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# Industry in Lanzhou

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Ich erkläre hiermit, dass ich die vorgelegte Dissertation selbst verfasst und mich keiner anderen als der von mir ausdrücklich bezeichneten Quellen und Hilfen bedient habe.

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**Preface**

Lanzhou is the capital city of Gansu province in Northwest China. My decision to study industrial development in Lanzhou is related to my personal experience. In 1992 I heard of "sustainable development" for the first time through radio. My intuition told me that population growth had much to do with the sustainability of socio-economic development in such underdeveloped areas as my hometown. This, together with others, explained my decision to focus on population geography when I was a graduate student from 1994 to 1997. During my study as a graduate student, I participated in several research programmes concerning the relationship between population growth, economic development, resource utility and ecological evolution. My findings showed that the severely degenerating environment, quick increasing and badly educated population, backward agricultural economy with a low production efficiency are common features of a large number of areas in Gansu province. I was so disappointed that I did not have any feelings of regional sustainable development, regardless of the "rich" northern oasis-desert areas, the poor middle half-drought loess plateau areas, or the very poor southern mountain areas. In consideration of the fact that population in Gansu will grow continuously in the next 30 to 50 years due to a high proportion of young population, relatively high fertility and a longer expectation of life before a turn point for population stability or decline appears, I decided to transfer my focus from population to industrial development. I believe that industrial development is the most important factor in promoting regional sustainable development.

Lanzhou University, where I had worked for over three years, gave me a chance to apply for a German scholarship. The China Scholarship Council financed my one-year German learning in Shanghai and paid my plane tickets from China to Germany and back. The Hanns-Seidel-Stiftung provided me a scholarship for two years and the Heidelberg University for further ten months.

Earlier, my focus was on population geography. Despite this, Prof. Dr. Hans Gebhardt was so kind that he was willing to supervise me by writing my dissertation related to economic geography. Besides his excellent academic guidance, I was repeatedly moved by his patience and driven by his encourage to revise my study plan for several times and to complete the written work. His care for my financial support from the university, his attachment to academic freedom, and his friendship are all things I will remember forever. During my stay in Heidelberg, great and friendly help from Dr. Klaus Sachs made my life much easier and in order. His constructive suggestions contributed to great improvement of the dissertation. Dr. Heiko Schmid, Dr. Jörn Schellenberg, Mr. Holger Köppe, Ms. Annika Mattissek, and Ms. Stephanie Köllner, also supported me a lot.

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Chang Genying, October 2004

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**Abbreviations**

Changfenchang: Changfen Machine Tool Plant
Changzheng: Changzheng Plant
Collectives: collective-owned enterprises
CPC: Communist Party of China
Foci: Foci Medicine Plant
FYP: Five-Year-Plan
Ganchangfen: Gansu Changfen Industrial Co. Ltd.
Ganchanggong: Gansu Changcheng Electro-technical Corporation
Ganhuaji: Gansu Chemical Machinery Plant
GIOV: gross industrial output value
GMGP: Gansu Machinery Group Corporation
Lanhua: Lanzhou Chemical Industry Corporation
Lanjisi: Lanzhou Machinery Production Company
Lanlian: Lanzhou Petroleum Processing & Chemical Complex
Lanshi: Lanzhou Oil & Chemical Machinery Complex
Lantong: Lanzhou General Machinery Plant
Lanyouyan: Lanzhou Oil Machinery Institute
Lanzhou Sanmao: Lanzhou Third Wool Textile Plant (Group Enterprise)
LHNTIDZ: Lanzhou High- & New-tech Industrial Development Zone
Redianchang: Xigu Heat & Strom Plant
SMIEs: small & medium-sized industrial enterprises
SOEs: state-owned or -controlled enterprises

**Abstract**

In discussions of an actor- & action-oriented economic geography, attention has been paid to decisions and relations of enterprises, while aspects of the macro-structural power of regional economic geography have been neglected to some degree. The importance of socio-cultural – rather than economic – factors and unofficial institutions in regional economic development has been emphasized. Related discussions were linked with economic practices in developed countries, especially with industrial districts. In terms of political, economic, socio-cultural and geographical peculiarities of China and the context of Lanzhou, through this research the author tried to answer two key questions. One questions is whether aspects of the macro structural power, such as official institutions and location factors, played an important role in the industrial development of Lanzhou. Another question is to what degree actions and relations of enterprises could explain the industrial development in Lanzhou.

Both qualitative methods and quantitative methods were adopted in this research. The qualitative methods are mainly interviews with entrepreneurs and governmental officials in charge, and analyses of historical materials and annual reports of local large enterprises and documents of local government. The quantitative methods include analyses of official statistical data and questionnaires of local small and medium-sized industrial enterprises (SMIEs).

In contrast to an emphasis of non-official institutions in regional economic development by scholars in developed countries, official institutions played a decisive role in the industrial development of Lanzhou. Investments of the central government in the planned economy before 1978 initialised the local industrial development and shaped the local industrial structure. Heavy industry has been dominant in the local industry since the later 1950s. The development of local light industry before 1978 was related to national policies to build a complex local/regional industrial structure for military considerations. In the 1980s, a variety of consumer products were locally produced with the reform of SOEs and the development of private and collective enterprises. In the 1990s, many local enterprises producing consumer products experienced severe competition from enterprises in other regions, first of all in coastal region, while investments of the central government led to a quick growth of petrochemical industry in Lanzhou.

Location factors, such as proximity to the Yellow River and the city centre, local and regional raw materials and energy, and convenient transport, could explain to a great degree why several large enterprises were established in Lanzhou by the central government before 1978. They are also important for the current development of local SMIEs. The importance of various "hard" location factors in the industrial development of Lanzhou is not in harmony with the argument that economic activity of enterprises forms the region, which is characterized by location factors.

In the planned economy, local large SOEs had a complex product structure, characterised by a variety of subordinate and supplementary products besides main products. With the national popular slogan – "focusing on one field, while penetrating in many fields", products and economic activities of large SOEs were further diversified in the 1980s through the booming development of their subordinate collective-owned enterprises. In the late 1990s and early 2000s, diversification of economic activity and industrial products was still popular among

local listed corporations. Diversified economic activities were usually labelled with high- & new-tech products or advanced tertiary industries. Facing severe competition by producing low-tech products, some local large enterprises tried to develop new products to create new markets, as many large enterprises in developed countries have done. But till now, diversified economic activities play a very limited role in production and sales of large enterprises. Local large enterprises did not have a long-term diversification plan.

In product sales and especially in input acquisition of local SMIEs, long-term partners are dominant. Guarantee of inputs and product sales is the number one function of their long-term relations. Sometimes, long-term material linkages were accompanied by slight improvement of the product quality. Personal guanxi is important by initializing long-term transactions. As in industrial districts, trust is the basic mechanism for maintaining long-term relations. Interactions between related associations and local SMIEs are limited and no evidence for so-called "associational assets" is found. Family members, relatives and friends are the most important source of funds by establishing private enterprises.

Local SMIEs, as well as large enterprises, produce basically standardised products and innovations are seldom. There do not exist interactive innovations among certain networked enterprises. Above all, local enterprises are short of qualified researchers and technicians, financial means and advanced facilities for innovations. Equipment introduction was the most important means of technological improvement of local enterprises. Other means include learning by doing, on-the-job training of employees, employment of more qualified employees, and technological introduction from universities and research institutions.

The industrial development in Lanzhou in the past 50 years can be basically explained by aspects of the macro structural power, such as the changing economic system, the ongoing reforms of SOEs and reorganisation of state assets among SOEs, the changing national regional economic policies, location factors, and competitions between local enterprises and enterprises in other regions of China. Relational aspects of economic activities, such as material linkages among enterprises and interactions between enterprises and associations, can explain the local industrial development to a limited degree only. Political and economic elements still play a much more important role in the local industrial development than social-cultural elements. But decisions and relations of enterprises should not be neglected by understanding regional economic development in China, since more and more SOEs own autonomous performance rights and enterprises with other types of ownership play a more and more important role in the national economy.

**Zusammenfassung**

Die gegenwärtigen Diskussionen in der handlungs- und akteursorientierten Wirtschaftsgeographie konzentrieren sich vor allem auf das Entscheidungsverhalten von Unternehmen und auf die Beziehungen zwischen Unternehmen. Dabei wird die Bedeutung sozial-kultureller Faktoren für eine erfolgreiche regionale ökonomische Entwicklung sehr stark betont und die Untersuchung makrostruktureller Bedingungen in einem gewissen Maße vernachlässigt. Zudem beschränken sich Analysen zur regionalen Wirtschaftsentwicklung häufig auf die ökonomische Praxis in westlichen Industrieländern, hier insbesondere auf die Industriedistrikte. Die politischen, ökonomischen, sozialen, kulturellen und geographischen Ausgangsbedingungen der regionalen Wirtschaftsentwicklung in der VR China unterscheiden sich jedoch deutlich von denen der Wirtschaftsregionen in westlichen Industrienationen. Am Beispiel der industriellen Entwicklung in Lanzhou, der Hauptstadt der Provinz Gansu (Westchina), untersucht die vorliegende Arbeit, inwieweit die lokale und regionale industrielle Entwicklung in China weiterhin von makrostrukturellen Faktoren bestimmt wird bzw. inwieweit im Zuge der wirtschaftlichen und politischen Reformen auch mikrostrukturelle Faktoren, z.B. persönliche Beziehungen und informelle Institutionen, an Bedeutung gewonnen haben.

Die empirischen Untersuchungen erfolgten zum einen mit qualitativen Methoden – persönliche Interviews mit Unternehmern und Regierungsbeamten, Auswertung von historischen Dokumenten, Dokumenten der lokalen Regierung und Jahresberichten der lokalen Großunternehmen, zum anderen mit quantitativen Methoden – Analyse der amtlichen statistischen Daten, halbstandardisierte Befragung der lokalen klein- und mittelständischen Industrieunternehmen.

Die Untersuchungsergebnisse zeigen, dass informelle Institutionen und Beziehungen für die industrielle Entfaltung Lanzhous keine entscheidende Rolle spielen. Verantwortlich sind vielmehr formelle Einrichtungen und offizielle Regierungsentscheidungen. Basis für die industrielle Struktur war die vor 1978 initialisierten Investitionen der planwirtschaftlichen Zentralregierung. Seit den späten 1950er Jahren dominierten zunächst Unternehmen der Schwerindustrie, bevor aus militärischen Überlegungen der Aufbau einer vielfältigen Leichtindustrie erfolgte. Aber erst in den 1980er Jahren kam es im Zuge der Reformpolitik zur Produktion zahlreicher Verbrauchsgüter, die auch nicht mehr ausschließlich in Staatsbetrieben, sondern zunehmend in Kollektiv- und privaten Unternehmen hergestellt wurden. Während viele dieser neuen Betriebe sich seit den 1990er Jahren einer starken Konkurrenz von Unternehmen aus anderen Regionen Chinas, vor allem aus den Küstenregionen, gegenüber sahen, förderten Investitionen der Zentralregierung in Lanzhou ein rasches Wachstum der petrochemischen Industrie.

Die Gründung großer Industrieunternehmen durch die Zentralregierung vor 1978 erfolgte vor allem aufgrund der „harten“ Standortfaktoren Lanzhous: die Nähe zum Gelben Fluss und zum Stadtzentrum, lokale und regionale Rohstoffvorkommen und Energiequellen sowie eine insgesamt günstige Verkehrslage. Diese Standortqualitäten sind für die Entstehung dieser Industrieregion wie auch für die Entwicklung lokaler klein- und mittelständischer Industrieunternehmen bis heute enorm wichtig. Diese große Bedeutung der verschiedenen „harten“ Standortfaktoren für die Industrieentwicklung in Lanzhou widerspricht der Argumentation von

Bathelt und Glückler (2002), dass sich industrielle Regionen aufgrund wirtschaftlicher Aktivitäten von Unternehmen herausbilden, nicht aber das Ergebnis von Standortfaktoren sind.

In der Planwirtschaft produzierten die lokalen großen Staatsunternehmen meist nicht nur einige wenige Güter für den „Verkauf", sondern sie stellten auch die für die Produktionsgüter notwendigen technischen Anlagen, Werkzeuge und Produktkomponenten selbst her, die zum Teil ebenfalls für den „Verkauf" produziert wurden. In den 1980er Jahren erfolgte in den rasch zahlreicher werdenden Kollektivunternehmen, die weiterhin den Staatsunternehmen unterstellt waren, eine noch weiter reichende Diversifizierung der Produktpalette und Unternehmensaktivitäten gemäss dem Slogan: „Focusing on one field, while penetrating in many fields". Unter den lokalen börsennotierten Aktiengesellschaften setzte sich diese Diversifizierung bis in die späten 1990er und frühen 2000er Jahre fort. Diversifizierte Unternehmensaktivitäten in den späten und frühen 2000er Jahren galten als Synonym und Garant für die Produktion moderner Hightech-Güter und eine hoch entwickelte Dienstleistungsindustrie. Ungeachtet der starken Konkurrenz bei Lowtech-Gütern versuchten die großen lokalen Unternehmen mit neuen Produkten neue Märkte zu etablieren, so wie es zuvor bereits zahlreiche große Unternehmen in den westlichen Industrieländern getan hatten. Tatsächlich aber sind die diversifizierten Unternehmensaktivitäten für die großen lokalen Unternehmen in Lanzhou nur sehr begrenzt von Bedeutung, weil langfristige tragfähige Diversifizierungskonzepte fehlen.

Für die lokalen klein- und mittelständischen Unternehmen sind langfristige Verträge und Vertragspartner sowohl für den Absatz ihrer Produkte wie auch für den Einkauf von Rohstoffen von entscheidender Bedeutung. Interessanterweise kommt es bei langfristig vereinbarten Zulieferprodukten zu einer geringfügigen Verbesserung der Produktqualität. Beim Aufbau von langfristigen Geschäftsbeziehungen spielen persönliche Beziehungen oder „guanxi" eine wichtige Rolle; wie in den „industrial districts" westlicher Industrienationen basieren langfristige Beziehungen zwischen Unternehmen auch in China auf gegenseitigem Vertrauen. Formelle Beziehungen zwischen Betrieben und offiziellen Verbänden sind selten und spielen für die Etablierung und Entwicklung eines Unternehmens kaum eine Rolle. Die empirischen Arbeiten liefern keinerlei Hinweise für so genannte „associational assets". Die wichtigsten Quellen des Investitionskapitals bei der Gründung von Privatunternehmen sind Familienmitglieder, Verwandte und Freunde.

Lokale klein- und mittelständische Unternehmen produzieren in der Regel – ebenso wie die Großunternehmen – standardisierte Produkte; Innovationen sind selten, auch in vernetzten Unternehmen. Zur Entwicklung von Innovationen fehlen den lokalen Unternehmen – neben finanziellen Mitteln – vor allem hochqualifizierte Forschungs- und Fertigungsabteilungen. Technologische Verbesserungen erzielten die lokalen Unternehmen vor allem durch die Einführung moderner Fertigungstechniken sowie durch „learning by doing", „on the job training", durch die Einstellung qualifizierter Mitarbeiter und die Einführung technischer Neuerungen aus Universitäten und Forschungseinrichtungen.

Die vorliegende Studie zeigt, dass die industrielle Entwicklung Lanzhous seit der Gründung der Volksrepublik China 1949 ein Resultat makrostruktureller Bedingungen war und bis heute ist. „Harte" Standortfaktoren, die politisch organisierte Transformation des Wirtschaftssystems von einer zentralistischen Plan- zur sozialistischen Marktwirtschaft, mit der eine Reorganisation der großen Staatsbetriebe und eine veränderte regionale Wirtschaftspolitik einher-

geht, und die Konkurrenzsituation lokaler Unternehmen in Lanzhou zu Unternehmen in anderen Regionen Chinas wurden als maßgebliche makrostrukturelle Einflussgrößen identifiziert. Relationale Aspekte innerhalb der wirtschaftlichen Aktivitäten treten dagegen in den Hintergrund. Informelle Beziehungen zwischen Unternehmen sichern zwar langfristig Produktion und Absatz, führen aber bislang nicht zu Netzwerken oder Synergieeffekten durch räumliche Nähe, die ein produktivitätssteigerndes „innovatives Milieu“ erzeugen könnten. Politische und wirtschaftliche Vorgaben der zentralen, regionalen und lokalen Regierungen sind für eine industrielle Entwicklung weiterhin von sehr viel größerer Bedeutung als sozial-kulturelle Bedingungen. Arbeiten zur Regionalforschung in China sollten individuelle Unternehmensstrategien und informelle Geschäftsbeziehungen künftig aber nicht aus dem Blick verlieren. Denn immer mehr Staatsbetriebe werden eine größere Autonomie hinsichtlich ihrer Unternehmenspolitik erhalten und andere Eigentümerstrukturen (Kollektiv- und Privatunternehmen, Joint Ventures) werden für die lokale, regionale und auch nationale Wirtschaft Chinas immer wichtiger werden.

## Introduction

In theories related to positivism, structuralism and functionalism, the regional economic development and spatial distribution of economic activity were understood as being determined by location factors, spatial divisions of labour, as well as other aspects of the macro structural power and general processes of economic development. Universally usable spatial laws and general models of regional economic development are among the most important research objects of economic geographers. The spatial concentration of economic activity was mainly linked with physical distance-related costs. In contrast, in discussions of new regionalism, the importance of spatial proximity was emphasized with regard to social distance-related mechanisms, such as creative milieus, untraded interdependence, and unofficial institutions. Attention has been paid to place-specific socio-cultural and institutional contexts of economic development.

Economic practices are embedded in place-specific socio-institutional contexts and should not be causally treated and generalised. A deep position of context in regional economic development was showed, for example, by the interpretation of the Italian school of concentration of neo-artisan industry in the so-called "Third Italy". In line with a deep position of context, Bathelt and Glückler (2002) suggested a transition from the spatial school and regional science to a "relational economic geography". According to the relational economic geography, firms' decisions and their relations rather than location factors and structural aspects of economic development should lie at the centre of analyses. Economic activities of firms should be understood from three basic perspectives: contextuality, path dependency, and contingency. A regional research therefore should concentrate on four "-ions": organisat*ion*, evolut*ion*, interact*ion*, and innovat*ion* (ibid., 37).

A deep position of context in regional economic development was mainly confined to economic practices of some areas in developed countries, especially those in industrial districts. Firms in those areas are innovative, and unofficial institutions play a very important role in regional economic development. But theories derived from economic practices of those areas are context-specific. There may also exist such circumstances, in which aspects of the macro structural power play the most important role in regional economic development, while context exerts a limited influence only. This research about "Industry in Lanzhou" can deepen our understandings of regional economic development between structural power and contextuality, in terms of political, economic, cultural differences of China in contrast to developed countries and the context of Lanzhou.

Heavy industry, mainly oil refinery, petrochemical industry, equipment for oil-tapping and oil-refinery, and smelting and pressing of aluminium, is dominant in the industry of Lanzhou from the later 1950s till now. Light industry, mainly wool textile, Chinese medicine and food, also plays some role. State-owned large enterprises are dominant in the local industry, while private and foreign-funded enterprises play a limited role only.

In this research, attention is paid to both the aspects of the macro-structural power and decisions and relations of local firms. The macro-structural aspects of local industrial development include the reform and open-up policy, changing regional policies of the central government, regional divisions of labour and enlarging regional disparities, the extensive mode of

economic growth, and the Confucian culture. Great effort was made to analyse the relationship between location factors and the relative economic location of the city, and the establishment of local large SOEs and development of local SMIEs.

At firms' level, definite conclusions are drawn in aspects of the changing product structure of local large enterprises, the relationship between enterprises and associations and between enterprises and local governmental officials, and channels of product sales and input acquisition of SMIEs. In aspects of improvement of main technologies, improvement of the product quality, and functions of long-term transactions, only preliminary conclusions are drawn. The research was confined by financial means, research time, complexities of the socio-economic situation in China, difficulties in carrying out questionnaires and interviews.

Both qualitative methods, such as interviews, analyses of documents of government and enterprises, and quantitative methods, such as questionnaires and analyses of official statistical data, were adopted in the study.

The dissertation consists of eight parts. In the first part, main aspects of the discussions on an action- & actor-oriented economic geography are firstly involved. Then, the context of China in aspects of the economic system, the mode of economic growth, industrial policies, regional disparities, and the Confucian culture is analysed. Thereby, questions involved in the study on industrial development in Lanzhou are raised with respect to both the context of China and related discussions in economic geography. At the end of this part, research methods, implementation and shortcomings of this study are presented. The second part concentrates on the context of Lanzhou: its relative economic location, general conditions and its industry in 2001. Based on both documents of large enterprises and annual official statistical data, the history of local industrial development is described at the sectoral level in the third part.

Enterprise documents, annual reports of listed corporations and personal interviews are used to analyse the changing product structure of local large enterprises in the fourth part. The analyses of the fifth, sixth and seventh part are based on questionnaires of local SMIEs, supplemented by interviews and governmental documents. The fifth part is related to agglomeration mechanisms of local SMIEs from the perspectives of ownership types, their dependence on local/regional demands, and agglomeration economies. The sixth part deals with material linkages and communications associated with SMIEs in aspects of product sales and input acquisitions, the relationship between enterprises and local governmental officials, and between enterprises and various associations. In the seventh part, improvement of technologies and the product quality is analysed. Finally, in the eighth part, the results are discussed and conclusions are drawn.

# 1 Aims of Research and Research Design

Research aims of this study are subject to both disciplinary development and the context of China in related aspects. In accordance with multidimensional questions, both qualitative and quantitative methods are adopted.

## 1.1 Progress in economic geography

"A consensus about the subject and tasks of cultural geography (economic geography) is not possible in consideration of greatly heterogeneous basic theories and the disciplinary reality," (Gebhardt, 1990, 17). This suggests how quarrelsome this sub-discipline is after being transited from a geography of regional description and synthesis. Till 1983, Schamp distinguished at least five approaches in economic geography: functional, spatial economic, behavioural and decision-making, welfare, and new-hermeneutic (through Gebhardt, 1990, 17–19). Among the large quantities of approaches, some may play a more important role than others in the disciplinary development, just as Watts identified such three main approaches as behavioural, neoclassical (positivist), and structural approaches till 1978 (Watts, 1987, 15), and Wheeler et al. distinguished three philosophical approaches in the 1990s: positivism, structuralism and humanism (Wheeler et al., 1998). In Germany, many human geographers suggested a transition of a space-oriented human geography to an action- & actor-oriented human geography, possibly represented by Werlen (1995, 1997, 2000), and Bathelt and Glückler (2002), with regard to social geography and economic geography respectively.

In this sector, discussions on distinguishing an action- & actor-oriented from a space-oriented economic geography are firstly presented. Then, different understandings of spatial proximity and locations in regional socio-economic development are discussed.

### 1.1.1 Key discussions towards a more action- & actor-oriented economic geography

*The changing human image in economic activities*

In the school of spatial analysis and regional science, especially in theories of industrial locations, the dominant human image is the homo economicus, characterized by utility-maximization or costs-minimization (Richardson, 1978, chap. 3). This notion of utility-maximizing, omniscient homo economicus was criticized by the behavioural school. Pred (1967) pointed out that the choice of individual decision-makers is subject to the quality and quantity of information available and their ability to use information. Limited by available information and the ability to use it, a decision has "bounded rationality" and a decision-maker is more a satisfier than an optimiser able to pursue and realize minimal costs or maximum benefits (Wolpert, 1964; Krumme, 1972; Hamilton, 1974). Further, among a number of alternatives, the choice of a satisfier may result from both economic and non-economic elements (Uchatius, 2000). Not only economic elements matter thereby.

A decision-maker doesn't act as a physical atom. Firstly, his decision should be based on his experience, as suggested by phenomenology (Schütz, 1932; Hard, 1973). Secondly, his current decision is subject to his past decisions. In other words, current decisions of an enterprise may be influenced by its past decisions and the enterprise is confined to its development path.

Only suboptimal decisions can be currently made for its attachment to past decisions, as showed by evolutionary economics (Dosi, 1982, 1988). Thirdly, new economic sociologists thought that actors are not isolated from each other and economic activities are embedded in the systems of social relations of actors (Granovetter, 1985, 1992). Economic action, outcomes, and institutions are affected by actors' personal relations and by the structure of the overall network of relations (Bathelt and Glückler, 2002, 160). Place-specific social relations or collective actions in a geographical context function against a universal human image of rational, self-interested individuals (Barnes and Sheppard, 1992; Miller, 1992). This view of treating individuals within groups and social systems was shared by some social psychologists (e.g. Rouchy, 1982; Leal, 1983; Hutten, 1983).

*Organisation forms of economic activities: markets & hierarchies plus networks*

According to Williamson (1975, 1979, 1981, 1985), the organisation form of economic activity is decided by specific transaction costs in a market economy. Transaction costs depend on the degree of uncertainty, transaction frequency and transaction-specific investments in human and physical capital. In a long run, "simple, discrete or nonrepetitive exchanges tend to be transacted through markets" and "exchanges that involve high uncertainty, recur frequently, or require substantial transaction-specific investments are more likely to occur within hierarchically organised firms" (Morgen and Cooke, 1993, 544), whereas interfirm networks, such as strategic alliances, buyer-supplier partnerships, and joint ventures are only a temporal, labile form of transactions (Bathelt and Glückler, 2002, 158). In contrast, the embeddedness approach emphasised the relational aspect of economic transactions. According to it, economic transactions among networked actors are socio-culturally embedded, as Yeung (2000) viewed "networks as both a governance structure and a process of socialization through which disparate actors and organisations are connected in a coherent manner for mutual benefits and synergies." Networks may also be a stable transaction form and Yeung (2000) identified various forms of networks, such as business networks, supplier commodity chains, production networks, and innovative networks.

*Understanding regional economic development: from determinism to contextualism*

The school of spatial analysis and regional science regarded geography as "an analytical, law-finding discipline conjoined with quantitative methodologies" (Scott, 2000, 21). Universally functioning, first of all distance-related spatial laws, such as Thünen's agricultural rings (1875), Christaller's central place theory (1933) and Lösch's market nets (1944), and various models of regional development, such as growth polar theory (Perroux, 1955; Boudeville 1966), circular and cumulative causation theory (Myrdal, 1957), core-periphery theory (Friedmann, 1966), are among main research objects of economic geography (Isard, 1956, 1960; Bartels, 1968, 1970; Schätzl, 1994, 1998). Philosophically, the school of spatial analysis is in accordance with positivism, overemphasizing the necessary causation, employing the scientific (statistic and mathematical) methods to interpret and understand issues in economic geography, and "involving informed hypothesis testing leading to empirical generalisations and lawlike statements" (Smith, 1979; Wheeler et al., 1998).

In traditional theories of industrial location decisions, location factors, such as transport costs, labour costs, and agglomeration economics were used to explain location decisions of enter-

prises according to the principle of costs minimization or profits maximization. Much work was made at enterprise level to understand the relationship between location factors and location decisions of enterprises (e.g. Brede, 1971; Fürst, 1971; Gebhardt, 1979, 1990; Bathelt, 1992). Practical studies showed that location motives of enterprises changed with the socio-economic development and varied from place to place. From the 1950s to the 1970s, the labour force and cheap and abundant land were two most important factors influencing location decisions of newly founded plants in Germany, followed by local demands. But the importance of the labour force declined continuously, while official preferential policies and agglomeration effects played a more and more important role. In addition, location motives of more and more enterprises were diversified and their location decisions could be contributed to individual and non-traditional factors to a great degree (Schliebe, 1982; Gebhardt, 1990, 164). Especially in the Alpine areas, individual and accidental non-traditional factors played a very important role in location decisions of local enterprises (Gebhardt, 1990, 165). This could be associated with two tendencies of later reinterpretation of location decisions of enterprises. On the one hand, "soft" location factors, such as culture, safety, environment, and regional image should be also taken into account by analysing location motives of enterprises besides traditional "hard" location factors (Gaebe, 1998, 96). On the other hand, location decisions of enterprises should be interpreted evolutionally, rather than statically and deterministically. And new founding of an autonomous plant under the influence of social relations of the founder, move of a plant and new founding of branch plants according to strategies of headquarters should be dealt with separately by analysing location decisions of enterprises (Bathelt, 1991). Correspondingly, traditional causal connection of regional economic development with location factors should be replaced by evolutionary analyses of how socio-economic processes shape the region, characterized by location factors.

The deterministic understanding of regional economic development related to positivism, structuralism or functionalism has been further criticized by various theories, including evolutionary economics (Nelson and Winter, 1982), Giddens (1984) structuration theory, French regulation theory (Aglietta, 1979; Lipietz, 1985, 1987; Boyer, 1988, 1990), post-Fordist thought of flexible specialization (Piore and Sabel, 1985), and realist epistemology (Sayer, 1982, 1984, 1989). For Giddens, structure – rules and resources – exits only as memory traces of agents/actors. The duality of structure – "structure as the medium and outcome of the conduct it recursively organizes" – means that "the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction" (Giddens, 1984, 374). His emphasis on the importance of actors in formation of social systems contributed greatly to the development of a subject-oriented social geography (Werlen, 1995, 1997, 2000) and a new regional geography (e.g. Thrift, 1996). This action- & actor-related understanding of regional economic development was further boosted by the writings of Sayer (1982, 1984, 1989) on realist epistemology in economic geography. Sayer thought that valid laws about socio-economic processes can not be expected to be manifest at the empirical level in absolutely uniform regularities and local contingencies are as important as causal laws/structures in constructing local economy. These two theories, together with writings of Massey (1984) of "Spatial Divisions of Labour" and others, contributed to the popularity of the so-called "contextual approach" in economic geography (e.g. Sunley, 1996). On the one hand, economic practices are embedded in place-specific socio-institutional contexts and should not be causally treated and generalized. But context may exert a minor or a major influence (Sunley, 1996). One example for a deep position of context is the interpretation of

the Italian school of concentration of neo-artisan industry in the Third Italy by emphasizing the extra-economic (socio-cultural and institutional), socio-territorial dimension of the Mashallian concept of the industrial district (Becattinni, 1987; as a summary: Asheim, 2000). On the other hand, theories and ideas in economic geography are connected with academic and practical contexts, from which they are derived. It suggests "there may be a plurality of views on any topic which are all valid" (Sunley, 1996).

*Space, location, region: a transition from causal spatial laws and determinism of location factors to "spatiality as the structural principle of the social" or only as geometric impression of socio-economic activities?*

In the spatial school, distance is regarded as an explanatory element of the spatial distribution of economic activities and exchange relations, and it seems that space functions as an actor. In opposition, distances are the result of thematic contexts (inhaltliche Zusammenhängen) of respective socio-economic problems, rather than their causes (Bathelt and Glückler, 2002, 21–22). Not that space determines action, but that material and institutional conditions of action are changed through action. Not that region determines the development of enterprises, but that enterprises shape regional development (Bathelt and Glückler, 2002, 34; Storper and Walker, 1989). There are no such things as purely spatial processes and there are only particular social processes operating over space (Massey, 1985, 11). Thus, economic geographers should analyse how the social and the economic determine spatial structures by putting actors – individuals and organisations – and their action at the centre of analysis (Bathelt and Glückler, 2002, 22; Werlen, 1997). In this sense, region is only the geometric impression of socio-economic activities.

It seems this view overlooks the spatial dimension of socio-economic activities, in contrast to the view regarding spatiality as the structural principle of the social (Weichhart, 1996; Meusburger, 1998). For one aspect, regional disparities in form of a spatial concentration of knowledge, power, and control functions, and a decentralization of low-quality routine functions can be appear inevitably because of vertical labour divisions and differentiation and specialization of social systems, according to functional and organisational theories (Meusburger, 1998, 181). An example is the confinement of innovation activities within limited places due to the uncertainty of innovation processes, the dependence of innovative activities on universities, the complexity of innovation processes, the importance of learning by doing and the cumulative character of innovative activities (Dosi, 1988). For a second aspect, locations and regions play a constructive role in shape of socio-economic activities through mechanisms of resources, functions, symbolic meanings of locations, local and regional milieus, and space-specific rules. Space-specific rules can initialize, promote, ease, constraint, complicate or hamper regionally-related actions, although this should not be understood as deterministic (Pred, 1986; Meusburger, 1998, 186).

For a third aspect in association with the first two, the spatial proximity or local and regional concentration of enterprises and other institutions seems to be economically meaningful in a post-modern society as ever. Firstly, Krugman reemphasized the importance of agglomeration economies in current west societies by identifying the imperfect competition, increasing return, and external economies (Krugman, 1994,1998; as a critical assessment: Martin and Peter, 1996). Secondly, the long-term growth is regarded as exogenous in conventional neoclas-

sical growth models because the defect of diminishing returns to capital can only be remedied by exogenous technological progress in the long run. In the opposite, the endogenous growth theory sees long-term growth as endogenous. The growth can be resulted from increasing returns endogenously caused by capital investment which generates such externalities as learning by doing and spillovers of knowledge, by investments in human capital which spillover effects increase the productivity of both physical capital and the wider labour force and by on-the-job training or learning by doing in employment, and possibly more important, by deliberate and intentional innovation by producers and technology transfer and diffusion (Martin and Sunley, 1998). Since capital investment, human capital, and innovation capability are locally and regionally differentiated, the endogenous growth theory implies a tendency of the self-enforcing process of regional economic development, leading to further concentration and enlarged gaps between regions. Thirdly, not as expected, new techniques of telecommunication led to stronger spatial concentration of high-qualified activities, such as innovation, high-ranked decision-making and control. Decentralized were such activities as technical services, standardized production, low-ranked information processing (Meusburger, 1980; 1998, 53). Fourthly and the most important, the spatial proximity is still important and necessary in maintaining local and regional creative capabilities, regardless of much advanced transport and telecommunication conditions. Regions and territories are necessary locus for formation and maintenance of place-specific untraded interdependence, institutional thickness, relational assets, associational assets, creative milieus, and tacit knowledge, as showed in discussions of new regionalism (Malmberg, 1997; Morgan, 1997; Storper, 1997, 1999; Feldman, 2000; Mackinnon, Cumers and Chapman, 2002; Mohan and Mohan, 2002). Advantages of the spatial proximity at earlier times are mainly connected with costs-saving physical distance, while currently what matters is social distance. The importance of the spatial proximity in building trust and fulfilling face to face contact was emphasized.

### 1.1.2 Regional research object: actors versus structure and general socio-economic processes

*Actor- & relation-oriented four "-ions" of the "relational economic geography"*

Bathelt and Glückler (2002) suggested a transition of economic geography from a space science to a relational economic geography. The discontinuities between these two schools can be understood from five aspects: an inversion from that space determines action to that action shapes space; a change of the research object from causally-determined spatial structures to context-related socio-economic processes and relations; understanding actors in their

**Table 1.1 Discontinuities between the school of spatial science and relational economic geography**

| | The school of spatial science | Relational economic geography |
|---|---|---|
| The concept of space | space as object and causal factor | spatial perspective |
| Research object | spatial structure | context-related economic relations, social and economic process |
| The concept of actors | homo economicus: methodological individualism | relational: network theory, embeddedness perspective |
| Philosophical base | neo-positivism, critical rationalism | critical realism, contingent causation, evolutionary perspective |
| Research goal | spatial laws and models of economic activities | principles of socio-economic exchanges in spatial perspective |

Source: Bathelt and Glückler, 2002, 33 (modified)

relational perspective, rather than treating them as isolated individuals; paying more attention to contingent relations, instead of only to necessary relations; and a change of research tasks from spatial laws and models to the principles of socio-economic exchanges in spatial perspective (Bathelt and Glückler, 2002, 11; 34–36)

In a relational economic geography, firms' decisions and their relations lie at the centre of analysis, rather than regions and locations. Economic activities of firms should be understood from three basic perspectives: contextuality, path dependency, and contingency. In correspondence, Bathelt and Glückler put forward a regional research framework, consisting of four "-ions": organisation, evolution, interaction and innovation (Figure 1.1).

