Peasantry to Industry:
Labor and Chinese Cokemaking Township and Village Enterprises

by

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Submitted to the Department of Urban Studies and Planning
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ABSTRACT

This study examines the symbiotic relationship between labor relations and the resilience and performance of regional economies. I hypothesize that the institutional structure of the recent phenomenon of Chinese Township and Village Enterprises (TVEs) creates opportunities for industrial labor relations that contribute to their economic performance. I conduct two case studies, first the experiences of the Monongahela (Mon) Valley steel industry in the United States in the mid-1980s and then the more recent experiences of the Shanxi Province cokemaking sector in rural China in the late-1990s to early 2000s. They illustrate the mechanisms through which the cultural, social, economic and industrial environments influence labor market practices, which in turn affect the regional economy.

I propose that sour labor relations were partly responsible for the economic and social deterioration of the Mon Valley. Then, I claim that the unique institutional environments in which Chinese TVEs operate are conducive to positive labor-management relations and labor practices that render these enterprises competitive in the global economy. An agrarian culture, the prevalence of dense social networks in the form of guanxi, and the nature and structure of the firms all contribute to the Shanxi Cokemaking TVEs’ competitive advantage. To conduct this study, I review existing literature and research studies, official statistics, as well as use empirical plant-level survey data and make site visits.

I conclude that there is room for experimental labor relations that can be growth and labor-friendly. As a developing country, China has much to learn from the industrialization and de-industrialization processes of her Western counterparts, such as the United States. At the same time, U.S. management and workers may also benefit from learning about the TVE experience. The deep-seeded social capital and emphasis on long-term harmonious relationships should allow Chinese management and workers in the quickly industrializing countryside to create an innovative, cooperative forum of interactions.

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CHAPTER 1
INTRODUCTION

Since their inception during the Chinese economic reforms in the late 1970s, Township and Village Enterprises (TVEs) have demonstrated increasing productivity and competitiveness. Ironically, TVE employees often experience lower wages and fewer benefits compared to the larger, more formal state-owned enterprises. In addition, workers at TVEs are mostly peasants from rural areas with little industrial experience. What, then, constitutes the high degree of industrial competitiveness and productivity in these organizations? I hypothesize that it is the nature of China’s rural labor market and the social capital embedded within the TVEs that give these enterprises a competitive advantage. Putnam (2001) found empirical evidence that social connectedness in the United States is a strong predictor of altruistic behavior. Along similar lines, I claim that social connectedness within TVEs is correlated with workers’ and management’s willingness to be flexible and perhaps even sacrifice profits and/or incomes in the short run to foster long-term competitiveness. I examine how culture, society, and business decisions influence labor relations, and how labor relations, in turn, affect regional growth and competitiveness.

Research Questions and Rationale

My hypothesis is that the institutional structure of Chinese TVEs creates opportunities for favorable industrial labor relations. These relations allow TVEs the flexibilities to compete competitively in the domestic and global markets. I began this exercise with a broad interest in the roles that labor and industrial relations play in a region’s economic development and decline.
I propose that a symbiotic relationship exists between workers’ welfare (a function of their safety, health, wages, employment status, bargaining power, satisfaction, etc.) and an industry’s competitiveness, and I will explain and describe how it is so. (Figure 1.1) How do industrial labor relations evolve throughout a region’s industrialization process? What factors and industry/institutional characteristics influence and define these relations?

More specifically, I am interested in the nature of industrial labor relations in China’s new and somewhat amorphous set of institutions that make up the Township and Village Enterprises. I will examine how the unique nature of the TVEs has, or can, foster industrial labor relations and labor practices that enhance industry competitiveness. I will also look at how these relations change as TVEs evolve and grow and speculate what is going to happen to the future of workers as China’s countryside industrializes and urbanizes. Will China experience similar adversarial interactions between management and laborers in the metallurgical sector much like the Pennsylvania experience? I hypothesize that a new paradigm of labor relations can emerge from the TVE experience.

The analytical framework I use for this study is unique. Through looking at the symbiotic relationship between regional economic growth and industrial relations, I analyze the current and future state and functions of industrial labor relations in the TVE context. I review and analyze three major topic areas to support my hypothesis. First, I turn to the development experience in the Pennsylvania coal/cokemaking/iron and steel making industry. I analyze the specific historical and institutional factors that affect industrial labor relations and how labor relations, in turn, affected economic performance over the course of development in the metallurgical sector and the region. I focus on the case of the integrated steel plants in the Monongahela Valley in the 1980s for analyzing the institutional factors at play. Second, I
analyze industrial relations in the context of Chinese TVEs, using the Shanxi cokemaking TVEs as examples. Industrial relations include how work is organized within the plant, employment practices and job training, and the interactions between workers and management. Finally, I explore how industrial labor relations may evolve as TVEs undergo structural changes. The questions that I pose include: (1) As China quickly industrializes, how do firms handle their workforce and maintain their industrial relations? (2) Can China learn from the experiences of the United States, or vice versa? (3) What are TVEs capable of accomplishing in terms of seeking new paradigms for management and labor practices? Can their ambiguous property rights definitions and evolving nature be a new opportunity for organizing production and create a new forum of interaction between workers and industries? The results of my analyses could be useful to policy analysts, planners, labor organizations, firms, and institutional reformists in China as well as other countries across the development spectrum.

**Methodology**

I obtain support for my hypotheses using a case-study approach. For the case of the Monongahela Valley, I first analyze historical industrial-labor relations in Pennsylvania using secondary sources. These include literature on the subject and published interviews with workers. I also interviewed Professor Robert McKersie, who participated in the steel industry labor negotiations in the 1980s. To study the Shanxi cokemaking region, I use notes and interviews collected at visits to six cokemaking TVEs conducted by the Alliance for Global Sustainability’s China Coke Project research team in the summer of 2001. I also review what various scholars have written on TVEs and Chinese labor relations since the economic reforms in the late 1970s. For further analyses of the nature, structure, and institutional evolution of the
TVEs, I turn to figures and information published in the Township and Village Enterprise Yearbooks (published by the Chinese Statistics Bureau) and other published statistics. I use data from four Alliance for Global Sustainability (AGS) China Cokemaking Project surveys on SOEs and TVEs (1998-2001) to examine practices within State-Owned Enterprises (SOEs) and TVEs. The surveys contain questions on the enterprises’ employment practices, ownership structure, and supply-chain relationships. There were two surveys conducted in a total of around 300 cokemaking TVEs (1998 and 2000) and two surveys on 40+ SOEs (1999 and 2001). For descriptive statistics and comparison between TVEs and SOEs, I use the entire samples of the surveys. There were 31 cokemaking TVEs that participated in both the 1998 and 2000 surveys. I use the matched sample to look at the changes and evolution of practices within the cokemaking enterprises between the years.

**Preview of Study**

My study focuses on industrial labor relations in cokemaking township and village enterprises in Shanxi Province, China. Based on the experience in the Pennsylvania coal-based industrial region and theories relating social capital and the workplace, I hypothesize that the evolving institutional structure of Chinese TVEs creates opportunities for industrial labor relations that increase industrial and regional competitiveness. To that end, I describe the Pennsylvania case using secondary sources and present various theories and evidences from both economic reform and social capital literature. I also focus on the case of cokemaking TVEs in Shanxi Province using empirical survey data and on-site interviews with plant managers. This exercise is an attempt to provide information on (1) Ways in which Chinese TVEs handle their workforce and maintain their industrial relations as the country quickly industrializes; (2) What
China can learn from the experiences of the United States and what the rest of the world can learn from the TVEs’ experiences; and (3) The potential of TVEs to develop into an innovative production organization and to create a new forum of interaction among workers and industries.

The organization of the thesis is as follows. Chapter 2 is an overview of theories and hypotheses on the topic of industrial labor relations. Chapter 3 is a case study of the Pennsylvania steel region in the 1980s, where I closely examine the labor factors that contributed to the rapid regional economic decline and social deterioration in the Monongahela Valley. Chapter 4 describes the recently invented Township and Village Enterprises in China. I postulate how this institution provides an opportunity for management practices and labor relations that can foster regional competitiveness. Chapter 5 is a case study of the cokemaking sector in Shanxi Province, China. I compare cokemaking TVEs cross-sectionally with state-owned enterprises, as well as among TVEs under various types of ownership. I also examine cokemaking TVEs longitudinally to uncover their evolution over time. Finally, in Chapter 6, I conclude with analyses of the evidence and point to future research and policy opportunities.
CHAPTER 2

BACKGROUND: THE TOPIC OF LABOR AND LABOR RELATIONS

I have chosen to examine the roles that labor and labor relations play in regional economic growth. Why labor? As development planners, we must be cognizant of the questions, “Development for what? For whom?” As people are both drivers and beneficiaries of regional economic activities, I find it important to examine the symbiotic influences of growth and industrial relations, labor welfare, and human development. Work is an enabling process (Ashford, 2/1/2002). Employment is the means through which we become self-sufficient, the pathway towards realization of capacities and possibilities. Workers are at the same time economic, social, and political animals. In this light, laborers are not just another factor input for production. The creation of employment and development of human capital are both the process towards the goal of economic advancement, as well as end goals in themselves. I attempt to uncover how laborers fare vis-a-vis regional development.

In this chapter, I give an overview of various theories and analyses of the philosophies and practices of labor management and industrial labor relations. Specifically, I indicate the differences between Chinese and Western styles and mentalities regarding labor and human resources.

Industrial Labor Relations

Labor is a crucial factor of production that fuels any economic growth. The management of labor hence deserves special attention when we try to analyze and understand the rise and
decline of regional economies. Gospel (1983) divided labor management into three categories: work relations, employment relations, and industrial relations.

   Work relations refer to the ways work is organized and the development of workers around the prevailing technologies and production processes. Employment relations cover the various personnel management practices, such as recruitment, training, remuneration and work conditions. Industrial relations is concerned with the collective representation of workers through union organization and management’s dealings with unions through joint consultation and collective bargaining (Benson et al., 2000, p. 80). Gospels’ distinctions are somewhat arbitrary, and the three different areas certainly intertwine and influence one another. For the purpose of this thesis, I use the term “labor relations” to include all three aspects of labor management.

Theories and Hypotheses

   In the following section, I examine some of the theories of management and various hypotheses regarding labor and labor relations that are particularly salient to the Chinese Township and Village Enterprises (TVEs).

Employment

   Even within the more developed capitalist economies, the notions and mentalities regarding work and employment vary. Michel Albert (1999) sees the North Atlantic economies as having rival systems of employment. In the Anglo-American model (U.S. and U.K.), companies maximize their competitiveness by sharpening competition between individual employees. This leads to a relentless drive to recruit the best and the brightest personnel and to pay them the market-dictated costs in order to keep them. Under this system, salaries are individualized and highly negotiable. On the other hand, in Germany and Japan, employees are viewed differently (the Rhine-Japanese model). Rather than being substitutable factor inputs, the
“company as community” feels obligated to provide job security and educational and training opportunities. As a result of the extra costs of providing training, the Rhine-Japanese firms may not be able to pay workers their market values, but instead guarantee job security and assistance for “smoothing out the rough spots along the way” (Albert, 1994, p. 117). Due to the cultural proximity between China and Japan, and the community nature of the township and village enterprises, I expect Chinese TVEs to resemble more closely the Rhine-Japanese mentality of employment than the Anglo-American model.

Theories of Management

In the 1950s, theorist Douglas McGregor developed two concepts of management. Theory X assumes that the average human being dislikes work, hence tries to avoid it. Based on this theory, management should adopt an authoritarian style of command. On the other hand, Theory Y assumes that workers want to be committed to their work, so that a participatory style of management is most appropriate (Hoerr, 1988). Depending on the framework from which managers come, their management mindset and practices would differ, resulting in very different natures of industrial labor relationships. Traditionally, the Anglo-American managers adopted Theory X as their management philosophy, resulting in adversity in management-workers relations.

The Collective-Bargaining Tradition

Developed as early as 1914 (by Beatrice and Sidney Webb), collective bargaining was conceptualized by Western main-stream industrial relations theorists as a key institution that helps integrate and stabilize labor-management relations in capitalist economies (Ng and Warner,
2000). After World War II, collective-bargaining norms shifted to focus on plant-specific productivity deals, later giving way to a type of performance-oriented, incentive-based form of managerial control (Ng and Warner, 2000).

Defined as such, notions of collective bargaining are rather foreign to Chinese enterprises. The Chinese practice of collective bargaining is heavily influenced by the state, hence a “unitarist system” that is devoid of self-determination. The Labor Law and local regulations govern the negotiation and making of the collective contract and prescribe and structure bargaining processes that are consistent across enterprises (Ng and Warner, 2000). Under such an institutional infrastructure, the contentions and frustrations that Western industrial workers experience may manifest themselves differently in the Chinese setting. Without representative labor unions (a collective voice), the arena in which labor and management interact are also quite dissimilar.

*The Employment-Technology Tradeoff*

Reforming labor-market institutions during a time of rapid economic growth and technological advances, the managers of Chinese enterprises are faced with trade-off options between technology and employment. Benson et al. (2000) suggest that to improve labor flexibility, Chinese managers can choose between empowering workers or containing them. Empowering workers involves granting them autonomy and re-training so that functional flexibility within the enterprises can be achieved; containing workers, on the other hand, requires introduction of a new technology to limit the amount of human involvement in the work process, thereby deskilling workers and reinforcing hierarchical control.
The Regional Hypothesis

The relationship between industry and its locale can affect the interactions among its workers and residents. Industrial regions often arise from a certain industry base. In the United States, as well as in other capitalist countries, individual firms may create or dominate a community economically. In these “company towns,” employment, the local tax base, and property values all depend on the activities of the firm. The company may even influence the selection of public officials. Companies in effect “own” the town, as opposed to the reverse (Gelb and Svejnar, 1990). Such dynamics between town and firms can create social tension. In Chapter 3, I describe how this tension manifests itself into sour labor relations in the Pennsylvania steel towns in the United States. These cases where companies essentially control the towns in which they operate are the opposite of what I predict in community enterprises.

Chinese TVEs are often collectively owned by members of the community. Regional industrial development on a community basis reduces the risk of investment flight. According to Gelb and Svejnar, some communities that have suffered from departures of firms, or that recognize their vulnerability to important company decisions, have attempted to attract and develop industry on a community basis. Successful worker and community mobilizations of this type not only yield economic benefits, but also give the community greater control over local businesses. In unsuccessful cases, however, the community may actually be worse off (Gelb and Svejnar, 1990).

The Cultural Hypothesis

Chinese and Western styles and philosophies of management differ. Therefore, labor relations and management must be understood in their cultural and historical contexts. These
differences have often been influenced through economic development, historical experience, and ideology (Stewart and Stewart, 1996). Stewart and Stewart propose that the three schools of Classical Chinese thought (Confucius, Han Fei Zi, and Sun Zi) exert direct and indirect influences on the Chinese style of management and labor relations. The underlying assumption in Confucius’ Analects (Lun Yu) is that man is good by nature, and this concept of virtue pervades in Chinese human resource management (Stewart and Stewart, 1996). This notion of the virtuous man and the moral leader, for example, is rather different from Douglas McGregor’s Theory X and its subsequent prescription for labor management. Although Sun Zi (circa 5th Century B.C.) in his book Bing Fa (The Art of War), concentrated primarily on war tactics, an underlying philosophy of Sun Zi is that “invincibility depends upon ourselves.” Hence, discipline and training are important (Stewart and Stewart, 1996). This emphasis on training can have significant labor-market implications.

As one of the most long-standing and influential schools of Chinese thought, Confucius regards the family as the core unit in one’s social sphere. During the Chinese economic reforms of 1979, which broke up agricultural communes in favor of family land holdings, the old family-based values were reinforced. The end result of this change was that economic life was organized around family units (Redding, 1996). Coincidentally, families privately own a majority of the township and village enterprises in rural China. I therefore postulate that the TVEs would follow rather Confucian styles of business and labor management. The fundamental belief that people are good by nature would lead to more cooperative and horizontal styles of management. However, as TVEs themselves are rapidly undergoing institutional and management changes (e.g., TVEs are increasingly “going public”), management tactics and business philosophies may also evolve.
The Social Political Hypotheses

According to The Dynamics of Industrial Democracy, the social environment of a community has a deep and lasting effect on the climate and practice of labor relations in the community. Golden and Ruttenburg argued that the “dominant social influence” in a community “have a far greater effect on the state on industrial peace” than collective bargaining (discussed in Hoerr, 1988, p. 184).

Industrial relations and employment issues were an important area of propaganda in the founding of the New China in the mid-20th Century (Warner and Zhu, 2000):

In answer to the question, “What does socialism bring to people?” Qu (1950, p.34) claimed that the most important issue was the “right to work” (gongzuo quan) and “full employment” (quanmin jiuye). It was even written into the Constitution of the PRC (xianfa) (Article 42: PRC citizens have the right and responsibility to work). These rights were an essential part of the “social contract” made at the time in order to protect the rights of the “new Chinese Worker” (Korzec, 1992, p. 48).

As a socialist country, a labor-friendly ideology regarding work should prevail in China. However, under rapid economic reforms, it is interesting to note how political ideology succumbs to capitalist market pressures.

Cokemaking TVEs in Shanxi Province are located in rural areas, on former farmlands. Almost all of the plant workers are peasants who come from nearby villages, often the same ones from where plant managers and the managerial staff come (AGS Field Notes, 2001). Analysts Weitzman and Xu considered The Folk Theorem and suggested that the outcome of a repeated non-cooperative game played among sufficiently patient players may look as if it is the outcome of some cooperative process or some legally binding agreement to play cooperatively, or, it may not. It all depends upon an intangible expectation factor that might legitimately be identified with the history or culture of the group of players. … for each member of the group expects that every other member of the group will play
cooperatively, then the cooperative solution may become a self-reinforcing equilibrium. (Weitzman and Xu, 1994, p. 137)

If social interactions inside a TVE could be seen as repeated games, and workers and managers the players, then the pre-existence of long-term, persistent social ties constitutes the “history and culture” that sets up expectations. Based on such expectations, players have an incentive to participate cooperatively.

I speculate that all three forces (employment as political ideology, agrarian culture, and rural social networks) influence the degree of social solidarity in TVEs and translate into favorable management and labor-relations practices.

**The Work-Ethic Hypothesis**

Weber defines work ethics as “an obligation which the individual is supposed to feel and does feel towards the content of his professional activity, no matter [of] what it consists.” Hard work, diligence, and industriousness are then behavioral indicators and measurements of the work ethic (discussed in Levin and Yeung, 1996, p. 136).

Culture and historical experiences are sure to influence work ethics and people’s attitude towards work and management. In this light, Chinese societies have characteristically emphasized diligence and industriousness (Levin and Yeung, 1996).

**The Ownership Hypotheses**

Benson, Debroux, and Yuasa (2000) conducted case studies of 14 Shanghai firms to look at employment and work relations in companies under different ownership structures. Their study consisted of interviews with managers and union leaders and collection of company documents. They found that economic restructuring in China impacted the nature of the form of
labor management. Employment relations in the companies that they studied demonstrated differences from the Western Fordist approach. One salient difference is the nature of trade and labor unions. In China, the role of trade unions is to assist management in achieving a productive enterprise, and they do not partake in functions such as wage and benefits bargaining. They observed that Chinese enterprises are willing to install new technology to increase flexibility. They also discovered, however, that despite their willingness to empower their workforce, management created few opportunities to encourage workers to become more flexible and committed. They conclude that labor relations in their case studies were halfway between the old communist approach and the idealized form of Human-Resource Management (HRM). HRM is a western adaptation of a Japanese management philosophy that “nurturing people as a resource is a precondition to corporate success” (Chan, 2000, p. 43).

Chan’s (2000) field work also indicated that ownership structure is correlated with workplace relations. For Western joint ventures in China (which are often the bigger, more capital-intensive, and more high-tech companies), there has recently been an embrace of Japanese-influenced HRM. Her interviews in Northern Chinese joint-ventures revealed that management tried to put this management philosophy into practice in the hopes of maintaining a stable workforce and to keep up work incentives (Chan, 2000). On the other hand, she observed a different style of management among Asian joint ventures and indigenous private enterprises (which are often smaller, rural, family-run). The ownership of these enterprises suggests that the management has had little management experience, and little background in negotiation with trade unions (Chan, 2000). What Chan found were overwhelmingly authoritarian patterns of management, characterized by long work days, low pay, poor and unsafe working conditions, and low-skill, repetitive tasks.
**The Employment Hypothesis**

Political pressures exist in creating non-farm employment in rural communities. In fact, this is often claimed as a motive for community governments to develop TVEs (Jin and Qian, 1998). Reducing rural unemployment is of urgent policy concern, for labor cannot freely move from rural to urban areas. In the countryside, special relationships exist between local and regional governments. The special ties to local governments make TVEs better able to mobilize capital than private enterprises, thus they may bring in more capital investments, leading to more non-farm employment opportunities (Jin and Qian, 1998). According to Zhang and Ronnas (1996), private enterprises have much lower capital-labor ratios than SOEs and TVEs, and hence can provide even more employment opportunities for any given level of capital investment (Jin and Qian, 1998).

Jin and Qian (1998) empirically tested the relationship between ownership and employment in rural China, based on provincial data from 1986 to 1993. They found that the TVEs' share in rural enterprise employment had a positive effect on the share of rural non-farm employment in the total rural labor force, suggesting that TVEs are better at creating non-farm employment opportunities than private enterprises, despite private enterprises having lower capital-labor ratios. Jin and Qian explain their findings by suggesting that the lack of access to capital sufficiently hinders private enterprises' ability to generate non-farm employment. On the other hand, where capital is scarce and labor is abundant, the TVE effectively creates employment (Jin and Qian, 1998).

