Debt, Boom, Bust:
A Theory of Minsky-Veblen Cycles

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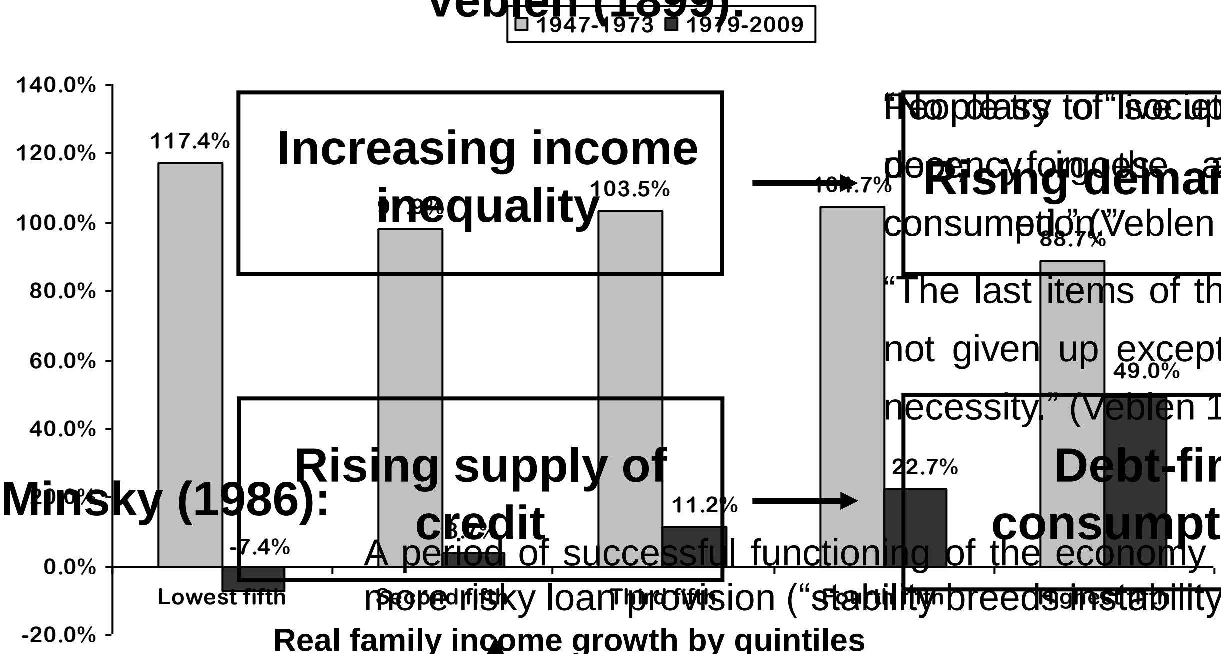
Background



Veblen (1899):

"People try to "live up to the conventional standard of decency in the amount and grade of goods consumed."

"No class of society, not even the most abjectly poor, forgoes all customary conspicuous consumption." (Veblen 1970[1899], p. 80)

"The last items of this category of consumption are not given up except under the stress of the direst necessity." (Veblen 1970[1899], p. 70)

Minsky (1986):

A period of successful functioning of the economy leads to more risky loan provision ("stability breeds instability")

Increasing income inequality → **Rising demand for credit**

Rising supply of credit → **Debt-financed consumption boom**

Burst of the bubble

Depression → **Consolidation**

Background

- **Income inequality** as a major factor leading to the crisis:

  Barba/Pivetti (2009), Evans (2009), ILO/IMF (2010), Kumhof et al. (2012), Kumhof/Ranciere (2010), Rajan (2010), Stiglitz (2009), UN Commission of Experts (2009), van Treek (2012)

- Importance of **relative consumption concerns**:

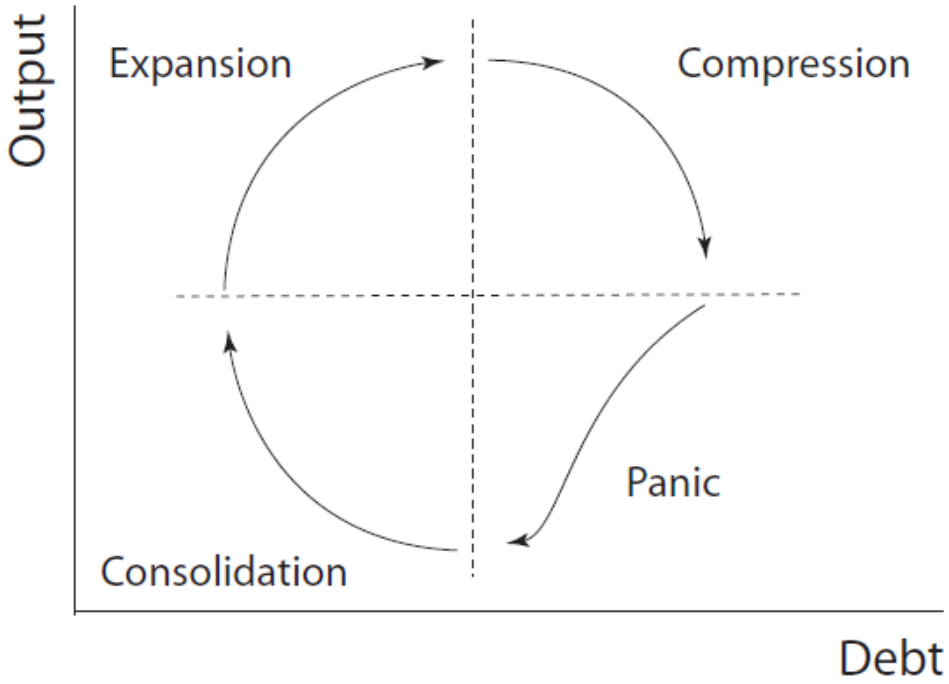
  Boushey/Weller (2006), Bowles/Park (2005), Christen/Morgan (2005), Krueger/Perri (2006), Neumark/Postlewaite (1998), Pollin (1988, 1990), Schor (1998)

