

2-2011

Why China Grew: Understanding the Financial Structure of Late Development

Adam S. Hersh
University of Massachusetts Amherst

Follow this and additional works at: https://scholarworks.umass.edu/open_access_dissertations



Part of the [Economics Commons](#)

Recommended Citation

Hersh, Adam S., "Why China Grew: Understanding the Financial Structure of Late Development" (2011).
Open Access Dissertations. 334.
<https://doi.org/10.7275/1922253> https://scholarworks.umass.edu/open_access_dissertations/334

This Open Access Dissertation is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Open Access Dissertations by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

**WHY CHINA GREW:
UNDERSTANDING THE FINANCIAL STRUCTURE OF
LATE DEVELOPMENT**

A Dissertation Presented

by

ADAM S. HERSH

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

February 2011

Department of Economics

© Copyright by Adam S. Hersh 2011

All Rights Reserved

**WHY CHINA GREW:
UNDERSTANDING THE FINANCIAL STRUCTURE OF
LATE DEVELOPMENT**

A Dissertation Presented

by

ADAM S. HERSH

Approved as to style and content by:

Gerald A. Epstein, Co-chair

Robert Pollin, Co-chair

James Heintz, Member

Gerald A. Epstein, Department Chair
Department of Economics

*To the 1.4 billion people who live on less than US\$1.25 per day. May
you escape the yoke of failed economic policies.*

ACKNOWLEDGMENTS

This dissertation was made possible by the generous support of the Political Economy Research Institute at the University of Massachusetts, Amherst, the David Boren National Security Education Program, and the Institute for Advanced Research at the Shanghai University of Finance and Economics. I am grateful to Gerald Epstein, Robert Pollin, James Heintz, Christian Weller, John Schmitt, and Dawn Le who provided patient support, studied intellectual guidance, critical feedback, and much appreciated encouragement and inspiration. Through countless conversations and ping pong matches, Xiao Junji, Feng Shuaizhang, Bai Dangwai, Tao Changsheng, Allen Ding, and Zhao Minghui were treasured partners and collaborators helping me to dig through the weeds of Chinas economic reform process. Nancy Zhang and Connie Liu provided research assistance. Judy Fogg graciously accommodated me with administrative assistance from half-a-world away. Patrick Watson slugged through the entire draft manuscript.

This dissertation was prepared using free open source software: Ubuntu Linux, Open Office Suite, LyX L^AT_EXeditor, and Mozilla Firefox.

ABSTRACT

WHY CHINA GREW: UNDERSTANDING THE FINANCIAL STRUCTURE OF LATE DEVELOPMENT

FEBRUARY 2011

ADAM S. HERSH

B.A., UNIVERSITY OF PUGET SOUND

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Gerald A. Epstein and Professor Robert Pollin

This dissertation explores how economic institutions governing finance and investment have contributed to growth in reform-era China. Economic and political reforms transformed Chinas prior centrally-planned economy. Although reforms incorporated elements of market institutions and private enterprise, state institutions exercising extensive authority over a wide range of economic affairs critically and fundamentally played a central role in transforming this economy from one of the worlds poorest to the worlds second largest in the span of one generation. I explain the emergence of a unique configuration of institutions supportive of industrial policy implemented by largely autonomous local government officials. In combination with state-directed bank credit, this local government industrial policy finance has played a significant and positive role in development of exports in China. Though private entrepreneurs are often seen as dynamic engines of growth in Chinas reform-era economy, I show the vast majority of entrepreneurs are low-skilled, low-productivity,

and exhibit non-positive rates of capital accumulation. Most entrepreneurs would experience higher earnings were they not segmented into self-employment occupations by adverse socioeconomic conditions. Rather than engines of growth, Chinas entrepreneurs resemble more the vast numbers of informal sector self-employment prevalent in many developing countries.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	v
ABSTRACT	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER	
1. INTRODUCTION	1
1.1 The Significance of China's Late Development	1
1.2 Playing Catch-up	4
1.3 Specialization, Diversification, and Manufacturing	7
1.4 The Entrepreneurial Role of the State	12
1.5 Preview of the Study	14
2. CHINA'S LOCAL GOVERNMENT INDUSTRIAL POLICY	17
2.1 Qualitative Transformation of the Economic Bureaucracy	21
2.2 Power and Incentives of Local Officials	26
2.3 Application of Local Industrial Policy	33
2.4 TVE Reform and Endurance of Local Industrial Policy	42
2.5 Conclusion	44
3. CHINA'S PRIVATE ENTREPRENEURS: CAPITALIST DYNAMOS OR RESERVE ARMY OF THE SELF EMPLOYED	46
3.1 Introduction	46
3.2 Institutions, Finance, and Entrepreneurship	52
3.3 Data on China's Entrepreneurs	56
3.4 Characteristics of China's Entrepreneurs and Entrepreneurial Enterprises	60

3.4.1	Characteristics of Entrepreneurs	60
3.4.1.1	The geography of entrepreneurship	61
3.4.1.2	Gender and Household Characteristics of Entrepreneurs	65
3.4.1.3	Human Capital and Entrepreneurial Ability	66
3.4.1.4	Entrepreneurial Preference	69
3.4.2	Evidence of Labor Market Segmentation	72
3.4.2.1	Effects of <i>Hukou</i> Status	73
3.4.2.2	Party Membership and Employment Dislocation	76
3.4.2.3	Timing of Entrepreneurial Market Entry	76
3.4.3	Wealth and Credit Relations	80
3.4.3.1	Perceived Credit Access	81
3.4.3.2	Wealth and Assets	83
3.4.3.3	Debt and Sources of Credit	85
3.4.3.4	Party-State Networks and Finance	89
3.4.4	Characteristics of Entrepreneurial Enterprises	91
3.4.4.1	Sectoral Distribution of Enterprises	91
3.4.4.2	Enterprise size at entry	94
3.4.4.3	Current size and capital accumulation	96
3.5	Occupational Selection of Entrepreneurship	99
3.5.1	Model Specification	100
3.5.1.1	Individual Abilities	101
3.5.1.2	Segmentation Factors and Social Networks	101
3.5.1.3	Wealth and Financial Factors	103
3.5.1.4	Housing Privatization as Exogenous Wealth Shock	105
3.5.2	Estimation and Results	108
3.5.2.1	Selection in the Urban Labor Market	108
3.5.2.2	Selection in the Rural Labor Market	112
3.5.2.3	Where's the Wealth?	116
3.6	Determinants of Earnings for Entrepreneurs and Wage Workers	117
3.6.1	Model Specification and Estimation of Average Earnings	117
3.6.2	Results	121

3.6.2.1	Urban Labor Market	121
3.6.2.2	Rural Labor Market	122
3.6.3	Opportunity Cost of Occupational Selection	124
3.7	Conclusion	131
4.	FINANCING EXPORT DEVELOPMENT IN CHINA'S GROWTH	133
4.1	Introduction	133
4.2	Exports and Growth in China	138
4.3	China's Multiple Financial Structures	143
4.3.1	Banks	144
4.3.2	Foreign Capital	152
4.3.3	Local Industrial Policy Finance	157
4.3.4	Private and Informal Finance	160
4.3.5	Capital Markets	165
4.4	Evaluating the Efficacy of China's Financial Structures	167
4.4.1	Data and Descriptive Analysis	168
4.4.1.1	Measurement	168
4.4.1.2	Correlations	173
4.4.1.3	Locally Weighted Regression	175
4.4.2	Estimation	177
4.4.3	Robustness Checks	181
4.4.3.1	Where is the FDI?	181
4.4.3.2	Residual dependence and quantile regression	183
4.5	Conclusion	186
5.	CONCLUSION: FINANCIAL STRUCTURE AND FUTURE DEVELOPMENT	188
	BIBLIOGRAPHY	194

LIST OF TABLES

Table	Page
3.1 Demographics of Economically Active Population, By Occupation Group	64
3.2 Subjective Perception of Credit Access	82
3.3 Average Wealth and Asset Endowments	83
3.4 Average Household Debt and Composition	86
3.5 Rural Self-Employed with External Credit: Usage and Sources	89
3.6 Effect of Political Relations on Entrepreneurs' Credit	91
3.7 Entrepreneurial Enterprise Size	97
3.8 Determinants of Housing Prices	107
3.9 Occupational Selection for Urban Economically Active Sample: Marginal Effects	113
3.10 Occupational Selection for Rural Economically Active Sample: Marginal Effects	115
3.11 Determinants of Earnings, Urban Workers	122
3.12 Determinants of Earnings, Rural Workers	124
4.1 Allocation of Bank Loans	148
4.2 Descriptive Statistics	168
4.3 The Effects of Financial Structure on Exports	179

LIST OF FIGURES

Figure	Page
1.1 Diversification of China's Industrial Structure	11
3.1 Provincial Distribution of Self-Employment, 2002	63
3.2 Comparison of Educational Attainment	67
3.3 Comparison of Income Expectations	71
3.4 State-Owned Enterprise, Collective-Owned Enterprise, and Self-Employment	74
3.5 Entrepreneurs and Urban Hukou Attainment	75
3.6 Year of Entry, Rural Entrepreneurs	77
3.7 Sectoral Distribution of Workers	93
3.8 Initial Capital Investment, Rural Self-Employed	95
3.9 Distribution of Initial Investment by Self-Employment Entry Year, Rural	96
3.10 Capital Growth of Rural Entrepreneurs	98
3.11 Comparison of Occupational Earnings Profiles, Urban Market	125
3.12 Comparison of Occupational Earnings Profiles, Rural Market	129
3.13 Predicted Earnings Gain/Loss from Switching Occupations	130
4.1 Export Performance in the Reform Era	140
4.2 Total Trade Shares of GDP	142
4.3 Distribution of Investment Funding by Source	143

4.4	Bank Credit	146
4.5	Policy Lending	150
4.6	Provincial FDI	154
4.7	Local Government Extrabudgetary Revenues	160
4.8	Informally Financed Self-Employment	164
4.9	Scatter Plot Correlation Matrix	174
4.10	Lowess Analysis of Export Determinants	176
4.11	Province Effects and the FDI-Export Relationship	182
4.12	Residual Dependence Plots	183
4.13	Comparison of Quantile and OLS Coefficients	185

CHAPTER 1

INTRODUCTION

1.1 The Significance of China's Late Development

Beginning in 1978, China embarked on a course of economic reform that would ultimately transform it from one of the world's poorest nations into an industrial powerhouse. In 1980, China's economy was the world's twelfth largest on a purchasing power parity basis. By 2001 China, with GDP of US\$3.34 trillion, had surpassed Japan (US\$3.29 trillion) as the world's second largest economy, behind only the United States (US\$10.29 trillion) (IMF 2010). At the outset of economic reform, China's per capita GDP of US\$251 ranked 143rd out of 146 countries; in 2008 average income in China had climbed to \$5,999—a nearly 24-fold increase, with average income growing by eleven percent annually for nearly three decades. Along the way, this growth helped raise an estimated 400 million people out of poverty by 2001 (Ravallion and Chen 2007), and helped China transform from a relatively backward, inefficient economy to one, in many respects, that uses and produces at the world frontier of advanced technologies. China's development experience at the close of the 20th and start of the 21st Centuries represents the most rapid and extensive episode of socioeconomic transformation in human history.

This remarkable growth makes China a key case study in the economics of growth, and explaining its sources and root causes puts China at the center of many hotly contested debates—debates that will likely continue for years to come. At the core of these debates sits a question about the various roles played by government and market institutions in shaping the allocation and management of economic resources

for development: are institutions of private ownership and free markets necessary and sufficient for achieving lasting economic development? Can governments encroach upon market forces to hasten development? Is development indeed possible without the contributions of a strong state?

This dissertation contributes original empirical research to this debate by exploring how economic institutions governing finance and investment in China, evolving through more than thirty years of reform, facilitated this most remarkable episode of economic development. The evidence presented here concludes that, in China's case, the state has played a critical and expansive role in managing economic development. As Gunnar Myrdal (1968: 709) observed in his classic study, *Asian Drama*:

The basic principle in the ideology of economic planning is that the state shall take an active, indeed the decisive, role in the economy: by its own acts of investment and enterprise, and by its various controls—inducements and restrictions—over the private sector, the state shall initiate, spur, and steer economic development....[D]evelopment can be brought about or accelerated by government intervention. Economic conditions, in particular, need not remain as they are or evolve under the influence merely of natural forces.”¹

The evidence compiled here from historical, institutional, and econometric analyses indicates that China has not replicated the liberal market institutions idealized in neoclassical economic theory. Digging deeper into the institutional foundations of China's reform-era economic transformation presents a starkly different picture of the role of the state and the nature of economic institutions underpinning this transformation. State control over the economy in China takes a number of forms: regulatory controls over international portfolio and direct investment flows; control

¹Emphasis added.

over interest rates, the exchange rate, and other key prices like energy; tariff and regulatory restrictions on international trade; direct ownership of virtually all of the formal financial system and much of the economy's productive assets; and control of labor mobility.

China's experience is of obvious interest to scholars of development as well as policy-making practitioners in other developing countries hoping to emulate China's successes. But more than an empirical data point on which to evaluate theories of growth and development, there is also a practical and critical importance to understanding the relationship between China's financial structure and its landmark development since 1978. The economic growth has been remarkable, but China's development also created serious and significant social and environmental problems that must be addressed as China looks to the future. Gains in poverty reduction in the early years of reform have stagnated, if not receded, and reforms severely worsened income inequality, making China one of the most unequal countries in the world (Khan and Riskin 2001; Ravallion and Chen 2007).

China's development path also often relied upon severe human and environmental exploitation. International civil society organizations and developed country governments routinely document widespread instances of human and worker rights violations, including child and forced prison labor employed in production for export markets (Human Rights Watch 2010; State Department 2009; Kempton and Richardson 2009). Civil protests and social unrest, though frequent, are locally contained to prevent outbreaks like the 1989 Tiananmen Square protests, and held in check through systems of surveillance, information and media restrictions, and political detentions. Environmental degradation associated with China's rapid development is widely recognized, if not well documented (Economy 2004). In 2006, China's State Environmental Protection Agency (SEPA 2006) estimated that environmental damage was costing China ten percent of GDP annually—in other words the pace and cost of en-

environmental degradation and destruction of natural assets equals or exceeds material output growth measured by official national statistics. Though on a per capita basis, China's greenhouse gas emissions are quite low, in 2007 China surpassed the United States as the world's largest producer of carbon dioxide emissions, reflecting the scale of its industrial output destined for consumers in other countries. Understanding the relationship between China's financial structure and its path of development provides a foundation for China to preserve the successful aspects of its growth engine while reforming toward more equitable and environmentally sustainable development.

The remainder of this introductory chapter reviews theories and research on the causes of growth in late developing countries. In other words, how can poor countries catch up to rich ones?

1.2 Playing Catch-up

As a proximate measure, catching up means approaching a level of output and incomes to rival that of the more advanced economies. But the quantity of output and income are merely effects of catching up. At its core, catching up is a process of fundamental transformation of the forces of production in an economy: transformation of the technologies used in production, transformation of the basket of goods and services produced, as well as transformation of the goods and services consumed. Few countries have managed to achieve these transformations. For a long time, economists saw physical and human capital accumulation and technological innovation as the fundamental causes of economic growth, but these factors are really just proximate causes of growth. On a mechanical level, investment is of course the means by which transformation is achieved. But at a fundamental level, transformation is a function of institutions and the incentives they create for investment, accumulation, and innovation (Acemoglu, et al. 2005; Acemoglu 2008). Of particular importance is what Pollin (1995) calls the *financial structure*: the nexus of institutions that mediate the

transformation of financial capital into physical capital, and that allocate rights to agency over this capital and the income streams derived from its productive use.

Such financial interactions are especially prone to coordination failures (Stiglitz 1993), and historically a variety of institutions have evolved to cope with the moral hazard, adverse selection, and principle-agent problems that arise in credit and ownership relationships. These institutions play a foundational economic role for how savings are collected and allocated for investment (and consumption), how these relationships are monitored and enforced, how property rights are assigned to income flows and agency over corporate governance, and so on. Different financial structures, by allocating control and authority over capital in mitigating coordination problems, tend to prioritize different economic activities, including the pace and direction of investment (Carlin and Mayer 2000, 2003; Demirguc-Kunt and Levine 2001). Some financial structures are perceived as better than others at promoting the kinds of investment and enforcing the discipline of efficiency that lead to the technological innovation and productivity improvements underlying growth and development (Hirschman 1970; Pollin 1995; Porter 1992, 1996).

Orthodox economics sees liberal “free market” institutions as the only viable path to long-run development. By allowing market prices to signal the most efficient allocation of resources free market institutions enable specialization of production based on the most rational and efficient employment of the economy’s relatively abundant factors of production. Over time, as skills and productive capital are incrementally accumulated, the relative abundances of factors will shift and the forces of production will inch closer to those transformative technologies and output baskets. Failure to build these institutions and misguided efforts to circumvent them through financial “repression” and other policies that distort distort a “natural” pattern of international trade based on factor abundance and comparative advantage-based specialization, in

this view, can only lead to gross misallocation of resources that subsequently retard economic growth (McKinnon 1973, 1991; Shaw 1973).

In contrast to the free-market-institutions view of development, much recent research is providing empirical evidence and theoretical support for the efficacy, if not necessity, of a state-coordinated industrial policy approach to development. The ideas are not necessarily new; they date back to Friedrich List (1841) and run through the early structuralists, the Big Push (Rosenstein-Rodan 1943; Murphy, et al. 1989), among many others. What is new, however, is first the emergence of a cohesive set of empirical stylized facts that highlight the importance of economic diversification, especially into the manufacturing sector, for long-run growth in contrast to outcomes obtained under institutions encouraging specialization of production along comparative advantage lines and with intensive use of the relatively abundant factor(s). Second, a theoretical approach that illustrates a number of macro-coordination problems leading to micro-level development failures shows support for growth enhancing interventions, particularly through shaping the financial structure—those institutions governing allocation and monitoring of capital for investment and distribution of the surplus.

By definition a violation of comparative advantage-based specialization given the relative abundance of labor (and sometimes land) in developing countries, the process of industrialization entails “a transition from competing against firms from other low-wage countries to competing against firms from high-wage ones” (Amsden 1989: 19). Similarly, Rodrik (2006: 7) observes “successful countries have always pushed the limits of their static comparative advantage and diversified into new activities that are the domain of countries considerably richer than they are.” Put differently, rather than focusing on what a country already knows how to do well, development requires learning to do other things well, too, namely what more advanced countries do. But the process of learning to diversify and advance technologically is wrought with

informational and other coordination failures under “invisible hand” liberal market institutions; the visible hand of the state is capable of helping out the situation considerably.

Third, this new view of the industrial policy approach to development (the “New Industrial Strategy”) provides a credible counter-narrative to the free-market-institutions explanation of China’s growth experience. Of course it is important to note that China’s experience departs from reliance on neoclassical institutions on so many accounts: “repression” of capital through domination of financial institutions through ownership, regulation, capital controls and a hard-pegged exchange rate, the subversion of intellectual property rights, and so on, for starters. In many ways, these suggest a shift from central planning to a heavily Keynesian policy of macroeconomic stabilization and expectations coordination coming from substantial government control over the investment process and labor market institutions to promote stable aggregate consumption (also allowing forced saving). Economic management also reflects a financial structure capable of suppressing/averting (for a time) destructive forms of competition that deter investment in new activities. But the approach outlined here further provides a lens through which to understand how the Chinese state’s hands-on approach to controlling the financial structure provides a macrofoundation for successful growth at the micro-level.

1.3 Specialization, Diversification, and Manufacturing

The strategic industrialization approach can be seen both in the experiences of early developing countries like the United States, Germany, France, and Japan (Gerschenkron 1962; Zysman 1983; Johnson 1982; Chang 2002) as well as in later developing countries like South Korea (Amsden 1989, 2001; Clifford 1994), Taiwan (Gold 1986), and more broadly across the regions of East and Southeast Asia (Wade 1990; World Bank 1993; Amsden 2001). Lin (2007), though recognizing the pervasive in-

fluence of statist economic policies in China, argues that China's success has been in striking upon statist policies that shape behavior of micro agents in ways that approximate outcomes based on market principles. Lin calls this a "comparative advantage following," or CAF, policy. In this view, government policies coordinated economic activities toward specialization in areas exploiting China's relatively abundant factor endowments and comparative advantages. Guided by such free market principles, these interventions could usher China toward efficient resource allocation—outcomes that would be achieved under first-best laissez-faire market institutions, but are otherwise infeasible given China's second-best institutional environment. Additionally, for long-run growth, Lin argues that countries must upgrade their endowment structures—presumably by human capital formation via education. Eventually capital accumulation under a CAF development strategy will shift a country's relatively abundant factors from labor to capital, and the ensuing change in relative factor prices can shift the composition of industrial production leading to development of heavier and technologically advanced industries.²

Lin's CAF strategy, while allowing for statist development policies, is seen as the only viable approach to development for its conformity to the principles of free market mechanism principles.³ In this sense, it is a more nuanced reaffirmation of the monolithic free market path to development. Any effort to defy these principles will surely fail, not due to rigidities imposed on capital and labor markets, but due to (a) the inherent non-viability of building heavy industry against the tide of relative factor prices, (b) the corruption bred by moral hazard inherent in sustaining unviable heavy

²While this view allows for long-run dynamic comparative advantage, the thrust of the argument is for all practical purposes based on allocation efficiency determined by static comparative advantage.

³Lin's arguments and criticisms seem aimed more toward 1950s-60s era import substitution strategies—ideas dominating Mao-era economic development strategies and the intellectual foundations of factions opposing China's retreat from central planning—than toward the realities of late developing countries.

industry with subsidies, and (c) the polarizing inequality resulting from the need to transfer surplus from labor to capital to pay for such subsidies. To summarize CAF, specialization along the lines of Heckscher-Ohlin/Stolper-Samuelson is the key to development, with government—perhaps—playing a coordinating role and supplying complementary institutions to facilitate this process.

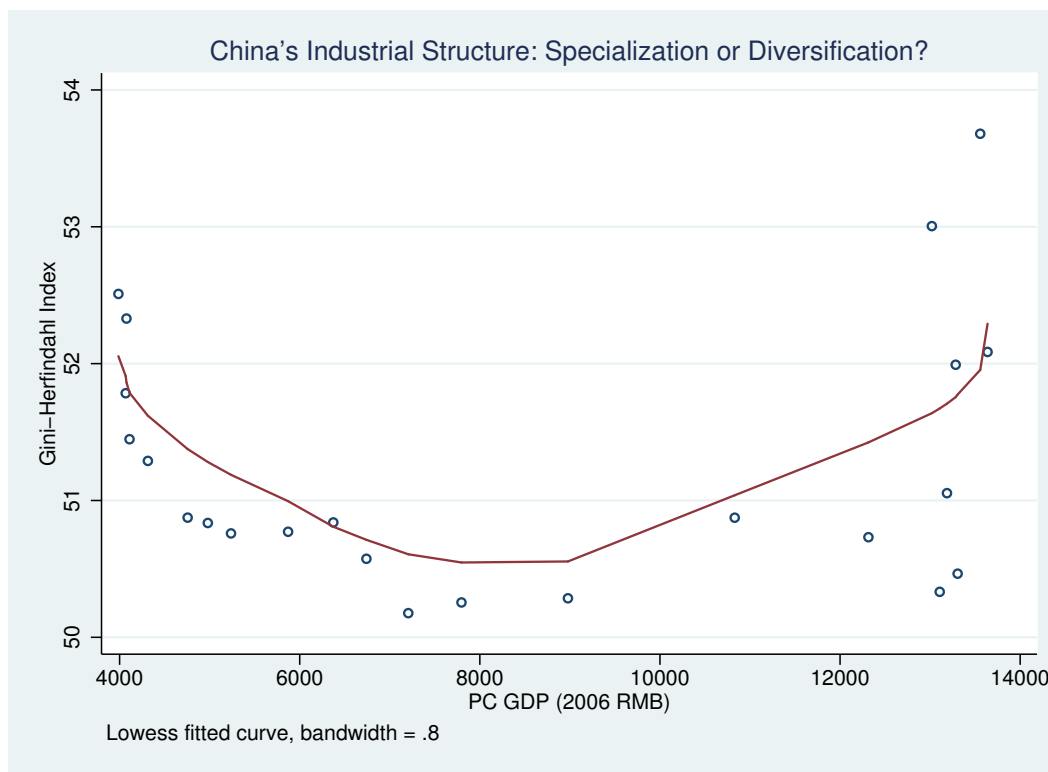
In other words, to catch up, countries need to build more than just a field of dreams. Institutions are needed that can channel resources into activities beyond those suggested by specialization in the use of abundant low skill labor (and sometimes land) factors characterizing less developed countries. If it were true that comparative advantage-based specialization were the root of aggregate productivity gains leading to growth, we would expect to see a direct relationship between specialization and average income levels. Rodrik (2006) highlights a number of recent studies indicating, instead, that the converse appears to be true: development requires diversification, not specialization. Imbs and Wacziarg (2003) study patterns of sectoral concentration in a large panel of countries and find that diversification of economic activities is correlated with rising incomes—until countries reach a relatively high level of income. After this threshold, which they estimate roughly as the level of Ireland’s per capita income, further growth is associated with increased specialization of economic activities. This is true for diversification from agricultural and primary commodity production to manufacturing, but also diversification of activities within manufacturing. Klinger and Lederman (2004) show that the relationship between diversification and income holds true for exports, as well, with introduction of new export products similarly following a U-shaped relationship in income. That is, increasing introduction of export products is associated with rising incomes until some threshold is reached at a relatively late stage of development, after which specialization occurs.

This U-shaped relationship between diversification, specialization, and level development is estimated for China and plotted in Figure 1.1. Using UNIDO industrial

production data, and following the methodology of Imbs and Wacziarg (2003), I calculate a Gini-Herfindahl index of industrial diversification in 3-digit SIC categories for the years 1980-2002. In this measure, a lower index number indicates less specialization (more industrial diversification). The relationship between this measure of industrial diversification and level of development measured in per capita income is estimated by fitting nonparametric lowess regression (Cleveland 1979). The curve indicates that China was diversifying industrially until average income reached a level of 8,500 yuan per capita (in real 2006 yuan, or a little over US\$1200). This peak of industrial diversification corresponds to 1998, after which China's basket of industrial output exhibits increasing specialization. The threshold turning point between diversification and specialization in China occurred at a much lower level of development than the US\$8000 average threshold found for the set of countries examined by Imbs and Wacziarg (2003). That China's turning point occurs at only 15 percent the level of development of other countries indicates that China, relying upon active industrial policy as a spur to industrialization, began its path to development much earlier than most countries.

Manufacturing seems to be the key here. Not only do countries with larger manufacturing sectors experience faster growth, but growth accelerations are associated with structural changes toward manufacturing. Hausmann, Pritchett, and Rodrik (2005) argue that medium-run growth accelerations in developing countries are actually quite prevalent, although long-term sustained growth is rare. Of the episodes identified, "nearly all" were associated with a rapid increase in the share of manufactures in exports (Johnson, Ostry, and Subramanian 2006) and increases in the manufacturing share of total employment (Jones and Olken 2005). The evidence further suggests that what is important is the general level of manufacturing, rather than intra-industry shifts in resource allocation within the manufacturing sector. In a comparative advantage-based specialization world, one might expect gains, for ex-

Figure 1.1: Diversification of China's Industrial Structure



ample, in shifting resources from capital-intensive manufacturing to labor-intensive following elimination of import substitution regimes in countries where labor is the relatively abundant factor. Such a proposition is not supported by this evidence.

Why are diversification and manufacturing so important for growth? Certainly, diversification can lower aggregate risks of macroeconomic shocks—particularly exogenous commodity price or technology shocks to sectors in which countries may otherwise choose to specialize given their factor endowments. But also, and likely more importantly, diversification forges deeper development, providing a more fertile ground for the economic linkages that fuel aggregate demand and propagate new ideas and technologies. It is well known that manufacturing activities support substantially larger employment and output multipliers than do agricultural or service activities—and the heavier the industry, the larger the multiplier effect. Not only do manufacturing industries demand more upstream inputs, but economic geography

suggests many service sector activities are tied to manufacturing. Moreover, productivity growth rates in manufacturing typically outstrip that in other sectors. This might help explain why DeLong and Summers (1990) find that just simply investing in production equipment yields a cross-country average return of 30 percent. Finally, the market-complementing institutional and bureaucratic inputs necessary to sustain particular economic activities vary considerably across sectors and industry. The same is true for human capital inputs. Some institutional and human capital forms are more readily scalable and adaptable to new economic activities than others. Other things being equal, a country is better off cultivating institutional and human capital assets that are capable of supporting the widest range of possible activities, thus expanding the realm and making more readily attainable potential activities. Hausmann and Klinger (2006) show this potential is greatest in manufacturing. So, not only do manufacturing activities in general yield higher productivity growth, but they also increase the likelihood and pace of future structural change.

1.4 The Entrepreneurial Role of the State

Why don't developing countries diversify? Aside from receiving economic policy advice to specialize along comparative advantage-based lines, Hausmann and Rodrik (2003, 2006) highlight the fact that diversification to new activities are fraught with information and coordination problems that impede the development process whereby countries climb the ladder to higher levels of technology, productivity, and incomes. As Amsden (1989) has stressed, the industrialization process for late developing countries is one primarily of learning (as opposed to inventing or innovating)—learning what kinds of economic activities one can viably pursue, learning how to do these things, and learning how to adapt appropriate technologies from the world innovation frontier to local conditions. Hausmann and Rodrik (2003) dub this discovery of the economy's "cost structure for the production of new goods." Such discovery requires

investment in information that generates positive externalities. Because the information generated is readily appropriable by other entrepreneurs, the private return to such investment lags the social return. A similar situation exists for intra-firm investment in human capital development, where technical knowledge cultivated in workers is readily appropriable by other firms. The information spillover in an environment of free market institutions results in an undersupply of this kind of investment. Note that free market institutions, by facilitating ease of market entry, make the information spillover problem even more acute.

Beyond the informational challenge, coordination failures exist where the return to some investment is contingent upon the existence of other complementary public and/or private investments. As noted above, necessary bureaucratic inputs for different economic activities may be quite complex and vary widely. Discovering the sufficient mix of public inputs is a challenge in and of itself. But free markets may not provide a mechanism by which to coordinate the necessary complementary private investments due to both incomplete information and unenforceable contracts. The resulting coordination failure comprises a classic assurance game whose solution relies on the addition of an external institution, for example the state, that can either fulfill the coordinating role between agents or undertake the welfare-enhancing investment on its own.

While growth originates in the industrialization and diversification drive, such structural transformation is not readily possible without the critical contribution of a strong and activist state to attenuate information and coordination problems that stand in the way of development. Traditionally, such practices of state involvement in allocation decisions are seen as distortionary, inefficient, and conducive to rent-seeking behavior and corruption. But the public goods nature of this information problem suggests the state can play an important role in underwriting the costs and risks of entering into new economic activities, including the cost of information discovery of

new markets and technologies, costs of providing complementary investments, and so on. This is consistent with the observed historical experience of industrial strategies pursued (through varying institutional innovations) throughout East and Southeast Asia.

New evidence indicates that entrepreneurial contributions from states can reward rapid and lasting returns. While countries promoting export of more “sophisticated” (i.e. higher productivity) goods are seen to grow faster and, moreover, there exists a tendency toward rapid, unconditional convergence toward the world productivity frontier in producing these goods (Hausmann, et al. 2007). What this says is that the mere act of entering into a product market is enough to ensure substantial productivity increases (with the distance from the frontier directly related to the speed of convergence) “more or less automatically” (Rodrik 2006). The micro-mechanisms behind this item-specific productivity acceleration are not well understood, but much qualitative work suggests productivity accelerations are consistent with successful industrial development policies where governments play a coordinating role to direct credit allocation towards economic diversification into new industries. If industrial policies can support and sustain diversification into new activities, then rapid advances (and a virtuous cycle) are possible. This point also Concords well with recent research on episodes of growth take-offs. While take-offs are rare, growth momentum is critical. Thus, targeted industrial policies as such may help spur virtuous growth cycles by helping stimulate a take-off and maintain momentum.

1.5 Preview of the Study

This dissertation explores the extent to which “free market” institutions and the New Industrial Strategy perspective on development can explain China’s remarkable economic transformation. Economic reforms created space for development of truly private economic activities, particularly for private entrepreneurship, which is com-

monly seen as the engine of China's economic growth throughout the reform period (Yueh 2009; Huang 2008; Zhang, et al. 2006). Reforms also transformed the incentive structure and breathed new life into the vast state-industrial infrastructure held over from the central planning era. Chapter 2 describes this transformation of China's industrial bureaucracy. Economic and political reforms devolved authority and fiscal resources to officials at the most-disaggregated local levels of government. Armed with extensive authority of many aspects of economic life and substantial resources derived from extrabudgetary revenues, local officials pursued industrial development with vigor, performing many of the functions described by the New Industrial Strategy theories: playing an entrepreneurial role in allocating investment resources, making production and market-entry decisions, coordinating complementing investments, and subsidizing costs of technological acquisition and market discovery. While rent-seeking and corruption undoubtedly ensued, industrial enterprises supported by this local government industrial policy financial structure also faced a fiercely competitive market environment that provided a disciplining incentive on enterprise efficiency and quality. Local officials, too, faced disciplining incentives in the competition for advancement in their political careers—advancement premised on an ability to deliver growth and export objectives. Over the course of the reform period, the economic forces under the authority of this local government industrial policy financial structure grew to account for some 40 percent of China's industrial output and exports.

Chapter 3 investigates how much of an engine for growth were China's private entrepreneurs and the non-state informal financial structure underpinning private entrepreneurship. China's private entrepreneurs do not appear to be the economic dynamos they are often made out to be. Instead, private entrepreneurs have relatively low educational attainment and are engaged in small-scale, low-technology, low-productivity activities. The vast majority of entrepreneurs are not attracted to entrepreneurship by vibrant opportunities for private gain, and in fact exhibit non-

positive rates of capital accumulation. Rather, people have entered entrepreneurship due to socioeconomic marginalization associated with job losses from more desirable wage employment or with discrimination based on China's household registration system, or hukou, which restricts internal migration and opportunities for employment and social welfare benefits. I find that most entrepreneurs would be better off, in terms of earnings, by switching to wage employment occupations if they were available. Similarly, most wage workers would experience earnings losses if choosing to enter entrepreneurship. China's private entrepreneurs are implausible engines of growth, and resemble more the vast segments of informal self-employment prevalent in many developing countries. One exception, though, are entrepreneurs who have close connections to the Communist Party and state institutions, and who thus enjoy access to benefits of the local government industrial policy.

Chapter 4 explores the relationship of China's myriad financial structures to exports. Here I test the financial determinants of export development in China's provinces: bank credit and directed policy lending, local government industrial policy, foreign direct investment, and informal finance. The local government industrial policy financial structure detailed in Chapter 2 and credit from China's state-owned banks are found to be significant and positively associated with export development, while private informal finance is not a significant determinant of exports and foreign direct investment is associated with exporting only in select coastal provinces.

Chapter 5 draws some conclusions about the nature of financial structure and its role in China's reform-era development. I consider how China's financial structure may be harnessed to address some of the most pressing externalities of rapid development—inequality and environmental degradation—and how the prospect of further liberalization in the future might affect the finance-growth nexus that delivered three decades of unparalleled economic growth and propelled China's economic ascendancy.

CHAPTER 2

CHINA’S LOCAL GOVERNMENT INDUSTRIAL POLICY

The New Industrial Strategy approach to development outlined in Chapter 1 builds upon preceding infant industries and “Big Push” macroeconomic arguments (Rosenstein-Rodan 1943; Murphy, et al. 1989) for state-led development to establish a microfounded rationale for the state to play a central role coordinating investment and subsidizing the costs of technological accumulation and expansion into new economic activities. In short, industrial policy can play an important role in helping to jump-start the industrialization and structural transformation at the heart of development. In China’s case, supported by a range of central government policies that created a conducive macroeconomic environment, this role has been played by local government officials. This chapter describes the development and contribution of a local government industrial policy financial structure in reform-era China. Owing to a confluence of incentives created by economic and political reforms, this financial structure under the command of local government officials has successfully borne the development of literally millions of highly efficient industrial enterprises capable of competing in global export markets in an array of increasingly technologically sophisticated goods.

The inherited institutions of China’s state-owned, centrally planned economy provided an extensive and long-established infrastructure for industrial planning. Under this structure China industrialized rapidly, but by the close of the 1970s China found itself with a substantial stock of antiquated, technologically stagnant industrial capital (Riskin 1987; Maddison 2006). It was only with the coming of economic reforms

and concurrent political reforms that dynamism came to this industrial planning infrastructure. China's industrial policy is not like that of its successful neighbors in Japan and South Korea, where centralized industrial policy championed the development of and restricted competition among a handful of national champion industries and firms (Johnson 1982; Amsden 1989). Rather, China's decentralized approach developed a large number of firms engaged in a fiercely competitive environment. But this was primarily not private, free market competition: these dynamic firms were a product of local government officials undertaking an entrepreneurial role in cultivating industrial development.

The story of China's success in local government industrial policy is, in many respects, a story of the rural economy and of township and village enterprises (TVEs), collectively owned and controlled by the most disaggregated political entities: townships and villages. While state-owned enterprises (SOEs) were owned by central, provincial, and county-level governments and administered by overlapping and often ill-defined layers of bureaucracy, local governments at the most grassroots levels presided over TVEs. TVEs developed rapidly under the guidance of local government industrial policy. From 1982 to 1988, industrial output of TVEs grew at an annualized rate of 38.2 percent (Harrold 1992); from 1985 to 1990 TVEs accounted for 30 percent of all China's growth in manufacturing (Lin, et al. 2003: 200); and by the mid-1990s, TVEs accounted for 40 percent of total national exports (He 2006: 246). Even more remarkable, these firms that were products of local government industrial policy achieved levels of productivity that rivaled or surpassed comparable privately owned firms (Fu and Balasubramanyam 2003). The apparatus of local government industrial policy was not reserved exclusively for TVEs. Officials had the autonomy to train government institutions for planning and financing industrial development on the private sector, too. And they did, especially following ownership and corporate governance reforms of the late 1990s. These institutions of local gov-

ernment industrial policy had their counterparts in urban governance structures as well, and became more prominent with ownership reforms to the urban SOE economy in the mid-1990s. But in order to understand the nature of and mechanisms by which China's local-government-led industrial policy worked, it is instructive to explore its origin and operation with respect to TVEs.

Development of this rural industry was not new to the post-Mao reform-era Chinese economy; development of rural enterprises predated the onset of reform to the centrally planned economy in 1978. Chen, et al. (1992) describe vibrancy and enterprise in villages in Guangdong province in developing profit-making brickworks, agricultural processing, and ancillary machine shop service businesses owned and managed by village councils and brigades as early as 1969. Such industry arose spontaneously within the framework of the centrally planned economy, from the grassroots, and at the height of the Cultural Revolution. The first economic reforms of 1978 concentrated on dismantling rural agricultural collectives. Decollectivization transformed rural governance below the county level from communes and brigades to townships and villages (in order of hierarchical rank). Legal ownership of these local enterprises fell collectively to those in their associated production teams, but ultimately *de facto* property rights—those of residual control, residual claimancy, and the right to alienability—belonged to “enterprise management committees” and “economic commissions”—institutions of local government. Reforms that devolved political authority to the localities gave rural local officials great leeway in shaping the form of enterprise growth, including by experimenting with a variety of different property rights arrangements. In some places, enterprises were collectively owned by the township or village authority, or owned collectively by workers of individual work teams, owned through joint shareholding arrangements between the local government and individuals or between TVEs originating in different localities (Oi 1999: 24; Whiting 2001: 76). Under these ownership arrangements contracted management

rights defined a distribution of surplus between the manager and the township/village government.

The observation of privately contracted management and opportunities for private gain have led many to conclude that China's TVEs are in actuality *de facto* private or quasi-private enterprises whose efficiency and success attest to the singular efficacy of "free market" institutions (e.g. Woo 2006; Nee and Su 1990; Pei 1994). The "collective" nature of TVEs has led some to erroneously conclude TVE governance functioned much like a shareholding corporation, with ownership rights appointed to individuals in the community. Such a conclusion, though appealing, misses the mark and fails to accurately characterize the nature of ownership of collectively owned enterprises or the power relationship between government officials and the enterprise. As Putterman (1997: 1645) highlights, "leaders were not democratically chosen by 'members,' and members had little control over the amount of earnings to be distributed to them and could not choose to sell off 'collective' assets to enhance present income."

Looking in more detail at the financial structure behind TVEs, it is clear that local governments retain great power over the control of productive assets—including over alienability rights and distribution of the surplus—and virtually every other aspect of economic life under their jurisdiction. This financial structure privileged local government officials with the capacity and the resources to orchestrate industrial development. But effective industrial policy requires more than mere authority. The success of China's reformed industrial planning system resulted from fiscal and political reforms that decentralized authority over fiscal resources and management of economic resources, as well as aligning incentives for efficient development with the self-interested incentives of local government officials. This political structure enabled local officials to take on an entrepreneurial role and vested them with the authority and autonomy to undertake coordination of industrial development.

Successful local government industrial policy was aided by an intra-party political process that resulted in the replacement of old-guard stalwarts with engineers and others with technical skills throughout the government and party structure. This process of democratization of the bureaucracies is described in the next section (2.1). Following, Section 2.2 explains how political and fiscal reforms that decentralized authority to local government officials vested them with the power and incentive with which to effectively command an industrial development strategy. Section 2.3 explains specific applications of this power exercised by entrepreneurial officials in implementing industrial strategy. Section 2.4 by considering how these institutions of local government industrial policy evolved under the ownership and governance reforms of the late 1990s and Section 2.5 provides a concluding summary.

2.1 Qualitative Transformation of the Economic Bureaucracy

Needless to say, skilled technocrats and officials would be helpful to this relationship between hands-on government officials and managers of productive capital. Much political reform accompanied the post-1978 economic reforms, transforming less the bureaucratic structure inherited from the Mao era, but more the quality of bureaucracy. Though maintaining a similar authority structure, bureaucrats have gained the capacity and incentive to support growth. Amsden (1989) stresses that development of a skilled technocracy—not just the managers and engineers obviously necessary for developing modern and competitive businesses, but the government bureaucrats and officials with the skill set, world view, and will to play a facilitating role in industrial and technological development. In China’s case political changes following the rise of Deng Xiaoping and consolidation of his power within the political structure put into place such a technocracy. Deng’s political revolution of China’s bureaucracy culminated in the period from 1989 to 1993—which witnessed Deng’s ultimate political triumph in the wake of the 1989 Tiananmen crisis to secure a path forward for the

neoliberal reform era. To do so, Deng's intention was to "discourage contention, so as to have more time for action . . . once disputes begin, they complicate matters and waste a lot of time" (Deng 1993). He achieved discouragement of contention and secured his revolution by brokering a deal for the support of the military against his rivals (Marti 2002).¹

After coming to power, Deng's early emphasis was on rebuilding the party infrastructure—purging Reds from the party ranks and replacing them with technocratic cadres. This not only transformed the party infrastructure, but significantly strengthened party control by helping overcome divisions lingering from the Cultural Revolution era and re-establishing the chain of command. Deng's lengthy career prior to his 1978 ascent dealt mainly with managing the party apparatus, and his vision was that "political stability and economic progress were dependent on a party that functioned according to Leninist principles" (Meisner 1996: 165). In other words, Deng believed that the state had a central and commanding role in the economic reforms that were to come.

The political apparatus inherited by Deng was massive, encompassing some 18-21 million cadres (Meisner 1996: 174). He set about transforming this apparatus—not to preen it to a size more consistent with a limited government supportive of market reforms, but to consolidate his political base and equally importantly to deepen the collective technical capacity of the party apparatus, thus laying groundwork for a party apparatus more conducive to modernizing development. Transformation entailed purging older and "redder" members and recruiting those with technical skills. In 1980 the party codified this preference for recruiting scientists, technicians, and others with professional skills to its ranks over those exhibiting appropriate political credentials. By the mid-1980s, "some 45 percent of the ministries of the central

¹Ostensibly, the bargain traded the People's Liberation Army's (PLA) commitment to refrain from politics and uphold one-party rule for promises to redistribute benefits of liberalization to the PLA—including through patronage of PLA-owned enterprises and promises of investment in technological upgrading of military hardware.

government held college degrees in engineering, as did 25 percent of provincial party secretaries and 33 percent of provincial governors” (Meisner 1996: 168). The new emphasis on technocracy not only served to create a bureaucracy with the administrative capacity to carry out economic development, but also to depoliticize the bureaucracy—part of a broader process of social de-politicization that left the party as the sole remaining locus of legitimate politics and, with no other outlet, encouraged a politically apathetic population. These created stable social conditions conducive to bureaucrats performing their duties “in an orderly manner and in ways they see fit, with little [popular] interference” (Meisner 1996: 182).

Technical deepening of the bureaucracies combined with a realignment of bureaucratic incentives toward growth (as well as personal enrichment). De-politicization and professionalization were important for creating a bureaucracy capable of supporting rapid economic growth. But as important were organizational changes toward bureaucratic decentralization—a move that helped remedy inherent principle-agent problems in governance that have long plagued efforts of centralized rule over China’s vast territory and population. China’s enormous bureaucracy by most accounts grew even more bloated under Deng, though it grew in new directions. Organizational reforms trimmed some offices and officials from the central government, while “[significantly] increasing the number of cadres at the provincial and county levels” of government (Meisner 1996: 182), or in other words where government was heavily involved in micro-managing investment financing and development strategies.

Political leadership in the boom province of Zhejiang, in the Pearl River Delta and bordering Shanghai, is a good example of how much this bureaucratic change gave primacy to technological deepening and industrial development. Provincial Governor Lu Zushan holds a graduate degree in engineering from the Central Party School and, from this beginning, climbed the party ranks into the bureaucracy responsible for development of Zhejiang’s manufacturing technical capabilities: Zhejiang Auto Industry

Company (an SOE), Enterprise Administration Division of the Machinery Department of the Provincial Government, and so on, before reaching the post of governor in January 2003. One of Lu's vice governors, Wang Yongming, who began his career as a technician, chief of production, at Hangzhou Steel quickly rose to be the director of the Industry Office of the Planning and Economy Commission of Zhejiang by 1985. And another, Zhong Shan, had previously served as chairman and general manager of Zhejiang Zhongda Group Holdings, "a large group of amalgamated companies, cultivated by the Zhejiang provincial government." The amalgamated holdings span light industries from agricultural processing and footwear to heavier manufacturing of advanced textiles and machine tools; taken together, the combined enterprises are among China's top 200 exporters. Many other top officials' career paths begin somewhere in industrial technology or business administration, and segue into the provincial Planning and Economy Commission or the Industrial Commercial Bureau. So, at the same time that political reform was putting more instruments of development financing at the hands of local governments, skilled technicians and successful managers were brought into positions of power and leadership in governance.

Technocratization and the revolving door relationships between officials and enterprise managers reached down to the smallest levels of government as well. In a 2002 nationally representative survey (CHIPS 2002), a substantial share of local government officials reported having business and management experience.² In the rural villages surveyed, 39 percent of party secretaries and 38 percent of village heads had prior experience as enterprise managers—in 48 percent of villages, either the party secretary or the village head has such experience. Even more had experience with a private non-farm business: 46 percent of village party secretaries and 41 percent of

²Based on analysis of the CHIPS (2002) Village Survey.

village heads; in 55 percent of the villages either official had private business experience.

Beginning in 1993 the institutional environment for TVEs changed, creating much more space for development of the truly private sector and for privatization of state and collectively owned enterprise. The result has been a pragmatic, agnostic approach of local officials to the appropriate place of different ownership structures in the Chinese economy. That is to say, a close working relationship exists to this day between privately and collectively owned firms and government officials for whom success of development objectives is favored with personal and political gain. The austerity program, in part designed to “starve the beast” of TVEs, clawed back on local government extra-budgetary revenues that had helped fuel TVE growth. Both the austerity crunch and new incentives to privatize resulted in liquidation of under-performing enterprises and consolidation of others into larger industry and conglomerate groups. Again, political decentralization gave local officials choice to steer the shape of these changes in governance and ownership forms of enterprises. A proliferation of structures ensued: limited liability corporations, joint ventures with domestic and foreign entities, free transfer of assets, liquidation or merger, sale to manager or worker cooperatives, listed or unlisted shareholding corporations, as well as many that remained collectively owned by local governments. It is worth noting, also, that a significant amount of corruption ensued, with collective assets expropriated for the private gain of local officials or their patrons. Similar reforms proceeded in the SOE sector as well.

I return to explore the effect of these late reforms in Section 2.4 below, but suffice it to say that the close ownership, management, and financing relationships between local governments and industry endured and persisted in orchestrating the path of industrial development. Full or partial privatization resulted in some form of shareholding governance structure, of which the governments would retain some portion of

shares, and even some continuing collectively owned TVEs implemented shareholding structures. Similar reforms occurred with SOEs, which also began a process of cleansing and preparation for public listing on China's new stock markets. Enterprises were first transformed into shareholding corporations, and then governments constructed holding companies to manage their new portfolio of financial assets. While parceling off much of the commons for sale, government at the local and higher levels still controlled most shares of the economy's productive assets, including more than two-thirds of the shares of all listed companies. This transformed the income stream received by local governments from tax and fee revenues to the distributed earnings of firms, but did not transform the incentive for local officials to shape development. Contracting out management of publicly owned assets also continued and expanded increasingly from productive assets to real estate (Wu 2005: 196), which could be leased to real estate developers. In short, governments became not only entrepreneurs, but also capitalists.

