

# Discussion of Fabio Ghironi & Viktors Stebunovs

## 'The Domestic and International Effects of Interstate U.S. Banking' Bundesbank Spring Conference

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# First reaction

- A great paper and a substantial leap forward:
  - ▶ effects of banking deregulation in the U.S. widely researched empirically, but under-researched from a theoretical perspective
  - ▶ First paper to actually look rigorously at the *international* dimension of *intra-national* banking deregulation
  - ▶ Adds to a growing literature that emphasizes the interaction between domestic financial development and globalization and its role for global imbalances...
  - ▶ ... and it is the first study to integrate this with the literature on the sources of the 'Great Moderation'

# Main findings

Interstate Banking deregulation leads to...

- higher steady-state consumption and output
- an appreciation of the real exchange rate
- persistent current account deficits
- lower business cycle volatility.

# Setup of the model and main mechanism

- Two countries, each producing an expanding variety of tradeable goods and a non-differentiated non-tradeable good. (Could that be housing? If so,  $\rightarrow$  see testable implications!)
- Firm entry into monopolistically competitive markets, financed by a sunk (anticyclical) entry cost  $w_t/Z_t$ .
- Firms need to borrow from banks. They start producing one period after having been set up. Firms die with probability  $\delta$  after each production period.
- Banks operate in one country (state) and take deposits from workers. Workers own shares in the bank.
- Banks finance the entry cost  $w_t/Z_t$  in return for the future stream of dividends  $d_{t+k}$  from the firm.

# Main mechanism

- In their financing decision, banks take account of the profit destruction externality (PDE): firm entry lowers average profits:

$$q_t(h) := \frac{\partial v_t}{\partial N(h)_{t+1}} = \mathbf{E}_t \left\{ M_{t+1} \left[ d_{t+1} + N_{t+1}(h) \frac{\partial d_{t+1}}{\partial N_{t+1}} \times \frac{\partial N_{t+1}}{\partial N(h)_{t+1}} + (1 - \delta)q_{t+1}(h) \right] \right\}$$

- ▶ size of externality decreases with aggregate number of firms  $N$  and increases in market size:

$$\frac{\partial d_{t+1}}{\partial N_{t+1}} \times \frac{\partial N_{t+1}}{\partial N(h)_{t+1}} = N_t \times \frac{\alpha \rho_{D,t}^{1-\theta}}{\theta N_t^2} C_t = -\frac{1}{N_{t+1}} d_t$$

- ▶ The higher the market share of the bank  $N_{t+1}(h)/N_t$ , the stronger it takes into the account the PDE.
- Banking deregulation is modelled as an exogenous increase in the number of banks  $H$ . Higher  $H$  then leads to higher steady-state firm entry, higher output and consumption, higher labour demand and higher real wages:

$$d_{t+1} + N_{t+1}(h) \frac{\partial d_{t+1}}{\partial N_{t+1}} \times \frac{\partial N_{t+1}}{\partial N(h)_{t+1}} = \left( 1 - \frac{N_{t+1}(h)}{N_t} \right) d_{t+1} = \left( 1 - \frac{1}{H} \right) d_{t+1}$$

- Since real wages also affect the prices in the non-tradeable sector, we also see an appreciation.

# What's there and what's not

- Model consistent with an impressive array of empirical evidence on the effect of deregulation on
  - ▶ state-level growth (Jayaratne & Strahan (QJE 1996)).
  - ▶ firm creation (Cetorelli & Strahan JF 2006)
  - ▶ (State-level) business cycle volatility (Morgan, Rime and Strahan, QJE (2002))
  - ▶ Aggregate volatility ('Great Moderation')
- The impact of deregulation on credit market access for existing firms / consumers and is not explored.
  - ▶ That's a modelling choice and whether it matters would seem an empirical question.
  - ▶ But: absence of these effects seems a consequence of the way banks are modelled.

# Two Comments

- Venture capital funds versus banks ?
- *Intra-* vs. *Inter-*state deregulation ?