- Crisis as a "**Minsky moment**":

  McCulley (2009), The Economist (2009), The Financial Times (2007), The New Yorker (2008), The Wall Street Journal (2007), Whalen (2007)

Research question

- Can the recent crisis be interpreted as part of a larger cycle?
- Can we create such cycles in a simulation and if yes, what assumptions are necessary?



Basic model components

- Basic Framework: **Stock-flow consistent modeling** (Lavoie/Godley 2002, Godley/Lavoie 2007)
  - Keeps track of all stock developments
  - Ensures that all flows and money stocks within the model add up to zero in order to avoid model inconsistencies
- **Closed economy Post Keynesian model** with **two classes** (workers and capitalists), **no fiscal activity** by the state and a **Minskyan banking sector**
- **2 types of workers**
  - Initially both groups are identical – later on type 2 workers will lose income relative to type 1 workers.

Flow matrix

	Households			Firms		Banks		$\sum$
	Worker 1	Worker 2	Capitalists	Current	Capital	Current	Capital	
Consumption	$-C^d_{w1}(t)$	$-C^d_{w2}(t)$	$-C^d_c(t)$	$+C^s(t)$				0
Investment				$+I^s(t)$	$-I^d(t)$			0
[Production]				[Y(t)]				
Wages	$+w_{w1}(t)N_{w1}(t)$	$+w_{w2}(t)N_{w2}(t)$		$-w_{w1}(t)N_{w1}(t)$ $-w_{w2}(t)N_{w2}(t)$				0
Interest	$+rM_{w1}(t-1)$	$+rM_{w2}(t-1)$	$+rM_c(t-1)$	$+rM_f(t-1)$		$-rM(t-1)$		0
Repayment	$+\phi M_{w1}(t-1)$ $-\phi M_{w1}(t-1)$	$+\phi M_{w2}(t-1)$ $-\phi M_{w2}(t-1)$	$+\phi M_c(t-1)$ $-\phi M_c(t-1)$	$+\phi M_f(t-1)$ $-\phi M_f(t-1)$				0
Debt Cancelation	$-\chi M_{w1}(t-1)$	$-\chi M_{w2}(t-1)$	$-\chi M_c(t-1)$			$+\chi M_{w1}(t-1)$ $+\chi M_{w2}(t-1)$ $+\chi M_c(t-1)$		0
Profits			$+\pi_f \Pi_f(t) + \pi_b \Pi_b(t)$	$-\Pi_f(t)$	$+(1-\pi_f)\Pi_f(t)$	$-\Pi_b(t)$	$+(1-\pi_b)\Pi_b(t)$	0
Δ Deposits	$-\Delta M_{w1}(t)$	$-\Delta M_{w2}(t)$	$-\Delta M_c(t)$		$-\Delta M_f(t)$		$+\Delta M(t)$	0
$\sum$	0	0	0	0	0	0	0	

Consumer behavior – Modeling relative consumption concerns

- **Type 1 workers:**

$$C_{w1}^{d}(t) = \frac{1}{1+\beta} a_0 + a_1 \left[YD_{w1}(t) - \frac{1}{1+\beta} a_0 \right]$$

$\beta = N_{w2}/N_{w1}$

a_0…aggregate subsistence level consumption working class

YD…disposable income

- **Type 2 workers:** Similar to type 1 workers as long as disposable income is **not less** than those of type 1; afterwards it changes to:

$$C_{w2}^{d}(t) = -\alpha \left(\frac{\beta}{1+\beta} a_0 + a_1 \left[YD_{w2}(t) - \frac{\beta}{1+\beta} a_0 \right] \right) + \alpha C_{w1}^{d}(t)\beta$$

α…relative consumption parameter

Investment, capital, employment and production

- **Investment:**

$$I^d(t) = i_0 + i_1 z(t-1) + i_2 RR(t-1)$$

z…capacity utilization [=*Y*/(ν*K*)]

RR…rate of return [= Π/*K*]

- **Capital stock:**

$$K(t) = K(t-1) + I^s(t-1) - \delta K(t-1)$$

δ...depreciation rate

- **Employment:**

$$N^d_{W1}(t) = \frac{Y(t)}{PR}\frac{1}{1+\beta} \qquad N^d_{W2}(t) = \frac{Y(t)}{PR}\frac{\beta}{1+\beta}$$

