Tales of the Finance Growth Nexus

Paul Wachtel
Stern School of Business
New York University

September 2007

Tales of the Finance Growth Nexus

THEMES

- Where it came from
  - Evolution of growth and development
- How the consensus emerged
  - How strong and how convincing
- Where is it going
  - Directions for future research

Evolution of growth theory

Modern growth theory

- 1940s Keynesian – Harrod-Domar
  - Coincided with development of income accounts and emphasis on measurement
  - Investment, investment, investment – I/GDP ratio is all that matters.

Evolution of growth theory

- 1950s Neoclassical models – Solow
  - Technological progress introduced
  - Growth accounting indicated that TFP is more important than investment
  - Emphasis on technical know-how embodied

Still, growth puzzles

- Why do countries with high I/GDP ratios sometimes have low growth rates?
- And why do countries with low ratios sometimes grow rapidly?
- Why doesn’t know how, skill, technology and capital flow around the world so capabilities converge?

Clear that there are important missing elements

- Something more that differences in physical and human capital endowments.
- Something more than technology – a piece of machinery, a computer – that can easily move around the world.
- Something more than skills – services can be purchased, skills can be learned, people can move.

Two key elements

- Ability to allocate –

  the role of financial markets

- Ability to insure proper application –

  the role of legal structure, institutions and the rule of law.

Origins

- Role of finance and the importance of institutions were not entirely new ideas

- But the empirical growth literature grabbed hold of these ideas about 1990 and an explosion of research that is still going strong followed.

Empirical growth literature

- Growth empirics in 60s and 70s was focused on growth accounting exercises
- Barro's empirical framework provided a context for regression analysis and a shift (rightly or wrongly) to causality.
- Levine applied it to finance with gusto

Finance growth nexus

- Precursors
  - Raymond Goldsmith
  - Robert McKinnon
- Doubters
  - Joan Robinson “enterprise leads, finance follows”
  - Robert Lucas
- Campaigners – led by an eager and energetic general – Ross Levine
  - Established consensus from cross country, times series and panel studies.

Finance growth nexus

- Consensus entered the canon of economics
- At the same time – nay sayers abounded
  - The American campaigners out shouted the mostly continental skeptics (Temple, Arestis)
    - Robustness to changes in data
    - Ability of econometrics to distinguish direction of causality between finance and growth
    - Ability to rule out joint causality with other things.

Finance growth nexus

Consensus entered the canon of economics

Campaigners had enormous influence on the direction of economic research for the past generation.

We might categorically reject their work but at the end of the day, this conference would not be going on if that path had not been set out.

Phenomenon is not unusual

- An idea emerges – a theoretical and empirical consensus develops – it becomes part of the cannon – influences research – footing appears dubious but becomes the influence remains.
- Another example
  – The monetarist consensus and the St. Louis equation relating money growth to income or inflation.

Is consensus on weak footing?

- The consensus was established largely with the cross country studies.
- The cross country data is very strong until we begin to take a closer look.

