge fund	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
	IBM deposit -100 GS deposit +100	Deposit +100	Repos +100	Deposit -100 Repos +100			
Securitized loans -100	IBM deposit -100	MBS +100	Repos +100	Deposit -100 Repos +100			
Securitized loans -100 New loan to PIMCO +100	IBM deposit -100 PIMCO deposit +100	MBS +100	Repos +100	Deposit -100 Repos +100		Deposit at City bank +100	Loan from City bank +100

Source: Lavoie (2014), available at:

<https://www.elgaronline.com/monobook/book/9781839109621/9781839109621.xml>

Note: MBS stands for Mortgage-Backed Security

2. Endogenous money and shadow banking



The role of **shadow banking** in the money creation process has been a subject of debate among heterodox economists (see e.g. Gabor and Vestergaard, 2016; Michell, 2017; Caverzasi et al, 2019; Lavoie, 2019; Bouguelli, 2020; Michell, 2024; Canelli et al, 2025).

2. Endogenous money and shadow banking

Bank solvency/regulation

- **Securitisation process** can help banks to avoid capital requirements (Lavoie, 2014).
- This is the case since securitisation allows banks to **remove loans** out of their balance sheet (and receive fee income).
- The removal of these loans reduces the capital adequacy requirements of banks (since a risky asset is removed from their balance sheets). This reduction incentivises **banks to provide new loans**.
- Banks might also provide **more credit** because they need to worry less about the ability of borrowers to repay their debt.

Capital adequacy ratio (CAR)

$$CAR = \frac{Capital}{RWA}$$

Note: RWA stands for risk-weighted assets

2. Endogenous money and shadow banking

Bank liquidity

- **Repos** are used for getting access to liquidity in the private markets through collateralised lending.
- The **haircut** is the excess of the market value of the securities over the borrowed money (cash), divided by the market value of securities (see figure).
- When the price of collateral increases and the haircut of collateral declines, banks and non-banks can get access to liquidity more easily and this can reinforce financial asset price inflation. This can **increase credit supply**.
- However, the opposite holds when the price of collateral declines and the haircut of collateral increases. Thus, repos are conducive to the **pro-cyclicality of credit**.

Exhibit 1
A Typical Repo Transaction

Opening leg



Closing leg



Source: Copeland et al (2012), available at:
<https://www.newyorkfed.org/medialibrary/media/research/epr/2012/1210cope.pdf>

2. Endogenous money and shadow banking

Bank liquidity

- In the case of central bank lending, central banks typically ask for **collateral** when they lend through their facilities.
- The assets that can serve as **collateral** are determined by central banks based on a number of criteria that reflect credit quality.
- Central banks determine the **haircut** on assets: the higher the haircut of an asset the lower the liquidity that can be obtained using this asset as collateral.
- The Eurosystem collateral framework is conducive to the **pro-cyclicality of credit** since it largely adopts the practices in the private repo markets.
- Vestergaard and Gabor (2022) argue that the Eurosystem collateral policies **should address this procyclicality** by: (i) using countercyclical haircuts, (ii) suspending collateral valuation practices and (iii) conducting outright purchases of collateral assets.