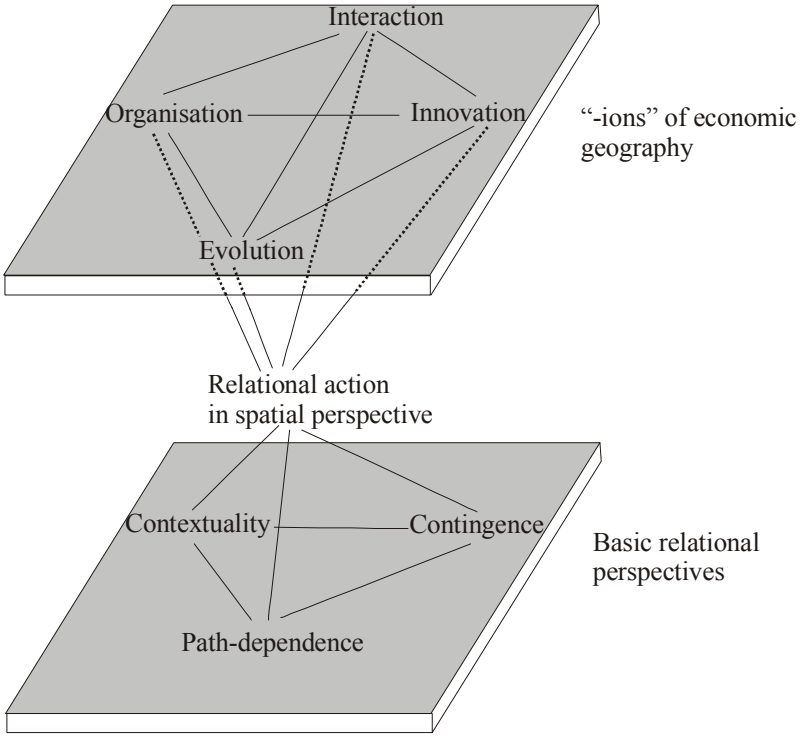



**Figure 1.1 Relational perspectives and the "-ions" of economic geography**
Source: Bathelt and Glückler, 2002, 37

*"Holy trinity": organisation, technology and territory*

Storper (1997, 1999) put forward the "holy trinity" of organisation, technology, and territory as a framework of regional studies, laying keys on territorial innovation capabilities (Figure 1.2). In contrast to the above framework of four "-ions", the spatial dimension – territories – was paid so much attention to as organisation and technologies. Here territories are the locus of, above all, untraded interdependence and unofficial institutions.

*Framework of regional research of the regulation theory*

In contrast to Marxian structuralism, the regulation theory emphasized the nationally/locally-specific, historically evolving combinations of regimes of accumulation and modes of social regulation by analysing national and regional economic development in the capitalist world (Aglietta, 1979; Lipietz, 1985, 1987; Boyer, 1988, 1990; Peck, 2000). In accordance with this

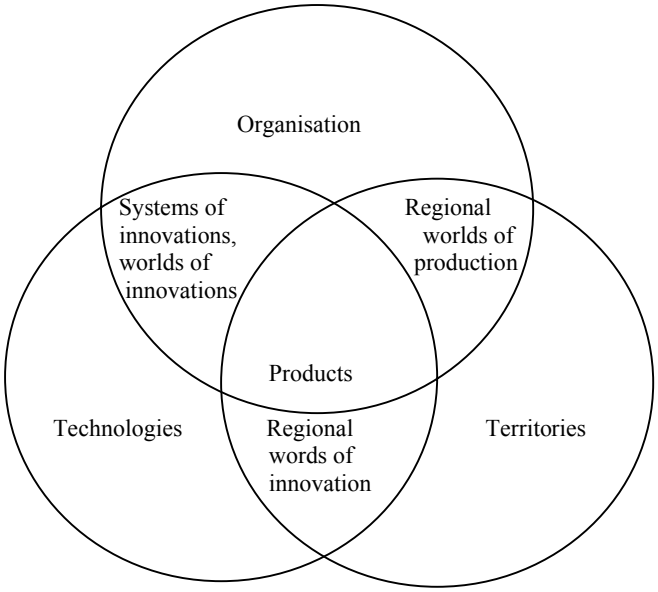



**Figure 1.2 Storper's holy trinity**
Source: Storper, 1997, 49

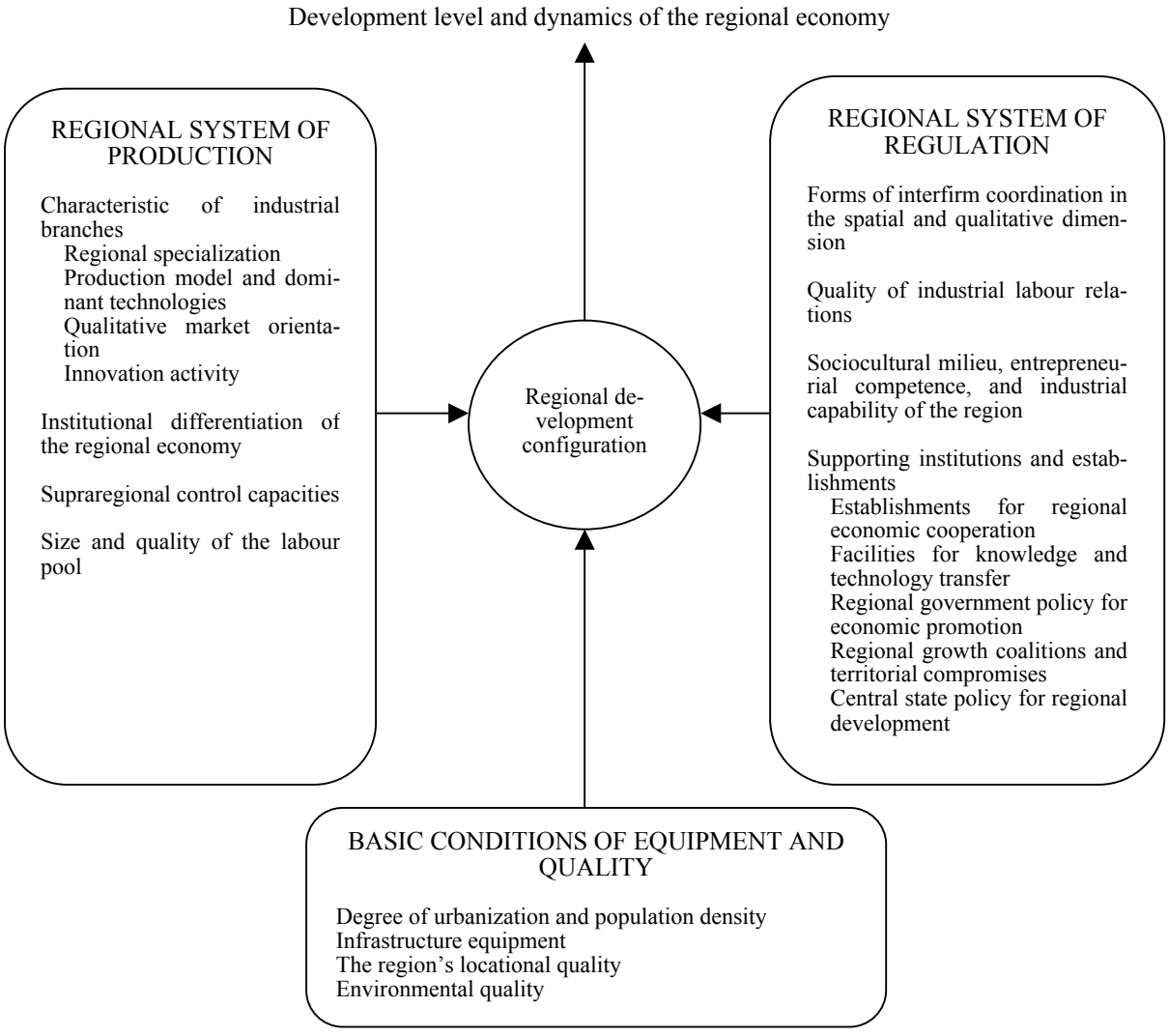



**Figure 1.3 Regional development configuration: components and influential factors**
Source: Krätke, 1999, 698

theory, Krätke (1999) introduced a framework of regional research, focusing on structural aspects of regional economic development – regional system of production, regional system of regulation, and location factors (Figure 1.3).

*Research object: actor or structure? Context matters*

Changing approaches of economic geography is not free from the influence of specific social problems of various periods (Scott, 2000). North America and Western Europe experienced their long economic prosperity with the expansion of Fordist mass-production, the emergence of modern consumer society, and the regulation of Keynesian welfare-state policy systems in the post-war era. The school of spatial analysis and regional science emerged as response to such social phenomena or problems as the quick expansion of cities and municipalities, the enlarged regional disparities, and the location of industries. It seems various location factors and physical distance-related costs could explain spatial distribution of economic activity and regional differences to a great degree. The following popularity of Marxian structuralism among some economic geographers had lots to do with the failure of the spatial school in explaining crises of some formerly prosperous regions such as the American Midwest, the British Midlands, and the German Ruhr Area and persistent rate of unemployment and inflation by the early 1970s in North America and Western Europe (Scott, 2000).

During the late 1970s to mid-1980s, a small number of economic geographers paid their attention to "post-Fordism" industries. These industries are marked by relatively high levels of spatial agglomeration, intra-local business networking, innovation, and growth (Scott, 2000, 29). Works of the Italian school on neo-artisan industries in the Third Italy and works of the school of GREMI on innovative and creative milieus (Aydalot and Keeble, 1988; Camagni, 1991) contributed greatly to theoretical discussions on a contextual, evolutionary, and contingent understanding of local and regional socio-economic development. Hot discussions on globalization between ubiquitification and localization further promoted this tendency of reinterpretation. Such more firms-related, other than location factors-related analyses were based on a post-modern society. On the one hand, lifestyles and individual consumptions are diversified, calling for a more flexible production method for more diversified products. On the other hand, subjects are regarded as cognitive and acting (Werlen, 1997), a precondition of an actor-centred approach.

Interconnections between approaches and social problems in economic geography may suggest that the dispute on a structure- or actor-centred approach is not so practically meaningful. It should be that there are circumstances and questions, for which a structure-centred approach can explain better than an action-centred approach, and there are circumstances and questions, for which the latter is more suitable (Meusburger, 1998, 107). Various approaches can be adopted according to research questions and context at different spatial scales.

## 1.2 Aims of research in the context of China

Industries in Lanzhou developed under the specific socio-institutional, economic context of China. With regard to both related discussions in economic geography and the context of China, different questions in this study were raised with analysing certain aspects of the context of China. The most important aspects include a socialist political system, a planned eco-

nomic system before the reform and a more and more market-oriented economic system after 1978, the reform and reorganisation of SOEs, the mode of extensive economic growth, changing regional policies of the central government and regional divisions of labour, and the Confucian culture.

### 1.2.1 The changing overarching official institutions

*Economic reforms in a socialist political system and open-up policy*

Before 1978, there was a planned economy in China (part 4.1). Since 1978, a reform and opening-up policy has been carried out. Till now, three events are especially noticeable with regard to reform processes. The first was the Third Plenary Session of the 11th Central Committee of the Communist Party of China (CPC) hold at the third week of December in 1978 in Beijing. The reform policy was initiated at the meeting. China opened its door to foreigners, attracting more and more foreign investment in more and more special economic zones, cities and areas of coastal region. Later, cities and areas in central and western regions were also gradually opened up to foreigners (Meng, 2003, 78–79). Individuals were allowed to own production materials and to establish own enterprises under some limitations. With comprehensive reforms in fields of prices, finance, employment, plan and commerce, much was also done to improve the efficiency of SOEs.

The reform before 1992/1993 was tentative and experimental, as Deng Xiaoping's principle shows: "cross the river, feeling your way underfoot for the stepping stones" (Seitz, 2000, 18). This situation began to change, after the second event took place. Deng made a trip to south China in 1992. Deng said clearly that market and plan are both economic means, instead of symbols distinguishing socialist societies from capitalist ones. Since 1993, China had a very clear reform goal: to establish a socialist market economy. The third event was China's entry into WTO in 2001[1]. SOEs have to compete with enterprises with other forms of ownership, such as private enterprises, foreign-funded enterprises and foreign enterprises.

*Reforms of SOEs*

With regard to their lack of autonomy and labour incentives, a soft state budget constraint, and lack of price signals and market dynamism, a series of reform measures were taken to make SOEs autonomous market units to improve their efficiencies and competitive capabilities since 1978 (Shen, 2000). Reforms can be divided into six phases: demonstration of enlarging enterprise rights (1978–1980); initial fulfilment of the "economic responsibility system" (1981–1982); replacement of (paying) profit with (paying) taxation (1983–1986); full fulfilment of the responsibility system of economic contracts (1987–1991); introduction of the modern enterprise system to change operation mechanism of SOEs further (1992–1996); and comprehensive reforms centring on establishing the modern enterprise system since 1997 (Chen and Lin, 2002, Chap. 9).

[1] Many large enterprises in Lanzhou evaluated China's entry into WTO positively. They thought in comparison with their foreign counterparts, their products have comparative competitive superiority in terms of ratios between price and quality. In addition, they hope that China's entry into WTO can be conducive to improving their management at the micro level and the economic environment of China at macro level. 42.7% of 75 questioned SMIEs thought that China's entry into WTO will influence their development positively, 10.7% expressed no influence and 38.7% could not evaluate it. Only 8.0% expressed a negative influence.

### 1.2.2 The changing organisational structure of large enterprises

*The changing product structure of large enterprises*

In plan-oriented socialist societies, SOEs functioned only as production organisations carrying out national production plan (Zheng, 1999, 25). Large SOEs were characterized by a high degree of production integration consisting of basic production units, subordinate production units, supplementary production units and related service units (Zheng, 1999, 99). In addition, China's large SOEs were burdened with diversified social functions, such as schools and hospitals (part 4.1.1). This self-supplying trend of the production organisation was strengthened in the 1980s and the early 1990s under the nationwide popular slogan of "focusing on one field, while penetrating in many fields" (yi ye wei zhu, duo zhong jing ying). The popularity of this slogan could be contributed to both macro-economic conditions of China and the situation of SOEs. In the 1980s, the total demand on industrial products was larger than the total supply in China. Consumer goods were more in shortage than production goods. It was difficult for enterprises to obtain production funds, but it was easy to sell most of industrial products, especially consumer products. Under the strict resource allocation by government, SOEs established a large number of collectives to improve utilization efficiencies of various equipment, intermediate products and resources to obtain more profits and to create job chances for their abundant employees and their children and relatives (as a summary: Wang, 1996, 40–46). Economic activities of collectives were diverse. Since the middle 1990s, economic activities of many enterprises were further diversified in a consumer market (Yin and Zang, 1999).

There were many case studies citing diversified economic activities of large enterprises, but little work was done to trace current states of diversified economic activities in the 1980s. Further, differences in diversified economic activities carried out in the 1980s and those since the middle 1990s were not analysed and influences of diversification of economic activities on the development of corresponding enterprises were not fully analysed. Still, complex effects of diversifying economic activities on regional economic development were not systematically evaluated.

*Reorganizing SOEs*

Linkages among industrial enterprises, commercial organisations, and universities and research institutes were passive in most cases before 1978. Since the early 1980s, various linkages among them were strengthened under the support and even the push of government (part 4.2.2). Since the middle 1980s, measures were taken by government to establish SOEs-related enterprise groups and to promote their development (part 4.2.3). To enhance linkages among members of an enterprise group was one of purposes. Possibly, the most important purpose was to make SOEs larger and stronger to pursue economies of scale and enhance their competitive capabilities. The establishment of enterprise groups should also be conducive to resolving such problems as the complex production structure (da er quan, xiao er quan) and the low degree of specialisation of SOEs, a slow pace of turning new technologies and processes into actual production capabilities, and the divided situation between SOEs controlled by ministries of the central government and those controlled by local governments. Further, it should be helpful to separate performance rights of SOEs from their property right (State Council,

1986, 1991, 1997; National commission of Systemic Reform and National Economic Commission, 1987).

In terms of small scale and divided production organisation of numerous SOEs in the same sector, great effort was made by government to promote the development of both large enterprise groups and large enterprises since the middle 1990s. Reorganising SOEs and corporalising SOEs to a listed one are two interweaving, important ways. The basic principles of reorganising SOEs are "strengthening large, while letting small free" (zhua da fang xiao) and "further developing in some fields, while retreating from others" (you jin you tui) (Qin, 1999, 20; Central Committee of the CPC, 1999). The state will continuously control large SOEs in sectors related to the national safety, natural monopoly sectors, sectors providing key public products and services, and pillar industries and key high-tech industries. Those SOEs were and will be preferentially supported for further development by means of merger, consolidation, transformation to listed corporations, and acquisition of related small SOEs by large ones under the direct participation of government. Small SOEs in some competitive fields went and will go bankrupt. Or they were and will be transformed to corporations by introducing private funds and funds from other channels. This effort of making SOEs larger and stronger is in line with unprecedented mergers and acquisitions of core enterprises, concentration of the first-tier suppliers and even the second and third tier suppliers, and tighter control of core enterprises over other enterprises across the whole value chain in the 1990s (Nolan, 2001, 40–42; Nolan and Wang, 2002).

Economic efficiencies of some large SOEs and SOEs-led enterprise groups formed under the push of government turned out to be improved and they are larger and more competitive than earlier (e.g. Research Fund Commission of China's Economic Reform, 1999; Yin and Zang, 1999; Xv, Bai and Jiang, 1999; Li, 2002). Currently, enterprise groups and large enterprises play an important role in the national economy. This can be understood as positive effects of promoting the development of large enterprise groups by government. But this can not fully impress effects of related policies on the development of SOE-related enterprise groups partly for their limited number, and partly for undivided effects which may have been resulted both from "internal" development of core enterprises (mother enterprises) and external expansion by merging SOEs to some degree in the process of establishing enterprise groups.

Li (2000) showed that enterprises in coastal region were more active in institutional innovations and more possibly involved in the process of making large than enterprises in central and western regions. And differences could also be identified within provinces of three regions. 60 SOEs-related large industrial enterprise groups were formed in Liaoning province. Li and Chen (2001) compared economic efficiencies of them in 1996 and those in 1999. They found that establishing enterprise groups had negative effects on their economic efficiencies. In terms of provincial and regional differences in economic scale and structure, enterprise structures by size and ownership, the development of market economy, the entrepreneur quality, this place- and period-specific finding should not be generalized and more analyses at provincial and regional level should be made for a fuller evaluation of related reorganisation policies.

### 1.2.3 “Exogenous” technological improvement and rapid economic development in extensive manner

Since 1978/1979, China’s economy has been quickly developing, with an annual growth rate of over 9 per cent by gross domestic product (GDP) (Lin and Hu, 2001). The economic development was realized mainly through the development of raw material industries, industries related to general consumer products and planting. The development of those industries was characterised by massive inputs of water, energy, mineral and human resources, and land. And the development caused severe ecological problems, such as land, water, air pollutions, degeneration of grassland and forest, lack of water, and occupation of arable land (Lu et al., 2000, 14). In comparison with developed countries, production technologies of China’s enterprises are much backward and technological progress plays a subordinate role in the economic growth. Only one tenth of equipments of large and medium-sized enterprises reach international level. The majority of enterprises do not have own intellectual property rights and have to introduce core technologies and equipment from abroad (State Economic & Trade Commission et al., 2002).

Imported technologies should be basically mature technologies and correspondingly, China’s enterprises produce mainly standardized products, in contrast to the trend of destandardisation and the generation of variety in wealthy countries and regions (Storper, 1997, 32). According to the product cycle theory (Vernon, 1966; Hirsch, 1967), economies of scale are very important for enterprises to reduce production costs per unit and unskilled labour force and capital are main location factors by producing standardised products. As far as industrial enterprises in Lanzhou are concerned, related questions include: How were local industrial activities organised among enterprises? When core technologies were imported, were local enterprises active in technological improvement? And how?

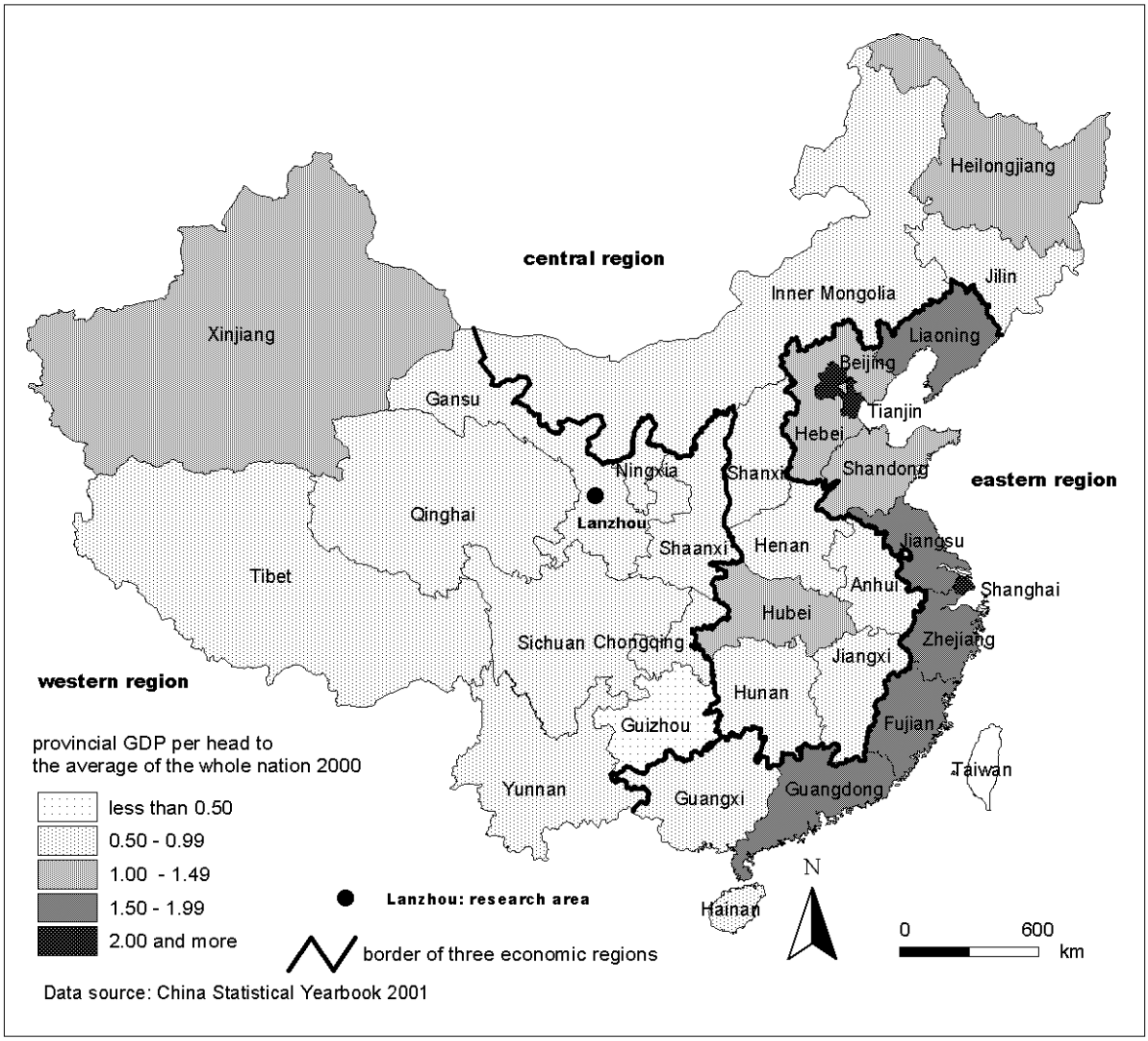
### 1.2.4 Location decision and spatial agglomeration of economic activities

*Enlarging disparities between eastern and western, northern and southern regions*

Enlarging regional disparities among western, central and eastern China have been a hot topic for both domestic and foreign scholars recently (Wei, 1997; Zhao and Tong, 2000; Haas and Rehner, 2000; Taubmann, 2001). In addition, regional disparities between southern and northern China have also attracted more and more attention from domestic scholars in recent years. But in contrast to differences in both income and industrial structure between coastal and inner regions, disparities between northern and southern regions are characterised not by obvious difference in GDP per head, but by industrial structure: heavy industry in northern region was troubled with aged equipment and technologies, irrational product structure, dominance of state ownership, and so on (Lu, Liu and Fan, 1999).

Till the P.R. China was founded in 1949, 70% of China’s industrial enterprises were located in coastal region (Lu et al., 2001, 24). In a planned economy from the 1950s to the end of 1978, spatial equality and economic pragmatism were determinants of state investment in basic construction during the first Five-Year-Plan (1953–1957) and national defence was the number one factor affecting spatial patterns of state investment during the Third Front Period (1965–1972) (Ma and Wei, 1997). Western region was in a favourable position in absorbing

state investments. State investments in western region concentrated on energy and raw material industries, in contrast to processing industries in coastal region. This difference contributed to enlarging regional disparities since 1978 (Fan, Cao and Lv, 2002). Since 1978, the concern of the central government for economic efficiency favoured coastal region. Besides favourable state investments, the opening-up policy initially carried out in coastal region led to inputs of great deals of foreign funds and the development of outward economy in coastal region, contributing greatly to regional economic growth (Guo, Lu and Gan, 2001; Sun and Parikh, 2001). The quick development of private enterprises in coastal region can also explain enlarging regional disparities to some degree (Taubmann, 2001). The economic growth in coastal region might be based on such location factors as large regional markets, a good infrastructure, agreeable climate, proximity to Hong Kong, Taiwan and Macao, and the regional creation and innovation capability (Sun, 2000).




**Map 1.1 Regional disparities in China**

*Location factors and regional agglomeration of industrial activities*

Location factors may have contributed to enlarging regional disparities in China. But at enterprise level, no work was made till now to interpret the relationship between motives of newly founded plants and location factors in China. This can be contributed to many factors. In a planned economy before 1978, China's enterprises did not have autonomous rights to decide

their location. The establishment of a new plant can be seen as "politically-oriented". Since the 1980s, so-called township and village enterprises witnessed a quick development. These collective or private enterprises were normally established by local organisations or individuals and they can be regarded as "indigenous spin-offs" for three reasons. One is that in a shortage economy, local natural resources, cheap, even free land and production houses, and proximity to family houses were so important for founding a new plant that without which a plant could not be founded for lack of funds or for too high production costs. Further, personal social relation networks were very important for acquisition of a legitimate identity, easier and cheaper access to land and resources. Still, China's non-autonomous population migration system hampered the establishment of new plants by outsiders in the 1980s.

In this work, the relationship between the establishment of large enterprises and location factors in Lanzhou was analysed. An ex-post-evaluation of the importance of "hard" location factors for the development of local SMIEs was made to understand agglomeration mechanisms of the local industry. Such studies may be helpful for enriching understandings of regional economic development between location factor determinism and evolutionism, in terms of China's peculiarities in the political system, economic system, regional economic policies, the mode of economic growth, and peculiarities of Lanzhou.

### 1.2.5 Network approach and Confucian culture

*Confucian culture and relational aspects of economic activity*

Many geographers paid great attention to the cultural dimension of economic development in recent years (e.g. Gebhardt, 1993; Gebhardt et al., 2003). Much work has showed that interpersonal relations or Guanxi played a very important role in explaining the nature of economic activity and its geographical consequences with regard to enterprises of Overseas Chinese – ethnic Chinese living outside mainland China (e.g. Mackie, Hamilton, 1992; Redding, 1990, 1994; Yeung, 1994). For example, Yeung's work (1997) on investment of Hong Kong's transnational corporations (TNCs) in the Association of South East Asian Nations (ASEAN) showed that on the one side, TNCs were inevitably motivated by lower production costs and the search for new markets to invest in these regions. On the other side, it is guanxi or network relationships that "decide through which countries and how these investments are channelled". This appears contradictory to pure determinism of transaction costs in organisational forms of economic activity and so means that "the TNC is as much a social entity as an economic institution." Overseas Chinese are intended not only to live and do things within their preexisting guanxi, but also to use guanxi as a strategy to deal with economic problems. The well-known example is investment behaviours of some Hong Kong-based firms in south China (Smart and Smart, 1991). Hong Kong-based and foreign-funded enterprises encountered great risk by establishing large daughter firms or joint ventures in China in the 1980s. Risks could be resulted from the underdeveloped law system and bureaucratic inflexibility, inexperience, and sometimes allegations of corruption. To constrict risks, foreign multinational corporations (MNCs) paid attention to strict contracts. In contrast, Hong Kong-based enterprises were inclined to set up several small enterprises in the areas, where an entrepreneur had strong social connections. Through personal guanxi, enterprises could successfully negotiate with local authorities by means of "gift economies" to obtain legality, resources and services. It was very difficult to obtain them in a shortage economy.

As far as enterprises in mainland China are concerned, Zhao and Aram's case studies (1995) of six small private electronic firms in Beijing in 1993 exhibited that it was general for executives to use their previous working relationship, families, friends, acquaintances, and community ties as important sources of advice and information. All shows that Chinese are willing to live in a group, to use and create personal relations by doing things, in harmony with the Confucian culture, Chinese commercial tradition, and the network approach (Thrift and Olds, 1996).

Questions deserving further studies include: How important were personal relations by establishing individual enterprises? In comparison with the 1980s, what changed in terms of the relationship between entrepreneurs and local governmental officials? To what degree were enterprises networked with each other in aspects of input acquisition and product sales? Did various associations play some role in the development of local enterprises? And what role?

*Functions of interactions*

Small & medium-sized enterprises in such areas as the Third Italy, southern Germany, Silicon Valley were known for their continuous innovations through interactions and collective learning in a knowledge-driven, globalising, and consumption-diversified world (e.g. Piore and Sable, 1985; Scott, 1997). This may explain to a great degree why the network paradigm should be seen as "new departures in corporate and regional development" (Cooke and Morgan, 1993). Although Chinese firms are networked to some degree, interactive innovations are very limited with regard to firms in mainland China. Zhong'guancun in Beijing is known for its highest density of universities, research institutions, and excellent brains in China. Wang and Wang (1998) presented that small firms there were inclined to produce specialized products with high or new technologies and there existed knowledge spillovers mainly by means of staff turnovers from state-owned universities and other institutions to newly founded small firms in the 1980s. But there did not exist interfirm vertical disintegration linkages and collective learning, typical in industrial districts. In the early and middle 1990s, foreign branches run in the area. The main task of many joint ventures was to sell products of their foreign partners, implying that the area was becoming a "high-tech satellite platform of multinationals".

Questions for further studies include: If long-term partners play an important role in product sales and input acquisition of SMIEs in Lanzhou, how were these long-term transactions formed and maintained? How important are long-term transactions for the development of enterprises? Did long-term linkages result in technological improvement and improvement of the product quality?

### 1.3 Research design and implementation

In accordance with multidimensional questions, both qualitative methods, such as enterprise documents, annual reports of listed corporations and interviews with managers and analyses of governmental officials in charge, and quantitative methods, such as questionnaires and analyses of statistical data, were adopted in the study.

### 1.3.1 Implementation and shortcomings

On-the-site work was carried out on March and April, 2002 in Lanzhou. Based on historical documents, annual reports, and journals of three most important enterprises in the city, establishment backgrounds, internal production organisation, technological improvement, governance structure, and subordinate collectives of local large SOEs were described (part 4.2.1). Interviews with middle-levelled leaders of these enterprises were also made[2]. Questions involved in interviews included mainly general problems faced by them, general situation of Sino-foreign joint ventures associated with them, the special relationship between them and their subordinate collectives. Further, annual reports of all Lanzhou-based state-controlled listed corporations were used to analyse their investment channels after they raised great deals of funds by issuing public stocks since the middle 1990s. Still, interviews, articles in newspaper, their reports were adopted to analyse the development of local large private enterprises.

With regard to SMIEs, both interviews and questionnaires were made. Several managers and city officials were interviewed[3]. One purpose for interviewing managers is to know about some economic processes or situation of enterprises more in detail or which were not included in questionnaires, such as motives of establishing enterprises locally, the importance of personal relations for the establishment and development of enterprises, their development plan and possible relationship between it and their location. Another is to know about how they understood various questions in questionnaires. This is very important for evaluating the quality of their answers.

Questionnaires were fulfilled through three channels. The City's Industrial Commission appoints the general manager of SOEs at city's level. It sent questionnaires in its name to each of controlled SOEs. Half of them operated at loss for a long time and failed doing that, while another half of them earned money or operated not too badly and reacted positively with excellent work. The second channel is personal direct visit to enterprises without telephone dating. This method could be helpful for both obtaining positive responses from more enterprises and improving the quality of answers in consideration of the fact that the questioned persons may misunderstand some concepts. The last parts of questionnaires were filled after April. A friend of the author studied economic geography and works in a large enterprise. He asked some commercial partners of his firm to fill questionnaires[4]. Filled questionnaires were obtained from about 100 enterprises. Only 77 of them are qualified and even among them some questions were only partly answered.

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[2] Interviews were based on newly created guanxi and surely what interviewed leaders said is believable. It is a pity that general managers of these enterprises were not interviewed. But negative impact of this shortcoming on the study may be very limited, because the main ideas of general managers can be found in journals or annual reports of specific enterprises.

[3] Before a SOE was visited, some kind of personal guanxi was created to guarantee success. In other cases, the author visited firms directly without telephone dating, because it did not function. Over 50% of enterprises were willing to cooperate with the author by direct visit.

[4] According to how many questions in questionnaires were answered and whether there are obvious logical contradictories between answers, the quality of filled questionnaires is at best in the case of government's participation. The quality of the last parts was at worst. It may be that the questioned did not deal with questionnaires seriously, when nobody is on the site to give them some explanations, and more important, to send emotional requests to them to do that.

In contrast to the ownership form structure of local enterprises, higher proportions of SOEs, private enterprises and foreign-funded enterprises were involved in questionnaires, while proportions of collective enterprises and stock cooperatives were drastically lower than their proportions in all enterprises. The higher proportion of SOEs can be partly explained by the fact that 19 questionnaires were from SOEs controlled by the city government. Another reason is the definitely larger scale of SOEs than others, especially than collectives. Before it was visited, the ownership form of certain enterprise was not clear. Researchers rode bicycles or went on foot to "counter" any enterprise for filling questionnaires. An enterprise can be so small that it could not attract attention of researchers and it is those relatively large ones, first of all SOEs, that came into eyes of researchers.

Proportions of the questioned enterprises by ownership types, scale, and products are not in accordance with those of all enterprises. Conclusions drawn from comparing enterprises with various types of ownership, different size and products should be treated cautiously. In addition, the limited number of questioned enterprises by certain classification challenges the rationality of percentages-based comparison analyses, although such comparison analyses are necessary for understanding certain questions. Despite these, 77 enterprises are already enough for a meaningful analysis of economic activities of SMIEs in Lanzhou. Firstly, enough attention was paid to dominant SOEs. Secondly, high proportions of relatively large private enterprises and Sino-foreign joint ventures were involved in questionnaires. Thirdly, interviews with local governmental officials and some managers and second-hand materials in journals and newspaper can supplement questionnaire-led analyses.