PR...labor productivity

- **Aggregate output:**

$$Y(t) = C^d(t) + I^d(t)$$

Banking sector

- Workers i = 1, 2 are **granted loans** as long as

$$w_{wi}(t)N_{wi}^{d}(t) \geq -r_L(t) + \phi \bar{M}_{wi}(t-1) + \theta_{wi}(t)$$

r_L…real interest rate on loans

ϕ…installment rate

- **Margin of safety:**

$$\theta(t) = \theta(t-1)(1+\mu) + \zeta \Delta L(t)$$

$\mu = (-\gamma)$ if no bankruptcies occur in a given period, otherwise $\mu = \tau$ ($\tau >> \gamma$)

L…absolute value of negative deposits (=total debt)

- **Debt cancelation** in case of bankruptcy:

$$\Delta M_{wi} = -\chi M_{wi} = cancel_{wi}$$

- **Interest rate:**

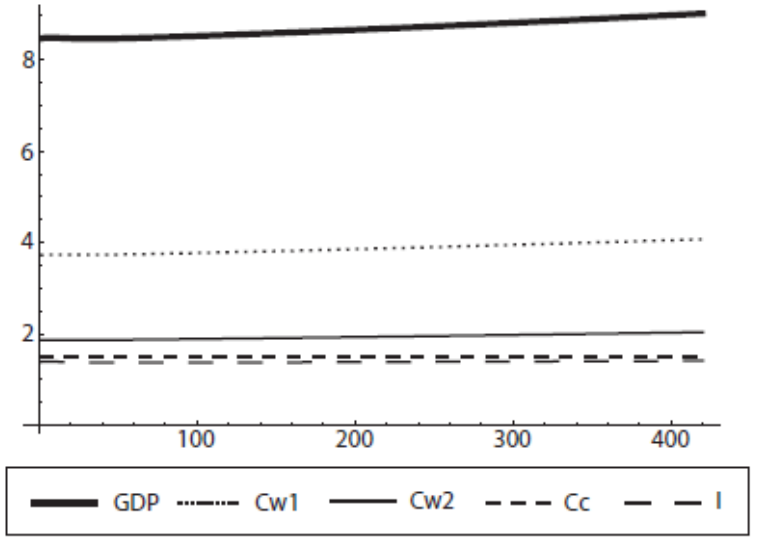
$$r_L(t) = r_L(t-1) + \rho \Delta L(t)$$

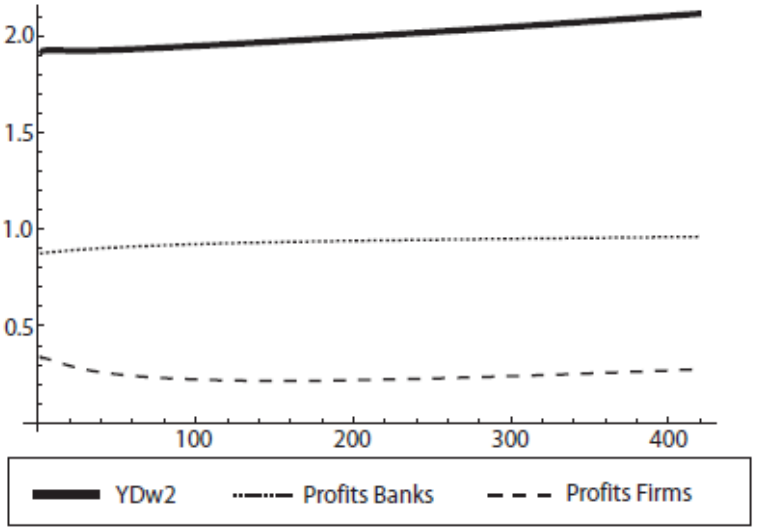
Simulation scenarios

- **Scenario 1:** Baseline case
- Increasing inequality, **unlimited** credit supply:
  - **Scenario 2:** No relative consumption concerns
  - **Scenario 3:** Relative consumption concerns
- Increasing inequality, relative consumption concerns, **limited** credit supply:
  - **Scenario 4a:** Speculative dynamics
  - **Scenario 4b:** Ponzi dynamics
  - **Scenario 4c:** Hedge dynamics

Scenario 1: Baseline case

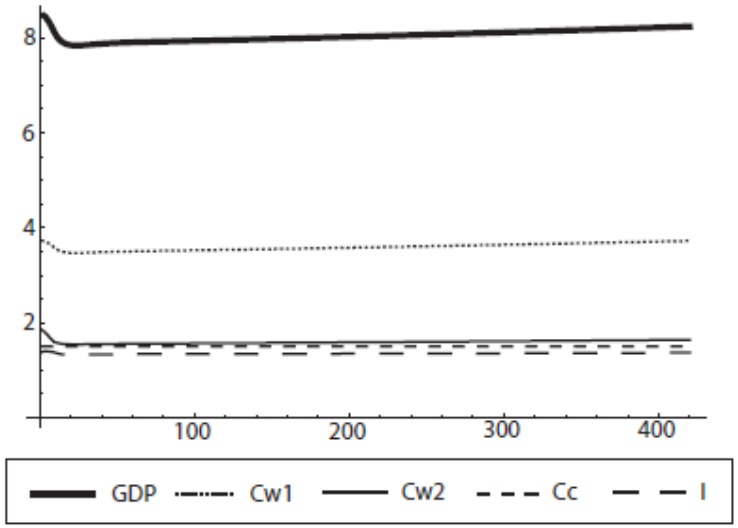
- **Assumptions:**
  - Income distribution **constant**
- **Results:**
  - Production and aggregate income slightly increasing (interest income)
  - No household debt