2.2 Power and Incentives of Local Officials

Examining the power relationships between government officials and those they govern helps illuminate understanding of the extent of authority vested in local officials to command economic affairs (and other aspects of life), including over ostensibly private entities. Taylor (1982) and Bowles (2003) define power as the ability of one party, A, to affect the incentives facing another, B, such that B will do something s/he would not otherwise do. That is, power is the ability of A to secure "low-cost compliance" from B in attaining A's desired goals (Bardhan 2005: 39). The mechanisms through which this power is exercised include offering the other party a reward (or rent) for certain behavior (with the threat of losing the rent), threatening penalties and sanctions for non-compliance, or some combination thereof.

Defining power as such allows an extension of understanding how power may be exercised through these means even in “free” exchange in competitive markets (Bowles and Gintis 1992). China’s local government officials wielded considerable power. It is obvious that local officials commanded the TVEs and other COEs under their jurisdictions, often concurrently serving as government executives, party secretaries, and directors of collective local industrial enterprises (Whiting 2001: 76). But through the lens of power, it becomes apparent that the authority of China’s local government officials extends well beyond management of the collective assets to exercise power over the local populace and private economic activity.

Lin, et al. (2003: 147) describe an extensive authoritative scope for local governance. Local officials governed not only economic activity in the local economy but “exerted control over almost all aspects of social, political, and economic life in rural communities.” It seems no minutiae was too small to be beyond the concern of local officials. Ang (2008) describes local government commissions tasked with regulating (and taxing) steamed bun production and sales, steamed bun vending being a rather ubiquitous aspect of Chinese daily neighborhood life. Their authority extended even into personal family issues such as reproductive planning decisions. Little took place in the local economy that did not explicitly or tacitly receive the blessing of local officials.

The labor force remained under the authority of local officials, too. Though the agricultural “household responsibility system” reforms opened for producers opportunities of non-agricultural pursuits, migration control policies constrained the opportunities for individuals to pursue opportunities beyond their home domain. For the economically active population, few options existed: become an independent agricultural producer, a local wage worker, a self-employed entrepreneur, or seek risky and costly “exit” options—undocumented rural-to-urban or overseas migration. Those wishing to enter the private sector as entrepreneurs owed licensing fees and com-

mercial and industrial taxes to the local government, which could be levied at the discretion of local officials.

In some localities private individuals could contract with local governments for enterprise management rights, and reap subsequent private gains. However, the entrepreneurial inputs of private manager-contractors were considerably limited in scope and mediated by oversight from presiding local government bodies. Managers could not set wage rates, determine quantity of labor, make investment decisions, or choose what to produce. Production and profit targets were “negotiated” in management contracts, with contracts varying in management bonuses and schedules for sharing the surplus with local government at and above contracted quota. Moreover, managers did not enjoy rights of disposal to the surplus generated—local governments mandated its uses, limiting bonus remunerations, controlling 100 percent of the collective TVEs’ profits, and typically directing fifty to seventy percent of the surplus to reinvestment.

I use quotes on “negotiated” because prevailing institutions vested these enterprising individuals with little bargaining power. As both party to and enforcer of management contracts, local government enjoyed *de jure* and *de facto* authority to cancel or renegotiate contract terms at will. Managers could neither sell nor relocate capital, and thus could not credibly threaten “exit” or “hold-up” in negotiating contract terms. Even for talented managers, whose skills might be in broad demand, restrictions on labor mobility embodied in China’s household registration system *hukou* limited their ability to relocate in search of better contracts (either in terms of compensation or managerial autonomy). Finally, general credit constraints deterred individuals from expropriating TVE technology and knowledge to establish truly private ventures. Given the power relationship between officials and enterprise managers, local government officials could make take-it-or-leave-it offers to managers;

managers' functions were mainly confined to enforcing labor discipline and keeping state assets operating at their production possibilities frontiers.

Though it is safe to presume that managers and government officials collaborated closely in market development, investment, and technological adoption decisions, it was the state sitting at the heart of entrepreneurial and capital allocation decisions. Rents offered to TVE managers created incentives for them to achieve static profit-maximization in enterprise operations. However, key business decisions explaining TVEs' growth dynamics—investments to expand into new and increasingly technologically advanced sectors—remained in the hands of local government officials. But from where did local officials' development-orientation come? The answer, alluded to above, is that institutional reforms—particularly in China's fiscal system—transformed local governments into a multitude of atomized, competitive, entrepreneurial micro-agents.

Wu (2005) argues that post-1978 economic reformers recognized informational and incentive problems arising from centralized control of the command economy. Reformers, Wu argues, sought to apply microeconomic contract theory to re-engineer the misaligned incentives and to decentralize decision making, all while retaining the institutional environment of public property rights.³ Throughout China's history, central governments rose and fell on their ability to build government institutions capable of administering taxation throughout such geographically expansive territory—a classic principle-agent problem challenging the center's ability to exercise its will over peripheral government outposts (Spence 1994). Governance structures in post-revolution China oscillated between nodes of decentralization and re-centralization as the political and economic conditions warranted (Meisner 1996). Prior to reform, it was incumbent upon local governments to collect and remit income to successively

³Historical evidence and interviews with reform-era economists suggest Wu is likely overstating the case, although reformers were certainly aware of the early works of Kornai (e.g. 1959).

higher levels of government, which would then be redistributed to localities through explicit revenue sharing formulas and by fiat political considerations. Local governments had little incentive to collect taxes or—with little input over the allocation of fiscal transfers—to utilize revenues efficiently.

Fiscal reforms turned this structure on its head, devolving much political and decision-making authority from the central government to lower levels of government, all the way down to the village level. Oi (1999) characterizes this process as granting a “property right” to local officials in the reputation and performance of their political domain, although it is perhaps more fitting just to note that fiscal reforms significantly altered the performance incentives that local officials faced. Fiscal reforms transferred responsibility for investment projects and other government expenditures to local governments, while cutting them off from guaranteed fiscal transfers from higher levels of government. The system did provide a guaranteed “safety net” to maintain essential “basic needs” government functions, but the baseline was set sufficiently low to induce local government efforts. In exchange for the onus of self-sufficiency, fiscal reforms created a range of “extra-budgetary” revenues that localities need not remit to upper-level government, and over which local officials exercised discretion to allocate as they saw fit. In addition, localities remained responsible for collecting budgetary revenues to be remitted to upper-level government, notably “industrial and commercial taxes” and other income taxes. But instead of remitting these tax revenues and awaiting their lot of fiscal transfers, local governments entered revenue-sharing contracts with the central government.

Contracting not only allowed local governments to retain a share of the budgetary revenues, but also afforded an increasing share as receipts increased above contracted quotas.⁴ The incentive structure created opportunities for officials to generate surplus

⁴In other words, for local revenues Y from budgetary taxation τ^B , $Y'(\tau^B) > 0$ and $Y''(\tau^B) > 0$.

revenues for the local governments. Cadres, now responsible for overseeing the development of their local domains, could earn bonuses tied to revenue generation. With the incentive to generate their own revenue sources came the authority to enforce fees, regulation, and taxation with ad hoc discretion. The small size initially of these extra-budgetary revenues likely explains why the central government so readily ceded them to lower-level government—they were not losing much. But the hardening of local officials’ budget constraints prompted them to seek out their own revenues, through development of economic activities that generated the extra-budgetary revenues they would control. Thus, local governments could raise revenues while supporting targeted economic growth. Local extra-budgetary revenues rocketed in importance from roughly five percent of total government revenues in 1981 to almost two-thirds of total revenue by 1988. This new financial structure over TVEs in essence linked “political advancement. . . to entrepreneurial skills” (Oi 1999: 51), vesting local officials with the task of managing resources for the collective wealth (and for their own private wealth, too).

Theories of governance decentralization suggest that local authorities may benefit from lower transaction costs and better quality and more timely information (Bardhan 2005). Localization may not always yield efficiency or welfare benefits. If local governments are less vulnerable to capture than the central government, Bardhan and Mookherjee (2000) argue decentralization is likely to achieve both efficiency and equity. Local officials were by no means immune to “capture,” although their potential scope for such dealings was markedly locally delineated.⁵ For sure, some local officials used their financial authority to build political machines—collecting rents and selectively distributing benefits and patronage (Shirk 1993). But while local officials wielded the authority to intervene in and exercise power over so many aspects

⁵Witness the apparent corruption and social outrage revealed after the 2008 Wenchuan earthquake in Sichuan province.

of economic activity, their actions were tempered and constrained by the disciplining effects of what Besley and Case (1995) call “yardstick competition.” Qian and Weingast (1997) and Qian and Roland (1998) suggest that decentralization of authority combined with competition created a “commitment mechanism” to discipline local officials to pursue growth objectives. Though local officials had the power to command the forces of production and the incentive to turn these powers toward industrial development and export promotion, each individual locality faced fierce competition from every other locality in the goods markets (Lin, et al. 2003: 179). On top of the market competition faced by local government-orchestrated enterprises, the institutional incentive structure pitted ambitious local government officials against one another in competition for political advancement. Though local governments supported and cultivated a broad range of industrial enterprises, the combination of market and political competition imposed harder budget constraints on these enterprises than is often recognized (Lu 1997).

Huang (1996) characterizes the representative local official’s objective function as jointly maximizing growth (or growth and welfare/employment) and promotion. This may mean either expanding bureaucratic authority (scope and scale of resources) or obtaining promotions to higher-level positions, including to central government positions. In contrast, central government officials maximize growth subject to a macroeconomic stability constraint. Informational asymmetries make it difficult for the center to monitor effectively the behavior of local officials. While information discovery of the degree of compliance is relatively low cost, it cannot be achieved in a timely manner. The center may incur ex ante “costs” in the form of propaganda campaigns to encourage policy adherence—either appealing to local officials’ social preferences or issuing credible threats—but the center exercises only ex post enforcement mechanisms over the localities. The center may also command ex ante mechanisms in the appointment of local officials; however, this presents obvious adverse selection

problems in determining the appointee’s policy preferences. Such appointments are certainly made purposefully, i.e., in pursuit of a broad political agenda, and thus based on loyalty and competency criteria. Meisner (1996) stresses that as reforms progressed, government officials were appointed on the basis of their potential for delivering economic growth and loyalty to an economic reform agenda, while “redness” (adherence to core party discipline) was de-emphasized. But little can be said systematically about appointments, other than that they exhibit great heterogeneity (Huang 1996: 195).

Presumably, local officials want to maximize their own power—by delivering growth, expanding economic resources under their authority, and earning political accolades—which means maximizing investment. At the local level, a second principle-agent problem exists between local officials and enterprise managers under their charge, subjecting investment behavior to monitoring and enforcement costs on the part of local government officials. This additional principle-agent relationship certainly can open the door for inefficiency and rent-seeking in management of the publicly owned enterprises. No doubt, in a one-shot interaction, such behaviors are likely. However, insofar as inefficiencies impede growth, or outright corruption jeopardizes the official’s survival, repeated interactions should attenuate these tendencies to exploit the informational asymmetry and induce local officials to assume a more active role in evaluation, monitoring, and disciplining investment.

2.3 Application of Local Industrial Policy

Local governments held authority over a substantial share of investment in China, and this authority was “considerably enhanced during [the reform period]” (Huang 1996: 223). In 1981, local governments supervised 53 percent of total fixed asset investment in China, and this share grew to 58 percent by 1988 (Huang 1996: 68). With the inflationary and political crisis of 1989, the central government attempted

to rein in local-government-sponsored investment by lowering the size threshold for investment projects below which local officials exercised autonomy from 30 million yuan to 10 million yuan for production-related investment projects (Huang 1996: 67, 79). However, local officials could easily evade these tighter controls by partitioning large projects into multiple smaller projects, or by purposefully underestimating project costs, then later allocating additional resources when a project experienced “cost overruns.”

The ability of local governments to finance investment derived largely, though not exclusively, from their ability to raise extrabudgetary tax and fee revenues. On the expenditure side, these extrabudgetary revenues comprise a substantial source of investment financing, accounting in some provinces for 39 to 60 percent of total fixed asset investment (Huang 1996: 80). Extrabudgetary revenues were not the only means available to local officials to implement industrial policy. Officials could compel a supply of investment resources in other ways: by directing allocation decisions of local banks and credit cooperatives, through forced savings from enterprise managers and workers (discussed further below), and by issuing local government bonds that would be near compulsory for others above and below in the production chain to purchase (Huang 1996: 82). But extrabudgetary revenues played a special role in the mutually reinforcing incentives to develop enterprises providing the source of such revenues, which in turn expanded the resources available for local government officials to pursue their industrial development strategies. This symbiosis worked well: Lin, et al. (2003: 199) estimate that one-third to two-thirds of all government off-budget revenue derived directly from TVE activities.

Extra-budgetary revenues included taxes on agricultural, forestry, and animal husbandry activities; property, land, construction, and sales taxes; local enterprise and income taxes; and revenues from fees, fines, and penalties—including fees from contracting of local-government-owned TVE assets and from individual entrepreneur

licensing fees. The tax incidence of these revenues was remarkably high in many cases. Township governments taxed pre-tax (gross) income of TVEs at 10-20 percent rates. They received a contracted share of TVEs' after-tax profits on a sliding scale based on performance to contracted production targets. They collected a "management fee" proportional to enterprise sales—a sales tax—and earned a non-tax revenue contract fee, i.e., the manager's rent on the local-government-owned assets of twenty percent and up of enterprise profits. On top of these were ad hoc charges, licensing and other fees, and penalties to be assessed. In the early years of reform, a large share of these revenues came from taxation of small-holder agricultural producers, operating for the first time as individual farmers under the Household Responsibility System (in other words, the surplus was transferred from the agricultural sector to finance industrial development), but revenues from industrial and commercial sources soon took over, and took off. Wise officials saw that they could greatly increase their own power within the bureaucratic structure by cultivating development of extra-budgetary revenue-generating activities in their jurisdictions—namely, the development of industrial and commercial TVEs.

Again, officials enjoyed ad hoc discretion in enforcement of taxation and other fees and could wield this to promote development of TVEs—also development of private enterprise, if the officials were so inclined and forward thinking. Local officials held many tools at their disposal to encourage expansion of production into targeted industries. They could effectively subsidize capital costs as well as costs of technological investments and information discovery and market research. Surveys of township officials in many rural counties show that the rules were fungible. Often enterprises launching new product lines or building new plants could receive tax holidays spanning the entire time to capitalization of new assets. Officials could also make adjustments to depreciation accounting rules, adjust which outlays may be accounted against pre-tax and post-tax enterprise profits (each sum of which was

subject to different contractual obligations), or offer tax credits against enterprise loan interest and principle repayments.

Tax and fee policies of local officials not only generated substantial government revenues, but afforded officials a mechanism to coordinate industrial development—the pace, composition, and balance of growth—in their domains. To many, this combination of local government control over a collection of distinct enterprises resembles a corporatist structure. Local enterprise management committees and economic commissions play the role of a board of governors to a growing conglomerate of industrial and commercial enterprises. This view has added to TVE’s “quasi-private” mystique, implying a “hands-off” oversight role for government bureaucrats, leaving the real running of the enterprise in the hands of private entrepreneurs. In reality, these extra-budgetary revenues were substantial, but not the only pool of resources under the discretion of local officials for development of rural enterprises, and TVEs in particular. While vesting more funds in the hands of development-oriented local officials, these other sources also enabled the local “boards” to make more hands-on interventions into the operations of enterprises.

First, local officials retained control over the disposal of even the enterprise’s retained profit share—that is, profits net of taxes and contractual income payments to the local government. It is the presence of this surplus returning to the entrepreneur that gives the quasi-private myth its weight. But in actuality, local officials also retained discretion over the disposal of this surplus, dictating to managers the share available to worker (and manager) bonuses, the share directed to agricultural support, and the share mandated for enterprise reinvestment. He (2006) reports that in many cases fifty percent of this new investment went to technology development. Oi (1999) finds that a common distribution saw managers allotted twenty percent of net profits for distribution as productivity bonuses for workers (and to the manager), fifty to

seventy percent designated for enterprise re-investment, and ten to twenty percent agricultural development; it is unclear to what purpose the residual gets used.

Second, local enterprise management committees and economic commissions could coordinate what, in practice, amounted to the redistribution of surplus across enterprise units. Sometimes this practice was couched in terms of a kind of inter-firm credit, one enterprise unit lending to another; sometimes in terms of “rent paid in advance” that the government could then re-lend to enterprises targeted for development; and sometimes in the form of ad hoc fees and surcharges levied against enterprises. Local governments could also, in a way, redistribute (even more) surplus from peasants and workers to industrialization projects by compelling local residents or enterprise employees to invest in debt securities issued by the township or village, or in cases of larger TVEs, by the enterprise.

Third, within the enterprise further surplus could be extracted directly from workers. TVEs were not subject to the same wage and benefit regulations as were SOEs. The predominating labor contract required workers to post employment-performance bonds to management upon hiring; in some cases workers would be required to purchase equity stakes in the firms, though these shares did not really apportion legal claims to the firm’s capital or the income flowing thereto.⁶ Oi (1999) reports that in several Shandong province localities workers posted bonds of between 300 and 900 yuan (per contract or per annum). Depending on the province and location, this sum may be equivalent to a year’s or several years’ incomes for an average rural dweller. Managers, too, were often subject to post performance bonds, at levels commensurate with their higher salaries—500 to 2000 yuan. If the enterprise manager or workers failed to hit their production quotas, they would forfeit their deposit to the enterprise;

⁶Huang (2008: 11) cites a case of Huawei enterprise in Guangdong province. Records of workers’ equity shares were not kept, nor did the workers ever receive remuneration for these shares.

above-quota productivity would earn workers some return on their performance bond above saving deposit rates, but presumably below the enterprise-wide rate of return.

Such a contractual arrangement, it has been shown, is a theoretical flip-side to the “efficiency wage” solution to the worker effort-discipline micro-contracting problem. In efficiency wage-type models, employers offer workers a rent (and a disciplining threat of losing this rent) as a means to induce higher worker effort. In the employment bond case, however, the worker pays a rent to the employer. Though this arrangement achieves higher worker effort and Pareto efficiency in equilibrium, the result is to transfer some of the worker’s wealth to the firm’s profits (Bowles 2002: Ch. 8). Bowles (2002: 291) suggests the reason that such contracts are uncommon in practice is due to worker morale issues and strong preferences for reciprocity and fairness. The fact that this labor contract prevails in China’s TVEs reflects strongly on the state of worker morale and the lack of a sense of fairness and reciprocity.

Lin, et al. (2003: 168) characterize such financial arrangements as “voluntary,” but if one examines the structure of power embodied in these institutions, it is difficult to draw conclusions about the extent of voluntariness in this form of what amounts to coerced internal financing supported in part by local officials’ authority over household migration decisions. Nonetheless, the collected sum of workers’ bond payments comprised a hefty piggy bank of internal funds for enterprise investment, decisions for which ultimately lay with the local government enterprise management committees and economic commissions. Chinese statistics on TVEs do not report this data, but assuming Oi’s data points (above) are representative, by 1988 internal funds from employment performance bonds could range from 28.6 billion yuan to 85.9 billion yuan, or equivalent to as much as 22 to 67 percent of aggregated local extra-budgetary revenues.

Between extrabudgetary revenues and the other resources available under the local government industrial policy financial structure, local officials had the authority,

incentive, and a substantial pool of funds at their discretion to pursue industrial development goals. But what role did officials really play? With a new growth orientation arising from performance incentives and the incentive to cultivate extrabudgetary revenue-generating enterprises, local officials took an active role in entrepreneurship and the development of local enterprises. This role included supplying basic bureaucratic inputs to champion for their local enterprises within China's Byzantine bureaucratic structure and to ensure that enterprises had the resources necessary, including finance, to operate and grow. But much more than this, local governments played an intimate and activist role in development of enterprise. The kinds of engagement in the micro-mechanisms of enterprise development go well beyond merely playing an allocative function operating parallel to the formal banking system for channeling financial resources to targeted projects. Local officials were the impetus behind enterprises' most fundamental business decisions; took the initiative to start firms; made investment decisions; subsidized information discovery costs for market development and adoption of new technologies; and redistributed entrepreneurial risks. Moreover, local officials performed these functions amid increasingly fierce competitive environments for personal professional and market development.

With a substantial supply of investable capital, local governments played a central role in subsidizing the "information discovery" process of learning the potential profitability of various possible economic activities—and more importantly how to grow to expand the realm of possibilities to even higher value-added activities. A common mechanism employed by officials as such was to call "rural enterprise development meetings." These meetings would bring together all local enterprises—often including private enterprise as well—with relevant bureaucrats from local and upper level governments (Oi: 1999: 124). This mechanism provided both a channel for information to flow from the grass-roots of enterprises up to government as well as a pipeline down which the government's position can filter to enterprises. In this way,

local officials “encouraged the creation of export production networks to coordinate the design, production, transportation, and marketing of export goods and provided those associations with investment capital, guaranteed supplies of raw materials and power, favorable rates of taxation, and increased access to foreign exchange” (Harding 1987: 153).

With this information feedback on the needs and abilities of enterprises, officials could take the lead in searching out relevant new technologies. Local officials would secure technical assistance from higher-level government institutions. Often, they would also sponsor “study tours” for plant managers and technical personnel along with the local officials to visit advanced production facilities and to learn about new products and technologies that could be copied or adapted for local production. “Local government initiated a flood of projects,” at first (Harding 1987: 116), particularly into markets that promised quick profits, like consumer goods, alcohol, and tobacco. But some localities quickly discovered they could facilitate technological adoption within TVEs by establishing equipment supply companies. These companies helped ensure the supply of necessary inputs by developing and procuring equipment, and providing consultation for their adoption in local plants. But in so doing, the equipment supply companies opened a channel through which new technologies could be passed down to production in a timely manner. Local officials could also use investments in technological upgrading to promote development of private firms and to draw them closer under the authority of the local government industrial policy financial structure. Huang (2008: 69) cites a case in Ronqi township of Guangdong province where the local government provided a ninety thousand yuan technical assistance loan and arranged a four million yuan line of credit for a private firm. In return, the local government only required equity ownership and the power to appoint the ostensibly private enterprise’s general manager.

Local governments also played an instrumental role in recruiting foreign direct investment to joint ventures with locally controlled firms, though this strategy only really took prominence following TVE ownership and governance reforms of the late 1990s. The CHIPS (2002) survey reveals that in 1998 only 11 percent of villages had FDI projects in their locality. But by 2002, almost 18 percent of villages had FDI projects. While foreign investment increased, the role played by local government officials in attracting FDI remained relatively unchanged. In 1998, village, township, or county level cadres were responsible for sourcing almost 84 percent of all FDI projects. In 2002, under an improved institutional environment for private property rights, the share of privately sourced FDI projects increased, but only by 0.9 percentage points to a 12.5 percent share. Meanwhile, the share sourced by local officials fell to 82 percent, but clearly still local officials played the dominant role in bringing foreign investment partners to rural industry.

But local officials employed a variety of direct and indirect controls to coordinate economic activities into targeted industries, and perhaps most importantly they exercised ad hoc discretion in enforcing taxation and other fees, regulations, business licensing, and so on. As noted in the introduction, China's regulatory system is one of positive liberties: individuals are free to do only what is explicitly allowed by the government. Enterprise development did not proceed unless it fit within the local officials' designs, and the flexibility officials enjoyed in enforcing policies provided the capacity and the incentive to cater to industrial development. Local officials held the purse strings to investment funds, and played the gatekeeper to necessary inputs and technology. The result was rapid growth and technological advancement, in terms both of expansion of productive capacity to new industries and attainment of competitive (technical and allocative) efficiency levels. Murakami, et al. (1994), in a small survey of enterprises, found TVEs to be more efficient than SOEs or urban collective enterprises, but on par with efficiency at many foreign joint-venture

enterprises. Other studies find no statistical differences between TVE efficiency and that of foreign joint venture or private enterprises. This by no means implies that this institutional configuration was optimal, or that other institutions might yield improvements—it is merely a description of the financial structure of this period, where government played an intimate role in the development of rural enterprise and industry.

2.4 TVE Reform and Endurance of Local Industrial Policy

The period of political consolidation that followed the 1989 political crisis that culminated in the Tiananmen Square protests sought validation of earlier “market reforms” and a renewed push for reforms toward marketization, privatization, and “economic liberty” of private capital accumulation. The TVE sector, and the local government industrial policy financial structure that nurtured its rise, was caught in the middle—perceived both as too liberal by factions opposing further reforms and too statist by those pressing forward. As discussed in Section 2.1, Deng Xiaoping in 1992 won the backing of the People’s Liberation Army (PLA) to reinvigorate the market reform process. To support the privatization and corporate governance reforms of SOEs, a “Bill of Rights” (Wu 2005: 148-9) was passed empowering SOE managers to hire and fire workers; set production, prices, and output; invest and dispose of assets, including through mergers and joint ventures; and so on. The 1993 National People’s Congress further secured private property rights and provided an impetus for privatization of SOEs and COEs (including TVEs) in what is known as the Company Law, allowing for limited liability shareholding corporate governance structures. While the new laws spawned a variety of newly possible ownership forms in China and validated the distribution of surplus to private gains for shareholders, it did not undo the preceding financial structure that gave local officials much control over

the course of development, nor did it alter the bureaucratic incentive for successfully promoting growth.

Ownership and governance reforms did open more space for a truly private sector, but they also transformed governments into rentiers atop what amount to financial holding companies and money and land trusts, but still with the capacity to shape and support development of firms of all ownership categories. Full or partial privatization resulted in some form of shareholding governance structure, of which the governments would retain some portion of shares, and even some continuing collectively owned TVEs implemented shareholding structures. Similar reforms occurred with SOEs, which also began a process of cleansing and preparation for public listing on China's new stock markets. Enterprises were first transformed into shareholding corporations, and then governments constructed holding companies to manage their new portfolio of financial assets. While parceling off much of the commons for sale, government at the local and higher levels still controlled most shares of the economy's productive assets, including more than two-thirds of the shares of all listed companies. This transformed the income stream received by local governments from tax and fee revenues to the distributed earnings of firms, but did not transform the incentive for local officials to shape development. Contracting out management of publicly owned assets also continued and expanded increasingly from productive assets to real estate (Wu 2005: 196), which could be leased to real estate developers. In short, governments became not only entrepreneurs, but also capitalists.

Little detailed information about the performance of different segments of the TVE sector is available before 1997, and after 1997 property rights reforms and reforms to TVEs in particular led to a proliferation of different ownership structures in the TVE sector. Many TVEs remained collectively owned and some were fully privatized; a substantial share were reclassified as (worker-owned) cooperatives, corporatized as limited liability or shareholding corporations, or partially privatized as joint ventures

with domestic private or foreign-invested firms—from Hong Kong, Macao, Taiwan, and elsewhere. In all cases of these new ownership forms, the transformation yielded new capital infusions but left local governments with controlling stakes in the enterprises.⁷ As a general rule, the most valuable enterprises would be spun-off into new ownership forms, while worse-performing enterprises would be privatized entirely or consolidated under collective ownership.

Ownership reforms transformed governance structures, but they did not change the relationships between local officials and industrial enterprises characteristic of the local government industrial policy financial structure. A 2004-05 survey found that private business owners in China have quite favorable impressions of the business and institutional environment, especially when compared to non-business owners (Djankov, et al. 2006). In particular, private business owners had very positive perceptions of the local government’s “attitude toward business”—a sentiment not extended to their perceptions of the central government. The higher favorability from business owners than from non-entrepreneurs and the high favorability of local relative to central government indicates that local governments continue to play an important role in cultivating development, although the instruments of the industrial policy financial structure under their control are now extended to firms in a wider range of ownership categories.

2.5 Conclusion

This chapter describes the incentives, power structure, and application of a financial structure under the control of local government officials in China for promoting industrial development. Though through this financial structure local officials had

⁷Data on these new ownership firms are available only from 2002. In the TVE statistics, it appears after 1997 that much of the population of “private” TVEs was reclassified into the ownership category “Other.” These two categories are combined in considering the group of private TVEs.

the authority, the means, and the incentives to undertake the entrepreneurial role envisioned by the new industrial development strategy literature discussed in Chapter 1, on its own this institutional description does not provide evidence of its efficacy in promoting development. Was this financial structure effective? Or was it merely coincident with an emerging private sector, operating under a free market logic in an environment of gradually strengthening private property rights and other market institutions? In the next chapter, I turn to this question by first putting aside China's institutions of industrial policy to explore with empirical detail the development and performance of entrepreneurs in China's emergent private economy. Then, in Chapter 4, I return to explore how this local government industrial policy financial structure compares to other financial structures in developing exports that are the most obvious indication of the growing efficiency, quality, and technological sophistication of China's industrial base.

CHAPTER 3

CHINA'S PRIVATE ENTREPRENEURS: CAPITALIST DYNAMOS OR RESERVE ARMY OF THE SELF EMPLOYED

3.1 Introduction

Entrepreneurs play a vaunted role in economic theory: their competitive zeal, creativity, and initiative spawn the product and process innovations that form the foundation of economic growth (Baumol 1968). Many observers attribute China's development success to a wave of private, self-employed entrepreneurs unleashed through successive market-liberalizing reforms since 1978. Huang (2008: 55), for example, asserts there was no "China Miracle"—China grew because of its "private sector dynamism." Yueh (2009: 778) cites China's entrepreneurs as "important drivers of growth," and Zhang, et al. (2006) depict the sector as an "engine" of growth. These are just some examples of the view that China's fencing-in of the economic commons, its cultivation of private property rights, and its opening to market price-based resource allocation paved the way for a new economy of unbridled capitalist dynamism. After all, in 2001 the Communist Party even started extending membership to private businessmen. This vision of China's success is one where economic reforms unleashed an army of previously collectivized, disincentivized workers, transforming them into an army of skilled, innovative, motivated, risk-loving entrepreneurial pioneers.

This chapter answers two questions. First, who in China become entrepreneurs and why? Second, how attractive are the potential economic opportunities in entrepreneurship relative to expected rewards of other occupational choices, namely wage employment? Theory suggests that those with particular entrepreneurial verve

or appetite for taking risks will self-select into entrepreneurial occupations. Though it is unclear how economists might measure entrepreneurial ability, it is clear from the data that China's entrepreneurs exhibit lower levels of education than their wage worker counterparts in both urban and rural labor markets. Lower overall educational attainment indicates that the population of entrepreneurs are unlikely candidates to be leading the technological intensification underlying China's economic growth. Theory also suggests that financial structures providing access to investment capital and securing property rights to create appropriate investment incentives are important for entrepreneurial development. Even most moderately-sized projects require financing beyond the means of the individual entrepreneur. The importance of external finance for entrepreneurship implies that underdeveloped financial institutions that ration credit will constrain the supply of entrepreneurship and thereby impede economic development.

Between 1988 and 1995, entrepreneurial self-employment in the rural economy shot up by 30 million, accounting for almost 40 percent of all new off-farm rural employment (Rozelle, et al. 1999). Even though the trend of self-employment in China and the strengthening of property rights in the 1990s appear to coincide with a period of rapid economic growth, China's self-employed entrepreneurs are unlikely heroes in China's economic drama. China's financial institutions are widely regarded as inefficient and biased against the private sector (Lardy 1998; Park and Sehrt 2001; Podpiera 2006), particularly for the difficulties small and medium private sector entities face in obtaining external credit (IFC 2009; Zhang 2001; Liu 2007). At the outset of economic reforms, China ranked as the fourth poorest country in the world, rivaling countries like Burundi and Nepal in level of economic development, including in the quality of institutions.¹ Though China instituted landmark reforms to

¹The levels of per capita income were US\$251 in China, US\$203 in Burundi, and US\$265 in Nepal in 1980 measured at IMF purchasing power parity exchange rate.

strengthen property rights, both with implementation of the 15th National Congress guidelines in 1997 (Wu 2005) and in regulatory changes related to China's 2001 accession to the WTO, China's property rights institutions fall far short from the idealized institutions thought to support private entrepreneurial development (La Porta, et al. 1997, 1998). The International Finance Corporation's (IFC 2009) *Doing Business 2010* survey ranked China an unimpressive 89th out of 183 countries in overall business-friendly institutional environments (barely edging out Zambia), 93rd in investor protections, and 151st in ease of starting a new business.² The financial access problems for China's private sector have improved little over the course of reforms (Lardy 1998; Park and Sehrt 2001; Bonin and Huang 2001; Podpiera 2006). Some have suggested that, though China's formal financial institutions are inefficient, informal financial activities—credit relations beyond the purview of law and exogenously enforceable contracts—are pervasive in China and substitute (relatively) more efficient institutions in place of less efficient formal finance dominated by state banks and large firms (Allen, et al. 2005).

Aside from having a large population, China differed from its less developed peers in one key respect. Unlike these other poor countries, a decades-long industrialization campaign under centralized economic planning had left China with a highly developed—if technologically outmoded—industrial infrastructure at the time that economic reforms commenced in 1978. This industrial infrastructure included numerous state and collective-owned enterprises (SOEs and COEs), including the rural production brigades that would evolve into China's dynamic township and village enterprises (TVEs), as well as the state administrative infrastructure to support it. Later, in the 1990s and beyond, privatization and corporate governance reform of the SOEs, COEs, and TVEs would help private entrepreneurs penetrate the industrial sec-

²The IFC is the World Bank's private sector lending arm.

tor, particularly heavy manufacturing industries, but early entrepreneurs were largely excluded from this industrial sector. It would be remarkable if China's entrepreneurs were so different from self-employed entrepreneurs in Zambia, Burundi, Nepal, or any other country with underdeveloped financial systems and legal institutions.

In other developing countries a different story of entrepreneurship than that suggested for China predominates. Though few self-employed entrepreneurs and entrepreneurial firms achieve growth or high profitability, the sector is expanding rapidly in many regions of the world (Nichter and Goldmark 2009). Entrepreneurs in Tunisia with small wealth endowments were found to achieve no increasing returns, indicating low technological sophistication in their enterprise (Mesnard and Ravallion 2001). In Ghana, small entrepreneurial enterprises exhibited low productive capacity, low growth, and high rates of attrition; the bulk of small Ghanaian entrepreneurs did *not* grow into larger economic entities (Masakure, et al. 2008). In Argentina, not only do the self-employed on average earn less and experience less income growth than wage or salary-employed workers (controlling for skill levels), individuals tend to enter self-employment in economic downturns when economic conditions are most difficult (Mandelam and Montes-Rojas 2009). The story is much the same throughout the developing world where substantial segments of the economically active population are working in self-employment when the expected rewards from working in other occupations are so much better. Many of these individuals are engaged in informal economic activities (ILO 1972), beyond the purview of the legal system and absent social protections, and are concentrated in small-scale, low productivity, unskilled labor-intensive activities (Pratap and Quintin 2006). Could China's entrepreneurs be so different? Could they achieve the dynamism some ascribe to them even amidst underdeveloped financial institutions and an environment of relatively weak private property rights muting incentives for private risk-taking?

Survey data, including the China Household Income Project survey (CHIPS) on which this chapter is based, consistently find that China's entrepreneurs comprise roughly 4 percent of the national work force; official macroeconomic data show self-employment rising as high as 8.7 percent in 199899, falling back to an average of 6.7 percent in the years thereafter. This entrepreneurial economic sector spans a broad range of activities, from informal petty trading and household "putting-out" production, to large private national and even international (domestically owned) corporations. Although there are of course many examples of private Chinese businesses fitting into the latter group, the vast majority of China's self-employed entrepreneurs fall closer to the former group in terms of size, technological sophistication, and productivity, concentrated in service sector activities requiring little capital or technical skills: retail and wholesale trade, food service, and so on (Maddison 2007: 84). According to CHIPS data employed in this study, more than 92 percent of urban self-employed entrepreneurs and two-thirds of rural self-employed entrepreneurs are concentrated in traditionally low-productivity, low-skill-intensive service sector activities.

Drawing on the large-scale, nationally representative CHIPS 2002 data, this chapter evaluates the relationship between financial institutions and labor markets as they pertain to the supply and quality of entrepreneurship.³ To the best of my knowledge, this is the first use of the CHIPS to study entrepreneurship and entrepreneurial finance. Though administered more than twenty years into economic reforms, the 2002 survey captures the effects of important institutional reforms in the late 1990s affecting private entrepreneurship. First, new laws strengthening private property rights and investor protections greatly improved the institutional environment and incentives to enter entrepreneurship. Second, reforms in the 1990s also promoted

³See Gustafsson, et al. (2008) for a description of the CHIPS survey.

widespread privatization of state-owned and collectively-owned enterprises as well as management-labor relation reforms in enterprises remaining state-controlled. While privatization improved the business environment for the private sector, privatization and management reforms also led to mass layoffs and diminished economy-wide demand for labor. In order to better understand the contribution of indigenous entrepreneurs to China's development, I investigate which individuals supply entrepreneurship in China by choosing self-employment, factors affecting the probability of this occupational choice, and the productivity of these workers relative to workers in wage labor occupations.

Specifically, I estimate the effects of wealth and access to formal and informal finance, factors affecting labor market segmentation, and individual characteristics on the occupational choice of entrepreneurial self-employment. Wealth endowments may be endogenous with the choice of entrepreneurship if individuals accumulate wealth in anticipation of entering entrepreneurship (Evans and Jovanovic 1989) or if entrepreneurs accumulate wealth faster than non-entrepreneurs due to their enterprises. These possibilities complicate empirical analysis of wealth observed *ex post* of the occupational selection decision. To mitigate this endogeneity issue, I exploit a natural experiment provided by China's urban housing privatization scheme, which randomly "distributed" wealth endowments to individuals (Li and Zhao 2007), exogenous to any individual propensity toward entrepreneurship. After assessing factors affecting the probability of entering self-employment, I model the determinants of earnings for individuals in wage employment and self-employment occupations, controlling for the endogeneity of earnings and occupational choice, and compare the opportunity costs of occupational choice and the potential gains (losses) from switching occupations.

Instead of dynamic entrepreneurship, I find evidence that China's entrepreneurs largely comprise a reserve army of the self-employed with a constrained opportunity

set of occupational choices in their labor supply decision. In this sense, the vast majority of China's entrepreneurs resemble informal sector self-employment pervasive in many developing countries. China's entrepreneurs fall into one of two broad categories: those with relatively low skills facing social and economic marginalization who would be better off in wage work if such opportunities were available, and those who appear to excel in entrepreneurship owing to political relationships with agents of the Party and the State.

After reviewing the literature on institutions, finance, and entrepreneurship in Section 3.2, I discuss available data on entrepreneurs in China (Section 3.3) and provide an extensive descriptive statistical analysis of entrepreneurs and entrepreneurial enterprises (Section 3.4). Section 3.5 presents results of an estimated probit model of the determinants of occupational selection. Section 3.6 presents estimates of earnings functions for entrepreneurs and wage workers and compares the potential earnings gains (or losses) from switching occupations. Finally, Section 3.7 draws conclusions and discusses remaining questions about the nature of entrepreneurship in China's economic development.

3.2 Institutions, Finance, and Entrepreneurship

With the end of collective agriculture and the opening of space for private ownership and individual businesses, economic reform in China provided individuals with the opportunity to choose from an expanded set of occupations. Why choose to be an entrepreneur? At the simplest level, individuals will choose the occupation for which the expected returns are better than or equal to their next best alternative choice. This suggests that individuals who have the highest expected rewards will be attracted to entrepreneurship. The economics literature identifies two key factors primarily associated with the occupational choice to supply entrepreneurship: individual characteristics and wealth (Evans and Jovanovic 1989; Blanchflower and Oswald

1998;) Individual characteristics indicate a propensity toward self-employment as well as the potential returns to individual abilities in self-employment relative to other occupations. Wealth plays several roles, affecting the individual's preferences, economic opportunities, and the ability to access external finance in order to achieve sufficient scale economies in production. Institutions, in particular the financial structure institutions affecting property rights and credit contracting, play a foundational role in affecting the calculus of expected returns in the labor supply decision. Macroeconomic conditions, too, such as interest rates and the level and stability of growth, also obviously impact expectations formation and the cost-benefit analysis.

Individuals vary in their preferences for risk and abilities beneficial to entrepreneurial self-employment, and thus some people will have predisposed preferences for entrepreneurship. The labor supply choice of self-employment is unobserved by researchers, but it is reasonable to assume that individuals with innate entrepreneurial abilities—an ambiguously defined endowment of initiative and business acumen—and specific technical skills or knowledge will be more likely to choose and succeed in entrepreneurship. These attributes may or may not be known (or estimated) to the individual prior to the labor supply choice, but are inadequately observed by the researcher. An individual's particular concentration of endowed abilities, in addition to affecting the individual's labor supply choice, will also affect another simultaneous choice of economic sector to enter, and the choice of sector is in turn related to expectations of potential returns. Unobserved by the researcher, "ability" is proxied typically by the individual's level of education and work experience, such as in a standard Mincer (1974) earnings model. It has been suggested that some individuals may derive non-monetary benefits from entrepreneurial labor (subjective happiness) from aspects of entrepreneurial activities. This preference for characteristics of entrepreneurship is distinct from individual risk preference. It is possible that, even where an entrepreneurial individual may be indifferent to or worse off than in wage

employment (or other non-entrepreneurial activities), the satisfaction of entrepreneurship could more than offset some deficit in expected monetary rewards.⁴

Wealth affects entrepreneurship through several channels. First, wealthy individuals tend to have higher risk preferences, perhaps because they are better able to withstand the risks of entrepreneurship (Bardhan, et al. 2000). Second, problems of incomplete or unenforceable contracting in credit relations lead to credit rationing through reduced quantity and/or higher cost of capital. The constraints diminish as individual wealth increases, meaning that wealthy individuals will have a larger opportunity set of potential credit relationships. In the trivial case, a wealthy individual may be able to self-finance a project without the need for external funding, although this often is not possible even for modest-sized projects. There is an extensive literature relating information and contracting problems to credit constraints generally in finance (Stiglitz and Weiss 1981) and the implications of these coordination problems for the supply of entrepreneurship (Evans and Jovanovic 1989; Banerjee and Newman 1993; Mead and Liedholm 1998; Aghion, et al. 2007).

Wealth endowments constrain the range of feasible contracts in which individuals can engage, influencing not just the choice of entrepreneurship but also the scale and scope of undertaking (Eswaran and Kotwal 1990; Bowels 2002: Ch. 10). Greater wealth endowments that entrepreneurs can commit to a project will relax the external financing constraint, enabling the entrepreneur to choose from a wider range of projects and to achieve better scale economies. In this respect, wealth and credit constraints will affect firm performance. Entrepreneurs facing borrowing constraints will enter with under-capitalized initial investments and thus operate at less-efficient scale.⁵ Strong institutions, including property rights, exogenous contract enforce-

⁴Although there does not appear to be much difference in subjective happiness between wage workers and entrepreneurs in China, as discussed in Section 3.4.1 below.

⁵Evans (1987), however, argues such enterprises may grow faster due to strong incentives to reinvest earnings.

ment, and investor protections, are importantly related to the financial system's ability to attenuate problems in credit relations (La Porta, et al. 1997; 1998). The implication is that underdeveloped financial and legal institutions constrain individuals from entering entrepreneurship, but even in economies where these institutions are highly developed (i.e., not China), contracting problems such as moral hazard and adverse selection still abound and result in credit rationing. Development of financial institutions alone cannot eliminate information and contracting problems in credit relations—which persist even in the most advanced economies—and liberalization may exacerbate problems of entrepreneurial finance (Emran and Stiglitz 2007).

Entrepreneurial supply, in this view, is a function of the expected return from entrepreneurship, given individual abilities, wealth endowment, and risk preference, relative to the returns to wage labor or agricultural production for market or own-account. Institutions enter the equation by shaping who receives access to external finance and the quantity of financing received, and the entrepreneur's ability to appropriate profits from their investments.

But other factors—social, political, and economic—can also restrict the individual's set of occupational choices, resulting in dualistic, segmented labor markets (Fields 1975; Gordon, et al. 1983). That is, the choice of entrepreneurship may not be an individual's strict preference and may be made with a calculus unrelated to individual entrepreneurial abilities. There is some debate, though, as to whether segmentation results from the disadvantages faced by distinct groups or from rigidities in the formal labor market that restrain labor demand (Maloney 2004), and China's formal labor markets indeed exhibit rigidities (Brooks and Tao 2003). But the rigidities are most binding in the SOE sector where the declining employment trend is a construction of explicit policy, not the result of rigidities constraining labor demand. The following section turns to exploring who becomes an entrepreneur in China, why, and how successful are they as entrepreneurs. The descriptive analysis shows that

social segmentation factors, rather than rigidities preventing labor market clearing, are associated with entrepreneurship in China.

3.3 Data on China's Entrepreneurs

Although entrepreneurs are thought to be critical for growth, and for China's development experience in particular, systematic empirical research on China's entrepreneurs comprises a relatively small literature. With some important exceptions (Yueh 2009a, 2009b), the research has been focused on idiosyncratic cases—such as the experience of Wenzhou city in southern Zhejiang province, where early and extensive promotion of private sector development occurred (Parris 1993)—or been limited to surveys of small-to-moderate-sized samples (Djankov 2006), or of very large firms. For example, Allen, et al. (2005) survey seventeen large private firms to evaluate the relationship of informal finance to entrepreneurship; the Asian Development Bank (2003), in a study of private sector development, surveyed 719 firms that were *sixteen times larger* than the national average size for private sector firms—a systematically biased sample for evaluating China's private sector as a whole. An investment bank study from CLSA proclaimed China's entrepreneurs were “on the attack!” after surveying a mere 30 ostensibly small and medium-sized enterprises, although these averaged US\$28 million in annual sales (Rothman, et al. 2005).

This study draws on the large-scale, nationally representative 2002 China Household Income Project survey (CHIPS; see Gustafsson, et al. 2008). Though the present wave of self-employment in China began with the onset of economic reforms and there are two earlier iterations of the CHIPS data (for 1988 and 1995), there is an analytical rationale for focusing on the 2002 data. Aside from the practical matter of more relevant questions on entrepreneurship and credit relations, the 2002 survey follows important institutional reforms promoting privatization and strengthening of private property rights. First, new laws strengthening private property rights and

investor protections greatly improved the institutional environment and incentives to enter entrepreneurship. Second, the wave of reforms in the 1990s also promoted widespread privatization of state-owned and collectively-owned enterprises as well as management-labor relation reforms in enterprises remaining under state-control. Privatization also improved the business environment for the private sector, but also privatization along with management reforms led to mass layoffs and diminished aggregate demand for labor. Despite offering the most extensive individual and household economic data on China, to the best of my knowledge, this is the first use of the CHIPS to study entrepreneurship and entrepreneurial finance.⁶

It is worth pausing to consider just what makes an “entrepreneur” amid the myriad of legal ownership forms and property rights in reform-era China. Entrepreneurs are, at their core, people who take investment risks and supply their critical enterprise to the endeavor. China’s private ownership sector encompasses a large and growing share of the economy, but not all “private” firms are entrepreneurial (and indeed, as described in Chapter 1, not all “private” firms are really private). Enterprises may be classified as self-employed or an individual business owner, private, joint-stock corporation, shareholding corporation (market-listed), or domestic or foreign joint ventures, aside from wholly state-owned or collectively-owned enterprises (SOEs or COEs) and quasi state-owned TVEs. The TVEs at the heart of the rural-centered manufacturing and export boom occupy a property rights gray area wherein entrepreneurial local government officials exercised considerable autonomy and authority over even private economic affairs. In population terms, ostensibly private TVEs comprised approximately 90 percent of registered TVEs, though these were mainly small-scale and concentrated in low-productivity service activities (Huang 2008: Ch. 1). Though relatively small in numbers, larger-scale manufacturing and industry TVEs were pre-

⁶In fact, some research explicitly excludes self-employed, private entrepreneurs from labor market analyses with CHIPS (Yang 2005).

dominantly owned collectively or outright by the local government. Smaller, private TVEs likely played supporting roles in the rural economy as links in the production chains of collective TVEs, benefitting also from agglomeration economies of collective TVE local industry.

When policymakers began privatizing SOEs, they engineered corporate governance structures with diversified bloc shareholding, albeit with blocs distributed to other state-owned enterprises, asset management companies, and government agencies rather than to private ownership (Wu 2005). Now, the Chinese government, at various levels, controls approximately two-thirds of outstanding shares issued on the domestic stock exchanges. Privatization of local government- and collectively-owned TVEs, however, proceeded with a broader menu of property rights institutions options, but ultimately yielded private claimancy and control rights, often to current managers, even though the local government still retained significant shares and influence. It is safe to say that TVE managers, who often assumed residual control of the enterprise following privatization, retained their close connections with government officials and the economic benefits that entrepreneurial government officials focused on delivering growth could bring to bear. These new manager-owners of recently privatized TVEs are certainly entrepreneurs, but the political and social assets they bring distinguish them from other private entrepreneurs, particularly the self-employed and individual business owners. Managers of firms such as those privatized SOEs or those of other private corporate governance structures may be skilled, but the political and social assets they bring distinguish them from other private entrepreneurs, particularly the self-employed and individual business owners.