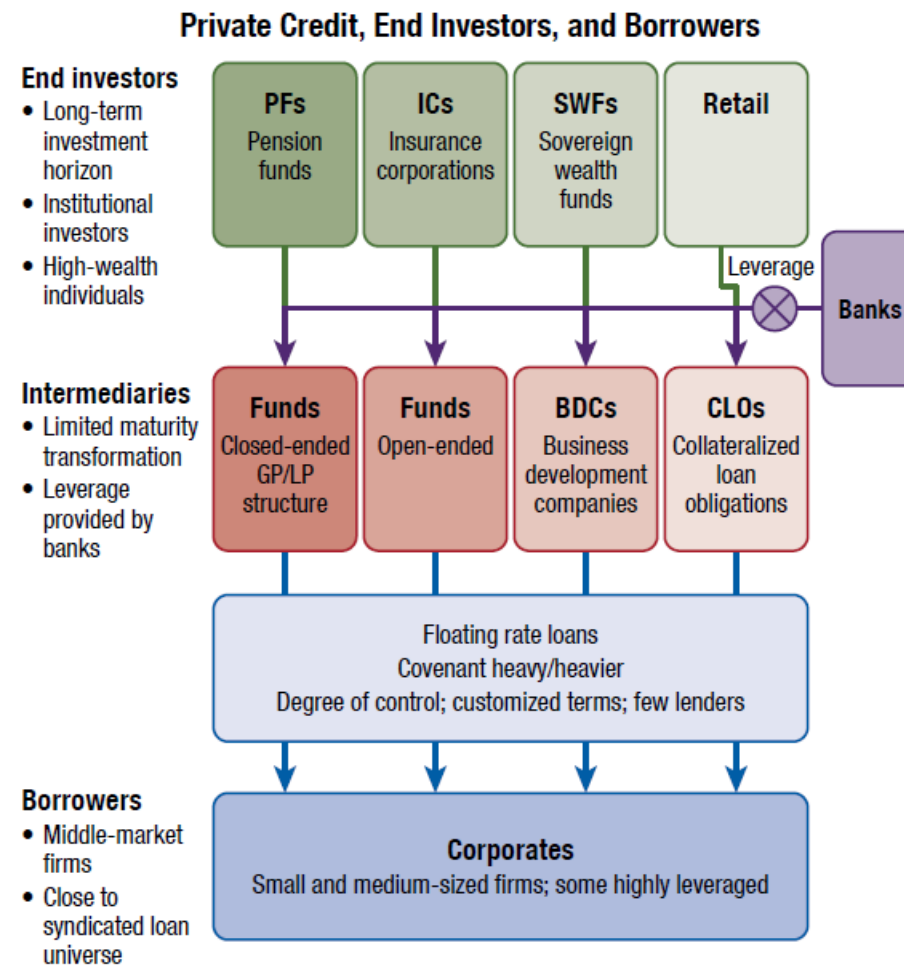
2. Endogenous money and shadow banking

New forms of shadow banking

- **Private (non-bank corporate) credit** is provided through bilateral agreements or small ‘club deals’ outside the realm of public securities or commercial banks.
- Private credit predominantly involves alternative asset managers (**e.g. private credit funds or business development companies (BDCs)**), who raise capital from institutional investors (e.g. **pension funds and insurance corporations**) using funds and lend directly to predominantly middle-market firms.
- It developed as a **lending solution** for middle-market companies deemed too risky or large for commercial banks and too small for public markets.

Figure 2.1. Private Credit Structure

Private credit funds are intermediaries between end investors and corporate borrowers that offer floating rate loans to middle-market firms.



Source: IMF staff.

Note: GP = general partners; LP = limited partners.

Source: IMF (2024), available at:

<https://www.imf.org/en/publications/gfsr/issues/2024/04/16/global-financial-stability-report-april-2024>

3. Modern Money Theory (MMT)

- **Modern Money Theory (MMT)** extends the concept of endogenous money to the government sector.
- According to MMT, a sovereign government is never in danger of running out of money and thus is always **solvent**.
- From an MMT perspective, countries that issue sovereign currency do **not need to rely on taxes** to increase government spending. Fiscal policy should be used to achieve **full employment**, for example, through employer-of-last-resort programmes.
- Although MMT highlights that there are no financial resource constraints, it accepts that there are **real resource constraints** (e.g. labour constraints and environmental constraints).

3. Modern Money Theory (MMT)

Critiques of MMT:

- Some scholars call into question the claim that **taxes and bonds do not and cannot finance government spending** (e.g. Lavoie, 2013).
- Although the central bank is the issuer of the state money and can monetise public debt (i.e. a country cannot default on its own currency), effective monetisation is bounded by market constraints and reactions that can, for instance, affect **long-term interest rates** (e.g. Palley, 2019).
- Budget deficits can have significant adverse **exchange rate** and balance of payments effects (e.g. Palley, 2020).
- It is not easy to have full employment without **inflation** (e.g. Palley, 2020).