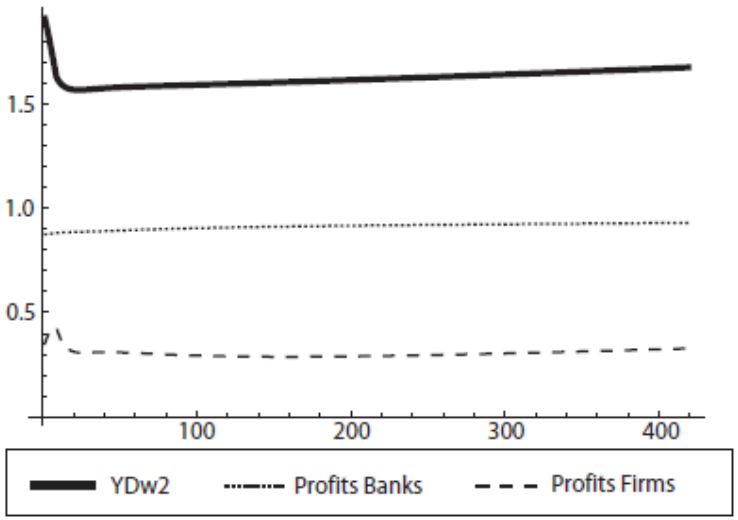




Scenario 2: Inequality and contraction

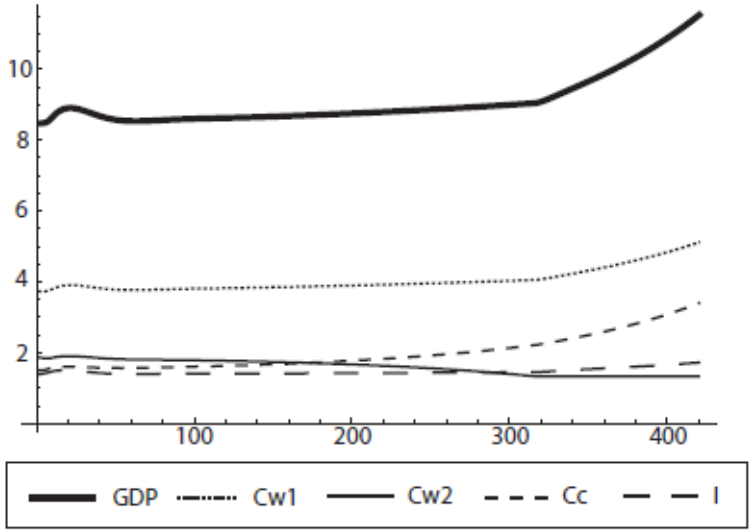
- **Assumptions:**
  - Income of type 2 workers **decreases**
  - **No relative consumption concerns**
- **Results:**
  - **Decrease** in consumption
  - **Decrease** in aggregate income
  - No household debt