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1According to Vernon Henderson, restrictive internal migration policy (the Hukou system) has created a surplus of labor in agriculture and led to insufficient agglomeration of economic activity within both rural and urban areas. He recommends that for rural areas huge productivity gains could be achieved if the population was allowed to migrate to cities freely (Henderson, 2002).
Conclusion

Despite the universal agreement on the importance of work and employment, management theories and labor practices differ across regions, and are specific to cultural, historical, economic, and political settings. I have reviewed some of the theories and research findings by other analysts who took an interest in the subject matter, and present here some of the hypotheses that are salient when examining rural China’s transition from peasantry to industry. In Chapter 3, I present the case of the Monongahela steel region in the United States in the 1980s and look at how theories and hypotheses can be applied during a time of regional economic slump. In Chapter 5, I use the case of the TVE cokemaking sector in Shanxi Province, China, as a testing ground for the aforementioned theories and hypotheses in the context of a developing and transitional economy.
CHAPTER 3
PENNSYLVANIA STEEL INDUSTRY IN THE 1980s

To demonstrate how industrial labor relations influence firms’ flexibility in the face of market changes, I employ the experience of the Pennsylvania steel industry in the 1980s as a case study. I use the experience of the United States’ Monongahela Valley (Mon Valley) as a reference point from which to think about the development of China’s Shanxi Province. Generally regarded as a steel region, a substantial amount of cokemaking activities happened in Pennsylvania within the highly vertically integrated iron and steel industry. I therefore consider Pennsylvania and Shanxi Province to be comparable in terms of economic base, and in their respective roles in their countries’ overall industrialization.

Although early industrialization in the Pennsylvania region gave rise to strong labor voices (Sheppard, 1947), Hoerr (1988) attributed the rapid decline of its steel industry in the 1980s to “an obsolete and adversarial relationship between management and labor” that “made it impossible for the industry to adapt to shattering changes in the global economy” (Hoerr, 1998, cover). Because the metallurgical sector was the dominant industry in the region, hiring the majority of the workforce, the decline of the steel sector led to overall deterioration of the region’s economic and social fabric (Hoerr, 1988). I believe that the highly unionized steel labor force and their hostile relationship with the industries and employers affected the region’s economic competitiveness.

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2 A large part of this chapter appeared, with a slightly different focus, in the term paper titled “When the Better got Worse, Would the Worse get Better: Industrial Labor Relations and Pennsylvania’s Steel Region in the 1980s,” which was submitted to Professor Paul Osterman for his Urban Labor Markets and Policies class in the Fall of 2001, at MIT’s Department of Urban Studies and Planning.
Using secondary sources, I present a case study of the waning steel industry and communities and the role of labor in the regional economic demise. I first provide a background on the U.S. steel industry and describe the Mon Valley labor market between WWII and the 1980s, followed by an analysis of how the bustling steel region encountered severe troubles starting in the early 1980s. I focus specifically on the role of industrial relations in affecting the fate of the industry. I then describe the solutions and coping mechanisms that the workers and management in the steel industry developed in order to salvage its competitiveness. I proceed to discuss whether the worsening old-world labor-market norms and business practices in the Mon Valley steel sector did change for the better during the 1980s.

**Rationale**

The purpose of this case study is to examine ways in which labor relations play a role in the economic resilience of a region. I choose to look at the steel labor market in the Mon Valley during a period of economic difficulty and transition for various reasons. First, the Mon Valley had an interesting labor market where one industry served as the primary employer. This created a certain tenuous relationship between people in the community and industrialists. Second, the Pittsburgh steel area was the breeding ground for the labor movements in the United States, giving rise to some of the strongest and most powerful unions. Third, the U.S. steel workers have been among the most productive in the world. Although this should give them a competitive advantage internationally, as well as the power to bargain with the management, this power could both help and hurt them in the long run. Fourth, the decline of the steel industry in the 1980s greatly deteriorated the communities in the Mon Valley region in both economic and social terms. These communities had been intimately tied to the steel industry. As Hoerr (1988)
observed in the late 1980s, “The mill towns, once so alive with the heavy throb of industry, now
gave off the weak pulse of welfare and retirement communities. The degree of suffering caused
by lost jobs, mortgage foreclosures, suicides, broken marriages, and alcoholism was beyond
calculation” (Hoerr, 1988, p. 145). The Mon Valley case, then, serves as an intriguing example
of the symbiotic relationship between the economy, politics, and social welfare of a region.
Also, the fact that the Pittsburgh area suffered more than other steel regions in the country,
despite similar macroeconomic, political, and technology constraints makes targeting the labor
dimension of the steel industry particularly interesting. Finally, the Mon Valley serves as a good
reference point from which to look at and analyze industrialization and labor relations in Shanxi
Province, China, due to the similar economic bases of the two regions.

Background

In this section, I outline the backdrop against which industrialization and labor issues
came into being in the Monongahela (Mon) Valley region in Pennsylvania.

The U.S. Steel Industry

The U.S. Steel industry has been a dominant player in the global market, and the
Monongahela Valley has historically been the steel capital of the world. The industry reached its
peak in 1974 with more than $32.2 billion in sales. However, by 1998, the U.S. steel market was
only one-third of its size in 1974. Total steel production in the country dropped from 150.8
million tons in 1973 to 105 million tons in 1996 (Antonelli, 1998,
http://pittsburgh.bcentral.com/pittsburgh/stories/1998/03/16/focus1.html). An acute decline in
U.S. steel production took place between 1981 and 1982; the dwindling production level was
accompanied by a steady increase in imports of foreign steel (Figure 3.1). This trend has long-term implications. By 2001, the U.S. steel industry again fell into crisis. Many steel plants could no longer compete internationally and declared bankruptcy as a result of cheap foreign imports. The decline in steel production led to declines in the labor market. The 232,000 wage and salary jobs in the U.S. steel industry in 2001 was at half of its 1980 level (Bureau of Labor Statistics, 2001).

In Pennsylvania, the decline in steel employment was even more pronounced. The total number of employees in the Blast Furnace and Steel Mills sector (SIC 3312) in the United States dropped from 296 thousands in 1982 to 171 thousands in 1992 (42% decrease); during the same period, blast furnace and steel mill employment fell from 73 thousands to 35 thousands in Pennsylvania, meaning half of the steel workers lost their jobs within ten years. By the year 2000, there were a total of 63 thousand steel workers in the United States, among which nine thousand worked in Pennsylvania. Steel employment in Pennsylvania shrank by about 90% in the course of 20 years (U.S. Department of Commerce, 1983, 1993, 2002). Prior to the 1970s, steel in the United States had been traditionally produced in integrated mills, making steel from iron ore. Integrated mills enjoyed economies of scale.

Technological advances and demand for specialized steel products, however, encouraged the development of electric-powered mini-mills that use scrap metal for production. Small-sized mini-mills produced specialized steel products, e.g. rods and wires. Their process of production had cost advantages in raw materials and energy over the integrated mills (Rubinstein, 2001). Mini-mills rapidly proliferated towards the end of the 1970s. These mills were characteristically non-unionized, and enjoyed high output per man-hour, high-yielding incentive pay plans, and efficient work practices. Between the 1960s and 1982, the mini-mills' market share grew from

**Steel and Labor Market in The Monongahela Valley**

The Monongahela Valley in southwestern Pennsylvania was the U.S. steel capital, largely due to its proximity to coal reserves. The steel industry, which included operations in coal mining and cokemaking, was the predominant employer of manufacturing workers in the Mon Valley. Prior to the 1980s, the industry was an oligopoly dominated by eight major firms with integrated plants. The fate of the communities, then, was closely linked to the economic well-being of the steel industry.

The very nature of the Monongahela steel sector created an imperfect labor market. According to census data, in 1981, the steel industry accounted for about 7% of Pennsylvania’s total employment. The eight dominant steel firms had the power to collude and consolidate demand for steelworkers, creating downward pressures on employment and depressed wage rates. Moreover, having the power to collude made it beneficial for steel producers to handle labor relations in a monopolistic manner. The steel industry had an industry-wide bargaining setup, where the large companies crowded under U.S. Steel’s umbrella to protect themselves from being picked off by unions in single-firm strikes. In return, they permitted U.S. Steel (USS) to assume command in collective bargaining and to enforce the resulting uniformity in costs. This enabled USS to prevent its less efficient competitors from gaining advantages through lower labor costs and in some cases eliminated cost efficiencies at the smaller firms (Hoerr, 1988).

Work in coal-based industries is characterized by hard work and adverse conditions. The intense heat in the foundries, the heavy machinery and the demand on physical strength make
employment in the coal-based sectors dangerous and difficult. In such an environment, the work environment of the industries, labor rights, job security, safety, and decision-making power are of special policy and economic concerns. The Pennsylvania coal and steel region is regarded as the birthplace of organized labor. The American Federation of Labor (AFL) was founded in Allegheny County in 1881 (Hoerr, 1988). The Steelworkers Organizing Committee (SWOC) began in 1936 in Pittsburgh to organize the steel industry. SWOC eventually became the United Steelworkers of America (USWA) in 1942 (Hathaway, 1993). USWA broadened its jurisdiction to include allied ferrous and non-ferrous metals producing and fabricating industries (United Steelworkers of America, 2002). As a result of the strong union presence, workers in the area enjoyed higher wages, better benefits and more power than their counterparts in other parts of the United States and the world.

Census data between the late 1970s and the late 1990s show that U.S. steel workers have been increasingly productive over time. The “value added per production worker per hour” has risen steadily during the time span, whereas average hourly earnings have not changed much (Figure 3.2). In large part, the America steel workers’ productivity was associated with the use of state-of-the-art production machinery and automation technology. During the 1980s, USS raised productivity by closing down its older mills and laying off thousands of workers, leading to higher productivity among the mills that remained open (Hathaway, 1993). In 1977, the value-added per steel employee hour was $23 (nominal value), and rose to $60 by 1988 (U.S. Census Bureau, 1997). By 2000, U.S. steelworkers were the most productive among key steel-exporting countries. Labor productivity averaged 3.7 hours per short ton of steel, compared to 4.2 hours in Canada, and 19.8 hours in China (United Steel Workers of America, 2001b). All else being equal, however, Robert McKersie (12/12/2001) believes that steel workers had little incentive to
increase their productivity voluntarily. Because of the capital-intensive nature of the integrated steel industry, where the company’s assets are geographically set in place, worker unions have leverage over the management. Workers in the Mon Valley gained by resisting streamlining and productivity-increasing efforts. In addition, unions had no incentive to encourage productivity of workers, for increased productivity could potentially cost jobs in the industry.

A high level of antagonism dominated management-worker relations in the Mon Valley steel industry. Prior to the 1980s, managers in the Monongahela Valley industrial region mostly embraced Theory X as their management philosophy. This theory assumes that human beings dislike work, thus try to avoid it. The management response to such behavior should be the adoption of an authoritarian style of command. Under this philosophy of managing the workforce, rank and file workers had little say in management decisions, and simply followed the instructions and orders of their supervisors. This management style was further articulated in the big plants where management workers did not have to engage in dialogue. As a result, management had little reason to communicate with workers on the shop floor, thus made minimal effort to do so (Hoerr, 1988). This resulted in characteristically sour management-labor relations where management failed to win the trust of employers through words and action.

The 1980s was a tough time for U.S. integrated steelmakers, but the Mon Valley fared significantly worse in comparison with other steel regions. According to Antonelli (1998, http://pittsburgh.bcentral.com/pittsburgh/stories/1998/03/16/focus1.html), “Chicago, an area with even bigger steel ties at the time, made 668,000 tons in 1981 and 513,000 tons in 1983—only a 23 percent decline.” On the other hand, between 1981 and 1982, steel output in Pittsburgh fell by 53%, and 36% of the steel workforce in Mon Valley was laid off (Hoerr, 1988).
hypothesize that the adversarial labor relations in the region is one of the main culprits for its rapid economic degeneration.

**Getting Worse**

The steel industry in the Mon Valley faced a number of challenges in the early 1980s, which eventually led to changes in its labor and organizational practices. Some of these challenges were external shocks, such as increased foreign competition, stringent enforcement of environmental regulations, proliferation of mini-mills, and decreased demand. Yet others were inherent problems and management mistakes within the integrated mills. These included market myopia, organizational rigidity, and adverse labor relations. These factors, both independently and in combination, led to the eventual decline of the Mon Valley steel sector, as it had been known, in the 1980s.

**Foreign Competition**

U.S. steel unions were partly responsible initially for steel consumers turning towards foreign steel. After the steelworkers’ 1959 strike, imports of steel to the United States more than doubled from the previous year. Moreover, the back-log caused by the strike led to an artificially high demand, followed by a glut in the industry where producers were forced to lay off workers and deactivate old furnaces. Because foreign suppliers often demanded long-term contracts, imports surged and then stayed high throughout the 1960s (Hoerr, 1988). According to Rubinstein (2001, p. 3), “Starting in the 1970s, the large integrated U.S. steel producers were at a competitive disadvantage in terms of both cost and quality when compared with foreign competition, particularly from Japan.” Foreign imports gained the upper-hand over U.S. steel
production through early adoption of energy-efficient and labor-saving processes (Hathaway, 1993). At the same time, there were also incidences of dumping and government aid to foreign steel producers, creating an unfair playing field for U.S. steel (Hathaway, 1993). The combination of rising costs and uncertainty of domestic production and increasingly competitive foreign industries resulted in growing levels of foreign steel imports to the United States. (Figure 3.1)

Environmental Regulations

U.S. environmental regulations imposed a sizeable cost on the steel industry. The more polluting processes of steel production are cokemaking and iron-making. These processes emit polluting gases and harmful particulates into the atmosphere (Polenske and McMichael, forthcoming). In integrated steel plants that embody the cokemaking and iron-making components of production, companies have to bear the high costs of complying with environmental regulations. Environmental legislation challenged the steel industry to develop cleaner and more efficient production processes than before, yet at the same time competition from substitute materials forced steelmakers to invest in cost-saving and quality-enhancing technologies (U.S. EPA, 1995). In the face of this challenge, however, firms often looked to the most economically beneficial solution instead of those that were labor-friendly. This was done even though management often used job security and plant operation as an excuse to gain leeway on regulation compliance (Hathaway, 1993).
**Mini-Mills**

The mini-mills were a growing threat to the traditional integrated plants for they could produce steel more cheaply and more cleanly than the integrated mills. Mini-mills are non-unionized and they use scrap metal in electric-arc furnaces for producing steel (instead of the traditional blast furnaces that use coke and iron ore as inputs), making their production process cleaner and more energy-efficient. As the federal air-quality regulations grew stricter, the mini-mills enjoyed an increasing competitive edge in the steel market (Antonelli, 1998). Furthermore, the electric-arc furnace technology that allowed for comparatively small-scale production of steel products moved the production of steel away from traditional steel-producing regions to all parts of the United States. Steel production no longer had to be concentrated geographically. There was no longer a need nor advantage to having a steel region.

**Market Demand**

Since the early 1970s, the demand for steel has dropped, partially due to the energy crisis. To save on energy costs, auto companies looked for ways to make lighter and more fuel-efficient cars. Cars became smaller, and plastics and fiber glass substituted for steel in the auto industry (Hathaway, 1993). The development of other lighter metals and plastics as steel substitutes also played a role in the dampening demand for steel by other products (Antonelli, 1998). In addition, the general U.S economy was in recession in the early 1980s. The unemployment rate reached 10.1% in October of 1982, an all-time high since WWII (Lieber, 1995).
Market Myopia

Hoerr believes that the steel companies relied too much on history and mistakenly believed that the downturn in the market in the early 1980s was merely cyclical and would eventually turn up for the better. Companies also failed to modernize to keep abreast of technological improvements in the industry. This failure spurred employee fears about job security and eroded management credibility (Hoerr, 1988). Labor relations thus deteriorated.

Organizational Rigidity

Rigidity in the corporate and organizational structures of the steel industry hindered its long-term competitiveness. Work rules in the "old world" U.S. steel industry were tailored to a stable market that emphasized the promotion of labor peace. Such a system of organization was characterized by "narrowly defined jobs, individual incentives, standardized procedures, strong managerial controls, and extreme specialization" (Rubinstein, 2001, p. 4). Steel-mill jobs were narrowly defined. Laborers were interested in categorizing jobs as narrowly as possible to (1) prevent bosses from exercising personal biases in assigning duties to people, and (2) maintain the level of the workforce (Hoerr, 1988). Unfortunately, this inflexible set-up hindered the competitiveness of companies in the long run in two ways. First, firms were not responsive to changes, as they could not easily adjust employment levels (limited factor mobility in production), nor could they re-shuffle workers and responsibilities to respond to changes in market conditions. Second, pigeon-holing employees to narrowly defined work posts made them ill-prepared for industrial restructuring and the eventual de-industrialization of the region. As workers became highly specialized in a single-industry, single-product environment, they had a difficult time transitioning into alternative roles in other industries.
Vertical integration, in particular, limited the flexibility of the steel sector in times of external shocks. U.S. steel mills had historically been vertically integrated, from the sourcing of fuels and raw materials to final products and channels of distribution. Fully-integrated steel mills consist of coke ovens, blast furnaces, steel furnaces, and rolling and finishing mills. A high degree of vertical integration throughout the supply chain means companies cannot react quickly to changes in the input markets as well as output demand. Being vertically integrated also limits the companies' ability to make certain choices, for the heavy sunk costs of integrated plants make assets fixed in place. McKersie believes that this particular attribute allowed unions to gain the upper-hand in labor negotiations (McKersie, 12/12/2001). Moreover, the integrated steel mills had been around for a long time, and old production facilities with aging technologies became increasingly inefficient.

Labor Relations

The fact that industrial workers communities in the Mon Valley were heavily reliant on one sector is important for understanding the nature of the industrial-labor relations, as well as the social and economic demise of the region. The Pittsburgh region has a history of resistance to elite control. According to Hathaway, the workers in the Pittsburgh region have “a history of militant resistance to the plans the economic elite and their political collaborators made for them.” The steel industry in Pittsburgh is to be remembered as the home of the bloody Homestead Steel strike of 1892 and the related attempt to assassinate steel magnate Henry Frick (Hathaway, 1993).

With pressure from the union, the steel industry concentrated on maintaining employment levels and wages, but paid little attention to investment, technology, organizational
improvement, and global competitiveness. Early decisions to shy away from adoption of advanced technologies eventually led to the close-down of plants in the 1980s. At the same time, the management elites in the Mon Valley had in time grown distant from the rank and file workers in terms of power, resources, and lifestyles. Steel mills generate a lot of noise, smoke, and air pollution. Whereas mill workers usually lived in dilapidated housing near the mills, the management elite moved to the suburbs. As a result, land-use and living patterns in the Monongahela Valley became class-segregated (Ingham, 1991). The physical separation between the workers and their supervisors created barriers for communication and mutual understanding. Despite minor successes in exercising moral suasion over the middle classes and some workers, the management elite in Pittsburgh had for the most part lost contact with the masses of unskilled, immigrant, and black workers in their mills and in the city at large. (Ingham, 1991)

The Role of Unions

In time, the United Steel Workers of America (USWA) merged with other unions in the basic metals and industrial sectors. In addition to obtaining wage and benefit increases for workers, these organizations organize labor and advocate for cost-of-living adjustments, improved pensions, healthcare, and employment protections. These issues span from health and safety to civil rights. The range of services provided by the USWA today include banks and credit unions, food distribution, insurance, travel and entertainment, transportation, social security, healthcare, childcare, and utilities. The USWA cover regions throughout the United States and Canada (USWA, 2002). While unionization was supposed to better the welfare of workers, the Mon Valley experience indicates that the powerful union and its relationship vis a vis the management played a role in the dreadful demise of the steel sector in the 1980s. The
United Steelworkers had a successful history of organizing strikes to enable workers to stand up for their rights and fairer work standards prior to the 1980s. This represented a step forward for the working class. On the flip side, steel companies lost $3-$5 million per day during the strikes, in addition to $100 million to shut down and restart their plant operation. Companies lost some of their key managerial employees and drove consumers towards foreign imports (Hoerr, 1988). These costs diminished the competitiveness of the Mon Valley steel sector.

The union’s search for a delicate balance between sustaining the workers’ voice and coping with changing economic realities remains a challenge. The union’s ability to handle the challenge, in turn, determines the welfare of workers, the performance of the industry, and the relationship between labor and management. Hoerr (1988) believed that when organized labor became incorporated into the economic system after World War II, it lost interest in what was happening in the work process:

The union presence remained strong on the factory floor in the person of the steward or grievance committeeman. But he or she fulfilled a narrow quasi-legal function of filling grievances when members complained about management decisions such as disciplinary actions or job assignments. The union took virtually no part or responsibility in making the workplace more productive, or in gaining a direct voice for its members in operations. … Achieving labor peace and preserving management control were perceived to be the key labor problems that industrial relations executives were expected to solve. The union had no concern for competitiveness and rejected the idea that it bore any responsibility for seeing that the plant operated efficiently. The old saying that “management manages the business and the union ‘grieves’” concisely described the explicit, and artificial, division of responsibilities (Hoerr, 1998, p. 34).

According to Hoerr, unions got co-opted into being a sated, watchful entity. The result was a “rigid, legalistic industrial relations system that, in a sense, ignored the outside world. It tended to alienate workers and could not adjust readily to changes in technology, geopolitics, and international trade” (Hoerr, 1988, p. 35). Within this framework, there was little development of trust and open communication between the management and workers.
Uniformity in wages was one of the steel union’s original goals. Obtaining common wages for each of the hundreds of different mill jobs across the entire industry was both a moral and political strategy to “take wages out of competition.” Morally, taking wages out of competition suggested that workers should not be treated like another raw-material input cost. Politically, having the same wage rate across the board prevented workers from thinking that the union was bargaining harder for one group of workers over others (Hoerr, 1988). The rigid format of negotiation and decision-making hindered the possibility for reform. In the 1970s, these steelmaking companies could not change under U.S. Steel’s leadership, but they were afraid to “get out from under the umbrella and dance alone under the rain drops.” (Hoerr, 1988, p. 97) Wage uniformity partially accounted for the rigidity that precipitated the decline of the steel sector in the 1980s.