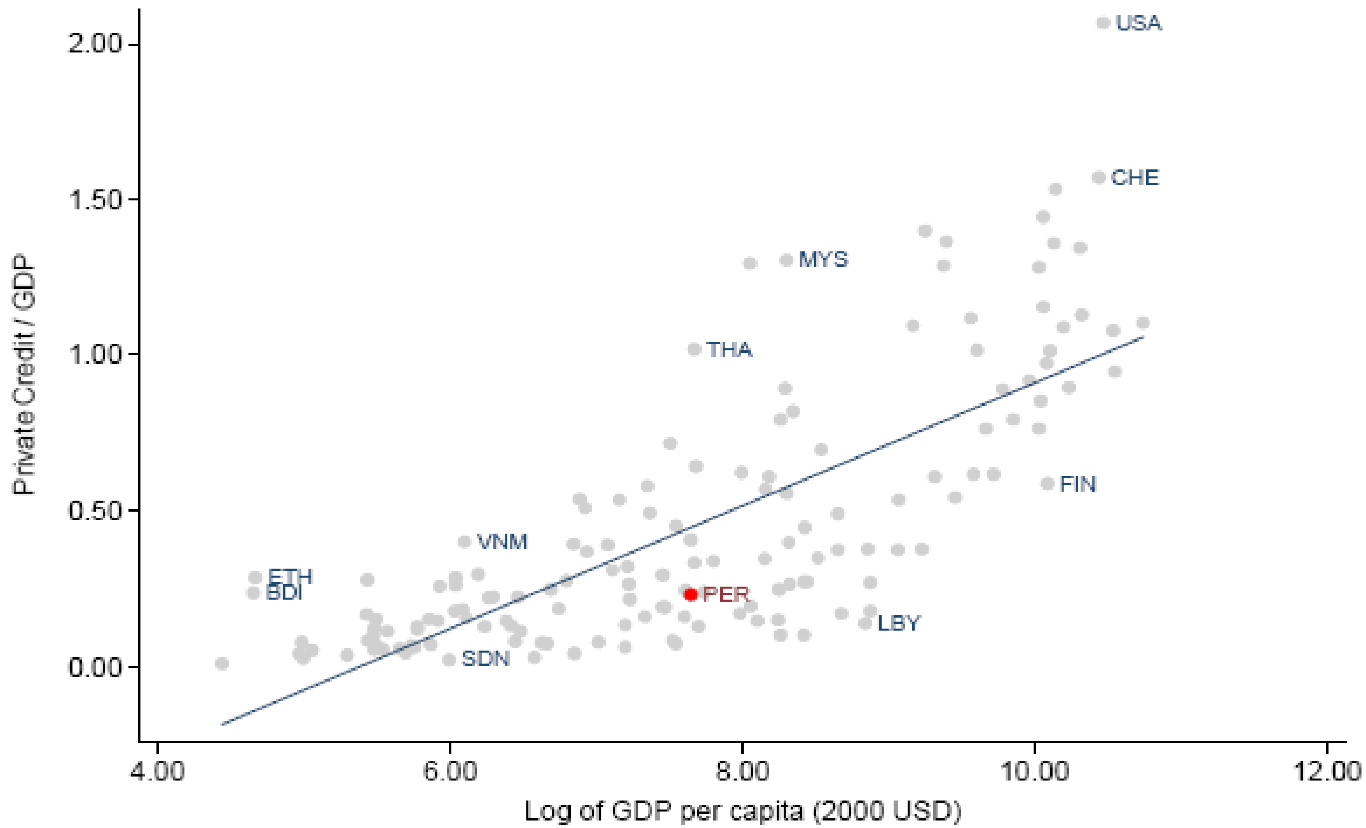
Strong evidence for nexus

Average Growth, 84 countries, 1960-2004

	M3 ratio quartile	Credit ratio quartile
1	2.81	2.84
2	2.20	2.41
3	1.65	1.21
4	0.68	0.94