For the purpose of this study, “entrepreneur” is defined as someone self-identifying as self-employed, the owner of an individually-owned or private business, or the manager of an individually-owned or private business for which the individual owns a majority of the productive capital stock. Although a large segment of the private

economy emerged with diverse property rights that assign residual control to managers and residual claimancy and risk to capital owners, managers of such enterprises do not qualify as entrepreneurs where they are uninvolved with risk-taking. The CHIPS data are divided into rural and urban surveys with separate questionnaires, covering 9,200 and 6,835 households and 37,969 and 20,632 individuals, respectively. In total, I identify 1,085 entrepreneurs (4.5 percent of the economically active population) in the rural survey and 450 (4.3 percent) in the urban survey, a prevalence of entrepreneurship consistent with other data sources (Yueh 2009a; NBS). In the urban survey sample, entrepreneurs are defined as those economically active individuals reporting an occupation of “self-employment” ($n=434$). Additionally, individuals reporting “owner or manager of private firm” or “other” occupations are defined as entrepreneurs if they also report positive values for owning self-owned productive assets ($n=7$ and $n=9$ observations respectively). Similarly in the rural survey, I define those economically active individuals identifying their occupation as “non-farm individual enterprise owners” ($n=1,054$) or as “owner or manager of enterprise” with positive values of non-agricultural productive assets ($n=31$). In the rural survey sample, however, I exclude individuals with occupations classified as “other” and with positive non-agricultural productive assets. This group also reports high agricultural time allocation, near the level of subjects identified as agricultural producers.

For a number of entrepreneurial enterprises, multiple household members supply labor to the enterprise. In the analysis that follows, individual characteristics are assessed using the full sample of entrepreneurs while household characteristics are assessed by assuming one individual exercises enterprise control. There is no information on intrahousehold allocation decisions and this is an arbitrary decision to assign control to the head of household or, in cases where the household head is not engaged in the enterprise, to the oldest participating household member. As a robustness

check, econometric analyses were also conducted on the full sample of entrepreneurs, but this did not qualitatively affect the results.

The data present some short-comings for the analysis of entrepreneurship as well. Self-reporting of the self-employment occupational choice is likely to understate the prevalence of entrepreneurship by missing unreported informal sector activities (Storey 1991). But to the extent that the informal sector comprises low-productivity activities, this potential omission would likely bias estimates of entrepreneurial selection and performance toward better-qualified and more successful individuals. It is also possible that a large pool of China's successful entrepreneurs are simply missed in the CHIPS's random sampling process, which was not designed to study entrepreneurship. However, the proportion of entrepreneurs observed in the CHIPS data is in the range of that reported in other distinct survey data specifically designed to study entrepreneurs as well as in national statistics. Thus, repeated sampling seems to converge on a consistent estimate of the size of the entrepreneurial population. Finally, I note that the data exhibit selection bias in not observing failed entrepreneurs, only surviving entrepreneurs. To the extent this selection bias exists, it should tend to bias in favor of observing relatively successful entrepreneurs.

3.4 Characteristics of China's Entrepreneurs and Entrepreneurial Enterprises

3.4.1 Characteristics of Entrepreneurs

Several stylized facts about China's entrepreneurs emerge from this literature, most of which are confirmed by analysis of the CHIPS data. The research indicates only a small share of the population is engaged in entrepreneurship. Yueh (2009a) finds, in a survey of 4,500 urban households, roughly four percent of the sample engaged in entrepreneurship. Djankov, et al. (2006) find that China's (urban) entrepreneurs tend to be wealthier, have higher risk preference, and have other family

members engaged in entrepreneurship. Some evidence suggests that entrepreneurs tend to be happier on average than non-entrepreneurs, however this is not the case in the analysis discussed below. In contrast to findings in other developing countries, China's entrepreneurs are more likely to be male and heads of household. China's entrepreneurs have lower educational attainment than those in wage employment occupations and are more likely to have been laid off from their previous job and to face other forms of social and economic marginalization. Entrepreneurial households appear to differ little from other households in their ability to access external credit, although those with political connections appear to access credit on better terms. The vast majority of China's entrepreneurs are of very small scale, are concentrated in low-productivity service sector activities, and exhibit low-to-negative capital accumulation rates.

3.4.1.1 The geography of entrepreneurship

The geographical dimension of unequal development between China's coastal and interior provinces is often attributed to the earlier and more extensive experimentation with liberalization and private sector development. A corollary hypothesis is that private entrepreneurship developed most in the coastal provinces, and particularly the southeastern provinces, where market reforms were earliest and furthest advanced and where proximity to the Hong Kong, Macao, and Taiwan economies provided channels to supply investment capital, to transfer managerial and technological know-how, and to provide entrepot trade linkages to export markets. However, geographical distribution of China's entrepreneurs shown in Figure 3.1 does not conform with this explanation for why coastal development raced ahead of the rest of the country. In fact, while self-employment is prevalent in some of the dynamic coastal province economies, it is equally prevalent in a number of the non-coastal provinces not often thought of as leading China's economic growth. Certainly coastal provinces

such as Guangdong, Zhejiang, and Jiangsu rank near the top of provinces with the highest shares of entrepreneurs. Guangdong and Liaoning provinces had almost 12 percent of urban entrepreneurs in the CHIPS sample and Jiangsu had over 8 percent; however, in Zhejiang and Shandong no urban entrepreneurs are observed in the data. Zhejiang did have the highest concentration of rural entrepreneurs. But many provinces far from the liberal and open coast had similar or even higher proportions of China's entrepreneurs. Henan province, in China's southern interior, had the highest share of urban entrepreneurs and tied with Zhejiang for the highest share of rural entrepreneurs. Sichuan, in the west, had more urban entrepreneurs than any of the coastal provinces, and Yunnan, Anhui, and Gansu all had shares of urban entrepreneurs comparable to Jiangsu's level. Thus, the distribution of China's entrepreneurs (as observed in the CHIPS data) does not correlate well with coastal geography where the provinces are more prosperous with more capital available from formal and informal sources for investment; more liberalized; and have institutions more conducive to private development. Geographically speaking, the distribution of entrepreneurship across China's provinces appears uncorrelated with the "quality" of institutions thought critical for private development.

Figure 3.1: Provincial Distribution of Self-Employment, 2002

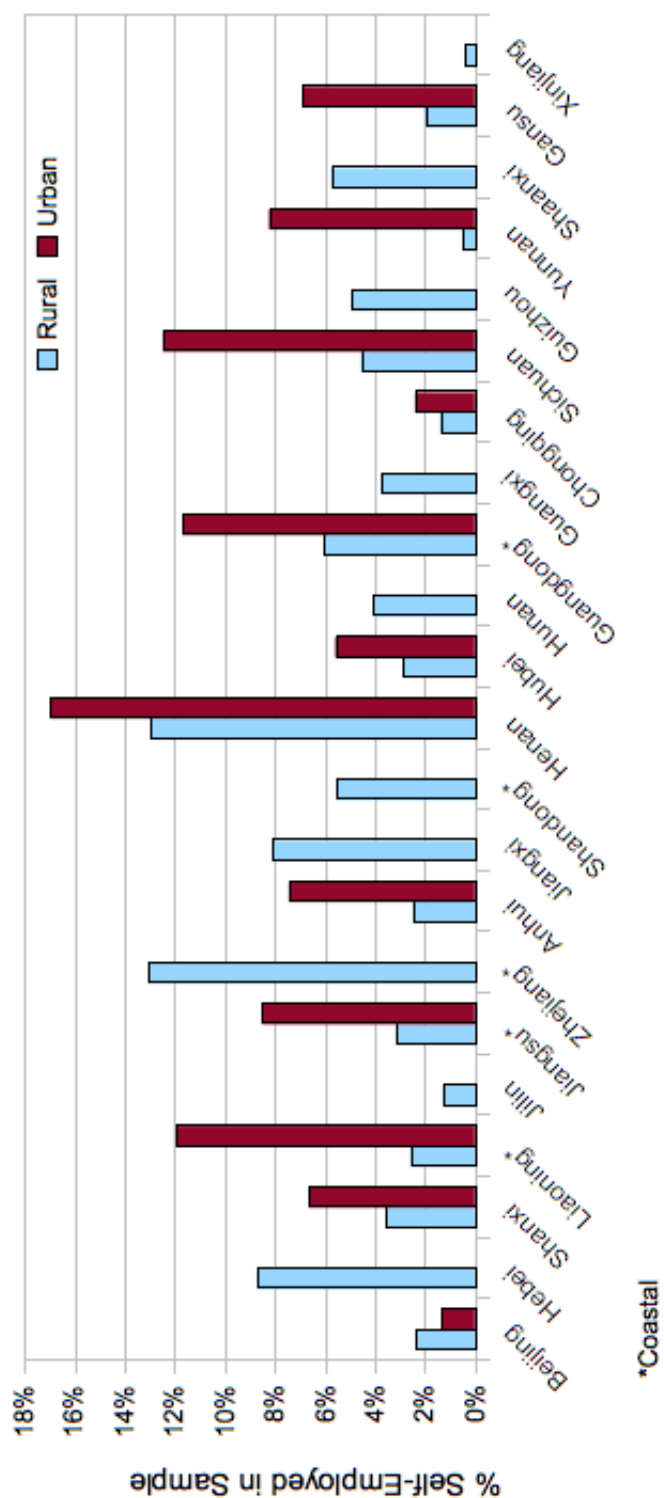


Table 3.1: Demographics of Economically Active Population, By Occupation Group

	Urban		
	Wage Worker	Entrepreneur	
N	9,287	450	
Male	55%	64%	
Married	88%	93%	
Household Head	47%	55%	
Avg Age	40.5	40.3	
Avg Years School	11.5	9.3	
Avg Experience	20.3	17.3	
Happy	57%	42%	
Party Member	34%	8%	
<i>Hukou</i>	98%	91%	
Laid Off	1%	4%	
	Rural		
	Wage Worker	Entrepreneur	Agric. Producer
N	9,234	1,085	13,046
Male	72%	68%	40%
Married	73%	88%	82%
Household Head	48%	52%	27%
Avg Age	36.1	39.1	40.5
Avg Years School	7.8	7.7	6.5
Avg Experience	22.2	25.3	27.6
Happy	63%	71%	59%
Party Member	12%	9%	5%

Source: Author's calculation of CHIPS (2002) data.

3.4.1.2 Gender and Household Characteristics of Entrepreneurs

Table 3.1 presents summary statistics comparing groups of workers in urban and rural labor markets. China's entrepreneurs are predominantly male and married, with a majority assuming "head of household" status. In contrast to many other developing countries where women comprise the majority of self-employed entrepreneurs (Pratap and Quintin 2006), in China entrepreneurship is predominantly a male activity. In the urban economy, 56 percent of entrepreneurs were male, while in the rural economy 68 percent were male. The higher share of males in rural entrepreneurship is due perhaps to the fact that women are often relegated to agricultural production—only 40 percent of rural agricultural producers were male, and only 27 percent were "heads of households." Whereas women tend to dominate self-employment in other developing countries, in China the preponderance of males indicates that gender issues are not a factor in segmenting labor markets into entrepreneurship. The data provide little insight into intrahousehold bargaining over labor and asset allocations, but the male predominance in entrepreneurship may belie an important role played by women. Ethnographic and survey research suggests that women play a leading role managing credit relations in the informal financial sector (Tsai 2002).

Large shares of the economically active population were married in both the urban and rural samples, but entrepreneurs were even more likely to be married than wage workers or, in the rural sample, agricultural producers. Marriage may be related to entrepreneurship in several ways. Marriage is associated with larger household sizes, making available a larger supply of unremunerated labor to the entrepreneurial enterprise (similarly, marriage rates are higher for agricultural producers than for wage workers). Marriage and larger households also allow for the household to have more diversified sources of income, thereby reducing the risk of entering entrepreneurship. Finally, marriage may expand the pool of potential resources available for entrepreneurship through informal, intrafamilial credit. As discussed in Section 3.4.3

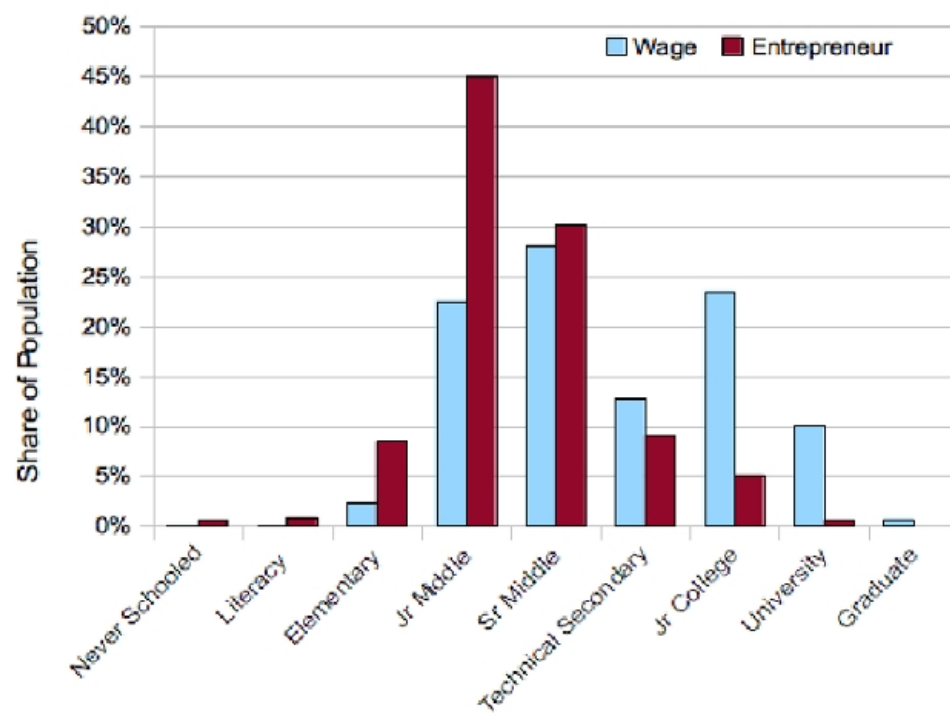
below, intrafamilial lending is the primary source of credit for both entrepreneurs and non-entrepreneurs alike. In the urban sample, 93 percent of entrepreneurs were married compared to 88 percent of wage workers. In the rural sample, 88 percent of entrepreneurs were married, compared to 73 percent of wage workers and 82 percent of agricultural producers. Entrepreneurs were also somewhat more likely than wage workers or agricultural producers to be designated as “head of household.” The preponderance of household heads in both urban and rural entrepreneurship suggests that entrepreneurship is the household’s primary economic activity, earning the highest expected returns.

3.4.1.3 Human Capital and Entrepreneurial Ability

Table 3.1 also compares human capital attributes thought related to entrepreneurial ability. Individual attributes reflecting entrepreneurial abilities are not well understood or measured within literature on entrepreneurship. The set of beneficial individual characteristics such as managerial skill and business prowess are difficult to operationally define or to quantify. Typically, empirical research that employs some kind of Mincer-style (1974) human capital measures of education and experience can in part capture entrepreneurial abilities; returns to abilities unobserved by the researcher are assumed explained empirically by disturbances from predicted earnings estimates. Clearly educational attainment cannot distinguish precisely between entrepreneurial endowments and other dimensions of human capital—being educated does not necessarily make one a good entrepreneur, nor is education a necessary condition for entrepreneurial success. Examining educational attainment of entrepreneurs, however, is suggestive of the technological sophistication of entrepreneurs and entrepreneurial enterprises. If entrepreneurs are driving innovation and technological deepening of China’s economic structure, it is reasonable to expect entrepreneurs’ technical capacities to be reflected in higher educational attainment.

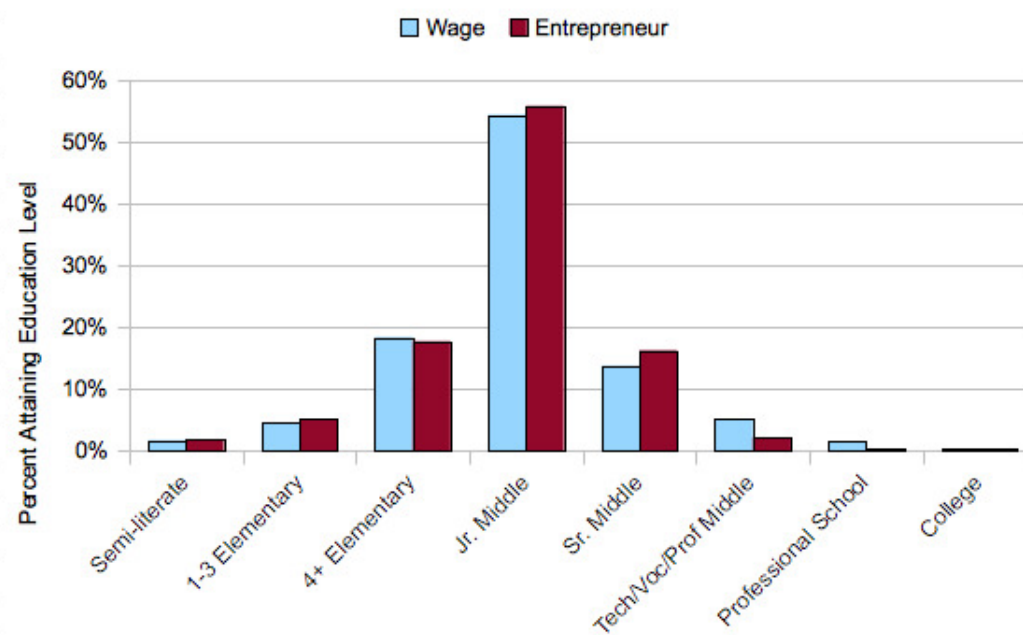
Figure 3.2: Comparison of Educational Attainment

(a) Urban



Source: Author's calculation of CHIPS (2002) data.

(b) Rural



Source: Author's calculation of CHIPS (2002) data.

In the urban economically active population, entrepreneurs' educational attainment was substantially lower than that of wage workers: on average, entrepreneurs had 2.3 fewer years of schooling and 3 fewer years of experience (Table 3.1). Figure 3.2a compares the educational attainment profiles of urban wage workers and entrepreneurs. Entrepreneurs were 3.5 times more likely than wage workers to have attained only an elementary level of education, and twice as likely to have attained only a junior middle school education. Wage workers, however, were 40 percent more likely to complete technical secondary schooling and were 100 percent more likely to have a university degree. No urban entrepreneurs had graduate degrees.

For the rural economically active population, too, entrepreneurs appear no better endowed with educational attainment than wage workers (Figure 3.2b). Though rural entrepreneurs and wage workers had on average completed the same quantity of schooling, entrepreneurs had three more 39 years experience than wage workers, though this result is somewhat misleading. The construction of the experience variable makes it inappropriate to conclude that rural entrepreneurs had significantly higher experience-based human capital than wage workers. The urban CHIPS provides direct data on years of employment (experience), but the rural survey allows only estimation of experience by Mincer's (1974) rule-of-thumb: age minus years of schooling minus six. While rural entrepreneurs had more experience, they were also commensurately older on average. Agricultural producers are older yet, and with more measured experience than either wage workers or entrepreneurs. There is little difference between the two groups in the proportions attaining literacy through middle school education. Although higher educational attainment was low for the rural economically active population as a whole, entrepreneurs were substantially less likely than wage workers to have higher education. The share of entrepreneurs completing technical or vocational schools was less than half that of wage workers; wage

workers were more than four times more likely to complete a professional school than entrepreneurs.

Again, educational attainment is not informative of the set of all characteristics related to entrepreneurial success. The potential to enter entrepreneurship may open opportunities for advancement of individuals despite their lower educational attainment. However educational attainment is suggestive of the technical capacities of entrepreneurs and entrepreneurial enterprises. That educational attainment of entrepreneurs falls short of that of wage workers indicates that entrepreneurial enterprises operate at low levels of technological sophistication.

3.4.1.4 Entrepreneurial Preference

Clearly, human capital characteristics do not independently determine individual preference for entrepreneurship. Other individual characteristics such as risk preference and even less tangible preferences for or non-monetized rewards from entrepreneurial labor determine an individual's orientation toward (preference ordering) entrepreneurship. The CHIPS provides no direct measure of individual risk preference, though it does offer some perspective on individual optimism and subjective happiness. Entrepreneurs do not appear to be systematically more optimistic about their future economic outlook than wage workers or agricultural producers. Figure 3.3 depicts survey responses about expectations of individual income paths over the following five years. Participants could respond that they expected a rapid increase in income, a small increase in income, unchanged income, or a decreased income. In the urban labor force (Figure 3.3a), wage workers and entrepreneurs are virtually indistinguishable in terms of their expected income outlooks. The majority of both groups anticipated no to small changes in incomes, while in both groups almost eight times as many expected their incomes to decrease than expected rapid income increases. In the rural labor force (Figure 3.3b), the profile of optimism is similarly indistinct

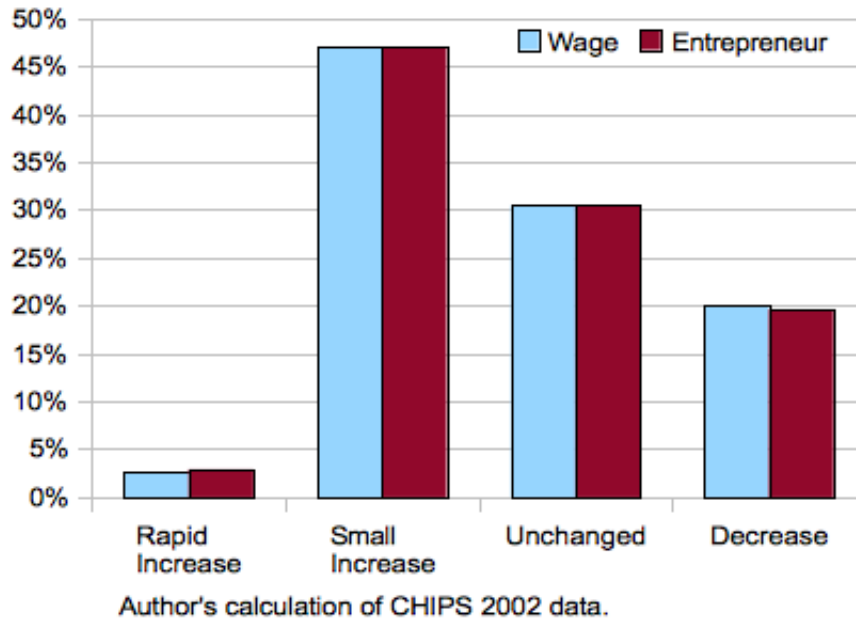
across the wage worker, entrepreneur, and agricultural producer occupation groups (small visible differences are not statistically significant). The rural labor force as a group, however, was considerably more optimistic than the urban labor force: 2.4 times more likely to expect increased incomes and only one-fifth as likely to expect decreased incomes. In neither urban nor rural labor markets do entrepreneurs have systematically different expectations for their future economic prospects.

Though measurement of individual subjective well-being is, in economics, an unsettled area of research (Layard 2010), it is fair to postulate that individuals with non-monetary preferences for entrepreneurship or who are relatively more successful in entrepreneurship than in their next best alternative occupational choice would exhibit greater happiness on average.⁷ Here, the CHIPS data provide mixed evidence on the relationship of happiness to occupational choice. The survey asked individuals (household heads) about their degree of happiness at present. In the urban sample, only 42 percent of entrepreneurs indicated being “happy” or “very happy,” whereas 57 percent of wage workers were happy. However, the reverse pattern of happiness is apparent in the rural sample: 71 percent of entrepreneurs recorded being “very happy” or “happy,” compared to 63 percent of wage workers and 59 percent of agricultural producers. The generally higher level of reported happiness across occupational groups in the rural sample is surprising, given the extent of rural-urban inequality in China (Khan and Riskin 2001) and the rate of rural-to-urban out-migration (Zhao 1999; Zhang and Song 2003). Obviously, occupational choice is not the sole determinant of happiness, but the lack of happiness among the urban self-employed is inconsistent with entrepreneurship being a desirable occupational choice.

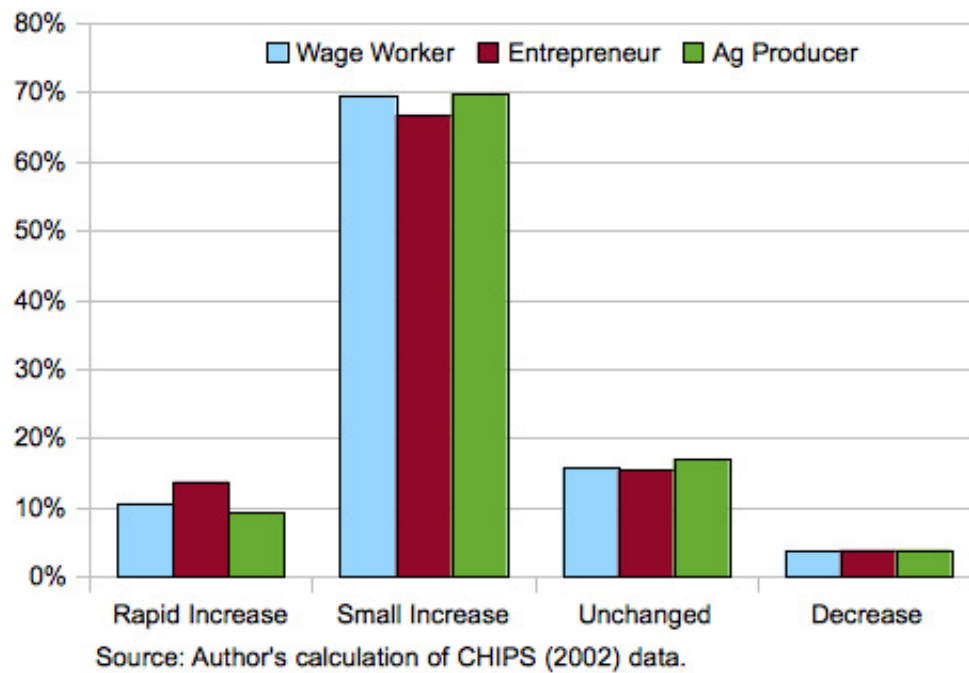
⁷ Additionally, individuals with entrepreneurial preference excluded from entrepreneurship by credit constraints or other factors would be expected to have lower happiness on average.

Figure 3.3: Comparison of Income Expectations

(a) Urban



(b) Rural



3.4.2 Evidence of Labor Market Segmentation

The above discussion of optimism in income expectations runs contrary to what would be expected if entrepreneurial self-employment offered fertile opportunities for private gain relative to other occupations. The homogeneity of income expectations indicates perhaps that the expected rewards of entering entrepreneurship are in general not matched by the commensurate additional risks of entrepreneurship, signifying entrepreneurship is a less desirable occupational choice. In fact, evidence from the CHIPS urban survey suggests that few people embody strong preferences toward choosing entrepreneurship.

The survey asked subjects about their desire to ever change jobs. Of the 2,896 answering this question, only one percent expressed a desire for wanting to change in order to start their own business.⁸ CHIPS respondents were also asked why they had left their previous jobs. Of the entrepreneurs who answered the question, 16 percent indicated leaving to start their own business while 23 percent reported having entered entrepreneurship after being laid off by a previous employer. Thus, for a preponderance of respondents, the path to entrepreneurship was not a voluntary choice.

The evolution of China's aggregate employment situation also suggests involuntary entry to self-employment (Figure 3.4). Total combined employment in China's SOEs and COEs peaked in 1994 at 145 million and began falling precipitously after 1996 to 83 million in 2002. Obviously not all of the workers displaced from SOEs and COEs were pressed into self-employment as some found new wage employment in non-state-owned firms, but the rise of both urban and rural self-employment nonetheless mirrored the decline in SOE and COE employment. In 1994, urban self-employment stood at 10 million and rural self-employment stood at 26 million. Urban

⁸The most often cited reason for not changing was due to a "lack of skills or funds."

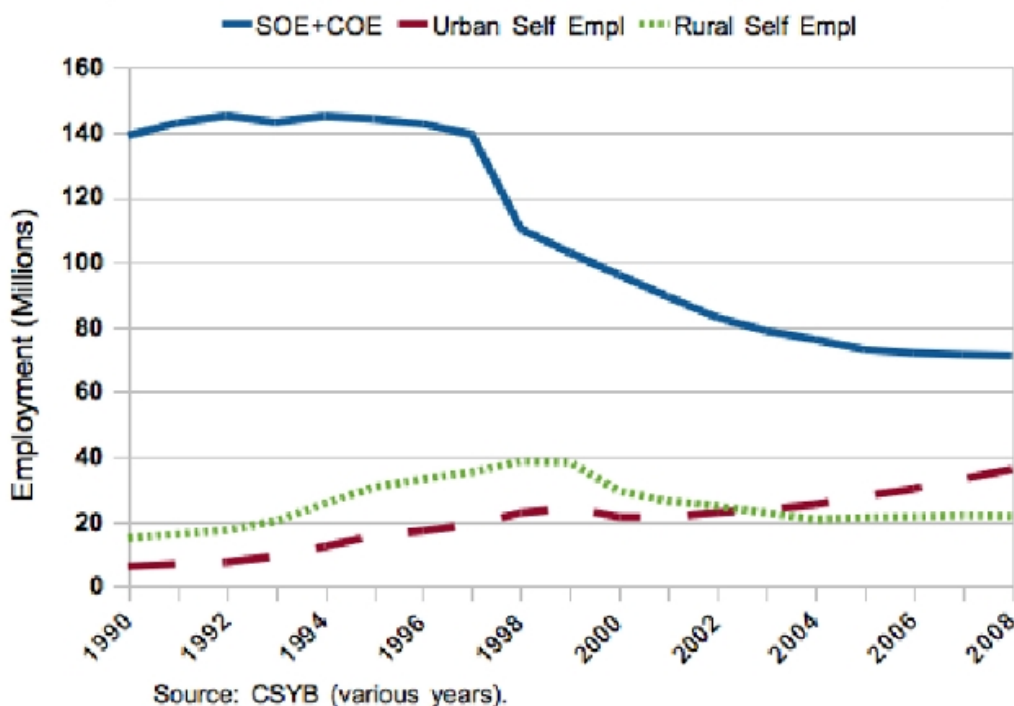
self-employment followed a steady rise to 26 million in 2002, reaching 36 million in 2008 as SOE and COE employment fell to 71 million. Rural self-employment peaked at just over 38 million in 1998 and 1999, but as costs of internal migration fell many (presumably less successful) rural self-employed shifted into other occupations, leaving rural self-employment to hold steady at approximately 22 million in the latter 2000s.

If income expectations for entrepreneurs are no better than in other occupations and if entrepreneurship is as undesirable as the evidence suggests, then those opting for entrepreneurial self-employment may be facing a constrained opportunity set. Gender, a common dimension of labor market segmentation in many countries, does not appear to characterize China's entrepreneurs. But the comparison in Table 3.1 does suggest other factors associated with entrepreneurship or, more importantly, exclusion from formal wage employment. These factors are *hukou* (or household registration) status, Communist Party membership, and layoffs from a previous job.

3.4.2.1 Effects of *Hukou* Status

As seen in Table 3.1 above, urban entrepreneurs differ from wage workers in terms of their *hukou* status. *Hukou* is China's household (labor) registration system—akin almost to an internal passport—which determines legal access to formal employment as well as housing, school, health, and other social services. Changing *hukou* is less restrictive than once was the case, and migrants may obtain urban *hukou* through a costly and lengthy bureaucratic process or after enrollment in higher education in the urban district (Rawski 2003). Still, many are unable to obtain formal registration and are restricted to less desirable economic activities with less access to social goods. The wave of rural-to-urban migrants constitute a massive reallocation of labor from low-productivity agricultural to higher-productivity modern sector employment, much as described in Lewis's (1954) classical development model. As migrants, these

Figure 3.4: State-Owned Enterprise, Collective-Owned Enterprise, and Self-Employment



individuals entered in overlapping, but distinct labor markets from those with urban hukou; analytically, this means that urban migrant entrepreneurs may make reference to a different reservation wage, namely their fall-back employment position in the rural labor market.

Workers in the urban labor market without urban *hukou* or those obtaining it in the recent past are predominantly rural migrants to the city. Not only are wage workers almost ten percentage points more likely to hold urban *hukou* status, but also those entrepreneurs with urban *hukou* are on average more recent urban migrants, obtaining their urban *hukou* much later than the population of urban wage workers. Figure 3.5 fits kernel density estimates of the year individuals first obtained urban *hukou*. The mean wage worker obtained urban *hukou* in 1981 compared to the mean entrepreneur who obtained *hukou* in 1986, although the peak frequency for each group occurred in 1985 and 1993 respectively.

At the time of the survey, ten percent of entrepreneurs had hukou in some locale other than their current residence compared to only one percent of wage workers who did not have resident urban *hukou*. The fact that entrepreneurs tended to obtain urban *hukou* later than individuals in wage employment suggests that, as a group, individuals joining the ranks of urban entrepreneurs are more likely to be migrants from rural areas who face greater social marginalization, including the ability to access formal sector employment.⁹ These results are consistent with earlier findings on job mobility in China's urban labor markets that show the job mobility of rural-to-urban workers greatly exceeding that of urban residents and that urban residents receive preferences and protection for formal sector employment (Knight and Song 1999; Knight and Yueh 2003).

Figure 3.5: Entrepreneurs and Urban Hukou Attainment



⁹*Hukou* status also affects access to social services, schooling, and other welfare benefits.

3.4.2.2 Party Membership and Employment Dislocation

Although the Communist Party began extending membership to private businessmen in 2001, party membership is more associated with wage work than with entrepreneurship. In the urban economy, 34 percent of wage workers are Communist Party members compared to only eight percent of entrepreneurs (Table 3.1). Though the rural economy registered lower membership rates overall, more wage workers than entrepreneurs were party members. The higher membership rates in wage work do not reflect institutional biases against private sector entrepreneurs so much as they do the fact that membership is related to accessing higher wage, higher benefit employment in state-owned enterprise (Chen, et al. 2003).

Acceleration of SOE and TVE privatization in the latter 1990s dislocated millions of workers from employment. Only 29 percent of people dislocated from SOE employment found reemployment within one year (Giles, et al. 2005). The unemployed and recently laid off have experienced decreasing rates of re-employment through the 1990s and are relegated to what Fang and Wang (2004) call “irregular employment,” including entrepreneurship. In the urban labor force, only 1.3 percent of wage workers had experienced a layoff from their prior job; three times as many entrepreneurs, 4 percent, reported being laid off from their last job.

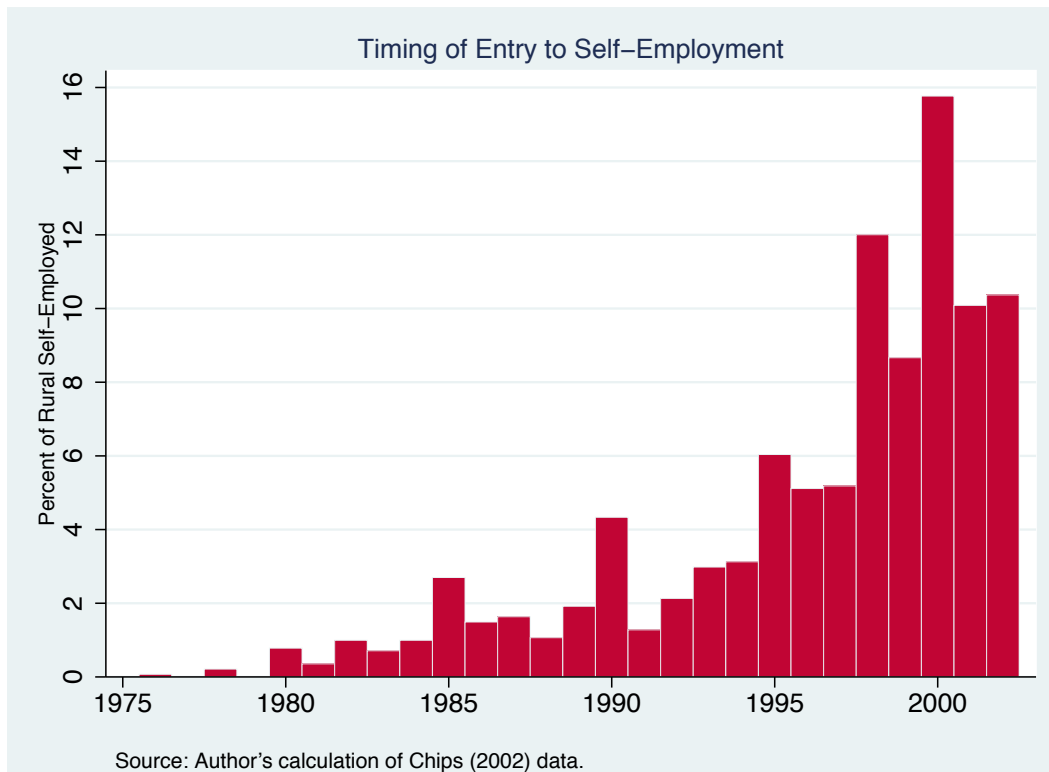
3.4.2.3 Timing of Entrepreneurial Market Entry

Given the trajectory of reform and economic growth in China’s transition from central planning, the timing of entry to entrepreneurial self-employment offers critical information about the institutional and macroeconomic factors affecting the choice of entrepreneurship. The fact that more than 73 percent of rural entrepreneurs entered in or after 1995 (Figure 3.6) points to several different explanations.¹⁰ First, although

¹⁰The survey only observes surviving entrepreneurial enterprises, excluding those who exited entrepreneurship prior to the 2002 survey, returning to wage work, agricultural production, or exiting the labor force entirely. Sample selection is thus biased in favor of successful entrepreneurs.

early economic reforms beginning in 1979 opened opportunities for self-employment, it is possible that relatively few individuals entered entrepreneurship until much later, when a series of new laws in the 1990s strengthened protections for private property rights and contract enforcement. Second, alternatively, it is possible that early entrants exited entrepreneurship by the time of the 2002 survey through a healthy creative-destruction process wherein the relatively more productive firms survived. Third, widespread privatization of SOEs and TVEs beginning in the mid-1990s led to dis-employment at a faster rate than job creation in other sectors of the economy, thus pressing employment-constrained individuals into self-employment.

Figure 3.6: Year of Entry, Rural Entrepreneurs



Although the data do not allow definitive evaluation of these hypothesized explanations, interpretation of the cycles of entry in Figure 3.6 can shed some light on the underlying causes. Following an inflationary episode and related political crisis in 1988 and 1989, the policy environment initially turned markedly against the private

sector, as some leaders laid blame for the crisis on reforms on liberalization that went too far and moved too fast. A central government-imposed anti-inflationary austerity policy aimed to “starve the beast” of the private sector as well as of collective TVEs, competition from which was perceived crippling SOEs (Huang 1996). Real GDP growth rates fell from double digits to just 4 percent in 1989 and 1990—not a particularly auspicious environment in which to elect voluntarily to pursue entrepreneurship. Only following Deng Xiaoping’s famous “Southern Tour” in the spring of 1992 to consolidate a political base for a renewed economic liberalization agenda did the environment for the private sector improve (Meisner 1996; Marti 2002).

Note the spike in self-employed entries in 1990.¹¹ It is unlikely that in this hostile environment self-employment entrants would be enticed by optimistic prospects for private sector growth, rather than pressured into self-employment due to economic hardship. The resumption of high growth in 1991 and 1992, followed by an improved policy environment after Deng’s southern tour, likely helped this 1990 cohort of entrepreneurs survive (and hence we observe them in the survey). But the resumption of growth and rekindling of liberalization did not entice individuals to enter entrepreneurship at any higher rates, and substantially less so in the early 1990s than in 1990 itself. The institutional environment for the private sector improved in steps throughout the 1990s, first in 1993 with implementation of the Company Law (NPC 1993). But the Company Law primarily afforded benefits to foreign invested enterprises in an effort to attract foreign direct investment. Domestic entrepreneurs did not receive similar protections until implementation of the 15th National Congress guidelines in 1997.

¹¹The spike could also result if entrants in neighboring years failed at a higher rate than those entrants in 1990, although there is little evidence to suggest why this would be the case for the years immediately before and after 1990.

Self-employment entries began spiking up again in 1995-1997 following implementation of the “Employment Law” in 1995. The law afforded SOE managers the authority to lay off “redundant” workers and to dissociate provision of social welfare services (housing, health care, pensions, etc.) from the employment relationship (Rawski 2003; Brooks and Tao 2003). As SOEs began laying off workers, privatization of SOEs (especially smaller ones controlled by county governments) and collectively-owned TVEs in the mid-1990s also led to substantial dis-employment. Employment in TVEs fell from 135 million in 1996 to 128 million by 2000; nationally, employment in SOEs fell from 112 million in 1996 to 81 million by 2000 and again to 72 million by 2002 (CSYB). The dis-employment effects of privatization and labor market reforms seem to fit the pattern of self-employment entry more closely than does the punctuated timing of the legal reforms affecting private property rights and entrepreneurship.

While the descriptive analyses offered here cannot account for the importance of varying factors influencing different individuals’ decisions to enter entrepreneurship, the evidence indicates that household registration status, party membership, and layoffs from formal sector employment are strongly associated with the choice of entrepreneurship. In other words, sociopolitical factors and economic conditions exogenous to the individual—and not just individual abilities, preferences, and wealth endowments—matter for the choice of entrepreneurship. Though strengthened protections for property rights and other institutional reforms presumably improved the environment for private sector development, situating the timing of entry within the institutional and historical context—along with other evidence of labor market segmentation—suggests that institutions were not a binding constraint on entrepreneurship.

3.4.3 Wealth and Credit Relations

Even small-scale entrepreneurial projects often require resources in excess of the individual entrepreneur, necessitating external finance. The institutions governing credit relations therefore play a pivotal role in the supply of entrepreneurship, mediating who gains access to external finance and the scale of projects. In neoclassical theory, efficient financial institutions evaluate the quality of potential projects, channel resources to the good ones, and then monitor and discipline entrepreneurs to ensure investment performance. But even where institutions governing property rights and credit relations are strong, asymmetric information and incomplete contracting will lead to credit rationing as a function of wealth. As a result, entrepreneurs would be expected to have higher wealth than non-entrepreneurs. Additionally, it is commonly held that China's private sector faces constraints to accessing credit in the formal financial system, dominated by government-owned banks, owing to institutional political biases against private enterprises. Although private, individual-owned, and self-employed businesses received only 1.2 percent of total bank credit in 2006, the quantity of bank credit to the private sector more than doubled from 0.5 percent in the decade since 1997.

Despite the perception of political bias against the private sector, the exclusion of some private entrepreneurs from accessing credit in the formal financial sector reflects credit rationing based on the size of the enterprise or the entrepreneur's wealth endowment, as is the experience in many other countries, including those with highly developed financial systems. There are only minor differences between entrepreneurial, wage working, and agricultural households in perceptions of and access to external financing. Most households do access credit from formal and informal sources for a variety of uses, including for entrepreneurial investment, but the evidence is that external finance is constrained by wealth in both the formal and informal financial sectors. And while political bias in lending to the private sector is not evident, it

is evident that political relations between private entrepreneurs and party and state institutions are associated with privileged access to financial resources.

3.4.3.1 Perceived Credit Access

First, it is worth considering individual self-perceptions about the ability to access external credit. Survey respondents were asked, if they needed a quantity of funds immediately, how they could raise the sum. Overall, entrepreneurs' perceptions of their ability to raise funds were quite similar to those of other occupation groups. Both urban wage workers and entrepreneurs saw their extended family as the primary source for raising funds (61 and 66 percent, respectively), followed by own savings and borrowing from friends (Table 3.2a). The fact that urban wage workers were 3.3 percentage points more likely to draw on personal savings as a source of funds suggests that entrepreneurs on average may have a lower saving rate than wage workers. Urban entrepreneurs were slightly more likely than wage workers (4 percent versus 3 percent) to perceive an ability to raise funds through borrowing from banks or credit unions. Thus, to the extent the formal banking system imposes lending constraints, the survey responses reflect a perception that these constraints are not premised on institutional biases against private enterprise. Few respondents from either occupational group would rely on informal financial mechanisms (beyond family and friends) from "other individuals" or "other financial institutions."

In the rural economy, family and friends were the leading source of credit for wage workers and agricultural producers (Table 3.2b). Though 45.6 percent of rural entrepreneurs also reported family and friends as an important source of credit, the majority (46.4 percent) indicated they would rely on own savings to meet immediate needs—far fewer wage workers (34.3 percent) or agricultural producers (27.4 percent) could rely on their own savings. In contrast to the urban survey responses, rural wage workers and agricultural producers (8.7 and 12 percent respectively) were

more likely than entrepreneurs (5.4 percent) to perceive an ability to access bank or credit union financing. The difference does not necessarily indicate that rural entrepreneurs face discrimination in accessing bank credit—the substantial number of rural entrepreneurs able to draw on their own savings means that fewer needed to rely on borrowing from banks. Two key points about credit access emerge from this analysis. First, there is no clear distinction or bias obvious in obtaining credit between entrepreneurs and other occupations. Second, even at these relatively small quantities, few would rely on extra-familial informal finance.

Table 3.2: Subjective Perception of Credit Access

(a) Urban

	Wage Worker	Entrepreneur
Family	61.1%	65.5%
Friend	8.3	9.6
Draw from Bank Savings	18.2	14.9
Bank/Credit Union	3.0	4.0
Other Individuals	0.2	0.2
Work Unit	1.4	0.0
Other Financial Institution	0.1	0.0
From Anywhere	7.1	4.9
Other	0.5	0.9

(b) Rural

	Wage Worker	Entrepreneur	Agric. Producer
Relatives or Friends	51.8%	45.6%	55.0%
Draw from Bank Savings	34.3	46.4	27.4
Bank/Credit Union	8.7	5.4	12.0
Private Credit Institutions	0.4	0.5	0.4
Take “Other Measures”	2.8	1.2	2.9
No Means	1.9	0.9	2.3

* “If you need 10,000 (5,000 rural) yuan immediately, how can you raise it?”

3.4.3.2 Wealth and Assets

Table 3.3: Average Wealth and Asset Endowments

(a) Urban

	Wage Worker	Entrepreneur
Total Assets (yuan)	144,565	142,798
House Assets	87,870	70,112
Financial Assets	40,938	50,543
Productive Assets	2,061	10,037
Durable Goods	9,776	7,601
Investment in Enterprise	557	710
Money Lent	1,421	1,574
Other Assets	1,942	2,221

(b) Rural

	Wage Worker	Entrepreneur	Agric. Producer
Total Monetized Assets (yuan)	37,854	63,208	33,348
House Value	24,089	34,094	19,889
Financial Assets	6,957	11,336	6,456
Productive Assets	3,520	11,789	4,361
Non-agricultural	1,745	10,032	1,983
Durable Goods	3,288	5,990	2,643
Land Holdings (<i>Mu</i>)	7.3	5.9	8.8

If credit constraints restrict the supply of entrepreneurship, entrepreneurs could be expected to have larger wealth endowments than other occupational groups. On average, there is little difference in the wealth endowments of urban wage worker households and urban entrepreneur households, although the composition of their average asset portfolio reveals somewhat different allocation decisions (Table 3.3a). Wage worker households held an average of 144,565 yuan in assets at year-end 2002, compared with 142,798 yuan in assets for entrepreneur households. Overall, the largest asset classes for both groups were housing and financial assets (encompassing money, bank deposits, insurance policies, stocks, bonds, etc.), with wage workers tending to hold nearly 18,000 yuan more wealth in housing and entrepreneurs tending to hold almost 10,000 yuan more in financial assets.

Unsurprisingly, entrepreneurs held substantially more fixed productive assets, almost five times as much as wage workers at 10,037 yuan. And wage workers held over 2,100 yuan more durable goods than entrepreneurs, reflecting perhaps a relatively higher preference for consumption over saving and investment for wage workers. Finally, although small in the overall asset portfolio, on average both wage workers and entrepreneurs engaged directly in informal finance on a non-trivial scale. “Investment in enterprise” indicates a direct equity interest in an enterprise not accounted in household financial assets, and “money lent” indicates informal lending regarded as a household asset (though we have no information as to the “quality” of these loan assets). With average investments in enterprises of 557 yuan for wage workers and 710 yuan for entrepreneurs, and 1,421 yuan and 1,574 yuan respectively of lending assets, it is unlikely that such informal financing was building even moderate scale or capital-intensive enterprises. The quantities involved are modest relative to per capita disposable income for urban households—just over one week’s worth of disposable income in direct enterprise investment and about 2.5-2.8 week’s income in informal lending. Extrapolating to the urban population, urban households held approximately 82.2 billion yuan in investments in enterprises and 208.3 billion yuan in lending in 2002. This total stock of informal lending assets amounts to almost 4.5 percent of gross national investment in 2002. These multitudinous informal loans do amount to a substantial aggregate sum, but each individual loan is of such small scale as to be relevant for financing dynamic entrepreneurial investments.

Rural entrepreneurial households (Table 3.3b), in contrast, are on average substantially wealthier than their wage work or agricultural counterparts across all asset classes. Entrepreneurs’ wealth averaged 63,208 yuan, compared to 33,348 yuan for agricultural producer households and 37,854 yuan for wage work households. The average rural entrepreneur is also much less wealthy than urban entrepreneurs. With credit rationing, wealth is expected to be positively associated with access to ex-

ternal finance, and thus larger scale entrepreneurial projects. But although urban entrepreneurs held two and one-quarter times the wealth of rural entrepreneurs, the two are virtually identical in their capital stock of productive assets: 10,037 yuan for the urban and 10,032 (non-agricultural) for the rural households. So, greater credit access paradoxically appears unrelated to scale of production.