3. Modern Money Theory (MMT)

Critiques related to the Global South

- **The degree of policy space does not depend only on** monetary sovereignty (MS). It also relies very much on the position of the country's currency in the **currency hierarchy** (CH). Many countries in the Global South are at the bottom of the currency hierarchy.
- MMT overfocuses on demand deficiency and does not sufficiently consider **supply constraints** and the role of structural change in the Global South (Aboobaker and Ugurlu, 2023).

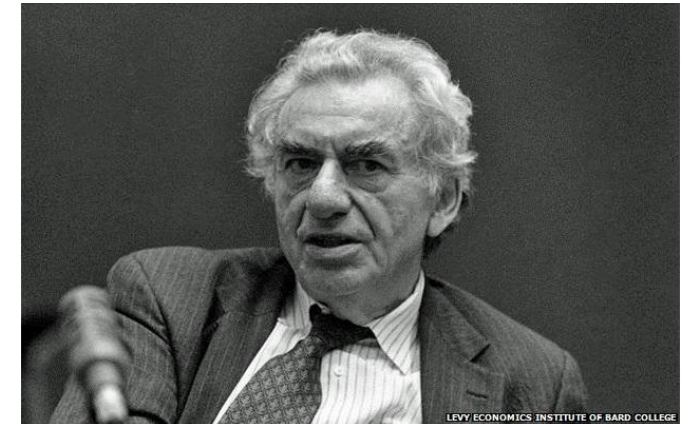
The currency hierarchy, monetary sovereignty, and policy space:
a Post-Keynesian approach

				(Degree of) monetary sovereignty (MS)		
				- —————→ +		
				Non-sovereign currency ^a		Sovereign currency
				Degree of policy space		
				- —————→ +		
Currency hierarchy (CH)	Key currency	Degree of policy space	+ ↓ -	n.a.		1 United States
	Center currencies			3 Eurozone countries		2 e.g. UK, Japan, Canada, Switzerland
	Peripheral currencies ^b			6 Ecuador	5 e.g. Turkey, Peru, etc.	4 e.g. China, Brazil, Mexico, India

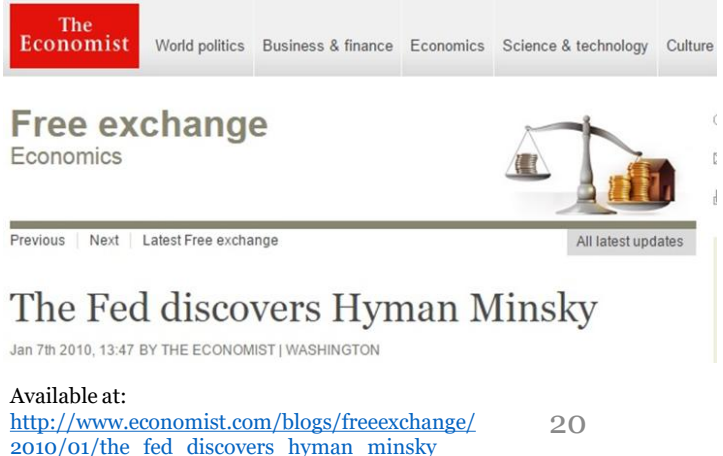
Source: Prates (2020)

4. Minsky's Financial Instability Hypothesis (FIH)

- The **Financial Instability Hypothesis (FIH)** was developed in the 1970s and 1980s by Hyman Minsky.
- It has been used by various economists to explain the **global financial crisis**.
- Minsky's FIH can be summarised by the phrase '**stability is destabilising**'.
- There are two **reasons** why stability can be destabilising.
- The first one is linked to the way that financial agents form **expectations**. During periods of euphoria, both firms and banks might be induced to participate in more debt contracts and increase their **financial fragility**.



Hyman Minsky (1919-1996)



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The Fed discovers Hyman Minsky

Jan 7th 2010, 13:47 BY THE ECONOMIST | WASHINGTON

Available at:
<http://www.economist.com/blogs/freeexchange/2010/01/the-fed-discovers-hyman-minsky>

4. Minsky's Financial Instability Hypothesis (FIH)

- Minsky captured the increase in indebtedness by making a **distinction** between three finance regimes: (a) hedge, (b) speculative and (c) Ponzi.