The majority of the questioned persons answered questions honestly. But there did exist such managers who did not deal with questionnaires seriously. It is difficult to distinguish all such questionnaires from those seriously dealt with. What was done is to give up questionnaires, in which answers to some questions are contrary to answers to some others. In addition, some common shortcomings associated with questionnaire studies also appeared in the study. For example, the scope of local was differently understood by the interviewed. Further, the interviewed did not understand some concepts. For example, answers of many enterprises to the question whether the enterprise has own R&D were positive. But their further explanations showed that what they understood as R&D was greatly different from what is in definition. Worse, it seems the questioned were inclined to give more positive answers than really be, in terms of questions about improvement of production technologies and the product quality.

Definite conclusions can be drawn in questionnaires-related studies on agglomeration mechanisms of local SMIEs, channels of input acquisition and product sales of SMIEs, the relationship between SMIEs and local governmental officials, and the linkages between SMIEs and technological intermediate organisations. In cases of improvement of the main technology and improvement of the product quality and functions of the long-term transactions in product sales and input acquisition, only preliminary conclusions can be drawn. Product-, scale-, organisation-specific analyses are not made by studying location factors and agglomeration economies, functions of the long-term transactions, means of technological improvement and improvement of the product quality for the limited number of the questioned enterprises, limited interviews made, and also the bad quality of answers in the latter two cases.

### 1.3.2 Major features of enterprises involved in questionnaires

Of 77 questioned enterprises, 33 enterprises are SOEs, 25 are private enterprises, eight collectives, two stock cooperatives, and six are foreign-funded enterprises. The ownership of three enterprises is not clear. There are 48 enterprises with less than 200 employees, eleven enterprises with 200–499 employees, and 18 enterprises with more than 500 employees.

**Table 1.2 Ownership forms of the enterprises questioned**

| | Number | Per cent | Cumulative per cent |
|---|---|---|---|
| SOEs* | 33 | 42.9 | 42.9 |
| Collectives | 8 | 10.4 | 53.3 |
| Stock cooperatives | 2 | 2.6 | 55.9 |
| Private enterprises | 25 | 32.5 | 88.4 |
| Foreign-funded | 6 | 7.8 | 96.1 |
| Unclear | 3 | 3.9 | 100.0 |

* SOEs include enterprises of 100% state ownership and state-controlled.

Of 77 enterprises, 49 are one-plant enterprises, 13 main plants, and 15 are branch plants. Of 13 main plants, nine are SOEs and three private enterprises, and the ownership of one enterprise is not clear. Sites of branch plants of ten of 13 main-plant enterprises are known. All branch plants are located within Northwest China. In detail, all branches of five enterprises are located in Lanzhou, branches of two enterprises in other regions of Gansu or both in Lanzhou and other regions of Gansu, while branches of the rest three are located in other provinces of Northwest China. Among 15 branch plants, headquarters of four enterprises are located in Lanzhou and that of one enterprise in another province of Northwest China. Headquarters of ten branch plants are not located within Northwest China. Among them, two are private enterprises, four foreign-funded enterprises and two SOEs, and the ownership types of the remaining two were not clear.

**Table 1.3 Organisational forms of the enterprises questioned**

| | Number | Per cent | Cumulative per cent |
|---|---|---|---|
| One-plant enterprises | 49 | 63.6 | 63.6 |
| Main plant and headquarter of a multi-plant enterprise | 13 | 16.9 | 80.5 |
| Branch plants | 15 | 19.5 | 100.0 |

18 enterprises produce chemical products and 16 do consumer products. Main products of 14 enterprises belong to machinery and equipment, while 29 enterprises produce other products.

**Table 1.4 Classification of the enterprises questioned by products**

| | Number | Per cent | Cumulative per cent |
|---|---|---|---|
| Chemical products | 18 | 23.4 | 23.4 |
| Machinery and equipment | 14 | 18.2 | 41.6 |
| Consumer products | 16 | 20.8 | 62.3 |
| Others | 29 | 37.7 | 100.0 |

## 2 Lanzhou: Location, General Conditions and Current Industries

### 2.1 Relative economic location of the city

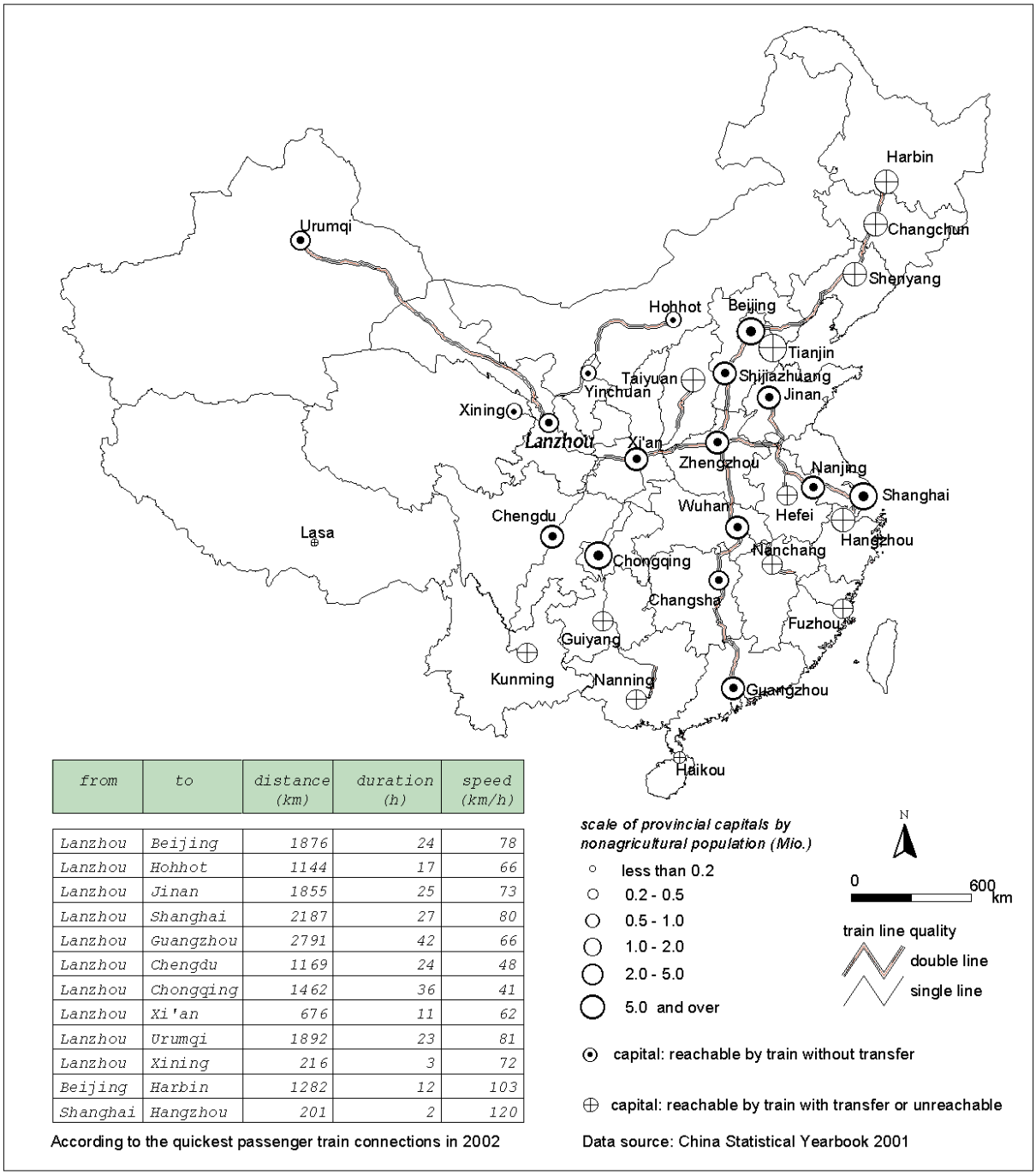
The economic location of Lanzhou can be interpreted on three regional scales. On the national scale, the city lies in western region. Economy in western region is backward and energy- and raw material-oriented. Among provincial capitals, the city is a small one in terms of the non-agricultural population including population of counties under the jurisdiction of the city government (1.60 Mio. in 2000), much smaller not only than Shanghai (9.86 Mio.), Beijing (7.61 Mio.) and Tianjing (5.33 Mio.) in coastal region, but also than Chongqing (6.61 Mio.), Chengdu (3.46 Mio.) and Xi'an (2.86 Mio.) in western region (Map 2.1). Long distances make train connections between the city and coastal region time-consuming, strengthened by the poor quality of train lines in western region. For example, the train lines on which the quickest passenger trains go between Lanzhou and the national capital city Beijing stretch 1,876 km. It takes about 24 hours from the city to the capital with an average speed of 78 km/h, faster than 62 km/h from the city to Xi'an for the higher quality of train lines in central and eastern regions. It is far slower from the city to large cities in southwest China, because of the poor quality of train lines and topographic conditions.

On the regional scale, Northwest China is known for drought and low vegetable coverage. Mountains, hills and deserts are dominant. Soil erosion, water and soil losses are severe for long-run over-cultivation, overgrazing, and over utilization of surface and underground water. In spite of the low population density, those parts of China are overpopulated in terms of its environmental loading capacity (e.g. Yuan and Chang, 1998; Chang, Yuan and Chen, 1998). Five provinces in Northwest China act basically as energy and raw material providers in the national economy (Map 2.2). Resource-oriented preliminary products, such as crude oil, coal, natural gas, hydropower, pig iron, steel, and salt, play the most important role in the provincial economy. More or less regional market- and resource-oriented products, such as cement, plate glass, chemical fertilizer, sulphuric acid, soda ash, beer, and cigarettes play a second important role. As exceptions, less regional market-oriented textile industry in Xinjiang and Shaanxi shares a certain proportion in the whole nation, while such more technologically-oriented products as metal-cutting machine tools, integrated circuits, refrigerators, washing machines, and TV sets are produced at noticeable scale in Gansu and/or in Shaanxi.

According to the population scale, Lanzhou is the second biggest city in Northwest China, only smaller than Xi'an. It is an important transport and communication centre, linking western and eastern, southern and northern China. Economic linkages with neighbouring provincial capitals are greatly constricted by the similarities of industrial structures. Long distances and relatively bad transport conditions are also against close linkages.

On the provincial scale, Gansu covers an area of 454,000 $km^2$, including 3.53 million hectares of cultivated land, 16.64 million hectares of grassland, and 4.26 million hectares of forests with a standing timber reserve of 200 million cubic meters. The Loess Plateau, Inner Mongolian Plateau and Qing-Zang Plateau converge here, accounting for diversified and complex natural conditions. Of the total areas, 26% are mountains, 30% high plateaus, 29% plains, and 15% are deserts. Due to its complex geological and natural conditions, the province is abundant in non-ferrous metals and animal and plant resources, especially medical plants. Nearly 3,000 deposits with 145 kinds of minerals are found and the reserves of 94 kinds of minerals

are ascertained. Some minerals are of national importance, such as nickel, cobalt, platinum family elements, selenium, and casting clay.

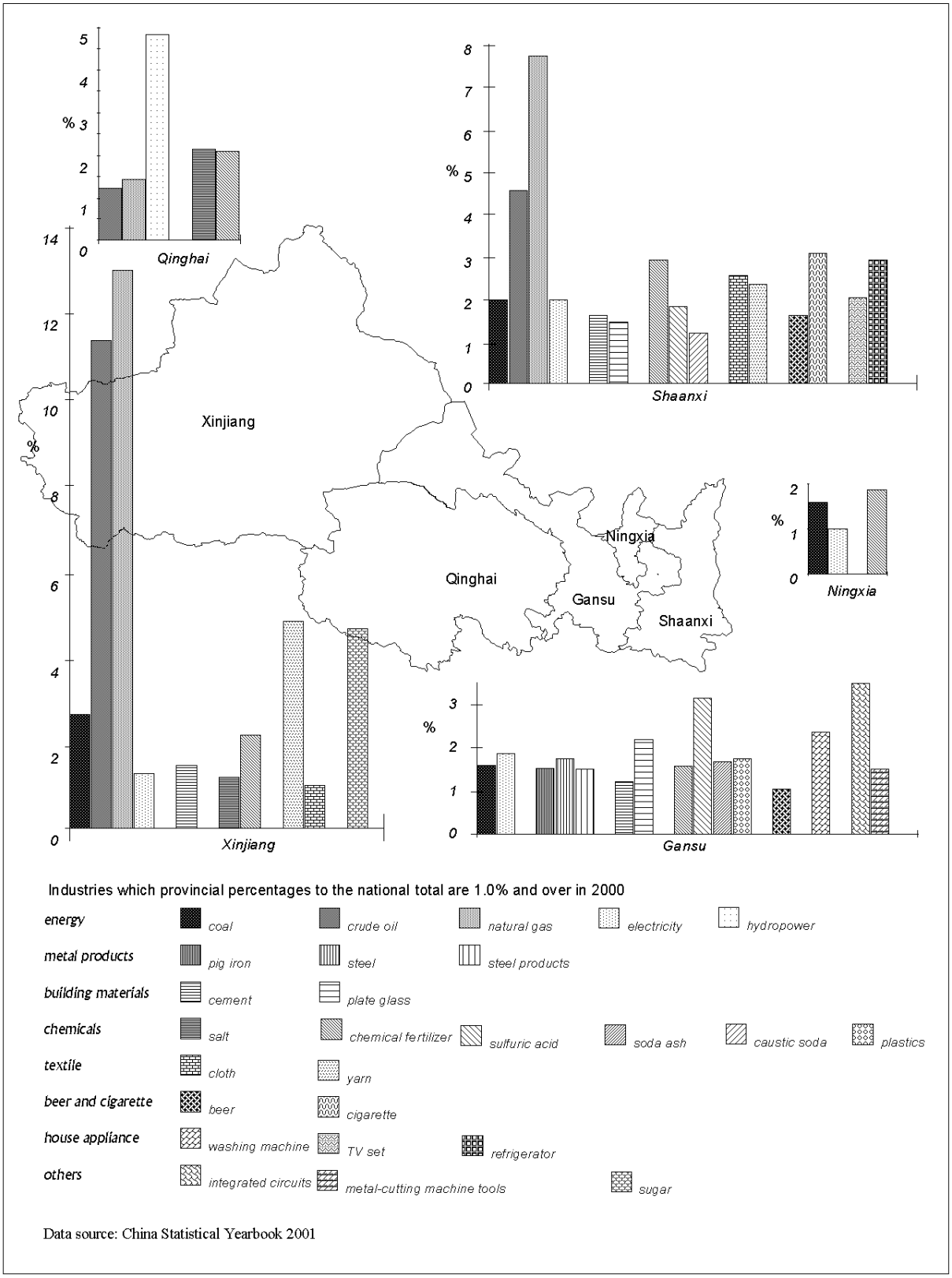



| from | to | distance (km) | duration (h) | speed (km/h) |
|---|---|---|---|---|
| Lanzhou | Beijing | 1876 | 24 | 78 |
| Lanzhou | Hohhot | 1144 | 17 | 66 |
| Lanzhou | Jinan | 1855 | 25 | 73 |
| Lanzhou | Shanghai | 2187 | 27 | 80 |
| Lanzhou | Guangzhou | 2791 | 42 | 66 |
| Lanzhou | Chengdu | 1169 | 24 | 48 |
| Lanzhou | Chongqing | 1462 | 36 | 41 |
| Lanzhou | Xi'an | 676 | 11 | 62 |
| Lanzhou | Urumqi | 1892 | 23 | 81 |
| Lanzhou | Xining | 216 | 3 | 72 |
| Beijing | Harbin | 1282 | 12 | 103 |
| Shanghai | Hangzhou | 201 | 2 | 120 |

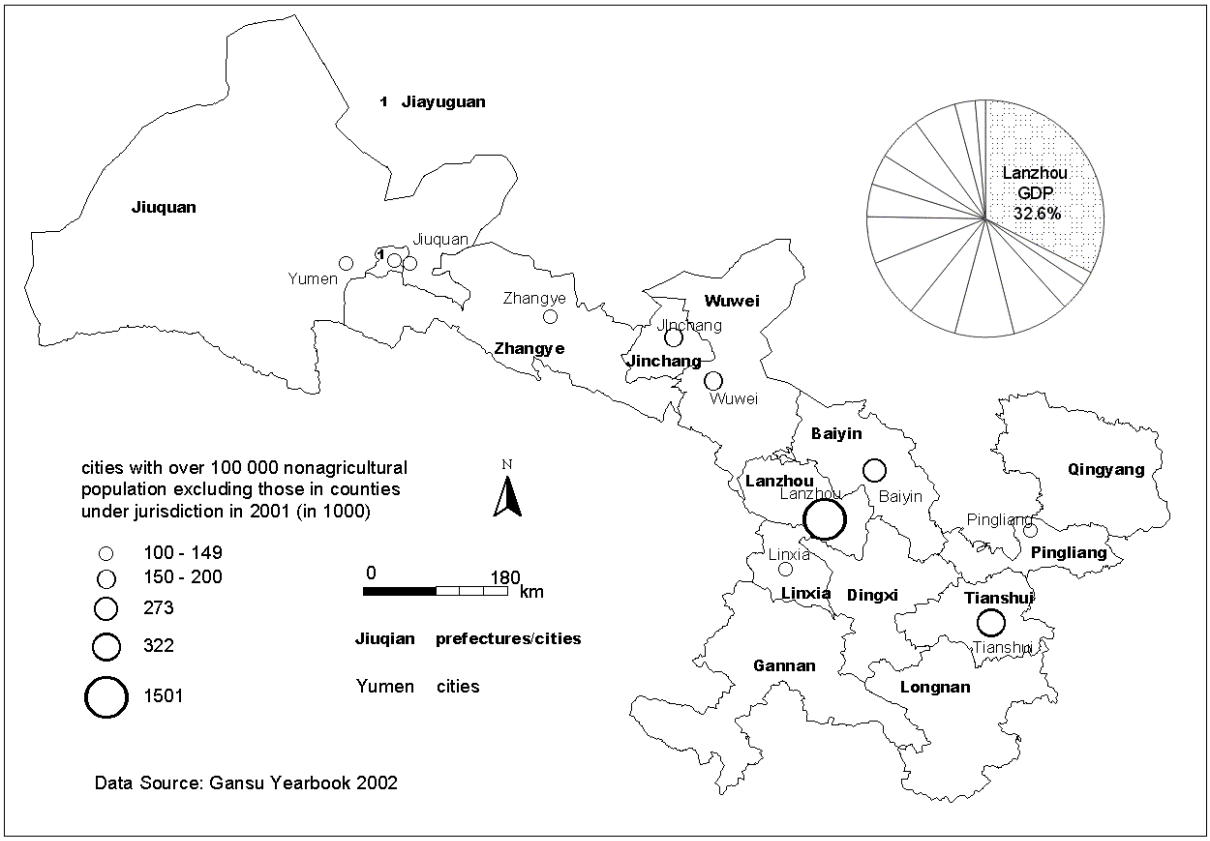
According to the quickest passenger train connections in 2002

**Map 2.1 Lanzhou among capital cities in China**

The province is one of the socially and economically backward provinces in China. In 2001, its population accounts for 2.02% of the national total, while its GDP occupies only 1.12% of the total. The net income per peasant is only equal to 63.41% of the national average. Lanzhou is the provincial capital city. It is the sole large city in Gansu province, much larger than the second and third biggest city of the province (Map 2.3). Industries in other relatively large cities are mostly resource-oriented, for example, production of copper in Baiyin, nickel in Jinchang, iron and steel in Jiuquan, and crude oil in Yumen.




**Map 2.2 Resource-oriented industry in Northwest China**



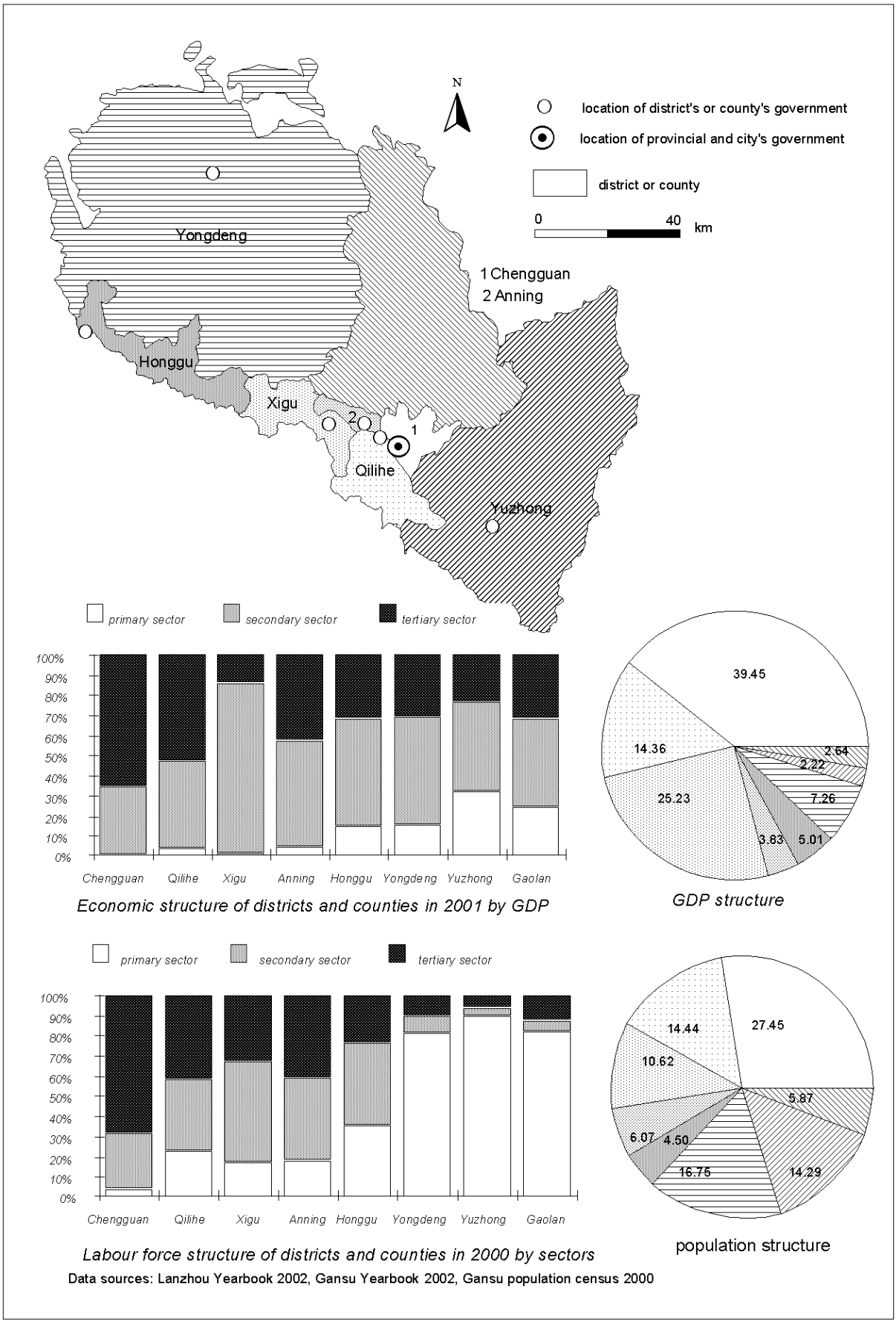

**Map 2.3 Lanzhou: single big city in Gansu**

## 2.2 General conditions

In China there exist five-tier governments: central, provincial, prefecture/city, county and township. At prefecture level, a region may be called a city or a prefecture, decided by its socio-economic situation. It is normal that a so-called city consists of some economically developed districts and several backward counties. This establishment was applied with the hope that the interactions between core areas and peripheries are enhanced through unified organisation of socio-economic activities by government at prefecture/city level and that the radiation effect of the core areas can promote socio-economic development of backward areas. Both districts and counties are comprised of urban and rural areas, but with obvious differences in ratios between them. Administratively, Lanzhou consists of five districts and three counties. Five districts are Chengguan , Qilihe , Xigu, Anning, and Honggu. Three counties are Yongdeng, Yuzhong, and Gaolan (Map 2.4).

### 2.2.1 Natural conditions

Lanzhou is located in the geometric centre of the continental territory of China and on the upper reaches of the Yellow River. It looks like a ribbon in the northwest-southeast direction between 35º51' and 38º00' N, and between 102º30' and 104º30' E, with an area of 13,086 km$^2$. The altitude varies from 1,400 m to 3,670 m. The main parts belong to the Loess Plateau, consisting mainly of mountains, hills, valleys, tablelands, and plains. The semi-arid continental monsoon climate is dominant, characterised by a concentration of rainfall in July, August and September, a stark contrast of an annual precipitation of 260–500 mm to an annual




**Map 2.4 Subregions of Lanzhou**

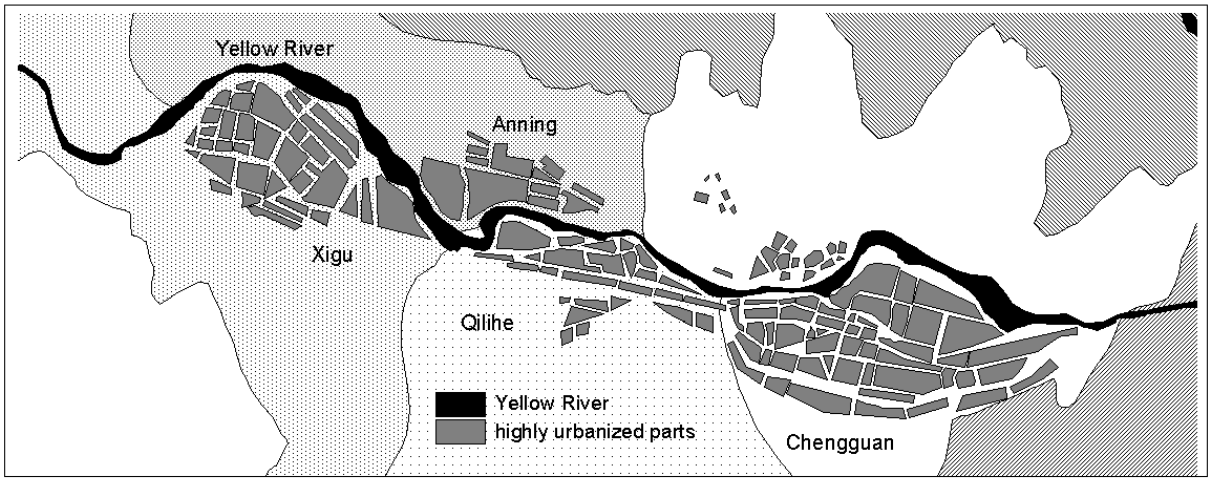
evaporation reaching 1,400–1,800 mm, and large temperature gaps between summer and winter, day and night. Because of the drought climate, long-term irrational utilization of land by means of over-cultivation and over-loading of livestock, the vegetation rate is low and soil erosion is severe.

### 2.2.2 History

As early as in the Neo-stone Age, 5,000 years ago, Lanzhou was inhabited. In 81 B.C. of the West Han Dynasty (206 B.C.–24), a prefecture was established here to protect western Hexi region. The prefecture was named as Jincheng – meaning a strong fort in Chinese. In 581 of the Sui Dynasty, the name of Lanzhou was firstly used when a so-called "Lanzhou Commander Prefecture" was established. Lanzhou was one of the major towns on the Ancient Silk Road, contributing greatly to the commercial and cultural communications between the west nations and China during the Han Dynasty (206 B.C.–220), later Tang Dynasty (618–907) and Song Dynasty (961–1279). In history, Lanzhou was known as the market for "exchanging horses (from western China) with tea (from southern China)". Modern industries were underdeveloped in the city before 1949. Local industries developed relatively quickly after the P.R. China was founded in 1949. The city is till now a very important industrial, transport and communication centre in Northwest China.

### 2.2.3 Socio-economic situation

In 2001, there were 2.97 Million inhabitants in Lanzhou. Almost two thirds (63.1%) lived in five districts and about one third (36.9%) in three counties. The area of three counties accounts for 87.5% of the total, while their GDP share was only 16.1% in 2001. In three counties, more than 80% of labourers undergo mainly farm work. In five districts, there are also many villages besides urban areas (Map 2.4). The economic activities and urban population concentrate on the valley of the Yellow River, which is surrounded by Northern and Southern Mountains (Map 2.5).




**Map 2.5 Highly urbanised parts of Lanzhou**

Districts and counties have different functions in city's development. Industries in Honggu and three counties are basically resource-oriented. Anning is known as an education district. Several universities and colleges are located there. Since the middle 1950s, Xigu is famous for its petrochemical industry. Qilihe is a complex district. Chengguan acts above all as the

CBD of the city. It is also an ideal location for high- & new-tech industries. In 1991, national Lanzhou High & New-tech Industrial Development Zone (LHNTIDZ) was founded within it.

## 2.3 Industry in 2001

In 2001, there were 4,286 industrial enterprises in Lanzhou, with a gross industrial output value (GIOV) of 44.65 billion Yuan (RMB). Enterprises with an annual sale income of five Million Yuan and more are called enterprises "above designated size". 1,060 industrial enterprises above designated size accounted for 92.25% of the total GIOV of the city.

### 2.3.1 Size structure and ownership types of industrial enterprises

Among the enterprises above designated size, the number of small enterprises occupied 92%, while small enterprises explained 34% of the total GIOV. There were 43 medium-sized enterprises and 39 large enterprises, explaining 8% and 58% of the GIOV respectively.

By number, collectives are dominant. But by value, SOEs overwhelm, explaining 74.05% of the GIOV. Among SOEs, enterprises controlled by the central government play the most important role. For example, they explained 54.17% of the total GIOV in 2000, when some SOEs were not transformed to corporations. 134 enterprises are fully owned by Chinese individuals, only 20 enterprises are fully or partly funded by entrepreneurs from Hong Kong,

**Table 2.1 Types of ownership of industrial enterprises by number and GIOV***

| | Number | | GIOV | | Value to number |
|---|---|---|---|---|---|
| | Number | % | Mio. | % | |
| Total | 1,060 | 100.00 | 41,192 | 100.00 | 1.00 |
| Domestic | 1,053 | 97.45 | 38,372 | 93.15 | 0.96 |
| State-owned | 182 | 17.17 | 10,776 | 26.16 | 1.52 |
| At central level | 37 | 3.49 | 6,281 | 15.25 | 4.37 |
| At provincial level | 59 | 5.57 | 2,916 | 7.08 | 1.27 |
| Collectives | 625 | 58.96 | 6,031 | 14.64 | 0.25 |
| Stock cooperatives | 69 | 6.51 | 651 | 1.58 | 0.24 |
| Limited liability corporation | 53 | 5.00 | 1,217 | 2.95 | 0.59 |
| Stock corporation | 11 | 1.04 | 18,595 | 45.14 | 43.50 |
| Private | 69 | 6.51 | 869 | 2.11 | 0.32 |
| Others | 24 | 2.26 | 233 | 0.56 | 0.25 |
| Enterprises funded by entrepreneurs from Hong Kong, Macao, and Taiwan | 20 | 1.89 | 2,047 | 4.97 | 2.63 |
| Equity joint venture | 13 | 1.23 | 1,638 | 3.98 | 3.24 |
| Contractual joint venture | 2 | 0.19 | 340 | 0.82 | 4.37 |
| 100% ownership | 5 | 0.47 | 69 | 0.17 | 0.36 |
| Foreign-funded enterprises | 7 | 0.66 | 773 | 1.88 | 2.84 |
| Equity joint venture | 4 | 0.38 | 304 | 0.74 | 1.96 |
| Contractual joint venture | 2 | 0.19 | 469 | 1.14 | 6.04 |
| 100% ownership | 1 | 0.09 | | | |
| In total: controlled by the state | 206 | 19.43 | 30,509 | 74.05 | 3.81 |

Source: Lanzhou Yearbook (2002), as following tables in this sector.
* State-owned refer to the enterprises solely owned by the state; collective-owned refer to the enterprises solely owned by a collective or jointly by two or more collectives.

Macao and Taiwan, and seven partly or fully funded by foreigners, together accounting for only 8.96% of the total GIOV. Other enterprises are jointly owned by the state, collectives and Chinese individuals. The ratios between value percentages and corresponding number percentages show clearly that SOEs are much larger than others (Table 2.1).

### 2.3.2 Product structure

Heavy industry, particularly raw material industries, plays the dominant role. Light industry is above all based on using and processing farm products (Table 2.2). Main industrial sectors are oil refinery, petrochemicals and related products, smelting and pressing of nonferrous metals and ferrous metals and related products, machinery and equipment production, production of

**Table 2.2 Industrial structure by light and heavy industry**

| | Number | | GIOV | |
|---|---|---|---|---|
| | Number | % | Mio. | % |
| Light industry | 384 | 36 | 7,175 | 17 |
| Farm products as raw material | 210 | 20 | 5,107 | 12 |
| Non-farm products as raw material | 174 | 16 | 2,068 | 5 |
| Heavy industry | 676 | 64 | 34,018 | 83 |
| Mining and quarrying | 69 | 7 | 1,024 | 2 |
| Raw material industries | 201 | 19 | 23,699 | 58 |
| Processing industries | 406 | 38 | 9,294 | 23 |

**Table 2.3 Industrial structure by sector**

| | Number proportion | Proportion of GIOV |
|---|---|---|
| Petroleum processing and coking | 2.36 | 39.71 |
| Smelting and pressing of non-ferrous metals | 1.51 | 8.92 |
| Production and supply of electric power, steam and hot water | 0.85 | 5.63 |
| Non-metal mineral products | 15.03 | 5.17 |
| Chemical raw materials and chemical products | 10.96 | 4.11 |
| Smelting and pressing of ferrous metals | 3.97 | 3.37 |
| Cigarettes | 0.38 | 3.30 |
| Medical and pharmaceutical products | 0.95 | 2.85 |
| Electronic and telecommunication equipment | 0.47 | 2.68 |
| Special purpose equipment | 3.69 | 2.63 |
| Ordinary machinery | 8.60 | 2.36 |
| Metal products | 8.98 | 2.18 |
| Food processing and manufacturing | 6.71 | 2.07 |
| Plastic products | 4.16 | 2.18 |
| Textile industry | 2.17 | 1.96 |
| Coal mining and dressing | 2.55 | 1.38 |
| Beverage production | 1.32 | 1.59 |
| Electric equipment and machinery | 2.74 | 1.36 |
| Transport equipments | 2.65 | 1.11 |
| Garments and other fibre products | 2.46 | 0.65 |
| Paper-making and paper products | 3.12 | 0.56 |
| Printing | 2.36 | 0.50 |
| Mining and dressing of non-metal minerals | 3.69 | 0.42 |
| Furniture manufacturing | 1.61 | 0.26 |
| Leather, furs, down and related products | 0.47 | 0.23 |

electricity and supply of hot water, non-metal mineral products, cigarettes, food, beverage, Chinese medicine, textile and garment (Table 2.3).

