

THE GREAT WESTERN DEVELOPMENT STRATEGY: CONTROVERSY AND A CASE STUDY OF ZHANGYE, GANSU PROVINCE

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ABSTRACT

This research examines debates over the assessment of the Great Western Development Strategy (GWDS) (xibu da kaifa) through the case study of Zhangye in Gansu Province in Western China. The policies and implementation of the GWDS have caused many researchers to question the sustainability and the long-term consequence of the plans. The major concerns include the diffused and uncertain decision-making processes and the imbalanced approach that put overwhelming emphasis on the construction of infrastructure while ignoring other aspects of the plan, as well as factors that have been proven to be effective instrument in stimulating economic and social development, such as encouragement of private and foreign investment.

Zhangye in Gansu Province provides a good case to assess the above debate because at about the same time when the government was pushing the GWDS, Zhangye received insurmountable pressure from the government to drastically reduce its water consumption so as to help with water reclamation and other related environmental protection projects.

By examining and comparing Zhangye in relation to other districts in Gansu over the time period of early 1990s and early 2000s, we hypothesize that Zhangye's economic and social structure would have experienced more rapid changes compared with other districts, because of the unique situation that Zhangye was in. Our data, however, have failed to support our hypothesis, indicating, at the minimum, that Zhangye has failed to take advantage of the opportunities to go through the transition from traditional and agricultural based economy to a more diversified economic structure.

INTRODUCTION

In 1999, China officially launched the “Great Western Development Strategy (GWDS)” (xibu da kaifa) to develop the inland and the western regions of the country. The campaign was first proposed by the then chairman of the CCP, Jiang Zemin, and was later included into the country’s Tenth Five-Year Plan (2001-2005) for National Economic and Social Development. At about the same time, China was negotiating and preparing for the entry of WTO membership. Logically, it was speculated, China’s Western Region would experience rapid economic and social changes such as a much more liberalized environment to encourage private and foreign investment, a diversified economy to compete in the national and global market, etc. Such changes were particularly anticipated in areas and communities with situations or conditions inductive to the changes, such as Zhangye in Gansu Province.

This paper reviews scholarly discussion on GWDS and the unique situation of Zhangye that we argue could have facilitated the policies and process of Western development strategy and make the implementation of GWDS feasible and realistic. We will then present and analyze data to evaluate the theoretical perspectives so as to assess the GWDS policies.

LITERATURE REVIEW ON GWDS

The major reasons for this campaign, according to both official statements of the Chinese government and scholarly research studies on this topic, included (1) the need to reduce the huge and increasing disparities between the Coastal and non-Coastal Regions in terms of levels of economic development and living standard, which was resultant from the economic boom of the Coastal Region during the reform since the late 1970s; (2) the strong possibility that an underdeveloped inland and Western Regions would not only be the cause of social unrest and instability, but also would hamper the overall economic development of the whole country; and (3) potential political instability due to the resentment or separatist sentiment of China’s ethnic minorities, the vast majority of whom reside in the Western Region, for being among the “losers” in the economic gain in China in recent decades.

In spite of the much enthusiasm by the Chinese government, as well as by some observers from the West (e.g., Sims and Schiff, 2000; Xing, 2004), about the GWDS, numerous researchers have raised doubt and concerns about the feasibility and the prospective sustainability of the campaign (Holbig, 2004; Saalman, 2004; Shih, 2004). The major reasons for the reservation and challenge focus on the following points:

The campaign has been loosely and vaguely defined and conceptualized from the very beginning, and adopted what some researchers refer to as “soft policies”, i.e., policies that are based on diffused and uncertain decisions that are up to various interpretations depending upon the power and position of agencies involved (Holbig, 2004). For example, the areas and regions covered by the plan of the GWDS were not clearly specified and the process to decide the targeted areas seemed irrational and self-contradictory. Following the reform plans designed by the paramount leader, Deng Xiaoping, who initiated China’s economic reform that opened China to the outside world in the late 1970s, the Coastal Region of China consisting of roughly 11 percent of the geographic territory and 37 percent of the population in 1999 (see Table 1) was the direct and often times exclusive beneficiary of economic reform policies. These policies included special treatment such as tax breaks, enthusiastic endorsement of private ownership, and a high concentration of foreign direct investment (FDI). These policies, coupled with several other factors such as more advanced industrial and infrastructural facilities in the Coastal Region, the easy access by foreign investment from the sea, and the history and experience of trade and commercial exchanges with foreign countries, have helped bring about the booming success of the economy of the Coastal Region, resulting in the huge and increasing disparities between Coastal and non-Coastal regions in terms of economic development and living standard, as are shown in Table 1.