Unions were also resistant to changes in the organizational structure of the companies. When the steel companies brought in college graduates as supervisors, the unions viewed it as a destruction of a partnership. Workers believed that foremen would no longer listen to the concerns of rank and file workers, so that the gap between management and labor further widened (Hoerr, 1988). Such resistance made it difficult to attract the best and brightest to the industry. As a result the industry could not attract personnel of the highest caliber, and it did not move towards modern technology and management processes as quickly as it could, making it ill-prepared for market challenges (McKersie, 12/12/2001).

Unionized labor in the steel industry became so powerful in securing their demands and expanding the benefits and definition of rights and responsibilities that their role eventually became one that was of substantial legalistic nitpicking. According to Hoerr, by the 1980s the contracts had become so complicated that each new round of bargaining produced a virtual
library of booklets that were jointly published and distributed to steelworkers by the union and the companies (Hoerr, 1988).

Apart from economic consequences, the decline of steel in the Mon Valley had sizeable social consequences. Socially, deindustrialization struck Mon Valley communities by challenging the fabric of their societies, the institutions of local government, religion, and family (Hathaway, 1993). Out of desperation, residents from these dire communities turned to crime. In 1985, some 93% of all serious crimes in Mon Valley were committed by unemployed people, most of whom were first-time offenders. Suicides and divorce rates also reached all-time highs during this period (Hathaway, 1993).

**Bettering the “Worse”**

Threatened by bankruptcy and unemployment, steel management and workers engaged in creative tactics to help save the industry. Among these efforts were changes in bargaining strategies, the forming of Labor-Management Participation Teams, and the establishment of new roles and functions for the unions. In this section, I will briefly describe some of the coping mechanisms that the industry came up with during the mid-1980s. For the steelmakers, survival instincts led them to labor issues. Antonelli pointed out that because strikes were both highly possible and costly to the industry, employers tried hard to avert them. On the other hand, downsizing and shut-downs signaled to the workers that in order to survive, they might have to cooperate more with businesses (Antonelli, 1998).
Concession Bargaining

During the hay-days of the steel industry, companies could afford to agree to the workers' demand without compromising their competitiveness. The slump in the industry that began in the summer of 1981, however, prompted workers to engage in a process of “concession bargaining” with their employers. If workers were unwilling to “give” in terms of wage concessions and give-backs, then employers would threaten to close down the plants to force wage reduction (Hoerr, 1988). In some cases, steel companies agreed to remit cost-savings to workers after their plants returned to profitability, before they paid dividends to their stockholders (Hoerr, 1988).

Faced with concession-bargaining requests, the labor unions developed a policy that involved three elements: (1) standards for determining whether a company really needed financial help, and how much; (2) a procedure for membership ratification of the terms of a concession agreement; and (3) a “system of trade-offs” that the unions would demand in return for cutting wages and benefits (Hoerr, 1988).

Change in Wage and Compensation Plans

Unions accepted variable pay plans based on company performance as a substitute for fixed rises in wages. The growing diversity in plant size, products, and technology choices resulted in different cost structures for the steel companies. Seeing that steel companies faced increasingly different cost structures and markets, and were engaged in increasingly diverse businesses, union leaders realized that the USWA could no longer maintain uniform wages and benefits across companies (Hoerr, 1988). As a supplier of labor, unions would adjust its labor
costs on a company-by-company basis in order to maintain employment and to keep companies afloat. Furthermore, the unions agreed to freezes on cost-of-living adjustments (Hoerr, 1988).

The buy-in to the Employee Stock Ownership Plans (ESOPs) represented a fundamental change in the union’s bargaining policy. According to Hoerr, steel workers traditionally rejected employee ownership because the concept went against the confrontational philosophy of U.S. trade unionism. The fear was that by owning stock in the company, employees would identify closely with the management. In fact, the USW believed that the management devised ESOP as a plan to manipulate workers. Lieber also pointed out that organized labor had come to regard the stock market as a casino, and would prefer payment of wages and benefits in fixed dollar amounts rather than in securities (Lieber, 1993). Many companies substituted ESOPs for pension plans and awarded stocks as workers retired. As steel mills failed in the 1980s as a result of lack of investment and weakening borrowing power by the companies, the USW felt that employees themselves had to provide investment capital in order to preserve jobs (Hoerr, 1988).

Change in Attitude

The 1980s marked a change in attitude for the union (McKersie, 12/12/2001). Instead of banking on the clout that they had historically had over the management, the unions tried to work through problems of the industry. The leaders of the union were willing to move towards a constructive relationship with the management. The Labor-Management Participation Teams were a result of this new attitude.
On the management side, survival instincts led them to labor issues. Antonelli (1998) pointed out that because strikes were both highly possible and costly to the industry, employers tried hard to avert them.

*Labor-Management Participation Teams (LMPTs)*

At a glance, the Labor-Management Participation Teams (LMPTs) closely resemble the high-performance work systems (Osterman, 2000) that are eminent in the “new world” (post-1980s) labor markets. LMPTs were negotiated results between the United Steelworkers and the steel industry and were attempts to improve worker productivity and product quality. They were based on the idea that workers knew best about the operation of the plant. Union and steel plants had set up these teams at the departmental level in the plant. Teams, composed of 8-10 hourly workers and a foreman, met once a week on company time to discuss ways of reducing costs, eliminating production waste, raising product quality, and improving health and safety conditions, among other things (Hoerr, 1998). Plants established LMPTs on a voluntary and experimental basis. At the minimum, these LMPTs created large psychological rewards for the workers, for they enabled them to speak out, to criticize poor management techniques and to have a voice in matters that vitally affected them (Hoerr, 1998). The participatory nature of LMPTs could potentially alter the concept of industrial management.

According to Rubinstein’s analysis, the LMPTs produced mixed results. During the 1980s, LMPTs resulted in millions of dollars of savings and solved substantial problems in safety, quality and productivity in the steel industry. Hundreds of LMPTs were formed and the United Steelworkers of America even used its national education facility to hold regular LMPT
training sessions. In order to further capture the gains of LMPT, the USWA strengthened the process by contract in the 1990s (Rubinstein, 2001).

Despite their local success at the few mills where they were implemented, LMPTs did not fit with the steel companies’ management style and philosophy and were therefore not widely implemented. Middle management, for example, felt threatened by the employee-participation efforts. “Hourly employee participation conjured up images of blue-collar ‘team leaders’ functioning without managers, slashing the middle management class” (Lieber, 1993, p. 243). Then USWA President Lynn Williams felt that the LMPT process was “more open to manipulation by management than arrangements more firmly founded in the agreement, open to being held hostage and dependent on the good will of the players rather than being firmly grounded in the collective bargaining agreement” (Rubinstein, 2001, p. 9).

Change in Union Nature

In the face of social problems that prevailed throughout the steel mill communities, the unions had to take on new roles and functions. They changed from being political, advocacy entities to performing social welfare functions. In the late 1980s, for example, the building that had previously housed Homestead’s local 1397 of the United Steelworkers of America was converted into a recovery center to support people overcoming drug and alcohol problems (Hathaway, 1983). When employment in the Mon Valley reached an all-time high since the Depression in 1982, the unions set up the Mon Valley Unemployment Committee (MVUC) to provide aid to laid-off workers. Staffed by volunteers, the committee set up food banks and set up a hotline for contributions to churches and individuals. It provided advice to workers on collecting employment compensation, on applying for welfare and foodstamps, and also on
retraining classes. In addition, the MVUC lobbied for legislation to help the jobless, and organized rallies and demonstrations of various kinds (Hoerr, 1988).

**Did the Worse Get Better?**

In retrospect, did the union’s attempts at saving the steel industry work? Or, what were the implications of the union’s shift in tactic and behavior? In the following paragraphs, I discuss the events in the 1980s in Mon Valley and the mark they left on labor management and organization, on the Mon Valley regional economy, and on unions. In addition, as the U.S. steel industry enters another crisis at the beginning of the 21st Century and as the steel industry globalizes, it is interesting to see what lessons history serves. Lastly, I propose looking at the current Shanxi Province coke region in the light of the Mon Valley experiences in the 1980s.

*The Legacy of Labor-Management Participation Teams*

The introduction of the Cooperative Partnership Agreement (CPA) into steel company negotiations in the 1990s followed the idea of joint labor-management planning, decision-making and problem-solving that the LMPTs had started. But unlike the LMPTs, the CPA was included in the contracting language throughout the industry. Because research has shown benefits to designing participation efforts as a voluntary process, some management leaders perceived the shift from LMPTs to the mandated CPAs as a move towards inflexibility. At the same time, the CPAs also expanded the LMPT efforts, which had focused on the shop floor, to a more strategic-level involvement in decision-making (Rubinstein, 2001).
The Monongahela Valley Regional Economy

The fall of steel in the 1980s also marked the beginning of the de-industrialization process that prevailed throughout other industrial regions in the United States. Employment in the industrial sector never recovered after the drop in the 1980s. A national survey showed that less than half of the 219,000 Mon Valley primary metal workers who lost their jobs between 1979 and 1983 found work by January of 1984. 18% of those who did find work were only employed part-time (Hathaway, 1993).

The Mon Valley’s past as a steel capital qualitatively influenced its growth as a region. Today, steel is only the 10th largest employer in Pennsylvania (U.S. Department of Labor, 2001). The decreasing significance of steel employment left the Mon Valley region with a two-tiered labor market: one in the high-technology sector, and the other in the services sector. Although steel mills are no longer the leading employer in the region, some jobs in the Mon Valley are off-springs of the region’s bustling industrial past. These high-technology sectors include engineering, research institutions, robotics, and computer science. These components of the economy developed only after the downturn in the steel industry. The employment in the high-technology sector increased by 25% between 1982 and 1985. By the mid-1980s, high-tech sectors employed more people than steel (Hathaway, 1993). The increase in high-tech, high-skill employment, however, did not benefit the steel workers who lost their jobs.

The shift in the economic base in the Mon Valley from industrial manufacturing to high-technology and service industries widened income inequality. Between 1980 and 1986, industrial employment in the Pittsburgh region decreased by 44%, while employment in its service sector rose by more than 25%. However, according to the Mellon Economic Update,
these service jobs tended to be lower-skilled and lower-paid, not fully replacing the high-wage manufacturing jobs (Hathaway, 1993).

Finally, the de-industrialization of the Mon Valley represented a window of employment opportunity for women. Because of the nature of work in coal-based industries, employees had always been all men. When men brought home the income, women were often confined to the roles of being wives and daughters of mine workers or steelworkers. The closing of mines and steel-plants and the growth of the service-sector economy expanded female participation in the labor force. As women's work and wages increased, they contributed more to the households' incomes, thus potentially raising their status and power within the households (Dublin, 1998).

The Role, Function, and Philosophy of Unions

In general, the 1980s “proved to be a decade marked by decline and retrenchment for labor unions in the United States” (Laslett, 1996). The steel crisis in the 1980s uncovered some of the inefficiencies and rigidities introduced by labor unions and their antagonistic tendencies. Faced with high unemployment and waning morale among workers and communities, unions lost bargaining power. Yet, the time of difficulty was also a window of opportunity for unions to demonstrate the strength of the participative process, and to revolutionize the system of labor management and labor relations. Steel unions in the 1980s changed the industry, as well as themselves, when faced with devastating external shocks.

From their experience in the 1980s, labor saw that their wages and benefits had to be tied in to the rest of the system, namely with the steel industry, steel consumers, and overall regional employment. The idea of concession bargaining suggested that unions were willing to take a step back in order that the industry could move forward. Unions took back their demands on
mandatory cost-of-living adjustments, and uniform wages, for which they had traditionally steadfastly stood.

The nature and function of the union changed during this period, from a merely political, workers’ advocacy entity to serving social needs. The MVUC was an example of these efforts. Although the function and nature of the union have changed a bit, the committee was “inciting activism on the part of rank and file who had never taken part in union activities” (Hoerr, 1988, p. 620).

The unions in the steel industry had been successful in harnessing bargaining power and securing jobs and benefits for their workers prior to the 1980s. Even during times of high unemployment and economic difficulties, the union was effective in lobbying in Congress for economic stimulation, retraining, and trade barriers (Hoerr, 1988). What the union had not foreseen, however, was the need to deal with the more social aspects associated with workers’ life, such as psychological problems and stress associated with job loss, and the need to develop new jobs, new markets, and new skills.

The experience in the 1980s strengthened the participatory process. Despite union’s resistance to taking stock in company ownership, unions and management have increasingly cooperated to perform functions that had previously been in the exclusive domain of the management. After the 1980s, unions and companies are seen to decide jointly on plant design and location, job redesign, training, and retraining (Hoerr, 1988). Workers, in fact, have gained a voice in not only determining their wages, but also their occupational environment, work processes, and skills training. Hathaway (1993) saw the experience as a reminder of how ordinary citizens can affect the “rules of the game”, and the dangers of excluding working people from society’s decision-making process. “The creative response of groups of workers to the
destruction of the Mon Valley can offer workers in other times and other places both inspiration and a chance to learn from mistakes” (Hathaway, 1993, p. 222).

In retrospect, who won the battle after the steel crisis of the 1980s? If unions were indeed instrumental in saving the steel industry and steel mill communities, then membership should rise. If labor relations did, in fact, improve, then we should continue to observe a resilient and robust steel industry today. From the union’s side, union membership in Allegheny dropped from 30% of the work force to 21% in the 1970s, to less than 17% in the 1980s (Hoerr, 1988). By the end of 2001, of the United Steelworkers of America’s 650,000 workers, only 25% were steelworkers, and the rest were employed in the health-care, rubber, chemicals and other industries (Matthews, 2001). The market share of integrated steel mills continued to decline after the 1980. In 2000, electric-arc furnaces used in mini-mills accounted for 48% of North American steel production (Berry, 2000).

The year 2001 once again saw the U.S. steel industry amidst tough times. Concurrent with a dwindling world economy, the global demand for U.S. steel shrank, pushing U.S. steel prices to an all-time low since the 1980s. A Wall Street Journal article calls it the worst time in the United Steelworkers of America’s 59-year history (Matthews, 2001). In the face of cheap foreign imports, U.S. steel companies experience problems of overcapacity. U.S. companies are again at the verge of bankruptcy, and talks of consolidation and mergers persist. Labor issues once again came to the forefront. This time, workers retirement is a key issue. For example, would the government or the companies bear the burden of millions of dollars in health care costs for retired workers? (Kapner, 2001) Unions and industry lobby for import tariffs in order to save U.S. jobs and production. According to one calculation, however, levying a 20% tariff on steel imports would eventually cost U.S. consumers in terms of higher prices for steel
products. These amount to Americans paying $326,000 for each steel worker retained, making trade protectionism a very expensive way of preserving employment (Kahn, 2001). Tying back to the central theme of this study, I believe it is both interesting and necessary to examine the different trade-offs between employment, labor relations, and the welfare of a regional economy.

Conclusion

I have described some of the reasons for the downturn in the Monongahela Valley steel industry in the 1980s, and the industry’s response. Some of the changes during this period did alter things in the industry for the better and represented a step forward for industrial labor relations. In this case study I have focused on the relation between hostile labor-management relations and the economic demise of the Mon Valley region in the 1980s.

It is unlikely that business would have gone on as usual had labor relations been more amicable and workers were cooperative and flexible. Other factors, such as electric-arc furnace technology, the global energy crisis, the increase in foreign steel production, etc., all affected the U.S. integrated steel industry negatively. Rather than suggesting a possible alternative to the way events played out in the Mon Valley in the 1980s, I attempt to tell the story from the labor perspective to show how it is an area that deserves legitimate concern. Although labor does not constitute the only explanation, or solution, for the deindustrialization and social deterioration of the Mon Valley story, I have shown that it did play a part. Social relations matter in the well running of a regional economy.

Regional economic experiences also in turn affect the dynamics of labor relations and practices. Evidence suggests that the as a collective voice for workers, U.S. steel unions have lost some of their original purposes and vigor after the experience. In conclusion, there are many
reasons why the Mon Valley experienced such a dramatic economic and social demise. Being able to identify some of these reasons and to see why they came into being, and how they could be handled, should provide important insights for the industries’ and regions’ smooth sailing in the future.

*Why So Bad?*

The 1980s witnessed a decline in the U.S. steel sector, and in this chapter I focused on the Mon Valley experience. There are various reasons for the rapid demise of the regional economy. Some of the reasons were external, such as the overall recession in the U.S. economy, and increased competition. Yet other reasons were inherent in the running and organization of the steel industry. In this chapter, I have emphasized on the role of unions during this period of economic difficulty, and looked at how the 1980s marked a turning point in the nature and functioning of both the unions and the labor market in the Monongahela Valley steel sector.

The difficulty in the steel industry in the 1980s, to a large extent, could be attributed to the downturn in the overall U.S. economy. With the recession, rising unemployment, and a climate of deregulation, the steel industry was by no means the only ill-fated one. The intriguing thing about the Mon Valley during this period, however, was that its steel sector declined at a much more rapid rate than its counterparts in other parts of the United States. The national economy and policy environment could not explain the entire story. Bad management was also largely responsible for the rapid deterioration of the industry. As described earlier, organizational rigidity, myopic decision-making, and untactful management of the labor force rendered U.S. steel companies uncompetitive in the face of external shocks.
Did the rise of the steel sector in the Monongahela Valley represent an undesirable model for regional growth and planning? The Mon Valley mill towns proliferated along with the industrial boom in the late 1890s. Hoerr’s sentiment was that more attention was being paid to the machines than to the people who operated them. The idea of growth and progress dominated and over-rode everything (Hoerr, 1988). Trying to protect their labor supply, steel companies actively discouraged other industries from entering the region, making the Mon Valley a single-industry region. Steel communities essentially became part of the steel corporations. Hoerr noted that in the 1960s, the Mon Valley was characterized by decentralization, subdivision, and separation that made regional development programs hard to implement (Hoerr, 1988). Class-segregated land use and living patterns in the Monongahela Valley created barriers for communication and mutual understanding between workers and the management. Company towns can also elicit social problems. Lieber (1995) believes that in a company-dominated town, residents often sense a lack of control over their lives, which can breed fatalism. Hoerr’s account concurred with Lieber’s. He sensed that the authoritarian and rigid leadership in the steel sector induced fear, repression, discrimination and parochialism, and produced social instability in the Mon Valley. Workers were trapped in a social environment that cast them into accustomed routines and union-management relations that they dared not upset (Hoerr, 1988).

Ultimately, bad relations played an important part in the Mon Valley’s rapid decline. Why were relations so bad? Besides the fundamental value clashes between labor and management and the general confrontational attitude that persisted in American industries, Hoerr suggested that relations in the Mon Valley had a bad start:

The Mon Valley mill towns did not spring full grown from the iron breast of Andrew Carnegie. Most of them had a rural antecedent, though it might not have been more than a country crossroads with a few houses. Upon this pre-revolutionary civilization, with its century-old political divisions and rural characteristics, was imposed a harsh factory
economy. Out of the inevitable clash grew a new way of life with social and political patterns that would have a profound effect on relations between workmen and bosses in the steel mills (Hoerr, 1988, p. 162).

From the very beginning, then, there was hostility between the capitalists and the proletariat, whereby the workers felt exploited and their lives disrupted. The main problem with bad relations and hatred is that they can lead to irrational behavior. Although management and labor could have cooperated to solve their problems, often they fought for the sake of fighting. Hoerr said that when plants were at the edge of being closed down and workers knew that they were not going back to work, they still wanted to vote against concession at meetings just so they could hurt the companies (Hoerr, 1988). As things changed for the worse in the Mon Valley in the early 1980s, workers saw injustice in their situation. Steelworkers resented the fact that while they and their forefathers had built the steel industry and made fortunes for the corporate management, that same management elite had cast them abruptly aside when troubles hit, and moved on to make profits elsewhere (Hathaway, 1993). The chasm between labor and management thus deepened at a time when cooperation and solidarity were needed.

Lessons Learned

What can we learn from the Mon Valley experience? Can labor and management get along? Has the nature of labor relations in the steel industry, in fact, changed for the better? A number of factors influence the nature and dynamics of labor-management relations. The ways these factors are handled will affect labor relations, hence industrial robustness, in the future.

First and foremost, leadership is important. From the Mon Valley experience, the willingness of leaders from both the union and the management sides to begin working and negotiating with one another was an important milestone in setting the tone for cooperation. From the labor side, the beginning of concession bargaining could be viewed as a step-back, for
labor was seen as handing over power to the management. However, because the United Auto Workers (UAW) had granted wage relief to Ford earlier, leaders within the steel unions saw concession bargaining as an acceptable tactic where labor could take a step back without losing its purpose. United Steelworkers’ morale and membership actually declined when McBride (USWA chairman) was sick and took a leave of absence (Hoerr, 1988). In the current steel crisis, we may see a different labor-management dynamic as a function of leadership. Leo Gerard, the current president of the United Steelworkers, is resistant to pleas for extreme financial give-backs from the unions to the steelmakers. He maintains that the union is not to blame for the steel industry’s precarious state. He believes that the workers have done everything right and cannot be blamed for the integrated steel mills’ problem (Mathews, 2001).

Second, the notion of power is tricky. Most people, at least in the West, seek power; yet power can potentially lead to exploitation, complacency, and inflexibility. Unions seek to empower workers against powerful, exploitative employers. In the case of the steel industry in the late 1970s, the unions were so powerful that their might hindered organizational flexibility and almost destroyed the competitiveness of the industry. Once power is seized, it is often difficult to let go. As demonstrated earlier, the failure of some of the cooperative efforts, e.g., the Labor-Management Participation Teams, was attributed to the management’s unwillingness to share decision-making power with rank-and-file workers.

The national and regional political climates also play a role in fostering a cooperative atmosphere. During the Carter Administration, the secretaries of labor and commerce co-chaired the Steel Tripartite Committee (STC). Based on the concept of gaining consensus among management, labor, and government, the STC was a promising solution to the industry’s problems (Hoerr, 1988). Under a political climate that favored minimal government intervention
in industries, however, the committee was disbanded during the Reagan administration. Although there are channels through which government, industry, and labor can cooperate and contribute positively to the economic process, political ideology can make or break the implementation. In the current steel crisis, the U.S. government may actually erect trade barriers and bail out the domestic steel industry as a strategic move of minimizing reliance on foreign steel imports. According to the Wall Street Journal, it also makes political sense as a substantial number of steel-mill retirees and current employees live in key election states. Their job security and pensions will directly determine their votes (Mathews, 2001).

