1 The (mis)allocation of capital

- Markets are supposed to allocate capital in such a way as to equate the marginal product of capital in all its uses, to the market interest rate, which is also the rate that is paid to savers for their savings.

- How well do real markets in developing countries approximate this ideal?

- Not an easy question to answer convincingly, because the marginal product is not easy to measure

- Here we suggest ways of answering this question without necessarily estimating the marginal product?

Are firms credit-constrained?(based on Banerjee-Duflo (2002)

- Indian banks, both private and public, are required to lend 40% of their portfolio to the priority sector.

- In January 1998 firms India with fixed capital between Rs. 6.5 million and Rs. 30 million became eligible for (possibly subsidized) priority sector credit from banks. Firms below Rs.6.5 million were already eligible.

- In early 2000, the limit was lowered back to Rs. 10 million.

- We study the impact of newly becoming eligible/ineligible for subsidized credit on the growth rate of borrowing, sales and profits using firm level data that we collected from a single bank.

1.1   Theory

- The fact that firm absorbs more subsidized credit does not mean that it is credit constrained.

- To be credit constrained you should be willing to borrow more at the interest rate you pay on the marginal dollar you borrow (not necessarily the subsidized rate, which may be infra-marginal).

- Unconstrained firms will use subsidized credit to pay down their existing debt:

  - they only expand production once they only have subsidized debt.

  - their production(sales) will grow slower than their credit.

- Constrained firms will use subsidized credit to expand sales.

1.2 Estimation

- We will mainly estimate

$$
\begin{aligned}
y_{it} - y_{it-1} &= \alpha_y BIG_i + \beta_y POST_t \quad (1) \\
&\quad + \gamma_y BIG_i * POST_t + \epsilon_{yit}, (2)
\end{aligned}
$$

  for $y =$ logcredit, logrevenue, logprofits, etc; BIG represents newly eligible firms; the dummy $POST$ represents the post January 1998 period or the post January 2000 period.

- We will also estimate the effect of credit on sales or profits by instrumenting credit by $BIG*POST$

Results

- Most firms stay where they were (Table 4)

- Credit to BIG firms grows faster in the POST period (Table 5)

- No change in the interest rate (Table 6)

- Firms appear to be credit constrained–sales grows almost as fast as credit (Table 6) suggesting that they are not using subsidized credit to pay off market borrowings.

- Sales grows at about the same rate at firms that have no market borrowing and at firms with some market borrowing (Table 7), confirming that there is little substitution of one type of credit by another

- Sales has an elasticity of .73 during the expansion and .75 during the contraction.

- Profit has an elasticity of 1.79 during the expansion and 1.89 during the contraction, implying that an extra rupee of credit increased profits net of interest by almost .70 rupees.

Conclusion

- Firms are clearly severely credit constrained.

- There is clearly a large wedge between the rates paid to savers and the marginal product of capital

- This does not directly tell us about whether the marginal product is equalized in all uses.

- However it does suggest that people who have wealth would rather invest it than put in the bank, even if the investment is not the most productive.

Table 4

	Year					
	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
B. Proportion of cases where limit was not changed						
small	0.716	0.714	0.690	0.782	0.667	0.718
	(.05)	(.046)	(.043)	(.041)	(.048)	(.054)
medium	0.667	0.579	0.634	0.784	0.868	0.724
	(.098)	(.081)	(.076)	(.069)	(.056)	(.084)
big	0.600	0.722	0.667	0.750	0.783	0.778
	(.245)	(.109)	(.105)	(.09)	(.088)	(.101)

Table 5

| | Dependent variables | | |
	Any change in limit (dummy)	Increase in limit (dummy)	Decrease in limit (dummy)
	(1)	(3)	(4)
post	0.000	-0.026	0.026
	(.05)	(.052)	(.024)
big	-0.043	0.016	0.027
	(.052)	(.051)	(.041)
post*big	-0.022	0.050	-0.028
	(.087)	(.079)	(.044)
	487	487	487
Years in sample	96, 97, 98, 99	96, 97, 98, 99	96, 97, 98, 99

Table 6: Credit rationning: priority sector contraction

	granted interest rate$_t$ -granted interest rate$_{t-1}$	log(interest rate)$_t$ -log(interest rate)$_{t-1}$	dummy for interest rate decline	log(turnover/limit)$_{t+1}$ log(turnover/limit)$_t$
	(1)	(2)	(3)	(4)
A. Sample with change in limit				
post2	-0.146	-0.008	0.225	-0.051
	(.167)	(.013)	(.068)	(.272)
big2	-0.077	-0.004	0.039	0.339
	(.188)	(.011)	(.14)	(.174)
post2*big2	0.206	0.013	-0.036	-0.134
	(.385)	(.026)	(.184)	(.232)
	203	203	203	52

