The Community Origins of Private Enterprise in China

Ruochen Dai Dilip Mookherjee Kaivan Munshi Xiaobo Zhang

NBER, April 2019

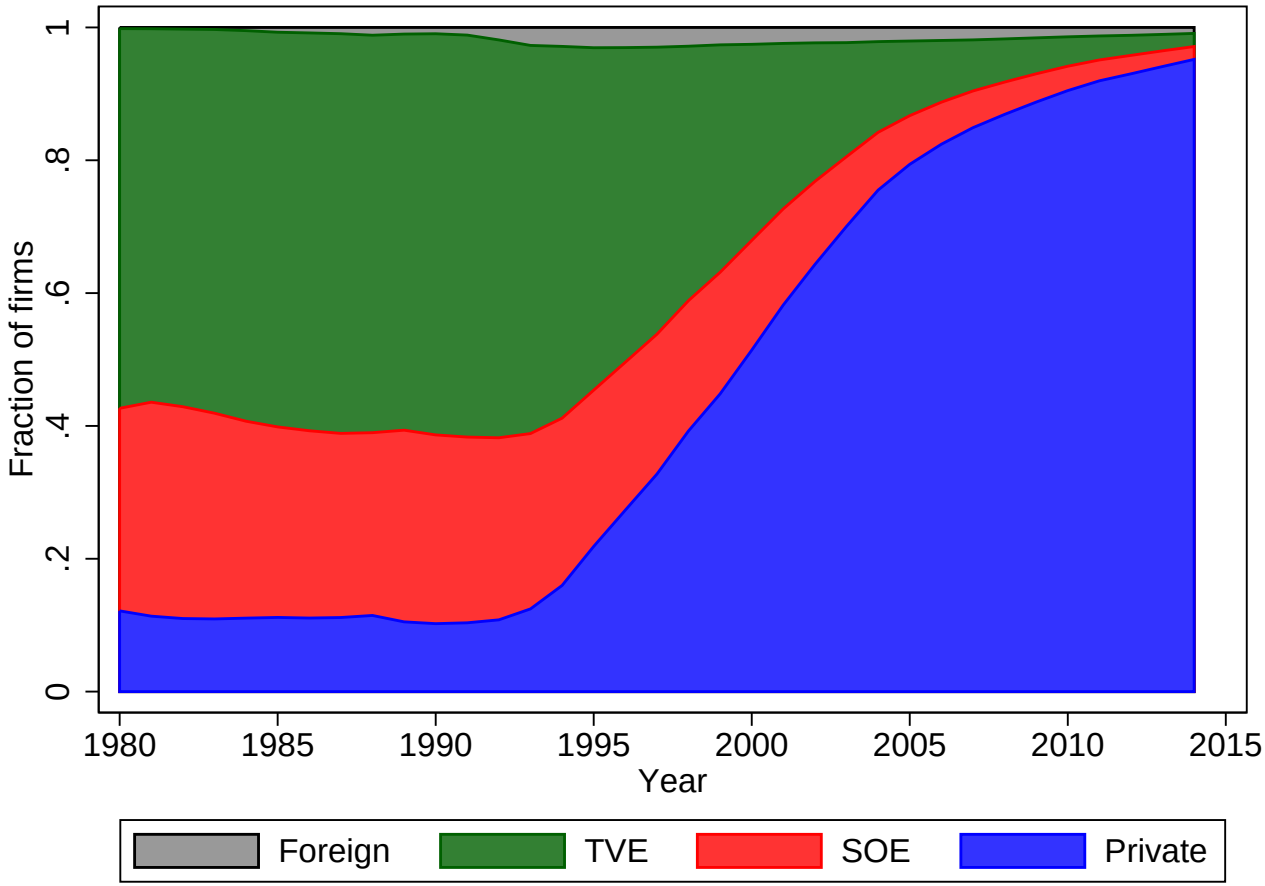
Introduction

- China has experienced the same degree of industrialization in three decades as Europe did in two centuries (Summers, 2007)
- This transformation began in the 1980's with the emergence of TVE's, and accelerated with the entry of private firms in the early 1990's
- Chinese growth occurred without the preconditions believed to be necessary for economic development e.g., effective legal systems or well functioning financial institutions (Allen *et al.*, 2005)
- Often argued that informal mechanisms based on reputation and trust must have played an important role (Allen *et al.*, 2005; Song *et al.*, 2011; Peng, 2004; Greif and Tabellini, 2017)
- Studies of production clusters; e.g. Fleisher *et al.* (2010) and Nee and Opper (2012) indicate that long-established relationships among relatives and neighbors (from rural origins) substituted for formal contracts