Hedge finance

Expected cash flows cover all contractual commitments (both interest and principal) in every period.

Speculative finance

Expected cash flows cover interest, not principal. So, the principal must be refinanced.

Ponzi finance

Expected cash flows cover neither. So firms must borrow more or sell assets even to pay interest.

- The economy is more **financially fragile**, the higher the proportion of speculative and Ponzi firms.
- Financial fragility can lead to **financial instability**, which is captured by an increase in defaults, a decline in asset prices and a fall in economic activity.

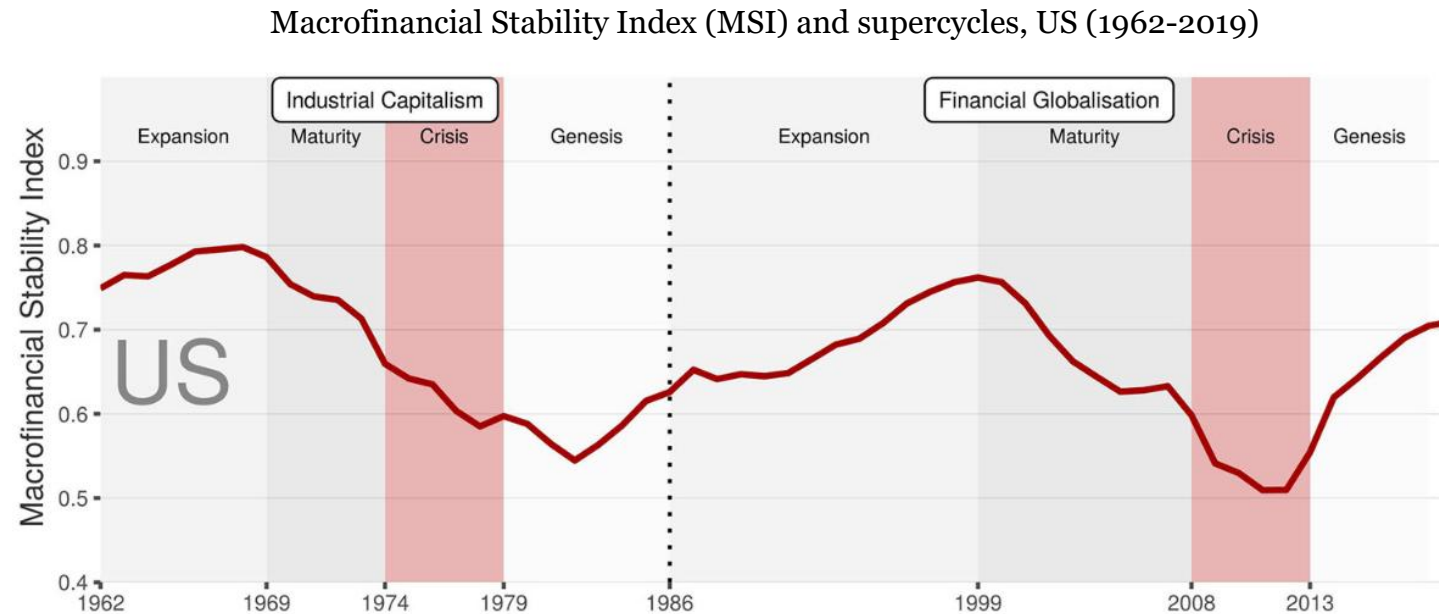
The Minsky moment. The turning point at which lenders refuse to roll over speculative and Ponzi positions. Asset prices reprice abruptly, financing contracts, and forced sales feed back into a self-reinforcing collapse

4. Minsky's Financial Instability Hypothesis (FIH)

- The second reason why stability is destabilising is the fact that stability brings about **institutional** and **policy changes** that might make the system more fragile.
- One evolution that Minsky paid particular attention to was the change in institutions that led to the emergence of the so-called **money managers**, who replaced **corporate managers** as the masters of private sector economic activity since the early 1980s.
- Wray (2011) has used the concept of **money manager capitalism (MMC)** to explain the processes that led to the Global Financial Crisis.