Table 7: Credit constraints: Effect of the reform on sales, sales to loan ratios, and profits (OLS regressions)

	Priority sector expansion: 1997-2000				
	Log(sales)$_t$-log(sales)$_{t-1}$		log(sales/loans)$_t$	Log(cost)$_t$	Log(profit)$_t$
	Complete Sampe without subst		log(sales/loans)$_{t-1}$	-log(cost)$_{t-1}$	-log(profit)$_{t-1}$
	(1)	(2)	(3)	(4)	(5)
1. Sample with Changes in limit					
post*big	0.194	0.168	-0.126	0.187	0.538
	(.106)	(.118)	(.094)	(.097)	(.281)
	152	136	152	151	141
2. Sample without Change in limit					
post*big	0.007	0.022	0.016	0.005	0.280
	(.074)	(.081)	(.065)	(.064)	(.473)
	301	285	301	301	250

Table 7: Credit constraints: Effect of the reform on sales, sales to loan ratios, and profits (OLS regressions)

	Priority sector contraction: 1999-2002				
	Log(sales)$_t$-log(sales)$_{t-1}$		log(sales/loans)$_t$	Log(cost)$_t$	Log(profit)$_t$
	Complete Sample	without subst	log(sales/loans)$_{t-1}$	-log(cost)$_{t-1}$	-log(profit)$_{t-1}$
	(1)	(2)	(3)	(4)	(5)
1. Sample with Changes in limit					
post2*	-0.403	-0.387	0.143	-0.374	-0.923
big2	(.207)	(.196)	(.206)	(.279)	(.639)
	168	150	169	168	151
2. Sample without Change in limit					
post2	-0.092	-0.045	-0.101	-0.048	0.170
*big2	(.108)	(.128)	(.088)	(.086)	(.56)
	401	380	401	399	321

Table 7: Credit constraints: Effect of the reform on sales, sales to loan ratios, and profits

	Dependent variables				
	Log(sales)$_t$-log(sales)$_{t-1}$		log(sales/loans)$_t$	Log(costs)$_t$	Log(profit)$_t$
	Complete Sample	le without substi	log(sales/loans)$_{t-1}$	-log(costs)$_{t-1}$	-log(profit)$_{t-1}$
	(1)	(2)	(3)	(4)	(5)
A. Sample with Changes in limit					
post*big	0.238	0.235	-0.123	0.205	2.018
	(.153)	(.162)	(.256)	(.151)	(.467)
post*med	0.182	0.146	-0.116	0.183	-0.006
	(.121)	(.134)	(.088)	(.109)	(.194)
post2*big	-0.421	-0.400	0.156	-0.384	-0.765
	(.197)	(.186)	(.204)	(.279)	(.662)
post2*med	-0.091	-0.095	0.075	-0.072	0.527
	(.113)	(.115)	(.188)	(.112)	(.354)
	215	193	216	215	192

Table 8: Effect of working capital loans on sales and profit, IV and OLS estimates

	Dependent variables				
	2SLS	2SLS	2SLS	2SLS	OLS
	Sample with change	Sample with change	Sample with change	Complete sample	Complete sample
	1996-1999	1998-2001	1996-2001	1996-2001	1996-2001
Regressor:	(1)	(2)	(3)	(4)	(5)
A. log(sales$_{t+1}$)-log(sales$_t$)					
log(working capital limit_t)	0.75	0.73	0.76	0.93	0.21
-log(working capital limit_t-1)	(.37)	(.35)	(.32)	(1.12)	(.07)
observations	152	168	215	718	718
B. log(cost$_{t+1}$)-log(cost$_t$)					
log(working capital limit_t)	0.72	0.68	0.70	0.67	0.24
-log(working capital limit_t-1)	(.36)	(.44)	(.4)	(.82)	(.07)
observations	151	168	215	716	716
C. log(profit$_{t+1}$)-log(profit$_t$)					
log(working capital limit_t)	1.79	1.89	2.00	2.08	0.15
-log(working capital limit_t-1)	(.94)	(1.49)	(.996)	(3.26)	(.2)
observations	141	151	192	598	598

Is the marginal product of capital equalized?(from Banerjee-Munshi (2001))

- If the credit market institutions function poorly, people will prefer to lend to relatively unproductive people who they trust, over a highly productive stranger. As a result social conections, as much as productivity, will determine the allocation of capital.

- Exporters in the knitted garment industry in Tirupur, India, belong either to the local Gounder community or are Outsiders. The Gounders are reputed to be cash rich.