This Paper

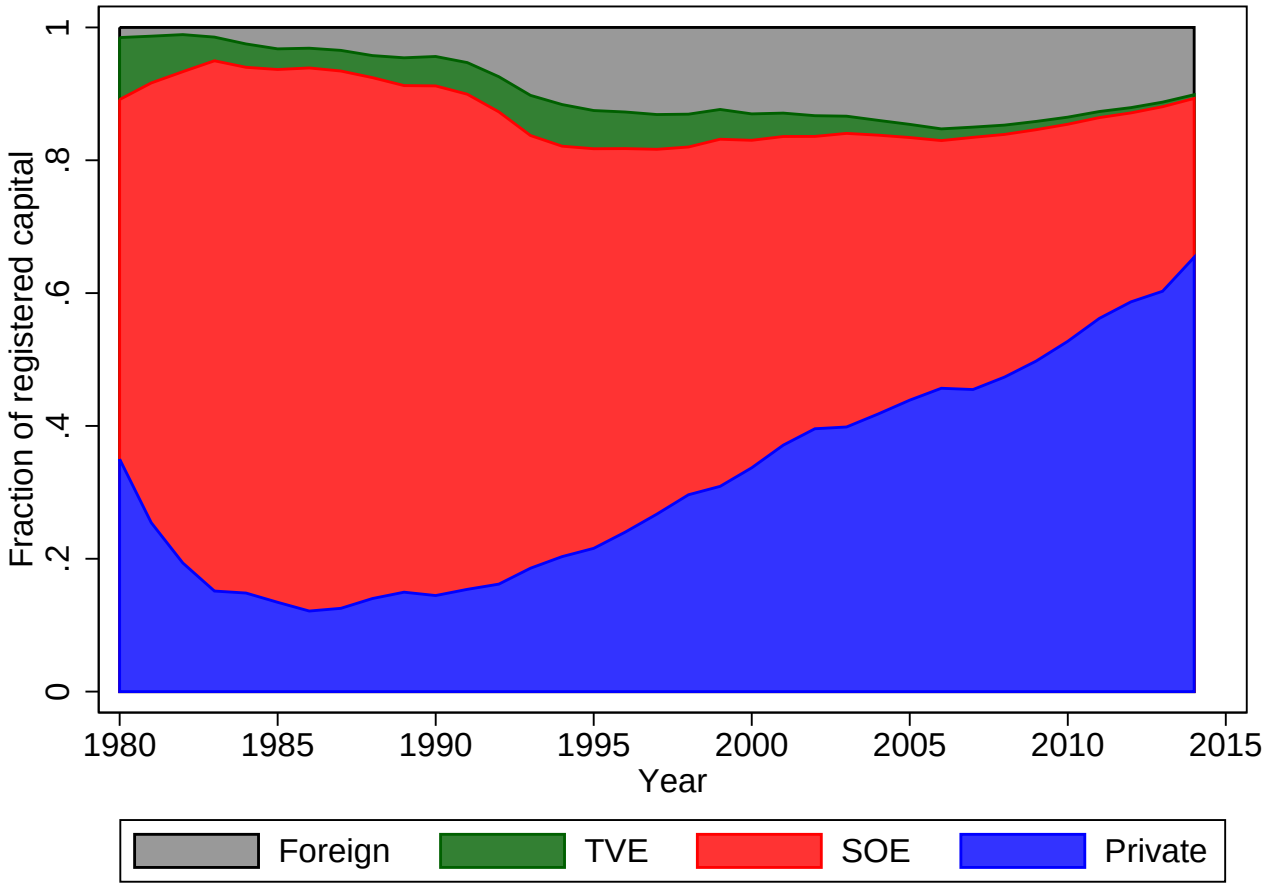
- In this paper we use comprehensive data (CAIS) covering the universe of registered firms in China, to study the role played by informal community-based networks in private entrepreneurship between 1990-2009
- The CAIS data includes *all* firms registered since 1978, and includes details of principal shareholders and legal representative (names, place of birth, age, education)

Distribution of Firms, by Type



Source: SAIC registration database.

Distribution of Capital, by Type



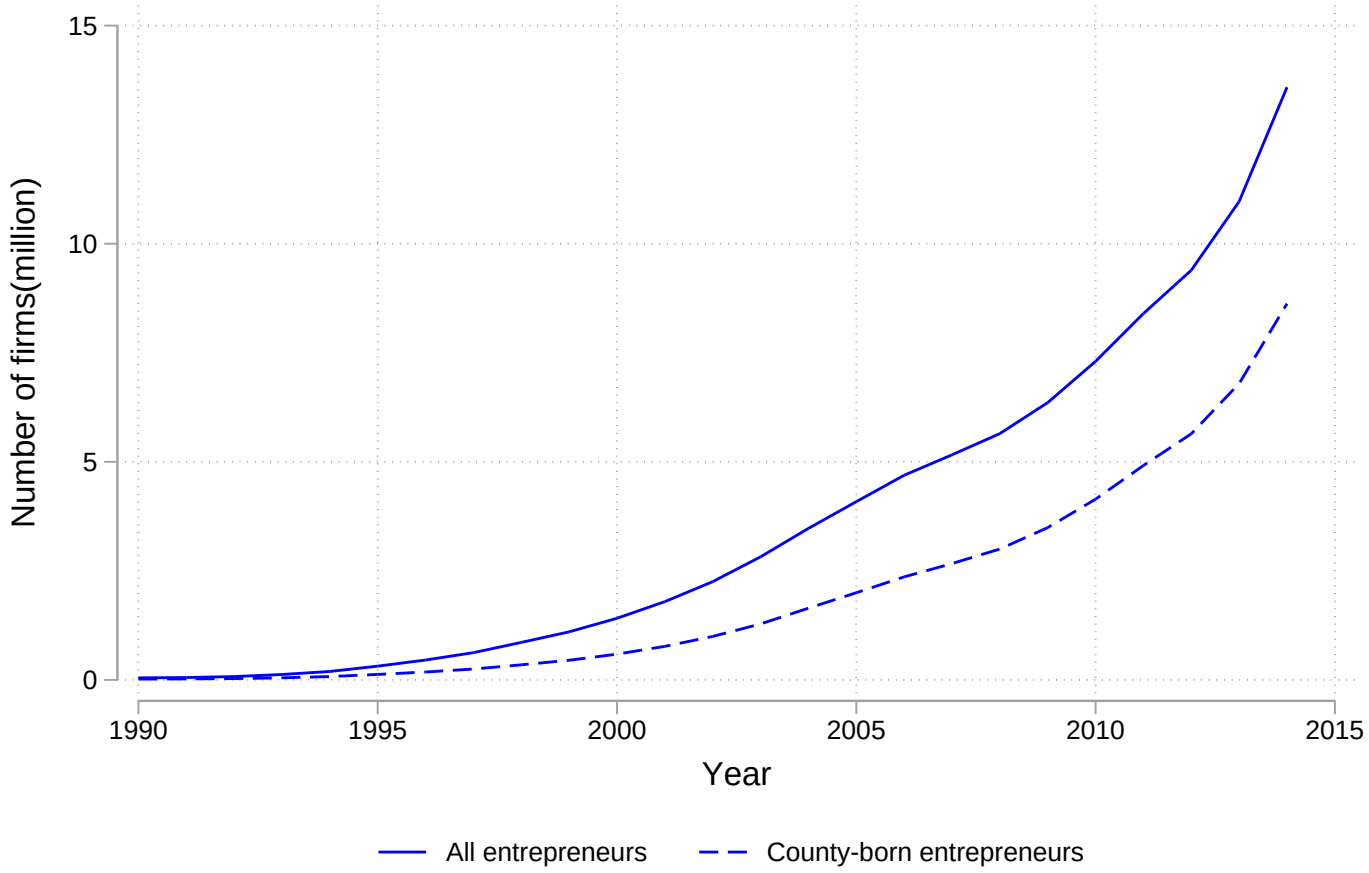
Source: SAIC registration database.