In 2001, 6.78 million tons crude oil were refined, 4.77 million tons coal were mined, and 5.84 billion KW/H electricity produced. Main chemical products are: chemical fertilizer, 216 thousand tons (TT) by pure amount; concentrated nitric acid, 76.8 TT; synthetic ammonia, 284.7 TT; ethane, 173.6 TT; chemical pesticide, 220 tons; plastics, 299 TT; synthetic rubber, 54.5 TT; synthetic fibre, 30.9 TT; chemical fibre, 18.4 TT; synthetic detergents, 51.7 TT, pure benzene, 57.9 TT, paint, 10.6 TT. Main building materials are cement (3,064 TT) and plate glass (3,862 thousand cases). Main metal materials are aluminium (243.2 TT) and ordinary steel (342.8 TT). Main equipments include oil-drilling equipments (13.4 TT), oil-refining equipments (7.2 TT), equipments for chemical industry (0.3 TT), small tractors (730 sets), pumps (2.2 thousand sets). Main textile products are yarn (6.5 TT), cloth (36,270 km), knitting wool (43,084 tons). Others are TV (19.2 thousand sets), washing machines (221.2 thousand sets), refrigerator (15.5 thousand sets), beverage and alcohols (155.6 TT), cigarettes (275 thousand boxes).

### 2.3.3 Operating situation

In 2001, 22% of industrial enterprises operated at loss. The percentages of enterprises operating at loss took on a stark differentiation among various types of ownership: at highest by SOEs, followed by joint ventures, and at lowest by collectives and limited corporations. More large and medium-sized enterprises operated at loss than small ones. There did not exist obvious difference between light and heavy industry. But more enterprises related to processing industries and industries using farm products as raw material encountered losses than other kinds of enterprises (Table 2.4, 2.5).

**Table 2.4 Proportions of enterprises operating at loss in 2001 by ownership**

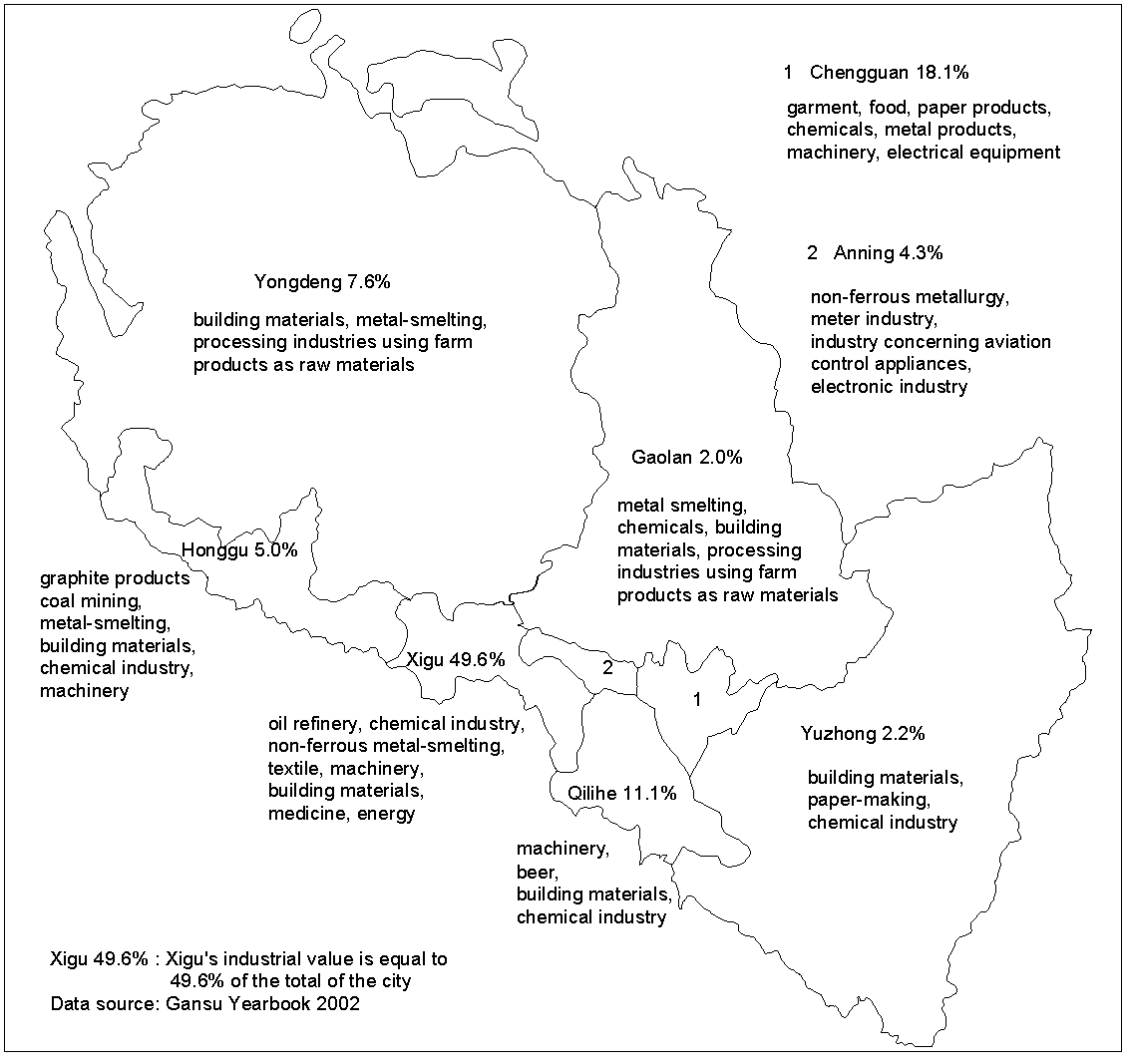
| | Proportions of enterprises operating at loss |
|---|---|
| Total | 22 |
| Domestic | 21 |
| State-owned | 50 |
| at central level | 42 |
| at provincial level | 55 |
| Collectives | 15 |
| Stock cooperatives | 23 |
| Limited liability corporation | 20 |
| Stock corporation | 18 |
| Private | 29 |
| Enterprises funded by entrepreneurs from Hong Kong, Macao, and Taiwan | 40 |
| Equity joint venture | 46 |
| Contractual joint venture | |
| 100% ownership | 40 |
| Foreign-funded enterprises | 33 |
| Equity joint venture | 33 |
| Contractual joint venture | 50 |
| In total: controlled by the state | 45 |

**Table 2.5 Proportions of enterprises operating at loss in 2001 by size and sector**

| | Proportions of enterprises operating at loss |
|---|---|
| Light industry | 24 |
| Farm products as raw material | 28 |
| Non-farm products as raw material | 20 |
| Heavy industry | 21 |
| Mining and quarrying | 8 |
| Raw material industries | 19 |
| Processing industries | 25 |
| | |
| Large enterprises | 41 |
| Medium-sized enterprises | 49 |
| Small enterprises | 20 |

### 2.3.4 Spatial distribution of industry

With regard to industrial value – corresponding GDP of the secondary sector, enterprises in Xigu explained 49.6% of the total, followed by enterprises in Chenguan and Qilihe, with a value percentage of 18.1% and 11.1% respectively. Industries in Honggu and three counties are resource-oriented to a great degree, concentrating on fields of mining and quarrying of




**Map 2.6 Industry in subregions of Lanzhou**

coal and non-metal minerals, smelting of metals and preliminary metal products, processing of farm products, building materials and chemical industries in close connection with local resources (Map 2.6).

## 3 Industrial Development in Lanzhou

Until the P.R. China was founded in 1949, the industry in Lanzhou stayed underdeveloped, represented only by some manual workshops (Shi, 2001, 131). During the planned economy before 1978, China's national regional policies were based more on regional even development and military considerations than on efficiency. National investments in fields of oil-refinery, chemistry, equipments for oil-drilling, oil-extracting and chemical industry, smelting and pressing of aluminium and steel, building materials, and Chinese medicine, initialised the development of modern industries and shaped the industrial structure of Lanzhou. Location factors played a very important role in this process. The heavy industry-dominant situation stayed principally unchanged since the reform. The industry became even "heavier" in recent years, both due to a quicker development of local heavy industry and due to diminishing production capacities of some enterprises related to light industry under severe competitive pressures from enterprises in other regions, especially in coastal region.

### 3.1 Industrial development in the planned economy

National investments functioned as the engine of local industrial development in the planned economy before 1978. Industries funded by the central government had great influence on local industrial development. They shaped the local industrial structure with strengthening investments of local governments and various collectives in the same industrial sectors. Some enterprises related to processing industries were established, using products of large SOEs as raw materials. And still some were established to provide intermediate products and services for large SOEs. In addition, SOEs funded by the central governemtn were much larger than enterprises locally funded. They were much more advanced in technologies and management than large amounts of local small ones[1]. In many cases, they provided small ones with technological, management, or material supports.

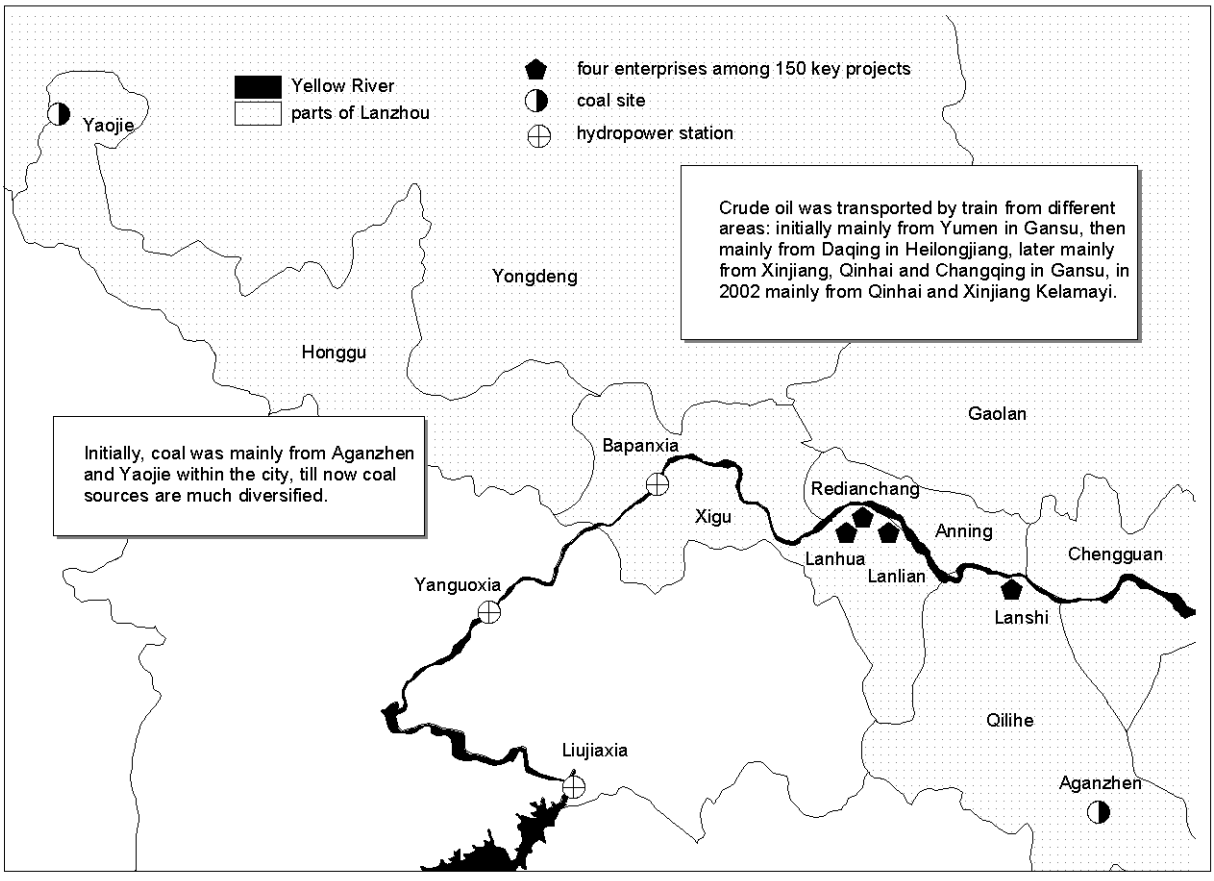
#### 3.1.1 Lanzhou as a newly established national chemical base during the first FYP (1953–1957)

The P.R. China copied essentially the economic system and the models of economic development of the Soviet Union[2]. Against light industry and agriculture, preference was given to the development of heavy industry during the first Five-Year-Plan (FYP) (Wang, 1989)[3]. This bias towards heavy industry, abundant natural resources in western China, and regional policies of the central government to balance spatial distribution of economic activities between coastal and inner regions out of both ideological and military considerations resulted in the establishment of 40 of the total 150 large industrial projects in western region during the first FYP[4]. Many natural resources are short in coastal region. Energy- and raw material-oriented

[1] This phenomenon was identified as the "dual structure" of the local industry by many scholars.
[2] In a planned economy, preference was normally given to the development of heavy industry, the model of an even regional distribution of economic activities was adopted, and proximity to raw materials or consumers was a principle for location decisions of industrial plants.
[3] Preference was given to heavy industry in the whole period before 1978, leading to great shortage of consumer goods. This "structural problem of the national economy" was gradually resolved since the reform.
[4] In most writings, it is said that there were 156 key projects during the first FYP. The number of 150 was used here because two planned projects were not carried out and still two were repeatedly cited. Lanshi and Lanhua consisted of two key projects respectively.

industries in western region supported and strengthened the development of light and processing industries in coastal region.

In Gansu province, it was planned to establish a coal chemical plant mainly to produce chemical fertilizer, a rubber plant using grain alcohol as raw material, and an oil-refinery enterprise to refine crude oil from the Yumen Oil Field in western Gansu. Later, the coal chemical plant and the rubber plant were combined into one enterprise. Among more than 10 places, Xigu district in Lanzhou was finally selected as the location for these two enterprises. Location factors in favour of Xigu include: neighbouring the Yellow River, abundant land for construction, suitable geological conditions, local supplies of coal, proximity to city's centre, and easy access to the Yumen Oil Field through newly built railways (The History of Lanhua, 1991, 419–421; The History of Lanlian, 1996, chap. 3). The city was planned to be built as one of three chemical bases of China. Later, coal chemistry was gradually replaced by oil chemistry. So much progress in oil chemistry was achieved that the city was called the "cradle" of China's petrochemical industry.




**Map 3.1 Key enterprises in Lanzhou and sources of raw materials and energy**

Besides Lanzhou Petroleum Processing & Chemical Complex (Lanlian) and Lanzhou Chemical Industry Corporation (Lanhua), an energy enterprise Xigu Heat & Strom Plant (Redianchang) was established under the principle of developing "regional production complexes". Lanzhou Oil & Chemical Machinery Complex (Lanshi) was established in Qilihe district to produce oil-drilling equipments, oil-extracting equipments, and chemical equipments. Yongdeng Cement Plant was also established in Yongdeng county. These five enterprises belonged to 150 key projects.

Before the establishment of these enterprises, Xigu and parts of Qilihe were villages. Infrastructure necessary for the development of modern industries had to be newly built. Construction teams came from other provinces. The main equipment and technologies were imported from the Soviet Union and East Germany. The Soviet experts played a very important role in location and site selection, plant and production design, installation and testing of equipment. Managers, technicians, and researchers were from other enterprises and institutions in other regions, or they were graduates of universities, colleges and vocational schools, or they were trained in the Soviet Union or by other Chinese enterprises and institutions. By establishing Lanlian, about 100 leaders and architects from northwest, northern, southern China came to the city in 1953. About 100 technicians came from other oil enterprises in China, 1,900 were trained by them, and 135 Chinese went to the Soviet Union to study or accept training in 1954 (The History of Lanlian, 1996, 25). Shortly after Lanhua was founded, about 1,600 managers and technicians from 67 enterprises in 12 provinces immigrated to the city, and about 300 workers were trained by 41 old enterprises (The History of Lanhua, 1991)[5].

### 3.1.2 Formation of local industrial structure before 1978

Petrochemical industry, machinery industry, and building material industry developed further with participation of local investments during 1958–1978. At the same time, industries in Lanzhou were diversified through the establishment of new plants and immigration of several plants from coastal region under the influence of the national policy of building a comprehensive regional industrial structure out of military considerations. Based on cheap and abundant local and neighbouring hydropower, several SOEs were established to smelt and press aluminium and steel. Three biggest hydropower stations are Liujiaxia, Yanguoxia, and Bapanxia, supplying power not only for Lanzhou and other regions of Gansu province, but also for the neighbouring Qinghai province and Ningxia Autonomous Region (Map 3.1). Wool textile and medicine were two other important new industries. Both of them depended on regional natural and agricultural resources to some degree. The most important enterprises were: Lanzhou Aluminium Plant, newly established during the Second FYP (1958–1962); Foci Medicine Plant (Foci), moved from Shanghai in 1956; and Lanzhou Third Wool Textile Plant (Lanzhou Sanmao), operating since 1974.

## 3.2 The changing local industrial structure

If peculiarities in several years are neglected, five phases of local industrial development can be identified according to the value proportions of light and heavy industry. In 1950, the city was under the control of the new government and social turmoil was over. Local industry began to grow. Light industry grew quicker than heavy industry. In 1952, light industry explained a record 69.31% of the local GIOV. Investments of government in oil refinery, chemical industry, petrochemical equipment, building materials, smelting and pressing of aluminium, and steel, and prohibition of private enterprises resulted in a much quicker growth of heavy industry from 1953 to 1965. In 1965, heavy industry occupied a record 83.74% of the local GIOV. Heavy industries continued to grow from 1966 to 1979. Meanwhile, some products related to light industry were also produced on relatively large scale under the influ-

[5] This could only be realised under the specific historic and political conditions of China at that time. High enthusiasm to build a "new China" after the recovery of national autonomy and dignity under the leadership of the communist party drove "builders" to work without considerations of wages and working conditions.

ence of national policies to establish a complex regional industrial structure out of military considerations. Two important industries were wool textile and medicine. Consequently, this period witnessed relatively stable proportions of light and heavy industry.

Industrial policies in favour of heavy industry in the planned economy began to change since the reform. With the enlargement of operation rights of SOEs, the booming development of various collective enterprises, and the appearance and development of private enterprises, various consumer products began to be produced or produced on a larger scale by local enterprises. Local/regional market-oriented consumer products included food, beer, beverage, garment, and leather shoe. Less local market-dependent products included house appliances, medicine and textile products. Light industry experienced a quicker development from 1980 to about 1992, explaining more than 20% of the total GIOV.

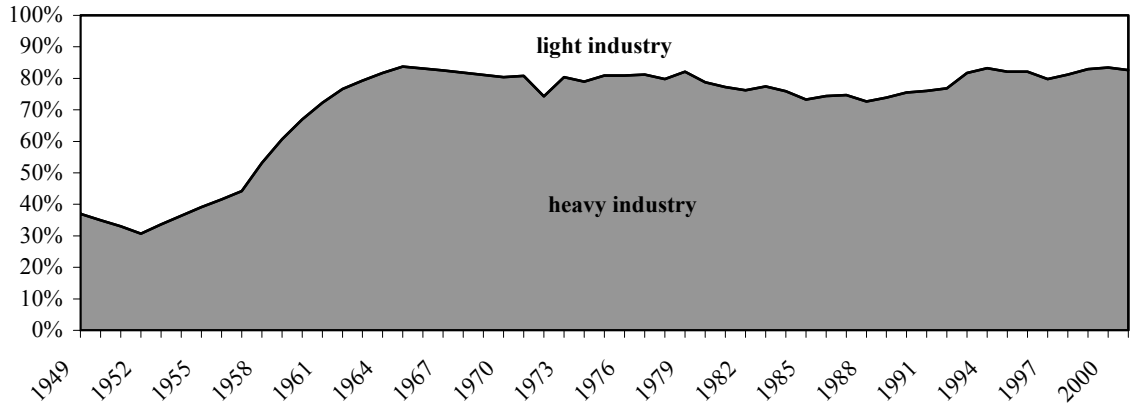



**Figure 3.1 Changing proportions of light and heavy industry in Lanzhou**

Sources: Lanzhou Socio-economic Statistical Data 1949–1998; Lanzhou Yearbook 2001, 2002

The proportions of light industry stayed below 20% from 1993 till 2001. Many elements may have contributed to this in consideration of the fact that the macro-conditions of local industrial development changed much. Firstly, economic activities of various enterprises were more coordinated by market than by plan. Secondly, China's producer market transited to a consumer market since sometime in the middle 1990s. Competition became severer and severer. Economies of scale are very important for reducing production costs. Thirdly, enterprises in coastal region accumulated more experience in management and sales by developing outward economy, and they were more capable of producing cheap products by pursuing economies of scale than their counterparts in the city. Local enterprises faced severe competition from them. Fourthly, the city was opened to foreign enterprises and a high & new-tech development zone was founded within the city in the early 1990s. In addition, local private enterprises experienced a quicker development in the 1990s than in the 1980s. Fifthly, the so-called "Western Development Policy" was carried out by the central government a few years ago. Infrastructure construction and environmental recreation are two keys of the policy in the 2010s. The positive effects of this policy on heavy industry are obvious[6].

[6] 59.2% of 76 questioned enterprises thought that the "Western Development Policy" will influence their development positively, 21.1% expressed no influence and 18.4% could not evaluate it. Only 1.3% expressed negative influence.

In the 1990s, petrochemical and related industries experienced an unusually quick development, explaining a large part of local industrial growth (Figure 3.2). Basically, this resulted from new investments of the central government in Lanhua and Lanlian. Some medicine enterprises produce high-tech products. The share of medicine industry in the local economy was increased. Regional market-dependent cigarette industry, and beverage and liquor industry also grew quicker than other industries, so that their shares in the local industry were improved. Textile, equipment and machinery production, smelting and pressing metals, household appliances were all "losers".

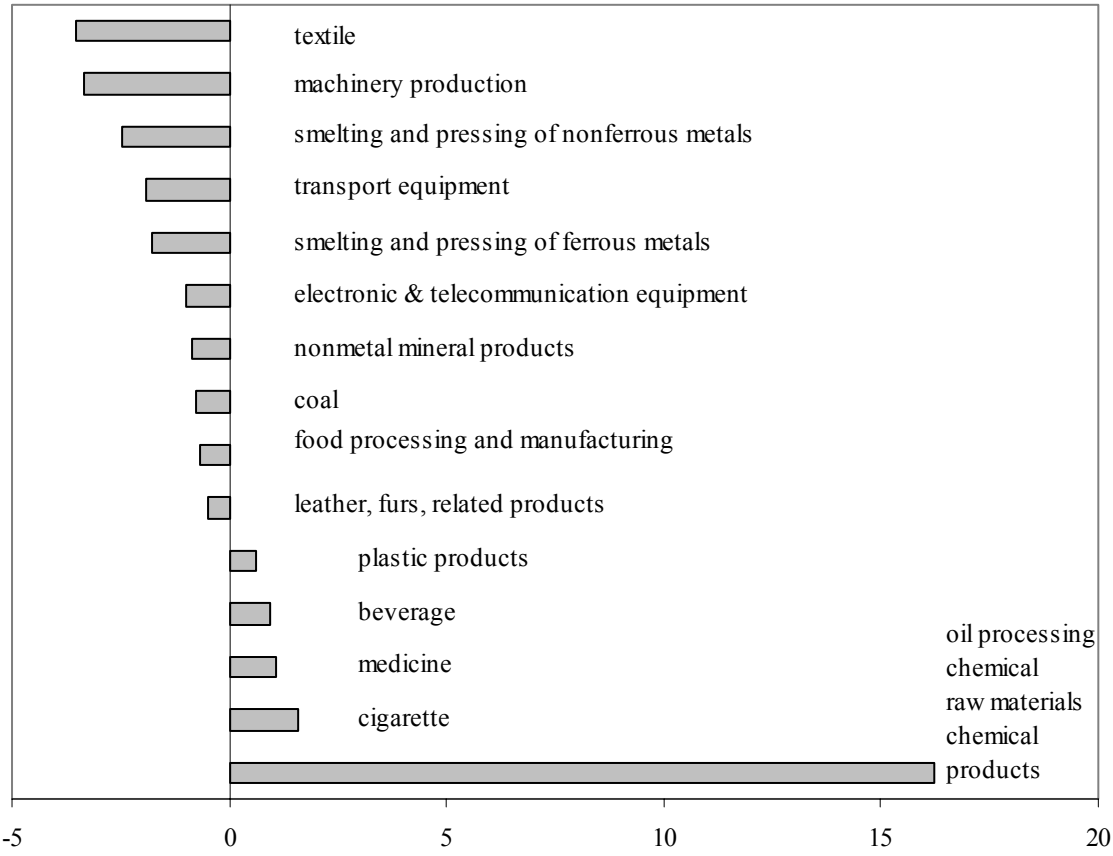



**Figure 3.2 Change of sectoral proportions between 1990 and 2001 by value (%)**

Sources: Lanzhou Yearbook 1991, 2002

The situation of losers is complicated. The production of the main products of aluminium and steel enterprises increased (Figure 3.3). The textile and garment industry was one of the biggest losers, characterised by a sharp decrease of production of yarn, cloth, woollen piece goods and garment. But at the same time, the production of knitting wool increased strikingly. As the sole large textile enterprise, Lanzhou Sanmao expanded relatively quickly in the 1990s under the support of national preferential policies, while several small textile and garment firms went bankrupt or operated at loss. The equipment and machinery industry also encountered a difficult situation. The bad operation situation of Lanshi and other enterprises led to a decrease of some main products, such as small tractors, oil-drilling equipment, oil-processing equipment. Another absolute big loser was the household appliance industry, showed by a

sharp decrease of production of TV sets and moderate decrease of refrigerators and washing machines. The production of leather shoes and canning food also decreased.

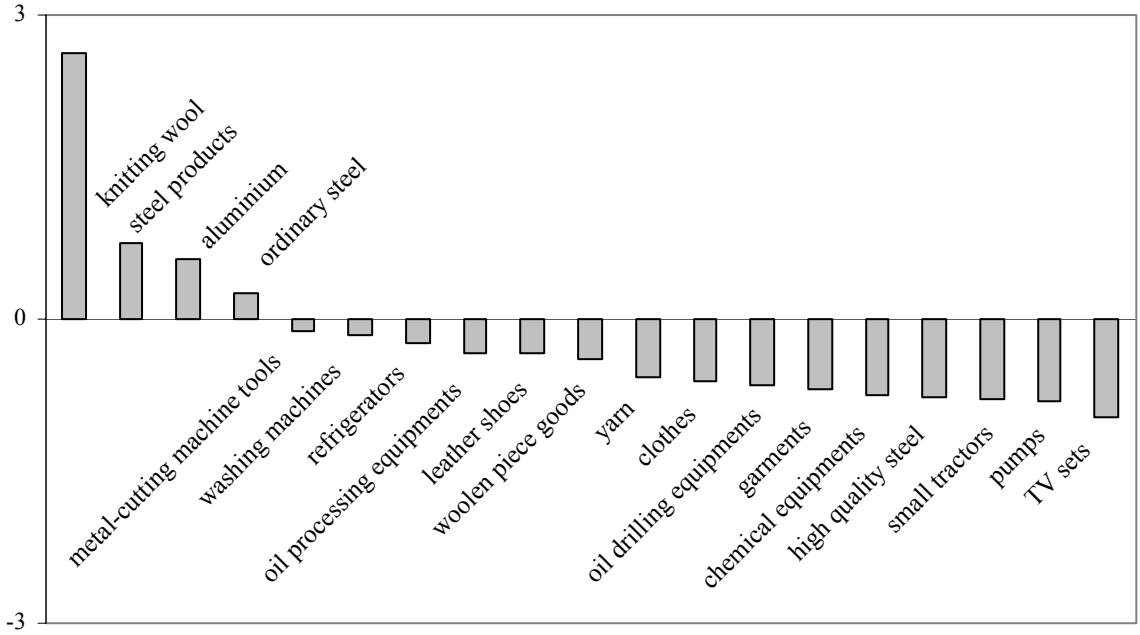



**Figure 3.3 Change rate of average production of various products (1989/90 and 2000/01)**

Change rate: (average production in 2000 and 2001) / (average production in 1989 and 1990) - 1
Sources: Statistical Yearbook of Lanzhou 1990; Lanzhou Yearbook 2001, 2002

## 4 Structuring and Restructuring of Local Large Enterprises

This part deals with the changing organisational and product structure of local large enterprises and its impact on the local industrial development. Large SOEs founded in the planned economy had an internalizing, complex production system. This trend of self-serving and self-making was strengthened to some degree by the upsurge of collectives in the 1980s. Since the middle 1990s, industrial products and economic activities of local large enterprises were further diversified by producing high- & new-tech products and taking part in advanced tertiary industries. National policies associated with making enterprises larger and stronger by merging and consolidating SOEs to some degree had a limited impact on the development of local SOEs and industry.

### 4.1 Internal organisational structure of large SOEs in the planned economy

#### 4.1.1 Functions of large SOEs

In comparison with modern enterprises, China's large enterprises in the planed economy did not have autonomous operation rights on the one side; on the other side, they were burdened with many social tasks. Such functional incompleteness and increments were main objects of the later enterprise reforms.

*Functional incompleteness: enterprises as production units and innovation units only*

The economy in China was centrally planed before 1978. The central government controlled and supervised the whole economy through ten to twenty years' plan, five-year plan and annual plan. Industrial production activities were fulfilled through two types of enterprises: state-owned enterprises and collective-owned enterprises. SOEs belong to the state, owned by all people. The products of many large SOEs were of strategic or national meaning. They were normally funded and supervised by the central government through its various ministries according to plan made by the State Planning Commission. The products of other SOEs were of regional, provincial or local importance. They were normally supervised by local governments. It was normal that the central government transferred the supervising right of a SOE from ministries to local governments. Any SOE is at the bottom of a hierarchical structure, supervised by or responsible to a relevant higher authority (Figure 4.1).

In the planned economy, SOEs were regarded as prolonged parts of governmental agencies, having no operational and financial independence. When newly established, they got land freely from the state, labourers were assigned by certain governmental department, products, processes and equipments followed certain plan. The plan provided detailed specifications for factor procurement channels and costs, output prices and distribution channels, wages and benefits, and expected profits or designated losses. The state and its lower administrations were loss-filler or profit-taker, bearing the ultimate responsibility for performance of a SOE (Shen, 2000).

Collective enterprises were also not free from the governmental interference and even its control in many cases, partly because of their unclear property right and partly because of the planned system of production, distribution and consumption. They must abide by national

plan, and were fully subject to national policies. For example, in radical political campaigns, many of them had been transformed to SOEs (Chen and Lin, 2002).

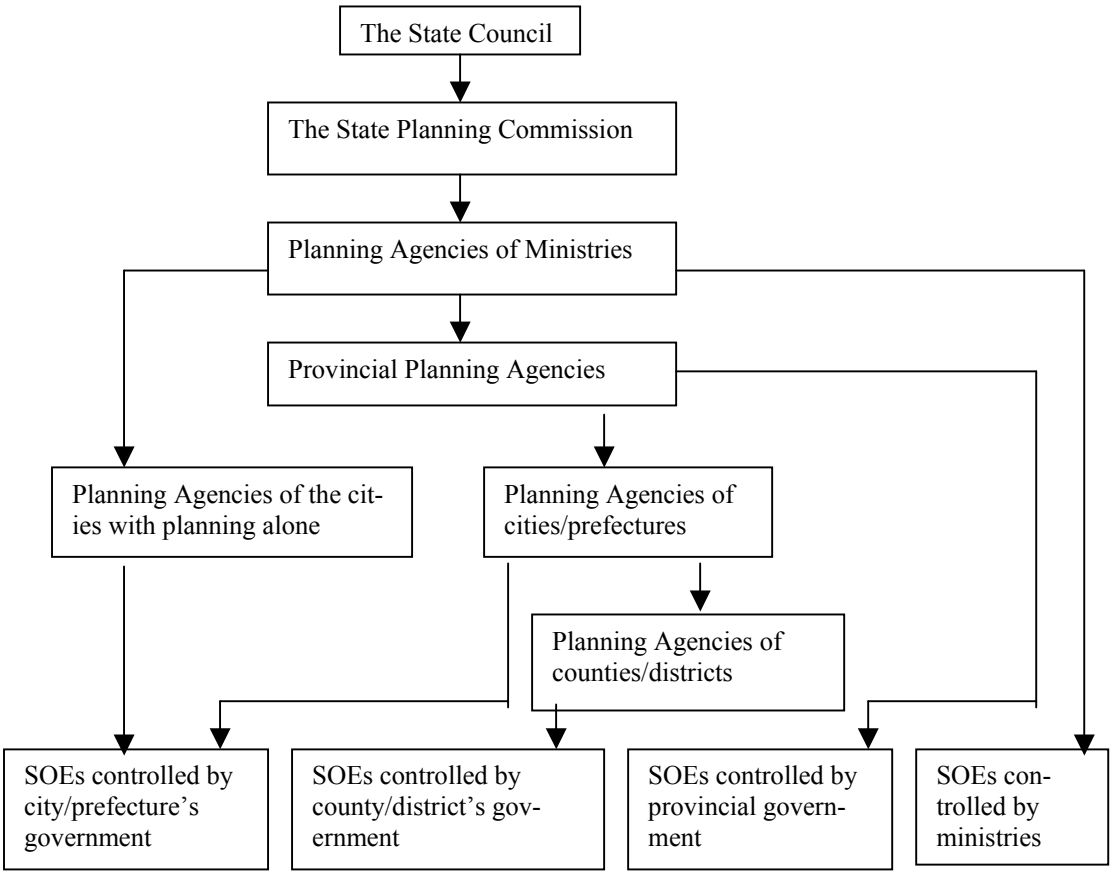



**Figure 4.1 Hierarchical structure of the Chinese planning system for industry**
Source: Hay, et al., 1994, 15 (modified)

*Functional increments: enterprises as small societies*

Large SOEs are like families in pre-industrialised societies to some degree. Within them there are kindergartens, primary and secondary schools for educating children of their employees, technical schools and colleges for preliminary job training or further training of their employees, children of their employees, and employees of other enterprises. They supply houses for families of their employees with low rents, partly supply agricultural products produced on own farms, and other services. They have own hospitals and clinics. They pay pensions for retirees. They have own hotels for guests and hotels in other places for own employees (Figure 4.2). This welfare system secured the life of their employees from cradle to grave, making later reforms of SOEs difficult.

### 4.1.2 Product structure of large SOEs

Large SOEs in Lanzhou had a complex product structure. One example is Lanshi. Besides main sectors for producing oil-drilling machinery, oil-processing equipment and general chemical equipment, there were a large amount of other supplementary sectors. The power sector produced various gases and provided power. Sectors of cast iron, cast steel, welding, accurate casting provided various materials. The instrument sector produced parts of instru-

ments needed by other sectors. The maintenance sector was responsible for maintenance and repairs of machinery and equipment. The transport sector was responsible for all production- or life-related transports of the enterprise. Another example is Lanhua. The fertilizer plant and the rubber plant were two main production divisions. Besides them, there were the petroleum plant, the organic plant and the chemical fibre plant, producing chemical fibres, chemical facilitators and various chemical products. There were facilities for dealing with polluted water caused by industrial production and personal life both within and outside the enterprise. Power facilities supplied steam and various kinds of water. There were also a chemical machinery plant, a construction division and an installation division[1].

