EC569 Economic Growth
Seminar 6

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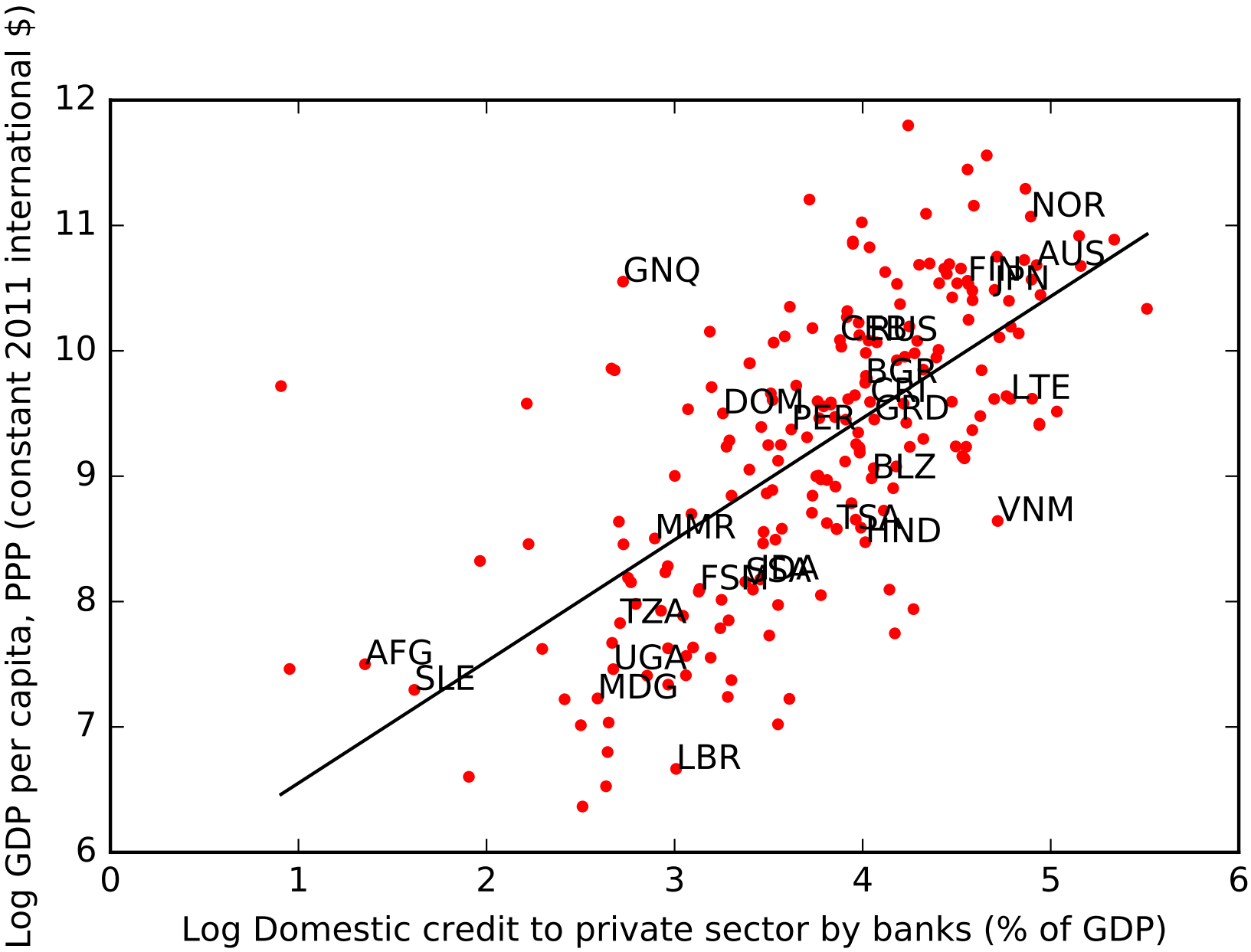
Log GDP per capita, PPP (constant 2011 international $)
Log Domestic credit to private sector by banks (% of GDP)
12
11
10
9
8
7
6
0
1
2
3
4
5
6
NOR
AUS
GNQ
FIN
JPN
CHE
BGR
LTE
DOM
CRI
PER
GRD
BLZ
VNM
TSA
MMR
IND
FSM
TZA
AFG
UGA
SLE
MDG
LBR

Financial system

Weil (2013):
Financial system directs capital towards its most productive use by

- evaluating potential returns from different investment projects
- pooling the savings of many individuals to allow for large investments
- monitoring the outcomes of investment projects to make use investors are properly compensated
- spreading the risk of any one project among a large number of individuals

Financial system eases transactions (more specialization)

Beck, T., Levine, R., & Loayza, N. (2000). Finance and the Sources of Growth. Journal of financial economics, 58(1-2), 261-300.