Our Hypothesis and Research Strategy

- Our hypothesis is that for county(non-city)-born entrepreneurs, community networks based on birthplace and clan (common surname/ancestor) played an important role in growth of private enterprise
- County-born entrepreneurs accounted for over 60% of entry and new capital invested in China

  (2000 counties and 250 cities in China)

Growth of Private Enterprise, by Birthplace of Entrepreneurs



Source: SAIC registration database.

Our Hypothesis and Research Strategy, contd.

- **Step 1:** Use 2010 China Family Panel Survey to argue that counties (unlike cities) with higher population density were more connected, more socially homogenous and exhibited higher levels of local trust
- **Step 2:**
  - Generate predictions using a model of network-based cooperation for how dynamics of firm entry, concentration and firm size for county-born entrepreneurs varies with population density of the birthplace
  - Test these predictions using CAIS data, supplemented by firm inspection data (for growth in firm size)
  - Argue these patterns are difficult to explain via alternative non-network-based mechanisms

Preview of Results

- Clan concentration, social interactions and trust within local community was higher in counties with higher spatial proximity/population density, not in cities (CFPS data)
- Faster growth of entry into private business by entrepreneurs from county origins with higher population density p (CAIS data)
- Consistent with predictions of the model, entrepreneurs from higher p origins:

  (a) concentrated more narrowly in fewer sectors and destinations
  (b) entered with lower firm sizes but grew faster thereafter

- Results are robust with respect to controls for origin demographics (population size, education, occupation structure) and for alternative mechanisms (e.g., destination-year dummies representing location/infrastructure/agglomeration/local government actions)

Relation to Literature

- The localized and enforceable trust that we focus on (within-community trust) is distinct from the generalized trust (in outsiders, sustained by internalized norms) that has received much attention in the culture literature (Alesina and Giuliano, 2015)
- Contrast with endogenous growth/spatial agglomeration literature: spillovers at any destination are restricted to entrepreneurs from the same birthplace-origin-cum-clan
- Consistent with literature on role of community networks in specific industries or locations in India (Banerjee and Munshi (2004), Munshi (2011))) and China ((Peng, 2004)), but results here pertain to all of China
- Firm misallocation literature ((Restuccia and Rogerson, 2008; Hsieh and Klenow, 2009, 2014)): we show high dispersion of firm size/productivity in China (across origin communities with varying population density), but this owes to differential within-community spillovers rather than policy-based wedges, with ambiguous normative implications

Step 1: Population Density and Trust, Underlying Hypothesis

- Population density/spatial proximity is positively associated with social connectedness, controlling for social homogeneity
  - Spatial proximity results in more frequent social interactions that, under plausible assumptions on the matching process, give rise to more inter-connected social network (Coleman, 1988; Jackson *et al.*, 2012)
  - Inter-connected networks sustain greater economic cooperation via norms based on community enforcement (Greif, 1993, 1994; Greif and Tabellini, 2017)
- This is accentuated (attenuated) if higher population density origins are more (less) socially homogenous, which may be true for counties (but not in cities)

Local Social Interactions and Population Density

Respondent's location:	county			city		
Dependent variable:	frequency of social interactions per month with local residents		indicates whether most unplanned interactions are with local residents	frequency of social interactions per month with local residents		indicates whether most unplanned interactions are with local residents
Type of social interactions:	planned	unplanned		planned	unplanned	
	(1)	(2)	(3)	(4)	(5)	(6)
Population density	0.343	1.635**	0.022**	-0.778*	-0.573	-0.019
	(0.422)	(0.789)	(0.010)	(0.398)	(0.834)	(0.012)
Mean of dependent variable	3.907	15.54	0.197	3.434	13.56	0.124
Observations	8,830	8,830	20,669	3,255	3,255	7,088

Source: China Family Panel Survey (2010). Controls include 1982 population, average education and occupation structure at the origin.

Social Structure and Population Density

Respondent's location:	city		county		
Dependent variable:	population density at neighborhood level	fraction of residents born locally (%)	population density at village level	fraction of residents born locally (%)	fraction of households from the largest clan (%)
	(1)	(2)	(3)	(4)	(5)
Population density at city/county level	3.266***	–	2.077***	–	–
	(0.993)		(0.548)		
Population density at neighborhood/village level	–	-7.750***	–	1.567	18.460*
		(2.591)		(2.109)	(9.608)
Mean of dependent variable	0.772	49.27	0.112	90.14	42.46
Observations	124	124	264	264	264

Source: China Family Panel Survey (2010). Controls include 1982 population, average education and occupation structure at the origin.

Trust and Population Density

Dependent variable:	trust in local residents	trust in outsiders	trust in local residents	trust in outsiders
Respondent's location:	county		city	
	(1)	(2)	(3)	(4)
Population density	0.225***	-0.018	-0.073	-0.014
	(0.054)	(0.079)	(0.056)	(0.064)
Mean of dependent variable	6.429	2.194	6.239	2.115
Observations	20,047	20,047	6,236	6,236

Source: China Family Panel Survey (2012). Trust questions same as in World Value Surveys, responses scaled 1-10. Controls include 1982 population, average education and occupation structure at the origin.

Base Model: Population Density and Entry into Entrepreneurship

- The majority of county-born entrepreneurs establish their firms outside their birth counties
- Consistent with the literature on temporary migration; e.g. Morten (2019) we assume that these entrepreneurs remain connected to, and can be sanctioned by their origin communities
- This implies that business networks drawn from higher population density counties will support higher levels of mutual help among their members, generating higher TFP for each network member
- TFP of any entrepreneur at date t equals ωA_t where:
  - own ability ω is drawn from an iid log uniform distribution
  - A_t is 'community' TFP (CTFP) which depends on quality of the network θ (increasing in population density p, exogenous) and size of the network (n_{t-1}, endogenously evolving)

$$A_t = A_0 exp(\theta(p) n_{t-1})$$

Base Model, contd.