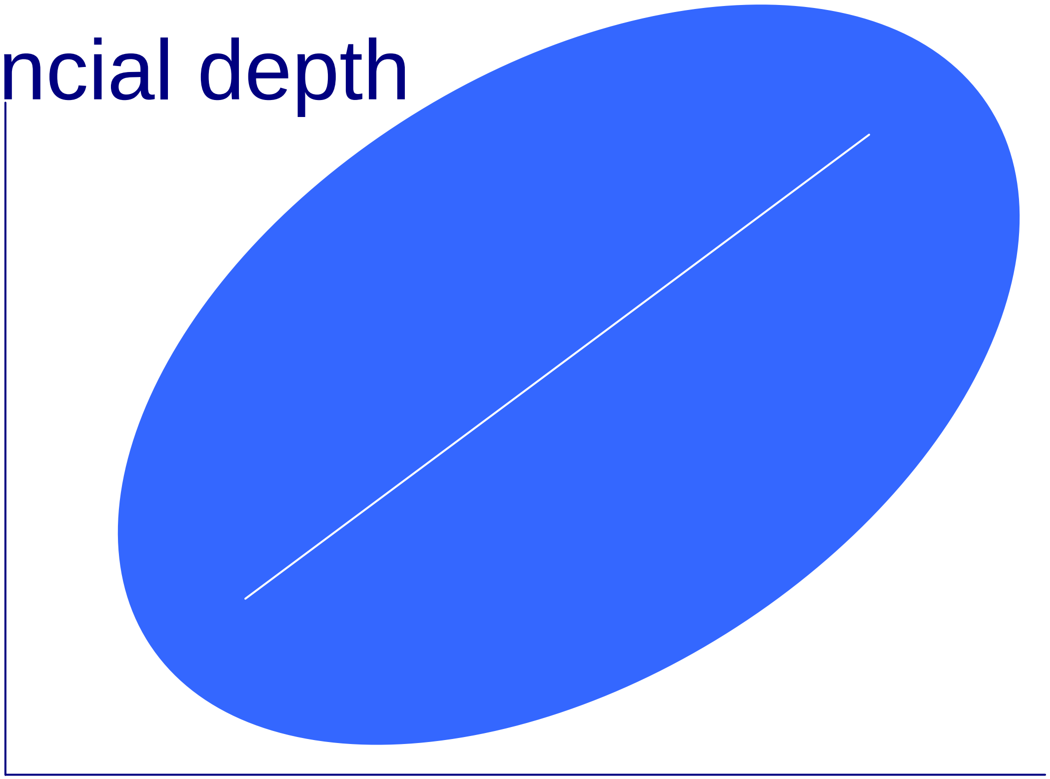
But, some observations

- Quartile 1 – financially deepest countries
  – 2/3 have average pc GDP in 95$ > $10,000
- Quartile 4 – financially shallowest
  – No OECD countries
  – Half are African
  – All with average pc GDP in 95$ < $2500



USA
CHE
MYS
THA
FIN
VNM
ETH
BDI
PER
LBY
SDN
2.00
1.50
1.00
0.50
0.00
4.00
6.00
8.00
10.00
12.00
Private Credit / GDP
Log of GDP per capita (2000 USD)