Financial development $\Rightarrow$ productivity $\uparrow$

- reduces the costs of acquiring information about firms and managers (Gertler, 1988)
- lowers the costs of conducting transactions (Levine, 1997)
- provides more accurate information about production technologies and exerts corporate control (Boyd and Prescott, 1986; Greenwood and Jovanovic, 1990; King and Levine, 1993b)
- facilitates risk management, improves the liquidity of assets available to savers, and reduces trading costs
    - encourages investment in higher-return activities (Obstfeld, 1994; Bencivenga and Smith, 1991; Greenwood and Smith, 1997).

Financial development $\Rightarrow$ capital accumulation $\uparrow$

- Higher returns ambiguously affect savings rates, due to well-known income and substitution effects.
- greater risk diversification opportunities have an ambiguous impact on savings rates (Levhari and Srinivasan (1969))

Financial intermediation and economic development

Channels through which financial intermediation affect economic development

- productivity increase
  - allocation of savings to productive projects (Schumpeter (1911))
- capital accumulation
  - higher saving rates
  - attracting foreign capital

This paper

Empirically assess the impact of financial intermediaries on

- private savings
- capital accumulation
- productivity growth
- overall economic growth

Measures of financial intermediary development

- Private Credit: the value of creditors by financial intermediaries to private sector divided by GDP
- Liquid Liabilities: currency plus demand and interest-bearing liabilities of financial intermediaries and nonbank financial intermediaries, divided by GDP
- Commercial-Central Bank: the ratio of commercial bank domestic assets divided by commercial bank plus central bank domestic assets.

Estimation, cross-section

$$Y_i = \alpha + \beta \text{Finance}_i + \gamma' X_i + \epsilon_i$$

X : Conditioning information set (simple)

- Initial real per capita GDP
  - control for convergence
- years of schooling
  - control for human capital

Conditioning information set (policy)

- inflation rate and ratio of government expenditure to GDP
  - control for macroeconomic stability
- sum of exports and imports as a share of GDP and the black market premium
  - control for degree of openness

Instruments

- legal origin: England, France, Germany, or Scandinavia
- affects creditors' rights, contract enforcement, accounting standards
- English system: more investor friendly
- French system: least investor friendly

Estimation, panel

$$y_{i,t} = \alpha' X^1_{i,t-1} + \beta' X^2_{i,t} + \mu_i + \lambda_t + \epsilon_{i,t}$$

$$y_{i,t} - y_{i,t-1} = \alpha'(X^1_{i,t-1} - X^1_{i,t-2}) + \beta'(X^2_{i,t} - X^2_{i,t-1}) + (\epsilon_{i,t} - \epsilon_{i,t-1})$$

System GMM

Results

- robust, positive link between financial intermediary development and both real per capita GDP growth and total factor productivity growth.
- ambiguous results on the link between financial development and physical capital growth and savings
  - a positive and significant relation between financial intermediary development and the growth rate of capital per capita
  - alternative measures of financial development: inconsistent results

Table 2: Financial intermediation and economic growth

	Cross-country data		Panel data	
	(1)	(2)	(3)	(4)
Constant	6.571	2.643	1.272	0.082
	0.006	0.527	0.250	0.875
Initial income per capita	− 1.971	− 1.967	− 1.299	− 0.496
	0.001	0.001	0.001	0.001
Average years of schooling	1.936	1.548	2.671	0.950
	0.008	0.078	0.001	0.001
Openness to trade		0.931		1.311
		0.042		0.001
Inflation		4.270		0.181
		0.096		0.475
Government size		− 1.207		− 1.445
		0.132		0.001
Black market premium		− 0.139		− 1.192
		0.914		0.001
Private Credit	2.215	3.215	2.397	1.443
	0.003	0.012	0.001	0.001
Hansen test	0.577	0.571		
Sargan test (p-value)			0.183	0.506
Serial correlation test (p-value)			0.516	0.803
Countries	63	63	77	77
Observations			365	365

- Financial intermediation $\Rightarrow$ economic development
- Mexico
  - Private credit $=$ 22.9% of GDP
  - Exogenously increase it to 27.5% (sample median)
  - $(\ln(27.5) - \ln(22.9)) \times 2.2 = .4$ percentage point increase in growth rate per year

Table 3: Financial intermediation and productivity growth

	Cross-country data		Panel data	
	(1)	(2)	(3)	(4)
Constant	3.527 0.065	− 1.189 0.717	2.473 0.001	− 1.611 0.033
Initial income per capita	− 1.266 0.001	− 1.171 0.001	− 1.244 0.001	− 0.353 0.001
Average years of schooling	1.375 0.028	1.241 0.060	3.043 0.001	1.174 0.001
Openness to trade		0.956 0.015		1.337 0.001
Inflation		3.223 0.096		− 0.415 0.033
Government size		− 0.647 0.286		− 0.431 0.088
Black market premium		− 0.191 0.861		− 1.003 0.001
Private Credit	1.500 0.004	1.986 0.021	1.332 0.001	0.296 0.001
Hansen test	2.036	3.472		
Sargan test (p-value)			0.205	0.401
Serial correlation test (p-value)			0.772	0.865
Countries	63	63	77	77
Observations			365	365