4. Minsky's Financial Instability Hypothesis (FIH)

- Minsky used the term **‘thwarting mechanisms’** to describe those institutional structures and policies that can stabilise the inherently unstable macrofinancial system.
- Dafermos et al (2023) argue that the endogenous change in the effectiveness of thwarting mechanisms can give rise to **institutional supercycles**.



Source: Dafermos, Gabor and Michell (2023), available at:
<https://www.tandfonline.com/doi/full/10.1080/13563467.2022.2161497>

4. Minsky's Financial Instability Hypothesis (FIH)

What are the key features in Minsky's FIH that make it unique compared to conventional approaches to financial crises?

- First, Minsky views the financial system as a network of **interconnected balance sheets** that interact dynamically (Gabor, 2020). Financial instability is the result of the endogenous interaction of balance sheets.
- Second, in Minsky's FIH **money is endogenous**.
- Third, Minsky's understanding of financial instability takes explicitly into account **evolutionary** changes that affect the stabilising role of institutions (see Wray, 2011; Argitis, 2019; Dafermos et al., 2023).

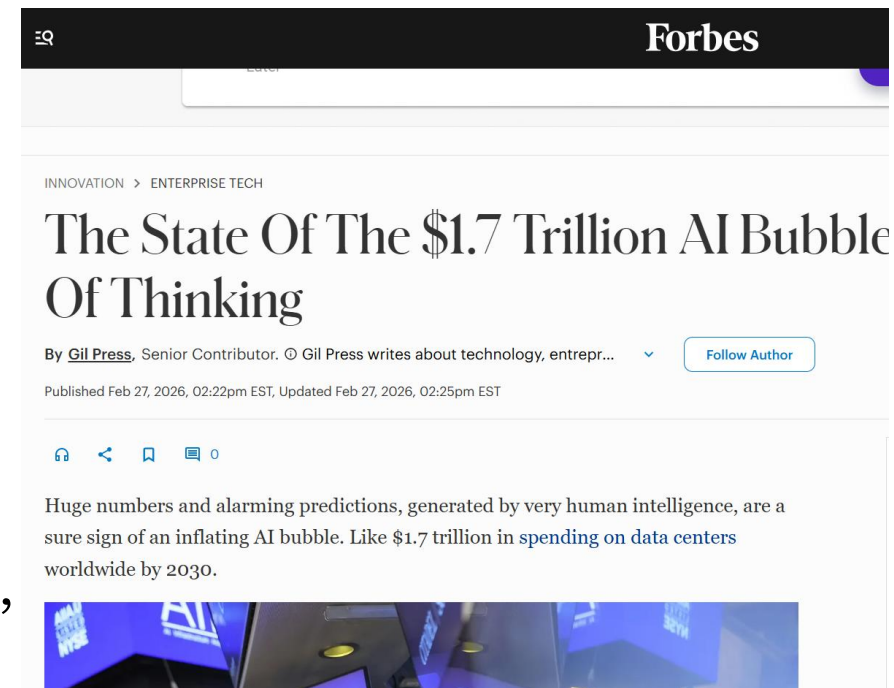
4. Minsky's Financial Instability Hypothesis (FIH)

- Private credit increases the **availability of credit** for non-financial corporations, which can be conducive to **short-run growth**.
- However, it leads to the **replacement of bank lending** that is subject to regulation and supervisory oversight with lightly regulated and opaque lending.
- Due to its funding model, private credit increases the **interconnectedness** within the financial system, making higher the risks of contagion in the case of defaults.
- Since private credit loans are **floating-rate loans**, borrowers can more easily face debt repayment problems in a high-interest-rate environment.

Feb 20, 2026, 10:44 AM GMT

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Blue Owl Capital, a leading investor in the data center boom, was unable to arrange financing for a \$4 billion data center it is co-developing in Pennsylvania after pitching lenders to help bankroll the project in recent months.