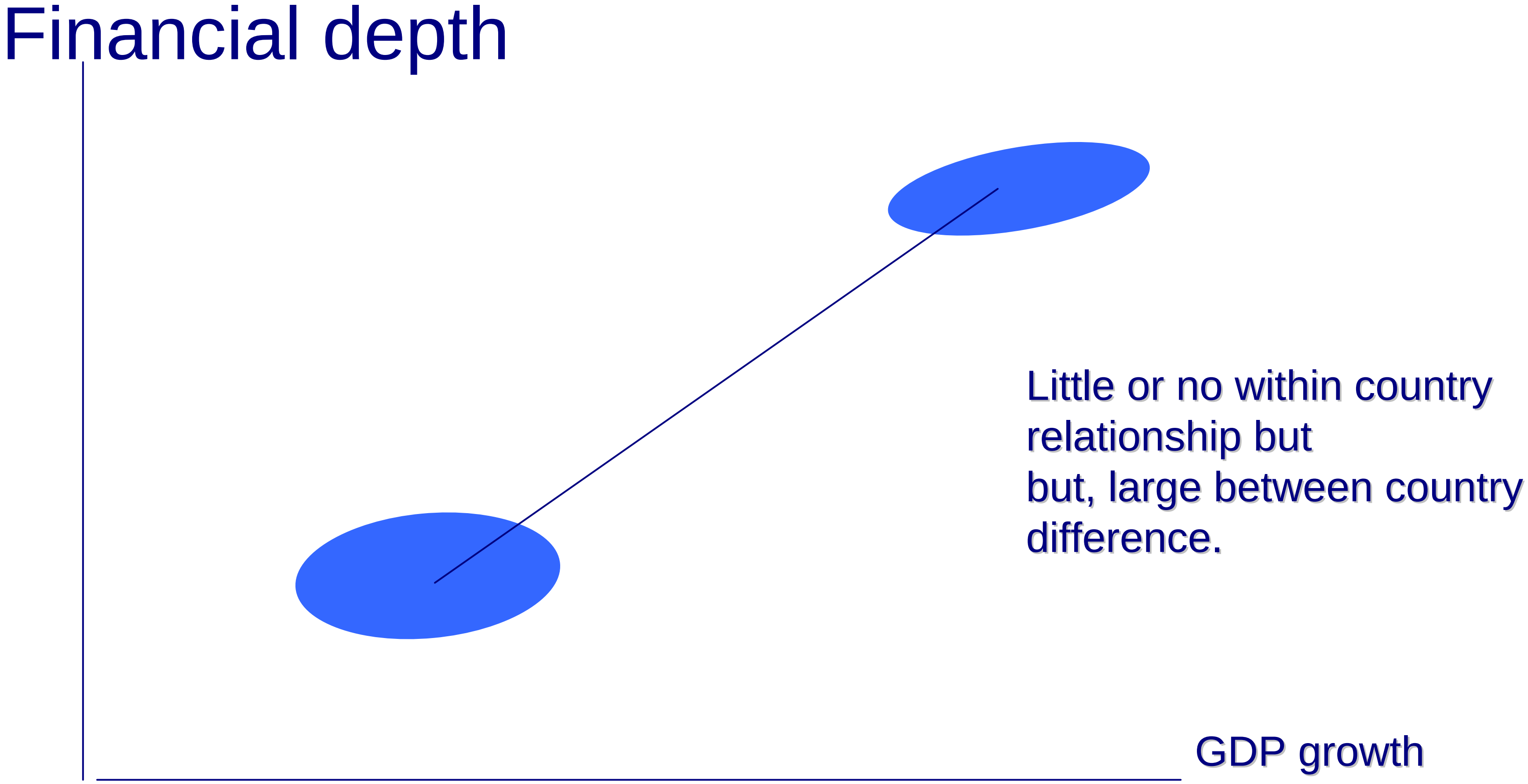
Problems with cross country evidence



Large variation
For given level of
GDP

Are we observing
cause of GDP
or
increased
demand for
financial
services?

Problems with panel evidence



Are we making right inferences?

Typical result --- A 10 percentage point increase in broad money to GDP ratio → GDP growth rate increase almost 1.0 percentage points

Note that about one-third of countries have ratio <40%, 40-60% and >60%

WOW! –

- Do we believe magnitude?
- It seems to make growth policy very simple and easy to pursue.

Rolling regression results

- Finance effect on growth in panels dominated by about 30 countries that are highly developed finance sectors (M3/GDP > 70%).
- For other countries – the relationship is only measured imprecisely.

Should we reject the consensus?

- The panel analyses of the 90s established an important consensus and directed research efforts
  - But, the econometric results are not to be taken seriously.
- Wait, I am not recalling my own research but suggesting that we acknowledge limitations
- Nevertheless, research is useful means of establishing consensus but not a guide to policy.

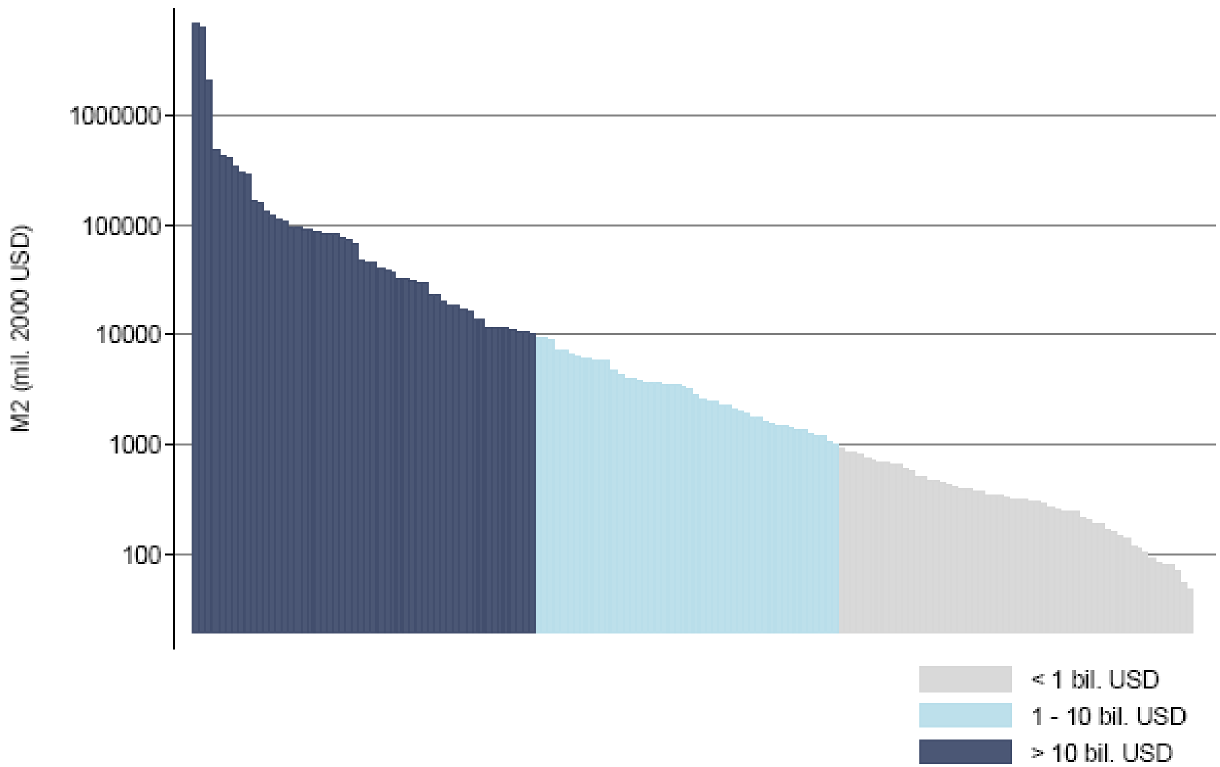
Are country comparisons unfair?

