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POLITICAL  
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# PAPERS IN POLITICAL ECONOMY

**Paper No. 52**

**“Cadre Networks, Information  
Diffusion, and Market Production in  
Coastal China”**

**Jean C. Oi**



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Preliminary Draft

*CADRE NETWORKS, INFORMATION DIFFUSION, AND MARKET  
PRODUCTION IN COASTAL CHINA*

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October 10, 1994

Paper prepared for the World Bank Project on "Explaining Growth: Chinese Coastal Provinces and Mexican Maquiladoras."

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## I. *Introduction*

Mody and Wang's World Bank study of coastal provinces in China found a wave-like synchronization of product development across regions in China.<sup>1</sup> The authors hypothesized that this pattern of growth could be accounted for by 1) shifts in buyer preference; 2) industry-wide technology improvements rapidly transmitted along the coast; and 3) the diffusion of strategies among decision makers for promoting sector growth. Of the three explanations, buyer preference was considered the least likely. Technology transmission and decision maker networks were considered more likely. However, because of the lack of micro-level data, none of these hypothesis could be adequately tested.

The current study is a follow-up to the above mentioned work. It is based on interviews in coastal provinces and Beijing with officials at the central, provincial, county, township, and village levels, as well as factory managers and owners.<sup>2</sup> The scope of the study covers the entire reform period up to the present. Readers should keep in mind that processes and factors described may not apply equally to the entire period, some may have been more relevant earlier and less so now. Whenever possible such considerations will be specified.

The findings suggest that of the three hypothesized explanations, the diffusion of strategies among decision makers for promoting sector growth comes closest to explaining the wave-like synchronization. The answer centers on cadre networks and the role of local government in the development of the economy. As will detailed below, these two factors affect product choice, acquisition and diffusion

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<sup>1</sup>Ashoka Mody and Fang-yi Wang, "Explaining Industrial Growth in Coastal China: Economic Reforms ... And What Else?" Unpublished ms., World Bank, Revised March 31, 1993

<sup>2</sup>This research was carried out between June and July 1994. A total of 62 formal interviews were carried out in Beijing, Shandong, Jiangsu, Zhejiang, and Guangdong, spread over nine different administrative units within the four provinces.

of technology, and the marketing of finished products. Mody and Wang were quite on the mark when they speculated that the "network of decision makers provide a grid for information flows leading to replication of sectoral-targeting strategies..." The following sections will examine the sources of information, the contours and composition of the decision maker networks, and the process by which information is diffused through this network. Such details will allow a more informed assessment of the spatial flow of information and technology and its impact on the replication of production across different regions of China.

## *II. Partial Explanations: Changing Buyer Preferences and the Diffusion of Technology*

Changing buyer preferences and technology diffusion both constitute part of the explanation, but neither is sufficient. Buyer preference fails to provide a satisfying *analytical* answer for the determinants of product choice. Similarly, diffusion of technology explains part of the puzzle, but again, it says nothing about how this diffusion takes place. Both explanations reflect the outcomes of a process, but neither shed light on the *process* itself.

This study recognizes that buyer preference structures production in China. Entrepreneurs, managers and officials again and again stressed that shifting buyer preference is what accounts for changes in product growth. When interviewed about the wave-like synchronization of production, they say that is an expected reflection of the new market mentality. Producers, they say, will produce a product if there is a market and profits to be made from a product. It matters little that ones neighbors are also producing the same item, as long as there is a big enough market there will be profits. Not to do so would be to lose profit. If the market gets saturated, then move on to the next hot market item. If in two years there is not

longer money to be made on the product, others will not be making money either.

Officials in Beijing further confirm the importance of buyer preference when they complain that most producers have a too simple a market mentality that takes a short rather than the long term view of profit. They complain that production follows rather than anticipates demand. Central level officials cite the household appliance industry as a prime example of this market calculus that has resulted in stockpiles of unsold goods. Refrigerators, are a favorite illustration. In 1978-79 when they first were made for household use, refrigerators were extremely profitably. People lined up and had to use personal connections (*guanxi*) to buy one. Now supply far exceeds demand and the now crowded field of producers are facing difficulties.<sup>3</sup>

Obviously buyer preference is important in shaping product line, but *how* is buyer preference known to the producers? Do producers themselves decide or are buyer preferences translated and communicated to them by intermediary sources? Television commercials and newspaper ads now exist, but those alone are not the only nor the most important ways in which producers learn about the market. Moreover, if entrepreneurs engage in copying, how is this possible? How can so many producers obtain the technology and capital to enter the market? Mody and Wang speculated that technology diffusion took place along the coastal areas. If that is the case, how does technology diffusion take place? What is the process by which technology is acquired and transferred?

### III. *Sources of Information and Technology*

A first step to understanding how market production works in China is to identify the sources of market and technology information. This will provide clues

to the decision making process that determines product line and clues to how information is diffused. Once we know what these sources are, the spatial distribution of these sources, and the exclusiveness of this information, then we can ask whether it was a process of diffusion across provinces that accounts for the wave-like synchronization, as Mody and Wang hypothesized, or whether each province had sufficient resources to produce these products independently.

The way producers acquire information and technology is varied and complex, although this is not always reflected in the initial answers that one gets to questions about technology acquisition. A major point to emerge from the interviews is the relatively low capital intensity of production and the incremental nature of technology improvement in rural collective and private enterprises. Many successful enterprises report that they started out with relatively simple items produced with relatively inexpensive technology. They stress that product development depends on the success of the original product line. New products usually incorporate the technology of previous products. Only after factories acquire substantial amounts of capital do they start investing in higher grade equipment and move up on the product ladder.