Source: Forbes (2026), available at:

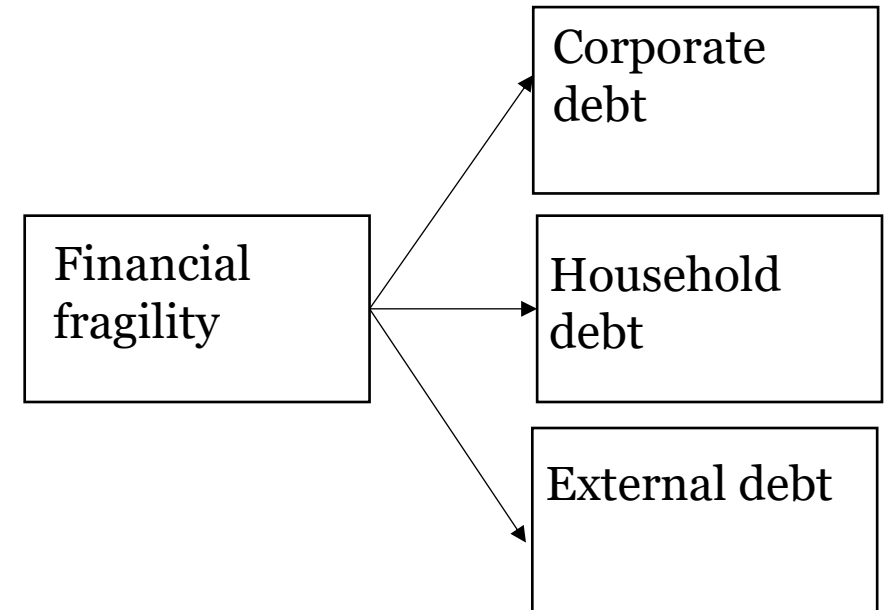
<https://www.forbes.com/sites/gilpress/2026/02/27/the-state-of-the-17-trillion-ai-bubble-the-end-of-thinking/>

5. Modelling Minsky's FIH

How can economies become financially fragile?

- **Financial fragility** is connected with the accumulation of debt.
- The Minskyan literature has focused in **three types of debt**: i) corporate debt, ii) household debt and iii) external debt
- The aim is to explain what can drive the rise in each of these types of debt and how debt accumulation can lead to **instability**.

