

# Traditional and Shadow Banks During the Crisis

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## Summary

- Theory of the **coexistence** of traditional and shadow banks
- Shadow banks escape the costly **regulation** traditional banks must comply with, while traditional banks can access **deposit insurance** in a crisis
- In equilibrium traditional and shadow banks coexist
  - In a crisis, shadow banks repay their creditors by selling assets at **fire-sale** prices to traditional banks, which fund these purchases with insured deposits.
- An increase in deposit insurance leads to a *decrease* in the relative size of the traditional banking sector.
- In equilibrium, the shadow banking sector is larger than socially optimal.
- Consistent with several facts from the 2007 financial crisis.

## Environment

- Three dates: 0, 1, 2. Two groups of agents, each in unit mass: bankers and households.
- Banks can invest in **risky assets** which pay off at  $t = 2$ , they can borrow from households with **risk-less debt** at  $t = 0, 1$ .

Figure 1: Timeline

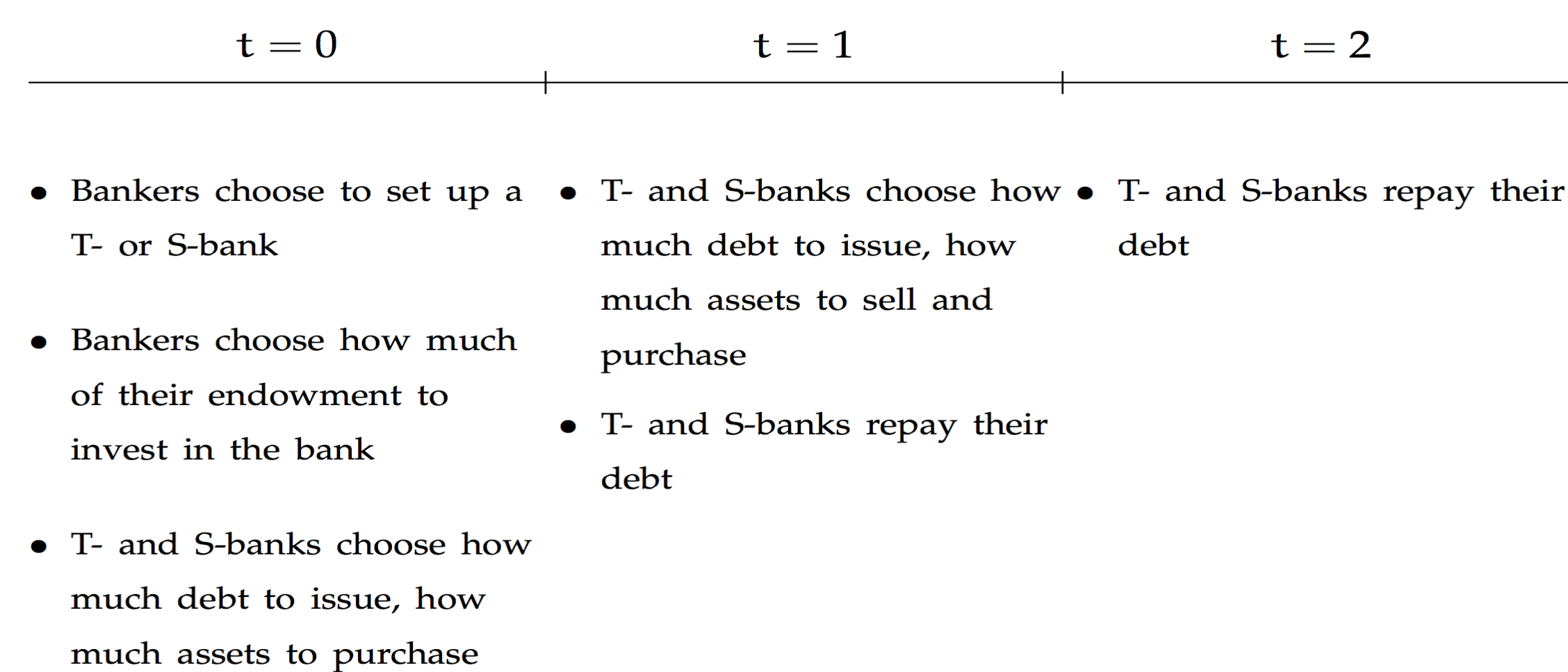
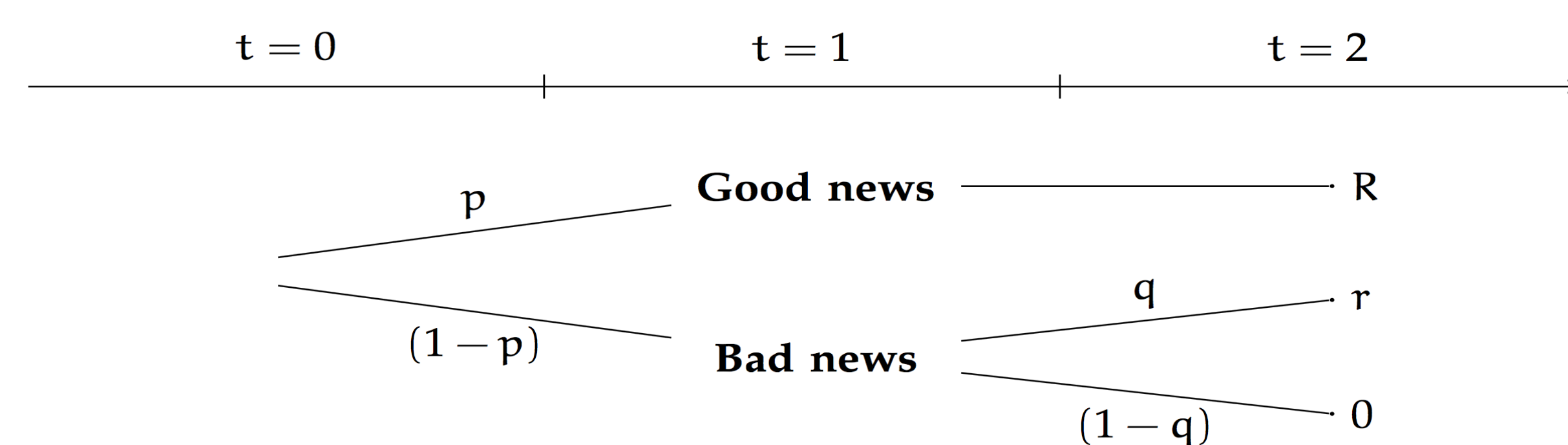