Trust and goodwill between labor and management are double-edged swords. In the United States, unions have an incentive to isolate themselves from the management and even to cultivate certain adversarial relations in order to build solidarity among the workers. At the same time, the constant distrust and ill-will between workers and management decreased organizational flexibility and rendered the industry vulnerable to external shocks. From the union's side, they perceived the management as having ulterior motives. From the companies' perspective, they saw workers as merely brainless attachments to machines, always wanting more benefits for themselves. Plant managers did not think that unions were there to help. Rather they perceived unions as being there to stymie progress (Hoerr, 1988). In essence, the organized labor movement in the 1980s operated in a society that both disliked unions and agreed to their rights and purposes of existence (Hoerr, 1988).

Social capital plays a vital role in labor relations. In the Monongahela Valley’s case, it affected labor's ability to organize. With the Monongahela Valley being a steel region, workers share the dual identities of being both residents of a community and colleagues in the workplace. Social capital and solidarity are therefore abundant among the people in the region and allow
unions to target issues that touch and affect all. This makes organization relatively easy. With new technology comes decentralization of production, as in the case of the mini-mills. People separate their communities in which they live from their work place—a disconnect exists between the “working life” and the “community life”; therefore the fervor for solidarity and gaining a collective voice subsides.

In order for management-labor relations in the steel industry, and perhaps in the United States in general, to progress, a shift in mind-set about the nature of negotiations has to occur. Labor and management in the Monongahela steel industry had historically engaged in zero-sum bargaining where one side’s gain always suggested the other’s loss. Within this bargaining framework, the unions saw companies’ profits and profitability as fixed, and their goal was to maximize their share of benefits by imposing high demands on the management (wanting a large piece of the pie). What the unions and management failed to recognize, until too late, was that they could work together to increase the profitability that the companies are capable of achieving (enlarging the entire pie for everybody). Yet, the mutual gains approach to labor negotiations is only applicable if labor and management operate in the same value system. Historically, the struggles between labor and management have represented a clash in values. The employers have often thought of workers as an input in the production process, whereas unions were essentially trying to fight against the idea. They believed in the voice, and the rights, and the power for self-determination on the part of the workers. Until this clash in values can be reconciled, there is little room for resolution for the more tangible economic issues. How can values be reconciled, and do we necessarily want to compromise the ideological underpinning of unionism so that business can run as usual?
CHAPTER 4

CHINESE TOWNSHIP AND VILLAGE ENTERPRISES

I propose that the institutions and environments in which Chinese Township and Village Enterprises (TVEs) operate provide opportunities for positive labor relations. Favorable relations among industrial workers and management, in turn, favor regional competitiveness. But from where do good relations arise? Among factors like technology constraints, legal institutions, industry structure, and market conditions is the presence and importance of social capital. In this chapter, I outline the historical background and current institutional environments of the TVEs, and I show the unique backdrop that provides the TVEs a favorable window of opportunity for positive labor relations. Specifically, these are the communal nature of the enterprises and the deep-seeded culture of social networks (guanxi) in rural China. In explaining the functioning of TVEs, I introduce the influence of social structures into decisions that can be deemed purely “economic.” I conclude with hypotheses on how the TVEs are going to affect industrial relations in today’s rural Chinese industrial sector.

What are TVEs?

The Township and Village Enterprises (TVE) is a twenty-year-old economic institution in rural China. The TVEs are products of the Chinese economic reforms in the late 1970s that have contributed significantly to China’s recent economic performance. By their official definition, TVEs are collectively-owned businesses that are in townships or villages. This means all residents in the township or village that establishes the TVE share ownership of it (Weitzman and Xu, 1994, p. 128). In this section, I describe the historical, political, and economic
backdrops against which this entity came about, and the evolution of the nature of these enterprises in recent years.

**Historical Background**

The growth of TVEs in the countryside was enabled, first and foremost, by the increased productivity in the Chinese agricultural sector. Cao et al. (1998) attributed the growth of the Chinese economy solely to the declining share of agriculture workers in the economy. Agricultural reforms in the countryside resulted in savings. The TVE thus arose as a vehicle to channel savings into the industrial sectors in the rural areas.

Enterprise reform in China encouraged the development of these non-state, small-scale township and village enterprise firms. These economic entities had their origin in Mao’s programs of rural industrialization. As early as 1958, Mao talked of people’s communes running rural industries (Unger and Cui, 1994). After 1984, they were encouraged by local governments. TVEs’ share of gross industrial output rose from 10% in 1980 to 45% in 1993; also in the latter year, together with urban industrial “collectives” and fully private firms, they accounted for a majority (57%) of industrial production (Cable, 1996). On the other hand, between 1978 and 1993, the SOE share of national industrial output dropped from 78% to 43% (Jin and Qian, 1998). National policy makers in China view the development of TVEs and the private sector in the interior of China as one way to narrow the income gap between interior and coastal regions (IFC, 2000). In the mid-1990s, TVEs employed half of China’s surplus rural laborers (130 million). In 1998, TVE output accounted for 28% of China’s gross domestic product (GDP) (ChinaOnline, 2000).
Nature and Ownership Structure of TVEs

Township and Village Enterprises vary in nature, size, and scope. The official definition of a TVE has been constantly changing since the inception of this economic entity in the late 1970s. According to the IFC 2000 report, private (and semi-private) businesses in the countryside first emerged in the trade and services sector (where large state-owned enterprises had limited involvement) for historical and ideological reasons, but eventually expanded into other industries (IFC, 2000).

The rural commune was the predecessor of the TVE. Up until 1984, TVEs were community-owned. Local governments controlled the operation of the TVEs, and these enterprises paid (and still pay) lower taxes than a private enterprise. After further economic reforms in 1984, the terms of approval and supervision of TVEs varied greatly across regions (Cao et al., 1998).

The ownership definition of TVEs has varied over time. Currently, there are three broad categories of TVEs. The first kind is completely privately owned, but they often register as being collectively owned to avoid legal discrimination; the second kind receives approval from local authorities in return for a commitment to make an annual contribution to the village funds; the third kind is tightly controlled by local authorities.

The definitions and assignments of property rights among TVEs are equally varied. According to Cable (1996), leaders of TVEs in the early 1980s were the entrepreneurs; by the late 1980s, these leaders were able to hire professional managers to supervise and run the day-to-day operations of the facilities. Some of the managers were not assigned property rights to the firm, and they did not share in the economic performance of the firm. In contrast, there were examples of managers who have become much more autonomous, being assigned increasingly
more of the firm’s property rights. Three types of contracting arrangements current exist within TVEs:

- **Fixed-wage contract**—leaders manage the firm, everyone gets paid a salary
- **Profit-sharing contract**—local leaders and managers form business partnerships
- **Fixed-payment contract**—managers pay a lump sum to the local government in return for more comprehensive use rights over the firm’s business operations. Managers also must perform virtually all external and internal management duties.

Due to the vagueness surrounding the changing nature in ownership and control of the TVEs, official statistics on TVEs now cover all non-state enterprises in the rural sector (Cao et al., 1998). Table 4.1 provides an overview of how official statistics have treated the definition of TVEs from the years 1996 to 1998, as well as the working definitions of TVEs for the Shanxi Cokemaking sector case study (Chapter 5).

**Table 4.1: TVE Definitions**

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<td>✓</td>
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<td>Village owned</td>
<td>✓</td>
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<tr>
<td>Collectively/ Joint owned</td>
<td>✓</td>
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<td>Privately owned</td>
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<td>Self/ Individually owned</td>
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<td>Rent Lease owned</td>
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The blurry definitions of TVEs reflect the ambiguity surrounding their property and control rights. These ambiguities not only show up in classifications and definitions of these enterprises, but also in their operation (e.g., decisions over daily operations, decision over the disposition of profits, and the rule of tax collection) (Li, 1996).
In reality, many registered “collectively-owned” firms are, in fact, privately owned. The collective ownership status enables firms “to evade the prohibition of private firms and ideological harassment by the government” (IFC, 2000, p. 20). Having registered as a TVE also brings in government involvement in the firm, which can be helpful in securing access to land, assets, finance, and markets. In the context of imperfect markets, the ambiguities over property rights allows TVEs the buffer of government intervention. Through sharing rights to the enterprise, the local government can help to facilitate transactions when market mechanisms fail (Li, 1996). Local governments also often subsidize collectives and TVEs, through tax breaks, favorable contracts, or loans on preferential terms (IFC, 2000).

The IFC 2000 report indicates that the private sector in China demonstrates a high degree of informality. Many of these enterprises “possess only the vaguest of property rights, ownership structures, corporate governance mechanisms, financial records, and rights to market access. They are often part of complex groups of companies, spanning many different activities” (IFC, 2000, p. vii). In the rural areas, large private enterprises were able to register as collective enterprises. Also, firms could obtain a “collective license” by paying a state or collective unit, or a local government organization (IFC, 2000). A benefit of these particularly ambiguous institutional arrangements is that entrepreneurs and enterprises enjoy the flexibility to respond to changing government policies, taxes, and regulations (IFC, 2000).

The economic performance of Chinese TVEs and private enterprises questions the necessity of well-defined property rights in a functional capitalist economy. The fact that communities and local governments share property ownership and corporate governance responsibilities with the TVE entrepreneurs gives these enterprises an informal, ambiguous character. This character, in turn, makes TVEs efficient and competitive given the imperfect
market institutions in a transitional economy (Li, 1995). Analysts (Weitzman and Xu, 1994, Li, 1996) point out, however, that the ambiguity of property rights and hybrid forms of ownership result in perverse incentives, hence may become a drain on resources. Managers and entrepreneurs have to concentrate on rent-seeking rather than economic returns, forcing collusion between local governments and firms (IFC, 2000). I was unable to determine to what extent the managers’ preoccupation with rent-seeking impacts their management mentalities and their relationship with rank-and-file workers.

The Emergence of Rural Chinese Labor Markets

As a socialist county where government ownership has been the norm, the idea of a labor market had been alien to the Chinese economy prior to the economic reforms in the late 1970s. Labor planning had long been part of China’s overall state plan, and central and local government labor offices controlled employment and job assignments (Bian, 1994). For a long time, there was no flow of labor between urban and rural China, hence no flow of labor between industrial (urban) and agricultural (rural) sectors. It was not until the introduction of the production responsibility system (PRS) in agriculture and price reforms that the industrial and agricultural sectors co-existed in China’s countryside (Xin, 1990). As economic activities in the countryside had traditionally been confined to the agricultural sector, the absence of a concept of labor markets is even more pronounced.

The Idea of Chinese Labor Markets

According to Chan (2000), economic reforms in China introduced a labor market that had not existed previously.
Due to the socialist nature of the State-owned firms, internal labor markets did not exist. Before 1978 in China, jobs were guaranteed through government assignments, and employers were not allowed to lay off workers. Wages and benefits were centrally regulated, salary increases were determined by state budgets, and career promotions followed ranking systems imposed by central planners. It was only during the economic reforms of the 1980s that internal labor markets were being used for the distribution of material incentives and promotions (Bian, 1994, p. 5).

A contract system replaced the old lifetime employment system, and the previous eight-grade wage system was abolished. The decentralization of control and ownership increased conflicts between workers and the management (Chan, 2000).

*The State-Owned Enterprise*

SOEs have historically provided Chinese workers (predominantly urban) with life-time employment. The Work Unit (danwei) provides workers and their families with comprehensive social services ranging from housing to education to healthcare. The danwei went beyond being an economic and industrial structure and became a political and psychological structure in which workers’ and managers’ identities were embedded (Warner, 2000). The prevalence of the danwei system insulated Chinese workers from a labor market. According to Warner (2000), it “evoked a mindset linked to a command economy, apparently immune from market pressures and fully buttressed by a set of supportive Party-led bodies” (Warner, 2000, p. 4).

SOEs have not been the most economically efficient. These “socialist” firms operate under bureaucratic, rather than market, coordination. The government controls and allocates resources for production, assigns quotas on outputs, and sets prices. Government subsidies are guaranteed to maintain profitability of all enterprises (Bian, 1994). Compared to the Township and Village Enterprises, SOEs, in general, have higher labor costs. Based on cross-sectional analysis of China’s 27 major industrial sectors, Mahdavi (2001) found that agricultural Non-
TVEs (i.e., SOEs) have direct and indirect labor inputs (measured by the number of workers) almost 3 times as great as the TVE agricultural sector. TVEs also have less wage expenses. In 1995, the national average wage for TVE employees was 4,512 Renminbi (RMB) per year, compared to 6,747 RMB in SOEs. Furthermore, TVE employers have lower social-welfare costs of labor. In 1999, SOEs on average paid 490 RMB per worker per year in social welfare costs, compared to 149 RMB/worker/year among TVEs. (Mahdavi, 2001) At the same time, SOEs are more heavily invested in assets than are TVEs. (Chinese Statistical Yearbook, 2001) This and the relative labor-cost savings by TVEs make SOEs less capital-efficient than their TVE counterparts. According to Mahdavi’s (2001) analysis of 1996 data, Non-TVEs/ SOEs have value-added per employee that is twice as great as that among TVEs, but capital expenditures per employee is almost three times as much in SOEs. Table 4.2 outlines some of the differences in labor insurance and non-wage benefits among various ownership structures. Although these data were based on urban firms in Tianjin, the table offers a relatively good snapshot of the comparisons in labor practices between China’s state and non-state enterprises.

Cao et al. (1998) argue that workers employed in SOEs would not choose to shift to non-state enterprises, because the SOEs offer more generous packages of wages and social protection. The TVEs tap into rather different labor pools than those of the SOEs. TVE employees are often first-generation industrial workers who have traditionally worked in agriculture. Farmers had never enjoyed the levels of benefits and social protection of those employed in SOEs. Therefore, they have been willing to shift out of low-income agricultural activities to the relatively higher-paying jobs in the TVEs (Cao, 1998).
Table 4.2: LABOR INSURANCE AND BENEFITS FOR WORKERS IN CHINESE NON-STATE SECTORS, 1994:

<table>
<thead>
<tr>
<th>Item</th>
<th>Collectives by Municipal Bureau</th>
<th>Collectives by Urban District or Rural County</th>
<th>Collectives by Sub-district Government</th>
<th>Collectives by Township Government</th>
<th>Village, Cooperative, and Private Sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- employees</td>
<td>- Same as state</td>
<td>- Same as state</td>
<td>- up to 75%</td>
<td>- 50%-70% limited</td>
<td>- none</td>
</tr>
<tr>
<td>- dependents</td>
<td>- Up to 50%</td>
<td>- Up to 50%</td>
<td>- limited</td>
<td>- limited</td>
<td>- none</td>
</tr>
<tr>
<td>Pension as % of salary</td>
<td>60%-90%</td>
<td>60%-90%</td>
<td>60% fixed</td>
<td>Vary, up to 60%</td>
<td>none</td>
</tr>
<tr>
<td>Injury, Disability, and death benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- injury</td>
<td>- Same as state</td>
<td>- Same as state</td>
<td>-1-time limited payment</td>
<td>-1-time limited payment</td>
<td>- ask from government</td>
</tr>
<tr>
<td>- disability</td>
<td>- Same as state</td>
<td>- Same as state</td>
<td>- limited for funeral</td>
<td>- limited for funeral</td>
<td>- none</td>
</tr>
<tr>
<td>- death</td>
<td>- limited for funeral</td>
<td>- limited for funeral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits for women workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 3-month maternity leave</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- 50% of salary</td>
<td>- none</td>
</tr>
<tr>
<td>- longer maternity leave</td>
<td>- same as state</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
</tr>
<tr>
<td>- infant nursery allowance</td>
<td>- limited amount</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
</tr>
<tr>
<td>- day-care allowance</td>
<td>- limited amount</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
<td>- none</td>
</tr>
<tr>
<td>Holiday, sick leave and leave of absence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- holiday</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- 50% pay</td>
<td>- none</td>
</tr>
<tr>
<td>- sick leave</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- no pay</td>
<td>- limited pay</td>
<td>- none</td>
</tr>
<tr>
<td>- leave of absence</td>
<td>- same as state</td>
<td>- same as state</td>
<td>- no pay</td>
<td>- no pay</td>
<td>- none</td>
</tr>
<tr>
<td>Other benefits</td>
<td>Limited</td>
<td>Limited</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: (1) “Regulations of Wage and Benefits for Tianjin Financial and Trade Industries.” (2) “Jinghai County Grain Bureau Documents on Wages and Benefits.” (3) Bian’s interviews with officials of given collective organizations. Taken from Table 8.1 in Bian, 1994 (pp. 184-185).
The Township and Village Enterprise Labor Market

Workers play a critical role in fostering the competitiveness of township and village enterprises. According to Byrd and Lin (1990), “lower overall labor costs and apparently superior labor motivation and effort have been principal sources of TVPs' [Township, Village, and Private Enterprises] competitive advantage in relation to state enterprises. Wages of TVP employees are much more closely tied to individual and enterprise performance than are those of most state workers.” (Byrd and Lin, 1990, p. 275) In addition to the lower wages and benefits at TVEs compared to SOEs, workers in TVEs tend to work harder, for longer hours, and in more difficult conditions (Byrd and Lin, 1990). This is possibly due to workers seeing a close tie between their efforts, the enterprises’ business performance, and their incomes. This type of work ethics and job performance is similar to the Z-firm model observed in Japanese companies, where the notion life-time employment and company-provided social services allowed firms to pay lower wages compared to their Western counterparts. I argue that because TVE workers enjoy job security through community membership, they are likely to accept short-term long wages and reduced benefits in exchange for the long-term prosperity of the enterprise.

Gelb (1990) considers Township, Village and Private enterprises (TVPs) an “in-between” sector due to their part public, part communal, and part private nature. Furthermore TVEs operate both in free markets and planned ones for inputs and outputs. These “in-between” characteristics of TVPs/ TVEs have labor-market implications. Gelb hypothesizes the following models of ownership and management for enterprises:

- The public-enterprise model: labor is allocated to firms rather than hired in the market, and workers have great job security;
- The communal model: firms are owned and controlled by a community, and employees are members of the community. Job security is safeguarded by through community membership. Workers are hired through voluntary applications and informal community ties;
• The Taylorist model: labor is a variable factor of production, work patterns are simplified, and workers are replaceable;

• The Japanese Z-firm model: workers identify strongly with their firms, resulting in low turnover rates, close ties between the firms’ profitability and payments to labor. Labor mobility is low, and family members and partners often make up a substantial proportion of the work force. (Gelb, 1990)

Using data from a Worker Survey Questionnaire, Gelb found that TVPs are closer to the communal or Z-firm model than to the other models. In addition, he also noticed that workers were relatively content, despite a lack of say in the running of their firms. He attributes workers’ satisfaction to the newness of the TVPs and the fact that these were first-generation industrial workers. He questions how attitudes and labor relations would evolve as the TVP sector matures (Gelb, 1990).

Given the differences in what SOEs and TVEs have to offer their workers (in terms of job security and social benefits), an analyst may logically hypothesize that private firms would have difficulty in hiring and keeping skilled workers, provided that labor is mobile. The IFC 2000 survey of four urban industrial regions found that in Beijing and Chengdu, university graduates prefer foreign companies, joint ventures, and government institutions over Chinese private firms, despite the private firms paying higher wages than the SOEs (IFC, 2000).

The Emergence of Labor Issues

In a Maoist planned economy, worker power is limited and the concept of private rights is absent. Labor is considered a national resource, not just another commodity (Bian, 1994) In order to foster stability, central planning prohibits job turnover between workplaces (Davis, 1990). Worker unions within SOEs have been subject to the Communist party, and they are designed for the government and management to control, rather than serve, workers (Walker, 1986). Chinese economic textbooks define labor as a common asset of the nation, and not an
individual’s private property. Hence, labor is a national resource, and not something that is arbitrated and traded in a market. (Tang 1990)

Currently, the organization of labor in China is weak. The so-called unions in China resemble bureaucracies more so than advocates for labor rights and welfare. The All-China Federation of Trade Unions (ACFTU), whose membership is intended to be universal, remains the only voice of workers. The Chinese Communist Party is careful to ensure that the trade/labor union comes under tighter surveillance than other bureaucracies (Chan, 2000). “Under the government’s prodding, and itself in search of a role, the union has taken on new roles as a welfare relief agency and as an employment agency. But within the trade union, some wonder whether the union should get involved in relief work or whether it should instead concentrate on protecting workers’ rights.” (Chan, 2000, p. 52) The Enterprise Law of 1988 ensures built-in mechanisms of checks and balances between management and workers in state and collective enterprises. Workers’ interests are represented by a democratically elected Staff and Workers’ Representative Congress (SWRC). In practice, however, the managers’ power in these SWRCs far outweighs the workers’ (Chan, 2000). Despite the unions’ struggles to increase its power and usefulness, its presence is predominantly in the urban regions. According to my literature search, organized labor is absent from the rural landscape.

Traditionally, labor issues have not raised much attention in the countryside. With farmers participating in a predominantly commune system, there was little room for conflicts that are characteristic of employer-employee relationships. For those participating in non-farm activities, SOEs and their largely subsidized work units (danwei) created life-time employment and comprehensive benefits to workers and their families (e.g., housing, education, healthcare, and pension). Due to the paternal and provisional nature of the state-employer, labor treatment
and relations were not contested subjects—at least not openly. Recent trends indicate that TVEs are increasingly diverging from the small-scale cooperative model towards professional management and public ownership. This proliferation of private and/or semi-private TVEs with generally scarce labor provisions means different sets of labor issues may surface. Within the SOEs, the joint stockholding arrangement leads Chan (2000) to believe that workers’ relationships with the management would change. The nature of the change, however, is yet to be seen (Chan, 2000).