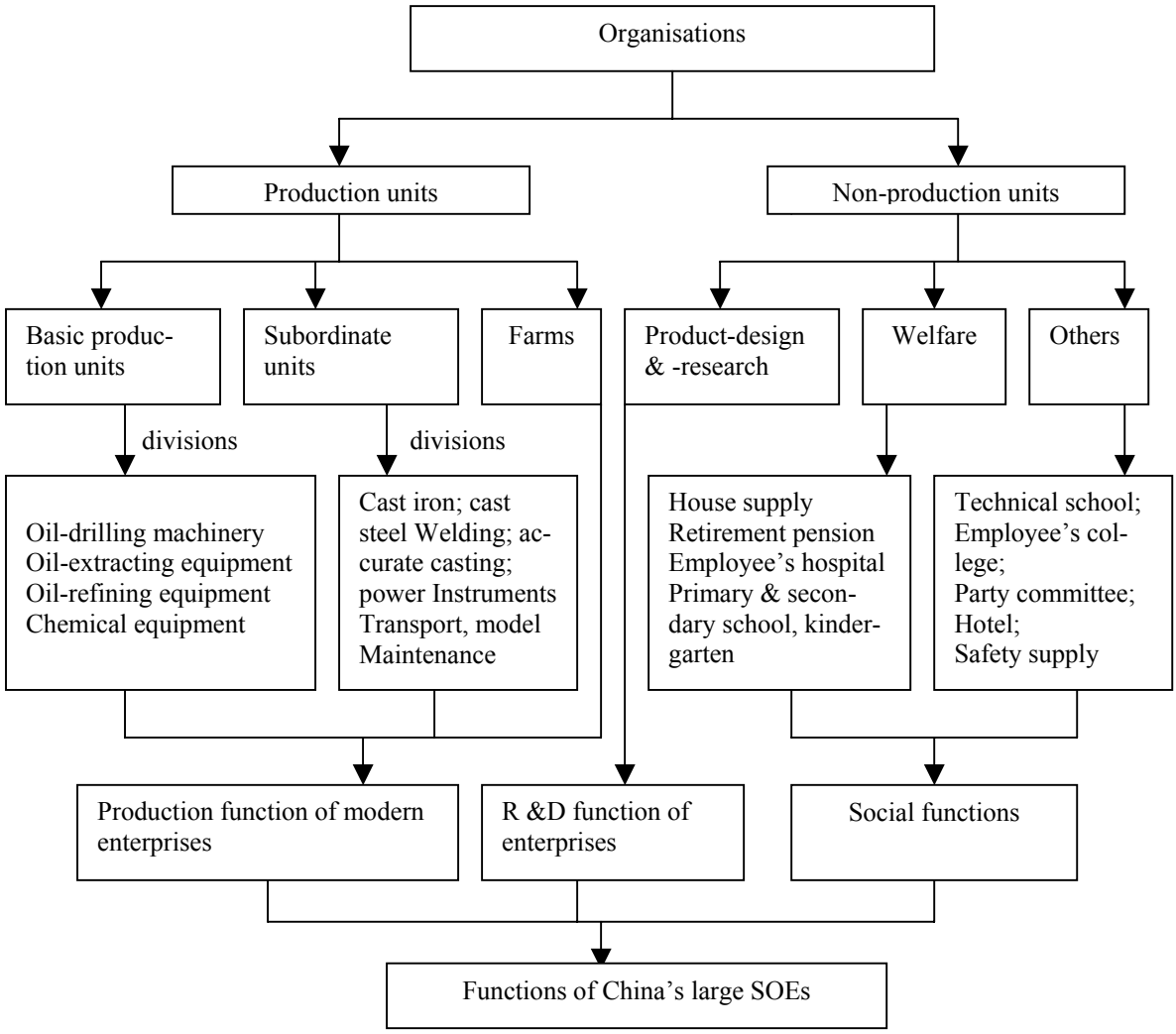



**Figure 4.2 Organisation and functions of China's large SOEs in the planned economy the example of Lanshi**

Source: own design

This high degree of production integration is in line with the theory of enterprise organisation in socialist societies (Zheng, 1999, 99). In addition, related national policies to build a regional complex industrial structure out of military considerations might also play an

[1] Subordinate sectors were mainly newly founded. Some of them were moved from coastal region. For example, the petroleum plant and the organic plant of Lanhua were moved from Shanghai, and Qingdao and Tianjin respectively. In several cases, they were transformed from local small enterprises.

improtant role in the formation of a complex product structure within large SOEs in Lanzhou. A further reason may be that local supplementing and supporting capabilitites were so weak at that time that complex equipment had to be introduced from abroad, mainly from the Soviet Union during the first FYP. Many related products and services had to be internally produced and supplied for guarantee of inputs or the quality of equipment, instruments, or intermediate products, as it is the case with regard to some large SOEs in previous German Democratic Republic.

#### 4.1.3 Technological improvement

Local large SOEs were creative. Three main means of improvement and innovation were: autonomous innovative activities by own research units, learning by doing, and cooperative innovative activities with other enterprises, universities and related research institutes. As far as the machinery industry is concerned, communications between users and producers were intensive, resulting in both general and case-specific technological improvement. Frequent technologicial improvement and innovations led to enormous economic returns. But the innovative activities of large SOEs were much less driven by the outside competition and inside material incentives, than by spiritual satisfaction of related persons derived from a higher academic, social, or political position, feelings of vocational successfulness, enjoyment of doing something for own mother land, and the belief in socialism. Innovitions were also necessary for the isolation of China from industrialized countries.

Regardless of respectable huge technological progress of large SOEs, technological gaps between them and their foreign counterparts were enlarged. In developed countries, science and technology have been developing so quickly that a knowledge-driven economy has been discussed hotly for a long time. Technological improvement of large SOEs in China was principally based on imported technologies and equipment. Innovations were realized mainly by means of imitation. But what was successfully imitated by local large SOEs was generally obsolete technologies on the part of their foreign counterparts.

### 4.2 The changing organisational structure of large SOEs since the reform

With the reform of SOEs since the 1980s, measures were taken by government to strengthen linkages between enterprises with different forms of ownership and scale and other institutions, to promote the development of collectives within SOEs out of both social and economic considerations, and to make enterprises larger by establishing enterprise groups. Especially since the middle 1990s, many SOEs were transformed to listed corporations on the one side and on the other side they were reorganised in the process of making them larger and stronger (part 1.2.2). The upsurge of collectives within large SOEs, cooperation forms among SOEs, other enterprises and institutions in the 1980s, and the appearance and evolution of local SOEs-related enterprise groups since the middle 1980s are dealt with in this sector. Economic activities of state-controlled listed corporations since the early 1990s will be analyzed later.

### 4.2.1 Collective firms: special prolonged parts of SOEs[2]

A unique phenomenon concerning the development of China's large SOEs was the appearance and booming development of so-called collective firms within large SOEs since the reform. Despite their complex development trajectories varying from case to case, such collectives shared some common features in terms of their founding, ownership and economic activities. The founding of collective firms was originated from the social function of large SOEs to create job chances for their abundant employees, and children and even relatives of their employees. Some small collectives existed already for this purpose in the 1970s, but an enormous development appeared in the end 1970s and the early 1980s. From the end 1960s to the end 1970s, many young urban persons who had accepted more or less education left cities and lived in villages as results of a political campaign. They came back to their hometowns in the end 1970s and the early 1980s. Under the push of government, large numbers of collectives were established by SOEs to provide jobs for them as well as for other persons related. Collectives mainly provided intermediate products and services for their mother enterprises and they provided services for employees of certain SOE.

Later, such collectives were seen by government as an important power to promote economic development. The pure job-creating motivation of establishing collectives was complicated. Under the label of "one enterprise, two systems," more and more economically-driven collectives were established to provide products and services for other parts of the society.

Products of collectives were diversified. Many of them produced various intermediate products for mother enterprises or produced backward products by using products of mother enterprises as raw materials. Some of them were founded in order to fully use residual materials of mother enterprises. In some cases, production activities of collectives had no connections with mother enterprises. This special combination between SOEs and corresponding collectives was in accordance with the diversification strategy of "focusing on one field, while penetrating in many fields" (yi ye wei zhu, duo zhong jing ying), which was popular nationwide from the 1980s till at least the middle 1990s[3].

Due to property right features of collectives, large SOEs are called here mother enterprises of corresponding collectives. Originally, collectives were mainly funded by large SOEs. Various types of joint ventures were added later. With the enterprise reform, the majority of collectives became autonomous legal entities. The sole ownership of some of them was diversified through stock transformation, and various operation forms were introduced, such as economic contracts, renting, and authorizing. Despite these, collectives as a whole are still under the control of corresponding SOEs till now, since SOEs are representatives of both state assets and parts of unclear collective assets within collectives. Relationships between SOEs and their collectives are more like those between mother enterprises and daughter enterprises than between partners in a network. Such relations are based on capital linkages, strengthened by the

[2] Sometimes it is difficult, both for Chinese and foreigners, to understand some concepts used in a transitional economy of China. The relationship between SOEs and their corresponding collectives was described here. But it is not clear why they were called collectives, since they were initially funded by SOEs. So, this subtitle is my personal idea about the core feature of collectives, which may be not shared by others.

[3] This slogan can be frequently found in various reports of large enterprises at least before the middle 1990s.

situation that many managers, technicians and also general workers of collectives came from mother enterprises.

The number of collectives subordinate to certain SOE reduced in the 1990s. For example, in 1988 there were 78 collectives in Lanshi, 50 of which were newly founded directly under the government's guidance of "focusing on one field, while penetrating in many fields". Till 1993, only 34 collectives continued to exist, and till 2002 only a little more than ten. All current collectives are located within five districts of the city, while all collectives in other parts of Gansu province have disappeared. Collectives which do not exist now either went bankrupt or were incorporated by others because of their unclear property rights, too small scale and bad management, and because of severe outside competition.

Collectives should have contributed something to local economic development in a shortage economy by improving resource utility efficiencies of mother enterprises and absorbing funds from other channels into their production activities. More case studies are needed for analysing their influences on the development of mother enterprises. In the case of Lanshi, some collectives occupied assets of the mother enterprise freely and consequently production costs of the mother enterprise increased. Some collectives are certainly incapable of competing with other enterprises in future. But those collectives may not be easily allowed to go bankrupt to avoid large-scaled unemployment. In this sense, they bring additional burdens to their mother enterprises.

### 4.2.2 Cooperation forms in the 1980s

*Highly voluntary cooperation in the early 1980s*

Linkages among enterprises and other institutions in the planned economy were determined by plan and were basically passive. As a result of the ongoing enterprise reform, SOEs were permitted to buy parts of inputs from market, to produce more products and autonomously to sell them at normally higher prices than planned in the early 1980s. This kind of autonomy of SOEs made direct, active linkages and cooperation between various enterprises not only possible, but also to some degree necessary with regard to undeveloped market. One form of cooperation was the establishment of joint ventures by SOEs and collectives. Inputs might be concrete materials, such as equipment, raw materials and land, or monetary capital, or both. Material inputs were the main form of establishing joint ventures during this period. It is not clear how many joint ventures were established in the 1980s and which percentage of them exists till now. But such joint ventures play a very limited role in current industrial development of Lanzhou, even when some of them exist now.

Another form of cooperation was sectoral alliances, mainly consisting of SOEs and other public institutions[4]. Large SOEs in the same sector or with strong backward or forward material linkages and related research institutes established sectoral alliances to enhance their complex production capabilities. For example, an alliance was established by Lanzhou Oil Machinery

[4] Many alliances were characterized by a high degree of vertical and horizontal production integration, showing very diversified economic activities in them. They are called here sectoral alliances because key parts of economic activities of main members of an alliance were normally involved in the same sector, such as machinery, chemistry, textile, and metallurgy.

Institute (Lanyouyan), Lanshi and Lanhua to produce some kind of equipment. Three enterprises were responsible for design, production and installation respectively. General functions of alliances were seeking and accepting production tasks and coordinating activities of members[5]. The relationship between members and the alliance was based not on capital linkages, but on contracts. Such alliances may have played some role in strengthening enterprise linkages and attracting production tasks for them, but gradually they disappeared[6]. One cause is that members found that alliances acted as competitors of their branches in many cases. Both joint ventures and alliances were not limited to the local territory. The latter had more members, located in a much larger space than the former.

*Cooperation under the increasing influence of national policies in the middle and later 1980s*

Voluntary linkages and cooperation between enterprises and other organisations were encouraged by the state (State Council, 1980; 1986)[7]. Since the middle 1980s, cooperation forms between SOEs and between SOEs and others were more or less affected by national policies. Under the influence and in some cases under the direct interference of local governments, two more forms of cooperation appeared in the middle 1980s. One was countertrade between a large and a small enterprise. The former provided the latter with funds or materials for its production and the latter paid them back with its products. Exchanges of materials and products between two enterprises were another cooperation form. For example, Lanhua provided Lanlian with some kind of crude oil, while getting heavy oil from Lanlian. Both forms of cooperation contributed little to the local industrial development.

### 4.2.3 Evolution of local enterprise groups and its influence on industrial development[8]

Since the middle 1980s, enterprise groups officially appeared at the economic stage of China, characterized by the issue of two governmental regulations – Rules on Several Problems of Further Promotion of Horizontal Economic Cooperation and Several Advices on Establishing and Developing Enterprise Groups in 1986 and 1987 respectively. As far as SOEs are concerned, the commonly shared idea is that there existed a "from below to above" "voluntary" process of establishing enterprise groups in the early 1980s, and the development of enterprise groups have been greatly influenced by the national policies of making large and strong since

[5] According to other researchers, members established sectoral alliances to commonly share retail networks, production conditions and enterprise prestige (Li and Chen, 2001).

[6] Only locally-related sectoral alliances are involved here. Nationwide, there existed such cases that voluntarily formed sectoral alliances evolved later to enterprise groups under the push or at least support of government (Qin, 1999).

[7] The should-be benefits of enhancing horizontal linkages among enterprises and other institutions include: fully exerting productive potentials of existing enterprises and consequently improving their economic efficiency; rationalising the organisational structure of enterprises, the industrial structure, and regional distribution of industrial activities; forming and developing commodity market, capital market and technological market; changing the isolated situation between enterprises funded by ministries and by local governments; realising responsibility divisions between government and enterprises and moderately separating the property right of SOEs from their operation rights, and so on.

[8] In terms of its complexities, great effort was made here to describe so clearly as possible the establishment and development trajectory of SOEs-related enterprise groups. Much attention was paid to this topic in the study, partly because the development of large enterprise groups has been one of the hottest economic topics in recent years in China (e.g. Wan, 2001; Deng, 2002), and partly because enterprise groups played an important role in economic development of Gansu province in recent years according to some articles or materials (Zhang and Li, 2001), and further because enterprise group is a concept frequently appearing in documents of enterprises and local governments.

the 1990s, especially in the process of reorganizing SOEs since the middle 1990s (Qin, 1999; Li and Chen, 2001; Zhao, Zhao and Xv, 2002). In terms of the mechanism of the establishment and development of enterprise groups in the later 1980s, there were two different ideas. One regarded it as essentially a voluntary process (Li and Chen, 2001), while the other understood it above all as a process guided by the national policies (Zhao, Zhao and Xv, 2002). The evolutionary trajectory of SOEs-related enterprise groups in China was firstly traced by taking Lanshi as an example. Attention was then paid to different types of enterprise groups in Lanzhou and their influence on local industrial development.

*Government-pushed evolution of SOEs-related enterprise groups: Lanshi as an example*[9]

In other parts of China except Lanzhou, there existed such cases that key members of a sectoral alliance formed in the early 1980s are also key members of the corresponding enterprise group in the later 1980s[10]. But in Lanzhou, no current enterprise groups evolved from sectoral alliances or joint ventures appeared in the early 1980s. All Lanhua- and Lanlian-relatd sectoral alliances do not exist now. One difference between earlier sectoral alliances and current enterprise groups is that key members of an alliance were not limited to the territory of Lanzhou, while for the latter this was the case[11].

In 1988, a so-called Lanzhou Petroleum & Chemical Machinery & Equipment Enterprise Group was established. Members were Lanshi, Lanzhou General Machinery Plant (Lantong), Changzheng Plant (Changzheng), Lanzhou Machinery Production Company (Lanjisi), Lanzhou Oil Machinery Institute (Lanyouyan) and Gansu Chemical Machinery Plant (Ganhuaji). On the one hand, the establishment of this enterprise group was out of "voluntary" decisions of its members [12]. On the other side, national policies played certainly an important role in the establishment of the enterprise group. Firstly, related national policies legalised the establishment of an enterprise group in the sense their voluntary requests for establishing an enterprise group might be approved by governmental departments in charge. Secondly, government may have been encouraged by supposed multi-dimensional benefits to support and push the establishment of enterprise groups. Supposed benefits include: changing the isolated situation between SOEs controlled by the central government and by local governments and changing the complex product structure of SOEs to rationalise the organisational structure of SOEs; improving economic efficiencies and pursuing scale economies by enhancing the interfirm specialised and coordinated production system; quickening the pace of turning new technologies and processes into actual production capabilities; enhancing competitive capabilities of SOEs; helpful for further internal reform of SOEs, and improving their operation mechanism (State Council, 1986). Thirdly and more important, relationships among members of an enterprise group suggest that the appearance of SOEs-related enterprise groups in the later 1980s was more a product of national policies than a product of voluntary decisions of members (Figure 4.3).

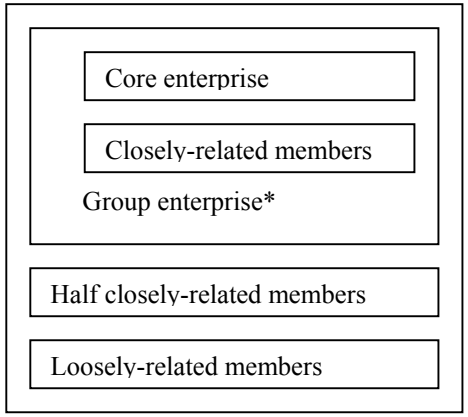
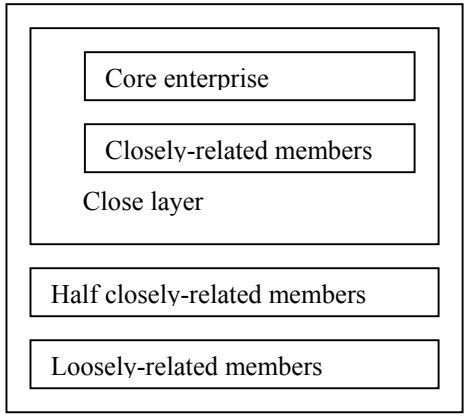
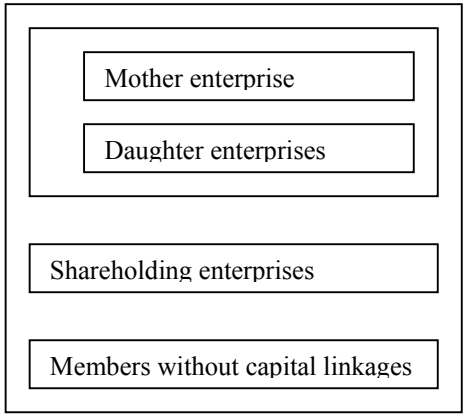
[9] This idea is in line with that of some scholars and in opposition to that of others.
[10] An example is Dongfen Car Group, mainly consisting of Dongfeng Car Company in Hubei province – the core enterprise, Yunnan Car Plant, Xinjiang Car Plant and Liuzhou Car Plant in Guangxi province.
[11] This conclusion is Lanzhou-specific and should not be generalized.
[12] It must be pointed out that according to related regulations of government, an enterprise group should be established voluntarily.

Members of the enterprise group were all autonomous legal entities and their assets belonged fully to the state. Lanshi was the core enterprise of the enterprise group. It had a close relationship with Lantong, Changzheng, and Lanjisi. The former two were also SOEs, producing machinery for mining, construction material, and rubber. The latter were collectives of Lanshi. They were called the close linkage layer of the enterprise group or core parts of the enterprise group. Linkages between members belonging to the close linkage layer were both subject to contracts and some degree of the vertical leadership of the group enterprise – a not clearly defined organisation at that time. The general manager of Lanshi was also the general manager of the group enterprise, responsible for appointing managers of Lantong, Changzheng and Lanjisi. Meanwhile, key investment and operation decisions within them were made by the group enterprise. This means in fact that they were combined into one enterprise to some degree. Or more exactly, Lantong and Changzheng were incorporated into Lanshi to some degree and made the latter larger. It is this character of incorporation that essentially distinguished enterprise groups in the later 1980s from sectoral alliances and other forms of cooperation appeared since the early 1980s. Obviously, this combination of SOEs could only happen under the push of definitive national policies, although members concerned might be voluntary to do so. Lanshi had a half-close relationship with Lanyouyan and Ganhuaji. A half-close relationship means normally that the core enterprise had some form of linkages with related members. In this case, Lanshi had technological cooperation with Lanyouyan and they used some facilities commonly. There did not exist enterprises or institutions, with which it had a loose relationship. Linkages between the core enterprises and close and half-close members are based on commonly established rules and contracts.

The relationship between the core enterprise and close members of an enterprise group became much clearer, according to the document issued by the State Council in 1991. Representing members of the close linkage layer, the core enterprise[13] is responsible for making development plans and yearly plans, signing contracts of economic responsibility with the related governmental department, applying loans for key construction and technological improvement from banks, export and import activities, management of state assets within them, and appointing managers of close members. This means a stronger control of the core enterprise over close members. The leadership of the core enterprise over close members could be realised by different means: investing in them and owning enough shares for control, leasing them or managing them by economic contracts, merging them or authorized by government to manage state assets within them. In the early 1990s, such more market-oriented means as shareholding, renting, signing economic contracts, trusteeship, and market elements in mergers and acquisitions were subordinate to administrative elements in the development of enterprise groups. The stronger control of the core enterprise over close members could only be realised through administrative authorization of government in most cases[14]. The enhanced rights of the core enterprise could be observed in the case of Lanshi. Its leadership over Lantong and Changzheng was based on governmental authorization, rather than on capital contacts. But this clearer relationship between them did not lead to rational divisions of

[13] The concept of the group enterprise was less used in the early 1990s, since in most cases the leadership of the group enterprise was in line with that of the core enterprise. But this concept is used currently, generally referring to the mother enterprise.

[14] This should not lead to the neglect of the voluntary side of the development of enterprise groups. Policies concerned were to some degree influenced by practices of enterprises. For example, the policy concerning "authorization management of state assets" was introduced under strong requests of some large enterprise groups.

| Stages | The initial stage | The transitional stage | Modern enterprise system |
|---|---|---|---|
| Period | In the later 1980s | In the early 1990s | Since the middle and later 1990s |
| Members (Except core enterprises or mother enterprises, names of other members of an enterprise group are featured by their relationship with core enterprises or mother enterprises) |  |  |  |
| Main law base | National committee of Systemic Reform and National Economic Committee, 1987: Several Advices on Establishing and Developing Enterprise Groups | State Council, 1991: Announcement on Selecting Some Large Enterprise Groups for Demonstration | State Council, 1997: Announcement on Deepening Demonstration of Large Enterprise Groups |
| Relationship between core enterprises and close members | Administrative leadership of core enterprises over close members, exhibited in that the group enterprise, the general manager of which is normally also the general manager of the core enterprise, appoints main leaders of close members and bears decision-making rights of key investments and key performance of close enterprises. | Administrative leadership of core enterprises over close members with an emphasis on capital linkages. A stronger control of the former over the latter, exhibited by "six unifications" of the core enterprise in planning, economic contracts, foreign trade, loans for key projects, management of state assets, appointment of key leaders of close members. In some cases, the core enterprise is authorized to manage state assets within related enterprises. More market-based means, such as renting and shareholding, were introduced. | The "modern enterprise system" should be introduced to large SOEs and enterprise groups. The relationship between members of an enterprise group should be based on capital linkages. Mergers, consolidation, acquisitions and corporalization are main means of further development of large enterprise groups and large enterprises under the direct guidance of government in many cases. |
| With half-close | Joint ventures, technological partnership | Joint ventures, technological partnership | Shareholding company, technological partners |
| With loose members | Technological partnership and material linkages | Technological partnership and material linkages | Technological partnership and material linkages |

* A signal of merger of SOEs to some degree

**Fig. 4.3 Evolution of SOEs-related enterprise groups in transitional China (Model in theory)**

production between them. It had been planned to transfer some equipment from Lantong to Lanshi to improve utilization efficiencies of the equipment. But it was not realised. One reason is that Lanshi did not have funds to invest in Lantong as compensations for the equipment. Another was Lanshi did not have the right to relocate state-assets within it and close members.

In comparison with the later 1980s and early 1990s, the "forced" element has been playing a more important role in the establishment and development of many SOEs-related large enterprise groups and large enterprises since the middle 1990s[15]. In the process of reorganising SOEs, many large enterprise groups and large enterprises were formed under the push of government (part 1.2.2). In contrast to the model that core parts of an enterprise group were formed by a large enterprise and several relatively small enterprises, much more large enterprises and core parts of enterprise groups were formed by several relatively large enterprises since the middle 1990s, generally called the strategy of "strong–strong combination" subordinate to "making large and strong" policies.

In 1993, the Central Committee of the CPC decided to establish a socialist market economy in China. In 1994, the Company Law was promulgated. According to the Company Law, a 100% SOE can be transformed to a state monopoly corporation, a limited corporation, a stock corporation, or a listed corporation. With the label of the "modern enterprise system", a right-divided governance structure consisting of three sides of decision-making, supervision and execution should be established within corporations under the clear property right. Under these two backgrounds, the relationship between the core enterprise and close members was clearly defined as mother–daughter enterprise relationship (State Council, 1997; National Administrative Bureau of Industry and Commerce, 1998). Core enterprises may be authorized by government to manage state assets within its members.

Lanshi was listed by the provincial government among the first group of enterprises establishing the modern enterprise system in 1995. In 1996, Lanshi was authorized by the provincial government to manage and perform state assets within the close layer of the group. Lantong did not belong to the enterprise group now, while Changzheng stays as a daughter enterprise.

*Enterprise groups: types and influence on their members and local industrial development*

In order to evaluate influences of the establishment and development of enterprise groups on local industrial development, it is necessary to classify enterprise groups. According to whether government played a relatively great role in their formation, government-pushed and non-government-pushed enterprise groups can be distinguished. The limitations of this classification include difficulties in measuring the role of government in the establishment of certain enterprise group and the system of multi-levelled legal entities of SOEs in some cases[16]. But it is a useful start point for further analyses.

[15] At the same time, however, market elements in acquisition of enterprises increased also in some cases.

[16] A group enterprise may have many daughter enterprises. They are autonomous legal entities and may have a large number of own legally autonomous daughter enterprises. In many cases, the mother–daughter and sub-mother–sub-daughter chain is very long. The system of multi-levelled legal entities of SOEs was a product of gradual reforms of SOEs.

In Lanzhou, two sub-types of enterprise groups established under the strong push of local government were identified. The first one was characterized by the combination of one large enterprise and several small ones. In the case of Lanshi, no obvious negative or positive impact of establishing the enterprise group on its members was observed. Instead, the bad operation situation of Lanshi in recent years was at least partly due to unwillingness or incapability of its top leaders to introduce a modern enterprise system and to diversify ownership of its plants. In another case, bilateral stock-holdings and joint investment activities took place after one local large paint enterprise and one small enterprise located in Gangu county of Gansu province established an enterprise group. This sub-type normally corresponded to the situation that there were only a few SOEs in some sector. When SOEs in one sector are numerous, then the second sub-type is involved.

Numerous enterprises in one sector were earlier under the unified leadership of an "administrative company" – essentially a governmental department. Since the fulfilment of the Company Law, administrative companies were normally transformed to group corporations. For example, Gansu Machinery Group Corporation (GMGP) was transformed from previous Gansu Machinery Industry General Company. The general task of group corporations is to operate and manage state assets within their members controlled by the provincial government. One difference between group corporations and previous administrative companies is that members of a group corporation may be traditional monopolies, transformed state monopolies, limited corporations, or stock corporations, while members of previous administrative company were sole traditional state monopoly. Theoretically, the essential difference between them is that their relationship with their members changed from previous administrative senior versus junior to current mother enterprises versus daughter enterprises. This change makes the reorganisation of state assets within members theoretically easier.

Numerous daughter enterprises of such a group corporation distribute normally in various sub-regions of the province. The impact of the establishment of such group corporations on the reorganisation of state assets within daughter enterprises and linkages among them was complicated. One phenomenon is the consolidation of some SOEs or merger of some SOEs by others. The best known example is that in 2000, two local enterprises transformed from core parts of Lanhua and Lanlian lost their legal entities, were then consolidated into one and became a branch of PetroChina headquartered in Beijing, as a precondition for PetroChina to become a listed corporation in stock markets of New York and Hong Kong. Another case is that a Lanzhou-located and two Tianshui-located enterprises produced electro-technical products under the unified control of Gansu Machinery Group Corporation. Based on the core assets of three SOEs, Gansu Changcheng Electro-technical Corporation (Ganchanggong) was established. Later, it became a listed corporation. These two are sole cases in Lanzhou.

The second phenomenon is enhanced capital linkages among some members of a group corporation. Generally, a new group enterprise was established by combining several SOEs, and then capital linkages among members could be enhanced to some degree. But the cases concerned are very limited in number and their effects on the development of certain enterprises and the local economy were very limited.

The third phenomenon occurred in general. SOEs within such a group corporation stayed autonomously operating as earlier. Some large SOEs turned into group corporations by found-

ing new daughter enterprises and by corporalising all or some former branches. For example, Lanxin, Languang, and Changfen are autonomous group corporations under the unified control of Gansu Electronics Group Corporation, developing along distinctive paths. Normally, the formation and development of these enterprise groups were free from the strong push of the provincial government. Besides them, there are other enterprise groups originated from earlier large SOEs or private enterprises. They are the core parts of local enterprise groups, having little to do with national policies related to promote the development of large enterprise groups by consolidating or merging SOEs to more or less degree. So, it is wrong to causally connect the development of local enterprise groups with related national policies. Enterprise groups formed under the strong push of the provincial government are minor among local enterprise groups, in terms of both number and assets. To understand industrial development of Lanzhou, more attention should be paid to historical, organisational, and institutional aspects of large enterprises.

It should be pointed out that mainly the core parts of an enterprise group were involved in the above analyses. Certainly, in many enterprise groups there are numerous other members that may have some degree of capital contacts with the core enterprise or may not have capital linkages. Their detailed interactions with the core enterprise are to a great degree beyond the researches presented here. But they played no noticeable role in the development of enterprise groups according to researches made.

### 4.3 Local listed corporations: operation, investment channels and problems

To promote the development of large enterprise groups and to promote the development of large enterprises are two usually interweaving ways towards making SOEs larger and stronger. One efficient way of promoting the development of large enterprises is corporalisation of traditional SOEs to listed corporations. The benefits of becoming a listed corporation include: raising funds by issuing stocks; being conducive to establishing the modern enterprise system; and improving the enterprise prestige (Shen and Xia, 2001). To become a listed corporation, large SOEs firstly divide their main, profit-winning production assets and assets related to R&D from other assets, such as hospitals, schools, and "unhealthy assets". Secondly, based on those assets, a stock corporation will be established with other enterprises and institutions and by issuing public stocks. Thirdly, stocks of the corporation may be allowed to be openly transacted in stock markets, if certain conditions are met. One condition is the asset scale of enterprises.

Till the end of 2002, there are totally nine listed corporations located in Lanzhou. Eight of them were originated from SOEs and only one from a private enterprise[17]. The first corporation was established in 1993 and the others after 1994. Eight state-controlled corporations distribute in fields of chemistry, machinery, electronics, textile, metal and non-metal materials and building materials, representing local main industrial sectors. Products of the cement corporation are sold within the neighbouring provinces, while products of other corporations are sold beyond the neighbouring provinces and products of some enterprises are exported.

[17] Of eight state-controlled listed corporations, seven corporations are controlled by the provincial government. The rest one is a daughter enterprise of an enterprise controlled by the central government.

### 4.3.1 Gansu Changfen Industry Co. Ltd. (Ganchangfen): a case study

Based on the core assets of the state-owned Changfen Machine Tool Plant (Changfenchang), Ganchangfen was established in 1993. Gansu Electronics Group Corporation is in charge of provincially-controlled SOEs in the electronic industry, occupying 41.63% of all stocks of Ganchangfen. Other enterprises occupied 20.83% of stocks, and 37.55% were held by individuals. In the early of 1994 it became a listed corporation. The main products of the listed corporation in 1994 were washing machines, TV sets, and refrigerators. From 1994 to the end of 2002, three different product strategies were adopted.

From 1994 to 1995, raised funds were used to produce new types of three main products, as promised by issuing public stocks. Promised but not carried out were three projects related to produce electrographs, packing materials and retards for washing machines respectively, due to their too high production costs or possible difficulties in sales. From 1996 to 1999, the strategy carried out from 1994 to 1995 to lay attention on three products was replaced by an uneven development strategy, treating washing machines as the main product and TV sets and refrigerators as supplementary products. Completely automatic washing machines began to be produced. The main cause may be that the enterprise faced severe competition from other producers in other regions of China, some of which were capable of reducing prices at a greater degree for economies of scale. In a consumer market for house appliances, economies of scale were so important that the enterprise had to focus on washing machines, which were produced on a relatively large scale earlier. In 1998, the enterprise operated at loss. Explanations for losses included lower prices, negative impact of the Financial Crisis of Southeast Asian on export, bad debts, limited types of main products, abundant employees, lack of the production enthusiasm of employees related to the systems of the labour employment, the salary distribution, and incentives.

Facing severe competition in the field of house appliances, the enterprise began to produce special electronic products with the new strategy of changing from the field of house appliances to the field of information technologies since 2000. Parts of facilities for producing special electronic products were from Gansu Changfen Information Technology Co. Ltd. (GCITC) in form of assets replacement. GCITC is a 100% daughter enterprise of Gansu Electronics Group Enterprise. Till 2002, special electronic products and washing machines are main products of the enterprise.

### 4.3.2 General investment features

Investment channels of listed corporations with raised funds by issuing public stocks were complex, but there were some common features. Enlarging the production scale with technological improvement was the both planned and realized key investment channel of the majority of corporations. Many facilities were introduced from abroad. With more advanced equipment, enterprises could reduce production costs, improve the product quality, and add product types. This was very important for enterprises to get through a consumer market, in which the prices of many products reduced continuously in the later 1990s. This channel is the most successful aspect of introducing public funds into SOEs.

The internalisation of production activities of related products, such as forward products and supplementary products, was a planned, but in most cases not realized investment channel, either because there were already enterprises producing such products or there did not exist enough customers. However, such investment plans were realized in two cases. The aluminium corporation incorporated the processing parts of a local SOE and it plans to prolong its production chain from current pressing–processing of aluminium to power–pressing–processing of aluminium in future. The paint corporation acquired a bankrupt SOE located in Dingxi. The object of establishing a new daughter enterprise based on it was to supply raw materials for the mother enterprise. But this acquisition turned out to be a failure two years later. The same consequence appeared in other cases. For example, the Foci Group acquired two SOEs in the same sector. Later, these two daughter enterprises went bankrupt. The Foci Group encountered not only heavy financial losses, but also burdens of creating job chances for employees of these two daughter enterprises[18].