- Equal-sized cohorts of new agents are born at successive dates, $t = 1, 2, ...$
- Every agent makes a once-and-for-all occupational choice between:
  - a traditional occupation where the return is $\omega^{\sigma}, 0 < \sigma < 1$
  - becoming an entrepreneur in a given destination, where TFP is $A_t\omega$
- Positive selection into entrepreneurship, depending on size and quality of the community network at the destination
- Selfish, myopic behavior: generates prediction for dynamics of entry flows:

$$e_t \equiv n_t - n_{t-1} = B + \theta(p)n_{t-1} = (B + n_0)(1 + \theta(p))^{t-1}$$

- Predicted entry flows e_t: (i) increasing in n_0; (ii) increasing in $n_0 * p$ and this effect is rising in t; (iii) independent of historical presence of *other* communities at the same destination

The Effect of Initial Entry on Subsequent Entry (birth place level)

Dependent variable:	subsequent entrants from the birth place					
Birth place:	county		county		city	
Time period:	2000-2004	2005-2009	2000-2004	2005-2009	2000-2004	2005-2009
	(1)	(2)	(3)	(4)	(5)	(6)
Initial entrants from the birth place	7.120***	8.935***	5.198***	5.723***	7.385***	6.668***
	(0.686)	(0.956)	(0.972)	(1.281)	(0.750)	(0.799)
All initial entrants at the destination	0.054	-0.020	–	–	–	
	(0.048)	(0.056)				
Initial entrants from the birth place × birth place population density	–	–	1.356**	2.277**	-0.016	-0.261**
			(0.564)	(0.937)	(0.107)	(0.113)
Distance to the birth place	–	–	-2.225***	-2.962***	-3.369***	-3.145***
			(0.104)	(0.106)	(0.229)	(0.162)
Mean of dependent variable	3.156	3.170	3.156	3.170	4.148	3.579
Origin-sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Location fixed effects	No	No	Yes	Yes	Yes	Yes
Observations	384,031	778,897	384,031	778,897	313,915	446,696

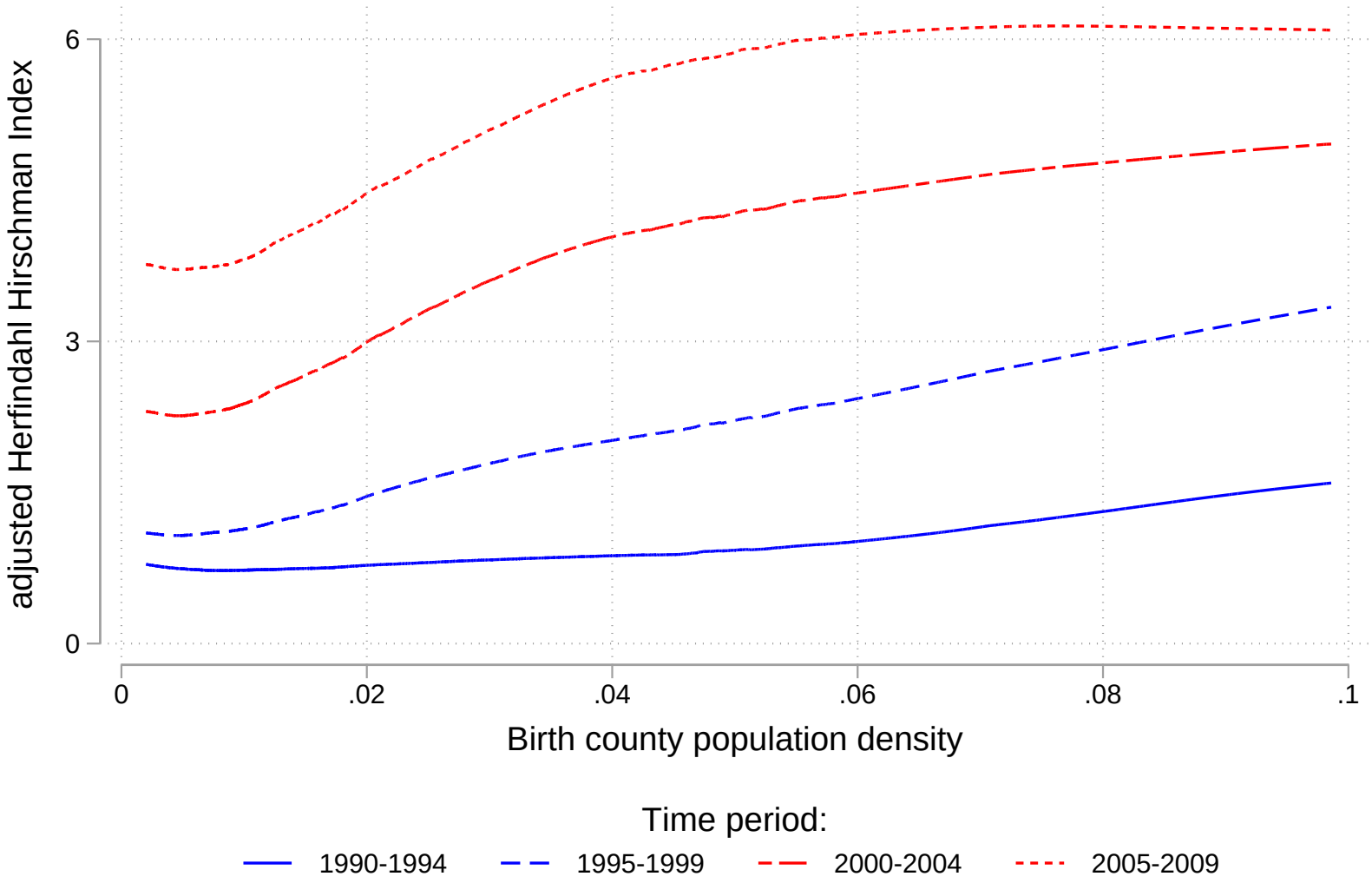
Clan Concentration: Predictions

- Suppose spillovers operate exclusively within the clan (origin-surname combination), with no cross-clan cooperation
- Quality of a clan network is now increasing in both p and relative size of the clan (within the county)
- Applying the same model at the clan level, we predict:
  - entry flows of entrepreneurs from a given clan are explained by historical presence of the clan, interacted with p; this effect rises in t
  - Clan concentration among entering entrepreneurs is increasing over time and increasing in p (more steeply over time), assuming clan concentration at the origin is rising in p (which we have already verified from CFPS)

The Effect of Initial Entry on Subsequent Entry (clan level)