When Deng Xiaoping initiated the policies of differential treatment of Coastal vs. non-Coastal Regions, he made it clear that his decision was based on the logic of what economists refer to as “ladder-step” or “echelon” or more commonly “tickle-down” theory (Holbig, 2004). Once the Coastal Region became prosperous, as he had supposedly argued, it could serve as efficient engine to help with the process of trickling down of their wealth and prosperity to the rest of the country, and hence bringing about economic prosperity of the whole country. Following this line of logic, China is dichotomized into Coastal vs. non-Coastal Regions in terms of economic and social development, with the Coastal Region far ahead of both the Central and Western regions, as the indicators presented in Table 1 show. Data in Table 1 also show that while the Central and Western Regions are both far behind the Coastal Region, the Central Region was not doing as well as the Western Region when evaluated by the variables of urban per capita disposable income and average annual wage. Not surprisingly, therefore, the GWDS

initially included as the target areas all the inland areas including both the Central and Western Regions, which contained close to 62 percent of the population and close to 89 percent of the territory of China.

Table 1. MAJOR INDICATORS, A COMPARISON OF THE COASTAL, CENTRAL AND WESTERN REGIONS (1999)

Source: Based on Saalman, 2004.

Major Indicators	National Total	Coastal Region	Central Region	Western Region
Area ('000 sp km)	9600.0	1070	1750	6780
Population (mn)	1,259.1	463.9	419.8	358.5
GDP/Capita (Rmb)	6,546.0	13,061.3	6,290.8	4,483.5
Urban/Capita Disops. Income (Rmb)	5,840.0	7,284.0	4,845.0	5,283.0
Rural/Capita Income (Rmb)	2,210.0	3,344.0	2,331.0	1,604.0
Average Annual Wage (Rmb)	8,346.0	10,300.0	6,755.0	7,819.0

Western Region includes Inner Mongolia, Sichuan, Chongqing, Guizhou, Yunnan, Tibet, Shaanxi, Qinghai, Gansu, Ningxia, and Xinjiang.

Central Region includes Heilongjiang, Jilin, Hubei, Shanxi, Henan, Hunan, Jiangxi, Anhui, and Guangxi.

Coastal Region includes Shanghai, Beijing, Tianjin, Zhejiang, Guangdong, Jiangsu, Fujian, Liaoning, Shandong, Hebei, and Hainan.

It soon became obvious to the central government, the major sponsor of the GWDS, that the non-Coastal Region and population that were initially included in the GWDS were so overwhelmingly large and complex that to include all of them in the GWDS would impose tremendous financial strain on the central government. Through dynamic and sometimes intense negotiation and power struggle between the central government and provincial sovereignties, therefore, the Central Region was eventually dropped from the targeted areas of the campaign (Holbig, 2004). On the other hand, however, several ethnic minority prefectures or districts in the central, north and northeast of China ended up being included in the final program through, again, negotiations and power struggle (Holbig, 2004).

The irrational and arbitrary nature in the delineation process of target areas of GWDS is also reflected in the content, the structure as well as the implementation of the plans. According to documents produced by the State Department of Planning Commission (SDPC) that oversaw the Office of the State Council Leading Group for Western Region Development, the group responsible for the west development program, headed by then premier Zhu Rongji, the main missions of the WDS were arranged in the following order "infrastructure construction, ecological protection, industrial restructuring, and the development of science and technology (S&T), education and human resources" (Holbig, 2004). During the implementation of this plan since 1999, however, infrastructure construction is the only item that has been materialized by receiving disproportionately large amount of attention and financial support from the central government. The consequence is the over-capacity construction of a tremendous amount of highways, railroads, airports, electricity generators and other facilities of infrastructure in the Western Region in recent years, most of which are under utilized or are running losses, particularly transportation-related facilities (Shih, 2004), while other items on the agenda have been neglected or failed to receive the due amount of support and attention. According to Victor Shih, for example, among the RMB270 billion that was poured into the GWDS between 2000 and 2003, about 75 percent were used for basic construction and only less than 4 percent was spent for social service purposes, including poverty alleviation, education, etc. (Shih, 2004).