- financial intermediary development has a large, significant impact on productivity growth.
- The results for the panel regressions confirm the pure cross-country estimates.
- Mexico
  - Private credit $=$ 22.9% of GDP
  - Exogenously increase it to 27.5% (sample median)
  - $(\ln(27.5) - \ln(22.9)) \times 1.5 = .3$ percentage point increase in productivity growth rate per year

Table 4: Financial intermediation and capital growth

	Cross-country data		Panel data	
	(1)	(2)	(3)	(4)
Constant	8.448 0.004	8.349 0.093	– 1.273 0.219	5.694 0.001
Initial income per capita	– 2.075 0.001	– 2.225 0.001	– 0.933 0.001	– 0.070 0.701
Average years of schooling	0.663 0.427	0.628 0.559	0.985 0.055	– 0.340 0.552
Openness to trade		0.245 0.663		– 0.448 0.097
Inflation		4.196 0.236		0.445 0.360
Government size		– 1.619 0.082		– 3.229 0.001
Black market premium		0.304 0.826		– 0.748 0.001
Private Credit	2.832 0.006	4.038 0.012	3.435 0.001	3.005 0.001
Hansen test	6.747	3.039		
Sargan test (*p*-value)			0.166	0.316
Serial correlation test (*p*-value)			0.014	0.053
Countries	63	63	77	77
Observations			365	365

Financial intermediary development – physical capital accumulation

- less robust.
- In the pure cross-section results,
  - other measures of financial development (Liquid Liabilities and Commercial-Central Bank): not significant
- The panel results are more robust.
  - other measures of financial development: not significant
- Reject the null that no serial correlation.

Table 9: Alternative measures of financial intermediary development and capital growth, using cross-country data

Financial variable	Coefficient	*p*-value	Hansen test
Panel A: Regressions using the simple conditioning information set			
Liquid Liabilities	– 0.345	0.767	4.693
Commercial Central Bank	– 1.046	0.832	4.578
Private Credit	2.832	0.006	6.747
Panel B: Regressions using the policy conditioning information set			
Liquid Liabilities	0.511	0.562	4.605
Commercial Central Bank	1.018	0.755	4.722
Private Credit	4.038	0.012	3.039

Table 10: Alternative measures of financial intermediary development and capital growth, using panel data

Financial variable	Coefficient	*p*-value	Sargan set (*p*-value)	2nd order serial corr. test (*p*-value)
Panel A: Regressions using the simple conditioning information set				
Liquid Liabilities	3.667	0.001	0.192	0.013
Commercial Central Bank	8.848	0.001	0.258	0.172
Private Credit	3.435	0.001	0.166	0.014
Panel B: Regressions using the policy conditioning information set				
Liquid Liabilities	5.162	0.001	0.494	0.076
Commercial Central Bank	6.493	0.001	0.338	0.169
Private Credit	3.005	0.001	0.316	0.053

Table 11: Financial intermediation and private saving

	(1)	(2)
Constant	− 0.102	0.474
	0.387	0.001
Real per capita GPDI	0.041	0.000
	0.005	0.992
Growth rate of real per capita GPDI	1.378	0.531
	0.001	0.001
Real interest rate	0.172	− 0.101
	0.282	0.130
Terms of trade	− 0.024	− 0.029
	0.534	0.094
Old dependency ratio	− 0.313	− 0.940
	0.170	0.001
Young depencency ratio	0.012	− 0.300
	0.884	0.001
Urbanization ratio	− 0.073	0.107
	0.054	0.010
Government Saving	− 0.129	− 0.273
	0.527	0.001
Inflation	0.039	− 0.327
	0.733	0.001
Private Credit	0.085	0.021
	0.027	0.224
Hansen test	0.708	
Sargan test (*p*-value)		0.311
Serial correlation test (*p*-value)		0.335
Countries	61	72
Observations		247

Financial intermediation and private saving

- cross-section: significant but not strong
- Mexico
  - Private credit = 21.7% of GDP over the period 1971–1995
  - Exogenously increase it to 29.1% (sample median)
  - private saving: 20% to 20.6%
- The panel estimations: insignificant impact of Private Credit on private savings rates.

Evidence on causal impact of financial development on economic growth

- The presence of good financial system preceded growth (King and Levine (1993))
- In the U.S., states began loosening branching restrictions.
  - faster economic growth on the states that liberalized banking
  - total quantity of banking credit did not rise
  - increase in efficiency (Jayaratne and Strahan (1996))
- in countries with well developed financial system, industries that depend on the financial system do well (Rajan and Zingales (1998))
- legal origin as instruments (GMM estimation) [Beck, Levine, and Loayza (2000)]
  - legal origin: England, France, Germany, or Scandinavia
  - affects creditors' rights, contract enforcement, accounting standards
  - English system: more investor friendly
  - French system: least investor friendly