For example, a private furniture factory in Xinhui county, Guangdong started out in 1980 as a three man operation with 2000 yuan in capital, using scrap parts from a state owned bicycle factory to build stools. It now employs 1000 workers and exports over 10 million dollars a year.<sup>4</sup> Only after the stools sold and capital accumulated did they buy better production materials to produce higher quality

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<sup>3</sup>China Interview (CI) 62094. Hereafter, reference to interviews will be noted as CI plus the interview accession number.

<sup>4</sup>This originally started out as a small hardware processing plant that made nails for a county level state owned enterprise. After losing money on the operation, these three came up with the idea of making stools from the scrap they saw at bicycle factory.



stools. This took two to three years. The first addition to their product line was ironing boards, which relied on the factory's existing technology. For the first 5 years they employed under 25 people and had investments of less than 1 million yuan. Expansion occurred in the later part of the 1980s when the work force grew to 60. In 1991 it increased to 100 and then took off in 1993 with 400, and by 1994 they were up to 1000 workers with a total investment of 60 million yuan.<sup>5</sup>

A private chemical factory in Hangzhou has a similar history. It started out in 1987 with five workers and a loan of 2000 yuan from friends and relatives. Only after three years of production did they construct a factory building and increase their work force and hire advanced technical personnel from local state factories to build up their product line. By 1993 they were up to 200 workers with a total investment of approximately 45 million yuan.<sup>6</sup>

Of the items that Mody and Wang identified as growing significantly during the five year period, only the chemical fibers, pharmaceutical chemicals, and electronics would require a relatively high level of technology to produce. Even so it is unclear how much technology would actually be required because of the range of products such categories encompass. According to *The China Foreign Economics Statistics*, the category "chemical manufactured goods for daily use" includes soaps, perfumes, essential oils, and matches--products that can be produced with relatively little technology.<sup>7</sup> This point was highlighted in an interview with a Hangzhou private chemical factory, which has now grown to a one of the largest enterprises in its township. How could former villagers (i.e., peasants) start a chemical plant?

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<sup>5</sup>CI 7794.

<sup>6</sup>CI 7194.

<sup>7</sup>1979-1991 *China Foreign Economic Statistics* (Beijing: China Statistical Information and Consultancy Service, 1992), p. 162.

The answer was that the so-called chemical products consisted mostly of liquid soap. The entrepreneur explained that he didn't need much technology or sophisticated knowledge. In fact, they didn't even have factory; the business started in their house with little more than a big pot.

If these stories are typical and the technology is relatively simple and requires little capital, then we have a partial explanation of why there could be such massive shifts in product line from year to year--the entry and exits costs are fairly low. But that is not a very complete answer and one that soon may be outdated. Even if the above generalization are valid, one must question how long the simple technology argument will holds in today's increasingly competitive market environment. Small producers may have been able to get away with relying on fairly simple technology because China was just coming out of an economy of shortage. Entrepreneurs and officials who say that Chinese consumers are happy simply to have products on the shelves may be right for the earlier period of the reforms and for the disadvantaged segment of the country today. But already the larger and more successful enterprises realize that the only way to survive is to continue to improve their product design and increase their market share in what they see as an increasingly competitive environment where it is increasingly difficult to make a profit.

China is entering the stage where producers need to sink large investments in research and production design to provide product choice, variation in color, style, etc. Competition is particularly fierce in the export market where quality is a prime consideration. Local officials and producer stress that increasingly success depends on scale and the ability to dominate a market. Those who succeed are those get into the market first, dominate the market, and thus establish their name. One provincial level economic commission official vividly described the competition

among producers as a military battle. If an enterprise wants to dominate a new market they must ready their soldiers, i.e., their products, and when everything is in place, meaning when they have produced sufficient quantities of a product, then they bombard the market with their goods and establish a name for themselves as the leading producer of a certain product, thus undermining the position of potential competitors. How one dominates the market is to produce better service and ultimately better products.<sup>8</sup>

The more fundamental reason to probe more deeply is to get a better handle on where exactly the ideas, expertise, and capital came from, as minimal as they may be. For example, the successful private soap makers cited above turns out not to have been just peasants. One of the brothers in the business was a school teacher. He thus was likely to have some expertise or know where to go to get the needed information. There was also already a large soap factory in nearby Hangzhou. Were there any links between this factory and the private soap makers?<sup>9</sup>

What follows is an examination of some common channels through which enterprises obtain information and technology to facilitate their decision making. These include open channels as well as particularistic channels rooted in personal connections. The issue is which were the most important for spreading information and technology, which explains the synchronization of production across regions in China.

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<sup>8</sup>The move in last few years by enterprises to form groups and make themselves into corporations is a direct response to the prevailing emphasis on scale and technological innovation. A popular view seems to be that the larger the corporation, the more prestigious the firm, the more likely creditors and customers alike will trust and support it. Industries enlarge their scope to cut costs through the profits of scale and to ensure more self sufficiency of inputs, capital, and technology in an increasingly competitive market environment.

<sup>9</sup>Unfortunately, we do not have information on this.

### Product Development and Market Research

Large factories with capital and resources are likely to have fairly sophisticated internal market research and product design departments to interpret and anticipate shifting buyer preferences. The state owned Wuxi textile machine factory, for example, devotes 3-5% of sales to new product research.<sup>10</sup> A state owned Hangzhou television factory has a 100 plus person product research unit with two development research institutes, with a total budget in 1994 of 10 million yuan.<sup>11</sup> Large private companies, such as a Xinhui (Guangdong) furniture factory that exports large amounts of its good, similarly have design departments.<sup>12</sup>

Many factories, however, especially the rural enterprises that have figured so prominently in the production of light consumer goods, lack sophisticated market research and product development teams. The market research team, to the extent that it exists, consists of the factory manager, along with his procuring and sales agents. Such smaller factories gauge the market when they attend sales fairs and goods ordering meetings, the *dinghuo huiyi*, where they can immediately know what supplies and goods are in demand and what the shortages exist. In some cases, entrepreneurs have changed product line or started new factories after discovering hot new items in the course of selling other products, such a roof tile making opening up a forged metal plant.<sup>13</sup>

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<sup>10</sup>CI 62894.