Such lopsided budget spending and the overall plan with a heavy emphasis on the construction of infrastructure while neglecting or down-playing the other aspects of the strategy have raised concerns among researchers and policy makers about the long-term sustainability and feasibility of the GWDS. Given that up to 80 percent of the fund for GWDS was from the central government, researchers wonder how much longer the governmental is able to sustain financial spending at such phenomenal scale (Shih, 2004, Saalman, 2004). Besides, this type of top-down, one-size-fits-all approach of heavy handedness by the central government in the policies and implementation of GWDS has reminded researchers of earlier efforts by the PRC to develop the West, such as the Third-Line Construction under Mao during the 1950s and 1960s (Saalman, 2004). Among the many similarities between the earlier campaign and the present one is the firm control of the government and the lack of flexibility and stimuli for local governmental and businesses to actively engage in the decision-making and participation of the Western

development. Researchers have pointed out, for example, that the way the GWDS has been implemented has groomed an atmosphere in which local governments in the Western Region develop the attitude of apathy and tend to focus on competing for the governmental fund rather than initiating long-range plans for sustainable economic and social development suitable for local areas and conditions.

Experiences of China's east coast and other regions, as well as other developing countries, have repeatedly shown that endowment of private and foreign investment, technological improvement, economic transformation of traditional and agricultural based structure to industrial and technological development, among many other strategies, are all extremely efficient means to not only improve but also maintain the sustainability of the economy of underdeveloped areas. Even those who enthusiastically endorse the current GWDS plans (e.g., Xing, 2001) make such arguments. Furthermore, studies based on the Western Region in China have found that the development of manufacturing industries that utilizes local resources and labor, particularly that of privately owned, is an important approach to stimulate economy in areas such as the Western Region in China. (Statistical Bureau of Gansu, 2005; UNIDO, 2005). The Chinese government, nevertheless, has shown very little interest to effectively introduce policies and measures to make the Western communities and economy competitive in the national and the international market. Although the item of internationalization or opening up to the global market was later added to the list of missions of GWDS (Saalman, 2004), the government failed to substantially materialize it with concrete and effective policies. This indifference is probably a direct reason for the extremely small and declining share of FDI distribution in Western Region since the reform in China. FDI in the Western Region declined from 4.7 percent of all FDI in China in the 1980s to 3.2 percent in the 1990s (Ogutcu and Taube, 2002), and the Western share of exports continued to decline since the late 1990s (Shih, 2004). Foreign investment or investment by businesses from Hong Kong and other territories in Xinjiang, the most northwestern region in China, suffered significant reduction during the late 1990s (Davison, et al., 2005), partly due to the local government's inability to overcome difficulties and barriers for smooth and continued investment by foreign and overseas businesses.

The debate over the GWDS in China is on going and cannot yet be conclusive simply because the Western development is still unfolding. This study is an attempt to test the critiques and perspectives outlined above through a case study of the city of Zhangye in Gansu Province in Western China. Based on the limited amount of information that is available currently, we hope to shed light on the GWDS, participate in the scholarly debate and hence contribute to the study of development and related issues.

THE CASE OF ZHANGYE

Zhangye is located in the middle of Gansu Province in Hexi Corridor. It is one of the oldest cities in the area with a rich cultural heritage. Historical records show that the earliest settlement in Zhangye region started at least 5000 years ago, and the County of Zhangye was officially established in 111 B.C., the sixth year of the reign of Yuan Ding during the Western Han Dynasty (206-23 B.C.) and it became an important military and economic base in the region, playing a significant role in the famous silk road and other cultural exchanges between the East and the West. During the 13th century the well-known Western traveler Marco Polo passed by Zhangye when he visited the Orient and recorded the prosperous scene of the city. There is still a street in Zhangye that is named after Marco Polo to commemorate this great explorer. The city of Zhangye was elevated from that of county level to that of prefecture level in 2002.