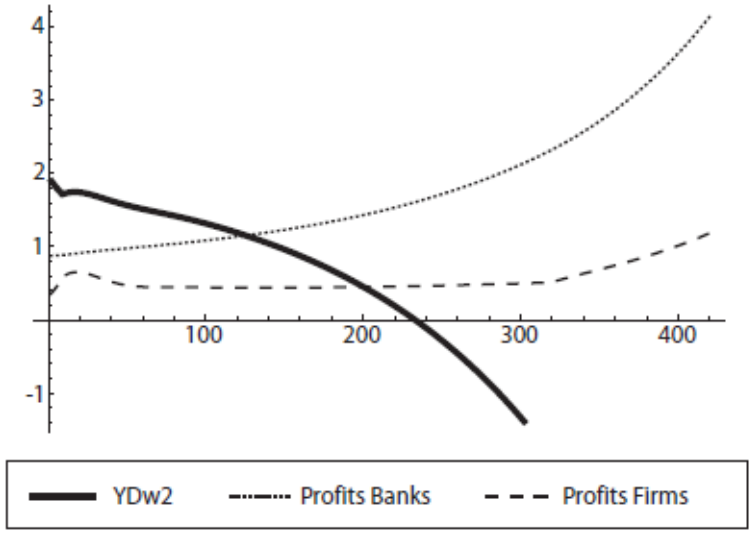




Scenario 3: Inequality and contraction

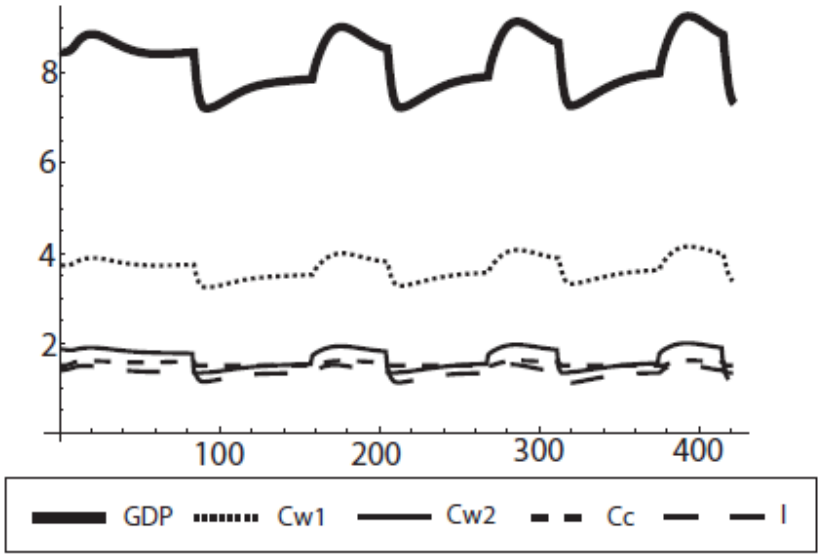
- **Assumptions:**
  - Income of type 2 workers decreases
  - **Relative consumption concerns**
  - **Unlimited** credit supply
- **Results:**
  - Initial **expansion** due to conspicuous consumption and increased debt
  - Followed by a **stagnation phase** (workers reduce spending and roll over debt)
  - **Boom** induced by capitalist consumption out of (debt-financed) interest payments

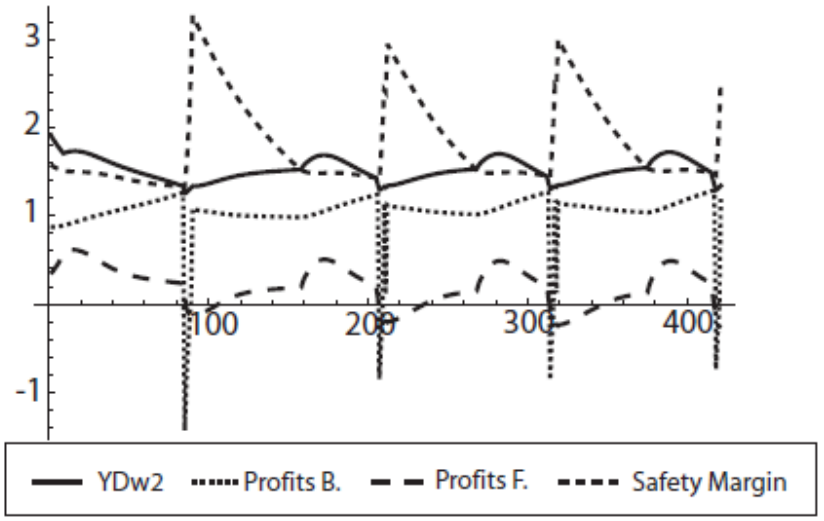




Scenario 4a: Speculative dynamics

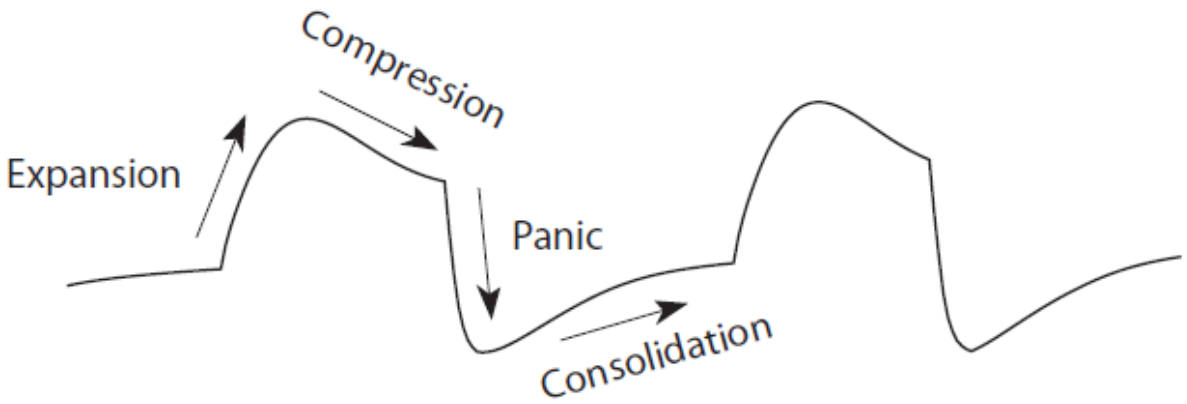
- **Assumptions:**
  - Income of type 2 workers decreases
  - Relative consumption concerns
  - **Limited** credit supply
- **Result: Minsky-Veblen Cycles #1**
  - **Expansion** (speculative financing)
  - Followed by **compression** phase (type 2 workers reduce consumption)
  - **Panic** and **bankruptcies**
  - **Consolidation**





Discussion

- Economies can display the following **Minsky-Veblen Cycles**:

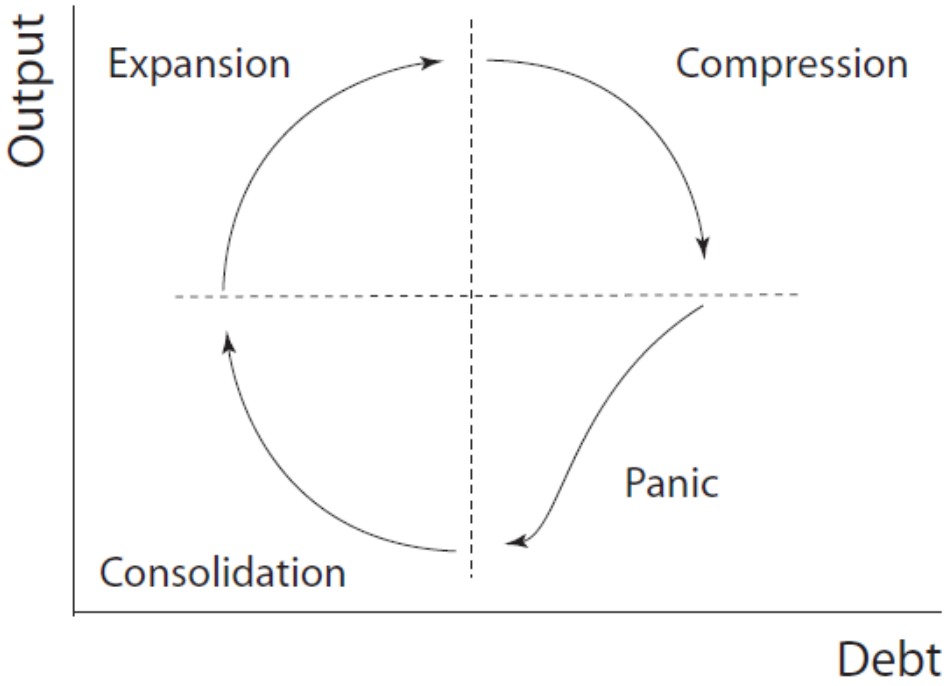


Minsky-Veblen cycle from scenario 4a (periods 150-250)

- What it needs are:
  - **Increasing income inequality**
  - **Relative consumption concerns**
  - **A financial sector** as described by **Minsky**

Discussion: Output-Debt dynamics

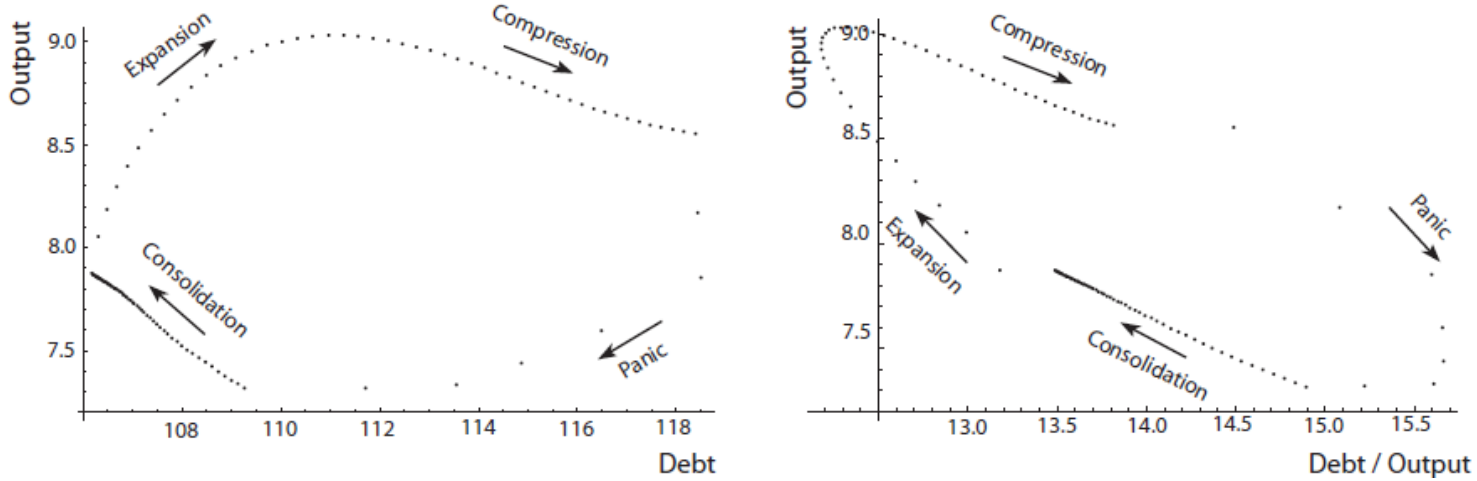
- In the beginning, we assumed the output-debt cycle to have the following rough properties,…