<sup>11</sup>As part developing a strong research and design department, the Hangzhou television factory offers various economic incentives, including the promise of attractive housing to keep its best technical people and attract new college graduates. CI 63094.

<sup>12</sup>The Xinhui company had 6 to 7 people in their design department. CI 7794.

<sup>13</sup>CI 62294.

### Professional Trade Associations and Newsletters

Over the course of the reforms, there have appeared channels for the diffusion of information through openly published sources and professional associations that are accessible to all firms, large and small firms, state, collective, and private. Specialized journals and associations, including those for metal products, chemical products, and even for specialized trades such as cornstarch, now exist. For example, one village that makes cornstarch belongs to the regional cornstarch producers association (*dianfen xiehui*). According to one village which was a member of this association, it pays 1000 yuan a year in fees. This fee covers a monthly magazine that provides information about new products and allows the village to attend an annual meeting. Such trade journals, newsletters, and associations have the potential of rapidly diffusing specialized information about new techniques and new products and processes within an industry over a wide geographical area. In practice, however, their usefulness is limited. For some industries, trade publications are more useful for learning about material markets rather than for finding new products or technology that can be easily copied. For most, they are merely a source of ideas.

What about the honorary associations for successful entrepreneurs (*qiyejia*) from different industries? Established during the course of the reforms, the national and local level associations gather the most successful entrepreneurs in a county, prefecture, province, or the nation. Membership is by nomination and a mark of distinction and economic success. While these associations, like the specialized journals and associations, have the potential of acting as channels for the diffusion of information across localities and industries, their usefulness in this regard also seems restricted. According to those who are members, the interaction

among members is infrequent, limited mostly to the formal meetings of these associations. One successful village party secretary, who had already earned the title of "provincial level entrepreneur (*qiyejia*)," declined nomination to be a "national level entrepreneur" because the fees associated with membership he thought higher than the benefits he or the village would receive.<sup>14</sup>

### Personal Networks

While the above channels can provide useful information to firms, they only explain partially the rapid growth rural industry. The more vital channels are personal networks. For example, one Shandong village, relatively far from any major industrial center, has a thriving chemical industry. This is a not a case of simple technology, they were making industrial chemicals, not soap. How could a rural village develop such a specialization? Where did it get the needed technical expertise? The answer lies in the use of *personal connections and networks*.

Personal networks are a product of historical circumstances and institutional contexts. Many of the networks that have been crucial to the successful development of China's rural economy have grown out the connections forged during the pre-reform period;<sup>15</sup> others grow out of the new conditions of the reform period. The following section describes various ways in which personal networks develop and connections made.

**The Political Transfer of Personnel.** Pockets of technological expertise exists in China's villages because of the Maoist practice of sending intellectual and

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<sup>14</sup>CI 62394.

<sup>15</sup>On the "stickiness" of relationships developed during in the context of Maoist central planning and their persistence in the conduct of business today see, Dorothy J. Solinger, "Urban Reform in Post-Mao China." In Richard Baum, ed., *Reform and Reaction in Post-Mao China: The Road to Tiananmen*, pp. 104-123. New York: Routledge, 1991.

officials to the countryside for re-education. The Anti-rightist campaign of 1957 sentenced intellectuals, scientists, and officials found guilty of political mistakes to live on a long term basis among peasants far from previous work and contacts. The result has been that technical expertise for starting industry may exist locally. The case of the village chemical industry noted above is one such example. A chemical engineer from Beijing who worked with the State Chemical Ministry was banished to this Shandong village during the Anti-Rightist Campaign. Not only do localities use these transplanted experts, but use their former connections to facilitate local development. Although the chemical engineer and his family were forced to live in this village, he kept contact with his old colleagues in Beijing. When the political situation changed and the village began to diversify its economy, he used his connections in Beijing and his old expertise to start the village chemical industry.

In other instances, such as during the cultural revolution, officials and intellectuals were sent down for shorter periods of time. Some lived with peasants in the communes, others were forced to create their own communities.<sup>16</sup> In both cases, ties were formed between the local peasants and upper level officials. Localities may or may not make immediate use of these sent down officials, but in later years after the cadres were allowed to return to their posts in the urban areas, peasants can call on them for help and information.

Downward transfers of officials are still taking place, but unlike the Maoist period, the current downward transfers are of promising middle-level officials destined for higher positions. Provincial and central level officials are sent to serve as deputy county magistrates; sometimes they are sent to villages to gain practical experience and knowledge of the lower levels. They live and work in their assigned area for one or two years. During the course of this training, the personal

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<sup>16</sup>These rural communities made up of sent down cadres were called May 7th Cadre Schools.

relationships between these upper level officials and the localities are cemented. Later, after the officials are back at the province or in Beijing, the locality feels comfortable contacting them for various types of assistance and information. The higher officials, having developed ties with a particular locality, will likely turn to that locality if there are new opportunities to dispense.<sup>17</sup>

**Formal and Informal Interactions among Firms.** The diffusion of information and technology also take place through routine business interactions. The precise way this occurs takes various forms. One of the most common is for village factories to rely on personal connections of native villagers who either work or have relatives who work in state owned enterprises. Relying on these connections, local technicians learn complicated procedures and techniques from their urban counterparts. Ideally, these connections will result in a expert coming to the village as a consultant. The expert may be employed only on the weekends, if he is still working in a state factory, or on a long term basis, if he is a retired state worker. In the later case, the village makes sure to provide lucrative wages and good housing. Relying on the Tianjin connections of villagers was one of the ways that the famous Dajiuzhuang village industries got started.<sup>18</sup>

Over the course of the reforms, institutionalized channels have broadened the personal connections of village and township enterprises. Vertical and horizontal linkages (*hengxiang lianhe*) are established when larger, more advanced firms subcontract assembly or material processing work to smaller, often rural township or village enterprises, but also to private firms. These links have come to serve as a source of the technology that has allowed the smaller firms to become producers and

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<sup>17</sup>I encountered such officials during my interviews in Shandong, Henan, and Jiangsu. They all seem to have maintained close ties with their adopted areas.