Zhangye has repeatedly made headline news in China in recent years. The latest publicity, and arguably one of the most significant as well, has to do with the special role it has been playing in China's efforts to solve water shortage problem and improve the ecological environment. Zhangye is one of three cities that the Department of Water Resources in China has selected across the country in recent years as the sites for a pilot study to prepare for a long-term and nation-wide water-conservation project. (The other two cities are Mianyang in Sichuan Province that has relatively rich water resources in the Southwest and Dalian in Liaoning Province that has a severe water shortage problem in the Northeast). Among the three selected cities, Zhangye took the lead in the experiment and has achieved, according to official Xinhua publication, impressive and positive results in water conservation (Li, 2006), which makes Zhangye the pioneer city in the water-reservation movement that China is preparing to launch in the near future (CCTV News Room, 2005). The focal point of Zhangye's water-reservation accomplishment involves the Heihe River water-conservation project.

Heihe, the second largest interior river in China, originates from the Qilianshan Mountain Range that lies to the east of Qinghai Province and west of Gansu Province, both in Western China. Although the river

eventually flows into the lake system named Juyanhai in Inner Mongolia Autonomous Region to the north of Gansu Province, it initially flows towards the southeast direction but then takes a huge U-turn, within the region of Zhangye, before heading to the north (Gansu Ethnic Affairs Committee, 1989). Zhangye, therefore, is embraced and nurtured by Heihe River, and depends upon it for water resources for thousands or even more years, particularly in agricultural production, the main component of Zhangye's economy.

As one of the major food producing districts in the province, Zhangye provides 35 percent of the total grain production of Gansu Province with only 5 percent of cultivated land in the province. Over consumption of the rich water resources is the major reason for the abundance of food production, since food and other agricultural production consumes at least 95 percent of the total water usage in Zhangye (Feng and Ma, 2004). According to Xinhua news report, Zhangye's output of food production based on every one unit of water consumption was only 1/6th of that of the national average prior to 2002 (Feng and Ma, 2004). In other words, it is fair to say that the success of Zhangye's agricultural economy was made possible by over-utilization and wasteful practice of water resources.

The over-consumption and abuse of Heihe River water resources over time have resulted in serious environmental and ecological consequences. During the 1960s and early 1990s, two major bodies of water in the Juyanhai Lake system in Inner Mongolia, i.e., the West and East Juyanhai Lakes, became desertified due to the reduction and ultimately the termination of water flow from Heihe River (CCTV News Room, 2004). Then, starting from the end of the 1990s, northern China experienced increasingly severe sandstorm attacks that affected more than half of China's territory, and generated concerns in both China and the international community regarding China's increasingly serious environmental problems (Saalman, 2004). The then Chinese Premier, Zhu Rongji, was quoted as lamenting that unless the desertification that was found to be the direct course of the frequent sandstorms that attacked Beijing was under control, China would probably have to relocate its capital (Holbig, 2004).

In February 2001, a strategic plan was produced at the 94th meeting of the State Department of the central government in China to address the issue and need of water conservation in Heihe River so as to restore water resources in the Juyanhai Lake system and subsequently ease the desertification in northern China. Since 95 percent of all the cultivated land and 91 percent of all the human population along the Heihe River region are concentrated in Zhangye area (CCTV News Room, 2004), Zhangye naturally became the main target of the Heihe River project, and was consequently designated, in March 2002, the leading city in the pilot study of water conservation.

Under such tremendous pressure, Zhangye had no choice but to comply with the instructions from the top to limit water usage, particularly in agricultural production, so as to ensure the restoration of water resources in Juyanhai Lake system in Inner Mongolia hundreds of miles down the Heihe River. Zhangye's effort of water conservation emphasized on two major approaches, according to the head of Zhangye government who was interviewed by Xinhua news, and both have turned out to be extremely effective in controlling water consumption. One is water usage regulation and rationing among farmers as well as companies, businesses and residents, and the other one is replacement of crops that are highly water-dependent (such as rice and wheat) with those that are relatively water-efficient (such as corn) (CCTV News Room, 2004).