According to Cable (1996), the poor conditions and insecurity associated with work in the TVEs could become more widespread. In reality, the position is much more complex. Despite authoritarian government, there are many reports from China of labor unrest as workers organize, sometimes violently, to resist low pay and deteriorating conditions, particularly poor safety. This evidence suggests that a vast labor supply does not necessarily translate into a low-wage, cooperative, and productive workforce. There are certainly costs in training, accommodating, and motivating unskilled workers with rural background to become productive employees (Cable, 1996). These factors must be considered when planning and evaluating the future of China’s labor-intensive manufacturing sectors.

**Characteristics of the Rural Chinese Labor Market and Social Capital**

In China, the rural industrial labor market is different from the urban industrial labor market in various ways. For example, due to the short history of industrial presence in the Chinese countryside, many of the employees at TVEs are first-generation industrial workers. Having endured the tough agrarian livelihood, first-generation industrial workers are thus tolerant of the often more difficult working conditions of industrial TVEs. Economic reforms
have to a certain extent deepened the divide between urban and rural China. Currently, the rural population face different sets of institutions and policies from their urban counterparts. For instance, the one-child policy does not apply to rural families, and rural residents have a *hukou* (account) system that limits their labor mobility. In addition to differences in economic and institutional norms, the agrarian, rural populations share a social and cultural identity. What appears ironic is that despite lower wages, longer hours, and more difficult working conditions, authors have found positive labor relations within TVEs (Byrd and Lin, 1990). In the following section, I will focus on the idea of social capital, its special role in rural Chinese communities, and its implications on employment and industry. I believe that the abundance of social capital within TVEs is the essence of how these economic entities enjoy robust and harmonious labor relations.

*Why Look at Social Capital in the Economy?*

Economic research that looks at management-employee relationships often does so without considering the broader cultural, historical contexts and the embeddedness of social relations. I argue that the successful economic performance of the TVEs relies precisely on its unique socio-cultural setting. Granovetter (1985, pp. 486-487) pointed out, “in economic models, this treatment of social relations has the paradoxical effect of preserving atomized decision making even when decisions are seen to involve more than one individual.” Any effective analysis of human action thus requires a shift in the analytical framework towards embeddedness. (Granovetter, 1985) Granovetter saw the neglect of social structure as one of the biggest shortcomings in conventional analyses of economic life. Thus, I propose looking at industrial labor relations in the context of social ties and relationships embedded in the TVEs.
Some sociologists and anthropologists suggest that instead of seeing the economy in a separate, differentiated sphere where transactions were no longer defined by social or kinship obligations, social relations could become “an epiphenomena of the market” (Granovetter, 1985, p. 482). Robert Putnam, too, observed a neglect of social capital issues in economic development theory. He questions where are the efforts to encourage the formation of social capital (Putnam, 1993). By understanding the relationship between social networks and organizational competitiveness, managers, institution reformists and policymakers can design industrial policies and management tactics that best harvest the valuable capital embedded within TVEs or other economic agents, or they can encourage creating social capital in their organizations.

What Is Social Capital?

Social capital refers to the surplus reaped from investing in social relations (Lin et al., 2001). Lin et al. explained four reasons why embedded resources in social networks can enhance outcomes of actions. First, it facilitates flow of information regarding opportunities and choices that are otherwise unavailable; second, its social ties can exert influence on the agents who play a critical role in decision making that affects the actor; third, social capital serves as certification of the individual’s social credentials; and fourth, social relations can reinforce identity and recognition (Lin et al., 2001). Burt’s (1993) definition of social capital differentiates it from financial and human capital in two ways: parties jointly own the social capital that is embedded in the relations to which they are attached; and no one player has exclusive ownership rights to it. The controversy over the definition of social capital centers around whether it is a collective or an individual good. According to Lin (2001b, p. 9), most scholars in fact believe
that it is both. “Institutionalized social relations with embedded resources are expected to benefit both the collective and the individuals in the collective. At the group level, social capital represents some aggregation of valued resources (such as economic, political, cultural, or social as in social connections) or members interacting as a network or networks.” They define social capital as:

resources embedded in a social structure which are accessed and/or mobilized in purposive actions. By this definition, the notion of social capital contains three ingredients: resources embedded in a social structure; accessibility to such social resources by individuals; and use or mobilization of such social resources by individuals in purposive actions. Thus conceived, social capital contains three elements intersecting structure and action: the structural (embeddedness), opportunity (accessibility) and action-oriented (use) aspects (Lin, 2001b, p. 12).

Social capital exists, albeit in different forms and at different levels, in all societies and communities. In the rest of this chapter, I examine the specific forms and functions of social capital in Chinese towns and villages and how it sets the stage for labor relations in TVEs.

Guanxi: Social Capital with Chinese Characteristics

The Chinese concept of guanxi (social connections) closely resembles the types of social capital described above. Defined as networks of personal relations, some analysts consider guanxi to be built-in cultural mechanisms to ensure universalistic rationality for the management of economic and bureaucratic life (King, 1991). Chinese scholars (e.g., Yan, 1996) have studied guanxi extensively. However, Yan (1996) pointed out that there was a lack of research on networks in rural communities. Yan’s research of guanxi networks in Xiajia village in Heilongjiang Province indicated that guanxi networks in the rural context encompass all kinds of personal relations, including siblings, affiliates, and co-workers. These networks serve
economic, social support, and political functions. Economically, village residents rely heavily on their *guanxi* for personal loans and mutual assistance and cooperation in different forms. Socially, *guanxi* networks serve as a system of social support in times of life crises by providing basic needs (e.g., food and shelter) and also by providing moral support (Yan, 1996). Yan’s research found that *guanxi* networks formed the local moral world in which villagers lived. A description of rural Chinese society by Fel and Hofer indicates that:

> To live in a peasant society means to live in a specific type of production and reproduction system: household- and village-based, seasonal and labor-intensive agricultural activity, tightly bounded and densely knit networks, impositions from outside and above, and under-developed communication with the outside. The underdeveloped communication and dense, bounded infrastructure meant that household- and kinship-orientedness were key elements. Hence personal networks were relatively strong, homogeneous, and local. (discussed in Sik and Wellman, 1999, p. 248)

The networks described above are congruent with Yan’s research findings.

*Guanxi* serves practical, instrumental purposes in Chinese labor markets. Due to the lack of labor-market intermediaries (e.g., job-placement agencies), social networks become a crucial means through which people learn of, and obtain access to, job opportunities (Bian, 1994). Furthermore, I propose that it “glues” managers and workers together into a harmonious industrial organizational fabric.

Because many of the TVEs operate in a cultural and social context similar to the one Yan described, it is logical that workers would want to continue to maintain their *guanxi* for economic, social support, and political reasons. Furthermore, many of the workers had been poor farmers before they participated in industrial activities. Espinoza (1999) pointed out that the poor in underdeveloped areas often rely on social relationships as a survival strategy. Social relations form the backbone of a community, upon which people depend for various resources.
For this reason, TVE workers have been pre-conditioned to maintain positive social relationships in the workplace.

_TVEs and Social Capital_

TVEs rely heavily on social capital in their operation. On an individual level, workers and members of the management staff have incentives to preserve the social capital embedded within their ties and relations to each other. The sum of these ties and the “capital” embedded therein represent the collective social capital in the closed network that is the TVE plant. Social capital in TVEs satisfies all three aspects as pointed out by Lin et al. (2001). First, it is embedded as a result of the close ties and pre-existing relations among the worker/residents in the township or village. Second, the closed network that is the plant allows everyone within it access to the collective capital. Finally, I believe that workers and managers translate this capital into work organization and industrial labor practices that favor regional competitiveness. The social value system in which TVE managers and workers interact allows TVEs the flexibility to expand and contract the labor force quickly in response to market conditions, suppress the cost of labor, and to enter and/or exit the market freely.

In the new post-socialist market economies, the primary example of extensive (beyond family) social cooperation in daily life is found in the workplace. The entrepreneurial efforts that arise from existing communes and cooperatives can be particularly effective in post-socialist societies in preserving “lumps” of social and organizational capital (Stiglitz, 1999). TVEs reap the social networks and social capital embedded in rural Chinese agrarian communities. On the management level, it is characteristic of TVE contracts to rely on social ties in transactions. Analysts such as Weitzman and Xu (1994) consider it to be the primary reason why TVEs are
popular. Friendship is often seen as a requisite for doing business, and managers often try to develop a friendship before doing business with the other party (Weitzman and Xu, 1994). Social networks and capital, then, are considered to be part of the enterprise’s overall assets, for they directly impact firms’ ability to compete in the market place. “Given the importance of long term relationships and connections, when there are disputes many TVEs would rather settle privately instead of relying on the courts because they care more about keeping long-term connections, even though doing so may hurt their business in the short run” (Weitzman and Xu, 1994, p. 141). The premium attached to establishing long-term relationships and positive social ties makes the negotiation process more likely to happen and to work effectively.

Byrd and Gelb (1990) found that township and village enterprises (referred to as Township, Village and Private Enterprises, TVPs) demonstrated “communal characteristics that distinguish them from most firms in advanced market economies.” (Byrd and Gelb, 1990, p. 24) Despite a lack of worker participation in the management of the plants, workers felt vested in the companies as they saw a close relationship between their incomes and the firm and community economic performance. Moreover, workers experienced a high level of job security in these TVPs and stayed in the firms for relatively long periods of time (Byrd and Gelb, 1990). Social capital could be the glue that holds TVEs/TVPs together.

Conclusion

As a new-found institution with an ambiguous ownership structure and ill-defined property rights, Township and Village Enterprises represent an opportunity for employment and industry in China’s countryside. Social capital, in the form of guanxi, serves as an institution that governs social, industrial, managerial, and business relationships.
If TVEs could reap the *guanxi* embedded within rural communities to their benefit, they could potentially establish new norms for positive and constructive management-labor relations. Beneficial use of *guanxi* includes trusting and cooperative negotiation processes and incentives to invest in long-term gains such as employee training. I am proposing that the nature and structure of TVEs should encourage non-adversarial labor-management relations. Management has the incentive to preserve the solidarity and good relations with all employees in order to maintain their reputation and standing. There is an argument among network scholars of whether reputation is a network asset (Lin, 2001b). Reputation presumably “reinforces the legitimacy of certain actors who claim their resources and positions and, at the same time, offers incentives for further social exchanges and unequal transactions among actors, enhancing their social capital. It also enhances the group or collective reputation, and thus solidarity and the building of public capital” (Lin, 2001a, p. 158). In this theoretical context, management-labor relations are the future social exchanges. Fostering good relations then becomes the management’s tactic in securing social capital that would allow for “future transactions,” mainly the cooperation and help from workers in times of economic difficulties. This quality in management-labor relationship is particularly valuable, for TVEs largely compete on their flexibility and efficiency. Maintaining good reputation and preserving social solidarity allows the management to bank on flexibility and competitiveness.

Based on the above review theories and research, I hypothesize the following characteristics in the labor market and labor practices in China’s TVEs:

1. Favorable industrial-labor relations characterized by harmonious relationships and closeness between management and workers;
2. An emphasis on workers’ welfare, such as employment security, health and safety, etc.;
3. Workers taking ownership of their company and feeling vested in its performance.
Chapter 5 is a case study of the cokemaking sector in Shanxi Province, China, where I test some of these hypotheses.
CHAPTER 5

SHANXI COKEMAKING TOWNSHIP AND VILLAGE ENTERPRISES

This case study looks into how Township and Village Enterprises (TVEs) are changing in ownership, scope, and labor practices. The information presented, and the accompanying analyses, shed light on questions regarding the future of TVEs as they evolve and grow beyond the control and jurisdiction of the entrepreneur, the family, or the village. For what should governments, firms, and laborers be preparing, based on the experiences of the following case study?

I begin by explaining why Shanxi Cokemaking TVEs deserve our attention when it comes to studying management-labor issues. Then, I describe the methodology for the case-study analyses. The analytical framework that I employ is comprised of multiple comparisons. First, I compare TVEs with Non-Township and Village Enterprises (NTVEs), or State-Owned Enterprises (SOEs) at the national level to gain an understanding of these enterprises in transition. Then, I compare employment and economic activities in Shanxi province with the rest of China to gain a further understanding of the regional economy. Next, I examine the cokemaking sector vis-a-vis other industries in Shanxi Province to uncover the characteristics of this particular industry. The information regarding the Shanxi Province cokemaking sector comes from four surveys conducted by members of the Alliance for Global Sustainability (AGS) China Cokemaking team between 1998 and 2001, as well as field visits and on-site interviews with plant managers in the summer of 2001. I maintain that although China can learn from the example of her Western, more developed, counterparts, U.S. enterprises and regions in other
countries—in various stages of development—may also gain helpful insights regarding labor relations from the ways of the Chinese TVEs.

**Rationale**

TVEs provide an interesting arena in which to study labor relations, for these evolving economic entities have management and industrial practices that are characteristically different from those in other Chinese firms that are state-owned, as well as being different from the traditional industrial firms in the West. I choose to focus on the cokemaking TVEs in Shanxi Province for three reasons. First, Deng Xiaoping’s economic reforms brought about an industrial boom in the countryside in Shanxi Province. Small-scale cokemaking TVEs, using indigenous technologies, proliferated in Shanxi Province’s countryside during this boom that took place in the 1980s. These TVEs continued to evolve and respond to economic, environmental, and technological challenges in the 1990s and the new millennium. Second, Shanxi Province forms an interesting comparison with the Pennsylvania case study described in Chapter 3. These two regions, being on opposite sides of the globe and having industrialized at different points in time, share similar natural resources and evolution in their industrial technologies. Shanxi Province and the Monongahela (Mon) Valley are both rich in coal, and both produce a substantial proportion, respectively, of Chinese and U.S. coke. The Mon Valley began as a concentration of coal towns, and eventually blossomed into the steel capital of the world. In the 1980s, the Mon valley was the center of U.S. steel production, dominated by large, integrated companies that produce coal, coke, iron, and steel. Today, truck-loads of coal and coke clog Shanxi Province’s highways and railways, and large and small coking plants dot the landscape of the countryside. As the coal, coke, and iron and steel markets globalize, the two
regions find themselves competing in the same markets (International Trade Administration, 2001). Although I have demonstrated that the intensely confrontational industrial labor relations that dominated the Pennsylvanian industrial labor market was associated with the region's economic demise in the 1980s, I propose that the labor-market setup in Shanxi Province offers a window of opportunity for something different. I hypothesize that the relations among employers and employees and the overall labor-market characteristics in Shanxi Province allow for a high level of flexibility that can sustain the region in times of rapid economic and technological changes. Lastly, my participation in the AGS China Cokemaking Project (AGS-MIT Award Number 005151-042), under the supervision of Professor Karen R. Polenske, has granted me the access to valuable data and insights into the cokemaking sector (SOEs and TVEs) in Shanxi Province.

**Shanxi Cokemaking TVEs—The Social Capital Perspective**

Cokemaking TVEs, with their unique form of ownership and institutional structure take advantage of the social networks and social capital embedded in rural Chinese agrarian communities. Originating from the commune system and having close ties with local governments, TVEs can "incubate and support entrepreneurial efforts" (Stiglitz, 1999, p. 9). Stiglitz suggested that in the new post-socialist market economies, the primary example of extensive (beyond family) social cooperation in daily life is found in the workplace, and that these entrepreneurial efforts (TVEs) that arise from existing communes and cooperatives may be particularly effective in post-socialist societies in preserving "lumps" of social and organizational capital (Stiglitz, 1999). On the management level, it is characteristic of TVE contracts to rely on social ties in transactions. Weitzman and Xu (1994) consider it to be the
primary reason why TVEs are popular. Friendship is often seen as a requisite for doing business, and managers often try to develop a friendship before doing business with the other party (Weitzman and Xu, 1994). Social networks and capital, then, are considered to be part of the enterprise’s overall assets. “Given the importance of long-term relationships and connections, when there are disputes, many TVEs would rather settle privately instead of relying on the courts because they care more about keeping long-term connections, even though doing so may hurt their business in the short run” (Weitzman and Xu, 1994, p. 141).

I suspect that the abundance of social capital makes TVEs more resilient, thus allowing them flexibility and freedom on labor issues. In the case study that follows, I test this hypothesis based on firm-level labor practices, such as employee training, employee health and safety, and job prospects and security.

Methodology

I examine the Shanxi Cokemaking sector based on different sources of information. For the comparison between Chinese TVEs and SOEs, and the overall socio-economic and regional differences between Shanxi Province and other parts of China, I consult statistical yearbooks published by state and regional statistical authorities in China from the mid-1990s to 2001. These published statistics provide an overall picture of the nature, structure, and institutional evolution of the TVEs. I use data collected from the AGS China Cokemaking Project surveys on SOEs and TVEs (1998-2001) to examine the business and labor practices within this specific industry. These surveys contain questions on the enterprises’ employment practices, ownership structure, and supply-chain relationships. Members of the AGS China Cokemaking Project Team administered the two TVE surveys in 1998 and 2000, sampling 158 and 164 plants,
respectively (31 of which are common to both surveys). The matched sample of 31 common plants is particularly helpful for looking at the changes and evolution of practices within cokemaking enterprises in the course of three years. (Map 1) They also conducted two SOE surveys in 1999 and 2001, with information of 8 plants being gathered in the earlier year, and 49 in the later. Finally, I visited 6 cokemaking enterprises (under various ownership structures) in Shanxi Province in the summer of 2001 with the AGS China Cokemaking team. I observed plant operations and met with managers and workers. The AGS China Cokemaking Project team interviewed plant managers regarding their plant’s history and evolution, business outlook, technology choice, and health and safety/employment practices. I include quotes and excerpts from the managers’ narratives in this case study.

Township and Village Enterprises (TVEs) Versus Non Township and Village Enterprises (NTVEs)

Township and Village Enterprises have consistently been more economically efficient than state-owned enterprises in China, and they have accounted for an increasing share of the nation’s total output (Mahdavi, 2001). TVEs’ share of gross industrial output rose from 10% in 1980 to 45% in 1993; by 1993, together with urban industrial “collectives” and fully private firms, they accounted for a majority (57%) of China’s industrial production (Cable, 1996). In 1998, TVE output accounted for 28% of China’s gross domestic product (GDP) (ChinaOnline, 2000).

There are various reasons for the TVEs’ impressive economic performance. Some of these reasons are exogenous, e.g., increased globalization and a sizeable domestic market, yet
others are endogenous to the nature of TVEs, and the contexts in which they operate. Among them are:

1. Fiscal vigilance. TVEs face “hard” budget constraints because local governments cannot engage in deficit financing.

2. Community support. Any surpluses accrue to local communities (and their leaders) so that they have a stake, in terms of both income and prestige, in the success of the enterprise.

3. Intense competition in domestic (and increasingly overseas) markets.

4. Market forces. Local governments, unlike the national government, are not able to protect TVEs from competition, and rivalry between different locales for resources and partners is a powerful stimulus for TVEs to strive for efficiency.

5. Professional management. Due to competitive pressures, there is a corresponding motivation to de-politicize enterprises and to bring in professional management.

6. Flexible labor market. Because there is no job security and (thus) none of the politically constrained approach to enterprise management associated with the “iron rice bowl” mentality in state-owned enterprises, firms can expand or contract their labor force as required, in a flexible labor market.

7. Low cost of labor that can be cut in adverse market conditions. Other forms of regulation are lightly applied, if at all (Mahdavi, 2001).

These inherent flexibility and comparative advantages of the TVEs allow and encourage them to engage in labor-intensive production methods. In addition, the rural labor market appears to have relatively free entry and exit. Our conversations with plant managers suggest that when labor is laid off from the plants, the workers are seldom left totally unemployed. This is because TVE employees are farmers who can return to farming full-time.

TVEs, in general, have lower labor costs than non-TVEs. Throughout China, TVEs’ share of compensation to labor is lower than their share of output. Based on 1980s data, labor employed per unit of output by TVEs averaged around two-and-a-half times that of state firms (and over twice that of “small” state firms”), while private firms had five times the labor intensity of state firms (Jefferson and Rawski, 1994). In 1996, Non-TVEs have value-added per employee that is twice as great, but capital expenditures per employee is almost three times as
much (Mahdavi 2001). Born out of a movement towards marketization of the economy, the small-scale, non-state nature of TVEs rids them of social welfare obligations of state-owned work units. Social welfare costs are lower among TVEs than non-TVEs. In 1999, NTVEs on average spent 490 Renminbi (RMB) a year in social welfare costs compared with 149 RMB/year in TVEs (Mahdavi, 2001). Because of an input-mix that is labor-intensive with low capital investments and capital expenses, TVEs are more capital efficient, but have lower productivity of labor compared to NTVEs. This means, TVEs are capable of generating a substantial amount of employment in China’s countryside and at lower costs than state-owned firms.

The total number of employed persons in China rose from 688 million in 1996 to 712 million in 2000. The most noticeable change during this period is the doubling of employment in private enterprises in both urban and rural areas. During this period, employment in rural China changed minimally (2%), but the types of employment changed a great deal. At the inception in 1978, TVEs employed 28.3 million workers, which was 9.2% of all rural employees. TVE employees rose to 128.6 million by 1995 representing 28.6% of the rural labor force, 18.9% of national employment (Chen Hongyi, 2000). Between 1996 and 2000, TVE employment dropped by 5%, the number of self-employed individuals in rural China decreased by 11%, whereas the number of employees in rural private enterprises increased from 5.6 million to 11.4 million. Together, TVEs (128 million employed persons), private enterprises (11 million employed persons) and self-employed individuals (29 million employed persons) constitute 34% of all rural jobs (the majority of which remain in agriculture) in China in 2000 (China Statistical Yearbook, 2001). The majority (70% in 2000) of the rural jobs in Shanxi Province remains in the agricultural sector (Shanxi Statistical Yearbook, 2001).
Although rural TVEs provided 18% of all jobs in China in 2000 (712 million total), they only accounted for 12% of total investment in fixed assets (China Statistical Yearbook, 2001). This is evidence that given the same level of capital investment, TVEs are more efficient and effective in generating employment opportunities. This makes the TVEs favorable candidates for investment if the provision of jobs were of concern.

