Comments on Investment and Institutions by Stjin Claessens, Kenichi Ueda and Yishay Yafeh

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SUMMARY OF THE PAPER

- How institutional environment affect investment efficiency?
- Combines two lines of reasearch
  - Institutions, capital allocation and economic performance
  - *Tobin's Q* (deviation from its steady state) as a measure of (in)efficient use of capital
- Shows theoretically how institutions afect financial frictions and rate of return that in turn influence adjustment of *Tobin's Q* to its steady state

SUMMARY OF THE PAPER

- Empirically decomposes the effects of institutions on *Tobin's Q* along these two channels on a sample of 75,000 firms from 48 countries for the period 1990 to 2007
- Main finding: Informational frictions related to corporate governance and contractual enforcement are most important in determining financial frictions and in turn investment efficiency
- Creditor rights, financial depth, and product market competition do not matter for investment efficiency

COMMENT 1: *Tobin's Q* AS A MEASURE OF INVESTMENT EFFICIENCY?

- In Tobin's model $q_t = 1$ when there is no investment (is this steady state?)
- Can you use deviation of *Tobin's Q* from its steady state (1) as a measure of investment efficiency?
- What does it mean to overinvest (bubbles?) or to underinvest in a model without frictions?
- Pareto efficiency: allocation is efficient iff it is a solution of the Social Planner's problem
- *Second and First welfare theorem*: without frictions any efficient allocation can be decentralized into a competitive equlibrium allocation; a competitive equilibrium allocation is efficient

COMMENT 1: *Tobin's Q* AS A MEASURE OF INVESTMENT EFFICIENCY?

- Take a simple *RBC* model with capital adjustment costs where the only uncertainty comes from the *TFP* shock
- Capital evolves through standard law of motion

$$k_{t+1} = i_t + (1-\delta)k_t$$

where capital is subject to (convex) capital adjustment costs

$$\phi\left(\frac{i_t}{k_t}\right)k_t$$

that is payed out of profits where $\phi(\cdot) > 0, \phi'(\cdot) > 0, \phi''(\cdot) < 0$ with $\phi(\delta) = \phi'(\delta) = 0$

- For example, a number of papers take (ψ determines the magnitude od adj. costs)

$$\phi\left(\frac{i_t}{k_t}\right) = \psi\left(\frac{i_t}{k_t} - \delta\right)^2$$

COMMENT 1: *Tobin's Q* AS A MEASURE OF INVESTMENT EFFICIENCY?

- Goods are produces using capital only and production is subject to the *TFP* shock A_t

$$y_t = A_t k_t$$

- Firms are choosing investment to maximize expected discounted profits

$$E_0 \sum_{t=0}^{\infty} \beta^t \left\{ A_t k_t - i_t - \phi \left(\frac{i_t}{k_t} \right) k_t \right\}$$

subject to the law of motion for capital

$$k_{t+1} = i_t + (1 - \delta) k_t$$

COMMENT 1: *Tobin's Q* AS A MEASURE OF INVESTMENT EFFICIENCY?

- Let the q_t be a Lagrange multiplier associated with the capital law of motion: shadow price of installed capital (**Tobin' Q**)
- *FOC* with respect to investment yields a formula for *Tobin's Q*, q_t

$$\phi'\left(\frac{i_t}{k_t}\right) = q_t - 1$$

- The steady state of *Tobin's Q* is 1 since in steady state $i = \delta k$ and $\phi'(\delta) = 0$: there is **no** capital adjustment costs in the steady state
- Outside the steady state dynamics of *Tobin's Q* is asociated with movements in investment/capital (and vice versa) that depends on marginal product of capital which is subject to *TFP* shocks
- Social Planner would compute the same allocations (*First welfare theorem*)
- Thus, all those allocation in the steady state and OUTSIDE OF IT **are efficient**!