The third channel was associated with diversified economic activities of enterprises. Diversified industrial products are treated in this study as such products, which do not belong to any parts of prolonged production chains centring on main products, or which do not have the same usages as main products. Under this definition, it is found that the diversification of industrial products was a normal phenomenon among local listed corporations. Further, corporations established a large number of enterprises belonging to the tertiary sector. They concentrated on advanced service industries, such as technological service and consulting. Some service industries had little to do with industrial activities of mother enterprises. It is clear that the diversification of economic activities popular in the 1980s and the early 1990s has been taking effect till now. What was different from the past is that current economic activities of diversification were often labelled with high or new technologies. Many high- & new-tech daughter enterprises were founded in the process of diversification. But till now, they play a very limited role in the development of corporations due to their small scale by assets and production.

The diversification degree of economic activities and industrial products mainly by using raised funds varied from case to case. In cases of the aluminium corporation, the cement corporation, the carbon and graphite corporation, and the textile corporation, diversified economic activities were very limited. Those corporations were also characterized by their high realisation rate of promised investment projects showed in the process of raising public funds. The paint corporation was characterized both by its high degree of product diversification and low realisation rate of planned projects, while the special electronic industry corporation, the petrochemical corporation and the electro-technical corporation lay in between. Diversified economic activities of local enterprises in the later 1990s and in the early 2000s were not fully outcomes of the long-term diversification strategy. They were also outcomes of an enhanced outside competition, above all competition from domestic enterprises. Enterprises were forced to find new markets by producing high- & new-tech products, since competitions in low-tech products became severer and severer.

Some diversification projects might be not fully assessed before their fulfilment. Incompetence and inexperience of managers in dealing with high- & new-tech products may also

[18] Nationwide, there may exist successful cases associated with making enterprises larger by carrying out the "low-cost expansion" strategy. But no such cases were found within the territory of Lanzhou.

hamper the development of diversified high- & new-tech industries. In addition, new daughter enterprises may function as channels for top leaders of SOEs to turn state assets into private assets.

### 4.3.3 Common problems

Mother SOEs of listed state-controlled corporations share normally over 50% of total stocks, guaranteeing their absolute control over them[19]. Listed corporations act more like prolonged parts of their mother SOEs than an autonomous legal entity. There were frequent, strong material and service linkages between listed corporation and closely-related enterprises, including their mother SOEs, other daughter enterprises of their mother SOEs and other members of the same enterprise group. Frequent transactions between them may be to some degree inevitable, since listed corporations were earlier parts of the whole production chain of their mother SOEs or enterprise groups. But this can not justify all their material and service linkages. Further, there existed frequent assets transaction activities between listed corporations and their mother SOEs and frequent joint investment activities between listed corporations and closely-related enterprises. This could happen only under the unified leadership. With regard to their close relationship, key questions are whether prices of material and service transactions between them were based on market prices, and whether various assets involved in activities of assets transactions and joint investments were evaluated as rationally as possible. Irrational transaction prices and assets evaluation would harm interests of small stockholders and till now, mechanisms for protecting interests of small stockholders are principally not established by local listed corporations.

Listed corporations are governed more like traditional SOEs than modern enterprises with a should-be governance structure consisting of decision-making, supervision and execution layers. They encountered the "diseases of SOEs" (e.g. Wei, 2000; Liu and Ma, 2001). The first "disease" is their "unclear ownership". The concept of the unclear firm ownership of SOEs was commonly used by economists in China. According to Wei (2000), a famous economist in China, a clear firm ownership should include two aspects: clearness in law and clearness in the process of economic operation. Legally, assets of SOEs belong to the state or to all Chinese. This is clear. But in operation, SOEs are controlled by several governmental departments. Top leaders of SOEs must try to maintain a good relationship with related governmental officials, because they are appointed by them on the one side and important economic activities must be approved by them on the other side. Maintaining such a relationship may be time- and energy-consuming. No governmental departments and managers of SOEs are responsible for losses of SOEs. Under the "insider control", state assets may be privatised through various illegal channels, when the legal system is far underdeveloped[20].

The second disease is their abundant employees and heavy social burdens, such as own schools and hospitals. The city government is financially incapable of providing such social services for them. The third one is incompetence and inexperience of top leaders and lack of

[19] Stocks owned by their mother enterprises can not be openly transacted in stock markets.

[20] As an effort to solve this problem, a new system was introduced in 2003. At national, provincial and city/prefecture level, a new department was founded to supervise and manage state assets within SOEs. The core is to establish the governance structure of legal persons and to separate the property right of SOEs from autonomous performance rights.

an efficient incentive mechanism and a constraint mechanism. The fourth one is low efficiencies and high ratios of assets to debts[21].

4.3.4 Extra: corporalisation and operation of SOEs

Corporalisation is one main way of SOEs' reforms. Of 18 state-controlled corporations transformed from traditional SOEs and involved in questionnaires, four corporations said that their operation situation was much better than before corporalisation (Table 4.1). Twelve selected the answer of "a little better". Only one experienced no change and another encountered a much worse situation. Management improvement, improvement of the product quality, reduction of production costs, and improvement of the production enthusiasm of employees are interactive aspects contributing to positive consequences.

**Table 4.1 Effects of corporalisation of small & medium-sized SOEs (%)**

| | Great positive effect | A little positive effect | No effect | A little negative effect | Great negative effect |
|---|---|---|---|---|---|
| Management improvement | 41.2 | 52.9 | | | 5.9 |
| Acquisition of funds | 29.4 | 29.4 | 35.3 | 5.9 | |
| Improvement of the product quality | 35.3 | 41.2 | 17.6 | 5.9 | |
| Reduction of production costs | 29.4 | 52.9 | 11.8 | 5.9 | |
| Production enthusiasm of employees | 35.3 | 41.2 | 17.6 | 5.9 | |
| Utilization rate of equipments | 29.4 | 23.5 | 41.2 | 5.9 | |

## 4.4 Development of large private enterprises: two cases

Among a large number of local private enterprises, Qizheng Tibetan Medicine and Huanghe Group are worth mentioning. Qizheng Tibetan Medicine was established in 1993 by a woman. She had studied physics. Her great interest in Tibetan medicines led to the batch production of them by establishing a production plant in Tibet in 1995 and another in Gannan of Gansu province in 1998. In 1997, the enterprise established its own medicine-related plant base in Tibet. By combining traditional prescriptions of Tibetan medicines with modern physical, biochemical techniques, the enterprise developed so quickly that its headquarter was moved from Lanzhou to Beijing for easier access to the whole national market and markets abroad.

Qizheng produces new products, classified as a high-tech enterprise. In contrast, the Huanghe Group is an ordinary enterprise, producing beer. The enterprise was established in 1985. In 1993, Lanzhou Huanghe Stock Corporation was established, in which the mother enterprise Huanghe Group shared 57.6% of stocks. The Huanghe Group owned 75.2% of all stocks of its daughter stock corporation by buying parts of stocks owned by others in 1995 and 1996. In 1999, the corporation became a listed one. The mother group owned 40.7% of stocks, acting as the controlling stockholder.

The development of the enterprise before 1996 was characterized by internal expansions. Besides beer, some supplementary products were also produced within the group, such as paper boxes, trademarks, and malts. Within less than two years from the end of 1996 to the early of 1998, the mother enterprise Huanghe Group acquired six SOEs, five of which produce beer

[21] At national level, SOEs account for only 30% of economic growth, while they occupy 70% of social capital.

and one produces glass bottles. The stock corporation acquired two SOEs producing beer. Four of the acquired beer plants distribute in eastern, southern and western Gansu respectively, while three others distribute in Shaanxi, Chongqing and Qinghai in western region of China. Those acquisition activities of the low-cost expansion were driven by different motivations, including enlargement of the production scale to pursue economics of scale, adjustment of the product structure by developing new products for new regions to guarantee sustainable development of the enterprise, easier entry into local markets, and confinement of competitors (Zhang, ??). Under the backgrounds that making large was greatly encouraged and supported by national policies and local government was confronted with severe problems associated with small SOEs, acquisition activities of the Huanghe Group were cited as a good example for making large both politically and academically. It seems that the Huanghe Group found a new way for the low-cost expansion of private enterprises and a new way for resolving problems caused by small SOEs.

But what happened later was in opposition to what was expected by the enterprise, governmental officials and economic researchers. The promised investment activities of acquiring three beer branches of the mother enterprise were not carried out by the listed corporation. Reversely, the corporation sold its three beer branches to the mother enterprise because of their money-losing operation situation in 2000. Two of three branches were acquired earlier and one from the mother enterprise in 1998. In 2000 or so, the mother enterprise sold its three beer branches acquired earlier in Shaanxi, Chongqing and eastern Gansu to others out of so-called “strategic considerations”. Those acquisition activities turned out to be unsuccessful. The reasons are complex, according to one official of the Huanghe Group. The acquired daughter enterprises were burdened with heavy debts and were short of funds for technological improvement and working capital. Identities of employees of earlier SOEs were not changed. More efficient management measures could not be fully carried out in those earlier SOEs. It was very difficult to improve the product quality of newly acquired daughter enterprises. Daughter enterprises outside Gansu province could not share high portions of local markets, because of bad product quality, local protectionism and the bias of local inhabitants to locally-originated beer.

Besides unrealised beer projects, two promised projects of establishing barley production bases and breeding cattle were carried out only to a limited degree till 2002. The corporation paid its attention to new-tech products, characterized by its introduction of a production line of raw beer from Germany and a production line of beverage from Italy, and the establishment of a so-called Lanzhou Huanghe Technological Risk Investment Corporation.

How to use raised funds is only one big problem faced by the listed corporation. Another one is its mother-daughter relationship with the Huanghe Group. The Huanghe Group is a family enterprise. The listed corporation is under its absolute control, showed by astonishingly frequent assets, materials and service transactions between them.

The establishment and development of two enterprises are closely associated with two main founders. In many aspects, they are at best among local private entrepreneurs. Investment channels of the Huanghe Group were in accordance with nationwide tides of diversification and making large by the low cost expansion. But it is not clear to what degree decisions of the enterprise were influenced by governmental policies and officials.

## 5 Agglomeration of Local SMIEs

Both national policies and location factors played an important role in the industrial development of Lanzhou during the planned economy before 1978 (part 3.1). Since 1978, local agglomeration of large enterprises and their branches was subject to national policies, decisions of large enterprises themselves, and external competition (part 3.2). Production activities of local large enterprises are basically confined to the territory of Lanzhou, although more and more branches were established in other parts of Gansu province and in other provinces of China. When newly established, large SOEs created necessary conditions for their development in many cases and these existing conditions, their long-term interactions with local other enterprises and institutions, and their special ownership and development trajectories, make them locally rooted to a great degree.

In this part, attention is paid to the agglomeration mechanisms of local SMIEs from three perspectives: ownership forms, local/regional markets, and agglomeration economies. Local SMIEs depend heavily on local and regional markets. Such location factors as transport conditions, proximity to the Yellow River, local and regional natural resources, local agglomeration of input providers and commercial partners, and universities and research institutes, are important for most of them. Localization economies are limited.

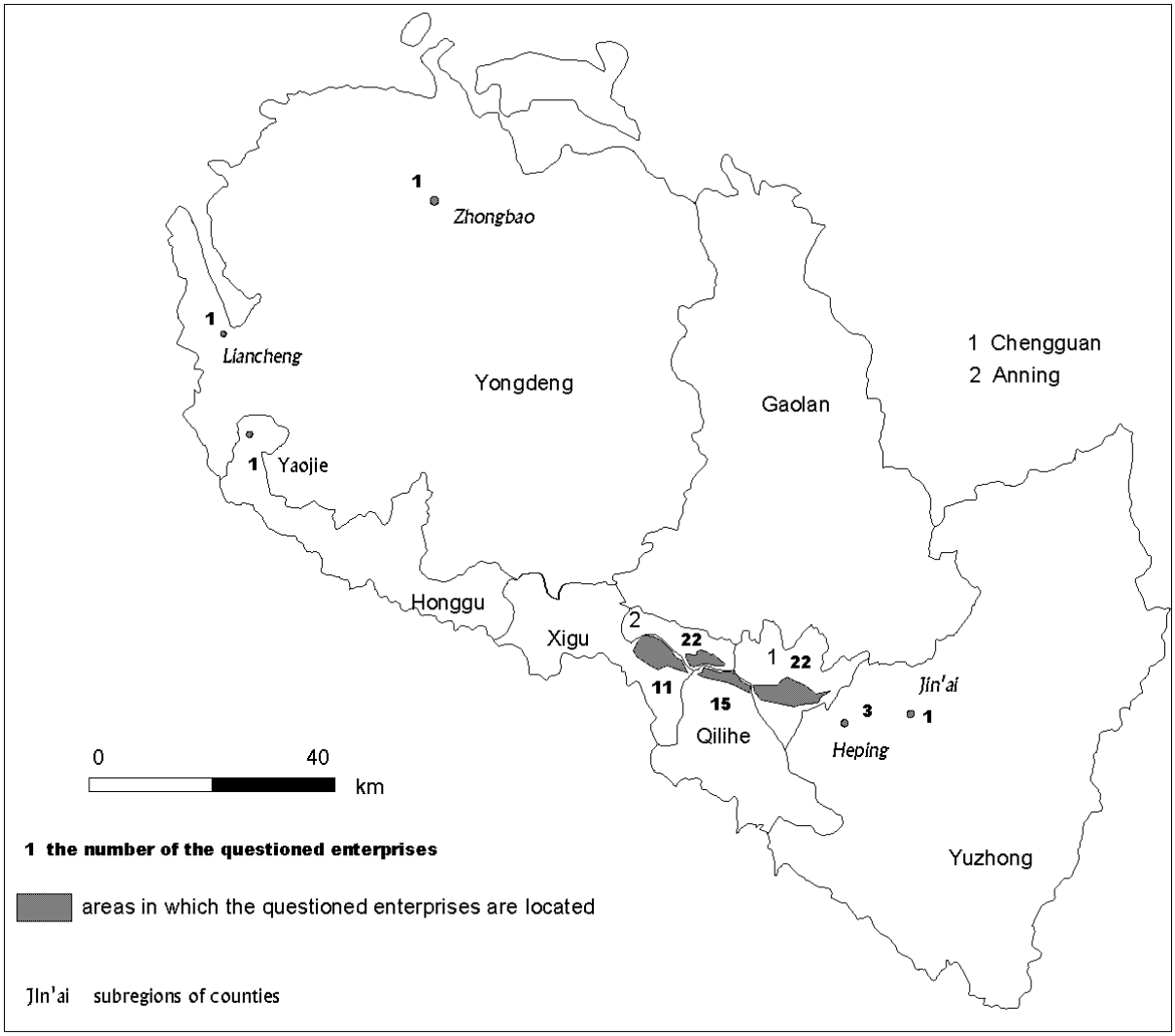
### 5.1 Spatial distribution of the questioned enterprises

Industrial enterprises in Lanzhou are located mainly in Xigu, Chengguan and Qilihe (part 2.3.4). Industrial enterprises in four districts except Honggu were mainly involved in questionnaires. The main towns of three counties, where the county's government is located, act above all as the administrative and cultural centre of the county and the industry there is underdeveloped. Generally speaking, industrial enterprises are spatially scattered in other parts of the counties. Attention was mainly paid to the industrial enterprises in two areas of Yuzhong county. One area is Heping town, where more than ten enterprises are located. Another is Jin'ai, where several enterprises producing plastic products are located (Map 5.1).

### 5.2 Ownership perspective

#### 5.2.1 "Ownership-associated" establishment of small SOEs and certain collectives

The majority of small & medium-sized SOEs and collectives were established before 1990. These SOEs were mainly funded by the city government and governments of counties and districts and it was seldom for local governments to establish enterprises in other regions before 1990. This is also the case for collectives and stock cooperatives established by SOEs, colleges, universities, state-owned research institutes, local governments and their subordinate organisations. It is normal that those collectives are located near to sites of their owners and within the territory of Lanzhou.




**Map 5.1 Sites of the enterprises involved in questionnaires**

5.2.2 Establishment of private enterprises

25 private enterprises were involved in questionnaires[1]. All of them were established after 1990. 20 of 25 private enterprises answered the questions related. Among them, the owners of 14 enterprises lived in Lanzhou before the establishment of their enterprises, showing a dominance of seedbed origins of private enterprises. No evidence was found that deliberate activities of seeking an ideal location characterized by minimum costs or maximum profits were carried out before the establishment of their enterprises. It seemed the interviewed were puzzled by the question why the enterprise was established in Lanzhou, rather than in another region. It may be that possibilities to earn money and their capabilities to realize it were enough for them to establish an enterprise. One owner lived in other parts of Gansu province before the establishment of his enterprise and five owners came from other provinces of China. Only one enterprise of these six enterprises is a daughter enterprise of an enterprise headquartered

[1] Generally speaking, these 25 private enterprises operate better than the average. So, their structures in many aspects can not represent the whole. But with enough cautions, some features concerning the establishment of local private enterprises can be identified.

in another province. One enterprise is a multi-plant enterprise locally headquartered and the other four are one-plant enterprises[2].

One owner of 14 locally-originated private enterprises worked as peasant before the establishment of his enterprise. Another owner was student and still another worked in a public institution, while nine owners worked in a SOE or a collective enterprise and two in other kinds of enterprises. Half the private enterprises produce the same or similar products as the enterprises in which their owners worked earlier, suggesting that industrial products of SOEs and collectives had some influence on those of newly founded private enterprises.

Financially, personal guanxi played a very important role in the initial establishment of enterprises. 58% of investment funds were individual savings or from family members, 14% from relatives and friends, 27% were bank loans, and the remaining 1% came from other channels. These young private enterprises are basically family enterprises.

#### 5.2.3 Establishment of foreign-funded enterprises[3]

One of two relatively large enterprises was solely funded by entrepreneurs from Taiwan. The products are processed seeds of various melons mainly produced in Gansu province and some other neighbouring regions. The location of this enterprise is in accordance with the principle of being near to raw materials. Another large enterprise is a Sino-American joint venture. The enterprise was transformed from corresponding parts of Lanshi, producing mainly oil-drilling and -extracting equipment. The American side controls 60% of stocks. The majority of the local small-scaled foreign-funded enterprises are joint ventures. In most cases, the Chinese side is associated with a large enterprise and in charge of JVs. To sell their products in local and regional markets is the basic object of the foreign side. JVs experienced a high mortality. One reason is that foreign sides could not sell so many products in local and regional markets as expected.

### 5.3 Dependence on local/regional markets

Possibly, the majority of local small enterprises depended on local and regional demands when initially established. With their development, their product markets might be enlarged. Even this was the case, local SMIEs depend greatly on local and regional demands till now, according to sale scopes of their main products. On average, 35.6% of main products of 63 questioned enterprises were sold within the territory of Lanzhou, 42.5% in other regions of Gansu province and 21.9% in other provinces of China (Table 5.1). In many cases, the interviewed said besides Gansu, their products were sold mainly in other provinces of Northwest China, especially in Qinghai and Ningxia. The importance of the local market for their development was further proved by their qualitative evaluation (Table 5.2)[4].

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[2] Regrettably, interviews with those private enterprises were not made. It is not clear whether their owners had already some kind of locally-associated guanxi before the establishment of their enterprises.

[3] Taiwan, Hong Kong and Macao are parts of China. But because of their specialities, enterprises funded by investors from these three regions are dealt here together with enterprises funded by investors from other countries as foreign-funded enterprises. There should be no sovereignty misunderstanding.

[4] The scope of "local" was not clearly defined by the design of questionnaires, open to different understandings of the questioned persons. Despite this, it is clear that products of SMIEs in Lanzhou were sold mainly in neighbouring areas.

Enterprises which regarded local demands as negative for their development sold 13.1% less of main products in Lanzhou, 8.0% more in other parts of Gansu and 5.1% more in other provinces than the whole. Further, nearly one third of 75 questioned enterprises saw the long distance to coastal region as negative for their development. These enterprises sold 6.4% less of their products in Lanzhou and 10.6% less in other parts of Gansu and correspondingly 17.0% more in other provinces of China than the whole. These suggest that some local enterprises need or try to sell their products in a larger market, either due to the necessity of obtaining minimum profits, or out of the motivation to pursue economies of scale, or for other reasons. Both local limited demands and the long distance to coastal region hampered their development to some degree. This implies further that a larger consumption capacity of the inhabitants in coastal region may favour enterprises located there in pursing economies of scale and reducing production costs and in turn may have contributed to enlarged regional disparities.

**Table 5.1 Sale scopes of products by value (%)**

| | | Number of efficient questionnaires | In Lanzhou | In other regions of Gansu | In other provinces |
|---|---|---|---|---|---|
| All | | 63 | 35.6 | 42.5 | 21.9 |
| By ownership | SOEs | 27 | 38.8 | 36.4 | 24.7 |
| | Private enterprises | 22 | 30.0 | 54.6 | 15.5 |
| | Collectives & stock cooperatives | 9 | 45.6 | 27.8 | 26.7 |
| | Foreign-funded | 4 | 6.3 | 61.3 | 32.5 |
| By patents | With patents | 13 | 35.2 | 45.5 | 19.2 |
| | Without patents | 46 | 36.0 | 42.8 | 21.3 |
| By products | Chemical products | 16 | 30.1 | 44.0 | 25.9 |
| | Machinery and equipment | 10 | 13.5 | 60.9 | 25.6 |
| | Consumer products | 10 | 60.7 | 25.2 | 14.2 |
| By scale | 0–199 | 40 | 34.5 | 44.8 | 20.8 |
| | 200–499 | 7 | 47.6 | 41.9 | 10.6 |
| | More than 500 | 16 | 33.1 | 37.3 | 29.6 |
| By organisation | One-plant enterprises | 41 | 39.7 | 40.0 | 20.3 |
| | Main plants | 9 | 38.0 | 39.3 | 22.7 |
| | Branch plants | 13 | 21.1 | 52.7 | 26.2 |

**Table 5.2 Importance of local and regional markets to SMIEs**

| | Local market | | | | | Long distance to coastal region | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 38.7 | 44.0 | 12.0 | 4.0 | 1.3 | 4.0 | 5.3 | 58.7 | 21.3 | 10.7 |
| SOEs (32) | 28.1 | 59.4 | 12.5 | | | 9.4 | 3.1 | 46.9 | 15.6 | 25.0 |
| Private enterprises (25) | 56.0 | 32.0 | 12.0 | | | | 4.0 | 76.0 | 20.0 | |
| Collectives & stock cooperatives (10) | 50.0 | 20.0 | 10.0 | 20.0 | | | | 80.0 | 20.0 | |
| Foreign-funded (5) | 40.0 | 60.0 | | | | | 20.0 | 40.0 | 20.0 | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 38.7: 38.7% of the enterprises mentioned great positive effect.

Six questioned foreign-funded enterprises and five of six private enterprises which owner came from other regions except Lanzhou thought that local demands are important for their

development. Being near to consumers was an important reason why they established their enterprises in Lanzhou. 60.7% of consumer products were sold within the territory of Lanzhou, much more than 30.1% of chemical products and 13.5% of machinery and equipment. 29.6% of main products of the enterprises with more than 500 employees were sold in other regions except Gansu province, more than small ones.

An enterprise with own patents may be technologically more advanced and own a stronger competitive capability than one enterprise without any patents and in turn may be more able to sell its products in a larger market. But the results of this study do not support this view. There do not exist obvious differences in scopes of product sales between enterprises with some form of patents and those without any patents. One cause may be that many patents owned by enterprises have little to do with main production technologies and they play only a very limited role in the whole production chain. Another cause may be that some patents owned by SOEs are obsolescent.

## 5.4 Location factors and agglomeration economies: ex-post evaluations[5]

### 5.4.1 Influence of local/regional resources and material linkages on agglomeration

Nearly two thirds of all questioned enterprises regarded their proximity to agricultural, mineral, metal and chemical materials as important for their development, while one fourth found them free from the influence of local or regional supplies of raw materials and 11% expressed negative effects (Table 5.3). The question involved in local input suppliers partly repeated the question involved in proximity to raw materials. Nearly half the enterprises regarded local accumulation of forward enterprises as important. In addition, 60% of the enterprises regarded local accumulation of enterprises and commercial units acting as customers as positive for their development (Table 5.4). The establishment and development of many local SMIEs were associated with local and regional natural and agricultural resources, raw materials provided by local large enterprises, and demands of local enterprises. Material linkages among them are strong, acting as one mechanism for their local concentration.

**Table 5.3 Influence of local/regional resources and material linkages on agglomeration I**

| | Proximity to raw materials | | | | | Local input suppliers | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 32.0 | 32.0 | 25.3 | 8.0 | 2.7 | 13.3 | 34.7 | 45.3 | 4.0 | 2.7 |
| SOEs (32) | 34.4 | 40.6 | 25.0 | | | 15.6 | 34.4 | 40.6 | 3.1 | 6.3 |
| Private enterprises (25) | 40.0 | 20.0 | 28.0 | 4.0 | 8.0 | 12.0 | 36.0 | 48.0 | 4.0 | |
| Collectives & stock cooperatives (10) | 20.0 | 30.0 | 20.0 | 30.0 | | | 40.0 | 60.0 | | |
| Foreign-funded (5) | | 40.0 | 40.0 | 20.0 | | 20.0 | 40.0 | 20.0 | 20.0 | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 32.0: 32.0% of the enterprises mentioned great positive effect.

[5] Only "hard" location factors were involved here.

**Table 5.4 Influence of material linkages on agglomeration II**

| | Local users/consumers and commercial organisations | | | | |
|---|---|---|---|---|---|
| | ++ | + | ● | - | -- |
| Total (75) | 17.3 | 42.7 | 30.6 | 6.7 | 2.7 |
| SOEs (32) | 34.4 | 40.6 | 12.5 | 12.5 | |
| Private enterprises (25) | | 52.0 | 44.0 | 4.0 | |
| Collectives & stock cooperatives (10) | 10.0 | 30.0 | 60.0 | | |
| Foreign-funded (5) | 20.0 | 60.0 | | | 20.0 |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 17.3: 17.3% of the enterprises mentioned great positive effect.

5.4.2 Influences of relative location and other location factors of Lanzhou on agglomeration

The ownership types, a high dependence on local and regional demands, and the proximity to natural resources, agricultural resources and material linkage-related external economies can not fully explain why SMIEs are concentrated in the urban parts of Lanzhou and why industries in three counties stay underdeveloped. Explanations are associated with the relative location of Lanzhou within the province and other location factors of Lanzhou, such as labour force, infrastructure, universities and research institutes, which distinguish the urban parts from the rural parts.

*Influence of local Labour force on agglomeration*

To a great degree, low labour costs can explain strong competitive capabilities of some Chinese products in the international market, such as textile products. But in China unskilled cheap workers are ubiquitous to a great degree. Only a little more than one third of the questioned enterprises regarded low labour costs as important for their development, while labour costs did not have obvious influence on the development of 60% of the enterprises.

**Table 5.5 Influence of local labour force on agglomeration**

| | Low labour costs | | | | | High quality of labour force | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 13.3 | 22.7 | 60.0 | 2.7 | 1.3 | 42.7 | 37.3 | 14.7 | 4.0 | 1.3 |
| SOEs (32) | 15.6 | 28.1 | 53.2 | 3.1 | | 56.3 | 25.0 | 15.6 | 3.1 | |
| Private enterprises (25) | 12.0 | 20.0 | 60.0 | 4.0 | 4.0 | 40.0 | 40.0 | 16.0 | 4.0 | |
| Collectives & stock cooperatives (10) | | 10.0 | 90.0 | | | 30.0 | 50.0 | 10.0 | 10.0 | |
| Foreign-funded (5) | 20.0 | 20.0 | 60.0 | | | 40.0 | 60.0 | | | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 13.3: 13.3% of the enterprises mentioned great positive effect.

The education level of population in the urban parts of Lanzhou is among the highest in cities of China, due to a large number of highly-educated immigrants since the 1950s, the concentration of colleges, universities, research institutes, and the unwillingness of many graduates to work in other parts of Gansu. The high quality of local labour force was important for the development of 80% of the enterprises[6].

[6] This result hat lots to do with the characters of the enterprises questioned. The enterprises questioned may be associated with more advanced production technologies, needing higher qualified employees than the average.

*Influence of local transport and water supply on agglomeration*

Only 3% of the enterprises regarded local transport location and facilities as negative for their development, while 58% confirmed transport advantages of Lanzhou. The nearly central location of Lanzhou in Gansu ensures convenient person and weight goods transports between it and the other parts of the province. This transport advantage of the city as a relatively ideal location for industrial enterprises within the province is strengthened by its function as an important transport and communication centre in Northwest China. Transports and communications between the city and other provinces are relatively easy, quick and cheap. Further, Lanzhou is the sole large city in Gansu. Other cities are small-scaled and their economy is either mineral resource-oriented or they function mainly as a regional administrative and culture centre. Still, transport advantages of Lanzhou are strengthened by long distances from one town to another, one county to another and one prefecture/city to another prefecture/city, and the dispersed distribution of rural population.

**Table 5.6 Influence of local transport and water supply on agglomeration**

| | Local transport | | | | | Local water supply | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 14.7 | 42.7 | 38.6 | 2.7 | 1.3 | 16.0 | 38.6 | 40.0 | 2.7 | 2.7 |
| SOEs (32) | 25.0 | 43.8 | 31.2 | | | 18.8 | 46.9 | 34.3 | | |
| Private enterprises (25) | 8.0 | 36.0 | 48.0 | 4.0 | 4.0 | 8.0 | 28.0 | 52.0 | 4.0 | 8.0 |
| Collectives & stock cooperatives (10) | 10.0 | 30.0 | 50.0 | 10.0 | | 20.0 | 20.0 | 50.0 | 10.0 | |
| Foreign-funded (5) | | 80.0 | 20.0 | | | 20.0 | 80.0 | | | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 14.7: 14.7% of the enterprises mentioned great positive effect.

Even larger parts (80%) of the enterprises evaluated local water supply conditions positively. The development of only four enterprises was constricted by water supply conditions to some degree. Three of these four enterprises are located in Yuzhong county and one in Anning district, all being relatively far away from the Yellow River. Proximity to the Yellow River is a basic condition for local agglomeration of industrial enterprises. The spatial expansion of industrial activities is greatly constricted by the inaccessibility to water sources[7].

*Influence of local universities, technological intermediate organisations on agglomeration*

The importance of local higher education and scientific research resources was identified by 48% of the enterprises. 52% of the enterprises expressed a neutral evaluation. These enterprises might not need advanced technologies and highly qualified employees, since they produce low-tech, low-quality products.

21% of the enterprises had some contact with technological intermediate organisations and benefited something. Local technological intermediate organisations played some role in bridging enterprises and research institutes and turning abstract technologies into actual productivities. Larger parts of SOEs benefited something from these organisations than enterprises with other types of ownership. This may be due to that there are many graduates of col-

[7] Local transport advantages and proximity to the Yellow River were preconditions for local agglomeration of industrial enterprises, but this should not be understood as deterministical. Local agglomeration of industrial enterprises was historically formed under complex influences of political, natural, and economic factors.

leges and universities in SOEs. The longer history of SOEs may also explain this phenomenon to some degree.

**Table 5.7 Influence of local universities, technological intermediate organisations on agglomeration**

| | Universities and research institutes | | | | | Local technological intermediate organisations | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 9.3 | 38.7 | 52.0 | | | 1.3 | 20.0 | 78.7 | | |
| SOEs (32) | 18.8 | 50.0 | 31.2 | | | 3.1 | 28.1 | 68.8 | | |
| Private enterprises (25) | | 32.0 | 68.0 | | | | 8.0 | 92.0 | | |
| Collectives & stock cooperatives (10) | 10.0 | 30.0 | 60.0 | | | | 10.0 | 90.0 | | |
| Foreign-funded (5) | | 20.0 | 80.0 | | | | 20.0 | 80.0 | | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 9.3: 9.3% of the enterprises mentioned great positive effect.

*Influence of local power supply, land supply and facilities for dealing with pollutants on agglomeration*

Eight questioned enterprises dissatisfied with power-supply conditions are located in Anning (4), Qilihe (2), Yuzhong (1) and Yongdeng (1) respectively. It is not clear whether their dissatisfactions had to do with the non-continual supply of power, the shortage of power, the quality of power or the high price of power. Generally speaking, the power supply is not a negative location factor for industrial enterprises in Lanzhou.

**Table 5.8 Influence of local power supply and land supply on agglomeration**

| | Local power supply | | | | | Land supply | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 17.3 | 41.3 | 30.7 | 8.0 | 2.7 | 20.0 | 24.0 | 52.0 | 4.0 | |
| SOEs (32) | 25.0 | 43.7 | 21.9 | 9.4 | | 18.7 | 50.0 | 31.3 | | |
| Private enterprises (25) | 8.0 | 40.0 | 36.0 | 12.0 | 4.0 | 12.0 | 16.0 | 68.0 | 4.0 | |
| Collectives & stock cooperatives (10) | 10.0 | 30.0 | 60.0 | | | 10.0 | 10.0 | 80.0 | | |
| Foreign-funded (5) | 20.0 | 60.0 | | | 20.0 | | 40.0 | 40.0 | 20.0 | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 17.3: 17.3% of the enterprises mentioned great positive effect.

Normally, SOEs and some collectives got land freely from the local government for their economic activities. The imaginable benefit is in line with their evaluation[8]. Only three questioned enterprises regarded land prices in Lanzhou as too high. Being enlarged area of LHNTIDZ, not enough used land in the development zones at various levels, and a large deal of usable land in suburban areas imply that currently and in the coming years, there exists enough, relatively cheap land for new comers in suburban areas of Lanzhou.

The enterprises were basically satisfied with local facilities for dealing with pollutants. Seven enterprises dissatisfied with them are spatially dispersed and no obvious spatial differences were found within Lanzhou.

[8] A related phenomenon is that nearly all relatively large SOEs are involved in the housing industry.

**Table 5.9 Influence of local facilities for dealing with pollutants on agglomeration**

| | ++ | + | ● | - | -- |
|---|---|---|---|---|---|
| Total (75) | 9.4 | 28.0 | 53.3 | 8.0 | 1.3 |
| SOEs (32) | 15.6 | 40.6 | 34.4 | 6.3 | 3.1 |
| Private enterprises (25) | 4.0 | 24.0 | 64.0 | 8.0 | |
| Collectives & stock cooperatives (10) | | 10.0 | 80.0 | 10.0 | |
| Foreign-funded (5) | | 20.0 | 60.0 | 20.0 | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect (the number of the questioned enterprises); 9.3: 9.3% of the enterprises mentioned great positive effect.

### 5.4.3 Localization economies and agglomeration[9]

A spatial concentration of plants in the same industry may lead to external economies of scale or localisation economies through sources of labour market pooling, intermediate inputs and technological spillovers (Krugman, 1991, Chap. 2). Several relative large enterprises in the oil and chemical industry, and the machinery and equipment industry are located in Xigu and Qilihe respectively, suggesting possible localization economies. But localization economies may be very limited, with regard to very limited personnel turnovers among enterprises, the internalizing production organisation of large SOEs, and generally backward production technologies.

Although there are no typical areas in which a large number of small & medium-sized enterprises are concentrated and localization economies are realized, it is normal that several plants in the same industry are located within the territory of Lanzhou, more or less far away from each other. 27% of the enterprises regarded local agglomeration of enterprises producing the same or similar products as positive for their development. But what means a positive evaluation? According to related interviews, technological spillovers happened seldom among them. And communications among high- & new-tech enterprises were also seldom. Any possible measure was taken to avoid technological spillovers. It seems to be a taboo to discuss the situation of other enterprises with the enterprise being interviewed. But surely, their positive evaluation resulted at least partly from material linkages between them and local large enterprises.