**Shanxi Province Compared with Rest of China**

Shanxi Province is situated in the northwest of China (Map 2). The region is rich in coal reserves and has an endowment of other minerals such as iron, bauxite, ferromanganese, copper, lead and zinc (New China News Agency, 2002). In addition to cokemaking, Shanxi Province has cement, mining machinery, steel rolling mills and textile machinery industries; at the same time, its light industry and textile industry are developing at a high speed (UN-ESCAP, 2002). Due to the Province’s rich endowment in coal, it can support a growing cokemaking sector. Cokemaking has accounted for increasing shares of the total value-added from Shanxi province in the past decade. In 1985, cokemaking barely contributed to the Shanxi economy; by 1992, the coke sector still accounted for only 1% of Shanxi Province’s total value-added. By 2000, it rose to 6% (Figure 5.1).

Shanxi Province is predominantly rural, but has urbanized some since the economic reforms of the late 1970s. In 2000, 73% of the Provincial population lived in rural areas, compared to 90% in the 1950s (Figure 5.2). On average, the population in Shanxi Province has education levels that are below the national mean. The level of female labor force participation in Shanxi Province is also significantly below the national average. The rate of female labor force participation (staff and workers) was 14% in Shanxi Province in 2000, compared to 35%
China-wide (Figure 5.3). On the other hand, staff and workers employed at Shanxi’s Township and Village Enterprises have educational attainments that are significantly higher than the general population in the Province, and are comparable with the national average among staff and workers in other Chinese provinces.

The total working population in Shanxi Province has grown in recent years, translating into increased farm and non-farm employment. Low marginal product of farm labor makes it easy and beneficial for farmers to switch from agriculture to non-farm activities. The past decade has been marked by (1) shrinking of farm areas; (2) increasing use of machinery in farming; and (3) increasing participation in farming activities (rising number of farm employees) (China Statistical Yearbooks, 1996-2001). All these factors contribute to a decreasing marginal productivity of farm labor. At the same time, employment in collectively owned TVEs has declined, mirrored by rising employment levels in privately owned TVEs. The question of interest then becomes, do privately owned TVEs hire more or fewer people than the collectively owned TVEs? In general, workers in Shanxi Province are slightly more likely to be employed at a TVE (20%) than in the rest of China (18%). What is surprising is that employment among Shanxi’s State-Owned Enterprises appears to have increased recently, despite a downward national trend (Figure 5.4).

Wages in Shanxi Province were lower than the national average across all enterprise types in 2000. This represents a shift from the pattern in 1998, when staff and workers in Shanxi’s collectively owned and privately owned TVEs had higher-than-national wage rates (Figures 5.5 and 5.6). It is, however, possible that the different sources of the wage data for the two years account for the contradictory evidence.
In Shanxi province, State-owned units represent the majority of the total fixed asset investment (63%) compared to 50% for the national average. Rural collective units in Shanxi Province only invested in 6% of the Province’s total fixed assets, whereas the national average is 12% (China Statistical Yearbook, 2001). This could be due to the nature of the industries (with Shanxi Province concentrating on mining and agriculture) or the choice of technology and capital/labor mix of the rural industries. Again, this is supportive evidence that TVEs are more labor-intensive and capital efficient. Because of the labor-intensive and capital-efficient natures of TVE production, they are more effective than the non-TVEs in generating industrial employment in the countryside than the SOEs.

Shanxi Cokemaking Sector

In 1999, Shanxi Province accounted for 41% of the total coke output in China, and is one of the dominant exporters of coke in the global market (China Steel Yearbook, 2000; Shanxi Statistical Yearbook, 2000). According to the Chinese TVE Yearbooks (1996-1999), of the 2682 Petroleum Processing and Coking TVEs in China in 1998, 907 were in Shanxi Province. Shanxi also employed 75,660 of the 158,006 Petroleum Processing and Coking TVE workers in China (48%). This means on average, the Petroleum Processing and Coking TVEs in Shanxi have more workers than those in other provinces (83 versus 59 in 1998). Although Chinese official statistics group Petroleum Processing and Cokemaking into the same industry category, the Petroleum Processing (TVE) sector is virtually non-existent in Shanxi Province. Therefore, it is safe to assume that all of the TVEs reported in the Petro Processing and Coking TVEs in Shanxi Province are cokemaking TVEs (Fang, 3/20/2002). There is also an upward trend in number of employees in Shanxi Coking TVEs, rising from an average of 66 in 1995 to 83 in
1998 (Table 5.1). Our survey findings support these trends in that the mean, mode, and median number of employees have risen for the 164 plants between 1995 (mean of 207, median of 110, and mode of 80) and 2000 (mean of 269, median of 120, and mode of 120) (Figure 5.7). It also appears, however, that our survey has a sample of coking plants that employ more people than the Coking TVE sector average for Shanxi Province.

Description of the Workforce

Although Cokemaking TVEs are increasing in size (defined by number of employees), the total number of employees working in Shanxi Cokemaking TVEs has decreased in recent years. This trend is complemented by a slight increase in cokemaking SOE employees. Overall, the total number of people employed in the cokemaking sector in the five surveyed regions in Shanxi Province declined from 96 thousand employees in 1995 to 75 thousand in 2001 (Figure 5.8).

Despite the increase in enterprise size (in employment terms), the composition of the workforce appears to change little over time. In both 1998 and 2000, Shanxi cokemaking TVEs had a Production Worker: Technical Staff: Administrative Staff: Other Workers breakdown of 78%: 8%: 11%: 2%. Furthermore, this breakdown closely mimics that of cokemaking SOEs in the Province (78%: 9%: 7%: 5%) (Table 5.2).

Workers' Compensation

How do wages in Shanxi cokemaking TVEs compare to other industries? Wages are a good basis for comparison in order to understand the quality of the labor relations, labor productivity, and the nature of the labor market. Unfortunately, the AGS cokemaking project
has scarce and incomplete data on employee wages and other in-kind benefits. In the 1998 TVE survey, they did ask managers the aggregate amount spent on employee compensation, but it is unclear what employee compensation consists of (i.e., whether it includes all wage and non-wage benefits). Furthermore, among the 158 firms surveyed, only 66 provided answers to this question. Nonetheless, I find that employee compensation, on average, accounted for 8% of the firms’ flow assets (compared to 12% for transportation, 7% for depreciation, and 8% for taxes, among other things). The aggregated amount (Total Employee Compensation) divided by the total number of employees (all categories) yields a crude measure of annual average employee compensation, which amounts to 6,289 RMB/employee/year in 1998.

Although the SOEs in China have historically served both economic and social welfare functions, the TVEs generally do not bear the burden of social provisions. Nonetheless, I discovered from our site visits that TVE employees still enjoyed some fringe benefits (however minimal), such as medical check-ups and subsidized lunches at company cafeterias (Figure 5.9). Some of the coke workers also live in employee quarters on company property, often in close proximity to the cokemaking facilities.

Based on very limited observation from the field, the production workforce in Shanxi Province cokemaking TVEs seem to be overwhelmingly young and male. When I asked a few workers about their ages, they either declined to answer, or said they were 18 years old. I had no way of telling whether these responses were a function of shyness, or the fact that labor regulations prevented anyone under the age of 18 from working in coke plants.
Educational Attainment

How do workers employed within the cokemaking sector match up to the general population in Shanxi Province in terms of educational attainment? I look at the different staff categories in a cokemaking facility and their educational attainment separately. Production workers are responsible for the majority of the operations within a cokemaking facility. Their responsibilities range from loading and unloading coal and coke, to driving quenching cars, to operating oven doors, to handling and transporting the final coke products. Technical workers are responsible for the well-functioning of the equipment in the plant. A typical member of the technical staff would sit in front of meters and machines for 8 hours a day, with 5-minute breaks every hour, to ensure that the readings are normal. Administrative staff includes plant managers and office workers. On average, the administrative staff has the highest educational attainment, followed by technical and then production staff. None of the production workers surveyed in the 1998 TVE survey had more than 12 years of schooling; in 2000, only 1% of the production workers had more than 12 years of schooling. The overall educational attainment among the Technical Staff employed in TVEs fell from 1998 to 2000. This coincided with an increase in the proportion of workers at the lower end of the educational attainment spectrum (6 years or less). Unlike the Technical Staff, Administrative Staff surveyed in the TVEs had an overall improvement in educational attainment between 1998 and 2000. A higher proportion of them received 12 to 18 years of schooling. SOE workers in all three categories had higher educational attainment (Figure 5.10).

These survey results lead to two speculations. First, the lower educational attainment among technical workers, administrative workers and managers at the TVEs compared to SOEs implies that TVEs provide more job and income mobility. Workers without many years of
schooling can move away from farming activities to becoming industrial managers. Second, the increase in educational attainment among TVE administrative staff, but not the other job categories, leads to a widening gap in education between management and rank-and-file workers. As discussed in the Mon Valley story (Chapter 3), this divide can lead to mistrust and hostility in labor-management relations.

**Job Training**

An objective of economic growth is to enhance people’s capacities to reach their full potential in achieving what they want. Although this can certainly be achieved through creation of employment opportunities and higher incomes, the skills and personal responsibility dimensions of work ought not be neglected. Here, I use employee training as a proxy for TVEs’ contribution towards human development. In 1998, 10% of TVE production workers received no training for their jobs. At the same time, a majority (49%) of them received one week of training. According to Professor Fang from the Taiyuan University of Technology in Shanxi Province, “training” usually refers to companies offering courses to employees on technical and administrative knowledge for different working positions, because the new workers are from the farms and are lowly educated. Some companies offer other new or advanced courses to older workers or office workers so that they can take on new work responsibilities. [As I know] a lot of coke plant have had their persons participate in classes on environmental regulations and measurements, and ISO9000, ISO14000, etc. (Fang, 2002b).

By the year 2000, only 4% of TVE production workers received no training. At the same time, however, employers seemed to have substituted one-day training for longer, more comprehensive types of training programs. Only 44% of the production employees in 2000 received one week or more training, compared to 78% in 1998. Ninety percent of SOE production workers received training that lasted for one week or longer. The training situations
for the technical and administrative staff appear somewhat similar to production workers. Between 1998 and 2000, a lower percentage of workers from either category received no training. Among those who receive training, however, a high proportion of workers in either job category engaged in shorter-term training (one day to one week). The majority of technical and administrative staff at SOEs received one month of training (Figure 5.11).

Aside from formal training programs, workers can accrue skills and expertise through work itself. Employment duration at cokemaking enterprises can provide us with a sense of the quality of the work force, as well as employment mobility and organizational loyalty among coke workers. When cokemaking TVEs first came into existence, the entrepreneurs and workers were first-generation industrial workers, who had previously worked in the agricultural sector. In 1998, 18% of the TVE production workers were new (had worked for 1 year or less). This dropped to 13% by 2000. The majority of the workers in all three job categories had worked for one to five years in 1998, and this trend continued through 2000, except that the majority of the administrative staff had five or more years of experience by 2000. This is not surprisingly given the managerial and supervisory nature of the administrative positions. On the other hand, cokemaking SOEs in our survey consisted primarily of experienced workers with five or more years of experience. This difference is not surprising, considering that the cokemaking TVEs are a relatively new sector in Shanxi Province. These numbers also support the hypothesis that SOE workers do not appear to be shifting to TVEs for employment (Figures 5.12). However, based on our interviews, I learned that two of the plant managers interviewed had previously been local government employees. This further demonstrates the intricate relationship between the private and the public realms within the rural industrial sector in China.
Workers' Safety

Cokemaking facilities are dangerous environments in which to work. Ovens operate at high temperatures, and the equipment is heavy and awkward. Furthermore, the cokemaking ovens, especially those that employ lower-end technologies, are highly polluting. Coke plants have piles of exposed coal, from which coal dust may be released, and spontaneous combustion can occur (due to the exposure to the sun and trapped heat). During the coking process, carcinogenic gases and substances (benzene, toluene, xylene, sulphur dioxide, etc.) are often released into the air, the land, and the water (Polenske and McMichael, forthcoming). Health and safety of workers should therefore be of primary concern to the enterprises. Overall, TVEs seem to have increased their awareness of the importance of workers safety over the two-survey period, reflected in the increased adoption of various measures. The most popular forms of health and safety measures are safety instructions, helmets, hard shoes, and eye-goggles (Table 5.3). In 2000, TVE plants, on average, adopted three to six safety measures (Table 5.4). True to their paternalistic and welfare-serving nature, SOEs adopted more safety measures than TVEs. Almost all workers in SOEs had to wear helmets and were given safety instructions (Table 5.3).

The following are excerpts from our on-site interview with an SOE plant manager in Taiyuan.

Reduction of pollutants emission not only protects the ambient environment, but also protects the body of ourselves. The environmental awareness among workers has increased substantially. … We restricted the maximum working time on poisonous and high pollutants emission positions. Usually workers on these positions must shift to other (safer) positions after working 3-5 years. The [SOE] regularly arranges for the worker to take physical examinations and tracks the examination results. There is a medical center of the [SOE]. To ensure the accuracy of the examination results, the [SOE] has kept in touch with the Occupational Disease Prophylactic and Therapeutic Hospital of Shanxi Province (ODPHSP). The ODPHSP holds an annual physical examination for the workers on polluted positions (poisonous and high polluted positions). The workers found with negative examination results need to be checked. The [SOE] will take active measures for any worker whose physical condition has worsened. Anyway, there have been no such workers apparently suffering from the working environment so
far. The Workers’ Union and (Production) Safety Unit of the [SOE] together supervise the annual physical examination and workers health protection program. Workers have been generally satisfied with the program. (On-site interview, Summer 2001).

From the manager’s narrative, we get a sense that workers’ safety and health are high on the management’s priority.

Although being state-owned or township-and village-owned certainly affected the enterprise’s provision of workers health and safety, the difference is not pronounced among the various TVE ownership types (Table 5.5). From our interviews, one of the TVE plant managers describes their provisions for employee healthcare and safety as follows:

On the factory site there is a clinic, which can solve minor illnesses. The company may be responsible for the injuries suffered on job. Serious injuries would be treated in other hospitals. Besides, each worker will be subsidized 4-5 RMB per month for health care. (On-site interviews, Summer 2001)

This type of healthcare provision is not uncommon among the plants that we visited. However, one gets the sense from walking around the facilities that management’s mentality towards employee health and safety are directed towards fixing problems as they arise (e.g., hospital treatments), as opposed to taking preventative measures (e.g. wearing helmets, masks, hard shoes, etc.). Despite physical signs with pictures and verbal warnings hanging everywhere, not all workers performing high-risk tasks were properly equipped (Exhibits 3 and 4).

Ownership and Finance

One of my premises in this study is that the cooperative nature in ownership and management of the TVEs give them the competitive edge through positive labor relations and flexibilities. Interesting, I found that most of the TVEs surveyed in 1998 were self-owned or publicly listed (shareholding) (Figure 5.14). When I look at sources of finance for these enterprises, the results indicate that only a small minority (3%) of the plants financed their fixed
assets with resources from townships and villages. Banks are the major financiers (38%), followed by sales of output (31%) and family funds (17%). These findings suggest that TVEs may actually be abandoning their communal nature, and have—in recent years—grown increasingly similar to the traditional “capitalist” enterprises in terms of ownership and finance mechanisms.

In order to find out the changing ownership structures of TVEs, I look at the sample of 31 common plants (surveyed in 1998 and again in 2000). Cross-tabulating the ownership of the plants in 1998 against their ownership in 2000 yields interesting results (Table 5.6). Most of the plants surveyed underwent a change in ownership between 1998 and 2000, although in no noticeable direction. Cross-section data indicate, however, that there is a surge in self-owned and shareholding firms since 1993 (Figure 5.15).

To examine the effect of shifting ownership on labor, I look at the 158 plants surveyed in 1998 (66 of which responded to the workers’ compensation question). The sample average for annual workers’ compensation is 6289 RMB/employee/year. Village-owned TVEs spent the most on employees (7,792 RMB), whereas shareholding and township TVEs spent the least (5,867 RMB and 5.6521 RMB respectively) (Figure 5.16).

Asset-Employment Trade-off

I now turn to what affects employment decisions. The surge of TVEs created a lot of industrial employment for Shanxi Province’s farmers. Faced with increased domestic demand and a growing global demand for Chinese coke, Shanxi Province’s coke output also increased. However, with the availability of more efficient technologies, better ovens, and pressures from the environmental agencies, TVEs may opt to shut down, or upgrade their production.
technologies and facilities. Recall the Mon Valley experience. U.S. steel companies often opted for the technology options that were labor-unfriendly when confronted by environmental regulatory constraints. The 2000 TVE survey data indicate that a sizeable number of TVEs underwent some type of expansion between 1995 and 2000. Unfortunately, from our survey we have no way of telling how many plants actually shut down, thus having to lay off employees, during the same period. Of the plants that expanded, the majority of them also hired more people in 2000 than in 1995 (Table 5.8). What is striking is that the firms that increased employment were, in general, smaller firms in 1995, compared to those that underwent expansion but decreased employment. In essence, the larger plants (in terms of number of employees) are the ones that substitute capital investments for labor. For policy-making, this finding implies that to preserve employment in the cokemaking sector, policy makers would want to encourage investments in the smaller plants, as opposed to the larger ones.

In addition to the number of workers hired, asset-employment tradeoff also involves the balance between investing in capital (e.g., technology, plant facilities, etc.) and investing in human capital (e.g., workers’ training). I have two hypotheses that would have contradictory effects. First, if labor (human capital) and capital were true substitutes, then higher levels of capital investment would be correlated with low levels of investment in workers’ training. This is consistent with the “containment” hypothesis where workers are de-skilled and are stuck with repetitive tasks as management invests in technology (Chapter 2). The other hypothesis, however, is that the richer and bigger a cokemaking plant is, the better it can afford to train workers. Furthermore, more advanced equipment that is associated with plant expansion may require more skillful operators, making training a must. Table 5.9 represents a matrix of the tradeoff between the firms’ fixed-asset investments and their time investment in labor training.
Although all of the plants that did not provide employee training fall within the low-end of the fixed-assets investments spectrum (1-300 million Renminbi in 2000), there is no observable pattern of differences across the various investment distributions. Looking at the relationship between training and the level of total capital in 2000 also leads to similar conclusions (Table 5.10): all of those that did not provide training for production workers fell within the first decile of total capital distribution.

*Technology*

As enforcement of environmental regulations becomes increasingly imminent, and demand for Chinese coke exports surges, cokemakers in Shanxi Province must upgrade their equipment and technologies to increase production capacity, as well as to upgrade to cleaner technologies to meet environmental standards. In his thesis, Chen Hao (2000) discovered that coke plants that employed new, cleaner technologies devoted less of their total expenditures on labor remuneration relative to the smaller ovens using more backwards technologies. To expand this line of research one step further, I look at the relationship between average labor compensation (per capita) and technology used at the plants among the 158 plants surveyed in 1998. A plant using the PX oven formed the lower end of the spectrum, spending 1,117 RMB per employee per year in compensation. Employees at non-recovery (SJ-96) plants had below-average compensations of 5,832 RMB/year, compared to the high end of 10,526 RMB/employee/year at 2H-II ovens (Figure 5.17). Overall, it appears that except for firms using indigenous technologies (namely, PX ovens) that pay employees significantly less, the relationship between technology choice and employee compensation is unclear based on the

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3 According to Chen Hao (2000), labor represented 5.2% of total costs of operating small machinery ovens, compared to 4.7% for JKH-97 (advanced modified indigenous), 3.4% for SJ-96 (Non-recovery).
data. Unfortunately, due to the small sample sizes for each technology, there are high degrees of variance attached to these figures.

**Enterprise Structure and Business Outlook**

Generally, metallurgical industries in the world are characterized by high degrees of vertical integration. The U.S. steel industry is representative of how companies internalize their supply chain to gain control, flexibility, and economies of scale.

Figure 5.18 is a graphic representation of development trajectories by two cokemaking enterprises in Shanxi Province. This should provide an overall idea on the evolution of the industry, and the changing nature and structure of these rapidly growing companies. One of them is state-owned, the other a TVE.

Both the SOE and the TVE in the following examples expanded and diversified their products beyond cokemaking. Both companies eventually internalized their entire supply chain. Notably, the TVE expanded business horizontally and evolved into a conglomerate firm that reaches above and beyond the metallurgy sector. Based on the two cases and conversations with managers from other plants, there is a salient trend towards shareholding ownership. Whether these cokemaking enterprises started as farmers’ communes or state-owned units, there is an overwhelming preference for switching towards shareholding in order to generate capital for business expansion (Figure 5.15). This type of fundraising mechanism and corporate ownership are new in China.
Figure 5.18: DEVELOPMENT TRAJECTORIES OF TWO COKEMAKING ENTERPRISES

**TVE**

- 1984: Coke production technologies changed several times, adopted small-machinery coking methods.
- 1986: Began production of steel, raw steel and cement; Implemented special chain structure to utilize resources, energy and by-products efficiently.
- 1992: Closed down indigenous ovens, used coal gas to generate power.
- 1994: Company consists of 6 industrial groups with 30 sub-companies: metallurgy, steel making, construction, power generation, real estate, and biological engineering. Products range from coke, steel, to garments, bottled beverages, hotels and vacation.
- 2000: Plan on going public and getting listed on stock exchange market.

**SOE**

- 1981: Set up stage: coal mines, the coking plant, the coke washing plant, the gasworks and coal gas company.
- 1984: Slow development stage.
- 1986: Rapid development stage: set up coal gangue plant, acquisition of small-scale coal mines.
- 1992: Set up stock company; raised hundreds of million RMB by issuing stock of the coal mines, the coking plants, and the coal washing plant. Diversification of capital—no longer purely state-owned.
- 1994: Expanding the scale: establishment of another one-million-ton coking plant;
- 1995: Technology transformation: improve the quality of coke exports;
- 1996: Raise money for further development;
- 2000: Beautification of the environment;
- 2010: Plan on going public and getting listed on stock exchange market.