Figure 2: Asset payoff



## Difference between T- and S-banks

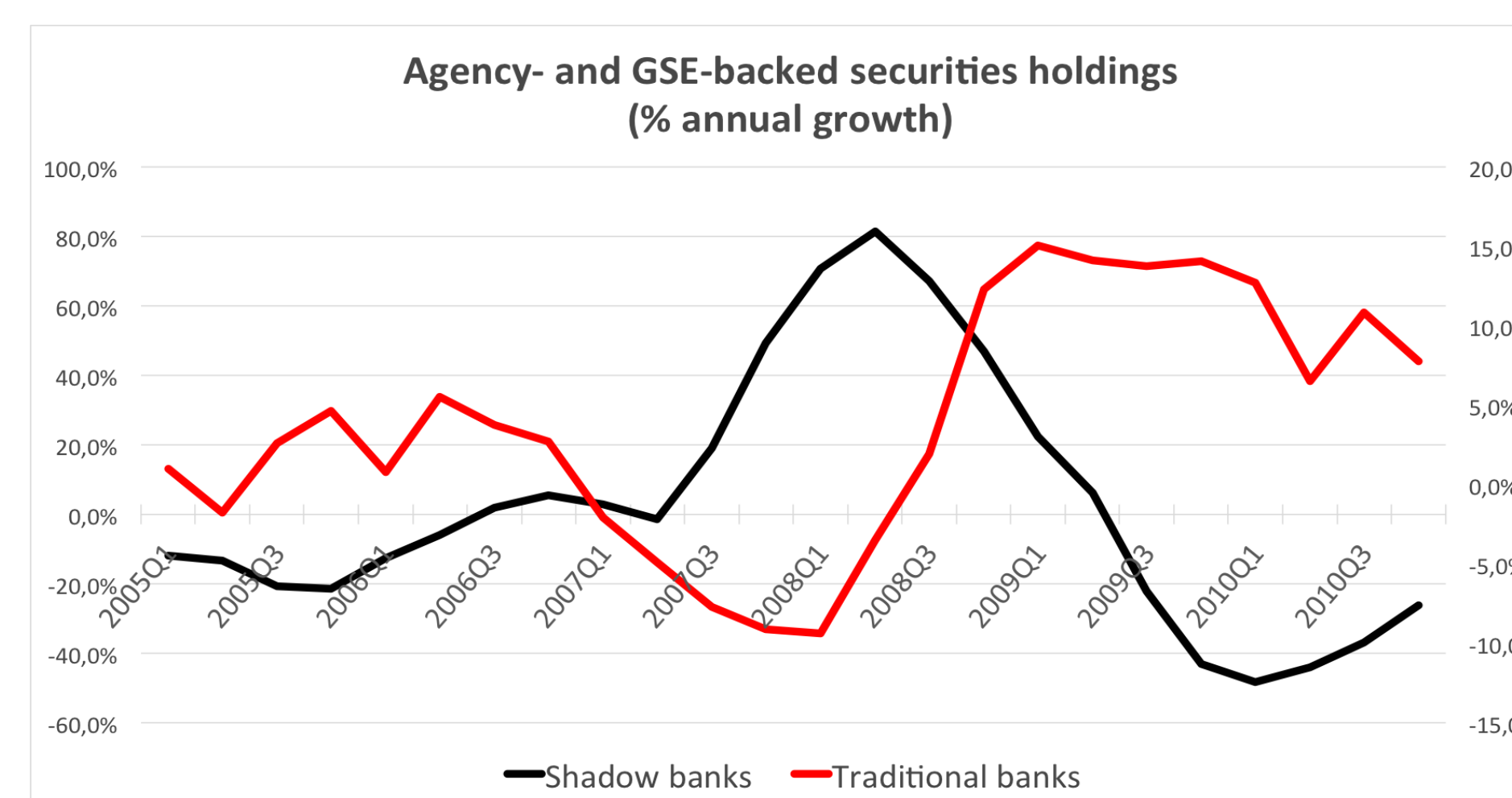
- T-banks have access to **deposit insurance** at  $t = 1$  in the bad news state. This enables them to issue risk-less debt that promise to pay up to a fixed amount  $k > 0$  per bank.
- T-banks face **regulatory costs** : At  $t = 2$ , T-banks only get a fraction  $\delta \in [0, 1]$  of asset returns.