- Our strategy is to compare the investment and production behavior of Gounders and Outsiders, based on our survey data. Essentially all we do is to compare means and growth rates, after controlling for cohort effects and years of experience.

Results

- Gounders who start firms start with almost three times as much fixed capital as the Outsiders

- Gounders own more fixed capital, at all levels of experience, though Outsiders catch up over time.

- Gounders own significantly more fixed capital per unit of production, at all levels of experience.

- Initially Gounders produce more, but the Outsiders have faster growth rate and produce significantly more after being in business for six years or more.

- Within each community those invest more produce more and grow at least as fast.

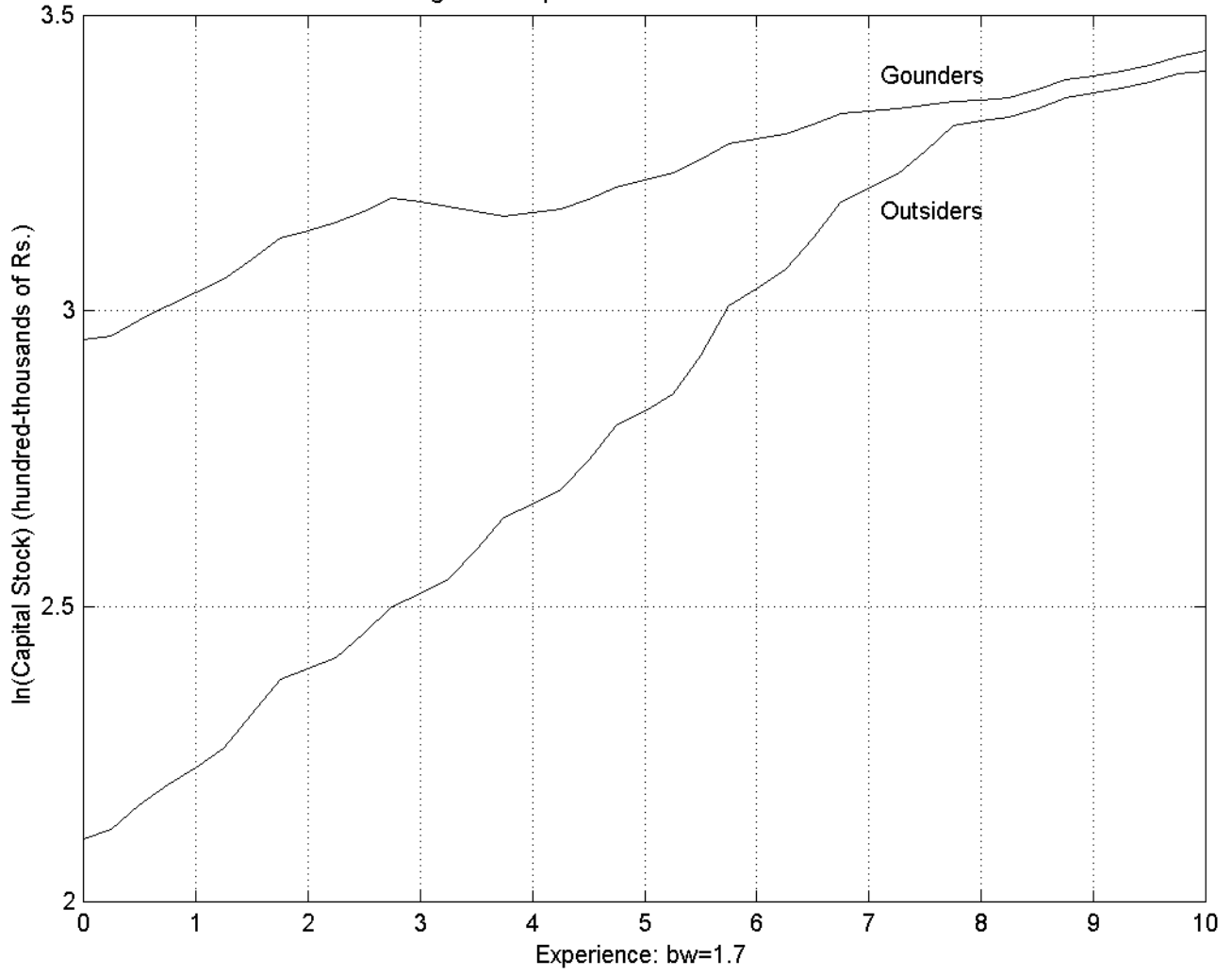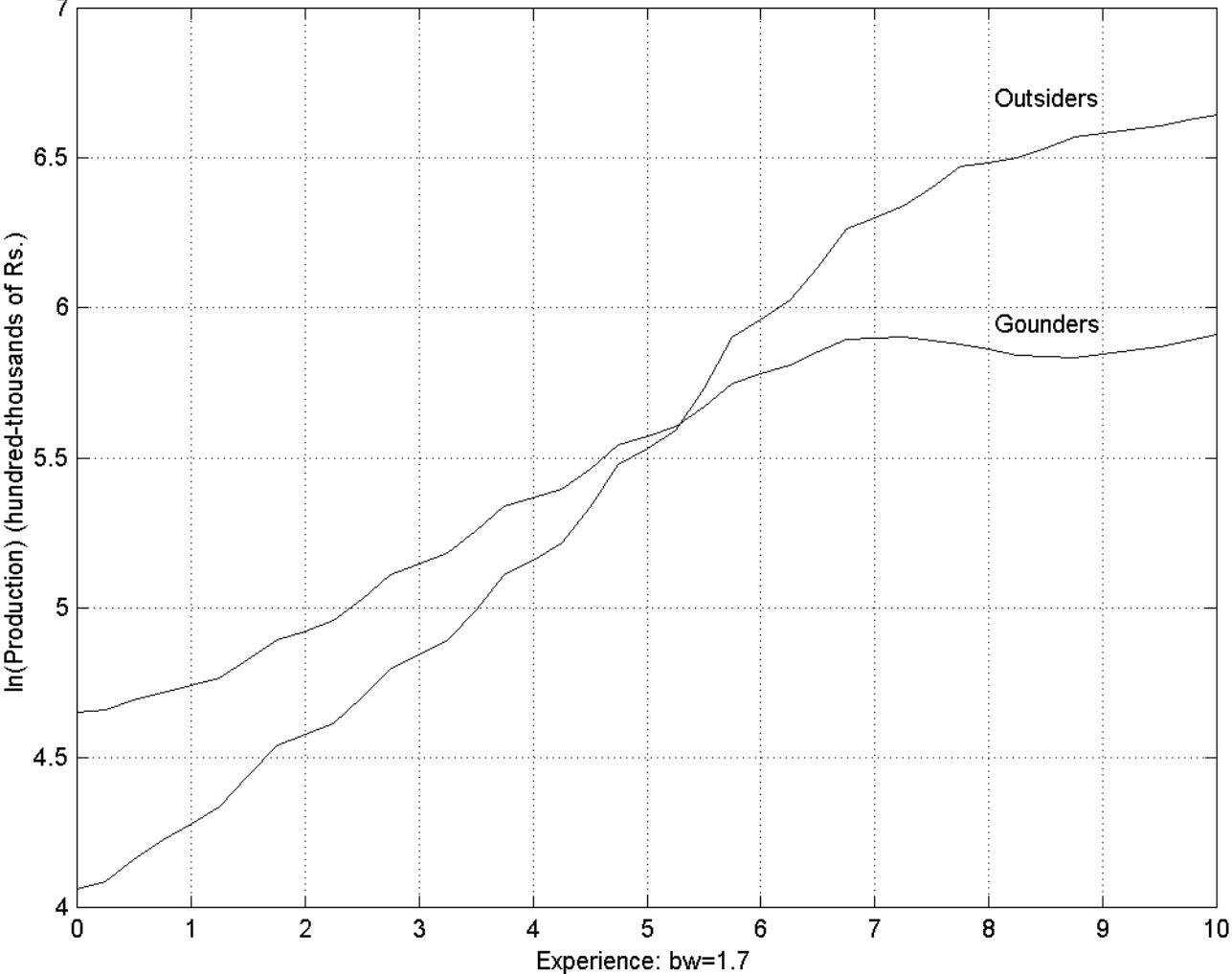Figure 1: Capital Stock - net cohort effects

Figure 2: Production - net cohort effects

Conclusions

- The contrast between within community and across communty patterns rules out any obvious exclusively technological explanation of this evidence, suggesting that community-specific factors must play a role.

- We can plausibly rule out community specific factors other than access to capital:

  - Gounders ought to have better access to inputs other than capital (sub-contracting, politically provided inputs). But then Gounders should have been more productive.

  - The fact that Gounders start big may result from better acess to buyers, but why would they invest more even when they produce less?

- We conclude that Gounders invest more despite being less good at making use of their capital.

1.2.1 Where does this leave us?

- The evidence clearly points to very large distortions in the capital market. As is well-known, this tends to the favor the perpetuation of inequality, because those who have wealth earn rents, and low levels of productivity, because capital is not with its most productive users.

- It raises questions about the usefulness of the neo-classical benchmark, as a guide to thinking about situation on the ground in developing countries.