Dependent variable:	subsequent entrants from the clan			
Time period:	2000-2004	2005-2009	2000-2004	2005-2009
	(1)	(2)	(3)	(4)
Initial entrants from the clan	3.275***	4.082***	2.422***	2.689***
	(0.325)	(0.353)	(0.304)	(0.305)
All initial entrants at the destination from the birth county	0.031***	0.051***	0.012	0.006
	(0.007)	(0.012)	(0.013)	(0.017)
Initial entrants from the clan × birth county population density	–	–	0.650**	1.092***
			(0.258)	(0.331)
Initial entrants from the birth county × birth county population density	–	–	0.012*	0.029**
			(0.007)	(0.013)
Distance to the birth county	–	–	-0.174***	-0.259***
			(0.012)	(0.015)
Mean of dependent variable	1.381	1.397	1.381	1.397
Origin-sector fixed effects	Yes	Yes	Yes	Yes
Location fixed effects	No	No	Yes	Yes
Observations	866,344	1,723,509	866,344	1,723,509

Clan Concentration and Population Density



Source: SAIC Registration database and 1982 population census

Augmented Model (sector-location choice and capital)

- Allow two ex ante symmetric destinations (sector-locations i), post-entry age l and endogenous capital size $K_{i,t+l}$ for cohort t:

$$y_{i,t+l} = A_{i,t+l}\omega^{1-\alpha}K_{i,t+l}^{\alpha}$$

- Add one more source of network effect: 'entry access' (e.g., information, referrals) to a given destination is random, with probability that is rising in own-community presence in that destination $n_{i,t-1}$

- Predictions:

  (i) **Entry and (sectoral/spatial) concentration:** increasing in cohort date (t), in p, and in $p * t$ (assuming share of largest sector is not too close to 1) ('lock-in' effect, owing to increasing returns driven by network complementarities)

  (ii) **Firm size:** in year of entry t is decreasing in p, in t and in $p * t$ for marginal entrants ('adverse selection' effect); but post-entry growth rate (across l) for all entrants is rising in p ('network growth' effect)

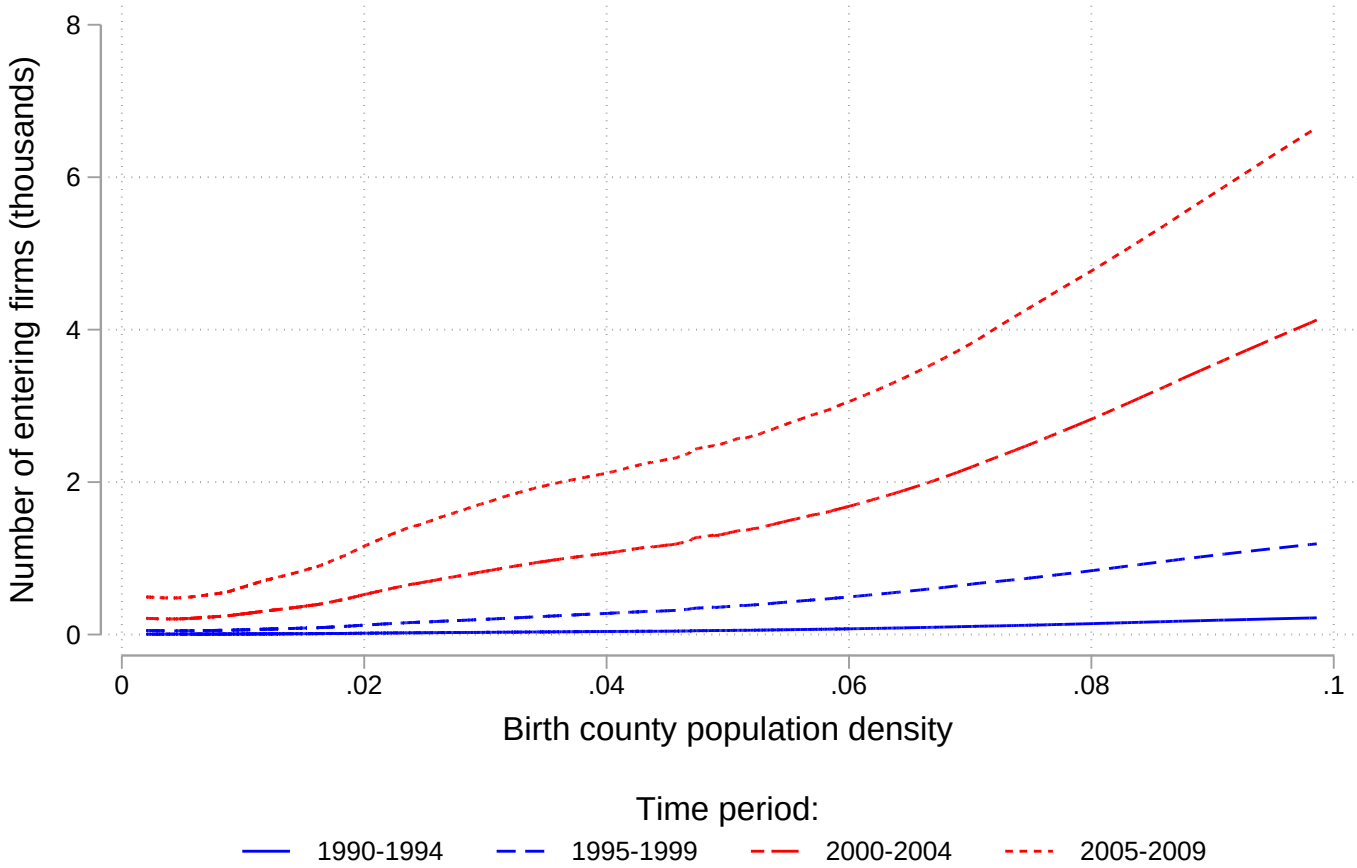
Alternative Explanations: Origin Heterogeneity

- While population density may determine social connectedness, it could also be correlated with independent determinants of the model's outcomes
- Include as controls: population size, occupation structure and average education at origin
- Entry results could be driven by unobserved ability at the origin (if positively correlated with p and $p * t$), but this would generate positive rather than negative selection
- Alternatively, entry and selection results could be driven by negative correlation of returns to traditional occupation with $p, p * t$, but this would not generate the same patterns for concentration and firm size growth

Alternative Explanations: Destination Heterogeneity

- If each origin locates at a unique set of destinations, we would not be able to disentangle time-varying destination heterogeneity (geography, government infrastructure, agglomeration effects) from network dynamic effects
- However, firms from multiple origins locate at the same destination, so we can include destination-time period dummies as controls
- If high p origins happen to be located closer to fast growing destinations, this will not explain why firms from high-p counties start small and then grow faster
- Neoclassical growth model will also generate convergence, so we control for initial capital in the firm size growth regression