## Coexistence between T- and S-banks: an Ecosystem

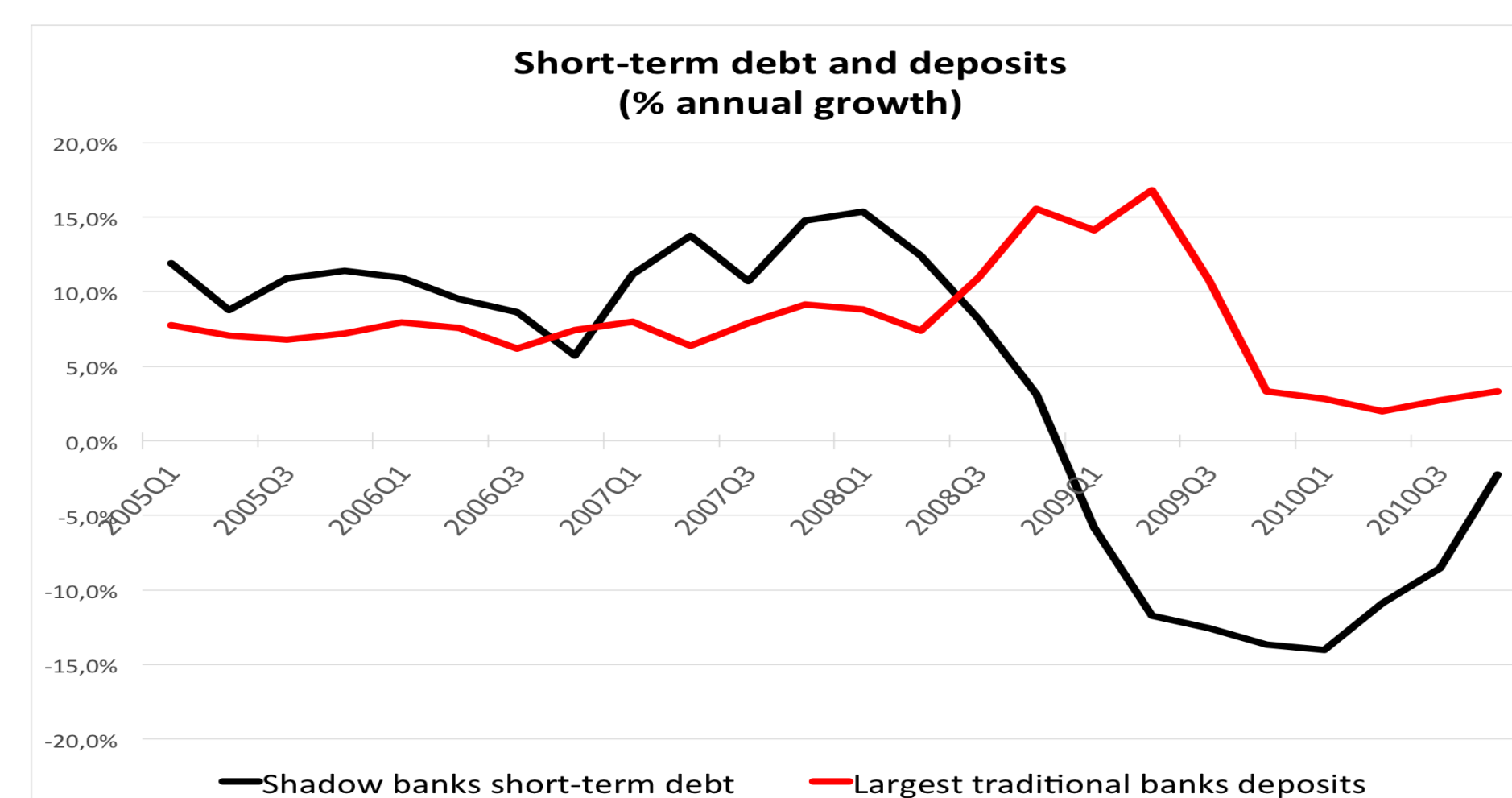
- Bankers' **trade-off**: low regulation costs but need to sell assets at a discount in a crisis *versus* high regulation cost but ability to buy assets at a discount in a crisis.
- The larger the **relative size** of the traditional (shadow) banking sector, the higher (lower) asset prices in a crisis, and the higher bankers' incentive to set up a shadow (traditional) bank in the first place.

## Equilibrium consistent with three stylized facts

- Fact 1: Asset flow from shadow to traditional banks



- Fact 2: Liabilities flow from shadow to traditional banks



- Fact 3: Asset fire sales (see e.g. Gorton and Metrick, 2011)

## Effects of changes in the level of deposit insurance ( $k$ )

- On the one hand, T-banks' increased debt capacity allows them to operate on a larger scale.
- On the other hand, T-banks use their increased debt capacity to bid for S-banks' assets in a crisis, which leads to higher asset prices.

## Expansion in deposit insurance

Expanding deposit insurance for traditional banks in a crisis *increases* the relative size of the shadow banking sector.

## Normative analysis

- There is a **pecuniary externality** via asset prices: too many bankers set up a S-bank in equilibrium (as in Stein, 2012).
- Bankers fail to internalize that operating a S-bank reduces the support from T-banks in a crisis, hence reducing other S-banks' ability to issue risk-less debt initially.
- Welfare can always be improved by imposing **lump sum taxes** on S-banks and subsidizing T-banks.

Figure 3: Centralized and decentralized equilibrium allocations