# Venture Capital Funds or Banks?

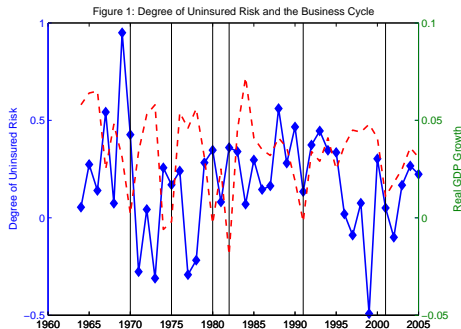
Banks have all the bargaining power and therefore appropriate all future dividends of the entrant firm

That admittedly, makes things much more tractable but...

- ...it could also (quantitatively) strengthen the mechanism in your favor: if the bank had a non-contingent loan contract it would care about the PDE only for the marginal entrant firm.
- ... banking competition effectively equals product market competition in the model. Therefore, all effects from deregulation come from the *extensive* margin of the firm population.
- No direct effect on e.g. risk sharing or improved access to finance for consumers and *existing* firms.
- However: evidence that banking deregulation has had differential effects on states with different *pre-existing* stocks of small (read: credit-dependent) firms (Demyanyk, Ostergaard, Sørensen) .
- Evidence of financing frictions (for existing firms) that vary over the cycle.



# Example: Interstate risk sharing varies over the business cycle...



Coefficient  $\beta_U(t)$  in the cross-sectional regression  $\Delta \tilde{c}_t^k = \beta_U(t) \Delta \widetilde{gdp}_t^k + \tau_t + \varepsilon_t^k$  (solid line) against aggregate US GDP growth (dashed).

Source: Hoffmann and Shcherbakova-Stewen (2009).

# .. and more strongly in states with lots of small businesses

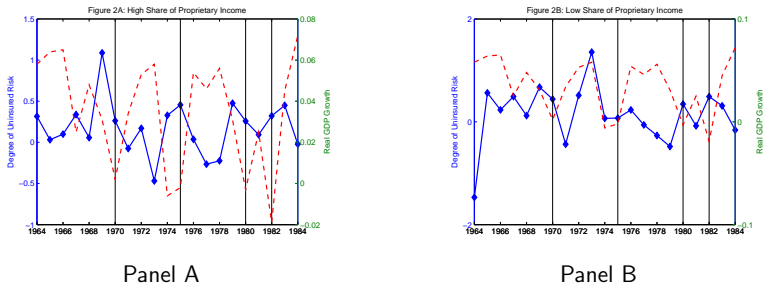
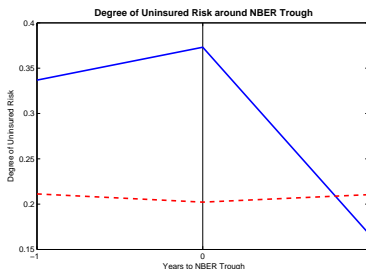


FIGURE 3: Risk sharing over the business cycle for states with above median (left, panel A) and below median (right, panel B) small business importance before the bulk of state deregulations took place (i.e. before 1984). In each panel, the blue, solid line is the coefficient  $\beta_U(t)$  of the sequence of cross-sectional regressions  $\Delta \tilde{c}_t^k = \beta_U(t) \Delta \widetilde{gsp}_t^k + \tau_t + \varepsilon_t^k$ . The red, dashed line is US GDP growth. Vertical lines indicate NBER business cycle troughs. Source: Hoffmann and Shcherbakova-Stewen (2009).

# Effects of liberalization highest in states with big small firm populations:



Regression coefficient  $\beta_U(l)$  in  $\Delta \tilde{c}_{t+l}^k = \beta_U(l) \Delta \widetilde{gsp}_{t+l}^k + \tau_{t+l} + \varepsilon_{t+l}^k$ , pooling across all states and NBER recessions for  $l = -1, 0, 1$  years before/after the trough. The plot gives the estimated  $\beta_U(l)$  for the two groups (blue: non yet deregulated at the specific recessions, red: already deregulated).