3.4.3.3 Debt and Sources of Credit

Urban households differ little by occupation in their overall quantity of debt, as seen in Table 3.4a. At 39,109 yuan, wage worker households held over nine percent more debt than did entrepreneur households, however the composition of debt differed considerably. While wage worker households held 62 percent of their overall debt from building or purchasing a house, entrepreneurs' housing debt makes up only 31 percent of total household debt. Both groups appear to have similar access to credit, but entrepreneurs choose to allocate more of their available credit (36 percent) to their business. The two liability categories, housing debt and business debt, sum to the same total share for both occupation groups, but the composition shows that entrepreneurs access a similar quantity of credit though choose to use credit to accumulate productive assets as well as housing assets. Entrepreneurial households also demonstrated less preference than wage households to borrow for consumption of durable goods and weddings, but more preference to borrow for education investment.

For rural households, we have data on the sources of credit as well as the uses of household debt (Table 3.4b). Rural entrepreneurs, consistent with their higher household wealth, at an average of 11,814 yuan also have higher debts than wage workers (5,641 yuan) or agricultural households (5,371 yuan). Like with urban entrepreneurs, rural entrepreneurs also incurred less debt for housing investment, 12 percent of total debt, than did non-entrepreneurial households. Instead, entrepreneurial households borrowed much more for production purposes, a category inclusive of both agricul-

Table 3.4: Average Household Debt and Composition

(a) Urban Households

	Wage Worker		Entrepreneur	
	Average	Share	Average	Share
% Households w/ Debt	15%		19%	
Avg Total Debt (2002)	39,109	100%	35,826	100%
Building/Purchasing Home	31,782	62	15,986	31
For Business	2,112	5	12,629	36
Durable Goods	345	3	200	1
Medical	1,035	7	814	6
Family Hardship	480	5	429	6
Education	1,152	10	1,110	14
Wedding	846	7	611	3

(b) Rural Households

	Wage Worker		Entrepreneur		Agric. Producer	
	Average	Share	Average	Share	Average	Share
% Households w/ Debt	23%		18%		23%	
Avg Total Debt (2002)	5,641	100%	11,814	100%	5,371	100%
Uses						
Home Ownership	1,742	17%	1,249	12%	1,351	14%
Production Loan	640	13	6,492	26	735	16
Durable Goods	24	1	196	2	30	1
Wedding/Funeral	168	4	197	4	216	4
Medical	189	5	203	3	153	4
Family Hardship	150	7	188	6	185	7
Migration	13	1	0	0	14	1
Other	1,393	28	1,214	20	1,277	27
Sources						
Bank or Credit Union	1309	23%	4,942	23%	1,563	25%
Collective/Work Unit	93	6	138	4	71	5
Private Individuals	4165	70	6,624	68	3,667	68

*Note: Composition shares are calculated as an average of debt shares at the individual household level. The average shares may not correspond to the average levels of each liability class, nor sum to 100 percent.

tural loans as well as business investment: 26 percent of total debt compared to 13 percent and 16 percent respectively for wage and agricultural households. All the occupation groups appear similar regarding preferences to incur debt for consumption of durable goods (1-2 percent of total debt), weddings (4 percent), family hardships (6-7 percent), and migration costs (0-1 percent).

Rural households also appear remarkably similar in their ability to access various sources of credit. Entrepreneurial households did not fare any worse than wage households in accessing formal bank credit, which amounted to 23 percent of total debt for both. Agricultural households had a slightly higher share from banks as a source of credit at 27 percent, likely owing to special lending programs to support farm activities. For all three groups, though, borrowing from private individuals supplied the overwhelming source of household credit: 70 percent of all debt for wage households, and 68 percent for entrepreneurial and agricultural households. What is clear from the similar debt source profiles is that, however efficient the rural financial institutions, all groups enjoy roughly equal, unbiased access to formal and informal financing. Even though entrepreneurial households had higher average wealth endowments than other households, the additional wealth did not change the shares of credit sourced from different financial channels. It is possible that the greater wealth did relax the bank lending constraint for entrepreneurial households, but more probable is that the wealth difference between entrepreneurs and others is not substantial enough to attenuate the incomplete credit contracting problems that lead to credit rationing. As a result, informal finance is by far the most important source of household credit for all occupation groups. Does access to different sources of credit affect the supply of entrepreneurship? That the three occupation groups receive essentially equal access to credit from banks, work units, and informal private borrowing indicates that the choice to enter entrepreneurial self-employment is driven by factors other than the ability to access external credit.

What does seem to matter for credit access is enterprise size. Table 3.5 examines how sources of credit vary by size of initial investment for entrepreneur's accessing external finance. The top panel summarizes credit access for rural entrepreneurs with initial investments exceeding 50,000 yuan (US\$6,038 at the official exchange rate) and the bottom panel summarizes those with less than 50,000 yuan initial investment. Depending on the source of credit, the median large entrepreneur made an initial capital investment ranging from 58,300 to 94,500 yuan, borrowing 42,500 to 60,000 yuan. The median small entrepreneur made initial investments ranging from 4,950 to 10,930 yuan and borrowed 3,000 to 6,815 yuan. For both large and small entrepreneurs private (informal) loans were the primary source of entrepreneurial credit. However with 60 percent of large enterprises and 80 percent of small enterprises receiving private loans, informal financial channels were much more important for smaller scale entrepreneurs. And though private loans were the most frequent financial channel accessed by both groups of entrepreneurs, private loans provided the lowest median quantity of borrowed capital for both groups.

Large scale entrepreneurs were twice as likely as small ones to access financing from banks or credit unions, with 30 percent of large entrepreneurs receiving bank credit compared to 15 percent of small ones. Even for small entrepreneurs, size matters for access to bank finance. The median small entrepreneur obtaining bank or credit union financing made an initial investment almost twice as large as those entrepreneurs receiving a private non-bank loan and more than double those receiving a rural credit cooperative loan or other external finance. Small entrepreneurs with access to bank loans could borrow more than twice as much capital as those accessing other forms of finance.

Huang (2008) emphasizes that rural credit cooperatives underwent early financial liberalization and were able to supply efficient and ample resources to burgeoning rural entrepreneurs. But the CHIPs data show that few entrepreneurs of large or

small scale relied on financing from rural credit cooperatives. Only 4 percent of large entrepreneurs and 3 percent of small ones relied on financing from the credit cooperatives. Remarkable for larger entrepreneurs is how much more leverage they could use with credit cooperative financing. With financing sourced from the credit cooperatives, entrepreneurs needed only post 15 percent equity compared to 41 to 50 percent initial equity when using informal private loans or bank credit. Ostensibly cooperatively governed, rural credit cooperatives ultimately fell under the authority of local township and village officials and thus could be marshaled to serve local industrial development policies. That larger entrepreneurs could access credit cooperative finance with such a low level of initial equity indicates that there is some deeper social or economic linkages between these entrepreneurs and local officials than merely an arms-length lender-borrower relationship.

Table 3.5: Rural Self-Employed with External Credit: Usage and Sources

	% Receiving	Initial Investment	Borrowed	% Equity
Credit Source	(Median)			
If Initial Investment > Y50,000				
Bank or Credit Union	30%	94,500	47,150	50%
Rural Credit Cooperative	4	58,300	49,650	15
Private Loan	60	79,600	32,500	41
Other	6	95,200	60,000	40

If Initial Investment < Y50,000				
Bank or Credit Union	15%	10,930	6,815	33%
Rural Credit Cooperative	3	5,000	3,140	33
Private Loan	80	6,000	3,000	50
Other	2	4,950	3,000	40

Source: Author's calculation of CHIPS (2002) data.

3.4.3.4 Party-State Networks and Finance

One group of entrepreneurs with little trouble accessing formal bank credit comprises those with political connections. Li, et al. (2006) find that Communist Party

membership is associated with access to bank credit and other key resources for private entrepreneurs, and Meng (2007) finds that party membership was associated with faster wealth accumulation from 1995 to 2002. Other personal relations and institutional connections with the state or Communist Party appear beneficial to accessing external credit and other benefits for private entrepreneurship. as well Table 3.6 analyzes the effects of various political relations on the size of initial capital investment in and the amount of external borrowing for (rural) entrepreneurs' projects. Individuals who were Communist Party members had an average initial investment of 12,480 yuan and borrowed an average of 13,326 yuan compared to 11,473 yuan invested and 7,209 yuan borrowed for non-members. Entrepreneurs who had previously been TVE managers—that is to say, had close relations with local government officials—had average initial investments of 23,050 yuan and initial borrowing of 15,238 yuan, while those who were not had less than half the size of initial investments and borrowing.

In all the cases, political relations are associated with being able to borrow at higher leverage rates. Party members had an average of only 28 percent initial equity stake in their entrepreneurial investment whereas non-members had 37 percent average equity stake; former TVE managers had initial equity of 34 percent compared to non-managers who had initial equity of 37 percent. The pattern is the same for former local cadres and military members as well. What is interesting is that these latter two groups, although they had slightly lower initial capital investments on average than those without such political relations, could still borrow with much higher leverage. Local cadres had a 24 percent equity stake in the initial investment and former PLA members had only a 14 percent initial equity stake, compared to 38 and 37 percent for entrepreneurs without similar relations.

Table 3.6: Effect of Political Relations on Entrepreneurs' Credit

Real 2002 yuan	Initial Investment	Initial Borrowing	Initial Equity
Party Member	18,499	13,326	28%
Not Member	11,473	7,209	37
Been TVE Manager	23,050	15,238	34
Have Not	11,268	7,147	37
Been Local Cadre	11,980	9,098	24
Have Not	12,108	7,555	38
Served in PLA (Military)	11,762	10,160	14
Have Not	12,105	7,652	37

Source: Author's calculation of CHIPS (2002) data.

3.4.4 Characteristics of Entrepreneurial Enterprises

China's entrepreneurial enterprises are predominantly small in scale and concentrated in low-productivity, labor-intensive service sector activities. A vast majority of entrepreneurs enter the market with very low levels of initial capital investment, and the size of the initial investment for most firms has changed little over time, even as China has become more wealthy and the institutional environment for private entrepreneurship has improved markedly. Although the small scale of China's entrepreneurs may be due to external borrowing constraints faced in both the formal and informal finance, the size of initial investments does not increase over time as the institutional environment for private entrepreneurs improved. Moreover, low rates of capital accumulation in entrepreneurial enterprises indicate that robust opportunities for growth are not driving the move into entrepreneurship.

3.4.4.1 Sectoral Distribution of Enterprises

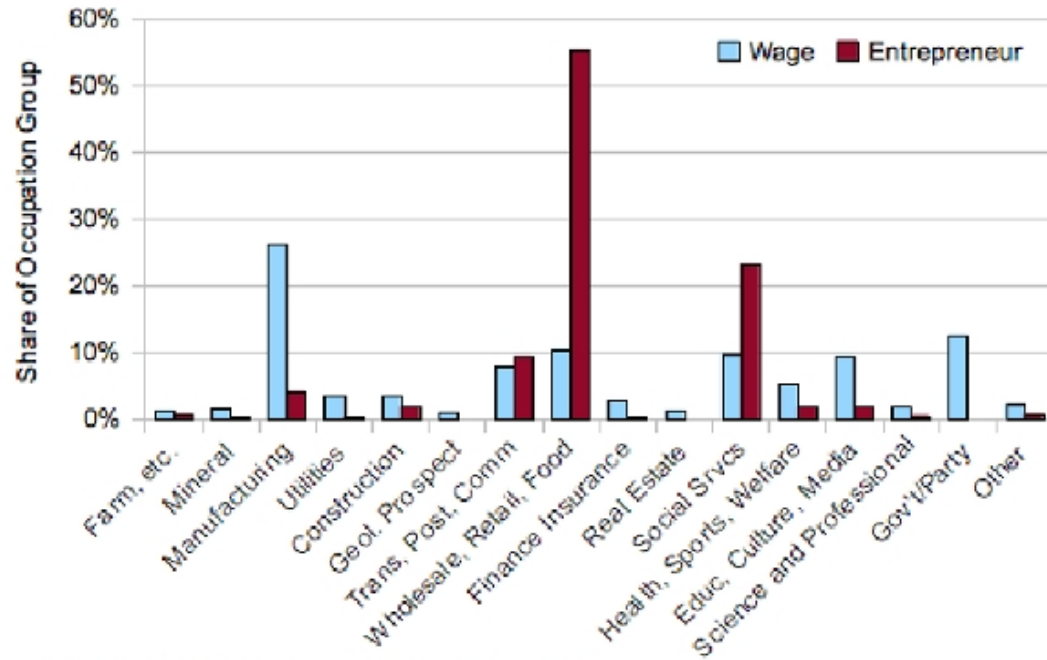
Early reforms opened to entrepreneurship select economic sectors such as retail and wholesale trade, food services, and shipping and transportation—areas of the economy long underserved by central economic planning. Expansion of the service sector in the early years of development most certainly yielded significant growth and welfare gains as labor and capital were reallocated to this underdeveloped sector.

It is likely much of these economic gains from resource reallocation were one-shot. Productivity growth in the service sector is difficult to measure, although most service sector activities exhibit lower productivity growth rates than do manufacturing and other capital-intensive industrial activities (Bosworth and Triplett 2000). Lower capital and skill needs make for lower barriers to entry to the service sector, meaning competitive pressures are higher and therefore profit opportunities lower beyond the short term. Additionally, many of these service sector activities are non-tradable, non-import-competing, thus lacking the disciplining effect of external market competition on productivity and quality. Over time, entrepreneurs could also move into manufacturing and other heavy, more capital-intensive industries. This was particularly true for the rural economy where, in many locales, officials were ahead of the curve in privatizing village- or production brigade-scale collective industrial enterprises (Chan, et al. 1992; Wu 2005).

As a result, the sectoral distribution of urban entrepreneurs is skewed much more heavily toward the service sector than is the case for rural entrepreneurs (Figures 3.7a and 3.7b). Whereas two-thirds of rural entrepreneurs operated in service sector industries, over 92 percent of urban entrepreneurs did. The majority of urban entrepreneurs (55 percent) were in labor-intensive industries of wholesale and retail trade and food service, sectors that require low levels of capital and skill and which thus have low barriers to entry and profit opportunities that can be rapidly competed away. The second largest concentration of urban entrepreneurs (23 percent) was in the “social services” industry, which encompasses a range of service industries from care-giving to tourism and more. Nine percent of urban entrepreneurs were engaged in transportation and communication industries, while only four percent were engaged in manufacturing, of either labor- or capital-intensive industries.

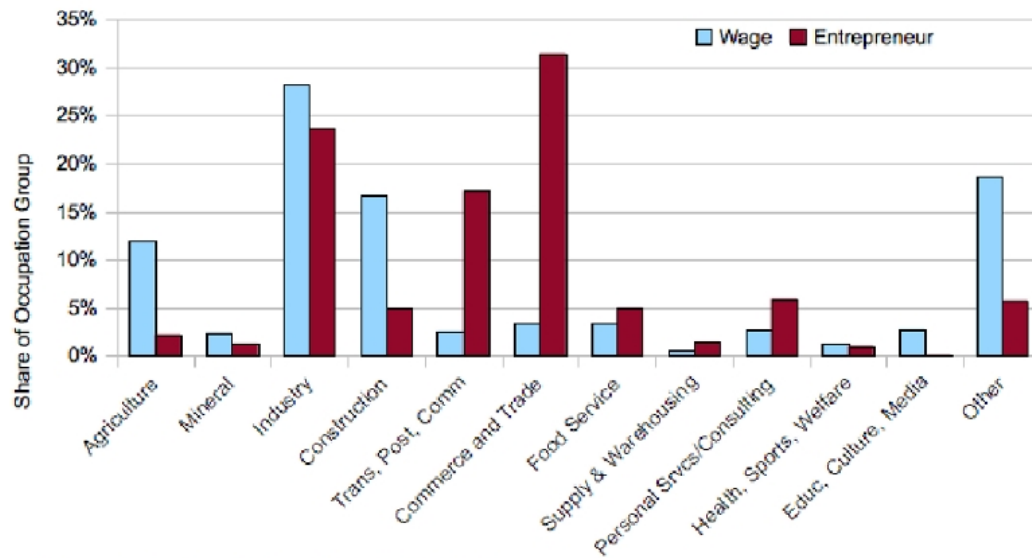
Figure 3.7: Sectoral Distribution of Workers

(a) Sectoral Distribution of Workers, Urban



Source: Author's calculation of CHIPS (2002) data.

(b) Sectoral Distribution of Workers, Rural



Source: Author's calculation of CHIPS (2002) data.

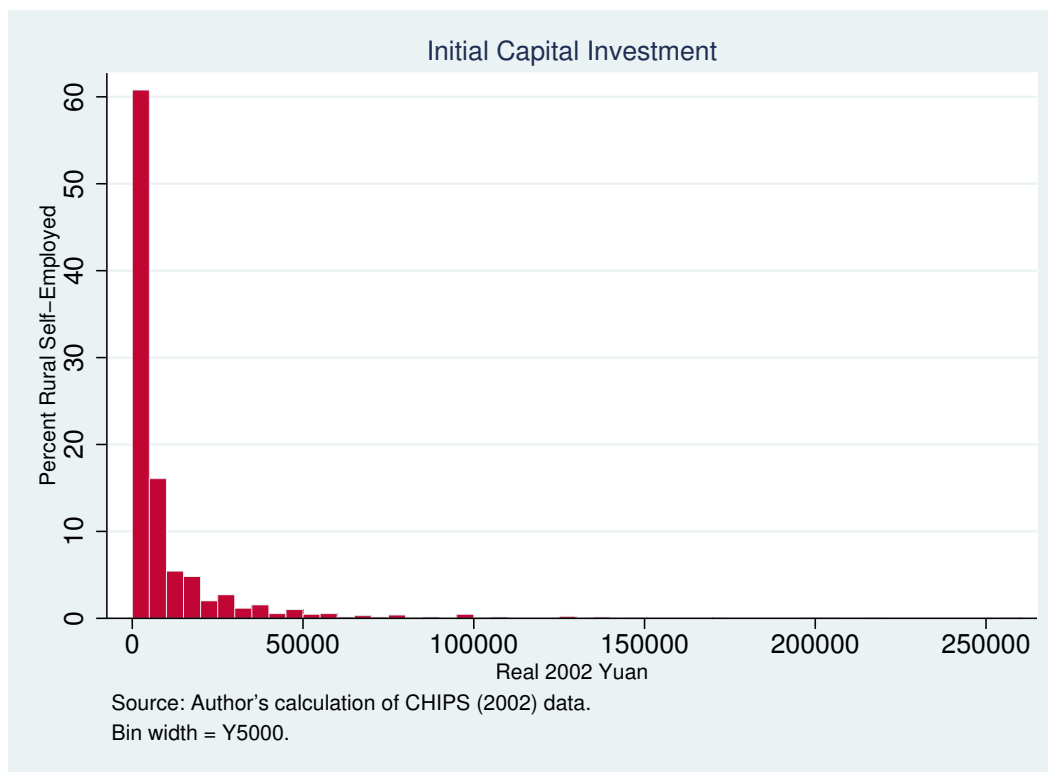
For rural entrepreneurs, too, the largest concentrations were in wholesale and retail trade (31 percent) and food service (5 percent). However, a much larger concentration of rural entrepreneurs, just under one-fourth, were engaged in “industry,” primarily manufacturing. The prevalence of manufacturing entrepreneurs in the rural economy, as suggested above, is due in part to earlier entry allowed in the rural economy. The early rural entrants also benefitted from substantial development support of local governments keen to deliver industrial growth. In fact, as indicated in Table 3.6 above, some private rural entrepreneurs benefitted from less formal, more direct relationships with the local government officials promoting their private growth.

3.4.4.2 Enterprise size at entry

The high concentration of entrepreneurs found in labor-intensive service sectors is consistent with the low capitalization observed for the majority of China’s entrepreneurial enterprises. The CHIPS rural survey asked households operating non-agricultural private businesses about the conditions of their entry to entrepreneurship. Figure 3.8 plots a histogram of the size of initial capital investments of these entrepreneurial enterprises, adjusted for inflation to 2002 prices. Over 60 percent of enterprises launched with 5,000 yuan (US\$604 at 2002 exchange rate) or less initial capital investment; more than 87 percent launched with less than 20,000 yuan (US\$2,415). Less than four percent of enterprises had initial capital investments exceeding 50,000 yuan (US\$6,039). The low level of initial investment for most entrepreneurs likely reflects external borrowing constraints, a function of low wealth endowments (discussed further in Section 3.4.3), though this should not necessarily be construed as following from underdeveloped financial institutions.

What is more remarkable than the small scale of initial investments is that the size of the initial investment for most entrepreneurs changes little over the course of China’s reform era. Figure 3.9 presents a Tukey (1977) box-and-whisker plot showing

Figure 3.8: Initial Capital Investment, Rural Self-Employed

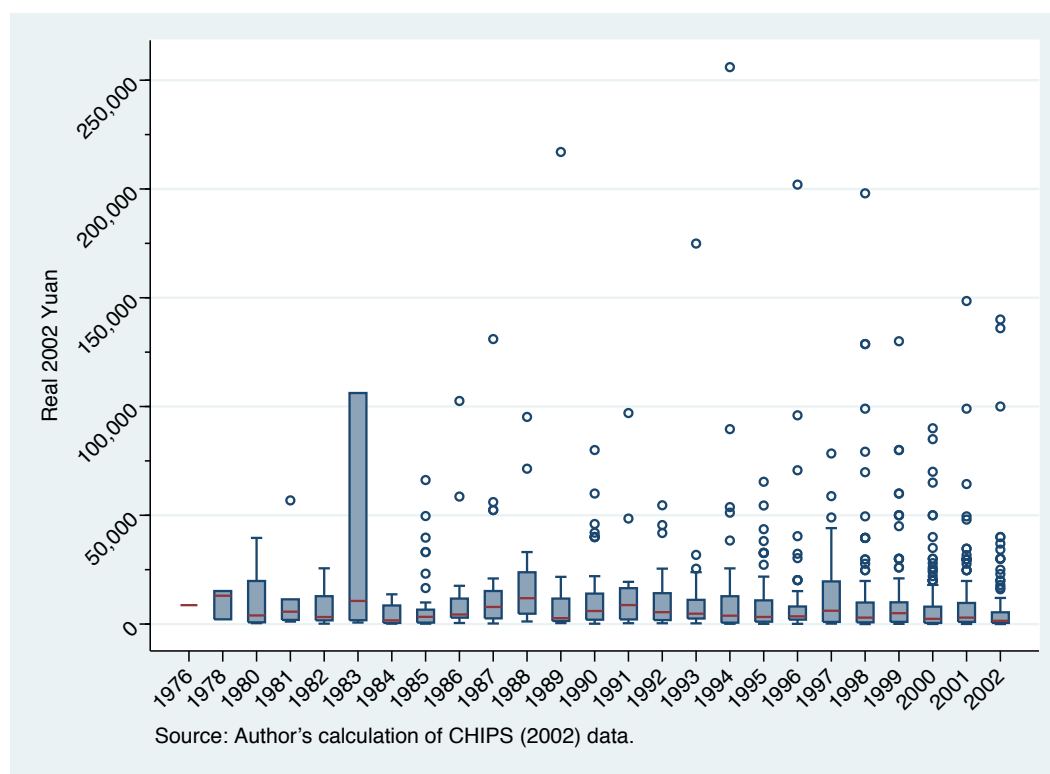


the variation in initial capital investments within each year of market entry. The vertical box spans the 25th to the 75th percentiles of the distribution in each year, with the horizontal line across each box indicating the median value. The “whiskers” reach 1.5 times the length of each interquartile range, and the dots depict extreme outlying observations in the tails of each distribution. Aside from 1983, where a small number of observations results in an anomalously tall box, the middle 50 percent of entrants in each year reside within a narrow range of initial investments between zero and 20,000 yuan.

If underdeveloped institutions were deterring entrepreneurial entry and external financing, then one would expect to see rising levels of entrepreneurs’ initial investments over time, especially as these institutional constraints were relaxed in the mid-1990s. Instead, institutional reforms in the 1990s that strengthened private property rights and exogenous contract enforcement (discussed in Section 3.4.2 above) are nowhere

reflected in the pattern of initial investments over time. Even the range of outlying entrepreneurs who made large initial investments appears to compress downward after 1997. Though national wealth increased substantially between 1995 and 2002 (Li and Zhao 2006), it seems this wealth was not being recycled back into entrepreneurial projects through formal or informal financial channels as one would expect with improved institutions and if entrepreneurship offered such promising expected returns.

Figure 3.9: Distribution of Initial Investment by Self-Employment Entry Year, Rural



3.4.4.3 Current size and capital accumulation

Table 3.7 presents the frequency distribution and average size of productive capital stock for urban and rural entrepreneurial enterprises. Both urban and rural entrepreneurship are dominated by small-scale enterprises, measured at current 2002 market valuation of productive capital stock. For urban entrepreneurs, 47 percent had fixed capital stocks of 10,000 yuan (US\$1208) or less; 62 percent had 20,000

yuan or less. Of rural entrepreneurs, 69 percent held 10,000 yuan or less in non-agricultural productive assets and 83 percent had 20,000 or less. Compared to the rural sample, a relatively large proportion of urban entrepreneurs are of substantial size: 26 percent had productive assets exceeding 50,000 yuan, while only 5 percent of rural entrepreneurs were of larger scale.

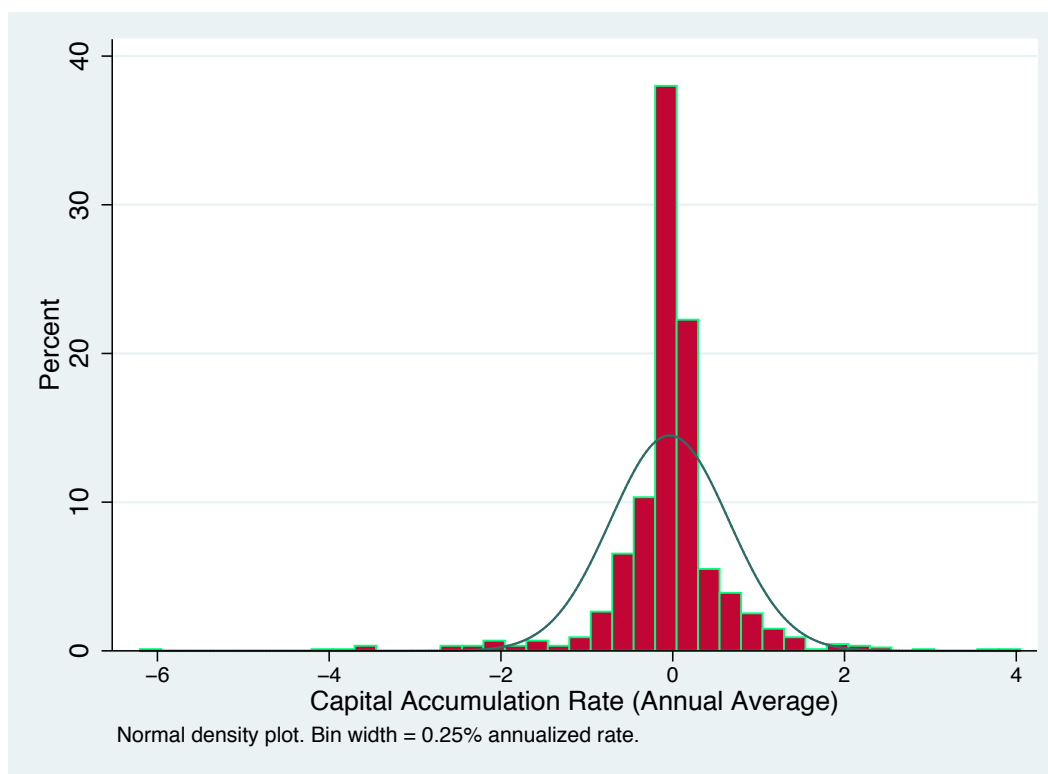
Table 3.7: Entrepreneurial Enterprise Size

Capital Stock, Market Value (2002 yuan)	Urban		Rural	
	%	Mean	%	Mean
1-10,000	47%	4,273	69%	3,011
10,001-20,000	15	16,000	14	15,019
20,001-30,000	6	27,600	5	26,798
30,001-40,000	2	37,500	3	35,788
40,001-50,000	5	50,000	4	45,493
50,001-100,000	13	74,745	3	69,642
>100,001	13	197,273	2	244,842

Source: Author's calculation of CHIPS (2002) data.

The CHIPS data do not offer direct measures of entrepreneurs' profitability, but other research provides evidence of the low profitability of small-scale entrepreneurs. Yueh (2009a) finds the sample of entrepreneurs to yield low profitability—63 percent reported only “marginal profits” in the year 1999, while almost 32 percent reported making losses or being on the cusp of bankruptcy. Profitability can be deduced from changes in the entrepreneur's productive capital stock. Evans and Jovanovic (1989) argue that, although entrepreneurs may start out under-capitalized due to external borrowing constraints, these endeavors tend to grow faster due to greater incentives to reinvest earnings in order to achieve more efficient (profitable) scale. Indeed, Kuijs (2005) estimates that more than half of enterprise investment is financed by firm retained earnings, and thus these are a major source of business investment. If an enterprise is earning profits and if the entrepreneur expects gains exceeding the next best alternative use of the surplus, then we would expect to see high rates

Figure 3.10: Capital Growth of Rural Entrepreneurs



Source: Author's analysis of CHIPS (2002) data.

of capital accumulation. Conversely, low expectations of future profitability from reinvestment would lead to low or no accumulation. Negative accumulation rates would indicate that entrepreneurs' profitability was so low as to not cover the cost of replenishing depreciated capital, or even that business opportunities were so poor that entrepreneurs chose to divest their assets rather than expand investment in their business.

Figure 3.10 plots the distributions of entrepreneurs' annualized accumulation rate of fixed productive capital.¹² Overall, a large percentage of entrepreneurs had a small, negative capital accumulation rate. Almost half of all entrepreneurs saw their productive capital stock shrink by an annualized rate of between -0.5 and 0 percent.

¹²The logarithmic growth rate. The rate of capital accumulation is normally distributed by the test of D'Agostino, Balanger, and D'Agostino Jr. (1990).

A slightly less large percentage of entrepreneurs, just over one-fourth, accumulated capital at a modest rate of 0-0.5 percent annually. Only 1 percent of entrepreneurs accumulated capital at faster than a 2 percent annual rate—well below national growth rates. Slightly more than half of China’s entrepreneurs were either not earning sufficient profits, or were not enticed to reinvest earnings by expectations of future rates of return. Recall also that the sample of entrepreneurs excludes those who have exited entrepreneurship prior to the 2002 survey and thus is biased in favor of better-performing enterprises.

Credit constraints in the formal or informal financial sector can result in low-wealth entrepreneurs starting businesses with low levels of capital. However, a good economic environment for private entrepreneurship would be expected to elicit increasing investments from the entrepreneur out of retained earnings. With an average accumulation rate of -0.4 percent and a relatively low accumulation rate for even the top-performing entrepreneurs, the outlook for China’s entrepreneurs is not promising. And yet, Figure 3.6 shows a wave of individuals entering entrepreneurship after 1997.

3.5 Occupational Selection of Entrepreneurship

The picture emerging of China’s entrepreneurs differs substantively from the vision of private sector dynamos. Rather than attracting China’s “best and brightest,” entrepreneurs had lower skill and schooling than those in other occupations. Many are people laid off from SOEs or migrants from rural areas eking out informal self-employment in the urban areas. Despite having access to formal and informal finance equivalent to those in wage or agricultural occupations, the majority of entrepreneurs are of very small scale, are concentrated in the lower productivity service sector, and have seen their productive capital stocks deteriorate since entering entrepreneurship. In this section I turn to more formal econometric analyses in order to better understand (a) who become entrepreneurs in China and why, and (b) how attractive are

their economic opportunities relative to other occupational choices. I begin in this section by modeling the factors affecting the probability of choosing entrepreneurial self-employment over wage work. I also test directly the effects of credit constraints on the supply of entrepreneurship by exploiting a “natural experiment” presented by wealth created under China’s urban housing privatization programs. After estimating the marginal probabilities of occupational choice, I turn in Section 3.6 to estimate and compare earnings models for entrepreneurs and wage workers.

3.5.1 Model Specification

I model the occupational choice y for individual i where

$$y_i = \begin{cases} 1 & \text{if entrepreneur} \\ 0 & \text{if wage worker} \end{cases}$$

The probability p_i of choosing the entrepreneurial self-employment is given by

$$p_i \equiv Pr(y_i = 1 | x) = \Phi(\mathbf{x}_i' \beta) \quad (3.1)$$

where $\Phi(\cdot)$ is the standard normal cumulative distribution on $(-\infty, \infty)$ and bounded by $0 \leq \Phi(\cdot) \leq 1$; \mathbf{x} is a $K \times 1$ vector of individual abilities and characteristics, risk orientation and preference for entrepreneurship, wealth, access to formal and informal finance, political and social factors relating to labor market segmentation, geographical factors, and province fixed effects to control for average income differences and other province-specific factors; and β is a vector of unknown parameters. To simplify the analysis, I assume that individual decisions to be economically active are distinct from that of occupational choice.¹³ Separate models are estimated for the urban and rural economically active populations and, owing to differences in the

¹³Multinomial regressions on the rural data including the choice of an agricultural producer occupation did not change the self-employment-wage employment results.

two administered surveys, different variables for wealth, credit access, and some other variables are specified in the urban and rural models.

3.5.1.1 Individual Abilities

Individual abilities are specified as Mincerian (Mincer 1974) human capital measures of educational attainment and work experience, which are identical in both the urban and rural surveys. These measures of human capital endowments are at best imperfect proxies for entrepreneurial abilities, at worst irrelevant or misleading. Some experiences are not as transferable to entrepreneurial endeavors as others. For example, it is not obvious why experiential capital accumulated through years of farming would necessarily aid entrepreneurial success in non-agricultural industries. However, as seen in Table 3.1, agricultural producers have on average 2.3 more years of experience than rural entrepreneurs. The urban survey provides data on years of work experience, but with the rural survey I proxy experience as age minus years of schooling minus six, which likely reflects simply age more than a stock of relevant work experience. Nonetheless, empirical specifications typically treat Mincerian (Mincer 1974) human capital measures as capturing at least observable variations in abilities, while unobservable faculties are assumed normally distributed in the population with mean zero and captured in the estimated residual. To the extent that educational attainment (years of schooling) and experience (years of employment) reflect entrepreneurial abilities, these should be positively associated with the probability of choosing entrepreneurship, though with diminishing returns accounted for by specification of a quadratic experience term.

3.5.1.2 Segmentation Factors and Social Networks

Several social, political, and economic factors unrelated to individual abilities and preferences are likely to affect the individual occupational choice, including by constraining the opportunity set. Evidence from other developing countries shows that the

self-employed are more likely to be women (Pratap and Quintin 2006; Desai 2009), although this does not appear to be as much the case in China (Table 3.1). Risk orientation and preference for entrepreneurship are not readily measured individual characteristics. In fact, evidence from behavioral economics and psychology show that individual risk preferences are not static, but rather are state and context dependent (Bowles 2002: Ch. 3). Though the CHIPS provide no direct measure of individuals' risk appetites, several observable characteristics are associated with a lower risk of choosing entrepreneurship. Being married and being the head of a (multimember) household can decrease the riskiness of entrepreneurship by providing a potential pool of unremunerated labor for the enterprise as well as providing opportunities to diversify sources of household incomes. Marriage may also expand the social network from which a potential entrepreneur might seek informal external finance or investment capital. Therefore, being married and a head of household are both expected to be positively associated with the probability of becoming an entrepreneur.

Household registration status, or *hukou*, directly affects an individual's opportunity set. Rural-to-urban migrants who lack legal status to obtain formal employment or housing, health care, schooling for children, and other social welfare benefits are expected to be more likely to choose self-employment. Although migration—itsself a risky choice—may reflect an individual's higher predilection for risk and entrepreneurship, a relationship between lack of resident *hukou* and entrepreneurship more likely would reflect this marginalization in the urban economy. Similarly, those having been laid off from a job in the urban labor market are expected to be more likely to choose self-employment.

The rural CHIPS provides some insights into households' social networks, in particular relationships with party cadres and government officials. Having a cadre in the extended family may also lower the risk of entrepreneurship. Family relations with a cadre may insulate private entrepreneurs from regulatory burdens and may

open doors to bank credit and other inputs and resources that enhance the likelihood of entrepreneurial success. By lowering the risks of entrepreneurship, political connections via a cadre in the extended family network is expected to increase the probability of choosing entrepreneurship.

Political connections through Communist Party membership may also affect the probability of choosing self-employment. As seen in Table 3.6, party membership and other ties to the state (particularly to economic institutions controlled by the state) appear to provide benefits to at least some entrepreneurs, who are able to enter with larger initial capital investments and more external credit. Anecdotal evidence of political privileges abounds, particularly in regard to privatization of government-owned enterprises and to access to bank loans. If such privilege is pervasive, then party membership should be positively associated with the probability of choosing entrepreneurship. However, judging by the preponderance of party members in wage work for both the urban and rural samples (Table 3.1), it is more likely that these party members are a privileged few. Alternatively, party membership is often a necessary condition for accessing higher-paying, higher-benefit employment in SOEs (Lee 1999; Appleton, et al. 2009), and thus lacking party membership can make obtaining this desirable employment more difficult. If employment segmentation along party membership lines pervades, then membership is expected to be negatively associated with the probability of choosing entrepreneurship.

3.5.1.3 Wealth and Financial Factors

Though wealth may be associated with risk preferences and may signal an ability to overcome external borrowing constraints, the rural survey also provides direct detailed information about households actual abilities to access various formal and informal financial instruments. The survey questions elicited a binary response (= 1 if participating, else= 0) for each financial instrument: formal loan from a rural

credit cooperative (RCC) or official microcredit program; receipt of some other form of loan; participation in a producer cooperative association; participation in a mutual credit association; or participation more broadly in “curb” market finance. Access to any external finance is expected to be positively associated with probability of choosing entrepreneurship, but to the extent to which property rights and other legal institutions associated with formal finance are important to entrepreneurship, the formal/informal dichotomy may yield differentiated effects.

Limited individual or household resources mean that entrepreneurial projects often require external finance to achieve efficient, or even sufficient, scale. Higher wealth endowments not only allow individuals to finance independently larger projects, but also can help overcome credit constraints by signaling to lenders the entrepreneur’s commitment to a project as well as private information about a project’s expected returns. Wealthier individuals are also thought to exhibit higher preferences for risk, or conversely individuals with low endowments of transferable assets exhibit greater risk aversion. For these reasons, wealth is expected to be positively associated with the probability of choosing entrepreneurship. I test several measures to explore the effects of the quantity of wealth as well as wealth of different liquidity characteristics on occupational selection: total household wealth, encompassing all the asset categories discussed in Section 3.4.3 and Table 3.3, as well as financial assets and real estate assets—both the market value of housing and land holdings for rural households. Although households hold a majority of their wealth in housing assets, housing assets are less liquid and may face more ambiguity as to assignment of property rights, particularly alienability rights that were restricted in some instances under housing privatization policies, than do financial assets. Asset values are measured in 10,000s of current yuan and land holdings are measured in mu, approximately $1/15^{th}$ of a hectare.

3.5.1.4 Housing Privatization as Exogenous Wealth Shock

Unfortunately, the data do not allow observation of the individual occupational choice, only the *ex post* outcome of this choice. Empirically, wealth and entrepreneurial selection may exhibit endogeneity. Individuals with entrepreneurial abilities and high risk preference may accumulate wealth in anticipation of future entry (Evans and Jovanovic 1989). Moreover, entrepreneurs observed with large *ex post* wealth endowments may have accumulated wealth faster in entrepreneurial pursuits than in their next best alternative economic activity. Fortunately, in the urban labor market, China's housing urban reforms present a convenient quasi-natural experiment that can control for the endogeneity of wealth and individual propensity toward entrepreneurship by introducing exogenous variation in wealth accumulation. In the urban economy, housing benefits had long been tied to employment in SOEs. In July 1994, the State Council instituted procedures for the sale of housing by state employers to their employee-denizens; these took effect in 1995. Individuals living in state owned housing were given opportunities to purchase their rental units (with some moratorium on resale). Housing privatization constituted a net welfare gain only if the value of the housing asset subsequently exceeded the present value of future rent payments, which it almost certainly did judging by the pervasive uptake of the housing privatization policy. Wang (2008: 14n) finds that over 80 percent of those living in state-owned housing in 1993 had transitioned to private-owned housing by 1997 (Wang 2008: 14n). Housing ownership increased from 37 percent in 1995 to 78 percent in 2002 (Meng 2002: 10), and urban households living in public housing fell from 57 percent in 1995 to 16 percent in 2002 Li and Zhao (2007).

For some, the pricing mechanism used in housing reform generated windfall wealth endowments. Much of the research on housing reforms focuses on the sale of state-owned housing assets at highly discounted prices (Wang 2008; Iyer, Meng, and Qian 2009). High level government officials and party members often enjoyed privileged

access to higher-quality housing (Wang and Wei 1999; Meng 2007). Thus, when time came for privatization, those with political privilege benefitted doubly from their more favorable initial housing allocation. Officials and party members may also have received even more substantial price subsidies in the privatization process. But the pricing mechanism employed in privatization schemes also resulted in random, exogenous endowments of housing wealth based on geographical placement within localities. Pricing guidelines from the State Council specified that sale prices should not exceed three times the average household income in a locality, older construction should be priced at a level to depreciate fully after 75 years, and further discounts were granted for seniority and rank (Iyer, et al. 2009). While taking account of age and size, privatization pricing rules reflected neither quality nor location within the metropolitan area (Li and Zhao 2007).

Though intra-city location did not factor in housing privatization pricing, location is a significant determinant of real estate valuation, as seen by estimating the determinants of housing prices

$$\ln(p_i) = \beta_0 + \beta_1 \ln(Age_i) + \beta_2 \ln(Area_i) + \delta Location_i + \gamma City_i + \varepsilon_i \quad (3.2)$$

Table 3.8 presents an OLS estimate of the determinants of housing prices at 2002 market values in Equation 3.2. The model specifies the estimated market value of privately owned housing (p_i) in natural logarithm as a function of the logs of the age of construction in years, size in square meters, a vector of dummy variables indicating location within the metropolitan area, and a vector of city dummy variables to control for geographical differences in average real estate prices. Overall, the model explains 73 percent of the variation in housing price, and importantly location within the city is a statistically significant and strong determinant of housing price. Controlling for size and age, the price of a house located in a city center is expected to be 40 percent

higher than a similar house classified as located in “other” areas of a city. Houses located “in the city” but not in the city center were valued almost 27 percent higher *ceteris paribus* than houses in other areas, and houses located in the city’s exurbs were valued 35 percent lower.

Table 3.8: Determinants of Housing Prices

VARIABLES	(1) ln(House Value)
ln(Age of Construction)	-0.186*** (0.015)
ln(Square Meters)	1.084*** (0.029)
City Center = 1	0.399*** (0.133)
In City = 1	0.268** (0.132)
Suburb = 1	0.126 (0.144)
Exurb = 1	-0.350* (0.216)
Constant	8.024*** (0.180)
Observations	5763
R^2	0.731

Robust (clustered) standard errors in parentheses. Includes city fixed effects.

*** p<0.01, ** p<0.05, * p<0.1

By ignoring geographical factors, the privatization of urban housing endowed households with wealth equal to the difference of privatization purchase price and subsequent market valuation inclusive of geographical determinants of real estate prices. Wang (2008) provides evidence that individuals did not, or were unable to, shift their sectoral choice of employment (to SOEs) to capitalize on potential foreknowledge of housing reforms, thus the wealth accumulated through urban housing reform was exogenous from individual abilities or preferences for entrepreneurship. Meng (2007) finds that, on average, urban household wealth increased 24 percent

annually from 1995 to 2002, and that much of the wealth accumulation came from unearned sources—namely in the form of real estate wealth from subsidized urban housing privatization programs. Thus a majority of the urban population accumulated housing wealth with legal title in the latter 1990s, and the accumulation of wealth through housing reform explains a substantial share of the increase in wealth inequality in China (Li and Zhao 2007).

3.5.2 Estimation and Results

I estimate $\hat{\beta}$ in Equation 3.1 by maximizing the log-likelihood function

$$\ln L(\beta) = \sum (y_i \ln \Phi(x'_i \beta) + (1 - y_i) \ln (1 - \Phi(x'_i \beta))) \quad (3.3)$$

Equation 3.3 is estimated separately for the urban and the rural labor markets, with different sets of variables used in each owing both to different relevant concepts and to different data availability in the two surveys. The equations are estimated with robust clustered standard errors and locational fixed effects. Marginal effects at the mean for the urban and rural samples are reported in Tables 3.9 and 3.10 respectively; statistical significance is calculated on the underlying parameters of the probit estimates. Results from estimation of a logistic cumulative distribution function did not differ qualitatively from the probit estimates. The models overall are strongly statistically significant as measured by the likelihood ratio χ^2 statistics and correctly predict 92-96 percent of the observed y_i .

3.5.2.1 Selection in the Urban Labor Market

Turning first to results from the urban sample in Table 3.9, the independent variables capturing human capital endowments and individual entrepreneurial abilities are statistically significant, but take the opposite sign from that predicted by theory. The quadratic term in experience is statistically insignificant, indicating no observable non-linear relationship between experience and occupational choice. Both

years of schooling and years of work experience are negatively and significantly associated with the probability of choosing entrepreneurship, although the economic importance of these human capital measures is small. An additional year of schooling decreases the probability of entrepreneurship by 0.4-0.5 percent ($p < .01$), and an additional year of work experience is associated with a 0.1 percent decrease in probability ($p < .1$). The negative sign on years of schooling is unsurprising, recalling the lower educational attainment profile of entrepreneurs seen in Figure 3.2a. The negative signs and low values on schooling and experience indicate it is not the more educated and more highly skilled individuals who are choosing entrepreneurship. On average entrepreneurs had 2.2 fewer years of education than wage workers and three fewer years of work experience (Table 3.1); if those entrepreneurs acquired this commensurate additional education and experience, they would be 1.2-1.3 percent less likely to choose entrepreneurship.

Being male, married, and a head of household are all positively and significantly associated with the probability of selecting entrepreneurship. Men were 1.1-1.2 percent ($p < .01$) more likely to choose entrepreneurship; married individuals were 1.2-1.4 percent ($p < .01$) more likely; and heads of household were 0.6-0.8 percent ($p < .01$) more likely. That men are more likely to be entrepreneurs in China runs counter to findings in many other developing countries where the predominance of women in entrepreneurial self-employment is seen resulting from gendered labor market segmentation into less desirable or less stable economic activities (Desai 2009; Pratap and Quintin 2006). The finding that marriage and household heads choose entrepreneurship with increased probability is consistent with the notions above that an ability to draw on resources of family members as unremunerated labor, expanded family social networks, and the potential to diversify income streams reduce the risk and reduce the costs of entering entrepreneurship.

The three segmentation factors—*hukou* status, Communist Party membership, and being laid off—all are significantly related to occupational choice and take signs consistent with the segmentation hypothesis discussed in Section 3.5.1. In fact, *hukou*, party membership, and being laid off are the first, third, and second largest predictors, respectively, of choosing entrepreneurship. Holding urban *hukou* significantly reduces the probability of choosing entrepreneurship, by 3.2-4.4 percent ($p < .01$). Conversely, urban migrants without formal household registration status—excluded from many forms of formal employment, social services, and the like—are more likely to enter entrepreneurship. Party membership decreased the probability of choosing entrepreneurship by 2-2.2 percent ($p < .01$). The negative association of party membership with entrepreneurship indicates that the effect of being excluded from higher-wage, higher-benefit SOE employment dominates any effects from preferential access for party members to formal finance or other resources beneficial to entrepreneurs. Finally, having been laid off increases the likelihood of entrepreneurship by 3.33.4 percent ($p < .01$). Viewed together, these results present a picture where individual decisions to enter entrepreneurship are not unconstrained, but rather tempered by individuals' social and economic marginalization. Liberalization of the *hukou* system is often proposed as a means to rationalize China's labor markets, allowing more efficient reallocation of labor resources. Given the results here, liberalization affording migrants better access to employment opportunities and social benefits would decrease the supply of entrepreneurship.

Household wealth, a measure of ability to commit resources to and access external financing for entrepreneurial projects, is positively related to choosing entrepreneurship, as hypothesized for a financial system with credit rationing. But while strongly statistically significant, wealth is an *economically insignificant* factor in occupational choice. In column (2), a 10,000 yuan increase in total household wealth increases the probability of becoming an entrepreneur by less than one tenth of one percent. In-

creasing wealth by 150,000 yuan—more than doubling the wealth of the mean urban household—only increases the probability of entrepreneurship by 0.3 percent. Column (3) specifies financial assets rather than total household wealth, a more liquid form of wealth with more secure property rights. Financial wealth is also a positive and statistically, but not economically, significant predictor of entrepreneurship. Increasing financial wealth by 50,000 yuan, more than doubling the mean for urban households, would increase the probability of entrepreneurship by less than 0.2 percent. Real estate assets (column 4) were a statistically insignificant predictor of entrepreneurship. It is uncontroversial to assume that credit rationing occurs in China, as such coordination failures are endemic even in countries with highly developed financial systems. Where credit rationing is present, higher wealth individuals should enjoy more access to external finance and therefore be more likely to become entrepreneurs. However, the economic insignificance of wealth as a predictor of entrepreneurship suggests that credit rationing in China’s financial system is not a binding constraint on entrepreneurship. In these results, there is no evidence of an excess supply of potential (urban) entrepreneurs held back for want of a more efficiently functioning financial system.