- which are well in line with our simulation results

Discussion: Output-Debt dynamics

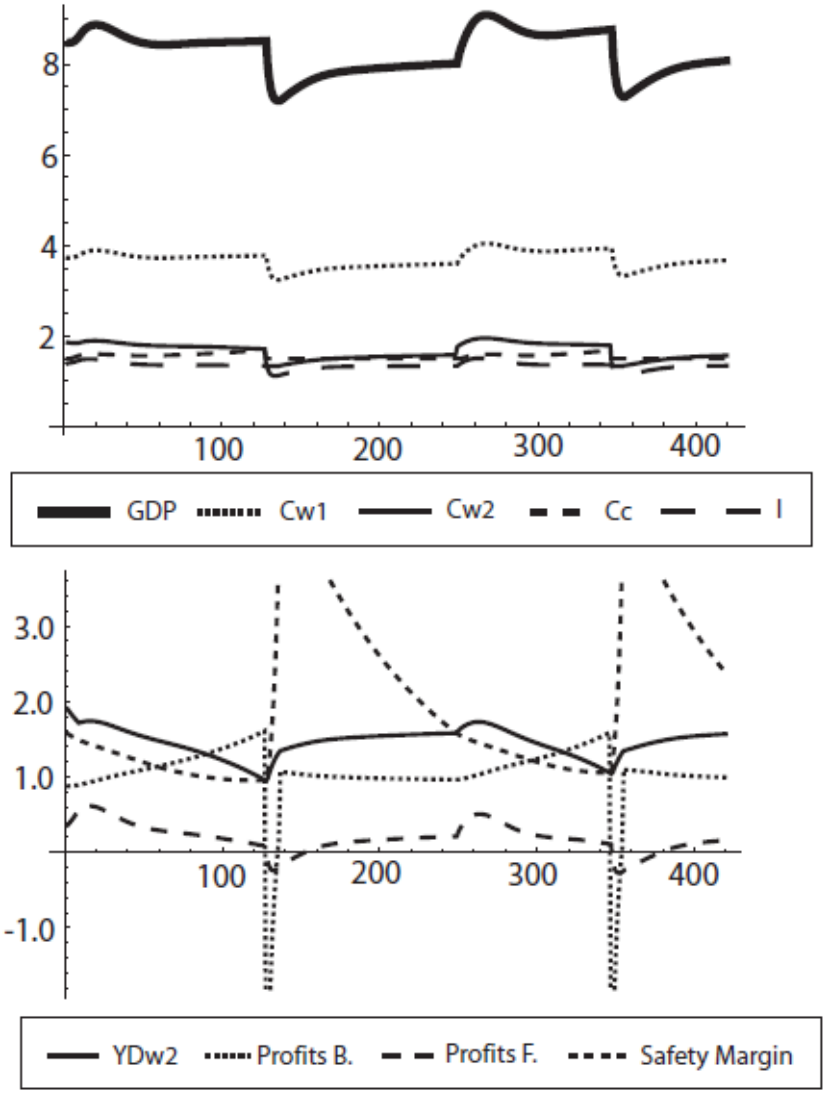
- Course of the cycle:
  - **„Expansion“:** growth accomodated by rising debt levels
  - **„Compression“:** decreasing or stagnating output with further rising debt levels
  - **„Panic“:** rapidly falling output and banks writing off debt
  - **„Consolidation“:** growth accomodated by decreasing debt levels



Output-debt dynamics (Scenario 4a, periods 100-220)

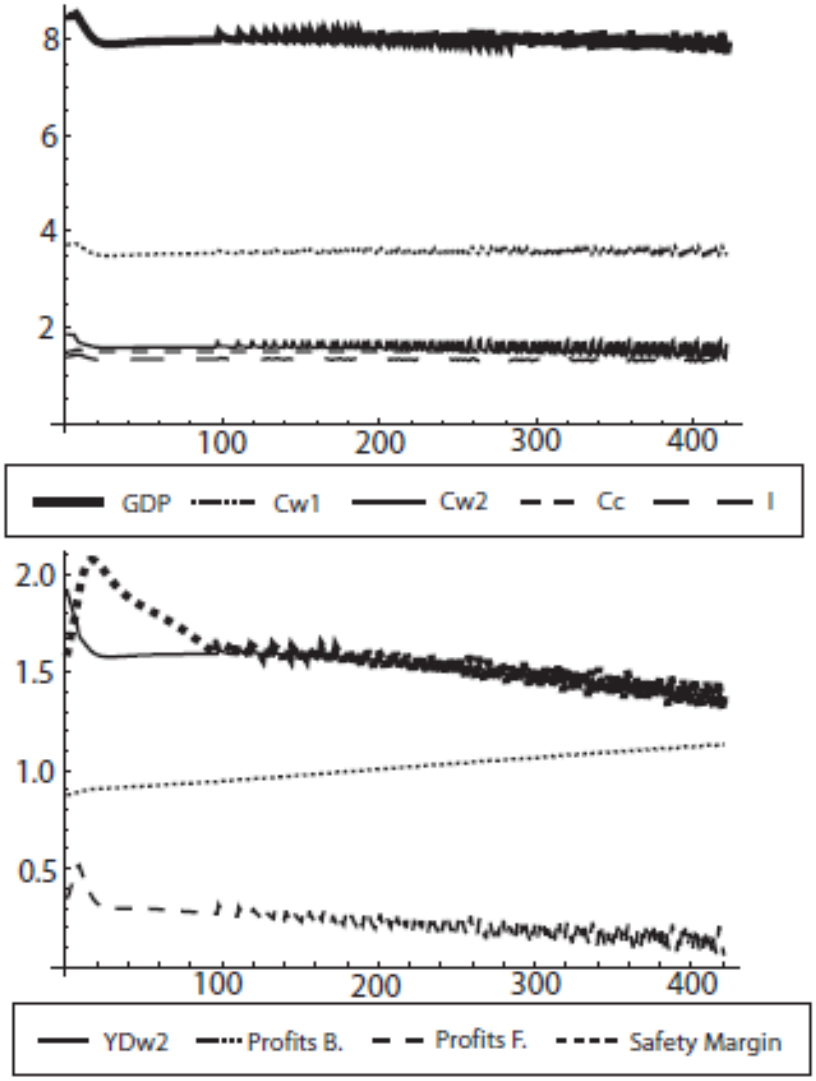
Scenario 4b: Ponzi dynamics

- **Assumptions:**
  - Income of type 2 workers decreases
  - Relative consumption concerns
  - Limited credit supply
  - **Less prudent** banks (ζ decreases)
- **Result: Minsky-Veblen Cycles #2**
  - Households become **Ponzi-financing units**
  - Cycles display **longer duration** and **larger amplitude**