45% of the enterprises saw local accumulation of enterprises in the same industry as a bad thing. Some enterprises interviewed said that other enterprises faked their products. But further inquiries showed that what they called faking behaviours were imitations in most cases. Except some high- & new-tech enterprises, the majority of local SMIEs are low-tech ones. Technologically, the entry threshold is low and it is easy to establish an enterprise to produce something that was already produced by local other enterprises. When new comers take part in the competition, it is natural that they are labelled as “enemies”, threatening the development of others.

[9] Practically, it is difficult to divide localization economies from urbanization economies. Above analyses are associated with both kinds of economies. But a separate analysis of localisation economies can result in a deeper understanding of agglomeration economies.

**Table 5.10 Localization economies, preferential policies and agglomeration**

| | Local enterprises producing the same or similar products | | | | | Preferential policies | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ++ | + | ● | - | -- | ++ | + | ● | - | -- |
| Total (75) | 12.0 | 14.6 | 28.0 | 30.7 | 14.7 | 33.3 | 30.7 | 32.0 | 2.7 | 1.3 |
| SOEs (32) | 18.7 | 9.4 | 12.5 | 37.5 | 21.9 | 59.3 | 31.3 | 6.3 | 3.1 | |
| Private enterprises (25) | 4.0 | 24.0 | 32.0 | 24.0 | 16.0 | 12.0 | 28.0 | 52.0 | 4.0 | 4.0 |
| Collectives & stock cooperatives (10) | 10.0 | 10.0 | 40.0 | 40.0 | | 20.0 | 20.0 | 60.0 | | |
| Foreign-funded (5) | 20.0 | 20.0 | 60.0 | | | 20.0 | 60.0 | 20.0 | | |

++: great positive effect; +: a little positive effect; ●: no effect; -: a little negative effect; --: great negative effect
(the number of the questioned enterprises); 12.0: 12.0% of the enterprises mentioned great positive effect.

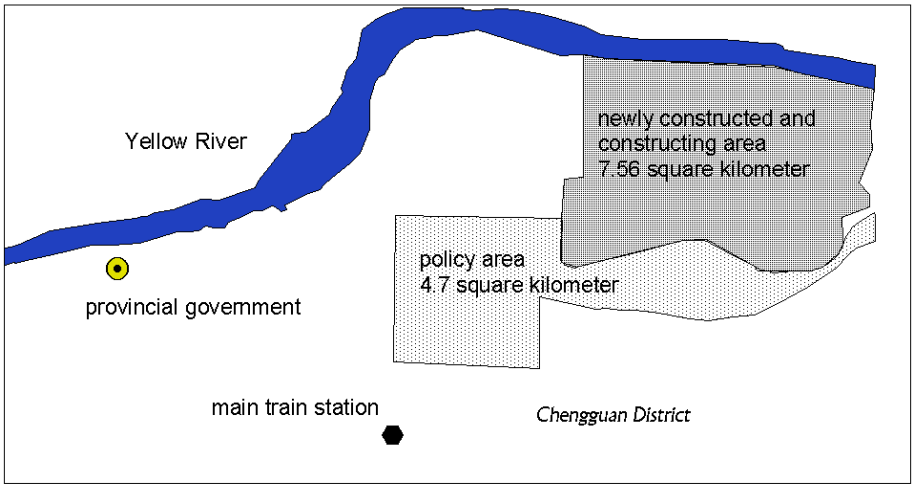
As a case study, the area Jin'ai is worth mentioning. Jin'ai is located in Yuzhong county. Three relatively large private enterprises producing plastic weaving bags and several other enterprises producing the similar products are located within the area. The first private enterprise was established by a local person. Two others followed when they found that the first enterprise was successful by producing plastic weaving bags. It was easier for the later two to establish their enterprises by imitating the first one. There did not exist personnel turnovers, information and technological communications among three enterprises. They are above all competitors. But one entrepreneur said that they benefited a lot from their concentration in so far as the area is already known for their products. Potential customers would directly visit them, other than try to find producers in other regions. It is interesting to wait and see if the area will attract more enterprises in the same industry in future.

## 5.5 Preferential policies and "incubator economies"

The local political environment was obviously in favour of SOEs. 90% of SOEs confirmed the importance of preferential policies for their development, while only 40% of private enterprises did so (Table 5.10). Preferential policies associated with the development of industrial enterprises include loan interests, taxations, allowances, etc. Attention was paid here to influences of the establishment of Lanzhou High- & New-tech Industrial Development Zone (LHNTIDZ) in 1991 on the establishment and development of local high- & new-tech enterprises. Positive effects of the policy can be called "incubator economies".

### 5.5.1 General situation of LHNTIDZ

LHNTIDZ belongs to one of the initial 27 national high & new-tech industrial development zones established in 1991 according to the decision of the State Council. Its "policy area" covers 4.7 $km^2$ (Map 2.6). Within the area, there existed a relatively good infrastructure and some enterprises were already located before the establishment of the zone. High- & new-tech enterprises registered there can share related preferential policies. The neighbouring area was newly and partly constructed as an additional part after the establishment of the zone. It covers 7.56 $km^2$. A further newly constructed and constructing part of the zone lies in Qilihe district, neighbouring the Yellow River and covering 2.7 $km^2$. In 2000, 501 enterprises were registered within the zone, 273 of which were high- & new-tech enterprises and 47 foreign-funded enterprises. High- & new-tech industries are mainly fine chemicals, biotechnologies, energy-saving and environmental protection industries and information industry.




**Map 5.2 Location of Lanzhou High- & New-tech Industrial Development Zone**

5.5.2 High- & new-tech enterprises as spin-offs of universities, research institutes and SOEs

All local relatively large high- & new-tech enterprises were spin-offs of large SOEs, research institutes and universities. Technologies of many small high- & new-tech enterprises were originated from universities and research institutes[10]. Some foreign-funded enterprises are classified as high- & new-tech enterprises. But among those foreign-funded enterprises controlled by the foreign investors, no enterprises are so large that they are worth mentioning. The foreign investors played a limited role in the development of local high- & new-tech industries.

5.5.3 Incubating effects: a topic for further studies[11]

Some high- & new-tech enterprises were newly established in recent years. The others had been established for a long time and were later classified as high- & new-tech enterprises. An interesting phenomenon is that economic activities and headquarters of most of the relatively large high- & new-tech industrial enterprises are not located within the area of LHNTIDZ, although they are officially registered there and shared related preferential policies. They are normally located in original sites, within the territory of their mother enterprises and research institutes, or nearby. They could only benefit from "soft" parts of preferential policies, such as funds-raising and taxation reduction.

The incubator policy may have contributed to the spatial concentration of local high- & new-tech industrial enterprises and others in LHNTIDZ, but "incubating effects" are certainly not as enormous as high- & new-tech development zones in Tianjin, Beijing, Xi'an, and other regions. The Electronic Street within LHNTIDZ is known for many local inhabitants more as a commercial centre for selling high- & new-tech products from other regions and countries, than as a window of local high- & new-tech enterprises and products.

[10] Technologies of the majority of small high- & new-tech enterprises known for the author were originated from universities and research institutes.
[11] Studies on small high- & new-tech industrial enterprises within LHNTIDZ were only carried out by means of questionnaires.

## 6 Linkages and Communications of Local SMIEs

The relational aspects of enterprises have been emphasized by some economic geographers in recent years (e.g. Bathelt and Glückler, 2002). The relational aspects of SMIEs in Lanzhou are discussed in this part from three perspectives: channels of product sales and input acquisition, the relationship between entrepreneurs and local governmental officials, and the relationship between enterprises and various associations.

### 6.1 Channels of product sales and input acquisition

Long-term partners play a very important role in product sales and input acquisition of SMIEs in Lanzhou. These long-term linkages can guarantee input obtainment and product sales. In some cases, long-term transactions are associated with lower prices and material linkages are accompanied by slight improvement of the product quality. Personal relations are important sources for initializing the long-term business partnership. In any case, trust formed in the long-run transactions is the basic mechanism for maintaining such relations, as in industrial districts.

#### 6.1.1 Sale channels of the main product: nearly half through long-term channels

21.1% of main products of 75 questioned enterprises were sold through commercial organisations with long-term relations and 27.9% were directly sold to enterprises with long-term relations. So, nearly half the products were sold through relational networks. 34.8% of products were sold through own retail networks and the remaining 16.2% were sold to accidental customers.

**Table 6.1 Sale channels of main products by mean value (%)**

| | | Reliable commercial organisations with long-term relations | Reliable enterprises with long-term relations | Own retail networks | Accidental customers |
|---|---|---|---|---|---|
| All (75) | | 21.1 | 27.9 | 34.8 | 16.2 |
| By ownership | SOEs (32) | 25.6 | 20.8 | 36.6 | 17.0 |
| | Private enterprises (25) | 21.6 | 26.0 | 34.4 | 18.0 |
| | Collectives and stock cooperatives (9) | 17.8 | 32.2 | 35.6 | 14.4 |
| | Foreign-funded (6) | 10.0 | 35.0 | 43.3 | 11.7 |
| By scale | 0–199 (46) | 17.9 | 28.7 | 35.7 | 17.7 |
| | 200–499 (11) | 8.6 | 38.6 | 32.3 | 20.5 |
| | More than 500 (18) | 36.9 | 19.2 | 34.2 | 9.7 |
| By product | Chemical products (18) | 31.9 | 38.3 | 21.4 | 8.3 |
| | Machinery and equipment (14) | 7.9 | 22.1 | 49.3 | 20.7 |
| | Consumer products (15) | 19.0 | 15.0 | 38.3 | 27.7 |
| By organisation | One-plant enterprises (47) | 17.3 | 29.6 | 35.5 | 17.6 |
| | Main plants (13) | 33.5 | 27.7 | 27.7 | 11.2 |
| | Branch plants (15) | 22.3 | 22.7 | 38.7 | 16.3 |

Much more consumer products and equipment were sold to accidental customers or through own retail networks than chemical products. There are no remarkable differences in the channels of product sales of enterprises with various types of ownership. Enterprises with less than 500 employees sold more products to accidental customers than enterprises with more than 500 employees. This may suggest that the sale channels of the latter are more stable than the former and that the latter may face less operation risks. Further, the latter sold much more products through commercial organisations, while much less products were sold directly to enterprises with long-term relations than the former. This may be that on the one side, it is easier for large enterprises to find cooperative sale partners, since their large-scaled products and numerous potential customers mean more profit for sale organisations. On the other side, a low percentage of large-scaled products already imply a large amount of products, and certain enterprise does not need so many products corresponding to a higher percentage. More products of main plants were sold through reliable commercial organisations than one-plant enterprises and branch plants, which may also have something to do with large-scaled products of the former.

### 6.1.2 Sources of the main input: dominance of fixed sources

Inputs of 76 questioned enterprises in Lanzhou were mainly from stable channels: half of them from fixed production enterprises and a little less than one fourth from fixed commercial organisations. 8.5% were self-supplied, while 19.1% were bought from non-fixed markets. In comparison with SOEs, collectives and private enterprises, a higher percentage of foreign-funded enterprises got inputs directly from production enterprises and a less percentage of them obtained inputs from non-fixed markets. Comparisons between branch plants, and one-plant enterprises and main plants are analogous. This may be that as daughter enterprises, foreign-funded enterprises and branch plants got a certain amount of inputs from their mother

**Table 6.2 Sources of main inputs by value (%)**

| | | Fixed production enterprises | Fixed commercial organisation | Self-supplying | Non-fixed markets |
|---|---|---|---|---|---|
| All (76) | | 50.1 | 22.3 | 8.5 | 19.1 |
| By ownership | SOEs (32) | 47.8 | 23.1 | 10.3 | 18.8 |
| | Private (25) | 54.8 | 24.6 | 3.6 | 17.0 |
| | Collectives and stock cooperatives (10) | 43.0 | 8.0 | 12.0 | 37.0 |
| | Foreign-funded (6) | 63.3 | 12.5 | 17.5 | 6.7 |
| By scale | 0–199 (47) | 53.9 | 17.3 | 7.7 | 21.1 |
| | 200–499 (11) | 41.8 | 36.4 | | 21.8 |
| | More than 500 (18) | 45.3 | 26.4 | 15.8 | 12.5 |
| By products | Chemical products (18) | 46.4 | 33.9 | 9.2 | 10.6 |
| | Machinery and equipment (14) | 56.4 | 32.9 | 0.4 | 10.4 |
| | Consumer products (15) | 34.3 | 14.7 | 9.7 | 41.3 |
| By organisation | One-plant enterprises (48) | 50.0 | 17.7 | 10.4 | 21.9 |
| | Main plants (13) | 43.1 | 30.4 | 8.1 | 18.5 |
| | Branch plants (15) | 56.6 | 29.7 | 2.6 | 11.1 |

enterprises. More parts of inputs of enterprises with more than 500 employees were self-supplied and less parts were bought from non-fixed markets than other types of enterprises. This is in accordance with the internalizing tendency of the production organisation of SOEs. Much more inputs of enterprises producing consumer products were obtained in non-fixed markets than enterprises producing other products. One reason may be that inputs of the former are more ubiquitous and can be produced and supplied by many enterprises, organisations, and individual families. Risks for temporary acquisition are limited. At the same time, they are free to make comparisons and obtain cheaper and more qualified inputs.

6.1.3 Functions of stable channels of product sales and input supplies

Guarantee of inputs and guarantee of product sales are two most popular functions of establishing, maintaining and strengthening long-term transaction relations among suppliers, consumers and commercial organisations. A little less than four fifth of the enterprises thought

**Table 6.3 Functions of stable channels of product sales and input supplies (%)**

| | All | SOEs | Private enterprises | Collectives and stock cooperatives | Foreign-funded |
|---|---|---|---|---|---|
| Efficient questionnaires | 71 | 32 | 24 | 6 | 6 |
| **Guarantee of inputs** | | | | | |
| Of much importance | 77.4 | 81.3 | 79.2 | 50.0 | 100.0 |
| Of little importance | 12.7 | 6.3 | 8.3 | 50.0 | |
| Of no importance | 9.9 | 12.5 | 12.5 | | |
| **Product sales** | | | | | |
| Of much importance | 76.0 | 84.4 | 58.4 | 83.3 | 83.3 |
| Of little importance | 8.5 | 6.3 | 8.3 | 16.7 | 16.7 |
| Of no importance | 15.5 | 9.4 | 33.3 | | |
| **Cheaper inputs** | | | | | |
| Of much importance | 53.5 | 68.8 | 33.3 | 33.3 | 66.7 |
| Of little importance | 21.1 | 18.8 | 29.2 | 16.7 | |
| Of no importance | 25.4 | 12.5 | 37.5 | 50.0 | 33.3 |
| **Commonly making prices** | | | | | |
| Of much importance | 25.4 | 37.5 | 8.3 | 33.3 | 16.7 |
| Of little importance | 23.9 | 28.1 | 16.7 | 16.7 | 33.3 |
| Of no importance | 50.7 | 34.4 | 75.0 | 50.0 | 50.0 |
| **Joint actions to improve the product quality** | | | | | |
| Of much importance | 39.5 | 46.9 | 25.0 | 16.7 | 66.7 |
| Of little importance | 23.9 | 31.3 | 16.7 | 33.3 | |
| Of no importance | 36.6 | 21.9 | 58.3 | 50.0 | 33.3 |
| **Market information exchanges** | | | | | |
| Of much importance | 38.0 | 46.8 | 25.0 | 16.7 | 50.0 |
| Of little importance | 33.8 | 43.8 | 20.8 | 33.3 | 33.3 |
| Of no importance | 28.2 | 9.4 | 54.2 | 50.0 | 16.7 |
| **Deepening of production divisions** | | | | | |
| Of much importance | 16.9 | 21.9 | 8.3 | | 33.3 |
| Of little importance | 23.9 | 34.4 | 16.7 | | |
| Of no importance | 59.2 | 43.8 | 75.0 | 100.0 | 66.7 |

that the stable supplier channels were of much importance for guarantee of inputs and product sales. Less popular functions are associated with prices. The benefit of obtaining inputs at relatively low prices through the stable sources was regarded by 52.1% of the enterprises as much and by further 21.1% as little. In addition, nearly half the enterprises confirmed the importance of the long-term transactions in making prices commonly by the members related. Further less popular but also very important functions were their joint actions to improve the product quality and market-related information exchanges. The most unpopular function was deepening of production divisions among the members related.

The answers associated with improvement of the product quality, deepening of production divisions and common activities of making prices are exciting. It seems that a new kind of industrial district as in the Third Italy or Silicon Valley is found in Lanzhou. But certainly, Lanzhou is not an industrial district characterized by innovative small & medium-sized enterprises. Deepening of production divisions was listed as one factor for evaluation. The purpose was to know whether there exist groups of small enterprises characterised by their specialised flexibilities as in industrial districts. But some questioned persons treated material linkages among the enterprises related as the evidence for making a selection confirming the importance of the long-term transactions in deepening production divisions. Interviews with several enterprises showed no specialised tendencies leading to a more flexible production. The declared joint actions to improve the product quality did not take place in some cases. The material linkages among the enterprises related were seen as joint actions in such cases. Although there did exist joint actions among the enterprises related to improve their product quality, how these took place is pitifully unknown. Further, instead of innovations, only slight improvement of the product quality resulted either from joint actions being consciously taken or from general material linkages. How the questioned understood the concept of making prices commonly is not clear, because the interviewed were unwilling to talk about this.

Much more SOEs and foreign-funded enterprises confirmed the importance of long-term transactions in joint actions to improve the product quality, deepening of production divisions, acquisition of inputs at lower prices and market information exchanges than private enterprises and collectives. On the part of SOEs, this may have lots to do with their long history and the large scale. On the part of foreign-funded enterprises, this may be due to their strong material and other linkages with their mother enterprises.

### 6.1.4 Formation mechanisms of stable relations

Material linkages among enterprises took place according to plan in the planned economy. But rather than natural processes, they were social and economic procesess, through which various relations were built. 34.4% of the questioned SOEs said that large parts of current long-term partners are business partners in the planned economy, while some current partners of further 28.1% of them are also business partners already in contact in the planned economy. In a more and more market-oriented economy, social relation networks of managers of SOEs played a very important role in initializing long-term transactions with others, as 37.5% of them identified great importance and 50.0% expressed little importance. This is also the case, with regard to private enterprises and collectives, especially with regard to foreign-funded enterprises.

**Table 6.4 Formation mechanisms of stable relations (%)**

| | All | SOEs | Private enterprises | Collectives and stock cooperatives | Foreign-funded |
|---|---|---|---|---|---|
| Efficient questionnaires | 70 | 32 | 24 | 6 | 5 |
| **Social relation networks of managers** | | | | | |
| Of much importance | 38.6 | 37.5 | 33.4 | 33.3 | 80.0 |
| Of little importance | 41.4 | 50.0 | 37.5 | 33.3 | 20.0 |
| Of no importance | 20.0 | 12.5 | 29.2 | 33.3 | |
| **Trust** | | | | | |
| Of much importance | 90.0 | 93.7 | 83.4 | 100.0 | 80.0 |
| Of little importance | 5.7 | 3.1 | 8.3 | | 20.0 |
| Of no importance | 4.3 | 3.1 | 8.3 | | |

Some long-term relations were originated from guanxi of general managers, while others might evolve from accidental transactions. In either case, trust is the basic mechanism for maintaining and strengthening such long-term relations (Table 6.4).

## 6.2 Relationship of managers/owners with local governmental officials

60.0% of the questioned SOEs and 40% of the collectives admitted some kind of relationship between their managers and governmental officials[1]. 54.2% of private enterprises expressed a loose relationship between their managers and local governmental officials, while the manager of one of four foreign-funded enterprises hat a close relationship and the managers of two enterprises have a loose relationship.

**Table 6.5 Relationship of managers/owners with local governmental officials (%)**

| | A close relationship | A loose relationship | No relationship |
|---|---|---|---|
| All (71) | 19.7 | 38.0 | 42.3 |
| SOEs (30) | 30.0 | 30.0 | 40.0 |
| Private enterprises (24) | | 54.2 | 45.8 |
| Collectives and stock cooperative (10) | 20.0 | 20.0 | 60.0 |
| Foreign-funded (4) | 25.0 | 50.0 | 25.0 |

SOEs benefited a great deal from their special relationship with government. The most popular benefits were embodied in acquisition of preferential policies, acquisition of funds, and product sales. SOEs could benefit from exclusive preferential policies and general preferential policies. The former are preferential policies shared only by SOEs, with an obvious political meaning. The latter can be shared by enterprises with various types of ownership, if they meet

[1] More managers of SOEs should have a close relationship with governmental officials than showed by questionnaires. Possible mistakes were mainly caused by the question itself. SOEs are controlled by governments at various levels. Theoretically, their managers have the closest relationship with governmental officials in direct charge. For the questioned SOEs, the scope of "local" in local governmental officials is not clear enough. For example, a SOE controlled by the city's government may understand local governmental officials as those in charge, while another SOE may understand them as governmental officials at district's or even street's level. With regard to private and foreign-funded enterprises, this problem might also exist. But the results concerning them are more convincible, both because their contacts are usually confined to governments at lower levels, and because any close relationship between their managers and governmental officials at any level would be regarded as with "local" governmental officials.

certain conditions, such as conditions of a new-tech enterprise. Easier acquisition of bank loans is one of the most important preferential policies shared by SOEs. Many SOEs can not pay back loans, bringing some state-owned banks in a great trouble. It is not clear how governmental officials helped SOEs sell their products. Possible ways include governmental acquisition, supplies of sale information, and trade protection. Further, government could help SOEs import advanced equipment and SOEs were also in a favourable position for obtaining technological services from government. The function of government in acquisition of raw materials of SOEs is certainly associated with the public or collective ownership of natural resources.

**Table 6.6 Benefits of a good relationship with governmental officials (%)**[2]

| | All | SOEs | Private enterprises | Collectives and stock cooperatives | Foreign-funded |
|---|---|---|---|---|---|
| Efficient questionnaires | 68 | 27 | 24 | 10 | 4 |
| **Acquisition of raw materials** | | | | | |
| Great positive effect | 7.4 | 18.5 | | | |
| A little positive effect | 5.9 | 14.8 | | | |
| No effect | 86.8 | 66.7 | 100.0 | 100.0 | 100.0 |
| **Acquisition of equipment** | | | | | |
| Great positive effect | 5.9 | 11.1 | 4.2 | | |
| A little positive effect | 10.3 | 22.2 | | 10.0 | |
| No effect | 82.3 | 66.7 | 95.8 | 90.0 | 75.0 |
| A little negative effect | 1.5 | | | | 25.0 |
| **Acquisition of technologies** | | | | | |
| Great positive effect | 5.9 | 11.1 | 4.2 | | |
| A little positive effect | 19.1 | 37.0 | | 20.0 | 25.0 |
| No effect | 73.5 | 51.9 | 95.8 | 80.0 | 50.0 |
| A little negative effect | 1.5 | | | | 25.0 |
| **Acquisition of funds** | | | | | |
| Great positive effect | 11.8 | 22.2 | 4.2 | | 25.0 |
| A little positive effect | 22.1 | 33.3 | 12.5 | 10.0 | 25.0 |
| No effect | 66.2 | 44.4 | 83.3 | 90.0 | 50.0 |
| **Acquisition of preferential policies** | | | | | |
| Great positive effect | 25.0 | 44.4 | 8.3 | 10.0 | 25.0 |
| A little positive effect | 25.0 | 29.6 | 20.8 | 10.0 | 50.0 |
| No effect | 50.0 | 25.9 | 70.8 | 80.0 | 25.0 |
| **Product sales** | | | | | |
| Great positive effect | 11.8 | 22.2 | | 10.0 | 25.0 |
| A little positive effect | 17.6 | 33.3 | 4.2 | 10.0 | 25.0 |
| No effect | 70.6 | 44.4 | 95.8 | 80.0 | 50.0 |

Private enterprises did not benefit or benefited only a little from their good relationship with local governmental officials in acquisitions of raw materials, equipment and technologies, and product sales. The benefit in acquisition of preferential policies was confirmed by 29.2% of them and in acquisition of funds by 16.7%. Foreign-funded enterprises benefited more from their relations with local governmental officials than private ones in product sales, and acqui-

[2] It is possible that some kinds of benefit are not included here.

sitions of preferential policies, funds, and technologies. A large number of exclusive preferential polices suitable for them can explain to a great degree why they benefited more in acquisitions of preferential polices and funds, but how benefits in product sales and acquisition of technologies took place is not clear.

Far less private enterprises have a close relationship with local governmental officials than in the 1980s. Meanwhile, an current enterprise can benefit from a good relationship with local governmental officials something different from what it could in the 1980s, as showed in studies of Zhao and Aram (1995) and Smart and Smart (1991). Two important factors contributed to these changes. One is the quick development of China's economy in the past years. In the 1980s, China's economy was a shortage one. Many natural resources were in the control of the local government. Meanwhile, only through the local government, enterprises could obtain necessary equipment and products of other enterprises, or they could obtain them at lower prices. There existed two kinds of prices for some time in the 1980s. So, a close relationship with local governmental officials was necessary for enterprises to get scarce inputs. Now, general inputs of enterprises can be easily bought at non-biased prices. A close relationship with governmental officials for cheaper acquisition of equipment and many raw materials is not necessary. Such a relationship is still helpful for easier acquisition of bank loans and preferential polices. Another factor is great improvement of laws and rules in regulating governmental behaviours and a drastic change of the attitude of governmental officials to the development of non-state-owned enterprises. In the 1980s, private enterprises developed in a very unfavourable environment. A close relationship with governmental officials was necessary for their legality and normal operation. Now, many previous illegal behaviours of government do not exist and it is the local government that tries its best to attract investments from various channels.

**Table 6.7 Help from related associations (%)**

| | All | SOEs | Private enterprises | Collectives and stock cooperatives | Foreign-funded |
|---|---|---|---|---|---|
| Efficient questionnaires | 74 | 33 | 23 | 10 | 5 |
| Much help | 4.1 | 6.1 | 4.3 | | |
| A little help | 18.9 | 21.2 | 17.4 | 10.0 | 20.0 |
| No help, but I do know there exist such associations | 36.5 | 39.4 | 34.8 | 30.0 | 20.0 |
| No help, and I do not know whether there exist such associations | 40.5 | 33.3 | 43.5 | 60.0 | 60.0 |

**Table 6.8 Types of help from associations (%)**

| | All | SOEs | Private enterprises | Collectives and stock cooperatives | Foreign-funded |
|---|---|---|---|---|---|
| Efficient questionnaires | 50 | 13 | 22 | 9 | 4 |
| Sale information | | | | | |
| Information concerning inputs | | | | | |
| Technological information | 14.0 | 23.1 | 18.2 | | |
| Training of employees | 2.0 | 7.7 | | | |

### 6.3 Relations between enterprises and associations

Less than 20% of the enterprises said that they got some help from related associations. About 40% of the enterprises did not know whether there exist related associations. Only 23.1% of SOEs and 18.2% of private enterprises obtained help in technological information, and still 7.7% of SOEs got help in training of employees. Types of help obtained by collectives and foreign-funded enterprises are not clear. Local associations are normally half-official and any evidence for the existence of "associational assets" was not found.

## 7 Improvement of Technologies and the Product Quality of Local SMIEs

Science & technology are the most important production forces in the current world economy. This part deals with improvement of production technologies and the product quality of local SMIEs.

### 7.1 Technological improvement[1]

Since the reform, the core production technologies of local large enterprises were improved mainly by importing equipment from industrialized countries. Local enterprises produced basically standardized products. When innovations are understood as unique over the whole world, both product and process innovations of local large enterprises were seldom with regard to the core parts of products. Exceptions are some enterprises producing Chinese medicines, such as Foci and Qizheng. Even according to China's standards, local enterprises had a low innovative capability in comparison with enterprises in Jiangsu, Zhejiang, and other regions (Sun, 2000). As far as patents are concerned, 15 of 73 questioned SMIEs own totally 93 patents. Of them, creations and inventions are 51, utility models 18 and designs 24. Of 15 patent-owning enterprises, six are private enterprises and nine are SOEs. Nine SOEs explain 49 of 51 creations and inventions, 14 of 18 utility models and 16 of 24 designs. High- & new-tech enterprises and SOEs are the main owners of patents.

Although innovative capabilities of local enterprises were low, general technological improvement was achieved. Using new equipment, learning by doing and own research units are three main means of technological improvement.

#### 7.1.1 Degree of technological improvement

Almost all enterprises said that their main technologies were improved to some degree since the establishment. 60.6% declared great improvement, while 30.3% were characterized by little improvement. It seems plausible that 86.7% of the enterprises with patents expressed great improvement, 27.1% more than the enterprises without patents. With regard to percentages of the enterprises with great improvement, no obvious differences existed among the enterprises with various types of ownership and the enterprises producing different products. 81.8% of the enterprises with 200–499 employees declared great improvement, about 20% more than the enterprises with less than 200 employees and the enterprises with more than 500 employees. 92.9% of the branch plants declared great improvement in the main technology, much more than the one-plant enterprises and main plants. The last two unusual phenomena may result from the limited number of the questioned enterprises and common problems involved in this question.

69.1% of the enterprises fully in operation in 2001 declared great technological improvement, 10.3% more than the enterprises half in operation and the latter are 8.8% more than the enter-

[1] Conclusions in this part should be treated with great caution, in terms of various problems. Above all, the concept of the main technology may be understood differently by the questioned persons. Sectoral differences make it more impossible for the questioned to base their answers on the same or similar understanding of this concept. Worse, the questioned were inclined to exaggerate their improvement in the main technology. Still, technological improvement of various enterprises was not confined within a common period.

prises not in operation in 2001. All enterprises with much profit in 2001 declared great technological improvement and there is a positive correlation between technological improvement and economic benefits.

**Table 7.1 Technological improvement (%)**

| | | No improvement | Little improvement | Great improvement |
|---|---|---|---|---|
| All (76) | | 3.9 | 30.3 | 65.8 |
| By patents | Enterprises with patents (15) | | 13.3 | 86.7 |
| | Enterprises without patents (57) | 5.3 | 35.1 | 59.6 |
| By ownership | SOEs (33) | | 39.4 | 60.6 |
| | Private enterprises (25) | 8.0 | 28.0 | 64.0 |
| | Collectives and stock cooperatives (10) | 10.0 | 30.0 | 60.0 |
| | Foreign-funded (5) | | | 100.0 |
| By products | Chemical products (18) | 16.7 | 16.7 | 66.7 |
| | Machinery and equipment (14) | | 35.7 | 64.3 |
| | Consumer products (16) | | 43.8 | 56.3 |
| By scale | 0–199 (47) | 6.4 | 29.8 | 63.8 |
| | 200–499 (11) | | 18.2 | 81.8 |
| | More than 500 (18) | | 38.9 | 61.1 |
| By organisation | One-plant enterprises (49) | 6.1 | 34.7 | 59.2 |
| | Main plants and headquarters (13) | | 38.5 | 61.5 |
| | Branch plants (14) | | 7.1 | 92.9 |
| By operation in 2001 | Not in operation (4) | | 50.0 | 50.0 |
| | Half in operation (17) | | 41.2 | 58.8 |
| | Fully in operation (55) | 5.5 | 25.5 | 69.1 |
| By profits | Much profit (5) | | | 100.0 |
| | A little profit (26) | | 26.9 | 73.1 |
| | No profit (17) | 11.8 | 23.5 | 64.7 |
| | A little at loss (16) | 6.3 | 37.5 | 56.3 |
| | Heavily at loss (3) | | 66.7 | 33.3 |

(the number of efficient questionnaires)

### 7.1.2 Means of technological improvement

Three main means of technological improvement are better equipment (more than 50%), learning by doing (48.0%), and own research units (36.0%)[2]. All three means are closely connected with highly qualified labour force. So, on-the-job training of employees (45.3%) and employment of more qualified workers (28.0%) can be understood as supplementary evidences for three means. Cooperation (18.7%), imitation (16.0%) and universities and research institutes (12.0%) are of secondary importance for technological improvement of local SMIEs, while technological intermediate organisations (2.7%) played a far more subordinate

[2] It should be pointed out that many high- & new-tech enterprises and some relatively large SOEs have separate research units responsible for technological improvement and product development. In other cases, related persons responsible for making products looking somewhat better or using somewhat better or others may be called research units, and even R&D. But they did not undergo and may also be incapable of undergoing systemic research and development work.

role. A positive evaluation of some enterprises on local agglomeration of universities and research institutes can be understood basically from two aspects. For high- & new-tech enterprises and a limited number of other enterprises, universities and research institutes were both a source for new technologies and qualified employees. For most enterprises, the positive influence was confined to supplies of qualified labour force. Headquarters are also a very important source for technological improvement of branch plants. 40% of them obtained technological supports from their headquarters.

**Table 7.2 Means of technological improvement (%)**

| | All | SOEs | PRI | COLL | FF |
|---|---|---|---|---|---|
| Efficient questionnaires | 76 | 33 | 25 | 15 | 5 |
| Own research units | 36.0 | 43.8 | 36.0 | 20.0 | 40.0 |
| Improvement of employees in practice | 48.0 | 59.4 | 40.0 | 30.0 | 60.0 |
| On-the-job training of employees | 45.3 | 56.3 | 40.0 | 40.0 | 20.0 |
| Employment of more qualified workers | 28.0 | 21.9 | 44.0 | 20.0 | 20.0 |
| Cooperation with others | 18.7 | 25.0 | 4.0 | | 60.0 |
| Technological help from headquarters | 8.0 | 9.4 | 4.0 | | 40.0 |
| Better equipment | 50.7 | 65.6 | 48.0 | 30.0 | 40.0 |
| Technological introduction from universities and research institutes | 12.0 | 6.3 | 20.0 | 10.0 | 20.0 |
| Technological introduction from intermediate organisations | 2.7 | 3.1 | | 10.0 | |
| Imitating others | 16.0 | 18.8 | 16.0 | 10.0 | 20.0 |

PRI: private enterprises; COLL: collectives and stock cooperatives; FF: foreign-funded enterprises.
36.0: main technologies of 36.0% of 76 enterprises were improved through own research units.

## 7.2 Improvement of the product quality[3]

The product quality of local SMIEs was generally improved during their development. Technologies, management and more qualified employees are three main means of improvement. Material linkages and imitation also contributed to improvement of the product quality.

### 7.2.1 Degree of improvement of the product quality

Of all enterprises questioned, 53.2% declared great improvement in the product quality since the establishment and 42.9% expressed little improvement, while only 3.9% were characterized by no change. More foreign-funded enterprises (83.3%) declared great improvement than private enterprises (56.0%), SOEs (48.5%), and collectives and stock cooperatives (40.0%). The worse situation of SOEs and collectives may have a lot to do with their ownership-associated problems, such as weak connections between improvement activities of the product quality and material encouragements, backward management, etc. The worse situation of collectives than SOEs may be partly due to that relatively large SOEs own much more qualified employees than small collectives. Foreign-funded enterprises acted much better than private enterprises, which may be partly due to the more sufficient management of the former and their stronger capabilities of adjusting their products to meet local demands.