<sup>18</sup>CI 11888 and CI 12888.



created a rotation of labor from larger to smaller, from urban to rural.

Former managers of collective or state owned factories start their own business using the skills they learned as an employee. For example, a former cadre decided to start his own private tile factory with the years of expertise gained running a tile factory for the township.<sup>19</sup> Sometimes subcontractors who originally only performed part of the production process expand their scope to become producers of the end product. For example, a Shandong collector of scrap iron who had worked for a number of years for a larger steel mill decided to start his own mill when he saw how steel prices were rising. In another case in the same Shandong county, a private copper scrap collector decided to start his own copper smelting factory. He originally sold his collected material to a large Shenyang factory that turned the scrap into finished copper items.<sup>20</sup>

The numbers engaged in a certain sector also expand as successful producers brings friends and neighbors into the trade. At the local level, particularly within villages, there remains something of a communal spirit--if one person becomes rich from a trade, there is the expectation that he will teach others the trade to allow them to enjoy the profits as well. There are numerous examples of this ranging from raising rabbits to smelting to making furniture. This sometimes has had the unhappy result of flooding the market, as when too many peasants in one area raise rabbits or cultivate oysters for pearls. But sometimes, at least for industrial goods, the new entrants become subcontractors for the original entrepreneur. A private sofa frame maker, for example, led most of his fellow villagers down same path of prosperity. The villagers became the subcontractors for the original sofa frame maker who sold their goods along with his own to his original buyer, a large urban

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<sup>19</sup>CI 62294.

<sup>20</sup>CI 62294.

collective enterprise.<sup>21</sup> The private steel mill in Shandong mentioned above provides employment for numerous small private entrepreneurs who now collect scrap materials for the local factory. Wenzhou, famous for its private enterprise, is in fact a situation where entire villages are part of an assembly line and individual households sell to a local agent that then sells in bulk to the end producer.

Joint ventures are an important subcategory of enterprise interaction through which technology and information is gained. An increasing number of firms, both state and collectively owned are entering into these arrangements to secure both capital and technology as well as enjoying the tax breaks that go along with being a joint-venture. This was evident in a number of the factories interviewed for this study, including a Hangzhou television factory; a shoe factory in Shandong, and a Guangdong car jack factory, to name only a few.

### III. *Decision Maker Networks and the Diffusion of Information*

So far we have examined only the personal connections of individual enterprises. This tells part of the story of the inputs into decision making process. Market and profit determine what is produced, but a central feature of the market in China is that market calculations are not only those of individual producers, i.e., factory owners or managers. Most enterprises in China, unlike in the United States, are not autonomous entities independent of government ties. The major decision makers who decide product choice and initiate enterprises and procure technology include local officials, known generally as cadres, who have administrative control over local enterprises. Enterprises may come up with a product idea, but the actualization of the product often depends on the help of local government officials.

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<sup>21</sup>CI 11891.

The cadre networks are among the most important personal connections through which firms gain information and technology. In many cases, the cadre network is the means for obtaining contracts with the larger state enterprises as well as those contacts that eventually lead to the establishment of joint ventures. Reliance on cadre networks and government support is especially crucial for those smaller factories that do not themselves have the resources for product development and market research. The scrap metal collector, cited above, started his own factory but this was with assistance from county and township officials and because the necessary technology was readily available in his home township. He was fortunate that his area had a long tradition of making small metal tools. Similarly, the copper scrap collector succeeded in opening a copper ware factory, but he did not do this alone. The scrap copper collector had some knowledge of how to make copper ware, but did not have sufficient funds to start a factory. He solved his problem by going into partnership with the village to form a village owned copper smelting factory, of which he was named the manager.

The following sections will show how local cadres use their official and informal connections to help the enterprises find the necessary information, markets, and technology. The wave-like synchronization of production across China is a product of local government involvement and coordination. The contours of local cadre networks shape the diffusion of technology and the choice of product line.

### The Information Grid

The primary nodes of the decision maker networks consists of government officials. In many respects they are the entrepreneurs responsible for the significant growth of China's rural economy.<sup>22</sup> Elsewhere I have developed an

analogy that compares these local cadres to the board of directors of an business corporation. This merger of government and economy characterizes a new institutional development that I label *local state corporatism*.<sup>23</sup> Depending on the size of the corporation, local officials regularly and directly intervene in the day to day affairs of its companies or simply use their network of contacts, resources and information to promote their development. Regardless of the level, each mobilizes its own resources and connections to do what they can to help favored enterprises.

The involvement by government that I point to is neither of the variety associated with Maoist central planning nor is it necessarily coming from Beijing. Government involvement central to the development of China's economy is at the local levels. The term "local level" encompasses all levels of government from the province, prefecture, municipality, county, township, to the village. All of these levels of government are involved in developing their local economies. But because of the smaller size and number of enterprises involved, the lower down the bureaucratic hierarchy one goes, the more direct is the role that government plays.<sup>24</sup> By the time one gets to the village, it is not unusual to find the village party secretary personally intervening in the economic decision making of the village's enterprises.

The precise form of the information grid may vary from locality to locality, but much of the flow of information follows the contours of the administrative

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<sup>22</sup>This point has been made by a number of different works. See, for example, Oi, "Fiscal Reform and the Economic Foundations of Local State Corporatism," *World Politics; Rural China Takes Off: Incentives for Reform* (University of California Press, forthcoming.); see also D. Bateman and A. Mody, "Growth in an Inefficient Economy: A Chinese Case-Study," World Bank, Mimeograph, 1991.