Scenario 4c: Hedge dynamics

- **Assumptions:**
  - Income of type 2 workers decreases
  - Relative consumption concerns
  - Limited credit supply
  - **Very prudent** banks (ζ increases)
- **Result: Minsky-Veblen Cycles #3**
  - Households remain **hedge-financing units**
  - Cycles display **short duration** and **small amplitude**



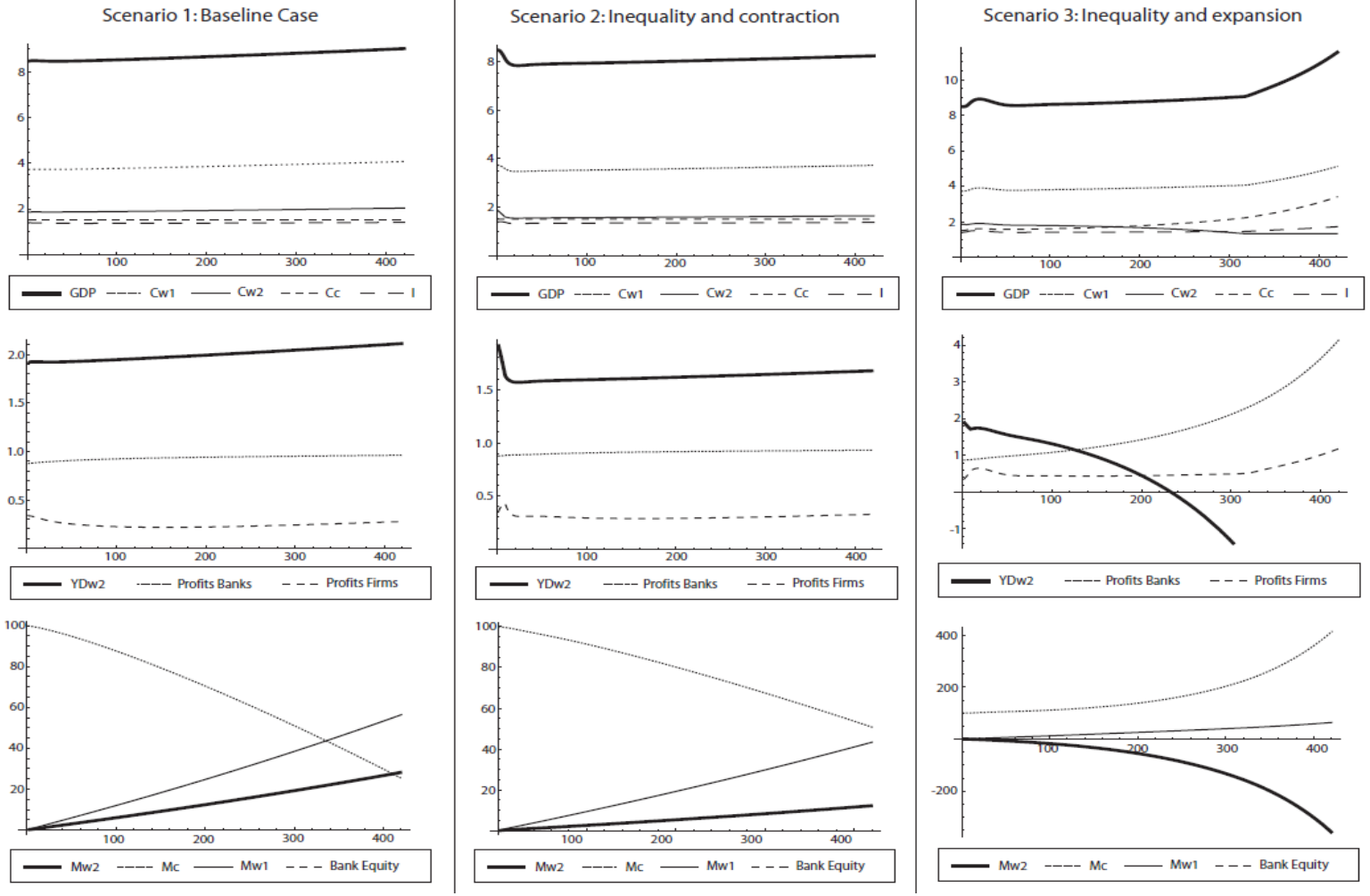
Conclusions and future prospects

- **Increasing income inequality**, **relative consumption concerns** and a **Minskyan financial sector** can give rise to **Minsky-Veblen Cycles**
  - Cautiousness of banks as a central factor determining the length of the associated cycles.
- Our story stops with the **financial crisis**
- Including the subsequent **sovereign debt crisis** is outside of the scope
- However, **negative bank balances** displayed in our simulation indicate where this would lead, and how this may provide an even richer story of *MVC*:
  - Negative bank balances are **reallocated** to the governmental sector
  - **Sovereign debt crisis**, **austerity programs, …**

Thank you for your attention!

Appendix

Figure 4.2: Simulation results for scenarios 1-3



Appendix

Figure 4.3: Simulation results for scenarios 4-6