Total wealth and financial wealth may be biased predictors of occupational choice if wealth accumulation is endogenous with other characteristics predisposing individuals to entrepreneurship. Participation in urban housing privatization programs, as discussed in Section 3.5.1 above, endowed many households with unanticipated accumulation of wealth based on geographical location and price subsidies, uncorrelated with entrepreneurial abilities or preference. But this exogenous proxy measure of wealth is negatively and significantly associated with the choice of entrepreneurship (Column 5). Participation in housing privatization decreased the probability of entrepreneurship by 1.8 percent ($p < .01$). When additionally controlling for housing location within the city and city center in Column (6), the marginal probability asso-

ciated with participation in housing privatization retains the same sign, magnitude, and statistical significance, although those benefitting from geographical factors in housing valuation were 0.5 percent ($p < .1$) more likely to choose entrepreneurship than those living in metropolitan suburbs, exurbs, or “other” areas. By interacting the participation variable with housing location in Column (7), we see the effects of those participating in privatization and residing in the higher-valued geographical locations: 1.5 percent ($p < .01$) less likely to choose entrepreneurship. Housing wealth on its own may not relax any external borrowing constraint to entering entrepreneurship if property rights over the asset are restricted, for example by limitations on resale or collateralization. But the strong negative association of housing privatization participation with entrepreneurial choice may indicate that even with greater wealth and with housing benefits decoupled from the employment relation, individuals do not prefer entrepreneurial self-employment.

3.5.2.2 Selection in the Rural Labor Market

Marginal effects for occupational selection in the rural labor market are presented in Table 3.10. Years of schooling is not a statistically significant predictor of choosing entrepreneurship, again unsurprising given the virtually identical educational attainment profiles seen in Figure 3.2b. Unlike in the urban results, work experience, proxying for human capital accumulated on the job, takes the expected positive sign with diminishing marginal returns, although the marginal effect associated with the quadratic term is virtually equal to zero. An additional year of experience is associated with a 0.3 percent ($p < .05$) increase in the probability of entrepreneurship. However, as discussed in Section 3.5.1, this proxy measure of experience may be more indicative of an age effect than a human capital effect.

In contrast to urban labor markets, in rural markets gender was not a significant predictor of entrepreneurship, although the effects of both being married and

Table 3.9: Occupational Selection for Urban Economically Active Sample: Marginal Effects

DV:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Entrepreneur=1	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx
Years of School	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)
Experience	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)	-0.001* (0.001)
Experience ²	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000
Male	0.012*** (0.003)	0.012*** (0.003)	0.012*** (0.003)	0.012*** (0.003)	0.011*** (0.003)	0.011*** (0.003)	0.011*** (0.003)
Married	0.013*** (0.004)	0.013*** (0.003)	0.014*** (0.003)	0.013*** (0.003)	0.012*** (0.003)	0.012*** (0.003)	0.013*** (0.003)
Household Head	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.008*** (0.003)	0.006*** (0.003)	0.006*** (0.003)	0.007*** (0.003)
Hukou	-0.044*** (0.017)	-0.044*** (0.017)	-0.043** (0.017)	-0.044*** (0.017)	-0.033** (0.014)	-0.032** (0.014)	-0.035** (0.015)
Party Member	-0.022*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)	-0.022*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)
Laid Off	0.034*** (0.014)	0.034*** (0.014)	0.034*** (0.014)	0.034*** (0.014)	0.033*** (0.014)	0.033*** (0.014)	0.034** (0.014)
Total Wealth*		0.000*** (0.000)			0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Financial Assets*			0.000** (0.000)				
Real Estate Assets*				0.000 (0.000)			
House Privatization					-0.018*** (0.003)	-0.018*** (0.003)	
House Location: 1 = In City						0.005* (0.004)	
Prvt*Loc							-0.015*** (0.003)
Observations	10,126	10,126	10,126	10,126	10,126	10,126	10,126
Pseudo R^2	0.1445	0.1478	0.1478	0.1445	0.1614	0.162	0.1582
χ^2	338.05	346.73	363.11	337.95	342	362.38	348.75
Sensitivity	0.53%	1.06%	1.06%	0.53%	1.06%	1.06%	1.06%
Specificity	99.98%	98.94%	99.97%	99.98%	99.98%	99.98%	99.98%
Correctly Classified	96.28%	96.30%	96.29%	96.28%	96.30%	96.30%	96.30%

Province fixed effects not reported. Robust (clustered) standard errors in parentheses.

Significance calculated with Z test on underlying parameter estimates: *** p<0.01,

** p<0.05, * p<0.1

*Scaled 10^4

heads of household again were positive and statistically significant. Marriage raised the probability of entrepreneurship by 3.13.3 percent ($p < .01$) and household heads were 3.3-3.4 percent ($p < .01$) more likely to choose entrepreneurship. Communist Party membership, like in the urban case, was significantly and negatively associated with the probability of entrepreneurship. Membership decreased the likelihood of entrepreneurship by 3.5-3.6 percent ($p < .01$).

In all models, total assets entered as a positive and statistically significant effect on choosing entrepreneurship. A 10,000 yuan increase in household wealth consistently increased the probability of entrepreneurship by 0.5 percent ($p < .01$). By this estimate, a doubling of the sample mean rural household wealth, from 44,800 yuan to 90,000, would increase the supply of rural entrepreneurship by only one percent.¹⁴ I find mixed results with regard to the effect of access to formal and informal finance on the choice of entrepreneurship. Access to lending from a rural credit cooperative had a statistically significant effect, increasing the probability of becoming an entrepreneur by 2.1 percent ($p < .1$). Recall from the discussion of Tables 3.5 and 3.6 above that large-scale private entrepreneurs with connections to local officials could gain access to such lending on very favorable terms. Access to no other form of credit is significantly associated with the probability of entrepreneurship. Neither participation in a mutual credit association, participation in the informal curb lending market, membership in a producer (mutual) association, or receipt of a loan from another source (including formal bank loans) were associated with entering entrepreneurship. But political connections were strongly associated with the choice of entrepreneurship: having a local or county-level cadre in one's family increased the probability of entrepreneurship by 1.9 percent ($p < .01$).

¹⁴Increased wealth for rural households could also relax constraints on urban migration, and subsequently the supply of urban entrepreneurship.

Table 3.10: Occupational Selection for Rural Economically Active Sample: Marginal Effects

DV:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Entrepreneur=1	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx	dF/dx
Years Schooling	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.000 (0.001)
Experience	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)
Experience ²	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)
Male	0.004 (0.009)	0.003 (0.009)	0.003 (0.009)	0.004 (0.009)	0.003 (0.009)	0.004 (0.009)	0.004 (0.009)
Married	0.031*** (0.010)	0.032*** (0.010)	0.032*** (0.010)	0.033*** (0.010)	0.032*** (0.010)	0.032*** (0.010)	0.033*** (0.010)
Head Household	0.033*** (0.011)	0.034*** (0.011)	0.033*** (0.011)	0.033*** (0.011)	0.034*** (0.011)	0.033*** (0.011)	0.034*** (0.011)
Party Member	-0.035*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.035*** (0.007)	-0.036*** (0.007)
Total Assets (10 ⁴)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Land Holdings	-0.001 (0.001)						
RCC Loan		0.021* (0.012)					
Other Loan			-0.001 (0.013)				
Producer Assoc.				-0.003 (0.006)			
Mutual Credit Assoc.					0.010 (0.020)		
Curb Market						-0.004 (0.007)	
Cadre in Family							0.019*** (0.007)
Pseudo R^2	0.0737	0.0738	0.0731	0.0735	0.0732	0.0732	0.0746
χ^2	262.5	265.54	262.93	267.76	262.2	266.09	267.92
Observations	9933	9933	9933	9889	9933	9933	9933
Sensitivity	0.47%	0.47%	0.47%	0.47%	0.47%	0.47%	0.71%
Specificity	99.97%	99.94%	99.96%	99.96%	99.96%	99.96%	99.29%
Correctly Classified	91.49%	91.47%	91.48%	91.48%	91.48%	91.48%	91.48%

Province fixed effects not reported. Robust (clustered) standard errors in parentheses. Significance calculated with Z test on underlying parameter estimates: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

3.5.2.3 Where's the Wealth?

What is puzzling from this analysis of occupational choice in China's urban and rural labor markets is that finance is at best only weakly related to the supply of entrepreneurship. In financial markets where information asymmetries and incomplete contracts result in credit rationing, wealth serves to relax the external borrowing constraint. This is true both of formal finance and of informal financial institutions, even where social monitoring/sanctioning and group homogeneity can help improve on some of the contracting problems. Evidence that wealth is strongly associated with entrepreneurship would indicate that would-be dynamic entrepreneurs are being prevented from realizing profitable investment opportunities due to failings of the financial system. But with China's urban and rural entrepreneurs, while statistically related, the economic impact of wealth on the supply of entrepreneurship is weak to irrelevant. In the rural market, where the estimated wealth effect was largest, one would have to nearly double the average household's assets—moving them to the 85th wealth percentile—in order to match the effect on entrepreneurship of having political connections. While the wealth measure captures the effect of financial institutions, we also have direct evidence about access to different sources of financing on entrepreneurship. But the ability to access both informal and formal lending made no difference in the choice of entrepreneurship—aside from the ability to access rural credit cooperatives, where local officials held sway.

One could conclude from these results that borrowing constraints do not appear to be hindering the supply of entrepreneurship in China. But another interpretation is that in China many people are becoming entrepreneurs in spite of their low wealth and the fact that, though informal and formal finance was accessible, the potential rewards awaiting in private entrepreneurship were insufficient to make this choice enticing. Combining the evidence on wealth and finance with the evidence on low-to-negative capital accumulation rates in entrepreneurial enterprises points

to entrepreneurship being an economically unattractive choice—excepting those with beneficial relationships with the Party and state. Seeing the situation of China’s swelling ranks of self-employed in this light illuminates the results that lower educational attainment and socioeconomic marginalization are positively associated with the probability of being an entrepreneur.

But how different are the rewards between entrepreneurship and wage work really? In the next section, I model and compare the earnings of individuals in both occupations and evaluate their potential rewards from switching occupations.

3.6 Determinants of Earnings for Entrepreneurs and Wage Workers

The results in Section 3.5 show that wealth, finance, and human capital endowments—the observable factors that theory suggests are determinants of the supply of entrepreneurship—in fact have little effect or the opposite effects than predicted. I next turn to estimating the determinants of individual earnings for individuals engaged in entrepreneurship and wage work, controlling for factors determining individuals’ occupational *ex ante* occupational choice. The self-selection-corrected earnings estimates allow predict the potential gains or losses in earnings available if individuals were to change occupations. These occupation-specific predicted earnings allow inference about the relative attractiveness of expected rewards in entrepreneurship—which for most of the labor force constitutes an inferior option.

3.6.1 Model Specification and Estimation of Average Earnings

I estimate earnings functions for the urban and rural labor markets where average earnings are defined as net income from work divided by average annual work time—for the urban sample I estimate average earnings per hour and for the rural sample

I estimate average earnings per day of labor supplied. Average earnings are modeled as

$$\ln y_{ijk} = \mathbf{x}_i' \beta + \gamma_j + \eta_k + \epsilon_i \quad (3.4)$$

where \mathbf{x} is a vector of individual human capital characteristics, productive physical capital stock, gender, *hukou* (for the urban labor market); γ is a fixed effects of sector j , η is a fixed effect of province k to control for geographical differences in average income levels, and ϵ is a normally distributed error term with mean zero and standard deviation σ^2 capturing unobservable individual characteristics affecting earnings. All of the variables in \mathbf{x} are hypothesized to be positively associated with average earnings, allowing for diminishing returns to experience captured by a quadratic term hypothesized to take a negative sign. This specification expands on the standard human capital earnings specification (Mincer 1974) to include employment of physical productive capital. For entrepreneurs, the model thus becomes akin to a Cobb-Douglas production function, while for wage workers with zero-to-negligible productive asset stocks the physical capital term drops out. Equation 3.4 is estimated by ordinary least squares (OLS) with robust clustered standard errors, first with a pooled sample of wage workers and self-employed, and then separately for each occupation respectively. Chow (1960) tests reject the null hypothesis of parameter equality between the separate occupation models. Results are presented in columns 1-3 of Tables 3.11 and 3.12 below for the urban and rural samples respectively.

Presumably, the individual's choice to enter self-employment—observed only *ex post* by the researcher—is made with some knowledge of entrepreneurial abilities. The individual's choice of occupation will be endogenous to earnings, meaning that characteristics influencing the probability of choosing wage or self-employment also influence the individual's earnings once the occupational choice is made. If occupational choice is endogenous with the individual characteristics relevant to the model of

earnings determination, then resulting OLS estimates will be biased. Thus, earnings equations for the two occupations are also modeled simultaneously with the choice of self-employment by endogenous switching regression to control for self-selection bias (Maddala 1983; Loshkin and Sajaia 2004) in Equations 3.5-3.7:

$$\ln y_{1i} = X_{1i}\beta_1 + \epsilon_{1i} \quad (3.5)$$

$$\ln y_{2i} = X_{2i}\beta_2 + \epsilon_{2i} \quad (3.6)$$

$$S_i^* = \delta(\ln y_{1i} - \ln y_{2i}) + Z_i\gamma + u_i \quad (3.7)$$

Here, y_{ji} is the earnings of individual i in occupation j ; S_i^* represents the individual's occupational choice observed *ex post*:

$$S_i = \begin{cases} 1 & \text{if } S^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

Z_i is a vector of characteristics that shape the individual's decision to pursue entrepreneurship. Specification of Z_i in the selection equation (3.7) draws on insights from the probit analysis in Section 3.5 and also includes sector dummies, assuming that sectoral choice is made jointly with occupational choice. X_{ji} is a vector of (weakly) exogenous variables influencing earnings. β_1 , β_2 , and γ are vectors of unknown parameters, and u_i , ϵ_1 , ϵ_2 are disturbance terms assumed to be trivariate normally distributed with mean vector zero and covariance matrix

$$\Omega = \begin{bmatrix} \sigma_u^2 & \sigma_{1u} & \sigma_{2u} \\ \sigma_{1u} & \sigma_1^2 & \cdot \\ \sigma_{2u} & \cdot & \sigma_2^2 \end{bmatrix}$$

where the diagonal of the matrix consists of error variance terms of the selection equation, the earnings equation in occupation 1 (entrepreneurship), and the earnings equation occupation 2 (wage work), and the σ_{ju} are the covariances of u_i and ϵ_{ji} ; the covariance of ϵ_{1i} and ϵ_{2i} is undefined as y_{1i} and y_{2i} are never simultaneously observed (i.e. individuals choose only one occupation).

Equations 3.5 and 3.6 are specified as above in equation 3.4. The system of equations 3.5-3.7 can be evaluated simultaneously with maximum likelihood estimation of equation 3.8 to avoid problems of this endogenous selection bias

$$\ln L = \sum_i \left(S_i \left[\ln \{ \Phi(\lambda_{1i}) \} + \ln \left\{ \phi \left(\frac{\epsilon_{1i}/\sigma_1}{\sigma_1} \right) \right\} \right] + \right. \\ \left. (1 - S_i) \left[\ln \{ 1 - \Phi(\lambda_2) \} + \ln \left\{ \phi \left(\frac{\epsilon_{2i}/\sigma_2}{\sigma_2} \right) \right\} \right] \right) \quad (3.8)$$

where $\Phi(\cdot)$ is a cumulative normal distribution function, $\phi(\cdot)$ is a normal density distribution function,

$$\lambda_{ij} = \frac{(\gamma Z_i + \rho_j \epsilon_{ij}/\sigma_j)}{\sqrt{1 - \rho_j^2}} \quad j = 1, 2$$

and $\rho_j = \sigma_{ju}^2 / \sigma_u \sigma_j$ is the correlation coefficient between ϵ_{ji} and u_i .¹⁵ Results of this estimation are presented in columns 4-5 in Tables 3.11 and 3.12 for the urban and rural samples. Though the endogenous switching regression corrects for potential self-selection bias, the selection-corrected results in columns 4-5 discussed in the following section are substantially similar to the OLS estimates in columns 1-3.

¹⁵This derivation is based on Lokshin and Sajaia (2004).

3.6.2 Results

3.6.2.1 Urban Labor Market

As expected, for both wage workers and entrepreneurs human capital is positively and significantly associated with average earnings, though with very different magnitudes for the two occupations. Estimated returns to schooling were more than four times as high for wage workers as they were for entrepreneurs. For wage workers, a one percent increase in years of schooling was associated with a 0.86 percent increase in average hourly earnings ($p < .01$), while for wage workers the same increase in schooling earned only an additional 0.21 percent hourly earnings ($p < .1$). This pattern is reversed with experiential human capital, where entrepreneurs had much higher estimated returns to experience than wage workers; however, while entrepreneurs exhibited the expected diminishing returns with -0.12 coefficient ($p < .1$) on the experience squared term, wage workers exhibited increasing rather than diminishing returns to experience with a 0.4 coefficient ($p < .01$). Physical productive capital was a statistically insignificant determinant of earnings for wage workers (as expected), and was positively and significantly associated with average earnings for entrepreneurs: a one percent increase in capital committed to the enterprise will raise the entrepreneur's average earnings by 0.03 percent ($p < .05$).

In addition to individual productivity characteristics, social factors also were significant determinants of earnings. Males enjoyed a wage premium in all regressions presented in Table 3.11, though the estimated effect for entrepreneurs at 0.32 ($p < .01$) exceeded that for male wage workers whose premium was 0.14 ($p < .01$); in levels, the average male wage premium equaled 1.38 yuan per hour for entrepreneurs and 1.15 yuan per hour for wage workers. Having official urban *hukou*—and all the social and economic benefits associated with this status—boosted the earnings potential for urban wage workers with a strongly statistically significant coefficient of 0.21 ($p < .01$), or 1.23 yuan per hour in levels. For entrepreneurs, urban *hukou* was not

a statistically significant determinant of earnings. The insignificance of hukou for entrepreneurs' earnings is most likely due to its importance as a factor in occupational selection—individuals with urban *hukou* were more likely to choose a wage employment occupation over self-employment.

Table 3.11: Determinants of Earnings, Urban Workers

	(1)	(2)	(3)	(4)	(5)
DV = ln(yuan/Hour)	Pooled	Wage	Entrep.	Selection-Corrected Wag	Entrep.
ln(Years Schooling)	0.640*** (0.032)	0.648*** (0.035)	0.277*** (0.093)	0.856*** (0.036)	0.211* (0.157)
ln(Experience)	0.099** (0.044)	0.101** (0.045)	0.485* (0.299)	0.078* (0.047)	0.572** (0.319)
ln(Experience ²)	0.027*** (0.009)	0.028*** (0.009)	-0.089* (0.063)	0.038*** (0.010)	-0.117* (0.075)
ln(Productive Capital)	0.000 (0.003)	-0.002 (0.003)	0.024** (0.011)	0.000 (0.003)	0.034** (0.017)
Male = 1	0.117*** (0.015)	0.116*** (0.015)	0.184** (0.084)	0.138*** (0.016)	0.320*** (0.100)
Hukou = 1	0.156*** (0.039)	0.196*** (0.047)	-0.142 (0.166)	0.211*** (0.052)	-0.170 (0.198)
Constant	-0.285 (0.224)	-0.339 (0.249)	1.028** (0.499)	-0.912*** (0.137)	0.400 (0.541)
Observations	9845	9476	369	9845	9845
R^2	0.353	0.35	0.233		

Includes province and sector effects.

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

3.6.2.2 Rural Labor Market

The pattern of parameter estimates in the rural labor market resemble that found for the urban market in the preceding section. Wage workers had positive and statistically significant returns to schooling, with average daily earnings increasing by 0.19 percent ($p < .01$) for each one percent increase in years of schooling. For rural entrepreneurs, the relationship between educational human capital and earnings is statistically insignificant—educational attainment is not a factor in determining

the earnings of entrepreneurs. Estimated coefficients on experience and experience squared take the expected signs for both occupations, but the returns were much higher for entrepreneurs. For rural entrepreneurs, these were 1.29 on experience ($p < .05$), with sharp diminishing returns seen in the -0.23 coefficient ($p < .05$) estimated on the quadratic term. Peak returns to experience for rural entrepreneurs are seen at 16.5 years of experience. For wage workers, the estimated coefficients were 0.29 ($p < .01$) and -.03 ($p < .05$); at these magnitudes, diminishing returns to experience are not seen in any relevant time frame. The results for experience should be viewed tentatively. As discussed in Section 3.5.1, though, the measure of experience employed for the rural sample—age minus years of schooling minus six, compared to actual years of employment experience observed for the urban sample—is at best a noisy indicator of human capital acquired on the job.

Rural entrepreneurs exhibited much larger returns to physical productive capital than their urban counterparts: a one percent increase in capital stock increased earnings .12 percent ($p < .01$). For wage workers, too, the estimate of returns to productive capital is positive and statistically significant, though with the small coefficient magnitude of less than 0.02 percent and low significance ($p < .1$) this may be Type I error. Finally, the male earnings premium was positive and statistically significant for all models, though the estimated size of 0.44 ($p < .01$) for entrepreneurs was more than double that of 0.15 ($p < .01$) for wage workers.

By comparing the determinants of average earnings for wage workers and entrepreneurs in the urban and rural labor markets, several key conclusions can be drawn about who in China become entrepreneurs and how productive they are. First, schooling accumulated human capital is less important for entrepreneurial earnings than for the earnings of wage workers. The regression results here add depth to the observation in Section 3.4 that entrepreneurs have lower overall educational attainment than those in wage employment occupations. With lower returns to schooling,

Table 3.12: Determinants of Earnings, Rural Workers

	(1)	(2)	(3)	(4)	(5)
DV = ln(yuan/Hour)	Pooled	Wage	Entrep.	Selection-Corrected Wage	Entrep.
ln(Years Schooling)	0.166*** (0.040)	0.170*** (0.039)	0.072 (0.164)	0.192*** (0.040)	0.057 (0.194)
ln(Experience)	0.313*** (0.070)	0.288*** (0.069)	1.161** (0.612)	0.291*** (0.071)	1.289** (0.612)
ln(Experience ²)	-0.031** (0.016)	-0.026** (0.016)	-0.203** (0.109)	-0.028** (0.017)	-0.230** (0.109)
ln(Productive Capital)	0.034*** (0.012)	0.024** (0.012)	0.066** (0.036)	0.018* (0.012)	0.116*** (0.037)
Male = 1	0.163*** (0.026)	0.151*** (0.026)	0.229** (0.114)	0.146*** (0.026)	0.435*** (0.101)
Constant	2.067*** (0.125)	2.029*** (0.130)	1.959* (1.012)	2.083*** (0.138)	1.492 (1.006)
Observations	5780	5318	462	5780	5780
R^2	0.189	0.186	0.263		

Includes sector and province effects.

Robust clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

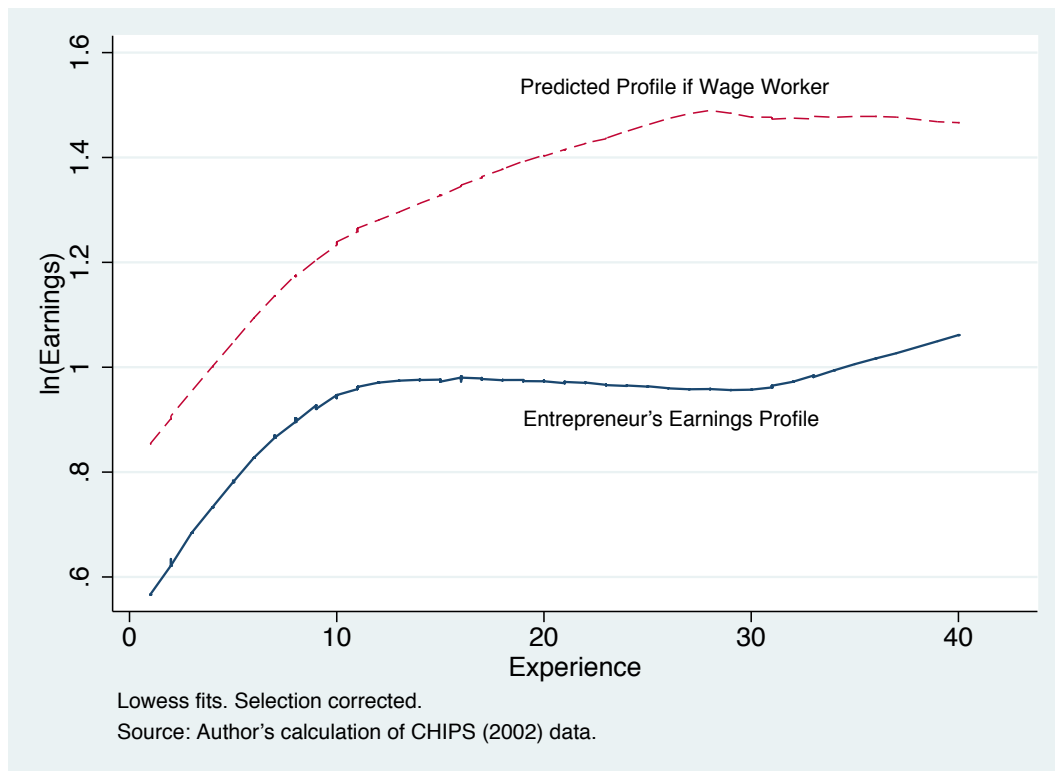
entrepreneurial self-employment is a less attractive economic opportunity for individuals with higher educational attainment and presumably technological sophistication. Second, estimated returns to physical capital for entrepreneurs of 0.03 and 0.11 for urban and rural entrepreneurs are quite low. Thus, it seems China's entrepreneurs are not the dynamic economic force that some researchers and China observers believe them to be.

3.6.3 Opportunity Cost of Occupational Selection

One benefit of the endogenous switching regression is the ability to predict the conditional expectation of average earnings if individuals were to switch occupations. That is, using the estimated parameters of the system of Equations 3.5-3.7 it is possible to calculate

Figure 3.11: Comparison of Occupational Earnings Profiles, Urban Market

(a) Entrepreneurs



(b) Wage Workers



$$E(y_{1i} | S_i = 1, x_{1i}) = x_{1i}\beta_1 + \sigma_1\rho_1 \frac{\phi(\gamma Z_i)}{\Phi(\gamma Z_i)} \quad (3.9)$$

$$E(y_{1i} | S_i = 0, x_{1i}) = x_{1i}\beta_1 - \sigma_1\rho_1 \frac{\phi(\gamma Z_i)}{1 - \Phi(\gamma Z_i)} \quad (3.10)$$

$$E(y_{2i} | S_i = 1, x_{2i}) = x_{2i}\beta_2 + \sigma_2\rho_2 \frac{\phi(\gamma Z_i)}{\Phi(\gamma Z_i)} \quad (3.11)$$

$$E(y_{2i} | S_i = 0, x_{2i}) = x_{2i}\beta_2 - \sigma_2\rho_2 \frac{\phi(\gamma Z_i)}{1 - \Phi(\gamma Z_i)} \quad (3.12)$$

or the expected average earnings for individuals currently in entrepreneurial self-employment (3.9); the expected earnings of current entrepreneurs if they switched to wage employment (3.12); the expected average earnings for individuals currently in wage employment (3.11); and the expected earnings of current wage workers if they entered entrepreneurship (3.10). The last term in each of these equations can be seen as the inverse Mills' ratio defining the shape of the distribution truncated by self-selection, weighted by the degree of endogeneity between individual characteristics and occupational choice; adjusting the otherwise linear prediction of earnings by these terms corrects for self-selection bias and allows unbiased prediction of the dependent variable in the regime for which no observation is available.

Equations 3.9-3.12 allow informed inference about the relative attractiveness of individuals' expected rewards in the two occupational choices. The introduction to this chapter characterized a common perspective on the importance of entrepreneurs as a dynamic force in China's economic growth and development during the reform era, during which privatization and market liberalization yielded an environment of unbridled opportunities for entrepreneurship. If the potential economic opportunities for entrepreneurship are so great, one would expect substantial predicted gains for individuals in wage work who choose to become entrepreneurs and substantial losses

for entrepreneurs should they switch to wage employment. Figure 3.11 evaluates these two scenarios for China's urban labor market.

Panel A compares the experience-earnings profile of entrepreneurs with the predicted experience-earnings profile if entrepreneurs switched to wage employment by fitting locally-weighted regression, or *lowess*, curves (Cleveland 1979) through the conditional expectations of average earnings given by equations 3.9 and 3.12. Rather than enjoying superior opportunities in entrepreneurship, throughout the range of experience levels, current entrepreneurs would gain substantially from switching to wage work. Urban entrepreneurs earned an average of 2.75 yuan per hour, but could earn an average of 4.16 yuan per hour in wage employment, or an average gain of 1.41 yuan per hour from exiting the entrepreneurial sector. Panel B presents the similar comparison for current wage workers in the urban labor market. Again, throughout the range of experience, earnings for wage workers surpassed earnings if these individuals were to switch to entrepreneurial self-employment. Wage workers earned an average of 5.06 yuan per hour but would earn a mere 2.06 yuan per hour in self-employment, losing 3 yuan per hour.

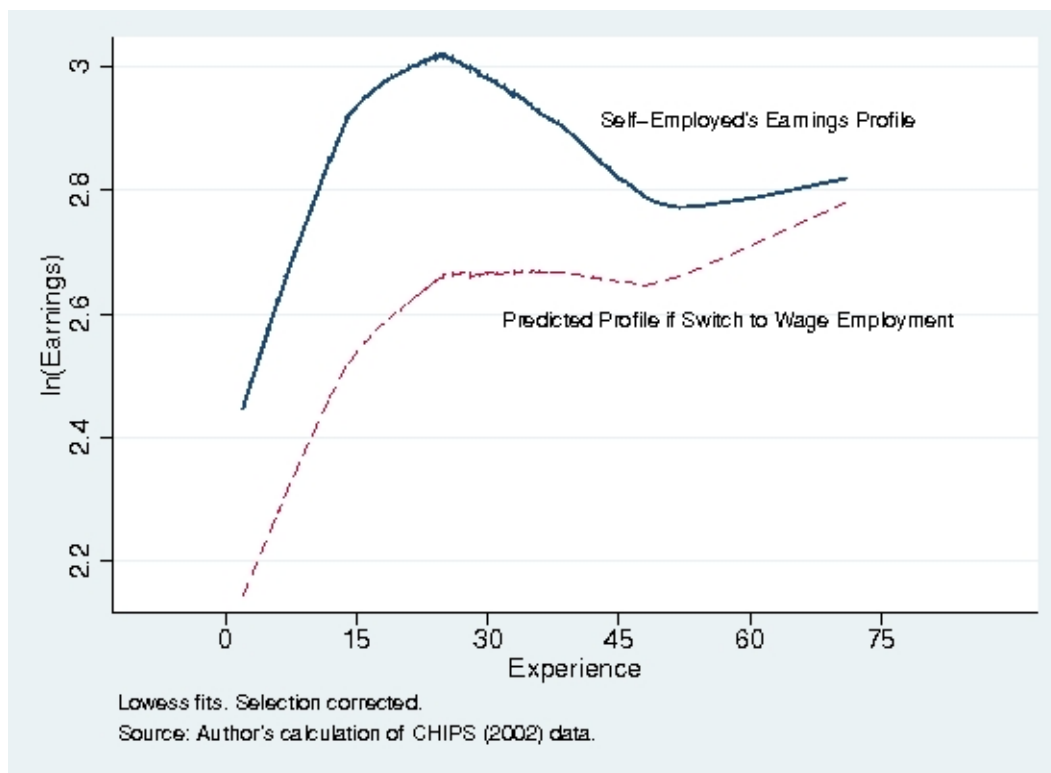
The story is somewhat different in the rural labor market seen in Figure 3.12. Experience-earnings profiles of the two occupations for current entrepreneurs in Panel A shows that self-employment offers superior opportunities throughout the entire range of experience. On average, rural entrepreneurs had daily earnings of 21.44 yuan, but would be expected to earn only an average of 14.68 yuan per day in wage employment, or a loss of 6.76 yuan per day. For rural wage workers in Panel B, wage workers' experience-earnings profile exceeds the predicted profile for most of the range of experience levels, although in a small range near 15 years of experience the two profile curves touch. For the most part, wage workers would experience higher earnings in their current occupation, although in this narrow range some wage workers could be indifferent between their current work and switching to entrepreneurship.

Wage workers averaged daily earnings of 15.51 yuan and would earn slightly less, 15.26 yuan per day on average, if switching to entrepreneurship.

While the lowess curves in Figures 3.11 and 3.12 characterize an average tendency in the data, it is similarly revealing to evaluate the predicted potential earnings gains and losses from switching occupations for individuals observed in the survey data. Figure 3.13 presents kernel density estimates depicting the distribution of gains/losses from switching in the urban and rural labor markets. For the urban labor market depicted in Panel A, few entrepreneurs, only 11.8 percent, would be worse off in terms of earnings from leaving entrepreneurship for wage employment; almost no wage workers, 0.5 percent, would improve their expected earnings from entering entrepreneurship. The vast majority of both groups would be better off in urban wage employment. For the rural labor market in Panel B, most entrepreneurs, 86.3 percent, would be worse off in wage employment although almost 1 in 7 could be better off in seeking wage employment. The predicted earnings gains and losses are more evenly distributed for rural wage workers. More than half of wage workers, 58 percent, would stand to lose earnings by becoming entrepreneurs. However, 41 percent would stand to increase their earnings by switching, with some predicted to make substantial gains, although even at the 90th percentile of the distribution predicted gains were just 6.07 yuan per work day.

Figure 3.12: Comparison of Occupational Earnings Profiles, Rural Market

(a) Entrepreneurs



(b) Wage Workers

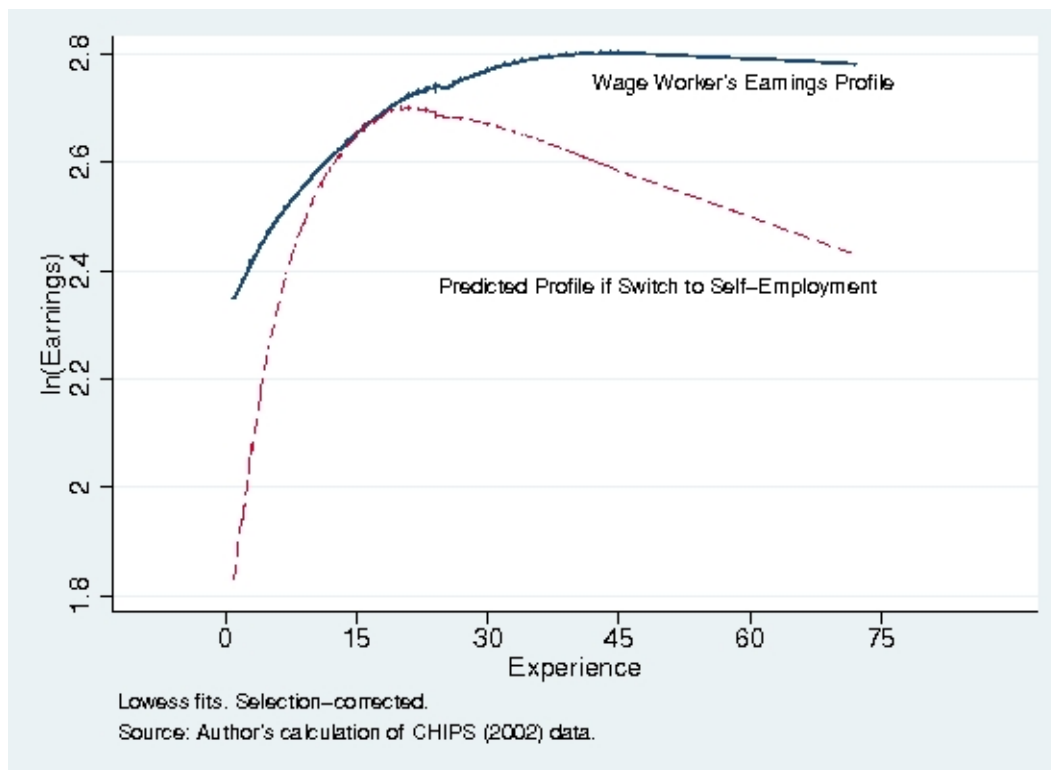
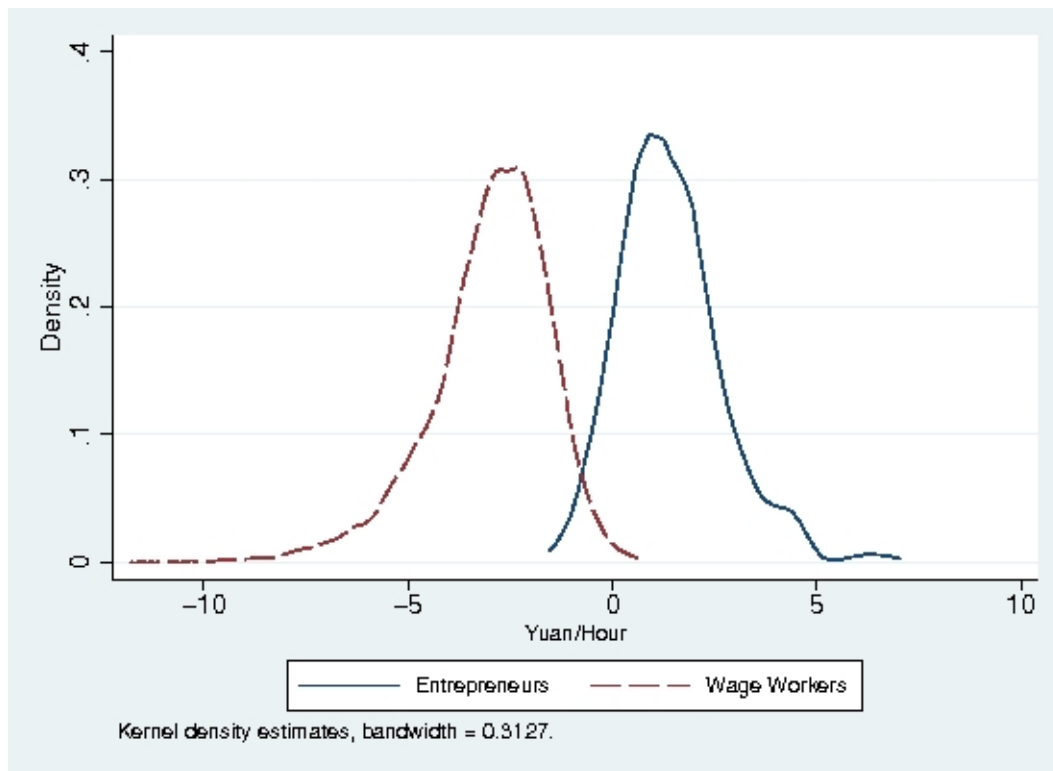
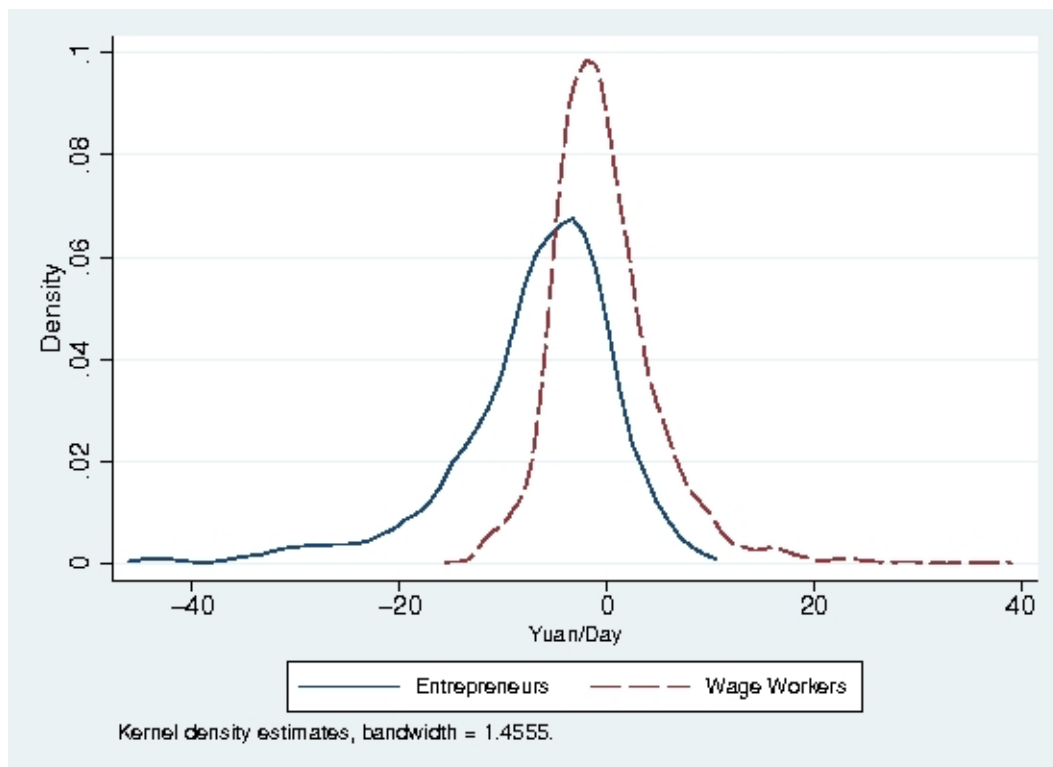


Figure 3.13: Predicted Earnings Gain/Loss from Switching Occupations

(a) Urban Labor Market



(b) Rural Labor Market



3.7 Conclusion

The analysis in this chapter shows that China's private entrepreneurs are not the sophisticated and successful business leaders propelling China's development as some believe. Despite widespread perceptions of biases in financial institutions against lending to the private sector, access to external credit appears to be neither an important determinant of individuals' choices to enter entrepreneurship, nor a boon to the performance of those entrepreneurs who access it. This is true of finance obtained both from formal and informal financial structures.

Entrepreneurship does not seem to be a preferable occupational choice for most people, including for those observed as employed in entrepreneurship in the 2002 CHIPS. Even though the institutional environment for privately-owned business improved qualitatively between 1978 and 2002 and average incomes in general rose substantially, over time new entrants to entrepreneurship were unwilling or unable to commit larger sums to their investment projects. Performance of entrepreneurs, measured in long-run capital accumulation rates, is surprisingly poor as well: the majority of entrepreneurs exhibited non-positive rates of accumulation. In the urban labor market, virtually all workers are expected to strictly prefer the higher earnings in wage employment than in self-employment. In the rural labor market though, two-fifths of wage workers could stand to increase their earnings, modestly, by entering self-employment.

Since the evidence indicates that entrepreneurship is not an enticing opportunity for most people, why do people in China become entrepreneurs? For many—marginalized migrants to the cities, disguised unemployed rural agricultural producers, and those dislocated from SOE employment—it seems entrepreneurship is a less than voluntary choice. For others, including a number of the larger and better-performing entrepreneurs, entrepreneurship is paying healthy dividends less because

of individual abilities and productivity characteristics that reap rewards in the free market, and more owing to political connections and relationships with the state.

If China's entrepreneurs and the financial structures supporting private sector development are not the dynamic force behind China's growth, then what does explain China's rapid development success? The next chapter endeavors to evaluate this question by exploring the relationship between China's multiple financial structures and the export performance at the foundation of China's development success since the mid-1990s.

CHAPTER 4

FINANCING EXPORT DEVELOPMENT IN CHINA'S GROWTH

4.1 Introduction

In the preceding chapter, we saw that China's private entrepreneurs resemble more the low-productivity, informal sector self-employed found in many developing rather than dynamic entrepreneurs driving the nation's growth. If not private entrepreneurship, what then has driven China's growth in the economic reform era? In the mid-1990s, China's development strategy shifted much more explicitly to one of export-led growth. Prior to the 1990s, early reforms focused on decollectivization of the rural economy, changes to price mechanisms, and modest and selective foreign economic engagement (Harding 1987; Riskin 1987; Meisner 1996), and internal factors accounted for the lion's share of growth (Lin 1992; Lees 1997). Following a bout of inflation in 1988-89 and ensuing political turmoil, economic reforms took new direction, coalescing in policies that promoted privatization of state and collectively owned enterprises (SOEs and COEs), further liberalized foreign direct investment, and emphasized exports as the engine of economic growth. After 1993, China began registering sustained trade surpluses, and exports shot up from 14 percent of GDP in 1993 to 34 by 2006. In this time, China's export basket expanded dramatically in both the variety and technological sophistication of exported goods (Rodrik 2006). Rapid reallocation of resources toward export activities was made possible by high rates of investment, which have averaged over 40 percent of GDP since the early 1990s. At the core of this structural transformation were China's various financial structures that

directed new investment and productive resources toward an expanding portfolio of export-oriented outputs.

By *financial structure* I mean the nexus of institutions that mediate the transformation of financial capital into physical capital, and that allocate rights to agency over this capital and the income streams derived from its productive use. Such financial interactions are especially prone to coordination failures (Stiglitz 1993), and historically a variety of institutions have evolved to cope with these moral hazard, adverse selection, and principle-agent problems that arise in credit and ownership relationships. These institutions play a foundational economic role for how savings are collected and allocated for investment (and consumption), how these relationships are monitored and enforced, how property rights are assigned to income flows and agency over corporate governance, and so on. Different financial structures, by allocating control and authority over capital in mitigating coordination problems, tend to prioritize different economic activities, including the pace and direction of investment (Carlin and Mayer 2000, 2003; Demirguc-Kunt and Levine 2001). Some financial structures are perceived as better than others at promoting the kinds of investment and enforcing the discipline of efficiency that lead to the technological innovation and productivity improvements underlying growth and development (Hirschman 1970; Pollin 1995; Porter 1992, 1996).

Much research on the relationship between institutions and growth, including that on China, focuses on the role of property rights institutions (La Porta, et al. 1997, 1998). But property rights are but one component of the broader complex of inter-related institutions comprising the financial structure. Property rights alone capture only one dimension of the relationship between institutions and growth, and analysis of property rights independent of the broader financial structure raises a serious conceptual problems and may yield misleading results. For example, a number of studies link private ownership forms in China to higher efficiency (e.g. Dollar and

Wei 2007), however, delineating precisely what is “private property” is not such a simple matter. At some times and places, firms posed as state-owned or collectively-owned enterprises (SOEs or COEs) to attain preferential treatment and access to capital and other resources, so-called “red hat” enterprises. At other times, domestic capital holders have masked their assets as foreign direct investment (FDI), similarly, in order to attain preferential treatment (Prasad and Wei 2005; Zhang 2006). Township and village enterprises (TVEs), encompassing both privately and collectively owned enterprises, seemed to wed the innovative potential of entrepreneurs with the command of (local) government, resulting in highly efficient enterprises (Fu and Balasubramanyam 2003). Although a large share of SOEs were “privatized” since the late 1990s, in reality these were merely corporatized, with shares issued and dispersed across government bodies, administrative agencies, and specially created government-owned holding companies, though ultimately remaining under state control; only a minority of shares traded openly on stock exchanges. Also since the late 1990s ownership reform, SOEs and government-owned TVEs may sometimes own ostensibly “private” (or private joint venture) subsidiary enterprises under a state-owned parent’s corporate umbrella. The August 2009 sale of private Hong Kong-based Cathay Pacific Airlines to the mainland-based state-owned Air China illustrates the challenge of disentangling China’s Byzantine ownership structures (Cheng and Ng 2009).

The nuances of ownership classification of Chinese are not well captured by available statistics, be it in widely used aggregate macroeconomic data or in large scale firm-level surveys. But the problem of classifying ownership is not merely a statistical issue hounding empirical research; it is symptomatic of the patchwork ad hoc legal environment in which firms operate. Even though firms of various ownerships exist, investment continues to be subject to much state control. Huang (2008: 20) describes an extensive government structure for monitoring and overseeing fixed asset investments (FAI): “[FAI] activities went through a government scrutiny process that

required a bureaucratic paper trail.” The extent of state influence over investment can be seen in persistent investment patterns over time. Rawski (2001) observed that even late into the economic reform process, China’s investment cycles had not changed substantially from those seen under the centrally planned economy, indicating that the main determinants of investment—that is to say, decision-making authority—also persist. Huang (1996: 223) goes so far as to argue that the ability of local governments to raise funds for investment projects and to influence key production decisions “has been considerably enhanced” during the reform period.

Rather than examine the muddled statistical or legal classification of firm ownership, this chapter assesses the relative efficiency of China’s various financial structures in promoting economic development: the state-owned banking system, foreign direct investment, local government industrial policy finance, private informal finance, and capital markets. Specifically, I test the relationship between China’s multiple financial structures and exports at the province level when controlling for geographic factors and economic structure. Locales with more efficient financial structures should find it easier to finance development of export industries (Kletzer and Bardhan 1987; Beck 2002, 2003). China’s development success clearly has been tied to increasing exports and financial structures capable of channeling resources into export production and enforcing efficiency and quality of output at levels that allow producers to compete on world markets. Exports outcomes, signifying the *de facto* ability to deliver world class levels of productivity, and the relative development of different financial structures varied considerably across China’s provinces thanks to geographic factors and regional variations in and local experimentation with economic reforms. Exports therefore serve as a convenient metric by which to measure the efficiency of different financial structures in facilitating capital accumulation, growth, and technological deepening.