- A country is a country is a country
- Or is it appropriate to treat all 180 countries of the world alike (from China to Fiji and even smaller). Studies do not generally weight by size.
- A financial system may need to reach a minimal size to be effective.
- And for many countries, the entire financial system is smaller than a small bank in the US.

Majority of countries have financial system that is under $10 billion

Inferences about influence on growth might depend on scale effects

(b)



Money Supply 2000-04 average, 159 countries
A. D-K

Look at countries – What happens when countries deepen?

- Rather than drawing inferences from dubious regression coefficients
- Let's look at large financial sector deepenings
  - Decade to decade increase in Credit/GDP ratio

- Do countries with large deepening of financial sector grow more than others
  - Growth > world average for decade by 1% point.

Credit growth from 60s to 70s

5 Largest		20 largest ΔCredit ratio	
ΔCredit ratio	%ΔCredit ratio	* Growth in 70s	# Growth in 80s
Japan *# Panama Spain # Brazil *# Israel #	Dominican R.* Bolivia Brazil *# Nepal # Malaysia *#	10	12

Credit growth from 70s to 80s

5 Largest		20 largest ΔCredit ratio	
ΔCredit ratio	%ΔCredit ratio	* Growth in 80s	# Growth in 90s
Chile *# Malaysia *# Switzerland UK* Jordan	Chile*# Bangladesh # Brazil Malaysia*# Malawi	10	5

Credit growth from 80s to 90s

5 Largest		20 largest ΔCredit ratio	
ΔCredit ratio	%ΔCredit ratio	* Growth in 90s	# Growth in 00s
Thailand* New Zealand# UK Malaysia* US	New Zealand # Bolivia Indonesia * Malawi Belgium #	6	4

Turn the question around – Are large growth spurts preceded by financial deepening?

- Look at fastest growing countries in any 15 year period since 1960 (from Hausmann)

- Does the CREDIT to GDP change noticeably prior to the growth spurt?

	Pre 3	Pre 2	Pre 1	Spurt 1	2	3
Japan 1975			74	79	125	129
Greece 1975			16	17	21	33
Korea 1996	41	40	53	57	63	73
Thailand 1996	22	37	47	62	102	148
Syria 1981 (M3)		27	30	38	42	53
Spain 1975			36	47	68	80
Algeria 1977			21	38	48	52
Cameroon 1986	12	14	15	23	29	24
Ireland 2002	27	38	44	45	84	113
Portugal 1975			52	68	74	78
Chile 1978	10	8	22	68	59	49
Brazil 1980		17	17	40	53	45

Credit to GDP ratio in five year period of growth spurt and before and after

Credit deepenings and growth spurts - Conclusions

- Big deepenings are sometimes but not often associated with growth spurt
- Growth spurts concurrent with financial deepening – simultaneity is big issue.
- Only weak indication of deepening in advance of growth spurt.