Evidence on Firm Entry

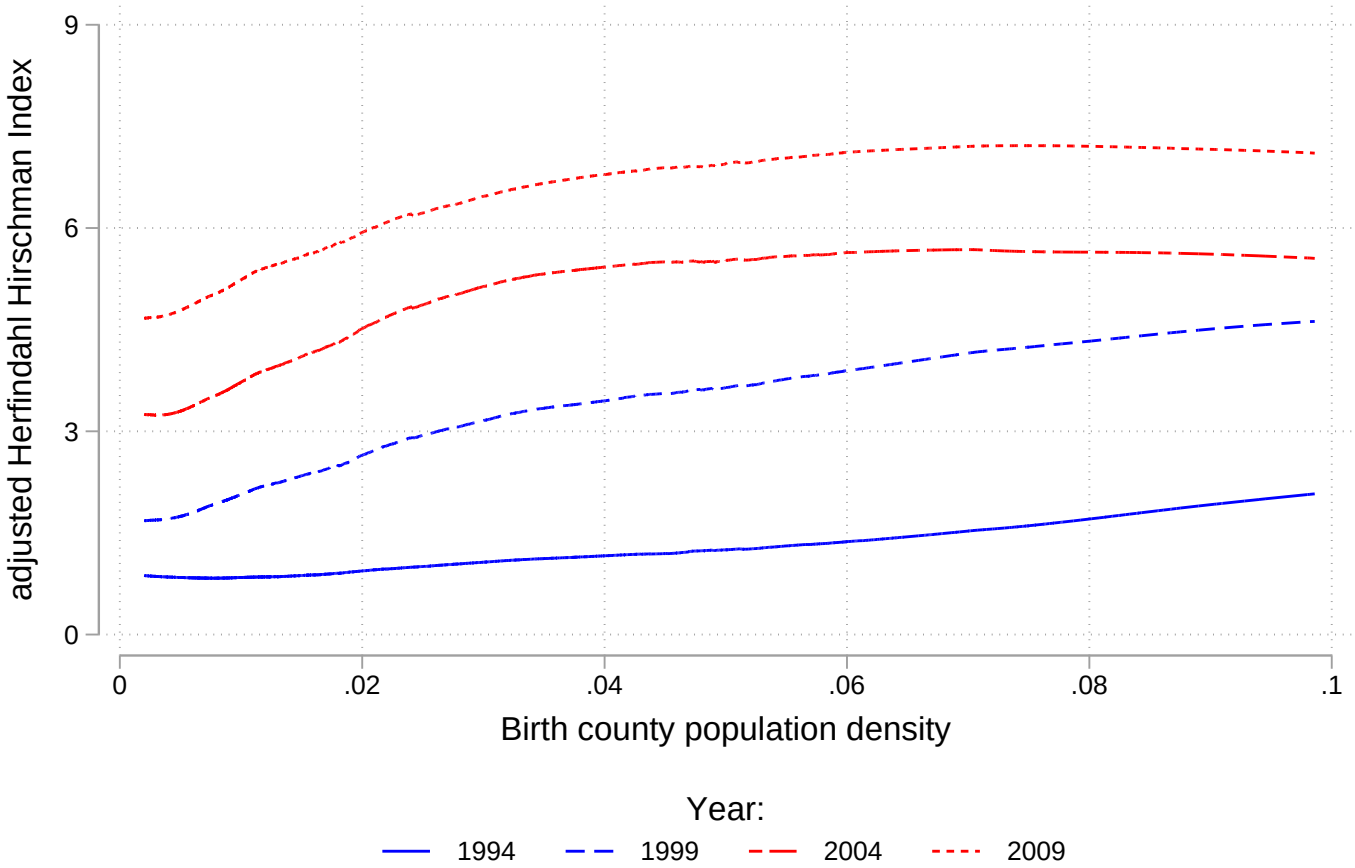


Source: SAIC registration database and 1982 population census.

Firm Entry and Population Density

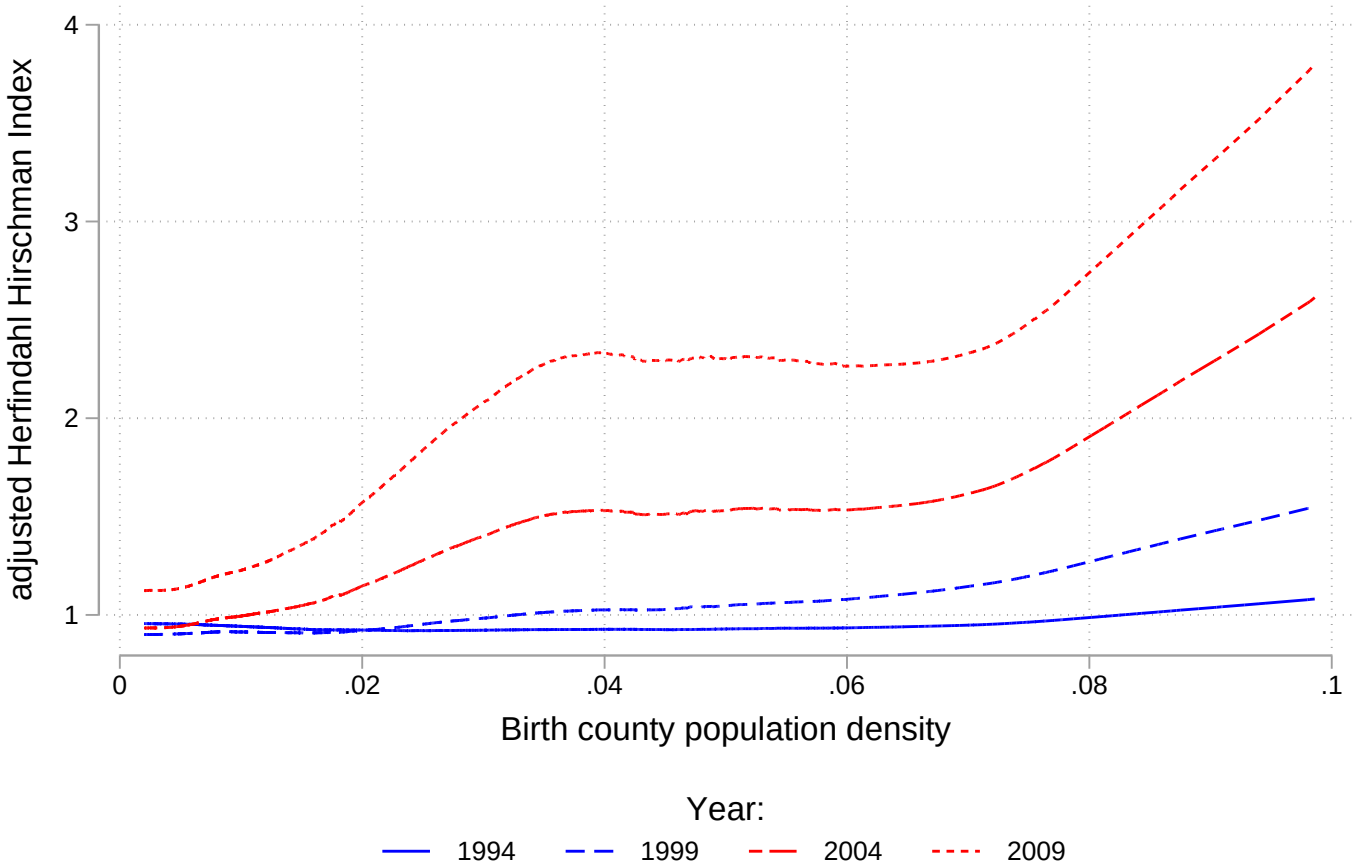
Dependent variable:	number of entering firms			
Time period:	1990-1994	1995-1999	2000-2004	2005-2009
	(1)	(2)	(3)	(4)
Birth county population density	0.014**	0.118***	0.382***	0.575***
	(0.006)	(0.037)	(0.101)	(0.126)
Mean of dependent variable	0.0725	0.483	1.673	3.024
Sector fixed effects	Yes	Yes	Yes	Yes
Location fixed effects	Yes	Yes	Yes	Yes
Observations	1,085,169	1,085,169	1,085,169	1,085,169