COMMENT 2: INVESTMENT ADJUSTMENT COSTS VS. CAPITAL ADJUSTMENT COSTS

- Authors use "standard" investment adjustment costs

$$\phi\left(i_t, k_t\right) = c_1 i_t + c_2 k_t + c_3 \left(\frac{i_t}{k_t}\right)^2 k_t$$

which is actually CAPITAL adjustment costs since it is punishing the change in capital

$$\phi\left(i_t, k_t\right) = c_1 i_t + c_2 k_t + c_3 \left(\frac{k_{t+1} - k_t(1-\delta)}{k_t}\right)^2 k_t$$

- Why is this **name** important: *Beaubrun-Diant and Tripier (2005)* show that models with adjustment costs penalizing the changes of investment ($\phi\left(\frac{i_t}{i_{t-1}}\right)$) can explain both asset returns and business cycle facts (in comparison with models with capital adjustment costs)

COMMENT 3: WHAT SI INVESTMENT ADJUSTMENT COST FUNCTION?

- How is adjustment cost function

$$\phi\left(i_t, k_t\right) - \delta k_t - i_t$$

which is

$$\phi\left(i_t, k_t\right) = \begin{cases} \phi\left(k_{t+1} - (1-\delta)k_t, k_t\right) & \text{if } i_t > 0 \\ -\delta k_t & \text{otherwise} \end{cases}$$

related to its calibrated version

$$\phi\left(i_t, k_t\right) = c_1 i_t + c_2 k_t + c_3 \left(\frac{i_t}{k_t}\right)^2 k_t$$

- Are $c_1 = -1$ and $c_2 = -\delta$? but they are functions of institutions...
- At p. 10 the authors says that inv. adjustment costs are 0 when $i_t \leq 0$?

COMMENT 4: INVESTMENT ADJUSTMENT COSTS AND *Tobin's Q*

- This "standard" investment adjustment costs function

$$\phi\left(i_t, k_t\right) = c_1 i_t + c_2 k_t + c_3 \left(\frac{i_t}{k_t}\right)^2 k_t$$

does not satisfy standard restictions (like in *Boldrin, Christiano, Fisher (2001), Baxter and Crucini (1995), Jermann (1998), Kolmann (1996), Kehoe and Perri (2001), Hennessya, Levyb, and Whited (2007)*)