Different shades of financial fragility

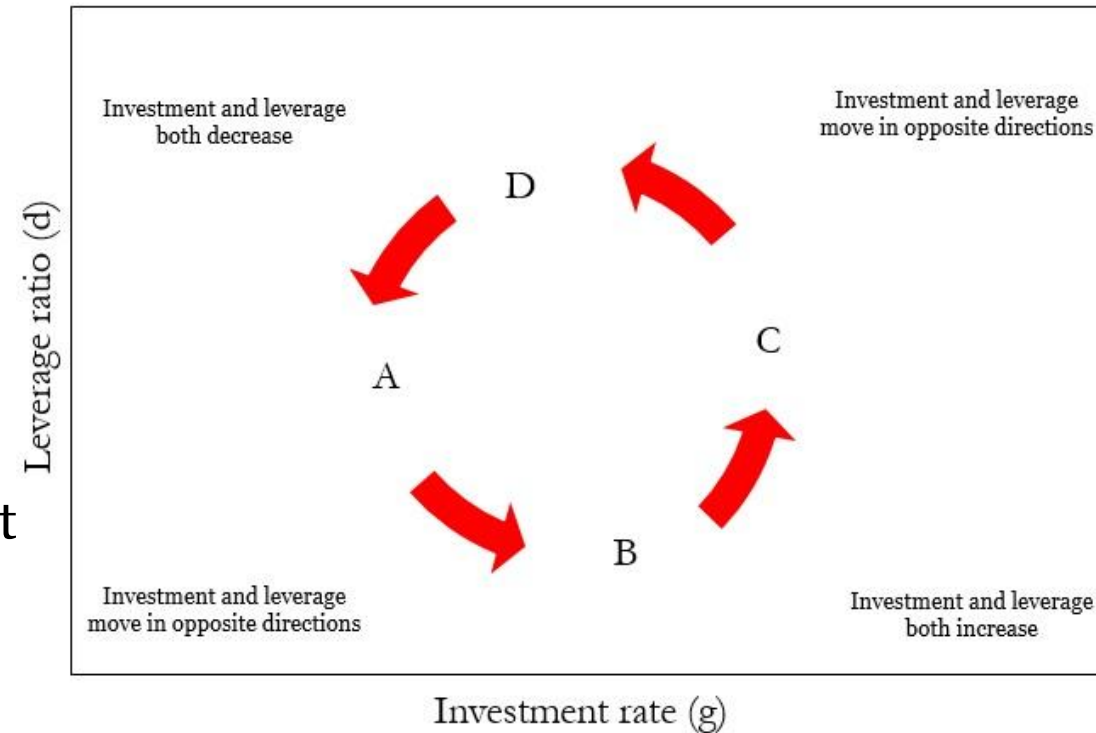


Source: Nikolaidi (2017, 2021); see also Nikolaidi and Stockhammer (2017)

5. Modelling Minsky's FIH

Corporate debt

- Most Minskyan macroeconomic models have analysed the **fragility** that stems from corporate debt using this setting as a starting point (see e.g. Lima and Meirelles, 2007, Charles, 2008):
 - i. Firms undertake investment, driven primarily by expected sales and profitability.
 - ii. The part of investment spending that is not covered by retained profits is **financed through loans**.
- There might be a dynamic interaction between leverage ratio and investment that can give rise to instability and real-financial **cycles** (see the figure).



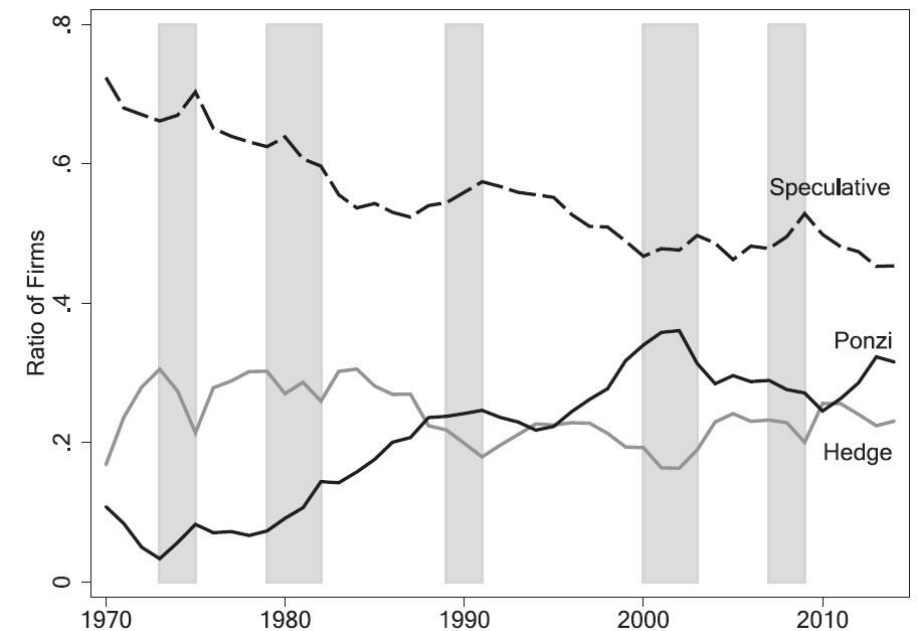
5. Modelling Minsky's FIH

Corporate debt

Empirical question: is the leverage ratio of firms pro-cyclical?

- Wolfson (1990) showed that, ahead of the US stock market crash in 1987, there was an **increase** in the corporate net interest payments to gross capital income.
- However, Lavoie and Seccareccia (2001) **did not find** supportive evidence for an increasing leverage ratio for the G-7 countries over the period 1971-97.
- Davis et al (2019) show that there was a secular growth in the share of Ponzi firms in the US non-financial corporate sector, from 10.8% in 1970 to 31.6% in 2014. However, the share of **Ponzi firms did not increase** during all periods of economic expansion.