Source: Field visit, 2001 and on-site interviews with plant managers.
The trend towards product diversification and public (shareholding) ownership has labor-market implications. On one hand, having diversified their industrial outputs and markets, cokemaking TVEs are less susceptible to market pressures in the coke market. It also reduces risks and increases resilience of the enterprises in the face of rapid technological changes (affecting the demand for coke) and the potential for eventual de-industrialization (affecting the regional economy). Workers enjoy better job security as they can shift from one industry to another in response to changing product-market conditions. On the other hand, shifting from collective or private, family ownership to shareholding would likely affect the management of the TVEs. Although I have postulated that the unique ownership, and hence management styles, of the TVEs should provide an opportunity for flexible and favorable management-labor interactions, shareholding ownership is often associated with professional management. In the Mon Valley case (Chapter 3), bringing in college graduates as managers deteriorated the labor relations in the steel plants. A widening educational gap between management and production workers in the Shanxi cokemaking facilities is thus susceptible to similar fate. A professionally managed firm may no longer benefit from the informal and communal characteristic (and the resulting flexibility and efficiency) from which the TVEs have benefited.

Conclusion

The purpose of the case study, using published, survey, and site-visit data, is to paint a picture of cokemaking activities in the countryside of Shanxi Province. In the past two decades, cokemaking has generated sizeable income and industrial employment in the Province. I have
used this case study to examine this recent regional economic growth phenomenon from the labor perspective. With respect to maintaining the welfare and well-being of the labor force, TVEs compare unfavorably with SOEs. Shanxi TVEs pay employees lower wages and provide fewer benefits. Over time, however, we do observe improvements in attention to workers’ health and safety and training among cokemaking TVEs. Even so, SOEs are still superior in terms of wage and welfare provisions.

Throughout this study, I have postulated ways in which Chinese TVEs achieve their competitive advantages. I have also discussed how a major strength of the TVEs lies in their positive labor relations, which, in turn, create flexibility that favors these enterprises in a competitive global market. I now recap the salient aspects regarding the Shanxi Province cokemaking sector presented in the case. Moreover, I revisit the hypotheses about township and village enterprises and labor that I put forth initially, juxtaposing them with evidence from the case study, as well as literature.

_Hypothesis: The Maoist Communist Ideal of the “The Right to Work”_

Township and Village Enterprises, with their community ownership structure, offers an opportunity for reassuring people’s right to work, as they are at the same time the owners and the laborers in the enterprises. Paradoxically, the right to work does not translate into workers’ rights in contemporary rural China. Workers in China remain silenced, and the organization of labor remains, to a large extent, just a bureaucracy. Based on the AGS cokemaking surveys, workers in TVEs enjoy fewer rights than their SOE counterparts. TVE employees do not enjoy as high wages and as many non-wage benefits, work under more hazardous conditions, and are less prepared for their jobs. TVE employees also have relatively insecure job tenure compared to
the SOE employees, who at least until now are essentially guaranteed lifetime employment.

Much of the TVEs’ competitive advantage lies in their ability to have the farming sector absorb excess, laid-off labor in times of organizational restructuring.

**Hypothesis: Positive Employment Effects of TVEs**

Recently published Chinese statistics reiterate Mahdavi’s (2001) proposition that TVEs are more labor intensive and more capital efficient, hence more effective in generating employment given a fixed level of investments. However, based on the samples of cokemaking plants surveyed in five regions in Shanxi Province, the period of 1995 to 2001 saw an overall decrease in employment in the cokemaking sector, despite the growth in TVEs’ contribution to Provincial output. More ironically, during the same period (1995-2001), employment in cokemaking SOEs in Shanxi Province increased slightly.

**Hypothesis: A Dual Labor Market**

Based on the discussions and studies presented in Chapter 4, I suggest that TVEs and SOEs tap into different labor pools. This is because SOE workers have little incentive to leave their comprehensive employment packages. Furthermore, the demographics (e.g., educational attainment) of TVE and SOE workers are rather different, suggesting that the two sectors face different labor supplies. Although I suspect that this hypothesis holds true for the majority of the workers, evidence from the field indicates that there are in fact cross-overs between the TVE and the public (government, SOE) sector. Despite my sample of interviewees being far from representative, there is a trend for managerial and administrative staff to leave the state sector.
towards more private and market-oriented enterprises as China undergoes institutional reform and rapid economic growth.

**Hypothesis: Companies Substitute Capital for Labor**

Evidence from the TVE surveys suggests that cokemaking TVEs do not usually substitute capital for labor. Contrary to speculation, companies actually hired more workers as their operations expanded, and their investments in fixed-assets increased. Unfortunately, data used to estimate the relationship between technology choice and employee compensation are inadequate to generate any meaningful results.

**Hypothesis: Ownership matters**

Survey data indicate that TVEs adjust ownership structures rapidly. TVEs are increasingly shifting away from township/village/joint ownership towards self and shareholding ownership. These movements suggest that to some degree, ownership must matter in a firm’s operations.

Whether a firm is state-owned or not affects its provision of workers’ health and safety precautions, training, and benefits. Within TVEs, however, different forms of ownership, ranging from private individual ownership, to joint-ventures, to public shareholding, do not appear to affect labor practices significantly.

The pressure to raise capital for business expansion, however, has led TVEs increasingly to turn to publicly listed private ownership (shareholding). Although ownership does not directly affect labor practices, the shift of ownership away from the township and village communities may have future impacts on management style, business decisions, industry outlook, and
eventually have regional and labor impacts. Even within the SOEs, attempts to pull themselves out of bankruptcy have led to the birth of joint stock companies where workers are forced to purchase shares of the company.

**Hypothesis: Problems with Company Towns**

In Chapter 3, I described how the company towns in the Mon Valley brewed contentious relationships between the managerial class and the working class and eventually became completely vulnerable to the business cycle. In the Mon Valley, businesses “owned” the towns. Shanxi Province is also comprised of company towns. These company towns are different in that the ownership is in reverse: the communities are the ones that own the businesses residing in the town. Whereas the residents in the Mon Valley felt trapped and disenfranchised, TVEs empower residents of towns and villages through their stake and ownership. Do residents, who are almost always the workers, feel empowered? I have no way of telling. However, an important point to note is that while township and village communities in theory have ownership, so do local governments, foreign capitalists, and local entrepreneurs, as a result of the “innovative” ownership structure of TVEs. It is unclear, and highly unlikely, that workers/owners can easily and readily access the resources embedded in the TVEs, and/or get to participate in business decision making and strategic planning actively.

**Final Remarks**

Results from my case study suggest different possibilities for the future of coke workers in Shanxi Province. On the one hand, TVEs’ expansion into other industries is not possible
without switching towards capital-intensive production methods. This could potentially displace workers and lower their bargaining power. On the other hand, adoption of capital-intensive technologies does not appear to affect significantly either the quality or quantity of employment. In the long run, investing in technology can safeguard the regional industrial competitiveness, thus protecting jobs and employment.

What about social capital? In the beginning of the chapter, I hypothesized that the dense social networks within TVEs and a management style that harnesses social capital would render them more flexible and resilient economic entities. As a whole (all entities classified as TVEs in the case study), TVEs’ abilities to “get away” with sub-optimal provisions for their employees, while at the same time being welcomed, economically viable institutions suggest that their unique settings in the social and cultural landscape must have played a role. However, the extent to which these social network forces are at play and the measurement of such forces are beyond the scope of the surveys and this case study. TVEs’ changing ownership structures, however, questions whether the conventional TVE model—with its reliance on familial and community ties—is likely to persist and how labor practices and relations will be affected. At this point, it appears that we can only speculate based on theory, past experiences, and examples from other places.
CHAPTER 6
CONCLUSIONS

Traversing from peasantry to industry, what are the advantages and challenges that township and village enterprises in rural China have, or have to anticipate? As a conclusion to this research on cokemaking Township and Village Enterprises (TVEs) in Shanxi Province, China, I recap and re-examine the hypotheses surrounding the relationship between labor relations and regional growth, as well as case study results and lessons learned. I do this by revisiting the two levels of comparisons and re-examining their validity: first between the Shanxi Province coke industry and the Monongahela (Mon) Valley integrated steel sector, and then between TVEs and State-Owned Enterprises (SOEs). Finally, I point to the issues that deserve particular attention, and I discuss their implications on the future of regional growth, labor markets, institutions, and public policy.

Monongahela Valley in the mid-1980s and Shanxi Province in the late-1990s

I use case studies of the Mon Valley and Shanxi Province regional economies to illustrate the symbiotic relationship between industrial labor relations and the resilience and performance of regional economies. Although the case studies focused on two regions that are on opposite ends of the world in different time periods, hence are mired in very different social, cultural, economic and institutional contexts, they nonetheless share a number of similarities. The two regions are similar in that (1) both relied on coal in their early stages of regional development; (2) both regions had labor practices characterized by minimal attention to training and investment in human capital; and (3) labor is “immobile.” The two cases are different in that (1)
they took place in two different time periods; (2) the two regions had divergent industry structures; (3) the two regions adopted different growth strategies, and (4) the two regions resided on different social, cultural and political landscapes, which translated into different practices, expectations, and power dynamics. These differences are important to note when comparing the two regions in search for “best practice” for growth. Like comparing apples with oranges, labor relations in Shanxi Province and the Mon Valley are too different to serve as each other’s counterfactuals. I, however, show how different institutions can translate into different labor practices and labor practices, and how they, in turn, affect economic performance. Also, these differences point towards how innovative and experimental institutional structures, such as the TVEs, can foster good labor relations to make regional growth sustainable. In this section, I first summarize the similarities in the two regions’ growth trajectories, and then I discuss the differences.

Similarities

Both the Mon Valley and Shanxi Province relied on coal in the early stages of their regional development. The abundance of coal in both regions allowed them to use coal-based industries as their economic bases. They eventually developed along the coal-coke-iron and steel supply chains, growing from mining into industrial regions that focused on manufacturing. As a result of the industrial base and types of jobs these industries created, both regions had low female labor-force participation during their economic booms. As the global metallurgical markets became increasingly integrated, the two regions faced similar international competition and global business climate. The concentration of one particular industry in the region exposes both regions to the risks associated with the business cycle.
In both the Shanxi cokemaking TVEs in the late 1990s and the Mon Valley steel mills in the mid-1980s, little attention was paid to workers' training and investment in human-capital development. Related to this neglect on training and retaining expertise is the industries' inability to attract the best and the brightest personnel. Robert McKersie (2002) sees this as a crucial factor that precipitated the vulnerability of the Pennsylvania steel industry.

In both cases, labor is immobile. Labor was relatively “stuck” in the Mon Valley, because their lack of transferable skills made it difficult for industrial workers to transfer into other sectors of the economy. As a result, a large proportion of the workers who lost their jobs during the mid-1980s in Pennsylvania never resumed employment. In Shanxi Province, labor is “mobile” in the sense that the informal nature of employment and corporate ownership allow workers to switch between the cokemaking and farming sectors. However, workers in Shanxi Province are “stuck” in the Province, or even in their towns and villages, for two reasons. First, the hukou system in China restricts the flow of rural population to urban or other rural areas. Second, villagers are tied to their homeland through familial and social ties (and maintained and reinforced through the practice of guanxi).

**Differences**

The first difference between the two case studies is that they cover two very different times periods: the growth of Shanxi Province had just begun when the Mon Valley was de-industrializing. The Mon Valley case focused on a region well on its way to de-industrialization after having boomed; the Shanxi case describes a region that has just begun its industrialization process, with a young industry and labor force.
Industry structures and market characteristics differ in the two regions. The few large Mon Valley steel companies were vertically integrated along the supply chain to maximize control and economies of scale, but at the same time this vertical integration rendered them more inflexible and irresponsible to external shocks (Chapter 3). In Shanxi Province, cokemaking TVEs are small and numerous, and are, for the large part, separate from steel production. This difference could be due to conscious business decision-making, where management in Shanxi Province cokemaking TVEs opts for horizontal expansion instead of vertical integration, or just due to geography and regional endowments. The lack of water transport in China makes producing steel in an inland province, such as Shanxi Province, unfavorable. This is because heavy goods (such as steel) can often be transferred less expensively by water than by road. The two industries also reside in two very different institutional landscapes. China in the late-1990s/early 2000s is an industrializing country transitioning from a socialist, command-and-control economic system to a more open, market-oriented economy. The United States in the mid-to-late-1980s was a full-grown capitalist economy. As such, workers and managers from the two cases have had extremely different experiences, expectations, and outlooks. Furthermore, the two countries have very different cultural and social norms, resulting in divergent management philosophies and subsequent labor practices and labor relations.

Ownership structures of firms in the two regions differ. Mon Valley’s integrated steel mills were owned by industrialists and capitalists, such as the Carnegie family. Ownership is defined, and these firms are the pinnacles of professionally managed, formal corporations. The dichotomy between the proletariat workers and the owner-management elite accounted for some of the tension in labor relations in the region. On the other side of the world, cokemaking TVEs
are, by definition, under shared ownership. In recent years, however, there has been a shift
towards private and shareholding ownership of TVEs.

The set-up of the TVEs represents a drastically different definition of the “company
town” from that in the Mon Valley. The township/village communities in this case actually own
the enterprises collectively (though in varying degrees, as is evident in empirical data). The
make-up of the communities is also different between Shanxi Province and the Mon Valley. The
population growth in the Mon Valley was mostly a consequence of the regional economic
growth. The steel boom attracted many immigrant workers to the Mon Valley, which was
largely comprised of immigrant communities from divergent backgrounds (Hovanec, 2001). In
contrast, an excess of agricultural labor fueled rural Shanxi Province’s economy (Chapter 5). In
addition, the power dynamics in the two regions differ. In the Mon Valley, workers fought and
struggled for more than just wage and benefit increases (Chapter 3). They were also standing up
for their values. Antagonistic relations might end up affecting the regional economy negatively,
but they were an expression of the power, free will, and rights of the workers. In Shanxi
Province, when I hypothesize that harmonious relations provide a favorable environment for
economic growth, I fail to examine the issue of power. It is unclear how much actual power
current rural industrial workers in China possess.

Labor Market Implications of the Shanxi Province Heresies

Shanxi Province industrial TVEs followed development paths that are different from
those in the Mon Valley. This has implications on the infant rural Chinese labor markets. First,
the oligopolistic Mon Valley steel industry favored the bargaining power of steelmakers, who
can exert downward pressure on labor wages. In theory, the more competitive Shanxi Province
cokemaking sector should foster labor efficiency and fair wages based on productivity. However, this is not evident in the Shanxi Province coke sector.

Second, product diversification among cokemaking TVEs strengthens the resilience of the region. Such an economy not only provides job security for workers, but also creates an interesting type of internal labor market within the TVEs. This internal labor market can be good for labor for various reasons. First, job security is ensured when workers can switch from one industry to another, and they are no longer completely dependent on the health of one sector. Second, workers can expand their skills set by shuttling between industries, and they are not limited to working in one narrow market. Third, management is more likely to train workers in general skills, such as reading, writing, accounting, driving, etc., that can apply across the enterprises’ various business endeavors. A potentially negative impact of such diversification and shuffling of workers and skills, however, is that labor is reduced to being just another substitutable input for production. This contrasts with the view of work as a right, as an enabling process, or as a means to build up human capital. Also, creating horizontal mobility through such an internal labor market may take away from any potential vertical (i.e., upward) mobility.

Labor relations play out in both regions with the company town as the backdrop. The workers’ mentality and attachments towards the company and the town affect labor relations. In Chapter 3, I discussed how the nature of the company towns created a sense that steel companies “owned” the towns, and it bred a sense of fatality and resentment among the residents. The population in Shanxi Province is indigenous, and the people working in township and village enterprises have long been farmers and residents of the towns and villages. TVES are relatively similar to communes, compared to the steel communities in the Mon Valley where the towns followed the steel corporation’s hierarchical organization of decentralization, subdivision, and
separation. Such organization of was supplemented by the belief that what was good for the companies must be good for the communities (Hoerr, 1988). Different conceptualizations of the company towns could lead to very different relationships between the workers and residents at large and the entrepreneurs and managers. Whereas Mon Valley residents felt hostility towards the companies that were located in their communities and were determined to stymie the smooth-running of the industries, local governments and communities in rural China have stakes in the well-being of their enterprises. By having ownership of the companies, residents and communities are likely to feel vested in the company, and they would want to cooperate with businesses (managers, entrepreneurs, etc.) in fostering a competitive regional economy. The fact that Shanxi Province TVE coke workers share a common heritage, community, and familial ties offers an alternative to the Western-norm of work and community. In the United States, for example, people tend to have to shuttle between two “lives”: the working life, and the community life. People are detached from their workplace after they leave, thus work remains a place that is somewhat impersonal and formal. The TVE setup offers a bridge between these two “lives” that people have and merges them into one. Just as people strive for harmonious community and kindred relations, this set-up might encourage amicable work and labor relations as well.

Comparing TVEs with SOEs

Just as the Mon Valley steel region is not a viable counterfactual for the Shanxi Province coke region, neither are cokemaking SOEs a plausible counterfactual for cokemaking TVEs. Based on our interviews with plant managers, I find that most TVE workers would remain on the farms had they not joined the TVE workforce, and they are likely to return to their farms should
they leave the TVEs. SOE employment is barely an option for these first-generation industrial workers. Therefore, it may make more sense to evaluate the TVEs' work conditions and their impact on developing human capital vis a vis agricultural employment, and not vis a vis SOEs. Nonetheless, the comparison between TVEs and SOEs is justified when taking into account the rapid agricultural reforms and industrialization in the Chinese countryside. As the region develops, more and more people are likely to leave farms for industrial jobs, and TVEs will become more prominent economic entities in the Chinese economy.

**Review of Methodology**

The design of this study has its shortcomings. I first describe how the methodology falls short in providing reliable and adequate information for the scope of my hypotheses, and then highlight key assumptions that I make in my analyses. There is room for improvement to this study in order to examine issues surrounding labor and regional growth in the context of Chinese TVEs sufficiently and comprehensively. However, appropriate discussions of issues such as human rights, workers' power, and institutional evolution of TVEs are beyond the current scope of this study.

**Critique of the Research Methodology**

For the Mon Valley example, I rely mostly on secondary sources, and I base my analyses heavily on existing literature. Although I try to be as expansive as I can in my research, and be as inclusive as I can in my setting forth of facts and viewpoints, it is entirely likely that such literature is biased. This is because authors who devoted energy to the labor issues in the steel industry probably felt strongly about the issue were therefore initially biased.
Given the lack of reliable and published data, the four empirical AGS coke plant surveys and several site visits to Shanxi Province cokemaking facilities were valuable and instrumental for my study. However, they were initially conducted with a different focus, and they lacked a lot of helpful data for my particular research objective. Therefore, the information gathered is not optimal for the types of analyses that I proposed in this study. Future studies relating regional growth and labor practices should have a more directed set of survey questions and more comprehensive and critical examination of the actual facilities.

Finally, the “protagonists” are missing from the two stories that I told. I did not directly interview workers. Their versions of the stories are not recorded, except indirectly. This omission is partly a function of time and resources (the lack thereof), but mostly a result of technical difficulties. Because I focus on the Mon Valley experience in the 1980s, most of the workers who participated in the union and steel-making activities have retired; and many of the mills are no longer in operation. For the Shanxi Province case study, I did not have the time nor funds to conduct a set of structured interviews with the workers. Even so, I did visit the sites with the Alliance for Global Sustainability (AGS) research team and attempted to talk with workers whenever possible. Unfortunately, my efforts were not very successful. One difficulty is that most workers at the plants were working and could not leave their positions and duties for interviews. Moreover, workers were often wary of a stranger (in this case a researcher from abroad) asking them questions regarding their backgrounds, their perception of the workplace, and the management.

Assumptions

My hypothesis of TVEs being able to foster positive labor relations rests heavily on the presumption that social capital is influential and in abundance in rural China. Although other
analysts have researched and written on the importance of social capital in rural China, I take this premise as given. However, just how much social capital is there in the Shanxi towns and villages, and how are managers and workers governed and affected by it? I have no way of telling. In order to make this a more empirically robust project, I would first have to develop criteria and benchmarks by which to measure social capital; then, I would need to implement such a measurement both at the enterprise level and in rural towns and villages, to gain an understanding of the nature and dynamics of social interactions among industrialists, workers, managers, and the communities.

I have treated TVEs as one form of firm, when, in fact, there is a high degree of heterogeneity within this category of firms. These companies fall into a wide range along ownership, scale, scope, location, and industrial experience dimensions. Furthermore, these companies, and the official definition of a TVE itself, are constantly mutating and evolving. It is therefore advisable that readers do not over-generalize from the analyses I have made.

Also, I make the bold assumption that the absence of complaints, strikes, and antagonism are signs of harmonious labor relations in Shanxi Province’s cokemaking TVEs. In reality, this may be more a manifestation of the power balance in the coke plants. Due to the infancy of the rural Chinese labor markets and the foreignness of the unionization concept that we take for granted in the United States, Chinese workers appear to be relatively silenced. The harmony and cooperation at the TVEs may be an indication of worker’s lack of a voice and channel through which workers can express their discontent. No analysis of regional development and labor issues can be complete without mentioning the role of power and the avenue through which people can make their own decisions and can actively shape their lives.
Future Research Implications

Labor relations constitute a crucial factor in ensuring successful and sustainable regional growth. In this light, studies such as this warrant attention and energy. In addition to refining the survey instrument and research methodologies, future research projects may include dissecting power dynamics in the rural Chinese labor markets, or looking at the changes in labor relations and practices along with institutional changes.