## Venture Capital Firms? (Cont'd)

- These and other results suggests that banking deregulation has a big beneficial impact also on the *intensive* margin of the small firm population.
  - ▶ Could, of course, calibrate two values of  $H$  – one to match the attrition rate of the firm population before and one to match it after deregulation.
  - ▶ But that would imply that even before deregulation, states with higher firm entry would have had more banking competition in steady state. But evidence points the other way.
- Finally, the distinction between VCF and banks might also matter because the very absence of access to bank credit may have contributed to the creation of the VCF industry.

# Inter- or Intrastate deregulation

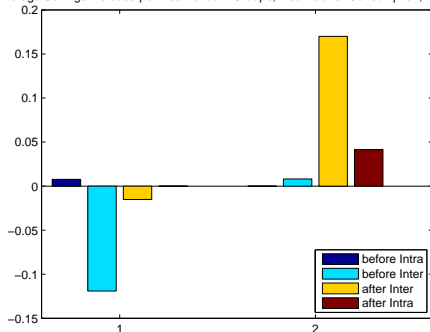
- Most of the empirical literature detects a huge impact from Intra-state branching deregulation, whereas the impact of inter-state deregulation is often empirically less robust (Jayaratne and Strahan, Morgan, Rime Strahan (QJE 2004), Demyanyik, Ostergaard & Sorensen (JF, 2007), Hoffmann and Shcherbakova-Stewen (2010).
- Model is interpreted as interstate banking model, but does not really specify where new entrant banks come from.
  - ▶ In fact, it may be more appropriate to think of G&S as a model of intra-state deregulation: Pre-deregulation, think of a states consisting of  $H$  counties with one monopolistic bank each. – One bank on average per county.
  - ▶ After (intra–state) deregulation, each of these banks branches out to all other counties in the same state: on average  $H$  banks per county.
- In the model there is no interstate branching since 'foreign', i.e. out-of-state banks are not actually lending to intra-state entrant firms directly.
- But could think of international (i.e. cross-state border) deposit-taking as a way to form bank holding companies across state borders. This pattern is probably consistent with changes in the banking industry following deregulation, where banks were consolidating across states as Multiple Bank Holding Companies and not so much through direct branching.

# Does this distinction between inter- and intra-state deregulation matter?

- Enhances the empirical scope of the model. Instead of one economy liberalizing vis-à-vis the rest of the world, we get a laboratory case of 50 homogeneous economies.
- Focus on intra-national dimension may help corroborate some key implications of the model that would seem at odds with aggregate data. Examples:
  - ▶ Timing of the real exchange rate appreciation (by 1984 only half of all states had deregulated with a big wave between 1984 and 1986. Dollar peaked in 1985 (Louvre-Plaza))
  - ▶ effects of deregulation on the savings rate (seems up in the model, clearly down in aggregate U.S. data)
- The interpretation as a model of intra-state deregulation suggests that the sequencing of Intra- and Interstate- deregulation may matter: G&S implies that, after Inter-state deregulation, capital should flow from states that have not yet removed intra-state bank branching restrictions (red states) to states that already have (blue states).

# Savings rates and state-level banking deregulation

Average Savings Increase per Year for both Groups, Income over Consumption, no weights



LEFT:

RIGHT:

'blue states', i.e. intra-state  
before inter-state deregulation.

'red states', i.e. inter before intra

Inter-state deregulation leads to an increase in savings, intra-state deregulation to a decline !

# Summing-up

- This is a milestone paper, linking banking deregulation to global imbalances, the great moderation, changes in goods market competition in one coherent, tractable model.
- But abstracts from effects on risk sharing / credit market frictions for households and existing credit-dependent small firms by its focus on the extensive margin of firm finance.
- Reinterpreting the model as one of intra-state deregulation may help corroborate many of its empirical implications in the data that would seem inconsistent with U.S. aggregate data.