Incidence of hedge, speculative and Ponzi financing regimes.
Full sample of firms; 1970-2014.

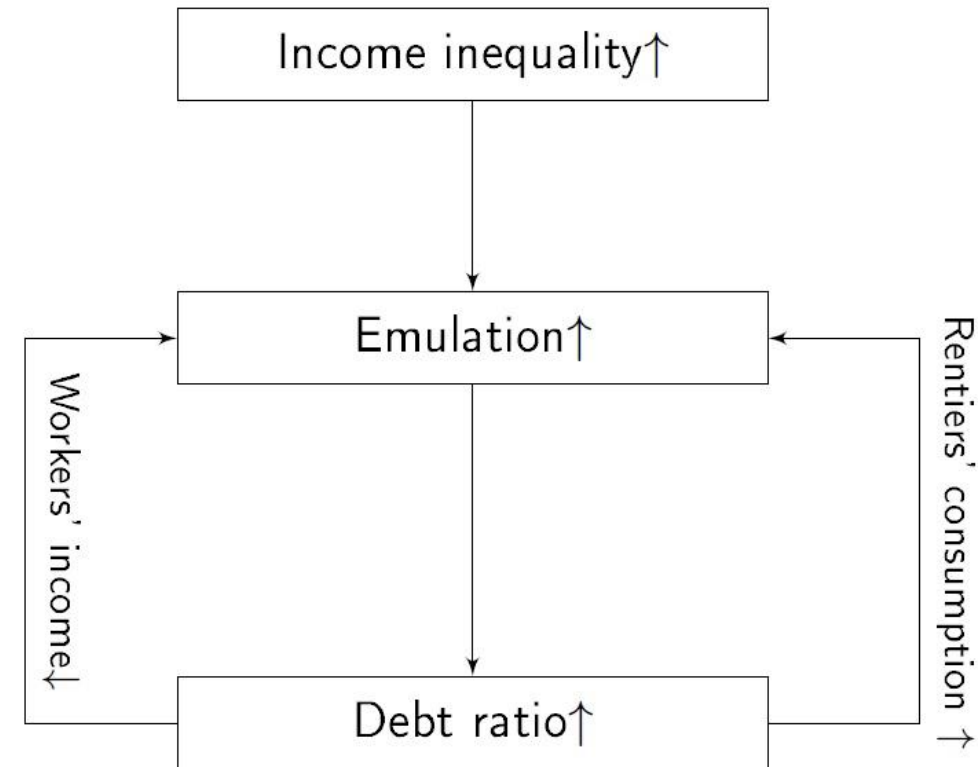


Source: Davis et al (2019)

5. Modelling Minsky's FIH

Household debt

- **Minsky** did not analyse household debt in his FIH. However, household debt has been the focus of many Minskyan models.
- There are Minskyan models that analyse the way through which household debt interacts with **income distribution** (see Palley, 1994; Kapeller and Schütz, 2014; Ryoo and Kim, 2014; Giraud and Grasselli, 2021).
- These models are in line with some **empirical evidence**. For example, Cynamon and Fazzari (2008, 2016) and Barba and Pivetti (2009) argue that increasing income inequality contributed to the rise in the indebtedness of the US household sector (see Palley, 1994 and Kim, 2013, 2016).



5. Modelling Minsky's FIH

External debt

- External debt, and especially **foreign currency-denominated debt**, can be a significant source of financial fragility in an open economy framework.
- Kohler (2019) has developed a Minskyan model that shows how endogenous cycles can arise in emerging market economies (EMEs) through the interaction between **flexible exchange rate** dynamics and balance sheet effects.
- However, endogenous cycles à la Minsky can arise in an open economy framework even in the case in which the **exchange rate is not flexible** (see Foley, 2003).
- Dafermos (2018) has shown how endogenous cycles can emerge as a result of endogenous changes in the **target debt ratio** of the domestic private sector. These changes in the target debt ratio are driven by the expectations of both the foreign lenders and the domestic borrowers.

Core readings

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Additional readings

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