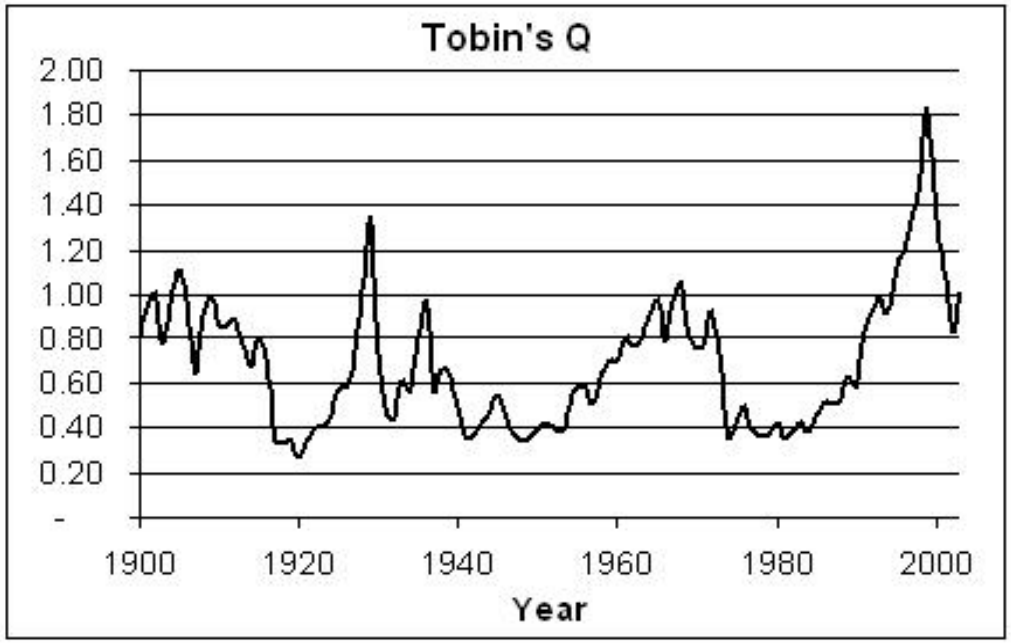
$$\phi(\delta) = \phi'(\delta) = 0$$

that ensure that incorporation of the adjustment cost does not affect the steady state of the model (otherwise calibration of the model would not be posible)

- Author's adjustment costs are **non-zero** in the steady state (?): *Tobin's Q* is different from 1 in the steady state?
- Adjustment costs are 0 only if $k_t = 0$ (!) (together with $i_t = 0$): Inada conditions not satisfied?

COMMENT 5: INVESTMENT ADJUSTMENT COSTS IN THE US

- Even if *Tobin's Q* is 1 in the steady state in the data, on average, it is below 1 for the *US* economy: inefficient investment?



COMMENT 6: AVERAGE VS. MARGINAL *Tobin's Q*

- Authors say that they assume "what ever it takes" for the average and marginal *Tobin's Q* is equal (since average *Q* is observable, marginal *Q* is the one important for investment decision)
- *Lorenzoni and Walentin (2006)* in a model with **financial friction due to limited enforcement of financial contracts** show that average and marginal *Tobin's Q* are different
- Notice that this financial friction is one of main determinants of *Tobin's Q* in the paper that assumes average and marginal *Q* are the same
- On the other side, a structure behind the estimated model is suggesting that average and marginal *Q* are different

COMMENT 7: "REAL" INVESTMENT ADJUSTMENT COSTS AND INSTITUTIONS

- In the robusness check, authors say that good institutions reduce investment adjustment costs
- Take again the *RBC* model from the begining of the presentation
- Simulate it for two countries which differ only in the parameter that affects the "volume" of adjustment costs (elasticity of investment with respect to *Tobin's Q*)
- What you get is higher volatility of investment for a country with lower adj. costs (because of better institutions): is this something that we observe in reality (*Cicco, Pancrazi, Uribe (2006)* model with financial imperfections similar to enforcement restriction)?

(volatility of investment in %)	*Argentina*	*U.S.*
data	20	3.1
model	13	6.45
model with fin. friction	18	-

COMMENT 8: INSTITUTION AND INVESTMENT

- Probably institution affect the level of investment and tehnology (*Acemoglu, Aghion, Zilibotti (2006)* for example)
- In a number of papers, Acemoglu shows that DIFFERENT ((*in*)*appropriate*) institutions affect countries on a different level of development
- Control for that?

FINAL COMMENT: A NICE RESULT

- A number of papers show that investment dynamics can be explained by movement in *Tobin's Q* (*Hennessya, Levyb, and Whited (2007)*, *Lorenzoni and Walentin (2006)*, *Boldrin, Christiano, Fisher (2001)* for example)
- A numer of papers show that business cycle properties can be explained by introducing contractual enforcement friction
  - *Lucas paradox* of why capital does not flow from rich to poor countries (*Dmitriev (2009)*, *Reinhart and Rogoff (2004)*)
  - International correlations puzzles of why investment, employment between *US* and *EU* are positive (*Kehoe and Perri (2002)*)
  - Contracting institutions appear to matter for the form of financial intermediation (*Acemoglu and Johnson (2005)*)
  - Business cycle in small opet economy (*Jaimovich and Rebelo (2008)*, *Cicco, Pancrazi, Uribe (2006)*)
- This paper suggests that this friction affect investment trough *Tobin's Q* (even if you do not assume that *Tobin's Q* is measuring investment efficiency)