<sup>23</sup>See Oi, "Fiscal Reform," and *Rural China Takes Off*.

<sup>24</sup>See Andrew Walder, "Local Governments as Industrial Corporations: An Organizational Analysis of China's Transitional Economy," unpublished ms., Harvard University, 1994 for a comparison of the size and number of enterprises each level of government manages.

bureaucracy and passes through routine channels of communication within and between levels of government, from the village, to the township, to the county, that then extends to the prefecture to the province and finally to Beijing. This network thus operates within as well as across provincial boundaries using established bureaucratic procedures as well as personal connections. Not all officials are equally plugged into each level, nor do all officials have a direct lead to all nodes. The success of local economic development is dependent on how well local decision makers are connected into this network and how far up and across one can operate. The normal order of communication is to pass information through the successive levels according to the bureaucratic hierarchy, although those well connected can bypass certain levels and go directly to the higher or lower levels.

The embeddedness of this network in the administrative hierarchy allows the branches to automatically multiply the higher ones goes in the bureaucracy. In the rural areas, the county, which is responsible for townships and villages, has the widest network of personal and professional relationships along with the broadest knowledge of developments outside of the county. County government runs its own enterprises but oversees, guides, and facilitates growth in the county as a whole, including that of its townships and villages.

The township plays a similar role but on a much reduced scale. The township acts as the agent for the county, coordinating and implementing county set targets and plans. Like the county, the village has its own enterprises but is responsible for overseeing development of its villages. The township is the first stop in the search for information by villages.

The village is the lowest administrative unit. Like the township above, villages carry out upper level directives and oversee their own development and that of households under their jurisdiction. Villages may have one or many

enterprises, some have none.

Enterprises are at the base of this information grid. Regardless of the level of ownership, state, collective, or private, all enterprises have the potential to benefit from similar types of information that flows from the cadre networks. All enterprises have the potential of being the focus of government attention and benefitting from the information and assistance. The difference is how much help is provided and how direct is the involvement of local officials. In practice, the collectively owned factories below the county have the closest relationship with local government.<sup>25</sup> They have also enjoyed the most rapid growth during most of the 1980s. As Mody and Wang pointed out, production by township and village enterprises accounted for much of the production charted in the 1985 to 1989 period. Much of the discussion and the examples that follows will be focused on this sector of the economy.

#### Channels for the Diffusion of Information

The diffusion of information and technology takes place primarily through administrative channels. There continue to be plans, targets, and meetings, but they operate differently than during the Maoist period. There is still planning, but the closest thing to a central plan is what the Chinese now call an "industrial policy" (*chanye zengce*) that targets specific sectors the government wants to promote.<sup>26</sup>

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<sup>25</sup>The term collectively owned refers to the fact that these factories belong to township and village government--originally the commune and brigade levels with the collective production system.

<sup>26</sup>The degree to which there has been a movement away from central planning is suggested by the debate about whether there should be an industrial policy. The issue, in part, is that some feel that it might look too much like a plan and result in too much government direction resulting in the same problems of central planning. In the years since rigid central planning preference lists have been sent to provinces stating clearly what products the state is interested in developing and consequently supporting.

But this resembles Japan's industrial policy<sup>27</sup> more than the mandatory plans of the Maoist period. Like Japan's industrial policy the targets are general and sectoral in nature.

The State Economic Commission and its successor, the Economic and Trade Commission, hold annual and semi-annual meetings for the provinces to assess past production and the current year's plans for production. Each province receives a set of guidelines about appropriate production, but no detailed plans for production and allocation of materials and procurement of products are issued. Rather economic incentives are provided to encourage producers to engage in certain areas of production, perhaps even for certain products, for the market, rewarding the producer with cheap credit or lower priced production inputs, including land and other hard to procure factors of production.<sup>28</sup> This includes the provision of such inputs as electricity, which is still in short supply. The recent list focuses on the development of infrastructure and energy resources. While suggestive, these lists provide little explanation of the wave-like development. It is unlikely that the synchronization of production can be explained as a result of central coordination.

A more likely explanation is local level planning. Numerous plans and targets continue to be sent at the local levels. For example, the county finance bureau sends revenue plans to each of its townships. The county economic commission sends plans to its county owned industries. The county rural enterprises management bureau sends plans with detailed targets for total production value, tax payment, and income to each of its township economic commissions. Township economic commissions send similarly detailed plans to

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<sup>27</sup>China has received advice from the Japanese on this subject.

<sup>28</sup>The center is attempting to give more direction to production for market sale, in part, as a corrective to the simplistic market mentality that I described above--i.e., to the wave like synchronization--to prevent the stockpiling of goods, such as refrigerators, described above.

their township owned enterprises. Sometimes villages also receive plans from the townships.

While there is planning and local government involvement, the relationship with enterprises and subordinate level again differs from the old strict central planning. The key difference is that the plans are no longer mandatory. If a locality or an enterprise does not want to produce a certain product, the upper levels will not force the issue. As will be clear from the examples below, much of the initiative to start certain enterprises comes from the lower levels. Local governments develop an overall plan, but they also act on ideas from individual townships, villages, and enterprises. While plans remain a part of local development, there are a number of other mechanisms that better explain the process by which information and technology are diffused in China's current economic context.

**Meetings.** Market and technology information is commonly diffused through official meetings. When a locality wants to develop local industry, they call rural enterprise development meetings. These may be county wide or more localized, inviting only selected townships and villages. Township and village officials have recounted meetings in which the county suggests specific products and enterprises for its different townships. Such practices were common in the 1980s. For example, it was at a three day rural enterprise development meeting in 1984 that a Shandong county worked out plans to have one its townships start a tire factory, which has since grown to be the largest business in the township. The meetings was for all 35 townships in the county. During part of the meeting, the 35 townships were divided into small groups, lead by county officials. These small group meetings met for about half a day to solve concrete problems of individual townships.