More enterprises with patents, enterprises in full operation in 2001, and enterprises with much profit in 2001 achieved great improvement in the product quality than corresponding other types of enterprises, showing a positive correlation between the product quality and economic

[3] Problems related to technological improvement exist also here. Results must be treated with certain doubt.

benefits. Differences in improvement of the product quality can be also identified with regard to enterprises with different scales, enterprises producing different products, and enterprises with different organisational structure.

**Table 7.3 Improvement of the product quality (%)**

| | | No improvement | Little improvement | Great improvement |
|---|---|---|---|---|
| Total (77) | | 3.9 | 42.9 | 53.2 |
| By patents | Enterprises with patents (15) | | 33.3 | 66.7 |
| | Enterprises without patents (58) | 5.2 | 43.1 | 51.7 |
| By ownership | SOEs (33) | 3.0 | 48.5 | 48.5 |
| | Private enterprises (25) | 4.0 | 40.0 | 56.0 |
| | Collectives and stock cooperatives (11) | 10.0 | 50.0 | 40.0 |
| | Foreign-funded (6) | | 16.7 | 83.3 |
| By products | Chemical products (18) | 5.6 | 50.0 | 44.4 |
| | Machinery and equipment (14) | 7.1 | 28.6 | 64.3 |
| | Consumer products (16) | | 43.8 | 56.3 |
| By scale | 0–199 (48) | 2.1 | 43.8 | 54.2 |
| | 200–499 (11) | | 36.4 | 63.6 |
| | More than 500 (18) | 11.1 | 44.4 | 44.4 |
| By organisation | One-plant enterprises (49) | 4.1 | 40.8 | 55.1 |
| | Main plants and headquarters (13) | 7.7 | 46.2 | 46.2 |
| | Branch plants (15) | | 46.7 | 53.3 |
| By operation in 2001 | Not in operation (4) | | 100.0 | |
| | Half in operation (17) | 5.6 | 61.1 | 33.3 |
| | Fully in operation (55) | 3.6 | 32.7 | 63.6 |
| By profits | Much profit (5) | | 20.0 | 80.0 |
| | Little profit (26) | 3.8 | 26.9 | 69.2 |
| | No profit (17) | 5.9 | 23.5 | 70.6 |
| | A little at loss (16) | | 70.6 | 29.4 |
| | Heavily at loss (3) | 33.3 | 66.7 | |

(the number of efficient questionnaires)

### 7.2.2 Means of improving the product quality

Technological improvement (57.9%), management improvement (71.9%), and more qualified employees – represented by on-the-job training of employees (55.3%) and employing more qualified labour force (25.0%) – are three most popular means of improving the product quality. Forward and backward interactions with other enterprises and customers (18.4%, 18.4%) and imitations (9.2%) are much less popular means. Except imitations, all other means have contributed a lot to improvement of the product quality of SOEs. This may be associated with their long history, reform experiences, and large scale. More private enterprises imitated local other enterprises by improving the product quality than SOEs. Four of six foreign-funded enterprises connected their improvement of the product quality with the better management, while two of them improved their product quality by means of technological improvement. This suggests that in comparison with local domestic enterprises, advantages of foreign-

funded enterprises are in most cases associated with their advanced management, rather than advanced technologies.

**Table 7.4 Means of improving the product quality (%)**

| | All | SOEs | PRI | COLL | FF |
|---|---|---|---|---|---|
| Efficient questionnaires | 76 | 32 | 25 | 11 | 6 |
| | | | | | |
| Technological improvement | 57.9 | 81.3 | 44.0 | 40.0 | 33.3 |
| More efficient management | 59.2 | 71.9 | 52.0 | 50.0 | 66.7 |
| On-the-job training of employees | 55.3 | 68.8 | 56.0 | 40.0 | 16.7 |
| Employing more qualified workers | 25.0 | 25.0 | 32.0 | 20.0 | 16.7 |
| Higher quality of inputs | 18.4 | 28.1 | 4.0 | | 50.0 |
| Requests of users/consumers | 18.4 | 28.1 | 12.0 | 10.0 | |
| Imitating others | 9.2 | 6.3 | 16.0 | 10.0 | |

57.9: the product quality of 57.9% of 76 enterprises was improved through technological improvement

# 8 Conclusion and Discussion

## 8.1 The changing organisational structure of enterprises

In the planned economy, large SOEs had a complex product structure, showing an internalising trend of organising production. This self-supplying trend was strengthened in the 1980s by the upsurge of subordinate collectives. Initially, collectives were established by SOEs to provide work chances for their abundant employees, and children and even relatives of their employees. Later, collectives acted as an influential power in providing products and services both for mother SOEs and other parts of the society, especially in a producer market of China before the middle 1990s. Economic activities of collectives were diverse. They provided intermediate products and services for corresponding SOEs, or they produced backward products by using products of corresponding SOEs as main inputs, or their economic activities were based on using residual resources of corresponding SOEs. In some cases, their economic activities had nothing to do with corresponding SOEs. As showed by the example of Lanshi, many early collectives do not exist today, due to their small scale, a bad management, and an unclear ownership.

Since the middle 1990s, economic activities of both local large SOEs and large private enterprises have been further diversified. Recent diversification activities concentrated on high- & new-tech industries and advanced tertiary industries. Listed corporations which main products were in an unfavourable competitive situation for their high production costs, the low quality or the limited types of products were more inclined to be involved in high- & new-tech industries than those bearing higher competitive capabilities. The main purpose for diversifying their economic activities since the middle 1990s is possibly to develop new products and to find new markets in a consumer market, as it is the case for many world-known enterprises (Wang, 1996, 45). But till now this trend should not be understood as a diversification strategy for three reasons. One is that in contrast to their main products, products and services involved in the diversification share a very limited part in production and income of local large enterprises. The second reason is that large enterprises declared in recent years that their main goal was to produce main products. Thirdly, it seems that many new projects were not enough assessed before being brought into reality. Local large enterprises might not have long-term development plans or strategies for specific projects of the diversification. Decisions on new products and services might be made temporarily under the influence of various factors, such as a chance to use a new technique of a research institute to produce some product.

National policies associated with establishing and developing large enterprise groups and large enterprises had positive effects on the development of some large SOEs. Nationwide, 57 and 63 large enterprise groups were listed as demonstration enterprise groups by the State Council in 1991 and 1997 respectively. None of the core enterprises of these enterprise groups is located in Lanzhou. A limited number of local large SOEs were involved in establishing enterprise groups and forming large enterprises by merging or consolidating various SOEs to some degree. Except the policies related to the corporalisation of traditional SOEs, local large enterprises were to a great degree free from the influence of the making-large-related policies. Within a limited number of local enterprise groups or large enterprises established under the strong influence of related national policies, some expected benefits were not realised. In ad-

dition, acquiring a SOE operating at loss by a relatively large SOE or a private enterprise with the label of the low-cost expansion was unsuccessful in most cases. Further studies are needed to show whether and how national policies related to "making large and strong" have led to regional disparities.

### 8.2 Official institutions versus non-official institutions

In discussions of a new economic geography in industrialized nations, the importance of such unofficial institutions as habits and conventions in local agglomeration of economic activities and innovations was emphasized. Unofficial institutions were not a specific topic to be dealt with in this study. They may be of certain importance in product sales and input acquisition of local enterprises. But no evidence was found that they played some role in technological improvement and divisions of labour.

The quick industrial development of Lanzhou in the past years was closely associated with the reform policy carried out since the end of 1978. The reform of SOEs, the development of private enterprises and the introduction of foreign funds led to a quick economic development during the transition of a plan-oriented economy to a socialist market one. Despite many reform measures, SOEs still face many problems, including an unclear ownership, the special relationship between them and government, a non-modern governance structure, heavy social burdens, and the absolute control of the state over state-related listed corporations.

The influence of official institutions on the local industrial development was great. But they are only one aspect of the macro-structural power influencing the regional economic development.

### 8.3 Macro-structural power and general processes of economic development

The macro-structural power influencing the regional economic development is multi-dimensional. Besides official institutions, another important aspect is changing national regional policies. Decisions of the central government in the planned economy to establish several large SOEs initialised local economic development and basically formed the local industrial structure. Since the reform, national policies were in favour of eastern region in aspects of state investments in basic construction, the establishment of special economic zones and regions to attract foreign funds and develop outward economy, experiments in institution creations, and so on.

The third aspect associated with the macro-structural power and general processes of economic development is the impact of enterprises in other regions of China and in other countries on the local industrial development. No evidence was found that products imported from foreign countries had an obvious negative influence on the local industrial development. Many local large enterprises thought in comparison with their foreign counterparts, their products have a comparative competitive superiority in terms of ratios between price and quality. But in fields of household appliances, textile, garment, shoes, and many other products mainly belonging to light industry, local enterprises encountered severe competition from enterprises in other regions of China and many of them went bankrupt or operated at loss. Why enterprises in other regions could produce cheaper and more qualified products than

local enterprises is a big topic. What's discovered is that price and quality advantages of household appliances produced by enterprises in other regions had lots to do with their much larger production scale. They shared more economics of scale. In other cases, it seems that both economics of scale and management contributed to the capture of large parts of local and regional markets by enterprises in other regions out of the hand of local enterprises.

### 8.4 Location factors

Location factors and the relative geographical location can explain regional disparities between coastal and inner China to some degree. Main location factors in favour of coastal region include climate, water supply situation, proximity to Hong Kong, Macao and Taiwan, convenient transport by sea, historically formed commercial culture, a good infrastructure, and a larger consumption capacity of the inhabitants. Except Lanzhou and Tianshui, industries in other relatively large cities of Gansu province are basically resource-oriented. The spatial distribution of industrial enterprises is to a great degree in accordance with the spatial distribution of mineral resources.

Location factors and its relative location played a great role in the establishment and development of large industrial enterprises in Lanzhou in the planned economy. Main location factors include proximity to the Yellow River, abundant hydropower produced locally and in the neighbouring regions, and local natural resources. The relative location was shown in aspects of its proximity to oil fields and regional natural and agricultural resources, and convenient transport. In addition, external economies encouraged agglomeration of local industrial enterprises by the establishment of forward and backward industries associated with large SOEs and the establishment of industries in the same sectors as those of large SOEs.

Since the reform, the dominance of large SOEs in the local industry did not change. Products of many local large enterprises are sold nationwide and certain parts are exported. Local SMIEs sold their products mainly to local and regional inhabitants. Such location factors as proximity to the Yellow River, local and regional natural resources, raw materials provided by local large enterprises, convenient transport, and abundant energy are of importance for many SMIEs. Universities and research institutes are important sources for spin-offs of high- & new-tech enterprises and they provide qualified labour force for local enterprises.

Transport costs played a limited role in the location choice of plants, according to several studies in Germany, the Alpine areas and the USA (Gebhardt, 1990; Bathelt, 1991). But in Lanzhou, transport costs, proximity to consumers, and agglomeration economies emphasized by Weber can explain the establishment of local large industrial enterprises and development of local SMIEs to a great degree. Differences in production technologies and the product quality may be the most important reason for that. Transport costs are more important for enterprises in Lanzhou than those in Germany for backward production technologies and low-value preliminary products. Backward transport conditions in other regions of Gansu except Lanzhou and long distances between regions may be another reason. Industrial enterprises agglomerate themselves in Lanzhou to reduce transport costs both in production and sales.

Labour force and cheap and abundant land were two main motives of location decisions of newly founded plants in Germany between the 1950s and the 1970s. Cheap labour force is of

great importance for many enterprises in China and low labour costs can to a great degree explain strong competitive capabilities of some products made in China. But in China, cheap labourers are ubiquitous to a great degree and the conclusion can not be drawn that new plants are oriented by cheap labour force to some degree. Analogous to this is the situation of land supplies. Abundant land is also a ubiquitous factor at least in suburban areas of many large cities of China, as in Lanzhou. Cheap and abundant land is one precondition for the establishment of local industrial enterprises. But only together with other factors, such as urban infrastructure, spin-offs of SOEs, universities and research institutes, external economies, the seedbed effect of the establishment of private enterprises, the state and collective ownership of many local enterprises, cheap land functions as an important factor.

Still, agglomeration of industrial enterprises in Lanzhou was basically ownership-associated till now, while location decisions of plants in Germany were subject to individual and non-deterministic factors to some degree. Confined by the public and collective ownership, or by the special population management system of China, and by a backward economic development, entrepreneurs could select a site for their plants only within certain areas. With the economic development and further reforms in related fields, more enterprises could be established by individuals from other regions except Lanzhou and by foreigners, and more branches were established by local enterprises in other regions.

Both the macro-structural power and location factors played an important role in the local industrial development. The economic development in Lanzhou will be influenced by further reforms of the economic system and SOEs, and the Western Development Policy in future. Economic geographers should pay more attention to the ever enlarging regional disparities. Thereby, distinctive agglomeration mechanisms of industrial enterprises in coastal and inner regions should be a prior topic and great attention should be paid to aspects of the macro-structural power. But in China, private enterprises has been playing a more and more important role in the national economy and there are more and more foreign-funded enterprises. At the same time, more and more SOEs own autonomous performance rights. Decisions and relations of enterprises should not be neglected by analysing regional disparities.

### 8.5 Relational aspects of economic activities

Personal social networks played a very important role in the establishment and initial development of private enterprises. One evidence is that family members, friends and relatives were the main sources for funds by establishing new enterprises. Another evidence is that large parts of stable channels of both input acquisition and product sales were initialized by personal guanxi. The third evidence is the “special relationship” between enterprises and local governmental officials. In comparison with the 1980s, a lower percentage of current enterprises tried to create and maintain special relations with local governmental officials. In addition, what enterprises could benefit from such a relationship changed at least partly. For example, a good relationship with local governmental officials was necessary for enterprises to get production facilities and inputs in a shortage economy during the 1980s. Now, enterprises can buy them easily in markets. It is necessary to point out that this kind of guanxi has little to do with Chinese culture. On the one side, it is true that Chinese are inclined to do something through guanxi. On the other side, the special relationship between enterprises and governmental officials is above all a political matter, not a cultural one. An indirect evidence is that

this kind of special guanxi was not concerned with enterprises located in Hong Kong and Taiwan, where the Confucian culture is dominant.

In product sales and especially in input acquisition, long-term partners are dominant. Guarantee of input acquisition and product sales is the number one function of their long-term relations. The second function are lower or negotiable prices. The basic mechanism for maintaining long-term relations is trust. Trust means what one partner does is in accordance with what another partner expects. Their behaviour is predictable to each other to a great degree.

Interactions between local enterprises and associations are very limited. No evidence for so-called "associational assets" is found. Many local high- & new-tech enterprises were originated from universities, research institutes, and large SOEs. Some private enterprises produce the same or similar products as the enterprises in which their owners worked earlier.

With regard to the financial sources of private enterprises and the spin-offs of high- & new-tech enterprises from universities, two elements leading to enlarging regional disparities can be identified. On the one hand, the inhabitants in coastal region are richer than those in western region as in Lanzhou. With the financial support from family members, relatives and friends, it is easier for them to establish a private enterprise. In addition, ancestors of many entrepreneurs in Kong Hong, Macao, Taiwan, and countries in southeast Asian were from southeast China, so that southeast China has been in a much more favourable position to attract investments from those regions and countries than western region. On the other hand, the majority of China's key universities are located in coastal region and they became better and better than universities in western region in recent years. More high- & new-tech industrial enterprises may have been originated from universities in coastal region than those in western region.

### 8.6 Technological improvement

Mainly by means of imitations, SOEs improved their technologies frequently in the planned economy. Since the reform, technological improvement of local large enterprises was realised mainly by introducing foreign advanced equipment. The main means of technological improvement of local SMIEs was also the introduction of better equipment. Other means include learning by doing, on-the-job training of employees, employment of more qualified employees, technological introduction from universities and research institutions. Interestingly, some degree of improvement of the product quality was realised through material linkages.

Local enterprises produce basically standardised products and innovations are seldom. There do not exist innovative networks. Although social-cultural, institutional elements are important for collective learning and interactive innovations of firms in industrial districts, qualified scientists and technicians, sufficient financial means, and advanced facilities are all preconditions of innovations. The enterprises in Lanzhou do not have those factors.

In summary, aspects of the macro structural power, such as the changing economic system, the changing operation mechanism of SOEs, reorganisation of SOEs, the changing regional economic policies of the central government, location factors, competition of enterprises in others regions of China, and the macro economic situation of China, played a decisive role in

the local industrial development. In product sales and input attainment, long-term relations are very important. But there do not exist interactive innovations and long-term relations did not lead to an enhanced competitive capability of local industrial enterprises. Above all, enterprises in Lanzhou are short of qualified researchers, technicians, financial means, and advanced facilities for innovations. Obviously, the local industrial development can not be explained essentially from the perspective of decisions and relations of local enterprises. But it is necessary to pay attention to decisions and relations of enterprises furthermore by studying regional industrial development in Lanzhou as well as in other regions of China, since more and more SOEs own autonomous performance rights and enterprises with other types of ownership play a more and more important role in the national economy of China.

**Appendix 1.1**

## 私营企业调查问卷

**企业名称:**
**地址:**

**基本情况**

1. 您的企业是

A 个人独资企业　　B 私营合伙企业　　C 有限责任公司

2. 本企业

A 仅由一个厂构成　　B 是多个厂的总厂(总公司)，分厂位於：
C 是一个多厂企业的一个分厂， 总厂(总公司)位於：

3. 企业所有者或拥有企业最多股份的人是：

A 兰州本地人　　B 甘肃其它地区的人　　C 外省人

4. 企业的主要产品是:

5. 去年主要产品的销售地构成为(%):

兰州市内(含三县五区):　　甘肃省内:　　中国境内:

6. 本厂共有工作人员:

A 0–8　　B 8–49　　C 50–99　　D 100–199　　E 200–499　　F 500及以上

7. 工厂有自己的生产专利吗?

A 有，其中发明　　项， 实用新型　　项， 外观设计　　项
B 没有

**建立与发展**

8. 工厂最初建立于　　年

**下列问题9–11有关企业起初设立时的一些情况，而不是现在的情况。**

9. 企业的投资者(主要投资者)在建立企业之前的工作为：

A 农民　　B 在国有或集体企业工作　　C 在私营企业工作
D 在其它性质的企业工作　　E 在大学或科研机构工作　　F 在其它部门工作

如果在企业工作，则自己创建的企业产品与原先工作的企业产品的关系是：

A 相同　　B 类似　　C 差别很大

10. 企业的投资者(主要投资者)在建立企业之前住在：

A 现在企业所在的地方　　B 兰州市农村　　C 兰州市城区

D 除兰州市外的甘肃其它地方　　E 甘肃省外

11. 建立企业的资本来源构成是：

| | 家庭成员 | 亲戚/熟人/朋友 | 银行 | 其它 |
|---|---|---|---|---|
| 比重% | | | | |

12. 工厂自建立以来，主要生产技术

A 没有任何变化　　B 有一些改进　　C 有较大改进

改进途径是(一个或多个选项)

A 使用更高效率的设备　　B 企业研究部门的创新　　C 职工在生产实践中的技术创新

D 雇佣高质量的职工　　E 职工在职培训　　F 模仿其它企业

G 与其它企业技术合作　　H 总公司的技术帮助

I 从大学和其它研究单位的技术引进　　J 通过技术中介组织引进　　K 其它

13. 自建立以来，主要产品的质量

A 没有变化　　B 有所提高　　C 有大幅度提高

提高途径是(一个或多个选项)：

A 采用新技术(新设备)　　B 科学的管理　　C 雇佣高质量的职工　　D 职工在职培训

E 上游企业(原料、配件、零件的提供者)产品质量的提高

F 应下游企业(中间产品使用者或销售商)提高产品质量的要求　　G 模仿其它企业

14. 下列区位要素对企业的发展有何意义？

| | 较大的正面影响 | 一定的正面影响 | 没有意义 | 一定负面影响 | 较大的负面影响 |
|---|---|---|---|---|---|
| 接近原料地 | | | | | |
| 当地市场 | | | | | |
| 便宜劳动力 | | | | | |
| 高素质劳动力 | | | | | |
| 当地交通状况 | | | | | |
| 当地供水状况 | | | | | |
| 当地供电状况 | | | | | |
| 污水、废物处理设施 | | | | | |
| 优惠政策 | | | | | |
| 土地供给 | | | | | |
| 大学、研究机构 | | | | | |
| 技术中介组织 | | | | | |
| 生产同类或类似产品的企业在当地的积聚 | | | | | |
| 提供原料、配件企业在当地的积聚 | | | | | |
| 接受本厂产品的厂家或销售商在本地的积聚 | | | | | |
| 与沿海地区的远距离 | | | | | |

**运营**

15. 去年，企业：

A 停产　　B 半停产　　C 全年营运

如果B或C， 则

A 盈利较多　　B 有些盈利　　C 持平　　D 亏了一些　　E 亏损严重

**关系与网络**

16. 企业领导层与地方政府官员有密切的私人关系吗？

A 是，密切　　B 有关系，但较为松散　　C 没有关系

17. 同政府官员的关系对您的企业发展在以下几方面的影响为：

| | 较大的正面影响 | 有些正面影响 | 没有影响 | 有些负面影响 | 较大的负面影响 |
|---|---|---|---|---|---|
| 获得原材料 | | | | | |
| 获得资本 | | | | | |
| 产品销售 | | | | | |
| 优惠政策 | | | | | |
| 获得技术 | | | | | |
| 获得生产设备 | | | | | |

18. 企业从任何形式的协会(不包括企业集团)，如纺织业协会、私营企业协会等，得到过任何形式的帮助吗？

A 是， 许多帮助， 从　　协会

B 是，有点帮助， 从　　协会

C 没有， 但我知道存在这样的协会，如

D 没有，我也不知道，是否存在这样的协会

如是A或B，则得到的帮助是(一个或多个选择)

A 销售信息　　B 供货信息　　C 技术信息　　D 职工培训　　E 其它

19. 主要产品的销售渠道是

| | 长期、可靠的<br>销售商(顾客) | 长期、可靠<br>的厂家 | 企业自己的<br>营销网点 | 偶然、不确定的销售商、<br>顾客、厂家需求 |
|---|---|---|---|---|
| 比重% | | | | |

20. 主要原材料、配件(最重要的一种)来源于：

| | 长期固定的生产厂家 | 长期固定的经销商 | 自己开采 | 非固定的市场购买 |
|---|---|---|---|---|
| 比重% | | | | |

21. 在原料、配件、半成品供应、产品销售、技术联系等方面，企业可能有一些长期、稳定、可靠的夥伴，这些关系对企业发展在以下几方面的意义有多大？

| | 非常大 | 比较大 | 有一点 | 没有任何意义 |
|---|---|---|---|---|
| 确保主要原材料、配件等的供应 | | | | |
| 以较低价格获得原材料等投入物 | | | | |
| 确保产品销售市场 | | | | |
| 双边或多边联合确定产品价格 | | | | |
| 联合采取行动提高产品质量 | | | | |
| 通过信息交流扩大产品销售市场 | | | | |
| 深化各厂家之间的专业化劳动分工 | | | | |

在初始建立这种稳定的夥伴关系中，下列方式的作用有多大？

| | 非常大 | 比较大 | 有一点 | 没有作用 |
|---|---|---|---|---|
| 企业所有者(管理者)的个人社会关系网 | | | | |
| 在长期的交易中建立的互相信任关系 | | | | |

**未来发展**

22. 您认为，中国加入世界贸易组织对企业的发展会产生何种影响？

A 积极影响　　B 消极影响　　C 没有影响　　E 说不清

23. 自1999/2000年，国家开始实施西部大开发政策，该政策对您企业的发展产生了或可能产生何种影响？

A 积极影响　　B 消极影响　　C 没有影响　　D 说不清

**未包含在私营企业调查问卷中的有关国有企业的问题**

1. 本企业是

A 没有进行公司制改造的国有独资企业　　B 已进行了公司制改制的国有独资公司
C 国有控股公司

2. 若企业进行了股份制改制，则自改制以来，企业的运营状况相较改制前：

A 好得多　　B 好了点　　C 一样　　D 差了点　　E 差了许多

3. 您认为，改制对企业在以下几方面的影响有多大：

| | 较大正面影响 | 有正面影响 | 没影响 | 有负面影响 | 较大负面影响 |
|---|---|---|---|---|---|
| 企业管理水平 | | | | | |
| 员工生产积极性 | | | | | |
| 机器利用率 | | | | | |
| 资本来源 | | | | | |
| 产品质量 | | | | | |
| 生产成本 | | | | | |

**未包含在私营企业和国有企业调查问卷中的有关有限责任公司的问题**

1. 本企业属於

A 私营企业　　B 中外合资企业（含港、澳、台）　　C 中外合作企业
D 内资中的国家控股企业　　E 其它

如果是B或C，则：A 中方控股　　B 外方控股

**上面涉及的问题包含了全部有关集体企业和股份合作企业调查问卷中的问题**

**Appendix 1.2**

## Questionnaire for Private Enterprises

Name of your enterprise:
Address:

### Basic conditions

1. Your enterprise is a

A sole private one B partnership C private limited corporation

2. Your enterprise is

A one-plant enterprise
B main plant and headquarter of several plants, and other plants are located:
C one plant of a multi-plant enterprise, the headquarter is located:

3. The sole owner or owner with the biggest share of the enterprise comes from:

A within Lanzhou B other regions of Gansu province C other provinces

4. The main product is:

5. Last year, the main product was sold:

Within Lanzhou: % Within Gansu province: % Domestically: %

6. The number of employees:

A 0–8 B 8–49 C 50–99 D 100–199 E 200–499 F more than 500

7. Does the enterprise have own patents?

A yes, of which: creations and inventions: utility models: designs:
B no

### Establishment and development

8. The enterprise was initially established in the year:

*Following questions 9–11 deal with original situation of the enterprise.*

9. The owner or the main owner of the enterprise worked before the establishment of the enterprise as:

A peasant B in a SOE or collective enterprise
C in a private enterprise D in an enterprise with other forms of ownership
E in a college, university or research institute
F in other institutions

When B, C or D, then products of earlier enterprise and those of own enterprise are:
A same B similar C greatly different

10. Before the establishment of the enterprise, the owner lived in:
A where the enterprise is located B rural areas of Lanzhou
C urban parts of Lanzhou D other regions of Gansu
E other provinces

11. By establishing the enterprise, funds came from:

| | Family members | Relatives & friends | Banks | Others |
|---|---|---|---|---|
| Percentage % | | | | |

12. Since the establishment, the main production technology:
A no improvement B little improvement C great improvement

Channels for technological improvement include:
A better equipment B own research unit
C learning by doing D employment of more qualified workers
E on-the-job-training of employees F imitating other enterprises
G cooperation with other enterprises H technological help from the headquarter
I technological introduction from universities and research institutes
J introduced from technological intermediation organisation
K others

13. Since the establishment, the quality of the main product:
A no improvement B little improvement C great improvement

Improvement channels include:
A using new equipment B better management
C employing more qualified workers D on-the-job-training of employees
E higher quality of inputs F requests of users to improve the product quality
G imitating other enterprises H others

14. The importance of the following location factors for the enterprise

| | Great positive effect | Little positive effect | No effect | Little negative effect | Great negative effect |
|---|---|---|---|---|---|
| Proximity to raw materials | | | | | |
| Local market | | | | | |
| Low labour costs | | | | | |
| Highly qualified employees | | | | | |
| Local transport conditions | | | | | |
| Local water-supplying conditions | | | | | |
| Local power-supply conditions | | | | | |
| Facilities for dealing with pollutants | | | | | |
| Preferential policies | | | | | |
| Land supply | | | | | |
| Universities and research institutes | | | | | |
| Technological intermediation organisation | | | | | |
| Local enterprises producing the same or similar products | | | | | |
| Local input suppliers | | | | | |
| Local users/customers and commercial units | | | | | |
| Long distance to coastal region | | | | | |

**Operation**

15. Last year, the enterprise,

A not in operation B half in operation C fully in operation

When B or C, then

A much profit B a little profit

C no profit D a little at loss

E heavily at loss

**Relations and interactions**

16. The relationship between the manager and local governmental officials

A a close relationship B a loose relationship C no relationship

17. The importance of certain relationship with local governmental officials

| | Great positive effect | A little positive effect | No effect | A little negative effect | Great negative effect |
|---|---|---|---|---|---|
| Acquisition of raw materials | | | | | |
| Acquisition of funds | | | | | |
| Product sales | | | | | |
| Acquisition of preferential policies | | | | | |
| Acquisition of technologies | | | | | |
| Acquisition of equipments | | | | | |

18. Did the enterprise get any form of help from some association?

A yes, much help from

B yes, a little help from

C no, but I know there do exist such associations

D no, and I do not know whether there exist such associations

When A or B, then forms of help:

A sale information B information concerning inputs

C technological information D training of employees

E others

19. Sale channels of the main products

| | Long-term, reliable commercial organisations | Long-term, reliable enterprises | Own retail networks | Accidental customers |
|---|---|---|---|---|
| Percentage % | | | | |

20. Sources of the most important raw materials or components:

| | Fixed production enterprises | Fixed commercial organisations | Self-supplying | Non-fixed markets |
|---|---|---|---|---|
| Percentage % | | | | |

21. By acquiring inputs and selling products, the enterprise may have some long-term, reliable partners. How important are such relations?

| | Of great importance | Of little importance | Of no importance |
|---|---|---|---|
| Guarantee of inputs | | | |
| Inputs at lower prices | | | |
| Guarantee of product sales | | | |
| Commonly making prices | | | |
| Joint actions to improve the product quality | | | |
| Sale information | | | |
| Deepening of production divisions | | | |

The importance of the following factors in initializing or maintaining such relations:

| | Of great importance | Of little importance | Of no importance |
|---|---|---|---|
| Social relation networks of managers | | | |
| Trust formed in the long-term transactions | | | |

**Future development**

22. What is your idea about the influence of China's entry into WTO on your enterprise?

A positive influence B negative influence

C no influence D I do not know

23. Since 1999/2000, the "Western Development Policy" has been carried out by the central government. Which influence had this policy on your enterprise or may have in future?

A positive influence B negative influence
C no influence D I do not know

**Questions in questionnaires of SOEs, not included in those of private enterprises**

1. The enterprise is:

A a traditional state monopoly B a transformed state monopoly
C a state-controlled corporation

2. After the enterprise was transformed to a corporation, it operated?

A much better B a little better
C no change D a little worse
E much worse

3. Which influence did the corporalization have on the following factors?

| | Great positive effect | A little positive effect | No effect | A little negative effect | Great negative effect |
|---|---|---|---|---|---|
| Management | | | | | |
| Production enthusiasm of employees | | | | | |
| Utilization rate of equipments | | | | | |
| Acquisition of funds | | | | | |
| The product quality | | | | | |
| Production costs | | | | | |

**Questions in questionnaires for corporations, not included in those of private and SOEs**

1. The enterprise is

A a private corporation B a Sino-foreign equity joint venture
C a Sino-foreign contractual venture D a state-controlled corporation without foreign shares
E others

When B or C, then:

A controlled by the Chinese side B controlled by the foreign side

**Questions in questionnaires for collective enterprises and stock cooperatives are fully included within questionnaires above**

**Appendix 2**

## Ownership and governance structure of enterprises in China

| Enterprises | Governance structure | Main laws |
|---|---|---|
| Sole ownership | Solely owned by the state, a collective, a Chinese individual or foreigner | |
| State-owned<br>Central<br>Provincial<br>City's/prefecture<br>County's/district | Manager responsibility system: the manager appointed by government or elected by workers enjoys operation and management rights, responsible for making strategic plans under the guidance and approval of government | State-owned Industrial Enterprise Law of the P.R. China, promulgated in 1988 |
| Collective-owned<br>Provincial<br>City's/prefecture<br>County's<br>Urban street, township<br>Others | Manager responsibility system: the manager elected by workers or appointed by government bears operation and management rights, responsible for making strategic plans, which should be approved by the worker representative conference | Regulations on Urban Collective Enterprises of the P.R. China, promulgated in 1991 |
| Individually-owned with unlimited liability | Owner–manager structure | Provisional Regulation of the P.R. China on Private Enterprise, taking into effect since 1988 |
| Foreign-owned | Decided by themselves | |
| | | |
| Cooperative and partnership | Jointly funded and managed by two or more sides among the state, collectives, individuals, or foreigners | |
| Stock cooperatives (a new form of collective enterprises transformed from the small state-owned and collective enterprises, or directly founded by individuals; all or parts of workers own some shares) | Manager responsibility system under the guidance of the stock-holder conference, or governed like a limited company | Guidance on Developing Urban Share-holding Cooperative Enterprises, issued by National Commission of Systemic Reform in 1997; Provisional Rules on Farmer's Share-holding Cooperative Enterprises, issued by Agricultural Department in 1990 |
| Individual partnership with unlimited liability | Owner–manager structure | As individually-owned enterprises |
| Sino-foreign contractual Joint Venture | The enterprise is managed by a jointly established agency or as a company with limited liability | Sino-foreign Contractual Joint venture Law of the P.R. China, promulgated in 1988, modified in 2000 |
| Others | | |
| | | |
| Limited liability corporation<br>State monopoly<br>Private<br>Sino-foreign JV<br>Others | Separation of strategic decision-making, execution, and supervision among the board of directors, the board of supervision, and manager (in some cases without the board of supervision) | Company Law of the P.R. China, promulgated in 1994; Sino-foreign Equity Joint Venture Law of the P.R. China, promulgated in 1979, modified in 1990 and 2001 |

**Appendix 3**

**Classification standards of China's industrial enterprises**

| | | Large enterprises | Medium enterprises | Small enterprises |
|---|---|---|---|---|
| Number of employees | Person | 2,000 and more | 300–2000 | Less than 300 |
| Sales | Mio. RMB | 300 and more | 30–300 | Less than 30 |
| Assets | Mio. RMB | 400 and more | 40–400 | Less than 40 |

Source: http://www.statistic.hainan.gov.cn/ReadNews.asp?NewsID=107

**Appendix 4**

**Western development policy**

As a response to the enlarging regional gaps, the Central Committee of the Communist Party of China officially put forward the "Western Development Policy" on September 1999 in an attempt to promote economic, social, and ecological development of western region. This decision can be justified by many factors. One is that the deteriorating environment of the upper and middle reaches of the Yellow River and Yangtze River in western region not only threatened a sustainable development of the hinterland, but also caused large economic damages in coastal region, mainly by means of floods along the Yangtze River, and shortage of water and soil deposit in the riverbed on the lower reaches of the Yellow River. The second factor is the necessity to promote the living standard of minorities mainly living in the interior and to control the trend of enlarging income gaps between inhabitants in western and eastern regions to pursue social justice and to maintain the national safety. The third one is to enhance energy and mineral resource supply capabilities of central and western regions to promote the economic development of eastern region. Finally, enterprises in coastal region can sell more products in the interior if inhabitants there become richer with the economic development.

According to the Plan of the Western Region Development of the State Council issued on September 29th, 2001 and the report of the Central Committee of the CPC at its 16th national meeting on November 8th, 2002, such infrastructure construction as transportation, water conservancy, telecommunication and urban infrastructure, and improvement of ecological environment are key points in the 2010s. Infrastructure facilities will be sponsored and funded partly by the central government with regard to large projects. The central government will provide subsidies for farmers to plant trees or grass on the arable land with high slope to increase the vegetation ratio, to lighten soil erosion and to enhance water-reserving capacities of mountains and hills. In addition, various preferential policies are available for both foreign and domestic investors if they invest in western region.

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