Looking Ahead

The second part of the conclusion of the study points to the issues to take note of in Shanxi Province’s TVE cokemaking sector. Much of what I have discussed in this study have implications on policies, institutional reforms, and human-resource management. The lessons from this study are valuable as Shanxi Province, China, and the rest of the regions in the world grow and develop. A number of growth strategy decisions await Shanxi Province. These decisions include (1) whether or not the region should diversify its industry base; and (2) whether TVEs as an ownership and institutional norm should persist in the long run. These decisions have implications that are multidimensional. I speculate about the impacts of growth on (1) labor markets; (2) management; and (3) communities and society at large. Despite the salience of these issues, substantiated discussions or detailed evidence of these impacts are beyond the scope of this current study. In conclusion, I reiterate that although developing countries can learn from the experiences of their more development counterparts, such as the Mon Valley case, the more advanced economies can also benefit from the examples of the Shanxi Province cokemaking TVEs.
Labor Market Implications

The growth of Shanxi Province cokemaking TVEs can affect the labor market in the areas of workers' training and labor relations. Diversification can potentially reduce workers' role to a factor input, easily substitutable across sectors and highly elastic depending on industry needs. Bargaining power of workers is stripped when specialized workers can only enjoy the upper hand at the bargaining table when their skills and expertise cannot be easily replaced. While ensuing job security and preserving the number of jobs in the Province, business diversification can negatively affect the quality of the jobs. However, if the culture of guanxi and social obligations persists among TVEs, the diversification of business ventures can have positive impacts on workers. When labor is immobile, it becomes beneficial for the enterprises to train their workers in general skills, such as reading, accounting, driving, using computers, etc. and be assured that the investment in human capital is retained within the firm (Osterman, 2002). This can potentially result in a more efficient workforce for the firm, better education and personal fulfillment for the workers, and a more flexible labor force for the region to withstand industrial restructuring and future shocks.

Implications for Management

As TVEs grow in size and scope, the current set-up and rules of the financial and economic institutions may not sufficiently equip them to compete globally (IFC, 2000). As formal labor, capital, and commodity markets develop in the Chinese countryside, there may be a decreased reliance on personal relationships and social ties for success and smooth operations. To thrive in more open, competitive markets, many private enterprises will need to upgrade the capacity and skills of their managers. Lastly, the accumulation of skills and expertise is crucial in
promoting the long-term success of a region in a globalized economy. In order for TVEs to remain competitive in the global economy, they must expand their technological and managerial capacities.

When business operations and management are no longer handled by the family or farmer entrepreneur, will the unique social embeddedness and harmonious labor relations that have contributed to the success of the TVEs be undermined? I maintain that if TVEs can harness well their rich endowments of social capital and flexibilities, they can safeguard their competitive advantage. Up-skilling, however, can have adverse effects. The switch to professional management, or hiring outside managers to the TVEs may expose TVEs to the antagonism highlighted in the Mon Valley story. However, as firms increasingly compete in a skills economy, labor relations will become an important means of retaining necessary skills in the labor market. Attention to labor relations is important for intellectual, ideological, and pragmatic reasons.

**Social Implications**

Industry reforms and economic growth can also have social implications. The rapid proliferation of cokemaking plants on the farmlands in Shanxi Province not only transformed farmers into industrial workers, it also created a managerial class that had not existed previously in the countryside. With the growth of TVEs, incomes, responsibilities, and experiences diverge within the towns and villages. Potential conflicts and tensions may arise, and may challenge the traditional social relations, *guanxi*, and ways of life.

Unger (2002) claims that a decline in social capital in today’s societies undermines and impedes the development of a democratic social regime. In that case, I imagine that China’s
countryside, where social capital in the form of *guanxi* is plentiful, not only encourages favorable labor relations, but also represents a great opportunity for democratization and true democracy.

*The Flip Side*

In this study, I have attempted to show how the institutional contexts of Chinese TVE creates opportunities for labor relations and practices that favor regional economic resilience. Of course, omissions exist in the analyses and counter-arguments are plausible. For example, although I have hypothesized that *guanxi* networks create an environment in which management and workers can get along harmoniously, *guanxi* can also be exploited and abused. In the name of preserving cordial social order, workers may be pressured to accept the status quo, despite it being repressive and exploitative at times. Ironically, the abundance of social capital in this case can reinforce exploitation, allowing companies to benefit from low wages and low benefits. In addition, *guanxi* among industrialists and entrepreneurs makes it easy for them to collude. Such collusion can essentially turn the coking industry into a monopoly. This can potentially translate into labor-market distortions, which benefit the industries, but render workers helpless and disempowered. Unfortunately, thorough examination of such issues and alternative hypotheses is beyond the current scope of this study.

**Concluding Remarks**

What are the lessons learned from Shanxi cokemaking TVEs? The role of TVEs and their labor practices fall into a debate surrounding institutional convergence in development. The crux of the debate lies in whether national institutions have to converge to some prototypical form in order for countries to develop economically and in order to have an integrated world
economy. In economics textbooks in the West, “success” takes the forms of free markets, secure and well-defined property rights, and representative democracy, etc. But as an analyst digs a little deeper, s/he also finds that the rise and boom of regional economies are often mired in class conflicts and adversarial industrial labor relations. TVEs offer an alternative to organizing market economies and another model of management-labor relations. The accomplishments of the township and village enterprises in rural China challenge the Western understanding of what necessitates regional growth and economic success. This study has shown that the institutional heresies in the rural labor market in China, such as a high degree of informality, an abundance of social capital, and family management, etc., have precisely contributed to the success of the TVEs.

There is room for experimental labor relations. Currently, the Western concept of organized labor does not exist in China. The hope is that Chinese workers, such as the ones at the Shanxi cokemaking TVEs, will eventually gain a voice and be able to stand up for their rights. However, I propose that they do so without following the confrontational footsteps of their Western counterparts. The deep-seeded culture of guanxi and emphasis on long-term harmonious relationships should allow Chinese management and workers to come up with a cooperative forum of interactions. This is certainly something that U.S. management and workers can observe. Despite the political freedom to organize, unionization has dropped in the United States, and low-wage, low-skilled workers are often left without a channel to fend for themselves. According to Unger, the current state of management-labor relations actually undermines the spirit of democracy:

Episodic unionization is likely to reinforce the pre-existing segmentation of labor force when it takes place in the setting of a starkly hierarchical social division of labor. Skilled workers in the capital-intensive sectors of industry will ordinarily have greater bargaining power.
The contractualistic labor-law regime favors a middle-level, economistic style of labor militancy. Such a style of militancy focuses upon wages, benefits and job security rather than upon the organization of the firm and the economy. The assimilation of labor relations to private contract conceals the political constitution of labor relations, helping to push the political economy of work just beyond reach of active and conscious response by workers. (Unger, 1998, p. 224)

He further suggests that the development of labor rights ought to be growth-friendly:

They must help moderate the conflict between two great social requirements of the material progress of society: the acceptance of innovation and the disposition to cooperate. For economic growth to occur, people must cooperate: most notably, workers with workers, and workers with managers, but also firms with firms and businesses with governments. People must also, however, innovate and accept innovation. The problem is that every innovation threatens to change the relative positions and advantages of the cooperators by altering the context of practices, expectations, and rights in which their cooperation is embedded. We must therefore prefer those ways of organizing cooperation that minimize the conflict between the requirements of cooperation and innovation. The partnership principle—arrangements for sharing of profits and ownership with workers—has just this attribute. (Unger, 1998, p.224)

A symbiotic relationship exists between regional growth and labor welfare. Unger’s insights and suggestions may point towards an alternative, for both developing and developed countries, to achieve sustainable success on both counts.

In the societies that we live in today, we spend a majority of our waking life at work, at the workplace, and with other workers. Ensuring healthy, positive, and empowering workplace and labor relations is therefore important for ideological, political, economic, social, and pragmatic reasons. I have demonstrated that both China and the United States have a long ways to go before labor relations are close to optimal. A change in norms and expectations ought to take place. With a bit of imagination and the courage to experiment, however, I believe that positive labor relations can emerge to sustain the growth of human capital, communities, industries, and regions.
Map 1: LOCATION OF SURVEYED SAMPLE OF COKE MAKING PLANTS

Plants Location in 2000 TVE Survey

Source: AGS China Coke Making Project TVE Survey 2000, compiled by Yan Chen.
Map 2: SHANXI PROVINCE AND CHINA

Source: www.rom.on.ca/pub/unicorn/graphics/unimap2f.gif
FIGURES

Figure 1.1: THESIS CONCEPT
Figure 3.1: U.S. Steel Production and Imports
(MILLION METRIC TONES)

Source: U.S. Bureau of Mines and the U.S. Geological Survey-Minerals Yearbook (MYB); Mineral Resources of the United States (MR), Mineral Commodity Summaries (MCS); Commodity Data Summaries (CDS); Metal Prices in the United States through 1998 (MP98).
Figure 3.2: U.S. Steel Mills Production Workers' Hourly Earnings vs. Value Added, 1977-1992

Figure 5.1: **VALUE ADDED OF INDUSTRIES IN SHANXI PROVINCE, 1992- 2000**  
*(PERCENT OF TOTAL VALUE ADDED IN THE PROVINCE)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Industry</th>
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Notes:  
(1) RMB= Renminbi;  
(2) Total Industry Value-Added in Million RMB;  
(3) Mining, Petro Processiong and Coking as percentage of Total Industry Value-added.
Figure 5.2: Urban and Rural Population in Shanxi Province, 1952-2000

(Percent)

Figure 5.3: Shanxi Province Staff and Workers (all sectors) Educational Attainment and Female Labor Force Participation, Compared with the Rest of China, 1998 (percent of all staff and workers)

Note: Total number of staff and workers in Shanxi Province TVEs was 1.3 million in 1998, compared to the national total of 48.3 million.
Figure 5.4: EMPLOYMENT IN SHANXI PROVINCE BY ENTERPRISE OWNERSHIP, 1952-2000
(MILLION PERSONS)

Notes: There has been a decline in total employment in Shanxi Province in recent years, exact reasons for the decline are unknown.
Figure 5.5: Average Wages of Employees in Shanxi Province and National TVEs, 1998 (Nominal RMB)


Notes: (1) RMB= Renminbi;
(2) Nominal RMB values refer to the face value of the RMB in 1998.
Figure 5.6: Average Wages of Employees in Shanxi Province and National TVEs, 2000 (Nominal RMB)

Notes: (1) RMB= Renminbi;
(2) Nominal RMB values refer to the face value of the RMB in 1998.
Figure 5.7: Average Number of Employees at Surveyed Shanxi Cokemaking TVEs, 1995-2000
(employees per plant)

Source: AGS China Coke Project TVE Survey 2000
Notes: (1) Average = Total Number of Employees Among All TVEs surveyed/Total Number of TVEs Surveyed; (2) Median refers to the number of employees at the plant in the middle of the distribution when all plants surveyed are ranked by their number of employees; (3) Mode refers to the most common level of employment among all the plants surveyed.
Figure 5.8: **SHANXI COKEMAKING EMPLOYEES IN FIVE SURVEYED REGIONS, 1995-2001 (PERSONS)**

Source: AGS China Coke Project SOE Survey, 2001
Figure 5.9: PICTURE OF EMPLOYEES DINING AT COMPANY CAFETERIA

Source: Author, taken during field visit, Summer 2001.
Figure 5.10: EMPLOYEE EDUCATIONAL ATTAINMENT
1998 (TVE), 2000 (TVE) AND 2001 (SOE)

Note: The percentages represent the proportion of plants surveyed which indicated that their staff received the depicted years of schooling.
Figure 5.11 EMPLOYEE TRAINING
1998 (TVE), 2000 (TVE) AND 2001 (SOE)

Note: The percentages represent the proportion of plants surveyed which indicated that their staff received the depicted length of training
Figure 5.12: Picture of production workers wearing hard hats

Source: Author, taken during field visit, Summer 2001.

Figure 5.13: Picture of physical reminders of health and safety

Source: Dr. Karen R. Polenske, taken during field visit, Summer 2001.
Figure 5.14: FORMS OF TVE OWNERSHIP, 1998  
(N= 158)

Figure 5.15: TVE Ownership by Founding Year of Plant, 1983-2000

Figure 5.16: **Annual Per Capita Employee Compensation Against Plant Ownership, TVE (1998)**


Notes:
(1) RMB= Renminbi;
(2) Nominal RMB values refer to the face value of the RMB in 1998.
Figure 5.17: Oven Technologies and Employee Compensation Cost, TVE (1998)

Notes: (1) RMB= Renminbi;
(2) Nominal RMB values refer to the face value of the RMB in 1998.
Table 5.1: Shanxi Province and National Petroleum Processing and Coking TVE Employment, 1995-1998

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shanxi Petro Processing and Coking (employees)</strong></td>
<td>9,478</td>
<td>90,524</td>
<td>85,205</td>
<td>75,660</td>
</tr>
<tr>
<td><strong>Enterprises (units)</strong></td>
<td>1,428</td>
<td>1,306</td>
<td>1,314</td>
<td>907</td>
</tr>
<tr>
<td><strong>Average Number of Employees (per work unit)</strong></td>
<td>66</td>
<td>69</td>
<td>65</td>
<td>83</td>
</tr>
<tr>
<td><strong>National Petro Processing and Coking (employees)</strong></td>
<td>212,386</td>
<td>208,180</td>
<td>180,149</td>
<td>158,006</td>
</tr>
<tr>
<td><strong>Enterprises (units)</strong></td>
<td>4,796</td>
<td>4,351</td>
<td>3,792</td>
<td>2,682</td>
</tr>
<tr>
<td><strong>Average Number of Employees (per work unit)</strong></td>
<td>44</td>
<td>48</td>
<td>48</td>
<td>59</td>
</tr>
</tbody>
</table>


---

Table 5.2: Composition of TVE and SOE Workforce, 1995, 2000 and 2001 (Plant Level Average)

<table>
<thead>
<tr>
<th></th>
<th>Production Workers (%)</th>
<th>Technical Staff (%)</th>
<th>Administrative Staff (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TVE - 1995</strong></td>
<td>78</td>
<td>8</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td><strong>TVE - 2000</strong></td>
<td>78</td>
<td>8</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td><strong>SOE - 1995</strong></td>
<td>74</td>
<td>17</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td><strong>SOE - 2001</strong></td>
<td>78</td>
<td>9</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: AGS China Coke Project SOE Survey, 2001
Table 5.3: Employee Tenure
1998 (TVE), 2000 (TVE) and 2001 (SOE)

<table>
<thead>
<tr>
<th></th>
<th>1 Year or Less (%)</th>
<th>1 to 5 Years (%)</th>
<th>5 or More Years (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TVE - 1998</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Workers</td>
<td>18</td>
<td>57</td>
<td>23</td>
</tr>
<tr>
<td>Technical Staff</td>
<td>6</td>
<td>51</td>
<td>37</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>6</td>
<td>51</td>
<td>36</td>
</tr>
<tr>
<td><strong>TVE - 2000</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Workers</td>
<td>13</td>
<td>46</td>
<td>29</td>
</tr>
<tr>
<td>Technical Staff</td>
<td>5</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>3</td>
<td>36</td>
<td>46</td>
</tr>
<tr>
<td><strong>SOE - 2001</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Workers</td>
<td>10</td>
<td>37</td>
<td>25</td>
</tr>
<tr>
<td>Technical Staff</td>
<td>6</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Administrative Staff</td>
<td>6</td>
<td>29</td>
<td>49</td>
</tr>
</tbody>
</table>

Source: AGS China Coke Project TVE Surveys 1998 and 2000
Note: The percentages represent the proportion of TVEs surveyed which indicated that their staff had worked in the industry for the depicted length of time.
Table 5.4: EMPLOYEE SAFETY (PERCENT ADOPTING MEASURE),
1998 (TVE), 2000 (TVE) AND 2001 (SOE)

<table>
<thead>
<tr>
<th></th>
<th>Safety Instructions</th>
<th>Helmets</th>
<th>Hard Shoes</th>
<th>Eye Goggles</th>
<th>Fire Extinguisher</th>
<th>First Aid Kit</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVE- 1998</td>
<td>79</td>
<td>68</td>
<td>77</td>
<td>60</td>
<td>43</td>
<td>32</td>
<td>9</td>
</tr>
<tr>
<td>TVE- 2000</td>
<td>91</td>
<td>76</td>
<td>66</td>
<td>61</td>
<td>51</td>
<td>41</td>
<td>7</td>
</tr>
<tr>
<td>SOE- 2001</td>
<td>96</td>
<td>98</td>
<td>78</td>
<td>67</td>
<td>71</td>
<td>49</td>
<td>n/a</td>
</tr>
</tbody>
</table>


Table 5.5: INCIDENCE OF SAFETY MEASURE ADOPTION
TVE (2000)

<table>
<thead>
<tr>
<th>Number of Safety Measures Used</th>
<th>Number of Plants</th>
<th>Percent of Total (N= 164)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9</td>
<td>5%</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>4%</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>6%</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>18%</td>
</tr>
<tr>
<td>4</td>
<td>39</td>
<td>24%</td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>26%</td>
</tr>
<tr>
<td>6</td>
<td>23</td>
<td>14%</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: AGS China Coke Project TVE Survey, 2000
Table 5.6: TVE Ownership and Adoption of Safety Measures

TVE (2000)

<table>
<thead>
<tr>
<th>Township Owned</th>
<th>Village Owned</th>
<th>Jointly Owned</th>
<th>Self Owned</th>
<th>Shareholding</th>
<th>Rent/Lease</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.6</td>
<td>4.1</td>
<td>3.5</td>
<td>4.0</td>
<td>4.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Median</td>
<td>5</td>
<td>4.5</td>
<td>4.5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mode</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>N=</td>
<td>11</td>
<td>16</td>
<td>6</td>
<td>67</td>
<td>51</td>
<td>10</td>
</tr>
</tbody>
</table>


Notes: (1) Mean = Total Number of Employees Among All TVEs surveyed/Total Number of TVEs Surveyed; (2) Median refers to the number of employees at the plant in the middle of the distribution when all plants surveyed are ranked by their number of employees; (3) Mode refers to the most common level of employment among all the plants surveyed.
Table 5.7: CHANGE IN OWNERSHIP OVER TIME, 1998- 2000
(31 COMMON PLANTS)

<table>
<thead>
<tr>
<th>Ownership in 1998 (number of plants)</th>
<th>Ownership in 2000 (number of plants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Township (2)</td>
<td>Village (1)</td>
</tr>
<tr>
<td>Township (3)</td>
<td>1</td>
</tr>
<tr>
<td>Village (1)</td>
<td>1</td>
</tr>
<tr>
<td>Joint (2)</td>
<td>1</td>
</tr>
<tr>
<td>Self (12)</td>
<td>1</td>
</tr>
<tr>
<td>Rent/Lease (1)</td>
<td>1</td>
</tr>
<tr>
<td>Shareholding (9)</td>
<td>1</td>
</tr>
</tbody>
</table>


Table 5.8: ASSET-EMPLOYMENT TRADEOFF-- EMPLOYMENT LEVEL
TVE (2000)

<table>
<thead>
<tr>
<th>Type of Expansion</th>
<th>Increased Employment</th>
<th>Decreased Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded Plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Number of Plants</td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>- Median Level of Employment in 1995</td>
<td>150</td>
<td>289</td>
</tr>
<tr>
<td>Adopted New Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Number of Plants</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>- Median Level of Employment in 1995</td>
<td>145</td>
<td>218</td>
</tr>
<tr>
<td>Adopted New Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Number of Plants</td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>- Median Level of Employment in 1995</td>
<td>130</td>
<td>179</td>
</tr>
</tbody>
</table>

Notes: Median Level of Employment refers to the employment level of the plant in the middle of the distribution when plants in the specified category are ranked by the number of employees.
Table 5.9: Asset-Employment Tradeoff- Fixed Assets on Employee Training  
TVE (2000)

<table>
<thead>
<tr>
<th>Fixed Assets Investment in 2000 (Million RMB)</th>
<th>Training of Production Staff</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Plants (100%)</td>
<td>None (%)</td>
<td>1 Day (%)</td>
<td>1 Week (%)</td>
<td>1 Month (%)</td>
<td>Others (%)</td>
</tr>
<tr>
<td>0-100</td>
<td>22</td>
<td>9</td>
<td>9</td>
<td>50</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>101-200</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
<td>6</td>
</tr>
<tr>
<td>201-300</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>301-400</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>54</td>
<td>38</td>
<td>8</td>
</tr>
<tr>
<td>401-500</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>45</td>
<td>55</td>
<td>0</td>
</tr>
<tr>
<td>501-1000</td>
<td>20</td>
<td>5</td>
<td>0</td>
<td>30</td>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>1001-1500</td>
<td>8</td>
<td>0</td>
<td>13</td>
<td>50</td>
<td>38</td>
<td>0</td>
</tr>
<tr>
<td>1501-2000</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>2001-5000</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td>5001 and up</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>38</td>
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<tr>
<td>All</td>
<td>164</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>


Table 5.10: Asset-Employment Tradeoff- Total Capital on Employee Training  
TVE (2000)

<table>
<thead>
<tr>
<th>Total Capital in 2000 (million RMB)</th>
<th>Training of Production Staff</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Plants (100%)</td>
<td>None (%)</td>
<td>1 Day (%)</td>
<td>1 Week (%)</td>
<td>1 Month (%)</td>
<td>Others (%)</td>
</tr>
<tr>
<td>0-200</td>
<td>17</td>
<td>12</td>
<td>41</td>
<td>24</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>201-300</td>
<td>12</td>
<td>0</td>
<td>42</td>
<td>58</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>301-500</td>
<td>14</td>
<td>7</td>
<td>0</td>
<td>50</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>501-1000</td>
<td>11</td>
<td>9</td>
<td>0</td>
<td>55</td>
<td>36</td>
<td>0</td>
</tr>
<tr>
<td>1001-1500</td>
<td>10</td>
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<td>0</td>
<td>60</td>
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<td>20</td>
</tr>
<tr>
<td>1501-2500</td>
<td>15</td>
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<td>7</td>
<td>20</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td>1501-2000</td>
<td>6</td>
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<td>0</td>
<td>33</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td>2001-2500</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>67</td>
<td>0</td>
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<td>2501-5000</td>
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<td>40</td>
<td>10</td>
</tr>
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<td>5001-10000</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>58</td>
<td>0</td>
</tr>
<tr>
<td>10001 and up</td>
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<td>0</td>
<td>10</td>
<td>60</td>
<td>0</td>
<td>30</td>
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<tr>
<td>All</td>
<td>164</td>
<td>4</td>
<td>4</td>
<td>41</td>
<td>37</td>
<td>7</td>
</tr>
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</table>

REFERENCES


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http://202.84.17.11/english/china_abc/taiyuan.htm