The remainder of this chapter is thus organized: Section 4.2 further explains the theoretical relationship between financial structure and exports and describes the role of exports in China's reform era development history. Section 4.3 explains the evolution of these multiple financial structures through various economic reforms and their relation to export development; Section 4.4 provides descriptive and econometric analysis of the financial determinants of exports. The lens of financial structure in China illuminates a very different perspective on the factors contributing to China's reform-era economic success, one where the Chinese state at various levels continues to exercise extensive authority over investment and many aspects of microeconomic life—albeit obviously and increasingly through less direct mechanisms than under the centrally planned economy that preceded reforms. The analysis here finds that bank credit, though largely excluding the private sector and directed at less-than-efficient SOEs (in non-exporting sectors) is playing a significant role in boosting exports through the aggregate demand it stimulates. Most significantly, industrial policy undertaken and financed by local level governments is highly effective at developing export-worthy industries. While the evidence indicates that statist macroeconomic demand management and microeconomic industrial policies are associated with higher exports, the success of private financial structures in promoting exports is less obvious. The relationship between FDI and exports appears to hold only in select coastal provinces, but not generally throughout China. Private informal finance, often seen as highly efficient due to its ability to escape government entanglements, is found to play no role in export development. The chapter's conclusion in Section 4.5 explores the implications of these findings for China's growth path as the government explores further financial liberalization and privatization and the financial strategies that can be employed to address China's geographically unbalanced economic development.

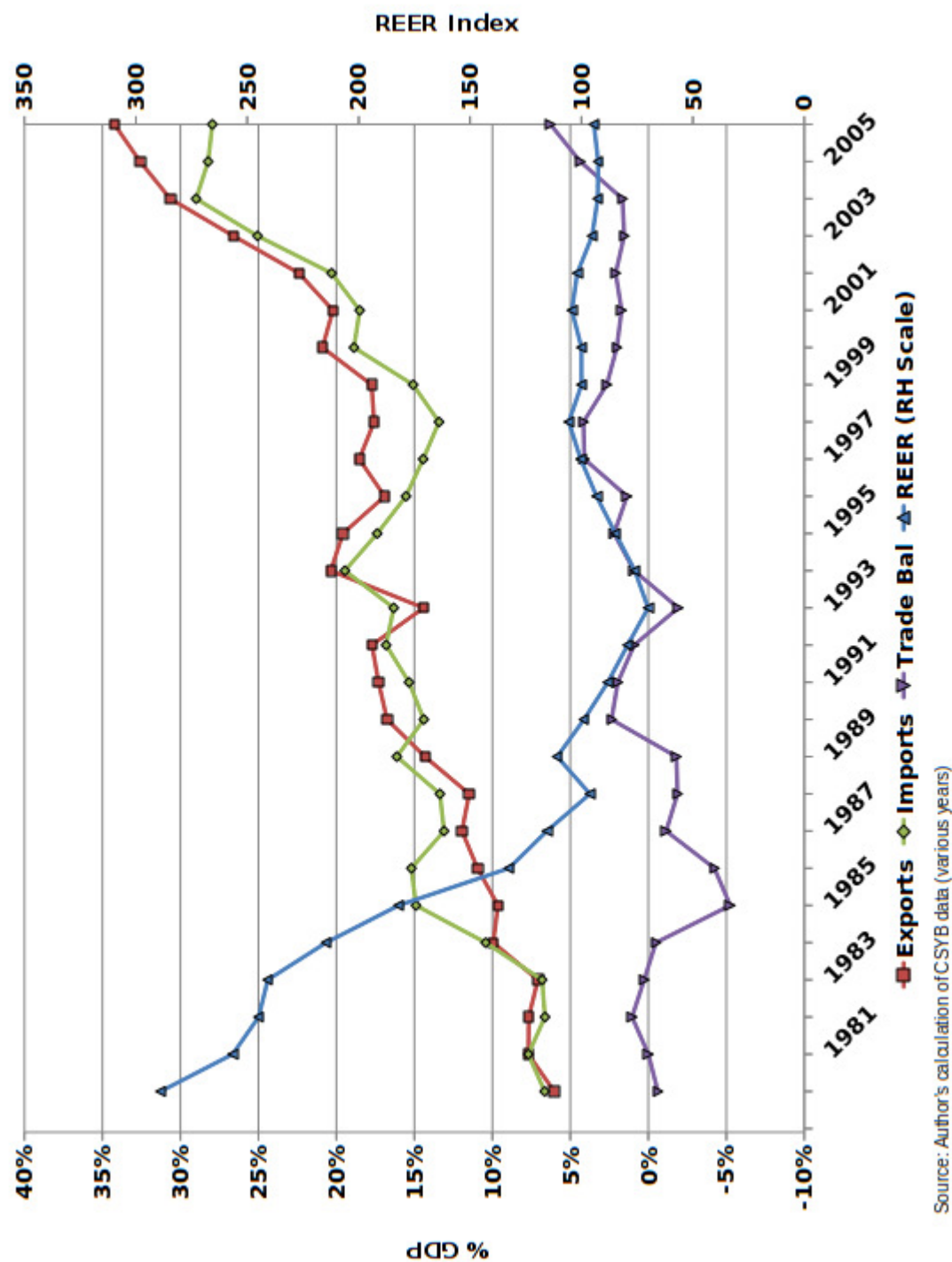
4.2 Exports and Growth in China

The focus on exports as a primary outcome signifying the efficacy of China's financial structures in promoting growth is motivated by several factors. First, exports provide a convenient *de facto* indicator of the extent to which China's productive capital can achieve internationally competitive levels of productivity and quality. Exporting is tied to productivity and technological advancement through several channels (Grossman and Helpman 1995). Competition on world markets provides a disciplining effect on firm efficiency as well as incentives for investments in product and process research and development. Participation in world markets can expose firms to new technologies through licensing and other direct technology transfers, for example. And this exposure creates opportunities for technology spillovers to be adopted in domestic production. Exporting also earns foreign exchange with which more advanced foreign technologies and capital goods can be purchased. Empirical trade research debates the direction of causality between exporting and (firm) productivity (Bernard and Jensen 1999, 2004; Lileeva and Trefler 2007). Whether high productivity firms export or exporting firms become high productivity, the observation of export outcomes indicates that producers are able to perform at the world frontier of productivity and quality. While productivity growth and technological accumulation of firms may be due to many factors complementing the export channels, exporting appears to be a key component of the story in most late developing countries.

Second, a large literature assigns substantial importance of exports to China's economic growth (Dollar and Kraay 2001). Export-dependence has not always been the main engine of China's growth, but beginning in the mid-1990s the turn toward export-led growth and explicit policy shift to promote exports can be seen clearly in the data. As shown in Figure 4.1, exports as a share of GDP increased steadily as China moved away from the relative autarky of a centrally planned economy, but China registered trade deficits throughout most of the 1980s—despite a dramatic de-

preciation of the real exchange rate. Several studies of the determinants of China's growth confirm that, indeed, for much of the early wave of economic reforms exporting was not the engine propelling China's economic growth. Lees (1997) provides an estimate of the contributions of various factors to China's growth, focusing on the late 1980s. Labor mobility, the ability to reallocate labor inputs from lowproductivity to higher productivity employment, explained 16.3 percent of economic growth, Lees estimates. The efficiency of free markets, and the reliance on price signaling mechanisms to guide the reallocation of capital resources, accounted for 4.1 percent of growth. Foreign trade—both exporting and the ability to import foreign technology-embodied goods—accounted for a mere 5.4 percent of growth. By far, the largest component of explaining China's growth was domestic and foreign investment, accounting for 74.1 percent. Lin (1992) estimates that agricultural decollectivization through the Household Responsibility System—not exporting or other market reforms—accounted for the majority of economic growth between 1978 and 1984. Anecdotal evidence also corroborates the relative unimportance of exporting throughout the early reform-era growth period. A survey on Chinese firms in the early 1990s asked managers to rank their most important objectives—"increasing exports and earning foreign exchange" ranked fourth, behind fulfilling tax obligations, creating new products, and improving management (Zheng Hongliang 1992, cited by Huang 1996: 231).

Figure 4.1: Export Performance in the Reform Era



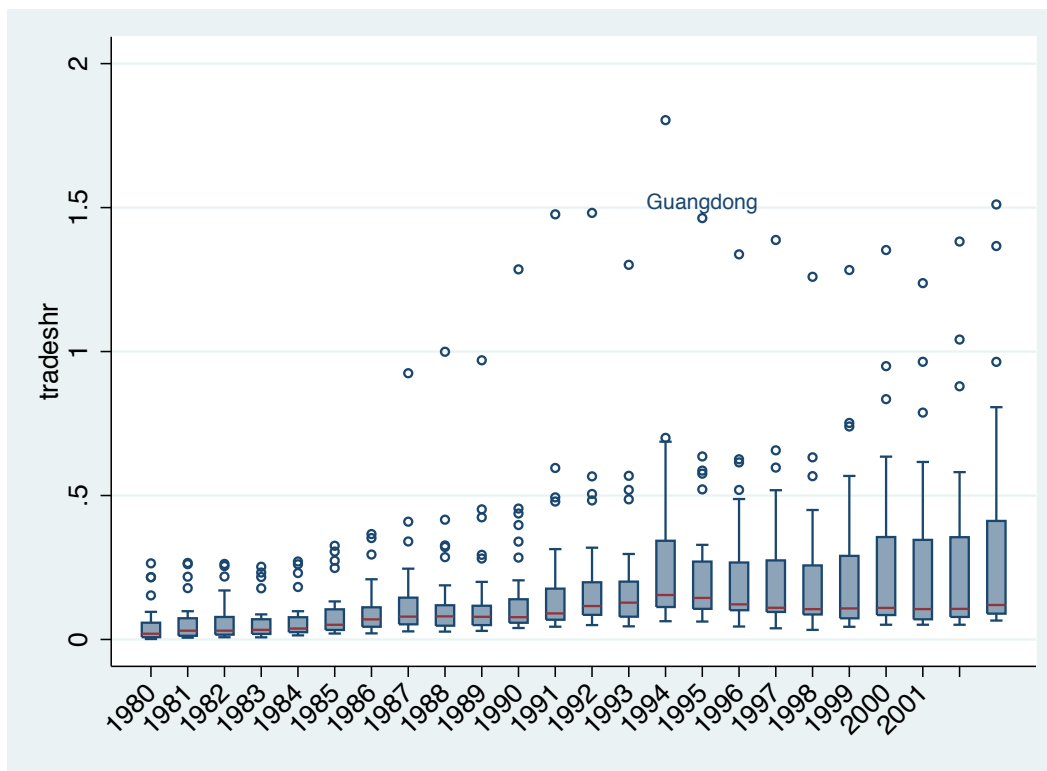
The export-oriented strategy for which China is known is a more recent phenomenon in China's growth experience. Only beginning in 1993 did China begin to exhibit sustained trade surpluses. Exports as a share of GDP shot up from 14 percent in 1993 to 34 percent by 2006 (Figure 4.1). Although early reforms had created Special Economic Zones and opened many coastal cities to attract FDI and encourage export-processing industries (see Section 4.3.2), it was not until the mid-1990s that the central government began to end state trading monopolies, and to liberalize entry to export markets and access to foreign exchange (Lardy 2002: 18; Lin, et al. 2003: 116).¹ But export market opening was not the only reform affecting China's export performance from the mid-1990s onward. The central government also began implementing value-added tax rebates on exported goods (Lardy 2002), while federal reforms devolved much authority over trading and FDI to subordinate level local governments (Lin, et al. 2003: 162; Huang 2003). Reforms did not alter the firm export and foreign exchange earnings quotas, and also maintained the mechanisms by which these earnings would remit to the central bank. So while market access created substantial opportunities for potential exporting firms, concurrent reforms in some ways bolstered administrative authority over the export economy and implemented policies aimed to earn foreign exchange that could in turn be used to purchase foreign capital and technological inputs.

China's booming trade since the 1990s has not been distributed evenly across its provinces. Figure 4.2 presents a box-and-whisker plot (Tukey 1977) of Chinese provinces' total foreign trade (exports plus imports) as a share of GDP. From the beginning of economic reform through the early 1990s trade played an insubstantial role in most provinces' economies, with a very compressed distribution save for a few

¹Parallel reforms to the foreign exchange system, while allowing firms to retain and manage more foreign currency earnings, centralized trading in the foreign exchange market, thereby enhancing the central bank's ability to manage the exchange rate.

outliers—most notably Guangdong province. But after 1993, even though total trade for the median province declined, trade intensity for a number of provinces began to pull away from that of their peers. For these provinces, the trading economy became a much more substantial contributor to provincial GDP.

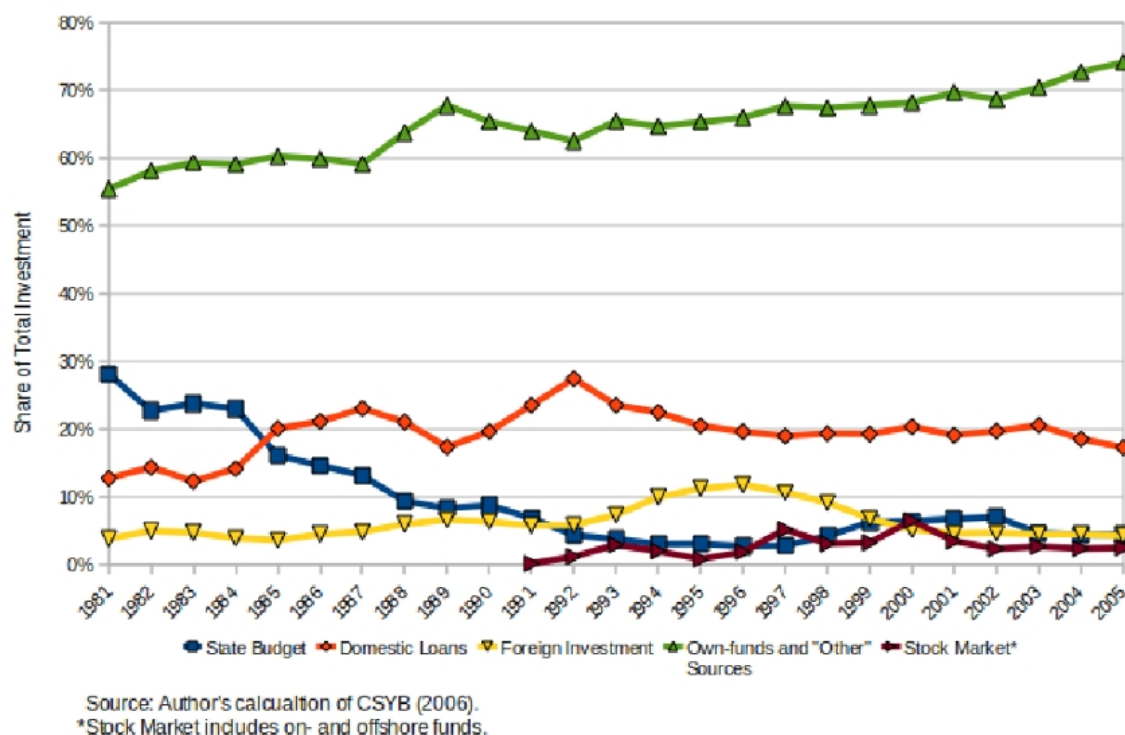
Figure 4.2: Total Trade Shares of GDP



Note: Whiskers indicate 1.5 times the interquartile range.

Third, as a more practical matter, China's trade statistics—originating from the central government's Customs service—are less subject to political manipulation by local and provincial government officials than aggregate GDP measures that are known to be biased (Rawski 2001; Holz 2008). Thus, exports provide a readily available and cleaner metric by which to assess the performance of China's various financial structures in promoting growth.

Figure 4.3: Distribution of Investment Funding by Source



4.3 China's Multiple Financial Structures

China's financial structures have evolved and diversified considerably since the beginning of economic reforms in 1978. Under the centrally planned economy, almost all funds for investment were allocated through state budgeting. At the outset of reform, the state budget allocated all but 17 percent of total investment and China's singular mono-bank did little more than serve as a payments clearing system for state investment plans. By the mid-1980s financial reforms had established China's commercial banking system, and financial structures outside the state budget allocated more than three quarters of all investment. Figure 4.3 shows that by far the most important source of investment funding was what official statistics dub "self-raised and other" funds, followed by lending from the formal domestic banking system, FDI, and funds raised on capital markets. Unseen in government statistics, by definition, are the informal financial mechanisms operating beyond the purview of state regulation

and legal protection that some argue have played an essential role in China's development (Allen, Qian, and Qian 2005). To what extent are China's growth success and export boom associated with these different financial structures?

Much research has focused on the inefficiency of the formal banking system that extends credit to SOEs and has accumulated problematic non-performing loans (Lardy 1998; Cull and Xu 2000; Dobson and Kashyap 2006). Other research stresses important contributions of FDI for development of China's export economy (Whalley and Xian 2006). Yet little systematic research has focused on the largest and least well known catchall "self-raised and other" category of investment finance that aggregates a mixture of funding sources, including local-government-financed industrial development policies, informal finance, and internal finance via retained earnings and forced savings. This section details the development of these distinct financial structures under China's economic reforms and their relationship to China's growth dynamic.

4.3.1 Banks

Since budgeting reforms in the early 1980s that moved SOE budgets off the fiscal ledger, China's banks have served as the leading source of external funding for SOEs. The share of investment coming from state budgets steadily declined through the 1980s, offset by rising investment resources provided through credit from state-owned banks seen in Figure 4.3. The rising importance of financing from bank credit after the mid-1980s can also be seen in the provincial-level data. Figure 4.4 shows the provincial distribution of bank credit as a share of GDP across China's provinces, as well as the central tendency for all provinces. Bank credit rose from an average of 53 percent of GDP in 1980 to nearly 96 percent by 1991, after which bank credit averaged 100 percent of GDP, mirroring the rising importance of bank finance for aggregate investment seen in Figure 4.3 above. Declines in bank credit in the mid-2000s are explained by central government efforts to limit credit expansion due to

concerns of a real estate and asset price bubble. Aside from the rising overall level of bank credit in the provinces, what is remarkable in Figure 4.4 is that, after leveling off in the early 1990s, the distribution of values across provinces remained so stable over time. During this time provincial GDP growth rates varied considerably, however this variance appears to have little affected the level or distribution of bank credit. The reason for the stability of bank credit, presumably, is the high degree of state involvement and policy implementation through bank allocation decisions.

The relationship between banks and state-owned industry is cemented by the outright ownership of the banks by various levels of the Chinese state, most notably China's "Big Four" commercial banks—Industrial and Commercial Bank of China, Bank of China, China Construction Bank, and Agricultural Bank of China—owned by the central government. These four banks account for roughly two-thirds of all loans and deposits in the banking system. State ownership of the banking system continues on down the line, from regional and provincial banks to city-level banks and even urban and rural credit cooperatives (discussed further in Section 4.3.3). While China's WTO accession agreement specified ownership liberalization in the financial services sector, these direct investments occurred under a watchful regulatory authorization process, and were limited to a non-controlling ownership stake (20 percent for any one firm, with total foreign ownership capped at 25 percent). But these institutional reforms began phasing in only in 2006 (after the sample period considered here).² SOEs absorbed three-quarters of all bank lending in the late 1990s (Boyreau-

²Between 1998 and 2000 the central government primed the banking system with substantial resources in anticipation of this eventual liberalization and opportunity to raise capital in an initial public offering of bank shares. The Big Four received Y270 billion in 1998 to shore up their balance sheets, while the central government also created four state-owned asset management companies to purchase NPLs from the Big Four—about 1.4 trillion by 2000 (Lardy 2002: 18). The plan was to commercialize the banks and their asset allocation decision-making in order to improve overall economic efficiency and to cultivate a desirable asset for direct and portfolio investors. A number of reforms aimed simultaneously to rein in bank lending practices—those unscrupulous or uncritical lending decisions—to avoid future problematic NPL episodes, but directed lending persisted.

Debray 2003). Lin, et al. (2003: 221) report that in 1994, 44 percent of subsidies to SOEs flowed through banking channels—both through low interest rate loans as well as through deferral of loan repayments. SOEs absorbed three-quarters of all bank lending in the late 1990s (Boyreau-Debray 2003). Lin, et al. (2003: 221) report that in 1994, 44 percent of subsidies to SOEs flowed through banking channels—both through low interest rate loans as well as through deferral of loan repayments.

Figure 4.4: Bank Credit



Note: Whiskers indicate 1.5 times the interquartile range.

Bank lending to firms of other ownership forms beyond SOEs has been, in aggregate, consistently modest. Table 4.1 decomposes the allocation of bank lending to different uses in select years. Although the share of industrial loans has trended downwards along with policies to cull and privatize SOEs, lending does not appear to have been reallocated to sectors of the economy outside of state ownership. The share of bank loans going to township enterprises and foreign funded enterprises, always low, has diminished even further since 1995. The share allocated to private enterprises and individual entrepreneurs has actually increased since 1995—from almost none to just over one percent of loans from the entire banking system. Though an anti-private bias is often alleged of China’s banks, the propensity to lend to state-owned or affiliated firms more likely reflects a size bias against riskier small and medium enterprises (Anderson 2006). The banking system has dramatically curtailed loans to the commercial sector, from 25 percent of all loans in 1995 to just 7 percent in 2007. The biggest change in the direction of bank financing since 1995 has been the increasing share of longer term loans. In 1996, medium and long-term loans accounted for 21 percent of all bank loans, but by 2007 longer-term loans shot up to fully half of all bank loans. While the available statistics do not identify the sectoral distribution of these loans, given China’s insecure property rights environment it is likely that this longer-term bank lending still flows to SOEs or to other firms with implicit state backing.

Banks remain very much under the direction of the central government, via the People’s Bank of China, as instruments of quantitative monetary policy. A recent business news capsule from the Hong Kong *South China Morning Post* (12/3/2009) reported that “Mainland banks continued to slash lending last month *in line with regulatory directives*, with new loans likely to hit their lowest monthly level this year” [emphasis added]. More than just through the quantity of credit supplied by banks, government policies continue to influence the allocation of credit to preferred

Table 4.1: Allocation of Bank Loans

	1995	2000	2005	2006	2007
Loans (Yuan 10^{12})	5.05	9.94	19.47	22.53	26.17
Industrial Loans (Share Total)	23%	17%	12%	13%	13%
Commercial Loans	25%	18%	8%	7%	7%
Construction Loans	2%	2%	2%	2%	1%
Agricultural Loans	3%	5%	6%	6%	6%
Loans to Township Enterprises	5%	6%	4%	3%	3%
Loans to Private Enterprises	0%	1%	1%	1%	1%
Loans to Foreign Enterprises	2%	3%	1%	1%	1%
Other Short-term Loans	5%	15%	11%	11%	12%
Medium-term & Long-term Loans	21%	28%	45%	47%	50%

Source: Author's calculation of CSYB (Various years).

projects and economic sectors according to managers at Big Four banks.³ Despite an appearance of liberalizing, Chinese banks remain subject to a range of formal and informal mechanisms of state control, including conventions of expected behaviors (Dittus 1989; Lardy 2002).

Some researchers, in efforts to assess how far China's bank reforms have progressed, attempt to distinguish between the policy lending functions of China's banks and a more market-oriented lending portfolio. Here, there is mixed evidence about the extent to which banking system reforms have changed bank behavior. Park and Sehart (2001) and Podpiera (2006) find little change in the direction of bank credit toward policy lending, as seen in the fact that credit does not appear associated with provincial GDP growth rates. Boyreau-Debray (2003) finds a distinction between policy lending and broader bank lending activities, with credit extended in support of SOEs negatively associated with provincial economic growth rates. Though banks have expanded lending to the private sector, it is not clear that this more market-oriented lending by banks is leading to any different outcomes than the policy lending. Lu and Yao (2004) find a statistically insignificant relationship between bank loans to

³Field interviews Nos. 4, 34, 43, 47, and 89.

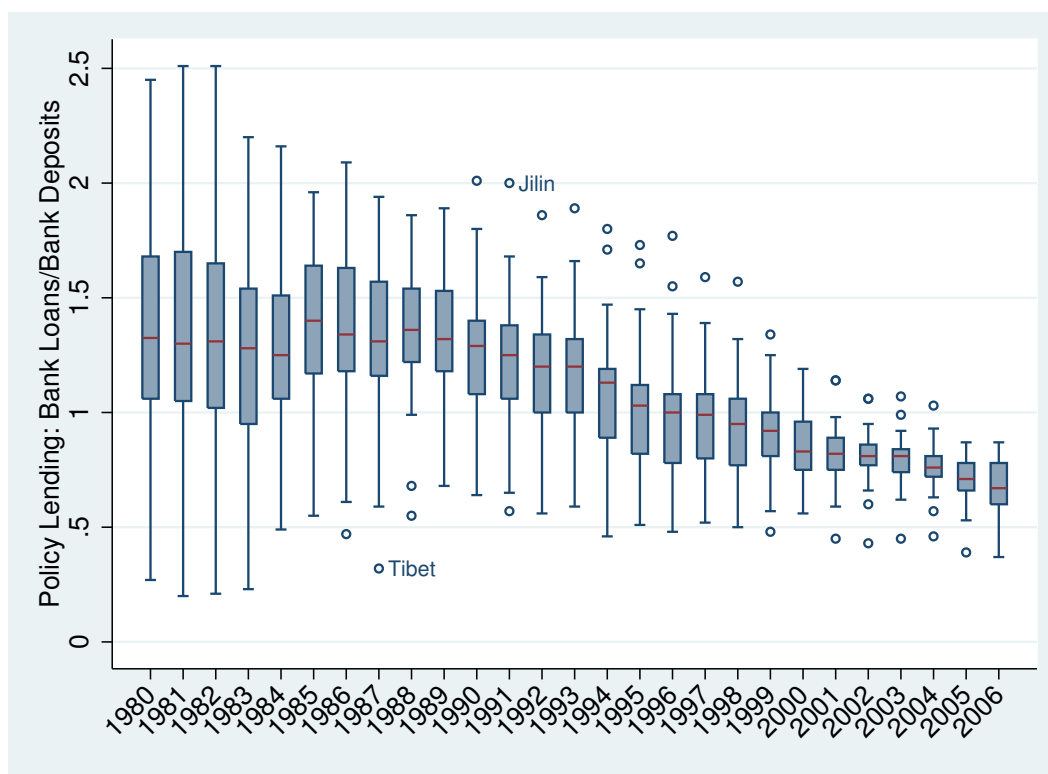
private sector and provincial growth, while Liang (2005) found a positive relationship, but only in coastal provinces. At a firm level, however, Cull and Xu (2000, 2003) find bank financing to be associated with higher firm productivity. Thus, despite substantial state involvement, China's banks are not as inefficient as often thought.

While policy lending persists, some evidence suggests its diminishing use. Figure 4.5 illustrates a commonly employed measure of policy lending, the ratio of provincial bank loans to bank deposits (Park and Sehart 2001), seen to be in secular decline as well as with decreasing variation in its incidence across provinces. The measure reflects the degree to which banking resources are redistributed across provinces: a ratio of loans-to-deposits less than one indicates that bank deposits are being redistributed to lending in other provinces, while a ratio greater than one indicates bank lending in a province is supplemented by resources from other regions of China. Redistribution does not reflect inefficient intermediation per se, however Park and Sehart find this measure to be unrelated to economic fundamentals. That banking system resources are not being redirected to higher growth regions suggests that the redistribution reflects central government fiat, or "policy lending," toward projects preferred by the state.⁴

Could it be that some twenty percent of China's investment resources accounted for by bank credit is simply being wasted on inefficient lending to SOEs? Though bank credit is concentrated on SOEs, it still may play an ancillary role in promoting productivity growth and exports. First, Lu and Yao (2009) suggest substantial leakage of financial resources from banks, through SOEs, to the private sector via inter-firm credit. Thus, bank finance may find its way to other ownership sectors through direct

⁴Other research on the efficiency of financial systems (Feldstein and Horioka 1980) has typically viewed deviations from the savings-investment equality constraint as indicative of efficient financial intermediation. However, given China's fragmented internal markets and the fragmented political structure of the banking system, deviations from the savings-investment identity measured as such most likely result from government allocation policies.

Figure 4.5: Policy Lending



Note: Whiskers indicate 1.5 times the interquartile range.

re-lending or the extension of trade credit, though undetected in national statistics. Second, bank credit by directing resources toward public goods and infrastructure investment and by managing aggregate demand via the SOE sector may have second-order effects on growth, particularly pertaining to exporting. Public investments in transportation and telecommunications infrastructure help lower the logistical costs of bringing goods to market as well as the costs of obtaining information, while also creating opportunities for development in new economic sectors. Such directed lending clearly can generate positive growth externalities (though the returns from such public goods investment may be over a longer time scale than detectable in the econometric research discussed above), but the quantity of bank credit can be playing

an aggregate demand management role, independent of policy lending, supportive of export growth in sectors outside of SOEs.⁵

The substantial disemployment effects of SOE reform and privatization pursued since the mid1990s demonstrate the insufficiency of labor demand and labor market institutions in China to effectively transition workers into productive employment in other sectors of the economy (Li 2002). Research advocating widespread privatization of SOEs, such as Dollar and Wei (2007), unrealistically ignore this fact. Bank credit, by supporting SOEs, helps maintain employment at higher levels than would be the case if SOEs were privatized. Higher employment levels and a larger SOE sector mean more aggregate demand derived from the wage bill and demand for intermediate inputs to SOE production. The employment effects are considerable. Feenstra and Hong (2007) estimate that of China's 7.5-8 million new jobs created annually between 1997 and 2005, exports accounted for at most 2.5 million new jobs per year. Most of China's employment gains came from the non-tradable sectors of the economy, including construction and other sectors with high SOE concentration, that are large recipients of financing from the state-led banking system. Elevated aggregate demand due to bank credit supplied to SOEs enables firms in other ownership sectors to produce at higher, more efficient scale economies and to achieve productivity gains from learning-by-doing afforded by a higher level of economic activity. With market pricing reforms, SOEs (and TVEs) began sourcing more inputs to production from outside, unrelated firms, and the impact of demand derived from bank-financed SOEs appears substantial. Oi (1999: 137) found that private firms sold 90 percent of their output to SOEs and TVEs under such sub-contracting arrangements. At the margin, firms outside the SOE sector that would not be viable at lower levels of activity not only are rendered viable, but can tap into indigenous sources of innovation that

⁵I thank James Galbraith for suggesting this hypothesis to me.

enable a progression of productivity and quality improvements leading to export-worthy levels.

4.3.2 Foreign Capital

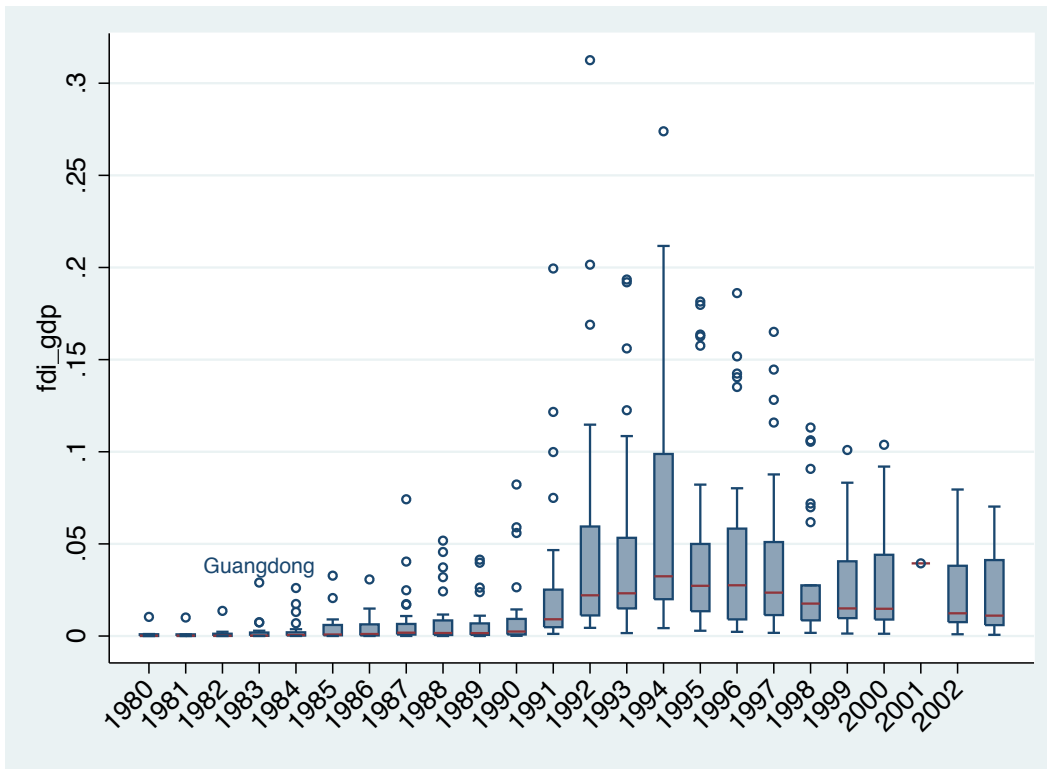
From the inception of economic reform, China's officials have looked to FDI for a much desired infusion of foreign technology and managerial know-how, while providing hard currency with which to purchase foreign capital goods to upgrade the legacy capital stock of SOEs. The relationship between FDI and exports in China is at once both obvious and puzzling. Firms receiving FDI—often joint ventures with domestic enterprises of various ownership forms—account for more than half of Chinese exports (Whalley and Xian 2006). Yet, in many respects, China's experience with FDI does not fit well with common theories of FDI and its contribution to development. Foreign firms are thought to be motivated to undertake FDI in a host country for a variety of reasons: to secure market access (either overcoming policy barriers to trade, or by purchasing domestic marketing and distribution networks); to obtain resources unavailable in other markets; or to achieve strategic goals such as eliminating competitors or diversifying investments geographically—naturally, the expected returns from such investments should exceed those in the home economy. In order to compete with domestic firms, foreign firms are thought to possess some firm-specific assets in order to overcome cultural and geographic factors that raise transaction costs. Difficulty in protecting firm-specific assets from appropriation lead firms to make direct investments rather than enter arms-length contracts with domestic firms. From the host country perspective, particularly developing countries, FDI is often seen as a cornerstone of development strategy for the opportunity to import advanced technology capital goods and management techniques; positive spillovers accrue to domestic firms. From a macroeconomic perspective, FDI supplements limited domestic savings and relaxes the foreign exchange constraint.

FDI in China has not always worked in the ways envisioned by theory. Early reform policies opened several Special Economic Zones (SEZs) and Open Coastal Cities to FDI—first through joint ventures, and later also through wholly-owned foreign enterprises. But these areas attracted little of the desired benefits of foreign investment. Instead, SEZs and open cities attracted low-technology, labor-intensive investments and real estate speculation. Harding (1987: 160) describes most FDI projects as “small enterprises, launched by overseas Chinese from Hong Kong, with low levels of capitalization and fairly unsophisticated technology.” Many localities found they had over-invested in infrastructure, at greater cost than expected, in their efforts to attract FDI. It was not until the mid-1990s, after liberalization in 1992 of regional and sectoral restrictions on FDI and devolution of the FDI approval process from the central to local governments, that the linkages between FDI and exports really developed in China. In aggregate FDI contributed only a small share of overall investment in the Chinese economy (Figure 4.3). Despite absorbing a substantial share of the world’s total FDI, China’s FDI inflows do not appear particularly large in international comparison when controlling for size and institutional quality (Fan, et al. 2007). Through the early years of economic reform, FDI as a share of total investment did not climb above five percent until 1989-90 (when austerity policies curbed aggregate investment), and only exceeded ten percent in the 1995-1997 boom years preceding the Asian Financial Crisis.

Looking beyond national aggregates, China’s provinces and localities pursued different policies to attract FDI and relied on FDI to varying extent in their economic performance. Though overall institutions may be weak, many argue that the coastal provinces that liberalized markets earlier and more deeply constructed local institutions to better serve private sector development (e.g. Demurger, et al. 2002). Figure 4.6 presents a box plot showing the central tendency as well as the variation across provinces of the relative importance of FDI. Through the early years of economic re-

form, FDI played a negligible role in most provinces, with Guangdong province being a distinct outlier in receipt of FDI. In the latter 1980s, although for most provinces FDI remained relatively minor for most provinces, more of the southeast and coastal provinces stand out as exceptional recipients of FDI in addition to Guangdong: Fujian, Hainan, Jiangsu, Shanghai, Beijing, Tianjin, and Liaoning. From 1991 to 1994, FDI in China's provinces spiked upward, with coastal Shanghai, Fujian, Guangdong, and Hainan continuing to lead in receipts. Not only did the trend in overall FDI shift upward beginning in the early 1990s, but its distribution among provinces also widened noticeably. However, for the median province the significance of FDI relative to overall economic activity remained small, at 2 to 3 percent of GDP.

Figure 4.6: Provincial FDI



Note: Whiskers indicate 1.5 times the interquartile range.

The headline figures most likely overstate how much FDI is actually “foreign.” A substantial share is believed to originate from domestic capital, cycled off-shore

through locales like Hong Kong, Macao, and elsewhere that ultimately returns to the mainland classified as FDI and carrying additional tax benefits and property rights protections. Estimates of such “round trip” FDI vary widely. On the low end, Tseng and Zebgras (2002) estimate that round-tripping amounted to 7 percent of FDI in 1996, although most estimates are much larger: the World Bank (1996) estimated 25 percent in 1992; Huang (1998) estimates 23 percent from the mid-1980s to the mid-1990s; Xiao (2004) estimates 40 percent of recorded FDI inflows is in fact round-tripping; and the Asian Development Bank (2004) finds round-tripping accounts for 26-54 percent of total measured FDI. Prasad and Wei (2005) see round-tripping as a substantial share of FDI inflows, but hypothesize that the magnitude of round-tripping is declining. Though researchers widely agree that round-trip investments inflate China’s FDI statistics, this study employs the most conservative assumption that no FDI is roundtripped. The prevalence of FDI, however, is underscored by the fact that Hong Kong, Macao, and Taiwan accounted for nearly 60 percent of FDI from 1978 to 1999 (Huang 2003), and at present FDI from Hong Kong still accounts for 45 percent of total FDI. Unsurprisingly, estimates see the highest incidences of round-tripping in many of the same exceptional provinces listed in the preceding paragraph, where cultural and geographic linkages to these offshore financial centers are strongest. Evidence of round-tripping means that the *quantity* of FDI is lower than that reported in headline figures, but it also means that the *quality* of such investment is not likely to bring the same developmental benefits of technologically advanced foreign capital goods and management techniques associated with FDI.

The importance of firm-specific assets for FDI means that those firms undertaking FDI are often rather large and oligopolistic. However, according to Huang (2003), FDI in China is overwhelmingly undertaken by small foreign parent companies in small-scale projects. Moreover, FDI projects in China are concentrated in highly competitive industries—low-skill labor-intensive manufacturing such as in the apparel and

electronics industries—with low barriers to entry where firm-specific advantages are readily appropriable by other firms and the competitive environment quickly erodes profits. In such industries, product and process innovations are readily appropriable, and the firmspecific advantages enjoyed by foreign firms are concentrated in their less appropriable investments in supply-chain, marketing, and distribution networks. It is no secret that most FDI in China has sought to benefit from the vast supply of low-cost and relatively high-quality labor, but this resource need not be tapped through direct investment. With difficulties protecting firm-specific assets and profit rates, it would seem that foreign firms should prefer contractual relations with domestic firms to riskier FDI in fixed capital. Huang (2003) argues that FDI in China reflects deficiencies in China's financial institutions that constrain the growth of domestic exporting firms, resulting in too few firms able to supply the low-cost labor resource through contractual relations. In this case, the relationship of FDI to exports can be seen not as creating exports, but as displacing them from would-be exporting domestic firms.

While FDI linking China's productive capabilities with foreign firms' brand and supply chain assets can expand access to foreign markets for Chinese-produced goods, the development benefits of technological deepening afforded by this FDI-based production structure may not be as strong as theorized. In other countries with labor-intensive manufacturing exports, typically export industries are first dominated by foreign firms. Then, as technology spillovers from FDI percolate through to domestic producers, locally-owned firms that contract production with foreign firms gradually replace foreign ownership (e.g. in Mauritius, Singapore, Thailand, and Taiwan). The trend in China, however, curiously has moved in the opposite direction in the 1990s and early 2000s: contractual production relations decreased as FDI inflows increased (Huang 2003). As such, Huang (2004: 21) argues that the contributions of labor-intensive FDI have little to do with transferring technological know-how. Evidence

on the technology transfer benefits of FDI in China is mixed. Hale and Long (2006) find that the presence of foreign firms yields positive technological spillovers to domestic firms in China via the movement of high-skilled workers from foreign-invested to domestic firms. However, Buckley, et al. (2006) suggest that many studies of FDI spillover effects in China are biased upwards due to obvious self-selection by foreign firms into the highest productivity sub-industries. When controlling for this selection and focusing more narrowly on China's electronics industry, the benefits appear much more muted. Buckley, et al. also find modest positive technological spillover effects from FDI, but those spillover effects deteriorate over time.

Finally, it must also be noted that FDI often entails foreign investment in joint ventures with domestic partners, including enterprises with government ownership or other relations with the state. Regulations often cap foreign equity in the enterprise and require technology transfers as conditions of the joint venture, routinely complained about in US government reviews of China's trade and investment policies (USTR 2008). Such investments may take the form of mergers and acquisitions of existing capital stocks, rather than greenfield investments in new, more productive plant.

4.3.3 Local Industrial Policy Finance

As detailed at length in Chapter 2, government at the local levels in China plays a significant role in coordinating and financing economic development using a wide range of policy instruments. Facilitated by a technocratic transformation of the government bureaucracies, and vested with resources, and incentives flowing from fiscal and political reforms that devolved authority from the central government, local officials became the stewards of local industrial development, especially in regard to collectively-owned TVEs. TVEs accounted for 30 percent of growth in manufacturing and tertiary industries from 1985 to 1990 (Lin, et al. 2003: 200), and industrial

output of the TVE sector grew at an annualized rate of 38.2 percent from 1982 to 1988 (Harrold 1992). By the mid 1990s, TVEs grew to account for 40 percent of total national exports (He 2006: 246). Initially efforts of local government industrial policies focused on development of TVEs, though in some places, depending upon the openness of local officials toward the private sector, industrial policies also extended to development of private enterprises. With the coming of ownership and enterprise governance reforms in the late 1990s the population of collectively-owned TVEs began declining as enterprises were transformed into other ownership forms. But the institutions constructed by local governments to promote export development remained and were trained more widely on developing firms of all ownership designations.

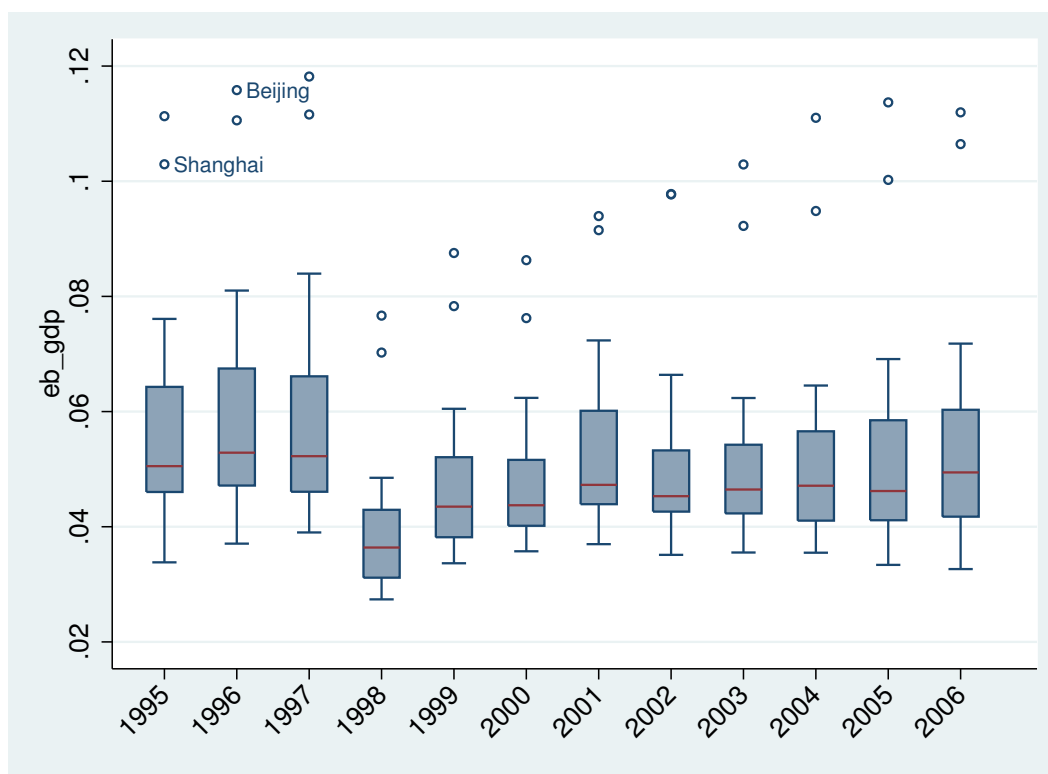
Beyond the residual local government ownership in reformed industrial enterprises and the myriad administrative channels through which local officials could steer the path of development, officials also commanded direct means by which to finance development of export-oriented industries. Local officials held sway over lending decisions from commercial banks and credit cooperatives in their jurisdictions, although this authority diminished over time with governance reforms to the People's Bank of China and incorporation of rural credit cooperatives under the Agricultural Bank of China (Lardy 1998; Sehrt 1999; Giardin and Xie 1997; Xie 2003; Cheng 2006). But the most important source of funds for investment at the disposal of local officials were extrabudgetary revenues that were not remitted to higher levels of government and over which officials exercised discretion on the expenditure side of local government budgets (Oi 1999; Whiting 2006). Extrabudgetary revenues were raised primarily from industrial and commercial activities: Lin, et al. (2003: 199) estimate that as much as two-thirds of all government off-budget revenue came directly from the business activities of TVEs, though revenues also derived from fees and licensing collected from enterprises in other ownership categories. In some provinces, extrabudgetary revenues accounted for as much as 60 percent of total fixed asset investment (Huang 1996: 80).

The industrial and commercial sources of extrabudgetary revenues combined with discretion over their disposal created a symbiosis of incentives for local officials to cultivate revenue-generating firms. In addition to launching new enterprises and coordinating complementary investments, local governments employed extrabudgetary expenditures to finance investments in enterprise technological upgrading, market discovery, and expansion into new industries.

Figure 4.7 shows the trends and variance across Chinese provinces of local government extrabudgetary revenues as a share of provincial GDP. This measure reflects, first and foremost, the quantity of resources available to local governments to undertake industrial and export development policies. But the measure also reflects, via local government's ability to raise extrabudgetary revenues, officials' ability to carry out non-budgetary interventions in support of industrial development. As such, this quantity measure represents just the tip of the iceberg in terms of capacity for local government industrial policy. Extrabudgetary revenues, aside from the dip in 1998 owing to economic slowdown associated with the Asian financial crisis, have remained remarkably stable throughout the period for which data are available.⁶ Ownership and corporate governance reforms in TVEs and other enterprises collectively owned by local governments also occurred in parallel with the effects of the Asian crisis. However, it does not appear that these ownership reforms noticeably affected extrabudgetary revenues or the wide range of institutions underpinning local government industrial policy as seen by the upward trend after 1998 as extrabudgetary revenues returned towards their pre-crisis, prereform levels. Despite the ownership reforms and partial privatization of TVEs, the mechanisms (and motivation) for government financing of industrial development continued unabated.

⁶The Asian crisis affected China's exporting firms with a loss of export markets in crisis-stricken countries as well as with increased competition in export markets overall due to currency devaluations in affected countries.

Figure 4.7: Local Government Extrabudgetary Revenues



Note: Whiskers indicate 1.5 times the interquartile range.

4.3.4 Private and Informal Finance

With economic reforms, private, informal finance grew up alongside the formal state-controlled banking system. For the most part, private entrepreneurs require external financing, but credit is often supply-constrained by the problem of incomplete contracting in the credit relationship—over and above any structural political biases that may or may not be exerted through regulatory channels or the formal banking system. As described in Chapter 3, coordination problems in credit relationships decrease in the entrepreneur’s wealth, but in China, like in many developing countries, private entrepreneurship was a “poor man’s affair” (Huang 2008: 68). Domestic private enterprises unable to access financing from foreign investors or domestic formal financial institutions must rely on raising funds through extra-legal means, that is, financing mechanisms beyond the regulatory purview of the state and without recourse

to protections and rights of government-enforced contracts. These mechanisms are often referred to collectively as “informal finance,” though they may vary considerably in degrees of institutionalization from intra-familial lending, to community-based rotating credit associations (ROCA, or *hui*), to usurious money lenders and even full-fledged underground quasi-banks.

What informal financial institutions share in common is the absence of a state arbiter of credit allocation or enforcement—a distinctly Coasian (Coase 1960) world. Rising numbers of private entrepreneurs in China and knowledge of the difficulties private entrepreneurs and firms face in raising funds from formal financial institutions lead some to conclude that informal financial institutions in China are highly efficient—owing, in this line of reasoning, to the absence of an inefficient state—and important for growth (Allen, et al. 2005). Though informal finance entails private contracting that is unimpeded by government regulation or intervention, the extra-legal nature of informal finance also entails that such contracts are not exogenously enforceable and property rights are often ambiguously defined. We will further evaluate the question of the efficiency of informal finance below, but it is certainly clear that this mode of financing is prevalent among the the private sector in China (PBC 2005). Participation in informal finance is widespread among the population, particularly among small-holder agricultural producers and small entrepreneurs. Based on small-scale surveys in a limited number of locales, Tsai (2002: 37) finds that three quarters of all credit to the private sector originated in this informal financial structure. Feder, et al. (1989) estimate that one-third to two-thirds of all rural credit during the 1980s came through informal financial institutions.