Prior to these meetings much leg work and discussion has already taken



place, as is common in the Chinese policy making process. A number of examples suggest that entrepreneurial initiative on the part of the county is in response to lower level concerns and sometimes to specific inquiries. In the above example, the township tapped to start the tire factory had previously consulted county officials about the need to convert an unprofitable machine factory to a more profitable product line. The county rural enterprise management bureau had discussed the matter with the township heads and its township's economic commission, which manages all township owned enterprises. The vice head of the township economic commission initiated the idea of a tire factory, after noticing the shortage of tires in Qingdao and having seen a very successful tire factory in Shantou. After the county and township decided that this was the route to go, the vice head of the township economic commission then used personal and professional connections to secure the needed technology. Key was an old classmate who was working in Qingdao but had maintained good connections with his home town of Shantou. It was through this classmate that the township eventually secured the technology and machines from Shantou.<sup>29</sup>

When county officials discover a product that they think is particularly profitable and suited to local conditions, they convene special meetings to bring it to the attention of their townships and villages. In one county, the rural enterprise management bureau organized such a meeting to promote the production of chemical products. The county convened the meeting in one of its townships and had a township official chair the meeting, which was attended by relevant villages that already had chemical plants and those that had an interest in starting such ventures. Notices had been sent to the villages. The same county held similar meetings to promote rug making; again these were held at the township level. The

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<sup>29</sup>CI 62694.

idea to produce rugs stemmed from a township that had been subcontracting production for a Tianjin carpet company since 1986. Once the township started making rugs, a number of private entrepreneurs started to subcontract for the township owned carpet factory. One of its townships is now exporting rugs to the United States.<sup>30</sup>

**Requests for Assistance.** In other instances, a township or a village comes up with an idea for an enterprise or product and then seeks the help of the county officials to carry out the project. Local officials can shepherd the project through the bureaucratic process of licensing and approval by the economic commission. It is not uncommon for local officials to take factory managers or village party secretaries with them to the provincial capital or even to Beijing when developing a project, to get funding or approval.

In addition, local officials can provide technical assistance. For complex projects, local officials will help seek outside expertise. How this is done is illustrated in the following example of a Shandong village cornstarch factory that wanted to expand and produce a highly marketable type of glycerin. The village came across the product in a trade magazine but they knew nothing about the technology or expertise. The village party secretary, who was a representative to the provincial people's congress, heard more about this product when he was in Jinan attending one of the congresses. He discovered that the Wuxi Light Industrial Research Institute was the source of this product. The village party secretary then sought out his connections in the county, seeking out various county officials, including the county magistrate. The project was turned over to the rural enterprises management bureau, which has responsibility for the development of all rural enterprises in the county. One of the vice bureau heads, who often takes the

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<sup>30</sup>CI 62294.

lead in searching out relevant technology, knew about the product and had good connections in Wuxi, having gone there a number times on official business. He then took the village official with him to Wuxi to negotiate with the research institute. Together they succeeded in convincing the research institute that the village, with the help of the county, would be capable of producing the product. A deal was concluded where the village paid 520 thousand yuan in technical fees to the research institute for the expertise, training, resident experts, and equipment. The village hopes to start production in December of 1994.<sup>31</sup>

The ability of local levels to acquire technical assistance has become much more feasible in recent years as specialized research units have been established, often by professors linked to universities or academies. These institutes may provide both expertise and specialized equipment. In some cases, research units seek out local enterprises to produce items that they have designed to make money for themselves and their units.

Increasingly private businesses also benefit from many of the same types of local government assistance. For example, the Shandong tile maker turned steel maker, succeeded only because he could call upon the county rural enterprise management bureau for assistance. He discovered a profitable product, but he lacked technical knowledge that would allow him to produce the product. After approached the county, local officials helped him contact consultants in Shanghai.<sup>32</sup>

To ensure that private businesses can legitimately receive government assistance, some local governments are allowing privately owned enterprises to call themselves collectively owned enterprises.<sup>33</sup> The collective label allows private

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<sup>31</sup>CI 62494.

<sup>32</sup>This private tile maker had developed close ties with those within the county rural enterprise management bureau when he managed the township owned tile factory. CI 62294.

firms to take full and direct advantage of the preferential taxes and credit policies that collectively owned enterprises enjoy. In addition, the collective label also allows companies to acquire land more easily, which in the current context, may be one of the most important benefits once a private company reaches a large enough size that they can secure on their own loans.<sup>34</sup>

**Visits to Models and Study Tours.** First hand information is often gained through the old Maoist practice of visiting successful models, such as the nationally famous Dajiuzhuang outside Tianjin. Many local level officials, particularly those at the county level, take factory managers and township or village leaders to the most industrially developed areas, such as Jiangsu and Guangdong, on investigation tours to study management techniques as well as to see what products can be made. Once they find a product, then use their connections to make that project work in their home locality.

In recent years, local officials have organized trips abroad to gain contracts, buy machinery, and search for products. Heads of successful factories are sometimes included in the delegation. A number of factory managers of the state owned enterprises reported that they were going to the United States to purchase equipment. This included the Hangzhou television factory and the Wuxi textile machinery factory. Foreign companies trying to sell technology to China have begun to invite important prospective buyers to come to their country to see their equipment in operation. Some county level factory managers, even in interior provinces such as Henan, have taken advantage of such opportunities.<sup>35</sup>

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<sup>33</sup>Local governments not only receive taxes from these firms, but commonly local government who have this arrangement with its private businesses also collect a negotiated fee for the use of the collective status. For example, a Xinhui furniture maker that was allowed to call itself a "collective enterprise" paid local officials 50 wan yuan fee in 1993; in 92 they paid 30 wan yuan; and in 1991, the first year of this arrangement, 10 wan yuan was given. CI 7794

Regardless of whether a factory manager goes along, local level government officials are well versed in the production process and technological needs of their key industries. The degree of attention paid by local officials to their important industries was evident in the barrage of technical questions that a county magistrate asked when touring the Sam Adams Brewery in Boston. This is not surprising given the concentration of investment by the county in their local brewery.<sup>36</sup>

While abroad officials scour the stores in search of products that their localities could produce or export. They buy products and take them back to be studied, modified and reproduced. This practice of copying foreign products seems to be particularly widespread in those provinces close to Hong Kong. Officials in Guangdong, including managers of large enterprises, have special visas that allow them to easily and regularly go to Hong Kong to do market research.