Evidence on Sectoral Concentration



Source: SAIC registration database and the 1982 population census

Spatial Concentration, within Sectors

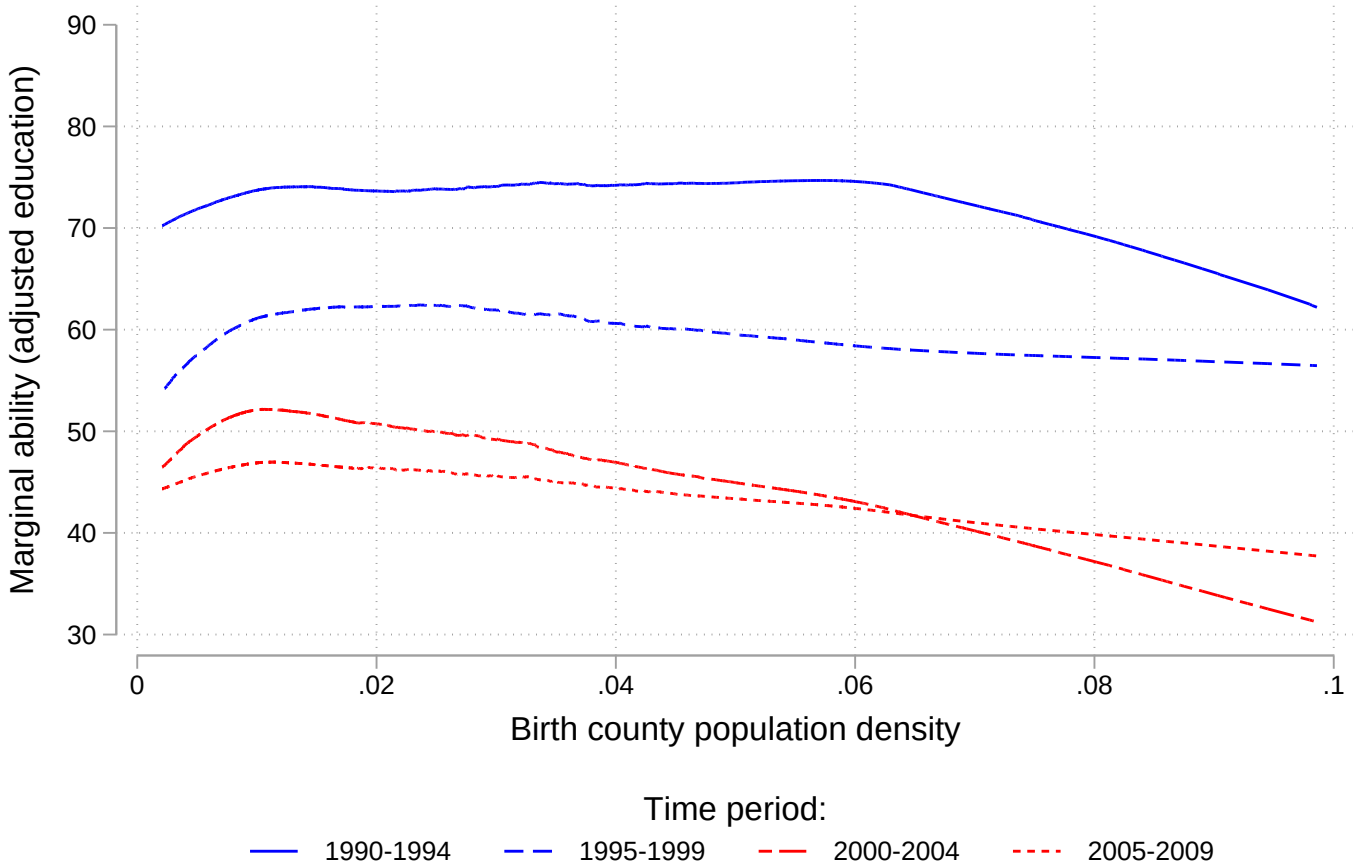


Source: SAIC registration database and 1982 population census.