- Where to now?
  - More econometrics ?
  - Modelling of joint relationships
  - Studies of channels of influence

Understanding financial deepening

- What is it? - Growth in credit, bank assets, money supply in excess of GDP.
- Remember that macroeconomists looked at this differently –
  - Excess credit/money growth is inflationary
- Growth economists look at a longer term phenomenon
  - But, is it long enough.
  - Easterly notes that literature uses 1960 when WB data starts – But,
    - correlation of p.c. income in 1960 and 1999 is 0.87
    - General growth slowdown around developing world in after 1980 compared to 60s and 70s.

Short run / long run

- Possible that panel data sets just do not have enough data (45 years) to truly look identify long run relationships.
- Short run effects might dominate
  - Within country short run effects – credit growth is inflationary
  - Crisis literature – credit deepening often precursor to banking crisis

Important to examine deepening experiences

Difficult to distinguish inflationary or de stabilizing credit boom from salutary deepening

This is a current issue

- Is the low interest rate environment that followed the dot com crash a credit deepening or a credit boom?
- Is the deepening going on in emerging market economies problematic or a dangerous credit boom

Little work examines deepening experiences

- Monetary policy inflation concerns and growth studies have not merged.
  - Peculiar because development economists are concerned with no-growth traps (the saga of Africa). Growth spurts and financial deepening are the other side of same coin.
- Growth research has moved in other directions

Growth literature has merged with research on institutions

1. Large interest in role of institutions –
   a) Deep origins - AJR
   b) As effected by good policy – LLSV

2. Look within the black box
   financial depth → → *growth*
   Starts with R-Z and others

1. Literature on institutions

- Acemoglu (AJR)
  - Emphasis on historical antecedents
  - Diseases, laws brought to the colonies 500+ years ago set out a path
  - Even if true, depressing - predestination in economics
- LaPorta, Shleifer et al (LLSV)
  - Emphasis on legal institutions and rights
  - Growth (and certainly financial institutions) require
    - Reliable legal institutions for dispute resolution
    - Clearly defined property rights, bankruptcy law
  - These institutional structures can be put in place by good policy.

Law finance growth nexus

- Clearly, financial deepening interacts with other things
  - Good laws
  - Low inflation
- Haselmann – Wachtel on transition countries tires to tie pieces of three-way nexus together
  - Good laws, legal enforcement related to lending behavior
  - Bank intermediary activity – amount and type – related to legal structure, collateral laws and perceptions of enforcement.
  - And importantly, in transition countries, clear recent history of legal improvements.

2. Strengthening the nexus - Industry studies look in black box

- Rajan Zingales (the pioneers)

  showed that industries that are heavy users of external finance, grow more rapidly in countries with deeper financial institutions
- Similarly, industries with lots of small firms, grow more rapidly in countries with deeper financial institutions
- Wurgler – a test of allocation role of finance:

  More reallocation of investment to growing industries in countries with deeper financial institutions

Basic questions remain…

- Question often posed:

Does the type of financial system matter?

Are bank centered or market systems better for growth?

  – Silly question particularly as the differences are rapidly disappearing.

- However, it leads to another question

What is ‘finance’ and how does it work?

  – We focus on banks and credit only because we find it easy to measure activity. But, there is more to ‘finance.’

What does financial sector do?

- Screen projects – lower costs of evaluation
- Monitor projects – ease of governance
- Mobilize saving
- Opportunity for risk management
- Provide liquidity

Varieties of financial experience

- Entrepreneurial finance

  Self finance, micro lending, trade credit, angel financing

- Bank lending

  Short term, collateralized, equity interests

- Capital markets

  Venture capital, private placements, direct debt, traded debt or equity

Are we looking for the nexus in the right places?