**Equipment Supply Corporations.** In addition to long established bureaucratic channels, local governments have established new mechanisms in response to the current market conditions. Some provinces have companies such as the Guangdong Engineering and Equipment Supply Company (set up by provincial authorities) that provide complete machinery systems, including technical assistance. The provision of such service is an economic transaction available to all types of enterprises, private as well as state and collective. The supply company charges a percentage of the total cost of the package as their commission. They do research and procure the equipment.<sup>37</sup>

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<sup>34</sup>CI 7794.

<sup>35</sup>This was factory manager of a very large county owned textile factory.

<sup>36</sup>While this county has a number of other factories, looking at the investments over the last number of years, the bulk of investment has been poured into the brewery, which was originally a

*V. Calculating Profit and Interpreting the Market*

Now that we have identified the sources of information and have a sense of how diffusion of technology occurs, let us move to the remaining part of the puzzle-- why particular products are selected over others. Here we accept that buyer preference and profit are key determinants, but the way that profit is viewed depends on who the decisions makers are. The fact that local governments play a central role in the development of local economies suggests that one can't simply look at the profitability of products for producers. Calculations that go into determining the product mix of a locality may have less to do with profit for an individual enterprise than with the larger interests of local government. One must ask what benefit local governments would receive from the growth of certain types of products as well as whether there is a market and whether it is profitable for the producer.

Examining the list of products that Mody and Wang identified as growing significantly across areas of China, one finds that they were all products that could be produced by rural enterprises, particularly the larger collectively owned enterprises at the township and village levels. This fact alone would suggest two reasons why local governments would want to promote such products. The first is that production of these products by township and village industries would help solve the surplus labor problem created by decollectivization.

Second, because all of these products are likely products for rural enterprises, their production would be fiscally lucrative to local governments. Rural enterprises, after the larger county owned enterprises, yield the greatest share of local tax revenues in many counties. For townships and especially for villages, such

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profit losing fertilizer factory.

enterprises are the primary and sometimes the only viable source of income for local government after the institution of the household responsibility system that took away the right of the collective to the income from agricultural production and returned it to the household, which is now the unit of production and accounting. The fiscal returns from rural enterprises has been the motivating force behind the rapid growth of rural enterprises in China.<sup>38</sup>

To further pursue this line of inquiry, let us examine whether certain products produced by rural enterprises would yield exceptionally high returns for the decision makers--whether for the producers or local governments. One way of getting at this issue is to look at the tax returns and tax breaks for different types of products.

The importance of tax considerations for structuring production is reflected in the 1994 tax reforms. The central state has decided to raise the tax on those sectors of the economy that it wants to cool down. The incentives built into the new tax regulations seem to be having an effect on development strategies and altering the product mix of localities.<sup>39</sup> With the new tax laws, county magistrates must consider anew what products incur the highest taxes as well as which has the biggest markets. Breweries fall squarely into this category of goods. What was once a profitable industry yielding high sales taxes could become a liability because of the 17% excise tax on the production of beer.<sup>40</sup> Counties that have invested in their

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<sup>38</sup>For details on the type of income that local governments receive from rural enterprises see Oi, *Rural China Takes Off*.

<sup>39</sup>The new system has reduced many of the tax breaks. There remains, however, special breaks for promoting new products: tax exempt for one year to promote new technology. This may be one of the reasons why some of the larger firms are investing in R&D.

<sup>40</sup>This is an example where local governments could collect large amounts of sales tax regardless of the amount of profits from the production of beer for the manufacturer. The two taxes are calculated differently.

breweries are now having to reconsider their options. One county has adopted the strategy of producing a higher grade beer and selling it at a higher price to compensate for the new high excise tax on beer. The excise tax is on the volume not the price of beer.<sup>41</sup>

Looking at the list of products that identified by Mody and Wang, one finds that they do in fact fall into a privileged tax category--most are products that could be exported. One would have to look more closely into China's exports for the period, but it would not be surprising to find that the items that grew the fastest and constitute the crest of the waves of growth were also the same items that China exported in the largest quantities during that period. This fact explains why they would be popular in so many different areas across regions of China--all factories that engage in export production receive special tax breaks.

On the surface it does not make sense for local governments to promote the production of products that are eligible for tax breaks because the amount of taxes collected would be less. However, in considering the fiscal implications of various types of production, one must consider non-tax as well as tax revenues. Localities may collect less in taxes, but they have access to the non-tax revenues of its local state and collectively owned enterprises through an array of formal and informal mechanisms, including management fees, surcharges, and the taking of "loans." The ability of local governments to access these extra-budgetary revenues is a major cause of the rapid development of rural collective enterprises.<sup>42</sup> While local governments are happy to benefit from both, the preferable type of revenue is the non-tax, commonly referred to as *extra budgetary revenue*. The reason is that localities must pass a portion of tax revenue to the upper levels under the terms of

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<sup>41</sup>CI 62294.

<sup>42</sup>Oi, "Fiscal Reform," and *Rural China Takes Off*.



the revenue sharing system. Extra budgetary revenues, in contrast, are not subject to revenue sharing; localities have exclusive property rights over such amounts.