Sectoral and Spatial Concentration

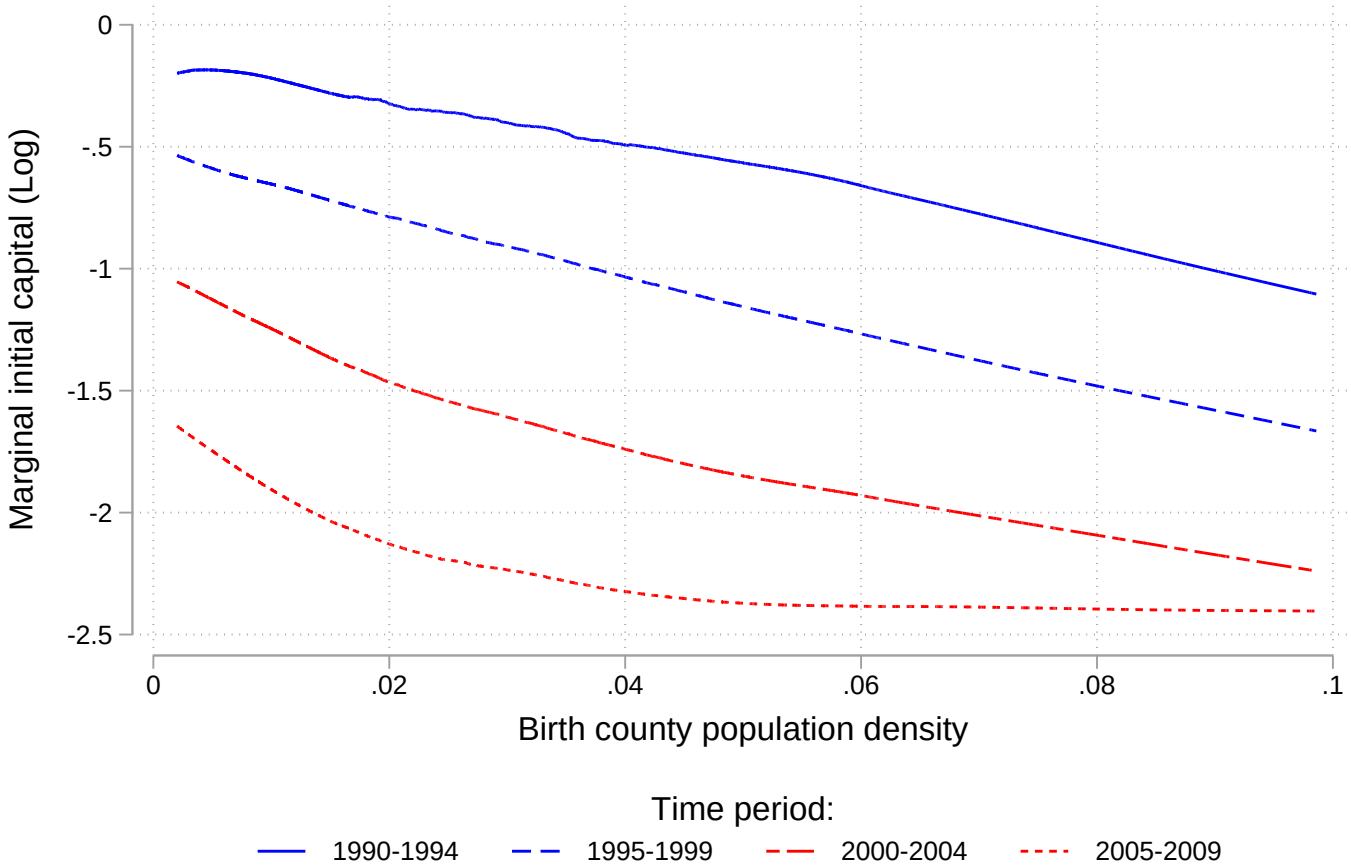
Birth place:	county			city		
Dependent variable:	number of entrants	sectoral HHI	spatial HHI	number of entrants	sectoral HHI	spatial HHI
	(1)	(2)	(3)	(4)	(5)	(6)
Time period	0.517***	1.686***	0.506***	0.661***	0.299***	2.054***
	(0.016)	(0.020)	(0.021)	(0.026)	(0.008)	(0.069)
Birth place population density × time period	0.353***	0.165***	0.134***	0.353***	-0.026***	0.030
	(0.029)	(0.019)	(0.012)	(0.041)	(0.004)	(0.026)
Observations	6,496	6,494	71,022	3,284	3,283	21,046

Marginal Ability and Population Density



Source: SAIC registration database and 1982 population census.

Marginal Initial Capital and Population Density



Source: SAIC registration database and 1982 population census.

Evidence on Negative Selection

Dependent variable:	marginal ability	marginal initial capital	average initial capital	marginal initial capital	average initial capital
	(1)	(2)	(3)	(4)	(5)
Time period	-18.532***	-0.882***	-0.115***	-0.655***	-0.109***
	(0.409)	(0.012)	(0.008)	(0.009)	(0.007)
Birth county population density × time period	-1.040***	-0.028**	0.002	-0.069***	-0.022***
	(0.394)	(0.012)	(0.008)	(0.010)	(0.007)
Mean of dependent variable	49.36	-1.744	-1.744	-1.223	-1.223
Observations	21,028	43,579	43,579	46,417	46,417
Origin-sector fixed effects	Yes	Yes	Yes	Yes	Yes
Location fixed effects	No	No	No	Yes	Yes

Asset Growth and Population Density

Dependent variable:	annual growth of asset					
Data:	industrial census		industrial census		inspection data	
Time period:	1995-2004		2004-2008		2004-2008	
	(1)	(2)	(3)	(4)	(5)	(6)
Birth county population density	0.006***	0.007*	0.004**	0.003**	0.004***	0.002*
	(0.002)	(0.004)	(0.002)	(0.001)	(0.001)	(0.001)
Initial capital	–	0.002***	–	0.001***	–	0.001***
		(0.000)		(0.000)		(0.000)
Mean of dependent variable	0.0528	0.0557	0.133	0.136	0.106	0.110
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Location fixed effects	No	Yes	No	Yes	No	Yes
Observations	5,517	5,664	31,234	64,258	18,701	43,470

Concluding Remarks: Implications for 'Misallocation'

- We have argued that community based networks played an important role in growth of private enterprise in China
- Involved productivity spillovers resulting from informal cooperation from fellow entrepreneurs from the same origin (clan/birth county)
- Domain of spillovers excluded entrepreneurs operating at the same location but from a different origin ('localized' versus 'generalized' cooperation)
- This generates some 'misallocation': restricted entry from origins with lower connectedness/density, dispersion of firm size and productivity across different origins
- However, normative significance of these distortions are ambiguous: e.g.:
  - more connected communities exhibit smaller size and productivity on average
  - growth/efficiency enhancing policies could entail subsidies that are targeted to more connected communities, thereby increasing dispersion (as shown in our structural exercise)