Li (2006; 2009) provides the most comprehensive study of informal finance in China to date. Li surveyed 20,800 individuals, 4,700 private enterprises, financial institution managers, and government officials in 27 provinces to assess the prevalence of informal financial activities. The survey results indicate that informal financing

accounts for 40.7 percent of all borrowing by private enterprises. Surprisingly, eastern coastal provinces—thought to be more liberalized and developed than the inland central and western provinces—reported a higher share of informal financing, 42.4 percent compared to 41.4 and 38.3 percent, respectively. Li also surveyed financial institution managers and officials in various government department as to their estimates of the importance of informal financing in overall credit supply. Both the managers and officials on average estimated that informal financing accounted for about one-third of all credit. Interestingly, financial managers in Fujian—an early-opening southeastern coastal province—ranked one of the highest estimated shares of informal finance (37.4 percent) while Hainan—another early and rapid liberalizer—ranked one of the lowest (25.6 percent). In an earlier survey, Li (2005) estimated the volume of China’s informal finance at 740.5-816.4 billion yuan in 2003. If these estimates are to be believed, informal finance amounts to 13.3-14.7 percent of total fixed asset investment or 61-68 percent of official domestic bank loans—a substantial sum. Estimates of informal finance cited in some official speeches put the size of informal finance at roughly 950 billion yuan in 2004, or 69 percent of domestic loans. The later results of Li (2006; 2009), suggest that these estimates may be overstated by 100 percent. Estimates from local surveys in Wenzhou suggest a volume of 17 billion yuan in 2001 in that small city alone.

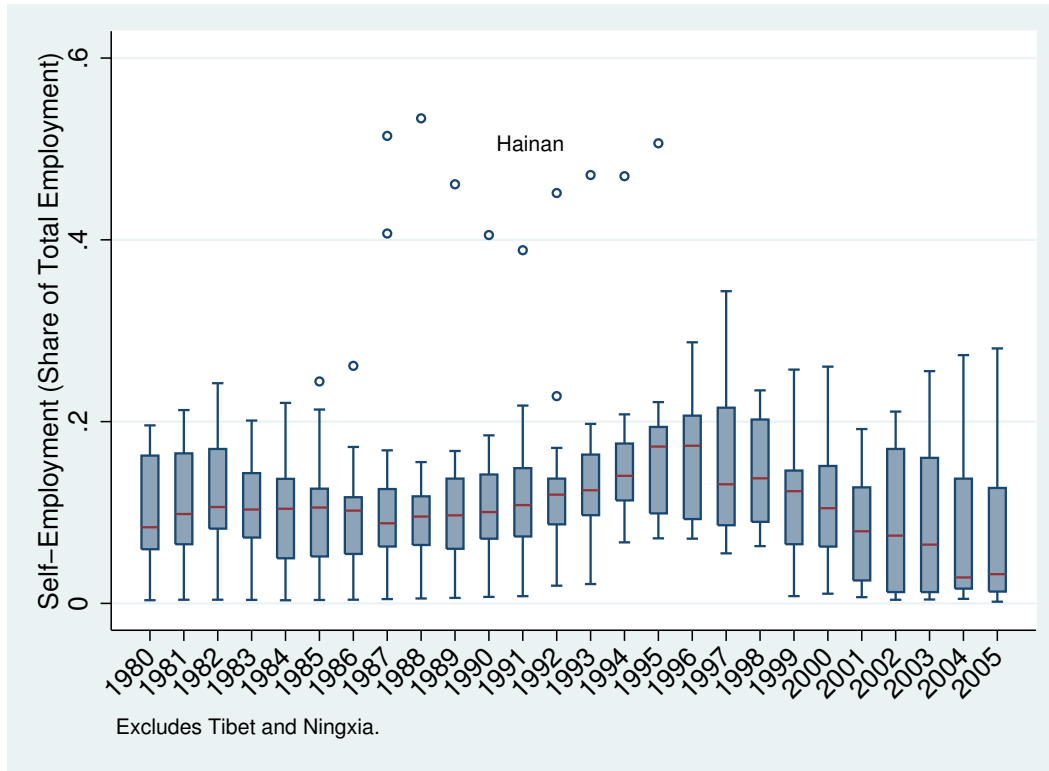
Though of substantial scale, a few caveats are worth noting concerning these estimates and the relationship of informal credit to private sector growth. First, not all informal credit is allocated to private sector investment—some will be used to finance consumption smoothing. In particular, households often seek informal finance when purchasing large-ticket consumer goods, to pay for weddings and funerals, and to pay for migration costs, school fees, and housing investments. For example, Tsai (2002: 77) reports that in one county, 73 percent of individuals participating in rotating credit associations were raising funds to pay for migration costs (including fees for human

smugglers). From an individual household perspective, this use of informal finance could certainly be seen as investment—financing migration today is expected to pay future dividends of remittances from higher wages—however, such uses should not be conflated with informal financing of private entrepreneurial development. Second, profitable opportunities for private investments are often dependent upon demand from state-owned or collective-owned enterprises.

Though private firms and individual businesses could operate independently and accrue individual profits, many existed but for the coordinating role played by entrepreneurial local governments. Tsai (2002: 75) recounts the experience of a coastal Fujian fishing village that spurred the development of private businesses through the creation of a collectively-owned frozen food processing factory and other complementary collectively-owned enterprises in 1984 that would allow the village to market its products more widely, including through export. Prior to this time, low technological capacity limited profitable markets for fisheries output. As a result, informal lenders as well as banks were unwilling to lend to individuals to invest in fishing boats, other means of production, or ancillary business services. But the creation of this industrial TVE—risks for which individual entrepreneurs were unwilling or unable to bear—suddenly made such investments viable and unleashed a spate of private economic activity. In situations like this example, informal finance was not the primary engine of growth, but rather followed the lead of other sources of state-directed investment that served to crowd-in private investment. Third, women are customarily in charge of managing *hui* relations. The predominance of women in controlling access to informal finance contrasts with male dominance in business and industry.

By definition, informal finance operates beyond the purview of the state and therefore is not measured in official statistics, and the figures cited here represent analytical attempts to estimate the aggregate quantity of informal finance using inference and deduction. However, a simpler, more direct measure to approximate the prevalence

Figure 4.8: Informally Financed Self-Employment



Note: Whiskers indicate 1.5 times the interquartile range.

of informal finance for investment and growth in China is possible. Given the widely perceived and reported difficulties faced by private sector firms and entrepreneurs in obtaining formal finance, one could assume that all of the private sector operates with capital sourced from informal financial structures. Thus, the prevalence of entrepreneurs and private business owners in the share of overall employment will reflect the prevalence of informal finance. This measure should be biased in favor of finding informal finance for two reasons. First, some private entrepreneurs and business owners do raise capital through formal financial mechanisms, including from foreign sources. Second, the employment category in official statistics covers more self-employed individuals than just entrepreneurs and private business owners, for example those engaged in professional services (lawyers, accountants, and so on). As

such, both reasons suggest the proxy measure will count more use of informal finance than is actually the case.

Figure 4.8 presents a box plot of provincial self-employment rates throughout the reform era. Throughout the first wave of reforms in the 1980s, self-employment on average exhibits a stable trend, although the variation of self-employment rates across provinces appears to decrease between the start of reforms and the early 1990s. The mid-1990s shows a rising trend in average rates of self-employment as well as increasing interprovincial variation. Though self-employment rates declined on average after the late 1990s, the variation between provinces continued increasing, suggesting increasing geographical differences in the prevalence of informal finance.

4.3.5 Capital Markets

Market-based financial structures envision capital markets as providing a market mechanism for corporate control wherein firms with growth opportunities can raise capital by selling equity ownership interests to unrelated investors. Buying and selling of ownership rights on capital markets allows investors to “vote” on the performance of firm managers. Implicit in this mechanism is a threat of exit that induces firm managers to deliver efficiency and profitability in their operation of the firm. Similarly, corporate bond markets allow firms to raise capital through direct debt financing, with investors “voting” on firms’ creditworthiness by buying or selling the debt assets.

China’s capital markets do not fulfill the functions envisioned in market-based financial structures, remain largely underdeveloped, and likely will remain as such for years to come. China’s corporate bond market is roughly 95 percent smaller than the size predicted by the depth of its banking market (Hale 2007). The stock market has developed rapidly in terms of volume and valuation since inception in 1990, but this phenomena is driven by speculation and limited instruments for household savings in the formal banking system (Xiao 2007; Kuijs 2005). Rather than functioning

as markets for corporate control, China's equity markets are "largely a vehicle for privatization by the government rather than a market for capital raising by firms with growth opportunities" (Ayyagari, et al. 2007: 9; Wang, et al. 2004). The vast majority of institutional players in capital markets are agents of the state—the state-owned commercial banks, insurance companies, asset management companies, and so on, with government entities continuing to control more than two-thirds of all shares (Lardy 1998). Thus, China's capital markets remain the purview mainly of large, established firms, privatized former SOEs and corporatized SOEs where government entities maintain controlling interests, and firms enjoying tacit government blessings. The list of the largest firms on the market reads as a who's who of China's major industrial SOEs and state-owned financial firms. In other words, listed firms are concentrated in the protected, non-exporting sectors deemed critical for China's development and economic security.

Not only do China's capital markets not perform the functions envisioned of market-based financial structures, but the quantity of capital raised from these markets is insubstantial in the overall picture of investment in China. Figure 4.3 shows that as a share of total investment, funds raised on China's stock markets—including both domestic and offshore listings—topped out at six percent of aggregate investment in 2000, but has averaged only 2.6 percent of investment a year since the stock markets' re-inception; funds raised in corporate bond markets are of negligible scale.⁷ Although stock market performance may influence the pattern of investment in China (Xiao 2007), as a source of investment funds capital markets have played a rather minor role in China, particularly in the development of China's export economy. China's political leaders espouse ambitious plans to mold Shanghai into a competitive interna-

⁷Between 1993 and 2009, China's Securities Regulatory Commission oversaw 160 offshore initial public offerings, with 66 subsequent follow-up offerings.

tional financial system, but the subsequent success of these efforts will not be known for years to come, and are not discussed further in this study.

4.4 Evaluating the Efficacy of China's Financial Structures

Ultimately, we would like to evaluate the efficacy of China's various financial structures—formal bank credit and policy lending, foreign finance, informal private finance, and local government industrial policy finance—in allocating scarce capital to productivity and economic-growth-enhancing activities. Rather than exploring the determinants of overall economic growth outcomes, data for which are notoriously murky (Rawski 2001; Holz 2008), I focus on exports as the main outcome variable of interest. Though empirical trade research debates the direction of causality between exporting and (firm) productivity (e.g. Bernard and Jensen 1999, 2004; Lileeva and Trefler 2007), the observation of export outcomes signifies economic activities capable of achieving internationally competitive levels of productivity and quality. And locales with more efficient financial structures should find it easier to finance development of export industries (Kletzer and Bardhan 1987; Beck 2002, 2003). Provincial export data collected by China's Customs service provide a convenient *de facto* indicator of the extent to which productive capital can achieve internationally competitive levels of productivity and quality. Beck's (2002, 2003) econometric model considers the size of credit to the private sector as an indirect measure of the development and efficiency of financial institutions affecting exports. Employing the same theoretical concept linking financial institutions to exports, data on specific sources of investment finance from a range of financial structures in China's provinces—the state-centered formal banking system, local government industrial policy, foreign direct investment, and private informal finance—allow a more detailed examination of various financial structures as they relate to the allocation of resources to high-productivity export

uses. This section explains the data employed and presents descriptive and econometric analyses of the financial determinants of exports.

4.4.1 Data and Descriptive Analysis

4.4.1.1 Measurement

Data covering 31 Chinese provinces, municipalities, and autonomously administered regions for the years 1995 to 2006 are drawn from Chinese national, provincial, and Township and Village Enterprise statistical yearbooks of various years (CSYB; TVEYB). Summary descriptive statistics and hypothesized associations with the dependent variable, export share of GDP, are provided in Table 4.2.⁸

Table 4.2: Descriptive Statistics

Variable	N	μ	σ^2	Min	Max	$I(p)$	Hypothesis
lnx	370	-0.06	0.89	-1.58	2.81	0	•
lnloan	372	-0.02	0.26	-0.6	0.81	0	?
lnld	372	-0.18	0.23	-0.99	0.57	1	?
lnsoeindu	367	-1.3	0.73	-3.17	-0.11	1	< 0
lnsoempl	371	-0.37	0.20	-1.17	-0.06	1	< 0
lnfdi	372	-4.1	1.24	-11.17	-1.42	0	> 0
lnneb	369	-3.01	0.27	-3.60	-2.14	0	> 0
lntven	335	-1.77	0.57	-4.61	-0.92	0	> 0
lnselfn	370	-2.65	0.42	-3.70	-1.58	1	?
coast	372	0.19	0.4	0.00	1.00	•	> 0

The dependent variable of provincial exports, measured in US dollars in China's Customs accounts, is converted to Renminbi by the period average official exchange rate from the IMF *International Financial Statistics* and normalized by provincial GDP. Standard determinants of trade exogenous to China's domestic economy—for

⁸Chinese data are notoriously both limited and noisy. Data availability issues for several provinces in particular make quality issues even more suspect (Tibet, Ningxia, and Qinghai) and closer inspection of the data also reveal several unreasonably outlying observations for a number of variables. Estimations below were also conducted excluding these provinces from the sample as a robustness check, though with no substantial change in results.

example, the real exchange rate, growth in trading partner economies, tastes and preferences—while varying over time yield common effects on the cross-section of provincial economies.

First, I control for both the quantity of credit extended by the formal banking system as well as policies of state-directed credit allocation. As discussed above, the formal banking sector—all but entirely state-owned—lends heavily to SOEs to the exclusion of the private sector and TVEs. Total bank loans normalized by GDP captures the quantity of formal bank credit available to finance growth. Following Park and Sehn (2001), I proxy for the degree of state-directed credit with the ratio of bank loans to bank deposits in each province. The measure reflects the degree to which banking resources are redistributed across provinces: a ratio of loans-to-deposits less than one indicates that bank deposits are being redistributed to lending in other provinces, while a ratio greater than one indicates bank lending in a province is supplemented by resources from other regions of China. Redistribution does not reflect inefficient intermediation *per se*, however Park and Sehn find this measure to be unrelated to economic fundamentals. That banking system resources are not being redirected to higher growth regions suggests that the redistribution reflects central government fiat, or “policy lending,” toward projects preferred by the state.⁹ In this case, one would expect a negative relationship between policy lending and exports.

The relationship of directed lending to exports could be misleading, since the thrust of China’s SOE restructuring and corporatization strategy works to corral these firms into “commanding heights,” largely non-exporting sectors of the economy: energy and water, transport, telecommunications, steel, construction, defense, and so

⁹Other research on the efficiency of financial systems (Feldstein and Horioka 1980) has typically viewed deviations from the savings-investment equality constraint as indicative of efficient financial intermediation. However, given China’s fragmented internal markets and the fragmented political structure of the banking system, deviations from the savings-investment identity measured as such most likely result from government allocation policies.

on. In other words, we should not expect that public investments in transportation and telecommunications infrastructure development lead directly to exporting at the firm level. But bank credit could be related to export growth through second-order effects on productivity and exporting via aggregate demand-management channels. By looking distinctly at the level of bank credit independent from the “leaning” of state-directed policy lending, we can test the extent to which bank lending’s stimulative effects on demand for labor, wage goods, and intermediate production inputs to SOE industry and public investments enabled domestic firms to achieve more efficient economies of scale in production, and to tap learning-by-doing productivity gains and indigenous innovation feedback. A positive relationship of bank credit with export levels would indicate that macroeconomic demand management has been an important foundation for development of export industries in China, distinct from policy lending.

Local industrial policy finance is measured as local government extrabudgetary revenues, aggregated at the provincial level and normalized by province GDP. Extrabudgetary revenues comprise financial resources derived from a number of sources to be dispensed at the discretion of local government officials, including in pursuit of industrial development strategies. Throughout much of the reform era, extrabudgetary revenues comprised a critical source of financing for collectively owned township and village enterprises, while extensive autonomy and authority vested in local officials endowed them with broad scope to intervene in and to coordinate the path of industrial development. A positive relationship between exports and extrabudgetary revenues would indicate the efficacy of local government industrial policies to foster successful enterprises operating at world levels of efficiency and quality.

While TVEs grew to produce a substantial share of China’s exports, not all TVEs found financing through local government industrial policy, particularly the small-scale privately owned TVEs that actually constituted a majority of the number of

TVE firms and employment in the sector (Huang 2008). However, these numerous “private” TVEs were of very small scale, and concentrated in nonexporting, labor-intensive food service, transportation, and wholesale and retail trade. And even though private in the sense of ownership and residual claim, as described in Chapter 2, private owners nonetheless were subject to the ultimate authority of local officials in economic affairs through a number of explicit and more subtle channels. TVEs commonly raised funds internally by demanding employees (and management) post productivity bonds, yielding a steady supply of working capital to the enterprise; higher TVE employment would mean a greater source of internal capital for investment. To assess whether the extrabudgetary revenues measure may be merely capturing a TVE export effect, I further test the share of TVEs in overall employment as an alternative to the extrabudgetary revenues measure. If the relationship with exports is rooted in TVE management structures—with either private ownership or private financial intermediation of internally-raised funds—rather than the broader institutional structure of local government industrial policy finance, then TVE employment should exhibit a similar positive relationship with exports independent from industrial policy.

Foreign finance is measured by FDI, converted to yuan at official period average exchange rates, and normalized by GDP. Given the relatively closed nature of China’s domestic economy, most FDI is thought to be export-oriented, suggesting a positive association with exports.

Private informal finance, by definition, is unobservable in aggregate official statistics. While in practice throughout China, evidence suggests the pervasiveness of informal finance varied substantially across provinces and localities, in part as a function of the demeanor of government officials as well as the inherited local economic structure. I proxy for the prevalence of informal finance by the share of employment accounted for by self-employment and individual business owners. A relatively higher

concentration of these entrepreneurs is suggestive of more developed informal financial institutions and a more permissive environment for private enterprise. If private finance is efficient in allocating capital to superlatively productive uses as argued by Allen, Qian, and Qian (2005), then we should expect a positive relationship with exports. However, informal financing may also be indicative of market segmentation of low-productivity informal economic activities.

I control for the relative importance of SOEs in provincial economic structure with the sector's share of gross value of industrial output.¹⁰ China's SOEs are widely regarded as economically inefficient relative to other ownership sectors (Dollar and Wei 2007), and uncompetitive on international markets. But also a policy shift in the latter half of the 1990s intended to prune and consolidate SOEs, concentrating them in a selection of core industries—capital-intensive and largely non-tradable activities—deemed critical for national and economic security: electricity, energy, water, telecommunications, and so on. Encompassing potentially less-efficient enterprises and non-tradable, a more prevalent SOE sector is expected to be negatively associated with exports.

Finally, I control for geographical factors specific to coastal provinces of Guangdong, Hainan, Fujian, Zhejiang, Jiangsu, Shanghai, Shandong, and Tianjin. Not only do goods from these provinces enjoy lower transportation costs, access to major ports, and proximity to the Hong Kong and Taiwan economies—nodes of *entrepot* trade and substantial channels for overseas sources of credit—but also these provinces were sites of early experiments in creating Special Economic Zones and Open Cities intended to provide incentives for investment in export-processing industries. The share of these six provinces in total exports ranges from 67 to 77 percent over the sample period. In the fixed effects regressions below these are controlled in the province fixed effects,

¹⁰An alternative measure, the SOE share of total employment, did not substantively alter estimation results.

and in the random effects models these are controlled by a dummy variable defined over this subset of provinces.

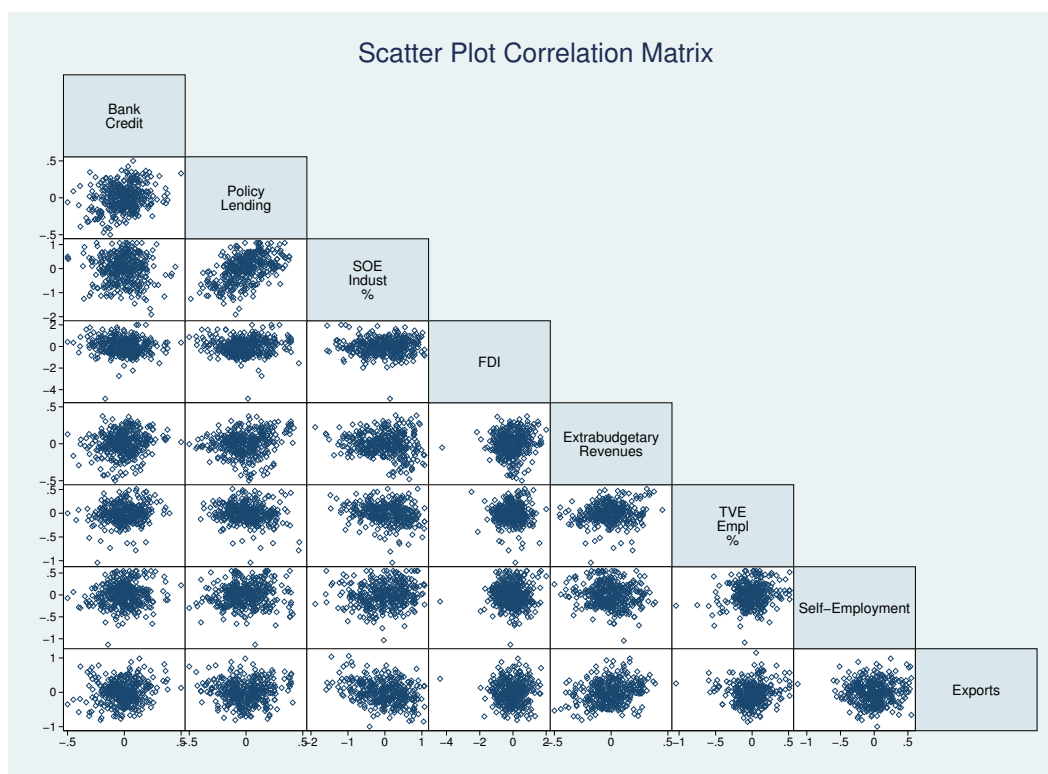
Several of the variables exhibit apparent time series properties in visual inspection. In particular, the share of employment in SOEs shows a secular decline in most provinces after the late 1990s, reflective of the privatization process beginning in earnest following the 1997 National People's Congress. Similarly, the share of industrial output in SOEs declines steadily through the entire reform period, save for the apparent structural break—which is most likely an artifact of the data generating process. I conduct the panel unit root test of Maddala and Wu (1999) on each individual variable (Table 4.2). Maddala and Wu's (1999) is the preferred test here due to the use of an unbalanced panel. For most of the variables I reject the null hypothesis of the presence of a panelwise unit root. However, with the policy lending, private informal finance, and both SOE share measures I fail to reject the null of a unit root. These variables are found to be integrated of order one, and thus are transformed by first differencing in the econometric analysis that follows.

4.4.1.2 Correlations

Figure 4.9 presents a scatter plot matrix of the sample variables (controlling for province fixed effects with mean-differencing), allowing for visual inspection of the bivariate correlations. First, there appears to be a mild positive correlation between the quantity of formal bank credit and the extent of policy lending, indicating that central government policies on the quantity of bank credit and the reallocation of bank resources through policy lending comprise related but distinct processes in China's monetary policymaking. Indeed, these variables exhibit a relatively mild correlation coefficient of 0.28 when controlling for time-invariant provincial effects. While no clear relationship is apparent between the quantity of bank credit and the SOE share of industrial output, bank credit appears negatively correlated with the SOE share of

employment. Policy lending, on the other hand, appears strongly positively correlated with SOE industrial output and mildly positively correlated with SOE employment. This visual analysis suggests a more nuanced relationship between lending from the state-controlled banking system and the SOE sector. Policy lending may indeed be focused on propping up SOE output and employment. Bank lending overall, however, appears ambiguously related. While the scatter plots indicate a moderate positive relationship between bank lending and exports, policy lending seems to have no correlation with exports.

Figure 4.9: Scatter Plot Correlation Matrix



As expected, the scatter plots indicate strong negative correlations between high concentrations of SOEs in provincial economic structure and exports—consistent with the concentration of SOEs in non-exporting industries, but could also be due to relatively lower efficiency of SOEs. Although in the time period under consideration restructuring of SOEs often included foreign joint ventures, FDI appears orthogonal

to economic activity in the state-owned sector. However, FDI also appears not to be supporting the development of the private sector enterprises as seen in the ambiguous relationship between FDI and the prevalence of self-employment, nor is FDI associated with development of the TVE sector. So FDI does not appear to be crowded-in or crowded-out by other financial structures in China. Also, surprisingly, FDI appears unrelated to exports, a point explored in more detail in Section 4.4.3.

Local government extrabudgetary revenues, a primary financing mechanism for TVEs, exhibit a strong positive correlation with exports and a more mild positive relationship with TVE employment. Extrabudgetary revenues also exhibit no apparent relationship with self-employment. SOE employment and industrial shares, however, appear to be negatively correlated with extrabudgetary revenues, which would be consistent with a hypothesis that competition from SOEs limited opportunities for innovative TVEs to emerge.

4.4.1.3 Locally Weighted Regression

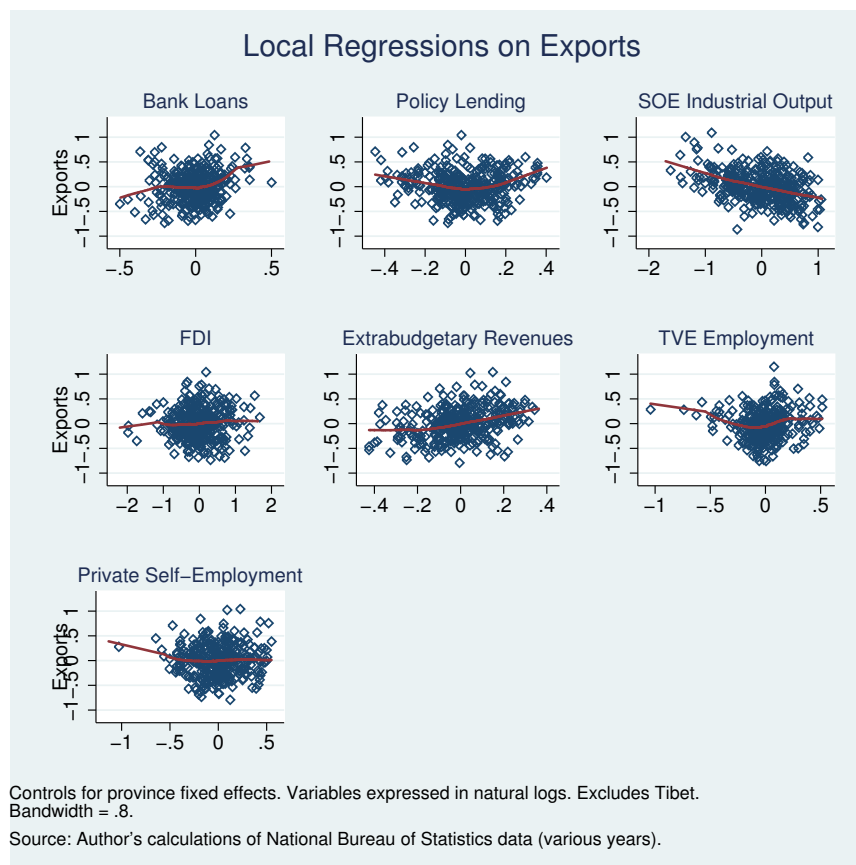
Locally weighted regression (Cleveland 1979) plots in Figure 4.10 allow for closer exploration of the statistical associations in the data without imposing assumptions about the functional form of the relationship between exports and the independent variables. Data used to fit the lowess curves control for time-invariant province-specific effects in the panel units with mean-differencing. The “optimal” bandwidth employed in the smoothing algorithm is chosen through a trial and error process, endeavoring to balance over-smoothing from using too wide a band with erratic behavior of the curve from using too narrow a band (Cleveland 1993).¹¹

In the first panel of Figure 4.10, though the tails of the lowess plot might suggest a strong positive relationship between bank loans and exports, the medial range of the

¹¹ “Fit” of the lowess plots were further evaluated by fitting the residuals using local regression. Lowess plots of residuals exhibiting no curvature indicate little information is left unexplained by the original lowess fit.

relationship appears flatter but upward curving at higher levels of bank lending. Panel two indicates a *u*-shaped relationship between policy lending and exports, with the nadir falling approximately at zero—in other words where there is no inter-provincial redistribution of banking resources. Observations to the left of zero indicate provinces that are net senders of bank resources to other provinces, while observations to the right of zero indicate that provinces are net recipients of policy lending. Thus, the *u*-shaped curve may suggest a positive effect of policy lending on the level of exports for net recipient provinces of policy lending, but a negative effect for net senders of policy lending.

Figure 4.10: Lowess Analysis of Export Determinants



As expected, exports appear negatively related to the importance of SOEs in the economic structure, whether measured by the share of industrial output or the share

of employment (panels three and four). Panels five and eight show no relationships between exports and FDI or between exports and informally-financed self-employment. Local government extrabudgetary revenues show a clear positive relationship with exports in panel five, while TVE employment—and the ability to raise finance internally from workers—shows a more mixed relationship with exports, albeit with positive slope through the densest region of observations.

4.4.2 Estimation

My goal is to evaluate the efficacy of the various financial structures that evolved in the course of China's economic reforms, controlling for economic structure and geographical location. I take gross exports as the proximate outcome of efficient capital allocation associated with each distinct financial structure, and model the determinants of exports as

$$y_{it} = \mathbf{X}_{it}'\beta + \tau_t'\delta + \varepsilon_{it} \quad i = 1, \dots, N \quad t = 1, \dots, T \quad (4.1)$$

where

$$\varepsilon_{it} = \eta_i + v_{it}$$

Expanding and adapting Beck's (2002, 2003) econometric specification, the outcome y_{it} is a function of a vector of provincial characteristics \mathbf{X}_{it} , including distinct development measures of multiple financial structures; a vector of time-specific province-invariant effects τ_t ; and a residual ε_{it} . The error is further decomposed into a time-invariant effect for the i th unit of observation and an idiosyncratic error $v_{it} \sim N(0, \sigma^2)$. Any unobserved or omitted causes of variation in the dependent variable owing to provincial characteristics will be captured by η_i and omission of these terms will result in biased coefficient estimates. The choice of estimator is determined by the relationship between η_i and other components of the model.

Likely dynamic effects might suggest an approach employing the generalized method of moments estimators developed by Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998), and Holtz-Eakin, et al. (1988). Though such an approach has been previously employed with Chinese provincial panel data (e.g. Hasan, et al. 2009), the available number of observations do not approach the large sample size required for asymptotic efficiency of these GMM estimators. The potential to overwhelm the data with high-powered econometrics resulting in other—and less obvious—forms of statistical bias (Roodman 2006, 2007) compels the more cautious and transparent statistical approach here.

I estimate the statistical model

$$\begin{aligned} \ln X_{it} = & \beta_1 \ln LOAN_{it} + \beta_2 \Delta \ln POLICY_{it} + \beta_3 \Delta \ln SOE_{it} + \beta_4 \ln FDI_{it} \\ & + \beta_5 \ln LOC_{it} + \beta_6 \ln INF_{it} + \tau_t + v_i + e_{it} \quad (4.2) \end{aligned}$$

where exports are a function of the prevalence of various financial structures, the relative importance of state ownership in the provincial economy, individual province effects v_i , and year fixed effects τ_t to control for time varying factors such as changes in the real exchange rate or external demand that are common to all provinces. The variables found to exhibit panel unit roots are transformed to stationary series by first differencing. While Hausman tests suggest specification of the fixed effects estimator (regressions two and four), results of the random effects estimator (three and five) are also provided in Table 4.3. Initial estimations detected heteroskedasticity, thus estimates presented here are corrected using White's (1980) consistent covariance matrix. Regressions one and two estimate this model with fixed and random effects estimators respectively; regressions three and four substitute TVE employment

for local industrial policy finance to assess whether extrabudgetary revenues merely capture a TVE export effect.

Table 4.3: The Effects of Financial Structure on Exports

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Estimator	OLS	FE	RE	FE	RE	Median	Median
Bank Loans	0.007 (0.123)	0.619 (0.377)	0.549*** (0.154)	0.984*** (0.280)	0.885*** (0.138)	0.578*** (0.102)	0.893*** (0.143)
Δ Policy Lend	-0.337 (0.497)	-0.463* (0.266)	-0.440** (0.195)	-0.531** (0.237)	-0.478** (0.240)	-0.236 (0.147)	-0.312 (0.208)
Δ SOE Indust.	-0.048 (0.081)	-0.016 (0.036)	-0.016 (0.042)	-0.039 (0.037)	-0.040 (0.042)	-0.008 (0.032)	-0.042 (0.047)
FDI	0.094*** (0.036)	-0.032 (0.036)	-0.021 (0.026)	-0.015 (0.038)	0.012 (0.026)	-0.043** (0.017)	-0.037 (0.031)
Extrabudgetary Revenues	1.045*** (0.137)	0.615* (0.350)	0.666*** (0.167)			0.509*** (0.122)	
TVE Employment				0.031 (0.112)	0.127* (0.075)		0.050 (0.095)
Δ Private	0.194 (0.132)	0.081 (0.067)	0.086 (0.070)	0.103 (0.071)	0.097 (0.081)	0.089 (0.060)	0.052 (0.096)
Coast	1.318*** (0.082)		1.597*** (0.157)		1.577*** (0.139)	0.069*** (0.021)	0.072** (0.032)
Constant	3.291*** (0.431)	1.651 (1.057)	1.574*** (0.524)	-0.104 (0.256)	-0.091 (0.193)	0.077** (0.035)	-0.167*** (0.052)
Observations	358	358	358	326	326	329	297
R^2	0.769	0.43	0.741	0.407	0.738	0.271	0.241

All models include year fixed effects.

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0$.

Recall that privatization policies since the late 1990s aimed to consolidate SOEs in industries deemed of critical national interest, which are also largely non-exporting industries. Coefficients on the size of SOEs in provincial economic structure obtain the expected negative sign, although none of the estimates are statistically significant. And, as expected, the coefficients estimated on policy lending are consistently negative and significant, with a sizable effect: a one percent increase in policy lending is associated with 0.44 to 0.51 percent fewer exports.

The quantity of bank loans, however, showed a substantial, positive, and highly significant association with exports in all but regression one. A one percent increase in bank lending is associated with a 0.55 to 0.98 percent ($p < .01$) increase in exports. The relationship of bank credit with exports is unexpected, particularly given the preponderance of lending to SOEs in non-exporting sectors and the general finding of inefficiencies in bank credit allocation. Two explanations are possible. First, bank credit may be “passing through” SOEs via interfirm credit—either through explicit re-lending of funds (an illegal practice often associated with asset tunneling) or through trade credit. Cull, et al. (2007), however, find that while trade credit is a prevalent practice, it occurs on a relatively small scale in relation to the size of bank credit. Second, state support for SOEs through bank credit may be playing an aggregate demand management function with positive externalities for would-be exporting firms.

When controlling for geographical factors (and geography-specific policy differences), FDI appears to have no significant relationship with exports. This result, while robust across all estimates (Columns 2-6), nonetheless runs counter to much anecdotal evidence, logic, and related econometric evidence linking FDI to export development. The result does *not* indicate FDI is unimportant for development, but rather that the relationship between FDI and exports holds only in certain locales, namely the coastal provinces, where geographic factors, including unique policy environments, influence both foreign investment and exports. This result is probed further in Section 4.4.3 below.

Extrabudgetary revenues show a statistically significant positive relationship with exports, with a one percent increase in extrabudgetary revenues associated with a 0.51 to 0.67 increase in exports. The size of this effect is economically substantial. If Hunan, at the 10th percentile of extrabudgetary revenues, were to rise to the median (from 4 to 4.6 percent of GDP), gross exports would increase between 8 and 11

percent, from the 15th to the 25th percentile of exports, holding all else constant. The relative size of TVE sector employment shows mixed but unsupportive results for the hypothesis that TVE ownership structure is linked to export growth independent of the function of local government industrial policy via extrabudgetary revenues. In the random effects regression, I find a mildly statistically significant relationship between TVE employment share, though with a small magnitude of effect at 0.13 ($p < .1$), though in the fixed effect and quantile regression estimates (Columns 4 and 7; see also Table 4.4 below) TVE size is not significantly related to exports. That extrabudgetary revenues exhibit a positive significant relationship with exports while TVE sector size does not indicates two points. First, the declining employment size of the TVE sector, and its accompanying means for TVE firms to raise capital internally through forced saving, did not lead to a decline of exports. Second, that export growth continued to be associated with local industrial policy instruments indicates that, rather than ending the relationship between local officials and local industry through ownership restructuring, officials merely extended the influence of their industrial policy apparatus to encompass the new private sector as well.

4.4.3 Robustness Checks

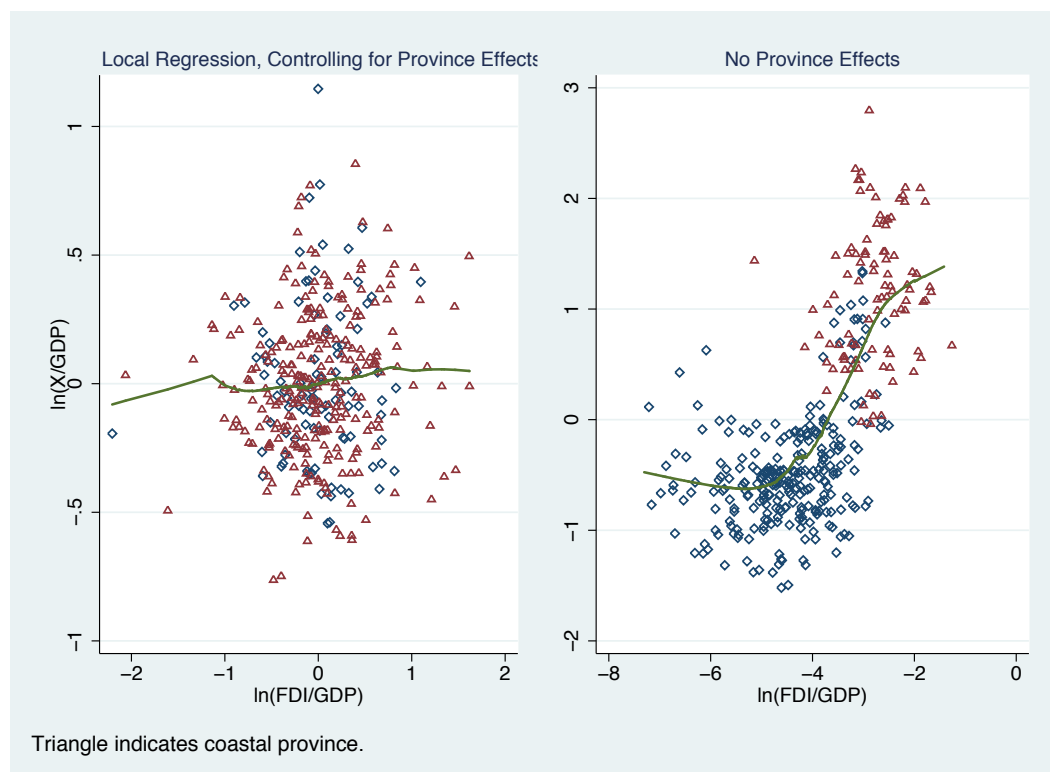
4.4.3.1 Where is the FDI?

The negative coefficient estimates on FDI and lack of a significant statistical relationship with exports are surprising given that prior studies find that a percentage point increase in FDI-to-GDP raised per capita income growth by half a percentage point (Aziz and Duenwald 2002), and that there is a long-run relationships between GDP growth, exports, and FDI (Liu, et al. 2002; Shan 2002). The lack of a significant finding here likely results from the propensity of coastal provinces to have both higher exports and higher FDI relative to GDP. Figure 4.11 presents a local regression plot of exports on FDI (right panel) alongside the same local regression plot seen in Figure

4.10 (left panel) that controls for province-specific effects. The left-hand graph shows clear segmentation between most provinces and those with very high gross exports. The region of provinces with very high exports ($\ln(x) > 0$) exhibits a strong positive relationship with FDI, but in the region of observations with “normal” high exports ($\ln(x) < 0$) there appears no discernible relationship with FDI. Regressions two and four suggest what is different about the very high export provinces: they are coastal.

These random effects regressions specify a dummy variable to control for coastal provinces that would otherwise be explained as province-specific factors in the fixed effects estimations. That the coefficients on the coastal dummy are large and highly significant indicates it is geography, rather than a marginal increase in FDI, that explains the observed slope in the region of very high gross exports.

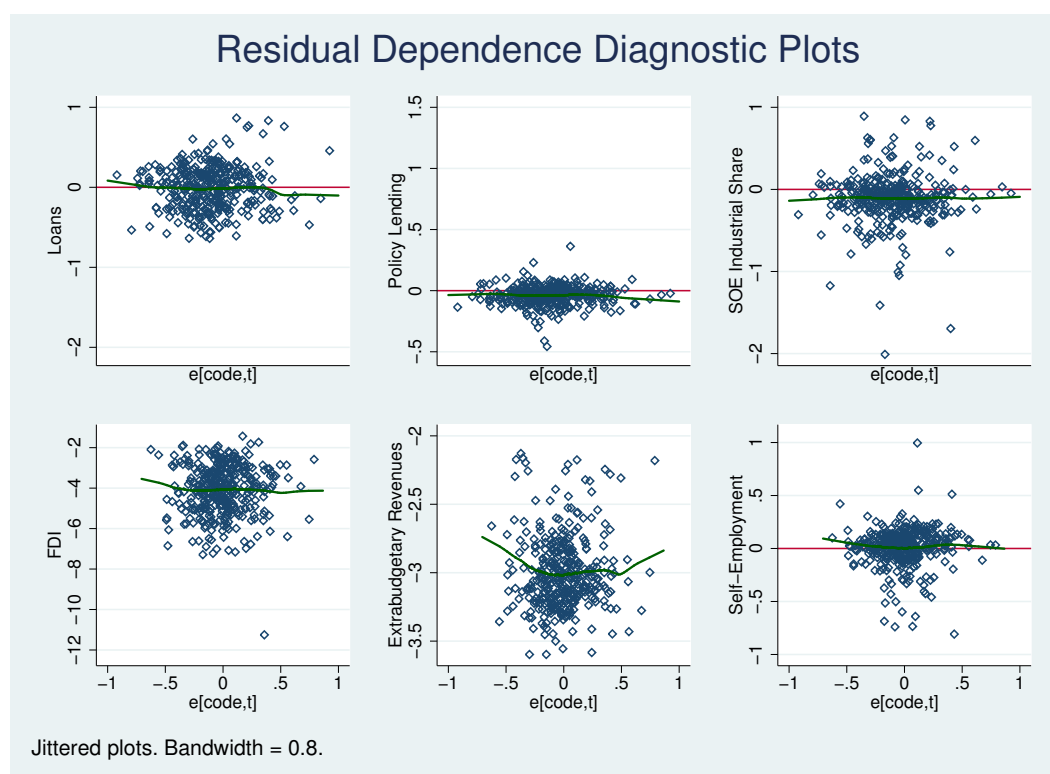
Figure 4.11: Province Effects and the FDI-Export Relationship



4.4.3.2 Residual dependence and quantile regression

I examine residual dependence plots to evaluate any potential bias in estimates (Figure 4.12). Predicted residuals (from model 1) are plotted against each independent variable and fitted with a lowess curve; a horizontal line indicates independence of the residual from the independent variables. All variables appear well-behaved; however, the dependence plot for extrabudgetary revenues shows deviations in the tails from the horizontal benchmark. While the excess curvature may be a statistical artifact of the lowess smoothing algorithm, this may also indicate the panel model does not explain the full relationship between extrabudgetary revenues and exports.

Figure 4.12: Residual Dependence Plots

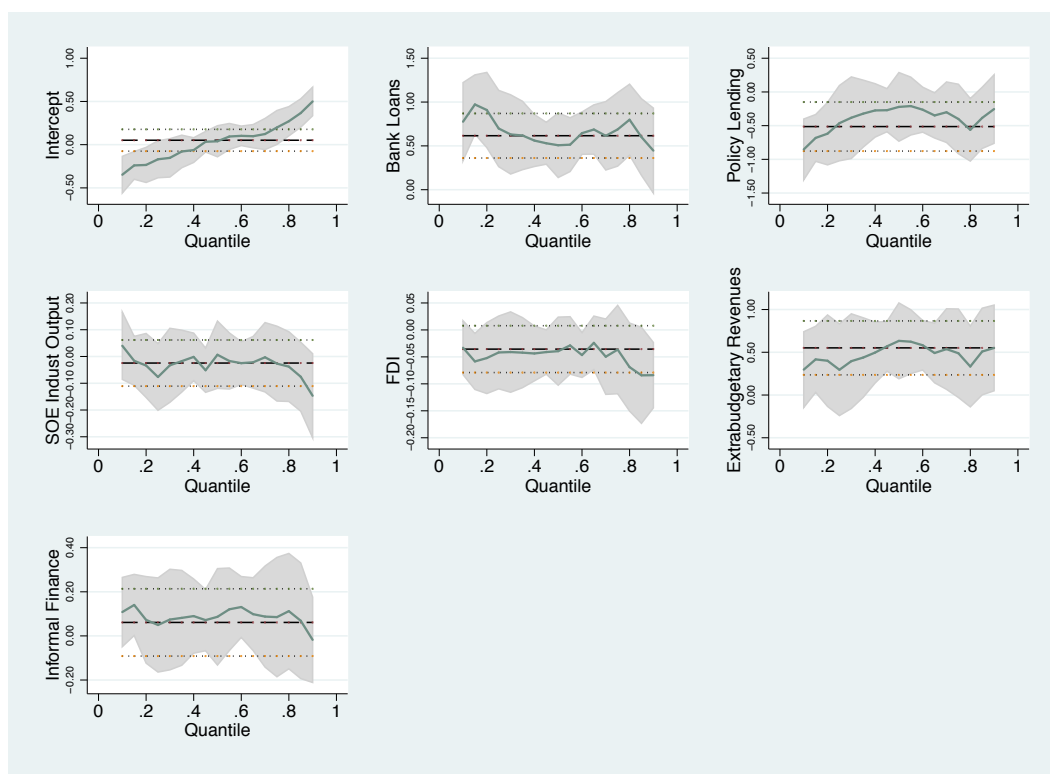


I employ quantile regression (Koenker and Basset 1978) as a check on the robustness of the linear estimates presented in Section 4.4.2. I use the same statistical model as above, but estimate conditional quantiles by minimizing absolute deviations:

$$Q_q(y_i | x_i) = \mathbf{X}'_{it}\beta + \tau'_t\delta + F_{u_i}^{-1}(q) \quad (4.3)$$

where F_{u_i} is the distribution function of u_i . I first consider regression at the median quantile, presented in columns 6 and 7 of Table 4.3, point estimates for which are less sensitive to statistical outliers. In both models, the coefficients on bank loans remain positive, statistically significant, and of magnitudes comparable to estimates obtained by panel regression models. Estimates for policy lending, while retaining the negative association with exports found in the panel models, are not significant. The effect of FDI on exports is found to be negative, though significant only in regression 6. Extrabudgetary revenues are positive and highly statistically significant, while TVE employment is insignificant. Next, Figure 4.13 depicts the conditional quantile effects of each independent variable throughout the range of the distribution. The horizontal dashed lines display the conditional means and 95 percent confidence intervals of the independent variables obtained from linear estimation. Note that the range of quantile estimates for extrabudgetary revenues falls within the confidence interval of the linear parameter estimate. Thus, the evidence from quantile regression supports the consistency of the panel regression estimates and indicates that the potential noise observed in the residual dependence plot does not appear to bias the finding of a significant positive effect of extrabudgetary revenues on exports.

Figure 4.13: Comparison of Quantile and OLS Coefficients



4.5 Conclusion

Several conclusions follow from the analysis here. First, China's local government industrial policy financial structure, detailed in Chapter 2, has played an important role in developing China's export economy. Consistent with the "new industrial strategy" perspective on development described in Chapter 1, China's local government officials undertook entrepreneurial roles to coordinate investments in physical plant, technological acquisition, and market discovery that successfully cultivated an industrial base capable of competing at world market levels of quality and productivity. Although this financial structure originally developed in symbiosis with China's TVEs, since late 1990s ownership reforms these instruments of local government industrial policy have been trained more broadly on developing collective and private industry. Far from being inefficient, this government-led finance and industrial policy successfully Second, although lending from government-owned banks is targeted largely toward non-exporting sectors and is widely considered inefficient, bank credit is positively associated with exports. This effect on exports is distinct from directed credit allocation decisions evidenced by the extent of policy lending and independent of the importance of SOEs in provincial economies, suggesting that bank credit is not as wasteful as is often perceived. The positive relationship between bank credit and exports supports the hypothesis that directed credit policies have important second-order effects, playing a role in supporting aggregate demand stimulus and stabilization conducive to productivity growth and development of export industries in other sectors of the economy beyond those receiving direct bank loans. Third, the private informal sector finance that some characterize as inherently efficient for circumventing formal financial institutions under government control have not been a significant force in developing exports. Fourth, FDI has been important for export development only in select provinces in China's coastal areas; elsewhere in China FDI has been insignificant in developing export economies. More research is needed to disentangle

gle the geographic and policy effects behind the FDI-export relationship in coastal provinces. But the results here indicate that China's policymakers should not bank on attracting FDI as a means to achieve geographic rebalancing of China's growth from the coast to interior and Western provinces. What can be effective, however, is strengthening the incentives and resources available for local government-directed industrial policies.