### Market Middlemen

Market middlemen fill in the final piece of the puzzle of how items are targeted for production from one year to the next. Factory managers, owners, and local officials are only part of the cast of characters that are involved in determining what products are being produced in China. In the increasingly internationalized environment foreign trade corporations, trading companies, and private agents also play a role in this process. These market middlemen are the most accurate source of information that decision makers have of buyer preference. Buyer preferences are transmitted via production orders and sales contracts. An understanding of their role will thus provide us with a more comprehensive answer to the question of how is it known what to produce.

**Foreign Trade Corporations.** Many enterprises do not produce directly for the foreign market; most until recently did not have the right to export directly; most go through the foreign trade companies. Consequently the foreign trade companies have direct impact on the products being produced and grown. They are the middlemen and brokers who receive the orders and sell to foreign markets.

Foreign trade companies operate in a variety of ways. Some have become sophisticated operations with computerized and up to the minute information on various local, national and international markets. Some have started to give contracts to its raw material producers to ensure a closer match between demand and supply. These companies provide producers with a guaranteed price and assume that risk of a decrease in the market price.<sup>43</sup> Others, unwilling to take

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<sup>43</sup>CI 62594.

such risks, shy away from contracts and rely on "market price" but then sometimes face shortages if their suppliers sell elsewhere. Some put out announcements of the goods that are to be procured, others rely on an established network of previous providers.

For manufactured products, after securing a foreign contract, a foreign trade company will sign contracts with domestic factories that it deems the best suited for the job. Usually, they go with those factories with which they have an established relationship; in some cases factories come to them when hear about export possibilities. It is through establishing relations with foreign trade companies at different levels of the system that village enterprises have been able to cash in on China's growing export market. This extends to those that are relatively faraway from major ports. For example, through the connections of the village party secretary, his village's forging plant has been producing for the provincial trade corporation in Qingdao since 1987. With the new super highway, this village is still about 4 hours from Qingdao.

**Private Trading Agents/Brokers.** In addition to the foreign trade companies there are now a growing group of private agents who act as brokers for individual enterprises and foreign trade corporations. These agents have complex networks that include foreign contracts, official cadre networks, and producers in China. The broker on whom this section is based is a young college educated technician who has taken a leave of absence from a large state owned textile factory to try his hand at business. Because of his background he specializes in buying and selling apparel.<sup>44</sup>

These brokers deal with both local foreign trade companies and with individual enterprises. Unlike the foreign trade companies, these brokers cannot

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<sup>44</sup>CI 63094.

require enterprises to sell through them. Consequently, they are constantly on guard to keep their producers and suppliers apart least they meet, strike up a direct contract, and cut him out of the deal. Their profits are made in a variety of ways, ranging from a simple commission basis to arrangements where they buy low from the producer and sell high to the foreign buyers. Some, such as the agent interviewed, are on permanent commission for foreign companies.

Why would foreign trade companies work through such agents? Their leverage, according to one such broker, is that the foreign companies know and trust him. Therefore, he has the contracts that the local foreign trade companies need. Consequently, he can extract a handsome commission from the local foreign trade company and from the foreign firm who is the end buyer.

Sometimes these agents go directly to the producers, often rural enterprises. The commission in these cases comes directly from the rural enterprise in the form of the mark up between the price he buys the finished goods for and the sales price. He makes a profit and firms, especially small rural who have few contacts, can sell on the export market. The more established firms, on the other hand, shy away from these private agents and say that they need not go through them.

Regardless of their somewhat uncertain position within the current market, these are a group that deserves watching in trying to understand China's shifts production.

## VI. *Conclusion*

Based on qualitative research using interviews with producers and local officials this study has fleshed out how buyer preference and the diffusion of technology occurs in China. The explication of these two processes provides answers to how a wave-like synchronization of production could occur across regions

of China's coastal areas. As Mody and Wang suspected, the key lies in the operation of decision maker networks. We identified local government officials along with producers as the decision makers who determine product line. We found that the information grid is embedded in the administrative hierarchy running from Beijing to villages all over China. We further identified a new group of actors who transmit buyer preferences for the decision makers--the foreign trade corporation and agents who buy from the domestic producers to sell on the foreign market.

As we have filled in the details of how the decision maker network operates, we also found that the technology needed for production was such that it allowed for relatively low cost entry and exit--thus further explaining the speed of the turnover and shifts in production. The operation of this cadre network in China's cellular pattern of industrial production, coupled with the relatively simple nature of the products produced being produced, suggests the need to refine our assumptions about technology and its spatial distribution. We need not assume that production required: 1) special technology that was both scarce and difficult to master; and 2) that this technology exists was in a limited area or the exclusive property of a small number.

Our findings suggests that there may not have been the need in all cases for the diffusion of technology *across* provincial boundaries. Instead of a diffusion of technology across provinces, in many instances it may have been a case of the activating existing technology within provincial boundaries. It is likely that each province had within its boundaries sufficient technical expertise to produce most of the light industrial items that dominated the economy, aside from the sophisticated high tech products. Even within China's villages, the lowest level of the administrative structure, and supposedly the most technologically backward, there exists surprising pockets of expertise due to historical circumstances that disbursed

technical personnel to rural areas of the country. The wave-like synchronization of product development across provinces is thus part and parcel of the lack of regional specialization and diversification.<sup>45</sup>

It remains for future research to probe how different levels of government and different types of enterprises interact and utilize the decision maker networks. Do differences in these interactions explain differences in enterprise performance? Can this explain the differences in the performance of state and collectively owned firms? Moreover, as the market becomes more sophisticated in China, will these networks remain effective? Will the foreign trade companies and brokers come to replace some of the functions of these networks? The limited scope of this study precludes answers to such questions, but hopefully its findings will be suggestive and useful as a guide for future studies on these issues.

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<sup>45</sup>Anjali Kumar, "Economic Reform and the Internal Division of Labor in China: Production, Trade, and Marketing," World Bank. (March 4, 1994)