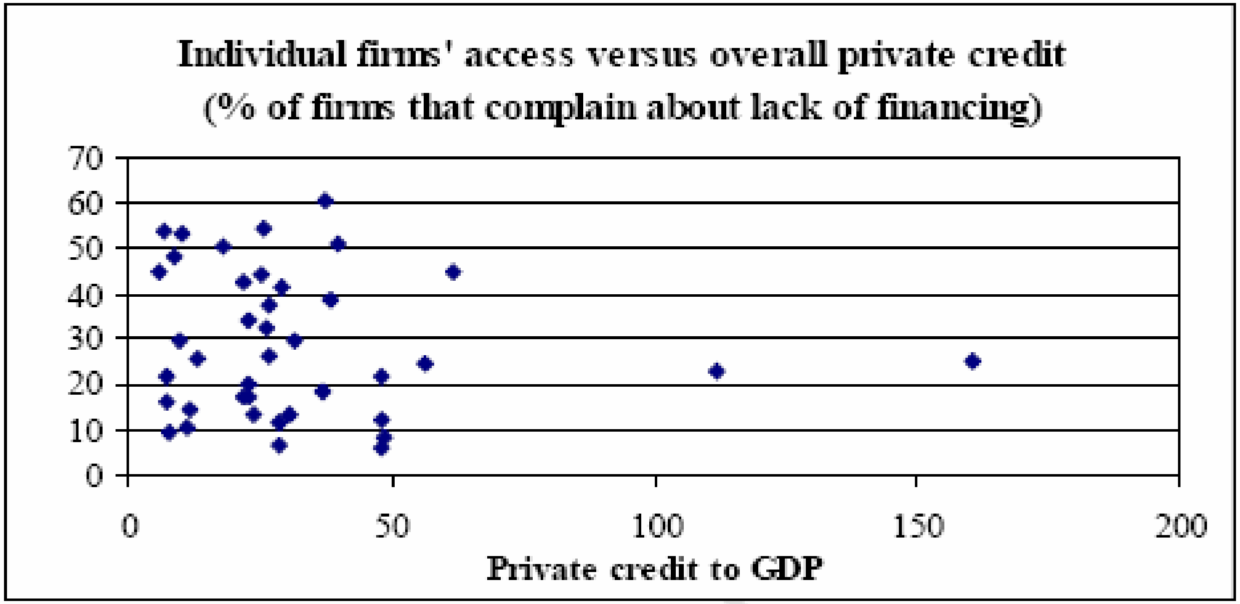
- The variety of financial experiences is wide.
- If informal and often unmeasured channels are working, then maybe credit ratios provided to us by the World Bank data might be quite irrelevant.

- Research is moving away from credit aggregates to….

Where to look for the finance growth nexus

- Entrepreneurship
  - Hard to measure ease of access to entrepreneurial finance.
  - Can measure whether institutions are welcoming – e.g. how hard is it to register a company? How long does it take?
- Self finance, trade finance
  - Unmeasured, unregulated sectors of industry important sources of growth though there is research on role of factoring
- Do small firms, entrepreneurs do better in countries with better financial structures?

- Sectors where finance-institutions relationship important
  - Legal protections that make sectors work
  - Cultural – legal framework – trust.


Individual firms' access versus overall private credit
(% of firms that complain about lack of financing)
70
60
50
40
30
20
10
0
0
50
100
150
200
Private credit to GDP

Some issues to explore

- Access to finance
- Role of family dominated firms and banks and their relationship.
- Role of non-traditional financial institutions

- Access and variety maybe related to financial depth. But they are different issues – and fundamentally more important than just financial depth.

Another issue to explore Globalization

- Will globalization of financial markets solve or worsen small country problems?
  - Firms can access finance in global centers
  - But, market segmentation makes it hard for the smaller firm.

- What has Euro area integration done for the access of firms to finance?

Recap and conclusion

- The emergence of the finance growth nexus in the last 15 years was a major step -- it is an important element of the canon of our beliefs
- As is often the case, there are some peculiarities in the history – the empirical research that brought the issue to the forefront may have been oversold.
- But it was important.

Where are we going?

There is much room for research that fleshes out the nexus –

- How it works? What kinds of financial activity effect growth and how does finance wend its way through the business sector.
- How it interacts with institutions? To what extent does finance rely on deep institutions or good intuitional policy (courts, regulators, etc.)

A warning

The difference between policy studies and studies of causation is large.

- Do not draw policy inferences from causal studies. Yes, financial deepening *causes* growth. But, increasing credit is not a good policy prescription.
- Policy making – the devil is in the sequencing – what has to be in place *before* credit begins to expand.

Conclusion

When invited here – I though I would spin the tale of a tired but important research agenda that established our nexus but was essentially played out.

A premature and incorrect conclusion.

The nexus is alive and kicking as research to examine the connections has a long way to go –

Which institutions *make* the nexus happen and how?

We have a lot to learn…