CHAPTER 5

CONCLUSION: FINANCIAL STRUCTURE AND FUTURE DEVELOPMENT

China's financial structures have succeeded in delivering remarkable economic growth and development. This dissertation provides extensive evidence that the root of China's success lies not in liberalized market institutions, private entrepreneurial drive, or private informal finance, but instead in the extensive role played by state institutions in shaping investment and broader economic development. Although ownership and corporate governance reforms in China in the late 1990s moved toward greater privatization, state institutions retained a remarkable degree of control over a broad range of economic activities. The foundations of China's local government industrial policy financial structure forged in the early years of economic reform and honed through cultivation of dynamic industrial and exporting TVEs did not go away with ownership and governance reforms. Rather, local officials trained their industrial policy financial structures more broadly on developing firms under a range of ownership structures: collective, public-private and foreign joint ventures, and privately owned firms, too. Success of China's private sector did not follow merely from privatization, liberalization, or other reforms seemingly strengthening liberal market economic institutions. At the core, and driving China's economic development, were institutions of the state.

Chapter 2 described the development of this local government industrial policy financial structure. Economic and political reforms devolved authority and fiscal resources to local government officials, transforming the incentive structure for governance and economic performance. Coupled with political consolidation within the

Communist Party that transformed the technical orientation of the bureaucracies, these reforms breathed new life into the vast state-industrial infrastructure held over from the central planning era. Armed with authority and ample resources under their command, local government officials undertook the role of entrepreneur—overseeing, coordinating, and marshaling finance for decisions to invest, to enter new product markets, to adopt new technologies, to hire and fire managers and workers, and all other functions of entrepreneurship. In so doing, local officials remarkably undertook many of the functions prescribed in an emerging New Industrial Strategy theory of development. Enterprises under this financial structure could enter new markets, rapidly increase productivity and quality to reach world market levels of performance, and gradually climb up the ladder of technological sophistication and value-added in the production chain. While granted extensive authority, local officials also faced disciplining mechanisms that provided performance incentives. Of course, corruption and rent-seeking occurred—problems not unique to developmental state institutions—but industrial enterprises supported by this local government industrial policy financial structure also faced a fiercely competitive market environment that provided a disciplining incentive on enterprise efficiency; local officials, too, faced disciplining incentives in the competition for political advancement, measured by an ability to deliver growth, develop competitive enterprises, and meet export objectives.

Enterprises under this local government industrial policy financial structure expanded rapidly to account for some 40 percent of China's exports and industrial output, all while rivaling or even exceeding levels of efficiency in similar privately owned firms. The success of this financial structure is demonstrated in the econometric exercise undertaken in Chapter 4. The extrabudgetary resources that provided the foundation for industrial policy financing is positively and significantly associated with the level of export development in China's provinces when controlling for other modes of finance and factors relevant to determining exports. And local government

industrial policy is not the only financial structure related to export development in China. Credit from the banking system, state-dominated and state-directed, is also positively and significantly associated with export development. Given the fact that China's state-owned banks are widely seen as inefficient and are focused on supplying credit to non-exporting SOEs suggests that bank credit affects export development through indirect channels, potentially by stimulating and stabilizing aggregate demand. By facilitating high and predictable demand, bank credit helped create an environment of stable expectations that encouraged investment and helped raise the level of economic activity such that firms could more readily achieve favorable scale economies in production and acquire productivity gains from "learning-by-doing."

FDI, too, is associated with export development. Though not in dispute, the evidence found for this relationship is much weaker than is often perceived. Much measured FDI actually originates as domestic capital that has been cycled out and back into the Chinese economy in order to achieve favorable tax status or other property rights protections not always afforded to domestic owners. This phenomenon is highlighted by the high concentration of foreign investment coming from Hong Kong, Macao, and Taiwan—accounting for 45 to 60 percent of total FDI over the course of the reform era. As such, this round-trip FDI offers (perhaps) different property rights institutions, but not necessarily the foreign technologies or management knowledge hypothesized to deliver development benefits from foreign investment. FDI in China has not always worked in the ways envisioned by theory. Early reform policies that opened select coastal areas to FDI resulted less in industrial development and technology transfer than in real estate speculation and small, low-technology investments. The relationship between FDI export development is found to hold only in the coastal provinces with close geographic and ethno-linguistic connections to Hong Kong, Macao, and Taiwan. Away from the coast, there is no positive relationship observable between FDI and export development. Even as restrictions on FDI were

relaxed in the latter 1990s, the result was not so much greenfield investment made by foreign capital as it was foreign capital forming joint ventures and strategic partnerships with domestic firms under the authority of local government industrial policy financial structures—private foreign capital joined hands with the state.

The analysis of export development also finds that informal financial structures providing the primary source of finance to private entrepreneurs are also not a significant contributor to export development. The finding is not surprising given the analysis of private entrepreneurship in Chapter 3. Though many observers see private entrepreneurs as the engines of China's dynamic reform era growth, the detailed empirical exploration indicates the opposite for the vast majority of this economic sector. Private entrepreneurs had on average lower educational attainment and were engaged in small-scale, low-technology, and low-productivity economic activities. Rather than chasing opportunities for economic gains afforded by China's reforms, private entrepreneurs are found to have entered entrepreneurship due to socioeconomic marginalization associated with job losses from more desirable wage employment, or with discrimination based on restrictions of internal migration inherent in the hukou, or household registration system. In fact, the vast majority exhibited nonpositive rates of capital accumulation and would be economically better off by switching to wage employment were opportunities available to them. The notable exceptions to the rule of these private entrepreneurs were the few who enjoyed political capital afforded by some relations with party, state, or edifices of local government industrial policy financial structure.

This dissertation explored how economic institutions governing finance and investment in China contributed to more than thirty years of unparalleled economic growth. This deeper understanding of China's finance-growth nexus also points to critical areas for future research. First, how will China's finance-growth (and innovation) nexus change as China moves toward greater financial liberalization under com-

mitments made when acceding to the World Trade Organization, as well as through indigenous efforts to develop Shanghai as an international financial center? Upon joining the WTO in December 2001, China committed to a sweeping liberalization of foreign direct investment in the financial services sector. The commitments made by China went further than any commitments made by other late-acceding country or signatory to the WTO—so much so that it surprised even the U.S. trade negotiators. By design, foreign bank entry promises to alter the competitive environment in China’s financial services sector and perhaps to hasten reforms in financing and governance of SOEs and COEs, placing constraints on the financing of industrial development strategies. Many developing countries and transition economies have been down the liberalization path before China, and the results have often been disruptive: capital inflows and asset bubbles in anticipation of liberalization, followed by reversal of capital inflows, contraction of credit, and protracted declines in output and growth. At present, many of China’s WTO financial commitments have phased in, and foreign financial institutions have taken ownership positions in Chinese state-owned banks, insurance, and securities firms. And with the financial crisis striking the United States and other developed countries in 2008 and 2009, many foreign suitors have since reversed their positions in China’s financial institutions. At present writing, China’s path of future financial reform hangs in the balance as leaders in Beijing weigh desires to claim the financial mantle in Asia against the experience of the United States’ financial system, consider the potential costs and benefits of future reform, and contend with external pressure to adjust to imbalances in the international monetary order. Without speculating on the outcome of such deliberations, the analysis in this dissertation provides a foundation for evaluating how such changes to China’s financial structure may affect its future development path.

Second, as noted in the introduction, China’s rapid development in the reform era also created acute problems of environmental degradation and social inequality that

threaten the sustainability of China's continued growth. With a greater understanding of the institutions underpinning China's finance-growth nexus, the analysis here points the way to future research on how these institutions can be tailored to create incentives for less environmentally exploitive and more equitable growth.

These directions for future research point to three sources for potential with dire immediacy embodied in geopolitical, environmental, and social relations. All contend with how to distribute the costs and benefits of the tremendous economic development spawned by China's financial structure.

BIBLIOGRAPHY

Acemoglu, Daron. 2008. *Introduction to Modern Economic Growth*. Princeton, New Jersey: Princeton University Press.

Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2005. "Institutions as a Fundamental Cause of Long-Run Growth." *Handbook of Economic Growth Vol. I*.

Allen, Franklin, Jun Qian and Meijun Qian. 2005. "Law, Finance, and Economic Growth in China." *Journal of Financial Economics*. Vol. 77, pp. 57-116.

Aghion, Philippe, Thibault Fally, and Stefano Scarpetta. 2007. "Credit constraints as a barrier to the entry and post-entry growth of firms." *Economic Policy*. Pp. 731-79.

Amsden, Alice H. 2001. *The Rise of "The Rest": Challenges to the West from Late- Industrializing Economies*. New York: Oxford University Press.

Amsden, Alice H. 1992. *Asias Next Giant: South Korea and Late Industrialization*. New York: Oxford University Press.

Anderson, Jonathan. 2006. "Five Persistent Myths About Chinas Banking System." *Cato Journal*. Vol. 26, no. 2, pp. 243-50.

Ang, Yuen Yuen. 2008. "Bureau-Contracting in China: Fusing Public Bureaucracy and Private Contracting (Or, How Chinese Bureaucracies are Organized as Markets and Hierarchies)." *State, Market, and Bureau-Contracting: Organizing Rents of Power in Reform China*. Unpublished dissertation. Stanford University Department of Political Science.

Appleton, Simon, John Knight, Lina Song, and Qingjie Xia. 2009. "The Economics of Communist Party Membership: The Curious Case of Rising Numbers and Wage Premium during Chinas Transition." *Journal of Development Studies*. Vol. 45, no. 2, pp. 256-75.

Arellano, Manuel, and Stephen Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and Application to Employment Equations." *Review of Economic Studies*. Vol. 58, pp. 277-97.

Arellano, Manuel, and Olympia Bover. 1995. "Another look at the instrumental variable estimation of error-components models." *Journal of Econometrics*. Vol. 68, pp. 29-51.

Asian Development Bank (ADB). 2003. *Development of Private Enterprise in the Peoples Republic of China*. Manila: Asian Development Bank.

Ayyagari, Meghana, Asli Demirguc-Kunt, and Vojislav Maksimovic. 2007. "Formal Versus Informal Finance: Evidence from China." *World Bank Policy Research Working Paper No. 4465*.

Aziz, Jahangir, and Christoph Duenwald. 2002. "Growth-Financial Intermediation Nexus in China." *IMF Working Paper No. 02/194*.

- Bai, Chong-En, Jiangyong Lu, and Zhigang Tao. 2006. "The Multitask Theory of State Enterprise Reform: Empirical Evidence from China." *American Economic Review Papers and Proceedings*. Vol. 96, no. 2, pp. 353-57.
- Balcerowicz, Leszek and Stanley Fischer. 2006. "Introduction and Summary." In Balcerowicz and Fischer (eds.). *Living Standards and the Wealth of Nations: Successes and Failures in Real Convergence*. MIT Press: Cambridge, MA.
- Banerjee, Abijit, and A. Newman. 1993. "Occupational Choice and the Process of Development." *Journal of Political Economy*. Vol. 101, no.2, pp. 274-298.
- Banerjee, Abhijit, Timothy Besley, and Timothy Guinnane. 1994. "The Neighbors Keeper: The Design of a Credit Cooperative with Theory and a Test." *Quarterly Journal of Economics*. Vol. 109, no. 2, pp. 491-515.
- Bardhan, Pranab. 2005. "Power: Some conceptual issues." *Scarcity, Conflicts, and Cooperation: Essays in the Political and Institutional Economics of Development*. Cambridge, MA: MIT Press.
- Bardhan, Pranab K., and Dilip Mookherjee. 2000. "Capture and Governance at Local and National Levels." *American Economic Review*. Vol. 90, no. 2, pp. 135-139.
- Bardhan, Pranab K., and John E. Roemer. 1992. "Market Socialism: A Case for Rejuvenation." *Journal of Economic Perspectives*. Vol. 6, no. 3, pp. 101-16.
- Bardhan, Pranab, Samuel Bowles, and Herbert Gintis. 2000. "Wealth Inequality, Wealth Constraints and Economic Performance." In A. Atkinson and F. Bourguignon (eds.), *Handbook of Income Distribution*. Amsterdam.
- Baumol, William J. 1968. "Entrepreneurship in Economic Theory." *American Economic Review*. Vol. 58, no. 2, pp. 64-71.
- Beck, Thorsten. 2002. "Financial Development and International Trade. Is There a Link?" *Journal of International Economics*. Vol. 57, no. 1, pp. 107-131.
- Beck, Thorsten. 2003. "Financial Dependence and International Trade." *Review of International Economics*. Vol. 11, no. 2, pp. 296-316.
- Bernard, Andrew B., and J. Bradford Jensen. 1999. "Exceptional exporter performance: Cause, effect, or both?" *Journal of International Economics*. Vol. 47, no. 1, pp. 125.
- Bernard, Andrew B., and J. Bradford Jensen. 2004. "Exporting and productivity in the US." *Oxford Review of Economic Policy*. Vol. 20, no. 3, pp. 343-357.
- Besley, Timothy. 1995. "Nonmarket Institutions for Credit and Risk Sharing in Low-Income Countries." *The Journal of Economic Perspectives*. Vol. 9, No. 3, pp. 115-127.
- Besley, Timothy, and Anne Case. 1995. "Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition." *American Economic Review*. Vol. 85, no. 1, pp. 25-45.
- Blanchflower, David G., and Andrew J. Oswald. 1998. "What Makes an Entrepreneur?" *Journal of Labor Economics*. Vol. 16, no. 1, pp. 26-60.
- Blundell, Richard, and Stephen Bond. 1998. "Initial conditions and moment restrictions in dynamic panel data models." *Journal of Econometrics*. Vol. 87, pp. 115-43.

- Bonin, John P., and Yiping Huang. 2001. "Dealing with the bad loans of the Chinese banks." *Journal of Asian Economics*. Vol. 12, no. 2, pp. 197-214.
- Bosworth, Barry P., and Jack E. Triplett. 2000. "Productivity in the Services Sector." in Stern, Robert (ed.), *Services in the International Economy*.
- Bowles, Samuel. 2002. *Microeconomics: Behavior, Evolution, Institutions*. Princeton, NJ: Princeton University Press.
- Bowles, Samuel, and Herb Gintis. 1992. "Power and Wealth in a Competitive Capitalist Economy." *Philosophy and Public Affairs*. Vol. 21, no. 4, pp. 324-353.
- Boyreau-Debray, Genevieve. 2003. "Financial Intermediation and Growth: Chinese Style." *World Bank Development Research Group Working Paper*.
- Brooks, Ray and Ran Tao. 2003. "Chinas Labor Market Performance and Challenges." *IMF Working Paper No. 03/210*.
- Buckley, Peter J., Jeremy Clegg, and Chengqi Wang. 2006. "Inward FDI and host country productivity: evidence from Chinas electronics industry." *UNCTAD Transnational Corporations*. Vol. 15, no. 1, pp. 13-37.
- Carlin, Wendy and Colin Mayer. 2000. "How Do Financial Systems Affect Economic Performance?" in X Vives (ed), *Corporate Governance: Theoretical and Empirical Perspectives*. Cambridge: Cambridge University Press
- Carlin, Wendy and Colin Mayer. 2003. "Finance, investment, and growth." *Journal of Financial Economics*. Vol. 69, no. 1, pp 191-226.
- Chan, Anita, Richard Madsen, and Jonathan Unger. 1992. *Chen Village under Mao and Deng, Expanded and Updated Edition*. Berkeley: University of California Press.
- Chang, Ha-Joon. 2002. *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.
- Chen, Yi, Sylvie Demurger, and Martin Fournier. 2003. "Wage Differentials and Ownership Structure in Chinese Enterprises." Paper prepared for the Fourth International Conference on the Chinese Economy "The Efficiency of Chinas Economic Policy" October 23-24, 2003, CERDI-IDREC, Clermont-Ferrand, France.
- Cheng, Jonathan, and Jeffrey Ng. 2009. "Air China raises stake in Cathay Pacific." *Asian Wall Street Journal*. August 18, p. 4.
- Cheng, Yuk-Sheng. 2006. "Chinas Reform of Rural Credit Cooperatives: Progress and limitations." *The Chinese Economy*. Vol. 39, no. 4, pp. 25-40.
- Cleveland, William. 1979. "Robust Locally Weighted Regression and Smoothing Scatterplots." *Journal of the American Statistical Association*. Vol. 74, pp. 829-836.
- Cleveland, William. 1993. *Vizualizing Data*. Summit, New Jersey: Hobart Press.
- Clifford, Mark. 1994. *Troubled Tiger: Businessmen, Bureaucrats, and Generals in South Korea*. New York: M. E. Sharpe.
- Chow, Gregory. 1960. "Tests of Equality Between Sets of Coefficients in Two Linear Regressions." *Econometrica*. Vol. 28, no. 3, pp. 591-605.
- Coase, Ronald H. 1960. "The Problem of Social Cost." *Journal of Law and Economics*. Vol. 3, no. 1, pp. 144.
- Crotty, James. 1994. "Are Keynesian Uncertainty and Macrotheory Compatible? Conventional Decision Making, Institutional Structures, and Conditional Stability in

Keynesian Macromodels.” In Dymski, Gary, and Robert Pollin (eds.). *New Perspectives in Monetary Macroeconomics*. Ann Arbor, MI: University of Michigan Press.

Cull, Robert, and Lixin Colin Xu. 2003. “Who gets credit? The behavior of bureaucrats and state banks in allocating credit to Chinese state-owned enterprises.” *Journal of Development Economics*. Vol. 71, no. 2, pp. 533-559.

Cull, Robert, and Lixin Colin Xu. 2000. “Bureaucrats, State Banks, and the Efficiency of Credit Allocation: The Experience of Chinese State-Owned Enterprises.” *Journal of Comparative Economics*. Vol. 28, no. 1, pp. 1-31.

Cull, Robert, Xu Colin Lixin, and Zhu Tian. 2007. “Formal Finance and Trade Credit during Chinas Transition.” *World Bank Policy Research Working Paper No. 4204*.

D’Agostino, Ralph, Albert Balanger, and Ralph D’Agostino Jr. 1990. “A suggestion for using powerful and informative tests of normality.” *The American Statistician*. Vol. 44, no. 4, pp. 316-321.

Delios, A. and Wu Z. 2005. “Legal Person Ownership, Diversification Strategy, and Firm Profitability in China.” *Journal of Management and Governance*. Vol. 9, pp. 151-69.

DeLong, J. Bradford, and Lawrence Summers. 1990. “Equipment Investment and Economic Growth.” *Quarterly Journal of Economics*. Vol. 109, no. 2, pp. 445-502.

Demirguc-Kunt, Asli and Ross Levine. 2001. “Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons.” In Asli Demirguc-Kunt and Ross Levine (eds). *Financial Structure and Economic Growth: A Cross-Country Comparison of Banks, Markets, and Development*. Cambridge, MA: MIT Press.

Demirguc-Kunt, Asli and Vojislav Maksimovic. 1996. “Institutions, financial markets, and firm debt maturity.” *World Bank Policy Research Working Paper No. 1686*.

Demurger, Sylvie, Jeffrey D. Sachs, Wing Thye Woo, Shuming Bao, and Gene Chang. 2002. “Geography, Economic Policy, and Regional Development in China.” *Asian Economic Papers*. Vol. 1, no. 1, pp. 146-197.

Deng, Xiaoping. 1993. *Selected Works of Deng Xiaoping*. Beijing: Peoples Publishing House. [63] Desai, Sameeksha. 2009. “Measuring Entrepreneurship in Developing Countries.” *UNU-WIDER Research Paper No. 2009/10*.

Dittus, Peter. 1989. “China: The State Investment System.” *World Bank Background Paper*. Washington, DC: World Bank.

Djankov, Simeon, Yingyi Qian, Gerard Roland, and Ekaterina Zhuravskaya. 2006. “Who are Chinas Entrepreneurs?” *American Economic Review Papers and Proceedings*. Vol. 96, no. 2, pp. 348-52.

Dobson, Wendy, and Anil K. Kashyap. 2006. “The Contradiction in Chinas Gradualist Banking Reform.” *Brookings Papers on Economic Activity*. Vol. 2006, no. 2, pp. 103-62.

Dollar, David, and Art Kraay. 2004. “Trade, growth, and poverty.” *Economic Journal*. Vol. 114, no. 493, pp. F22-F49.

Dollar, David, and Shangjin Wei. 2007. “Das (Wasted) Kapital: Firm Ownership and Investment Efficiency in China.” *IMF Working Paper No. 07/9*.

- Dunn, Thomas, and Douglas Holtz-Eakin. 2000. "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links." *Journal of Labor Economics*. Vol. 18, no. 2, pp. 282-305.
- Economy, Elizabeth. 2004. *The River Runs Black: The Environmental Challenge to Chinas Future*. Ithaca, NY: Cornell University Press.
- Emran, M. Shahe, and Joseph E. Stiglitz. 2007. "Financial Liberalization, Financial Restraint, and Entrepreneurial Development." *Working Paper*.
- Eswaran, M, and A. Kotwal. 1990. "Implications of Credit Constraint for Risk Behavior in Less Developed Economies," *Oxford Economic Papers*. Vol. 42, pp. 473-482.
- Evans, David. S. 1987. "The Relationship Between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries." *Journal of Industrial Economics*. Vol. 35, pp. 567-81.
- Evans, David S., and Boyan Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice Under Liquidity Constraints." *Journal of Political Economy*. Vol. 97, no. 4, pp. 808-827.
- Fan, Joseph P.H., Randall Morck, Lixin Colin Xu, and Bernard Yeung. 2007. "Institutions and Foreign Investment: China versus the World." *NBER Working Paper No. 13435*.
- Fang, Cai, and Meiyan Wang. 2004. "Irregular Employment and the Growth of the Labor Market." *The Chinese Economy*. Vol. 37, no. 2, pp. 16-28.
- Farrell, Diana, and Susan Lund. 2006. *Putting Chinas Capital to Work: The Value of Financial System Reform*. McKinsey Global Institute.
- Fazzari, Steven M., and R. Glenn Hubbard. 1988. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity*. Vol. 1988, no. 1, pp. 141-206.
- Feder, Gershon, Lawrence J. Lau, Justin Yifu Lin, and Xiaoping Liu. 1989. "Agricultural Credit and Farm Performance in China." *Journal of Comparative Economics*. Vol. 13, no. 4, pp. 508-26.
- Feenstra, Robert C., and Chang Hong. 2007. "Chinas Exports and Employment." *NBER Working Paper No. 13552*.
- Feldstein, Martin, and C. Horioka. 1980. "Domestic Savings and International Capital Flows." *Economic Journal*. Vol. 90, pp. 314-29.
- Fields, Gary S. 1975. "RuralUrban Migration, Urban Unemployment and Underemployment, and Job Search Activity in LDCs." *Journal of Development Economics*. Vol. 2, pp. 165-188.
- Fu, Xiaolan, and V.N. Balasubramanyam. 2003. "Township and Village Enterprises in China." *Journal of Development Studies*. Vol. 39, no. 4, pp. 27-46.
- Galbraith, James K. 2006. "The Firm, Exports, the Banks, and the Real Wage in China." A note prepared for the meeting on Institutional Reform in China, Manchester, UK, August 8-9.
- Ge, Ying, and Jiaping Qiu. 2007. "Financial development, bank discrimination and trade credit." *Journal of Banking and Finance*. Vol. 31, no. 2, pp. 513-30.
- Gerschenkron, Alexander. 1962. *Economic Backwardness in Historical Perspective*. Cambridge, MA: Belknap Press.

- Girardin, Eric and Xie Ping. 1997. "Urban Credit Cooperatives in China." *OECD Development Centre Working Paper No. 125*.
- Giles, John, Albert Park, and Cai Fang. 2005. "How has Economic Restructuring Affected Chinas Urban Workers?" *China Quarterly*. Vol. 185, pp. 61-95.
- Gold, Thomas B. 1986. *State and Society in the Taiwan Miracle*. New York: M. E. Sharpe.
- Gordon, David, Richard Edwards, and Michael Reich. 1983. *Segmented Work, Divided Workers: The Historical Transformation of Labor in the United States*. Cambridge University Press.
- Griffin, Keith. 2005. "Relative prices and investment: an essay on resource allocation." *UNDP International Poverty Centre Working Paper*. <http://www.ipc-undp.org/pub/IPCWorkingPaper4.pdf>.
- Grossman, Gene M., and Elhanan Helpman. 1995. "Technology and Trade." In Grossman, Gene and Kenneth Rogoff (eds.) *Handbook of International Economics*, Vol. 3. Amsterdam: North-Holland.
- Gustaffson, Bjorn, Li Shi, and Terry Sicular (eds). 2008. *Inequality and Public Policy in China*. New York: Cambridge University Press.
- Hale, Galina. 2007. "Prospects for Chinas Corporate Bond Market." *FRBSF Economic Letter*. March 16.
- Hale, Galina, and Cheryl Long. 2006. "What Determines Technological Spillovers of Foreign Direct Investment: Evidence from China." *Yale University Economic Growth Center Discussion Paper No. 934*.
- Harding, Harry. 1987. *Chinas Second Revolution: Reform After Mao*. Washington, DC: Brookings Institution.
- Harrold, Peter. 1992. "Chinas reform experience to date." *World Bank Discussion Papers No. 180*.
- Hasan, Iftekhar, Paul Wachtel, and Mingming Zhou. 2009. "Institutional development, financial deepening and economic growth: Evidence from China." *Journal of Banking Finance*. Vol. 33, no. 1, pp. 157-70.
- Hausmann, Ricardo, and Bailey Klinger. 2007. "The Structure of the Product Space and the Evolution of Comparative Advantage." *Harvard Center for International Development Working Paper No. 146*.
- Hausmann, Ricardo, and Dani Rodrik. 2003. "Economic Development as Self-Discovery." *Journal of Development Economics*. Vol. 72, December.
- Hausmann, Ricardo, and Dani Rodrik. 2006. "Doomed to Choose: Industrial Policy as Predicament." <http://ksghome.harvard.edu/?drodrik/doomed.pdf>.
- Hausmann, Ricardo, Jason Hwang and Dani Rodrik. 2007. "What You Export Matters." *Journal of Economic Growth*. Vol. 12, no. 1, pp. 1-25.
- Hausmann, Ricardo, Lant Pritchett, and Dani Rodrik. 2005. "Growth Accelerations." *Journal of Economic Growth*. Vol. 10, pp. 303-29.
- He, Kang. 2004. *Chinas Township and Village Enterprises*. Beijing: Foreign Language Press.
- He, Liping. 2005. "Evolution of Financial Institutions in Post-1978 China: Interaction between the state and market." *China World Economy*. Vol. 13, no. 6, pp. 10-26.

- Hirschman, Albert O. 1970. *Exit, Voice, and Loyalty: Responses to decline in firms, organizations, and states*. Cambridge, MA: Harvard University Press.
- Hohn, Donovan. 2008. "Through the Open Door: Searching for deadly toys in Chinas Pearl River Delta." *Harpers*. Vol. 317, no. 1900, pp. 47-59.
- Huang, Yasheng. 1996. *Inflation and Investment Controls in China: The Political Economy of Central-Local Relations during the Reform Era*. Cambridge: Cambridge University Press.
- Huang, Yasheng. 2003. *Selling China: Foreign Direct Investment During the Reform Era*. Cambridge: Cambridge University Press.
- Huang, Yasheng. 2004. "Why More May Actually Be Less.: Financial Biases and Labor- Intensive FDI in China." In Huang, Yasheng, Edward Steinfeld and Anthony Saich (eds.) *Financial Sector Reforms in China*. Cambridge, MA: Harvard University Press.
- Huang, Yasheng. 2008. *Capitalism with Chinese Characteristics: Entrepreneurship and the State*. Cambridge: Cambridge University Press.
- Human Rights Watch. 2010. *World Report 2010*. New York: Human Rights Watch. <http://www.hrw.org/sites/default/files/reports/wr2010.pdf>.
- Holtz-Eakin, Douglas, Whitney Newey, and Harvey S. Rosen. 1988. Estimating Vector Auto-regressions with Panel Data. *Econometrica*. Vol. 56, no. 6, pp 1371-95.
- Imbs, Jean, and Romain Wacziarg. 2003. "Stages of Diversification." *American Economic Review*. Vol. 93, no. 1, pp. 63-86.
- International Finance Corporation (IFC). 2000. *Chinas Emerging Private Enterprises Prospects for the New Century*. Washington, DC: International Finance Corporation.
- International Finance Corporation (IFC). 2009. *Doing Business 2010: Reforming Through Difficult Times*. Washington, DC: International Finance Corporation.
- International Labor Organization (ILO). 1972. *Employment, Income and Equality: A Strategy for Increasing Productivity in Kenya*. Geneva: ILO.
- International Monetary Fund (IMF). 2010. *World Economic Outlook Online Database*. <http://www.imf.org/external/ns/cs.aspx?id=28>.
- Iyer, Lakshmi, Xin Meng, and Nancy Qian. 2009. "Unbundling Property Rights: Urban Housing Privatization and Labor Mobility in China." Unpublished manuscript.
- Jiang, Guohua, Charles M.C. Lee and Yue Heng. 2008. "Tunneling in China: The Remarkable Case of Inter-Corporate Loans." Seminar Paper. Presented May 30, 2008 at Shanghai University of Finance and Economics.
- Johnson, Chalmers. 1982. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*. Palo Alto, CA: Stanford University Press.
- Johnson, Simon, Jonathan Ostry, and Arvind Subramanian. 2007. "The Prospects for Sustained Growth in Africa: Benchmarking the Constraints." *IMF Working Paper No. 07/52*.
- Keynes, John Maynard. 1935. *The General Theory of Employment, Interest, and Money*. New York: Prometheus Books.
- Khan, Azizur R., and Carl Riskin. 2001. *Inequality and Poverty in China in the Age of Globalization*. New York: Oxford University Press.

- King, Robert G., and Ross Levine. 1993. "Finance and Growth: Schumpeter Might Be Right." *Quarterly Journal of Economics*. Vol. 108, no. 3, pp. 717-37.
- Kletzer, Kenneth, and Pranab Bardhan. 1987. "Credit markets and patterns of international trade." *Journal of Development Economics*. Vol. 27, no. 1-2, pp. 57-70.
- Klinger, Bailey, and Daniel Lederman. 2004. "Discovery and Development: An Empirical Exploration of New Products." *World Bank Policy Research Working Paper No. 3450*.
- Koenker, Roger, and Gilbert Bassett, Jr, 1978. Regression Quantiles. *Econometrica*. Vol. 46, no. 1, pp. 33-50.
- Koenker, Roger, and Kevin F. Hallock. 2001. Quantile Regression. *Journal of Economic Perspectives*. Vol. 15, no. 4, pp. 143-56.
- Kornai, Janos. 1959. *Overcentralization in Economic Administration*. Oxford University Press.
- Kuijs, Louis. 2005. "Investment and Saving in China." *World Bank Policy Research Paper Series No. 3633*.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1997. "Legal Determinants of External Finance." *Journal of Finance*. Vol. 52, no. 3, pp. 1131-50.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1998. "Law and Finance." *Journal of Political Economy*. Vol. 106, no. 6, pp. 1113-55.
- Lardy, Nicholas R. 1998. *Chinas Unfinished Economic Revolution*. Washington, DC: Brookings Institution.
- Layard, Richard. 2010. "Measuring Subjective Well-Being." *Science*. Vol. 327, no. 5965, pp. 534-5.
- Lee, Ching Kwan. 1999. "From Organized Dependence to Disorganized Despotism: Changing Labour Regimes in Chinese Factories." *China Quarterly*. Vol. 157, pp. 44-71.
- Lees, Francis A. 1997. *China Superpower: Requisites for High Growth*. New York: St. Martins Press.
- Lewis, Arthur W. 1954. "Economic development with unlimited supplies of labour." *The Manchester School*. Vol. 22, pp. 139-91.
- Levine, Ross and Thorsten Beck. 2004. "Stock Markets Banks, and Growth: Panel Evidence." *Journal of Banking and Finance*. Vol. 28, pp. 432-42.
- Levine, Ross, and Sara Zervos. 1998. "Stock Markets, Banks, and Growth." *American Economic Review*. Vol. 38, no. 4, pp. 143-56.
- Li, Hongbin, Lingsheng Meng, Qian Wang, and Li-An Zhou. 2008. "Political Connections, Financing, and Firm Performance: Evidence from Chinese private firms." *Journal of Development Economics*. Vol. 87, no. 2, pp. 283-99.
- Li, Jianjun. 2005. *Research on the Volume of Underground Financing and its Economic Effects*. Beijing: China Financial Publishing House.
- Li, Jianjun. 2006. *A Survey of Underground Financing in China*. Shanghai: Shanghai Peoples Press.

Li, Jianjun. 2009. "Informal Finance, Underground Finance, Illegal Finance, and Economic Movement: A National Analysis." In Jianjun Li and Sara Hsu (eds.). *Informal Finance in China: American and Chinese Perspectives*. New York: Oxford University Press.

Li, Minqi. 2002. *Three essays on Chinas state owned enterprises: Towards an alternative to privatization*. Electronic Doctoral Dissertations for UMass Amherst. Paper AAI3068576.

Li, Shi and Renwei Zhao. 2007. "Changes in the Distribution of Wealth in China, 1995-2002." *UNU-WIDER Research Paper No. 2007/03*.

Lileeva, Alla, and Daniel Trefler. 2007. "Improved Acces to Foreign Markets Raises Plant-Level Productivity ...for Some Plants." *NBER Working Paper No. 13297*.

Lin, Justin Yifu. 1992. "Rural Reforms and Economic Growth in China." *American Economic Review*. Vol. 82, no. 1, pp. 34-51.

Lin, Justin Yifu. 2007. "Development and Transition: Ideas, Strategy, and Viability." *Alfred Marshall Lectures*. Cambridge University, Cambridge, UK, October 31-November 1.

Lin, Justin Yifu, Fang Cai, and Zhou Li. 2003. *The China Miracle: Development Strategy and Economic Reform*. Hong Kong: Chinese University Press.

List, Friedrich. 1841 [2006]. *National System of Political Economy, Volume 3: The Systems and the Politics*. New York: Cosimo Classics.

Liu, Chen Xiang. 2007. "SME financing in China." *University of Paris West Economics Work- ing Paper No. 207-29*.

Loshkin, Michael, and Zurab Zajaia. 2004. "Maximum Likelihood Estimation of Endogenous Switching Regression Models." *Stata Journal*. Vol. 4, no. 3, pp. 282-9.

Lu, Susan Feng, and Yang Yao. 2009. "The Effectiveness of Law, Financial Development, and Economic Growth in an Economy of Financial Repression: Evidence from China." *World Development*. Vol. 37, no. 4, pp. 763-77.

Lu, Wen. 1997. "The Development of the Poperty Rights System Reform in TVEs." *Rural Economy in China*. No. 11.

Maddala, G.S. 1983. *Limited-Dependent and Qualitative Variables in Econometrics*. New York: Cambridge University Press.

Maddala, G. S. and Shaowen Wu. 1999. "A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test." *Oxford Bulletin of Economics and Statistics*. Vol. 61, pp. 631-52.

Maddison, Angus. 2007. *Chinese Economic Performance in the Longrun, Second Edition*. Paris: OECD.

Maloney, William F. 2004. "Informality Revisited." *World Development*. Vol. 32, no. 7, pp. 1159-78.

Mandelman, Frederico S. and Gabriel V. Montes-Rojas. 2009. "Is Self-employment and Micro- entrepreneurship a Desired Outcome?" *World Development*. Vol. 37, no. 12, pp. 1914-25.

Marti, Michael E. 2002. *China and the Legacy of Deng Xiaoping: From Communist Revolution to Capitalist Evolution*. Dulles, Virginia: Brasseys.

Marx, Karl. 1867. *Capital: Volume 1: A Critique of Political Economy*.

- Masakure, Oliver, John Crangfield, and Spencer Henson. 2008. "Financial Performance of Non-farm Microenterprises in Ghana." *World Development*. Vol. 36, no. 12, pp. 2733-2762.
- McKinnon, Ronald. I. 1991. *The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy*. Baltimore, MD: Johns Hopkins University Press.
- McKinnon, Ronald I. 1973. *Money and Capital in Economic Development*. Washington DC: The Brookings Institution.
- Mead, D and Liedholm, C. 1998. "The Dynamics of Micro and Small Enterprises in Developing Countries." *World Development*. Vol. 26, No.1, pp. 61-74.
- Meisner, Maurice. 1996. *The Deng Xiaoping Era: An Inquiry into the Fate of Chinese Social-ism, 1978-1994*.
- Meng, Xin. 2007. "Wealth Accumulation and Distribution in Urban China." IZA Discussion Paper No. 2553.
- Mesnard, Alice, and Martin Ravallion. 2001. "Wealth Distribution and Self-Employment in a Developing Economy." CEPR Discussion Paper No. 3026.
- Mincer, Jacob. 1974. *Schooling, Experience, and Earnings*. Cambridge, MA: NBER.
- Minsky, Hyman. 1986. *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press.
- Minsky, Hyman. 1975. *John Maynard Keynes*. New York: Columbia University Press.
- Murakami, Naoki, Liu Deqiang and Otsuka Keijiro. 1994. "Technical and Allocative Efficiency among Socialist Enterprises: The Case of the Garment Industry in China." *Journal of Comparative Economics*. Vol. 19, no. 3, pp. 410-33.
- Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1989. "Industrialization and the Big Push." *Journal of Political Economy*. Vol. 97, no. 5, pp. 1003-26.
- Myrdal, Gunnar. 1968. *Asian Drama: An Inquiry into the Poverty of Nations*. Pantheon.
- National Bureau of Statistics (NBS). Various Years. *China Statistical Yearbook (Zhongguo Tongji Nianjian)*. Beijing. National Peoples Congress (NPC). 1993. Company Law of the Peoples Republic of China.
- Naughton, Barry. 1995. *Growing Out of the Plan: Chinese Economic Reform: 1978-1993*. New York: Cambridge University Press.
- Nee, Victor, and Su Sijin. 1990. "Institutional Change and Economic Growth in China: The View from the Village." *Journal of Asia Studies*. Vol. 49, no. 1, pp. 3-25.
- Nichter, Simeon, and Lara Goldmark. 2009. "Small Firm Growth in Developing Countries." *World Development*. Vol. 37, no. 9, pp. 1453-64.
- Oi, Jean C. 1999. *Rural China Takes Off: Institutional Foundations of Economic Reform*. Berkeley, CA: University of California Press.
- Park, Albert and Kaja Sehrt. 2001. "Tests of Financial Intermediation and Banking Reform in China." *Journal of Comparative Economics*. Vol. 29, no. 4, pp. 608-44.

- Parris, Kristen. 1993. "Local Initiative and National Reform: The Wenzhou Model of Development." *The China Quarterly*. Vol. 134, pp. 242-263.
- Pei, Minxin. 1990. *From Reform to Revolution: The Demise of Communism in China and the Soviet Union*. Cambridge, MA: Harvard University Press.
- Peoples Bank of China (PBC). 2005. *China Regional Financial Developments Update 2004 (Zhongguo Quyu Jinrong Yunxing Baogao)*.
- Podpiera, Richard. 2006. "Progress in Chinas Banking Sector Reform: Has Bank Behavior Changed?" *IMF Working Paper No. 06/71*.
- Pollin, Robert. 1995. "Financial Structure and Egalitarian Economic Policy." *New Left Review*. Issue 214, November-December, pp. 26-61.
- Porter, Michael. 1992. "Capital Choices: Changing the Way America Invests in Industry." *Journal of Applied Corporate Finance*. September.
- Porter, Michael. 1996. "Capital Choices: National Systems of Investment." In Goodwin, Neva R. (ed.). *As if the Future Mattered: Translating Social and Economic Theory into Human Behavior*. Ann Arbor, MI: University of Michigan Press.
- Prasad, Eswar, and Shangjin Wei. 2005. "The Chinese Approach to Capital Inflows: Patterns and Possible Explanations." *IMF Working Paper No. 05/79*.
- Pratap, Sangeeta, and Erwan Quintin. 2006. "The Informal Sector in Developing Countries." *UNU-WIDER Research Paper No. 2006/130*.
- Putterman, Louis. 1997. "On the Past and Future of Chinas Township and Village-Owned Enterprises." *World Development*. Vol. 25, no. 10, pp. 1639-55.
- Qian, Yingyi and Collin Xu. 1993. "Why Chinas economic reforms differ: The M-form hierarchy and entry/expansion of the non-state sector." *The Economics of Transition*. Vol. 1, pp. 135- 170.
- Qian, Yingyi, and Barry R. Weingast. 1997. "Federalism as a Commitment to Perserving Market Incentives." *Journal of Economic Perspectives*. Vol. 11, no. 4, pp. 83-92.
- Qian, Yingyi, and Gerard Roland. 1998. "Federalism and the Soft Budget Constraint." *American Economic Review*. Vol. 88, no. 5, pp. 1143-1162.
- Ravallion, Martin, and Shaohua Chen. 2007. "Chinas (uneven) progress against poverty." *Journal of Development Economics*. Vol. 82, pp. 1-42.
- Rawski, Thomas. 2001. "China Reform Watch: Turning Point." *China Perspectives*. Pp. 28-35.
- Rawski, Thomas G. 2003. "Recent Developments in Chinas Labour Economy." Report pre- pared for ILO International Policy Group.
- Riskin, Carl. 1987. *Chinas Political Economy: The Quest for Development Since 1949*. New York: Oxford University Press.
- Rodrik, Dani. 2006. *Whats So Special About Chinas Exports?* China World Economy. Vol. 14, no. 5, pp. 1-19.
- Roemer, John E. 1982. *A General Theory of Exploitation and Class*. Cambridge, MA: Harvard University Press.
- Roodman, David. 2007. "A Short Note on the Theme of Too Many Instruments." *Center for Global Development Working Paper Number 125*.

- Roodman, David. 2006. "How to Do xtabond2: An Introduction to Difference and System GMM in Stata." *Center for Global Development Working Paper Number 103*.
- Rosenstein-Rodan, Paul N. 1943. "Problems of Industrialisation of Eastern and South-eastern Europe." *Economic Journal*. Vol. 53, pp. 202-11.
- Rothman, Andy, Carole Liu and Julia Zhu. 2005. "Chinas Capitalists: Special Report." *CLSA Investors Forum 2005*. Shanghai: CLSA.
- Rozelle, Scott, Guo Li, Minggao Shen, Amelia Hughart, and John Giles. 1999. "Leaving Chinas Farms: Survey Results of New Paths and Remaining Hurdles to Rural Migration." *China Quarterly*. Vol. 158, pp. 367-393.
- Schumpeter, Joseph. 1911 [1982]. *The Theory of Economic Development: An inquiry into profits, capital, credit, interest and the business cycle*. Transaction Publishers.
- Schumpeter, Joseph. 1942 [1962]. *Capitalism, Socialism, and Democracy*. New York: Harper Perennial.
- Sehrt, Kaja. 1999. "Banks Vs. Budgets: Credit Allocation in the Peoples Republic of China: 1984-1997." Unpublished dissertation, University of Michigan.
- Shirk, Susan. 1993. *The Political Logic of Economic Reform in China*. Berkeley: University of California Press.
- Shaw, E. 1973. *Financial Deepening in Economic Development*. New York NY: Oxford University Press.
- Shleifer, Andrei. 2009. "The Age of Milton Friedman." *Journal of Economic Literature*. Vol. 47, no. 1, pp. 123-35.
- Solow, Robert M. 1956. "A Contribution to the Theory of Economic Growth." *Quarterly Journal of Economics*. Vol. 70, no. 1, pp. 65-94.
- South China Morning Post*. 2009. "Hong Kong Newspaper Highlights." December 3.
- Spence, Jonathan D. 1991. *The Search for Modern China*. New York: W. W. Norton Co.
- State Environmental Planning Agency (SEPA). 2006. *Environmental Protection in China (1996-2005)*. http://news.xinhuanet.com/english/2006-06/05/content_4647221.htm
- Stiglitz, Joseph E. 1993. "The Role of the State in Financial Markets." *Proceedings of the World Bank Annual Conference on Development Economics*. Washington, DC: World Bank.
- Stiglitz, Joseph E. and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." *The American Economic Review*. Vol. 71, No. 3, pp. 393-410.
- Storey, D.J. 1991. "The Birth fo New Firms: Does Unemployment Matter? A Review of the Evidence." *Small Business Economics*. Vol. 28, no. 2-3, pp. 171-86.
- Thun, Eric. 2004. "Industrial Policy, Chinese-Style: FDI, Regulation, and Dreams of National Champions in the Auto Sector." *Journal of East Asian Studies*. Vol. 4, no. 3, pp. 453-89.
- Tsai, Kellee S. 2002. *Back-Alley Banking: Private Entrepreneurs in China*. Ithaca, NY: Cornell University Press.

- Tukey, John W. 1977. *Exploratory Data Analysis*. Reading, MA: Addison-Wesley.
- UNCTAD. 2010. *FDI Online*. <http://stats.unctad.org/fdi>.
- UNIDO. 2006. *INDSTAT4 Database*. <http://www.unido.org/index.php?id=o3472>.
- US State Department. 2009. *Country Reports on Human Rights Practices*. Washington, DC: State Department.
- US Trade Representative (USTR). 2008. *National Trade Estimate Report on Foreign Trade Barriers*. Washington, DC: USTR.
- Wade, Robert. 1990. *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton, NJ: Princeton University Press.
- Wang, L., and Wei Zhong. 1999. "Housing Welfare and Income Distribution in Chinas Cities." In Zhao Renwei, Li Shi, and Carl Riskin (eds). *Re-study on Chinas Income Distribution*. China Finance and Economics Press: Beijing.
- Whalley, John and Xian Xin. 2006. "Chinas FDI and Non-FDI Economies and the Sustain- ability of Future High Chinese Growth." *NBER Working Paper No. 12249*.
- White, Halbert. 1980. "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity." *Econometrics*. Vol. 48, pp. 817-38.
- Whiting, Susan. 2001. *Power and Wealth in Modern China*. Cambridge: Cambridge University Press.
- Williamson, John. 1989. "What Washington Means by Policy Reform." In Williamson, John (ed.). *Latin American Readjustment: How Much has Happened?* Washington, DC: Institute for International Economics.
- Woo, Wing Thy. 2006. "The Experimentalist-Convergence Debate on Interpreting Chinas Economic Growth: A Cross-Country Perspective." In Leszek Balcerowicz and Stanley Fischer (eds.) *Living Standards and the Wealth of Nations: Successes and Failures in Real Convergence*. Cambridge, MA: MIT Press.
- World Bank. 1993. *The East Asian Miracle: Economic Growth and Public Policy*. Washington, DC: World Bank.
- Wu, Harry. 2010. *Not for Sale: Advertising Forced Labor Products for Illegal Export*. Washington, DC: Laogai Research Foundation. <http://www.laogai.org/>.
- Wu, Jinglian. 2005. *Understanding and Interpreting Chinese Economic Reform*. Cenage Learning.
- Xiao, Feng. 2007. "Irrational exuberance and stock market valuations: evidence from China." *Journal of Post-Keynesian Economics*. Vol. 29, no. 2, pp. 285-308.
- Xiao, Geng. 2004. "Round-Tripping Foreign Direct Investment and the Peoples Republic of China." *Asian Development Bank Institute Research Paper Series No. 58*. Tokyo: ADBI.
- Xie, Ping. 2003. "Reforms of Chinas Rural Credit Cooperatives and Policy Options." *China Economic Review*. Vol. 14, pp. 434-42.
- Xu, X., and Wang. Y. 1997. "Ownership Structure, Corporate Governance and Firm Performance: The Case of Chinese Stock Companies." *World Bank Policy Research Working Paper No. 1794*.

- Yang, Dennis Tao. 2005. "Determinants of schooling returns during transition: Evidence from Chinese cities." *Journal of Comparative Economics*. Vol. 33, pp. 244-64.
- Yao, Shujie. 2006. "On economic growth, FDI and exports in China." *Applied Economics*. Vol. 38, pp. 339-51.
- Yueh, Linda. 2009a. "Chinas Entrepreneurs." *World Development*. Vol. 37, no. 4, pp. 778-86.
- Yueh, Linda. 2009b. "Self-employment in Urban China: Networking in a Transition Economy. China Economic Review. Vol. 20, no. 3, pp. 471-484.
- Zhang, Chenghui. 2001. "Research Report on the Current Financing Situation of Privately-owned Enterprises." *China Development Review*. Vol. 3, no. 3, pp. 72-82.
- Zhang, Kevin Hongli, and Shunfeng Song. 2003. "Ruralurban migration and urbanization in China: Evidence from time-series and cross-section analyses." *China Economic Review*. Vol. 14, no. 4, pp. 386-400.
- Zhao, Yaohui. 1999. "Leaving the Countryside: Rural-To-Urban Migration Decisions in China." *American Economic Review*. Vol. 89, No. 2, pp. 281-6.
- Zhu, Andong. 2005. *Public enterprises in mixed economies: Their impact on economic growth and social equity*. Electronic Doctoral Dissertations for UMass Amherst. Paper AAI3193964.
- Zysman, John. 1983. *Government, Markets and Growth: Financial Systems and the Politics of Industrial Change*. Ithaca, NY: Cornell University Press.