Based on the information published by governmental news channels and the Department of Water Resources, Zhangye's efforts are hailed successful. Zhangye has not only fulfilled but has exceeded the assigned quota of water reservation, enabling the saved water to flow to the natural destination of Juyanhai Lakes. Less than a year and a half after the State Department meeting to address the Heihe River issue and less than six months after the designation of Zhangye as the first site of water-conservation experiment by the Department of Water Resources, water that was reserved and saved by Zhangye was channeled back to Juyanhai Lakes in the summer of 2002.

Zhangye's accomplishment in and contribution to China's water-conservation and environmental-protection efforts are astonishingly impressive, as we have conveyed above. By saving enough water in such a short period of time so as to realize the restoration of water resources in the two lakes in Juyanhai and hence help control desertification in China, Zhangye has also made a special contribution to China's overall economic and social development. The question we would like to ask in this paper, though, concerns the gain and benefit that Zhangye has obtained in the process and as a result of its generous and, in a way, self-sacrificing efforts in water-conservation. It could not have been easy for the local government in Zhangye to have to fulfill the water-conservation quota that was assigned to them from the higher-up authority with such a short time limit; and it must be even more difficult for individual farmers, households and businesses to have to alter their economic and business practices that they

have followed for generations, such as drastically switching the type of crops they grew in order to save water. What is even more intriguing is the fact that the realization of the desperate need for Zhangye to conserve water and the determination by the government to make it happen all took place at around the same time when China was implementing the GWDS and negotiating and eventually obtaining WTO accession. Logically, the combination of all these factors would have created a golden opportunity for the government at all levels to reshape Zhangye's economic structure by, for instance, drastically reducing the agricultural component and encouraging manufacturing and other types of economic activities. In the following section of this paper, we present longitudinal data about the change of Zhangye's economic and social characteristics between 1992 and 2002/2003 to evaluate the critiques we have discussed.

DATA ANALYSIS

The data in the following tables are based on Gansu Statistical Yearbooks for the years of 1992, 2003 or 2002 if the data for 2003 are not available. A comment needs to be made about the selection of years of the data that are presented. In order to ensure validity of measurement, it is desirable to present data for the time period right before the GWDS implementation and Heihe water-conservation project, which coincidentally both happened to be around the end of the 1990s. Besides, it takes time for economic and social changes to take place, be measured and made available. It is therefore most ideal to evaluate data that reflect the most current situation, say 2005, in order to compare changes that have taken place in Zhangye. Due to the fact that data for the end of the 1990s and recent period other than 2002 or 2003 are unavailable to us, we are presenting data for 1992, 2002 and 2003.

Zhangye is one of 14 administrative units at prefecture level that we call districts in Gansu Province, including the provincial capital of Lanzhou. Since Lanzhou is distinctly different from all the other districts in terms of economic structure and performance, we have excluded it, resulting in 13 cases in our analysis.

Table 2. MAJOR ECONOMIC INDICATORS FOR THE 13 ADMINISTRATIVE UNITS OF GANSU PROVINCE, CHINA, 1992 AND 2002/2003.

Source: Author

	1	2	3	4	5	6	7
Districts	Pop02	GDPp03	GDPch	Fdpc02	Fdchan	Areachan	Grainchan
			92/03	Klgram.	92/02	92/02	92/02
Jiayuguan	16.83	18337	262.2	29.14	-112.86	-21.46	-79.74
Jinchang	45.85	11775	152.6	428.20	33.20	-14.33	-23.63
Baiyin	174.68	6028	317.5	311.65	74.65	-32.88	-34.89
Tianshui	343.2	3136	250.4	203.21	-45.79	-37.49	-39.31
Jiuquan	96.2	11066	324.3	341.89	-373.11	-34.65	-68.58
Wuwei	193.45	4658	462.6	439.79	64.79	-25.36	-37.62
Zhangye	126.91	6574	378.5	620.22	-63.78	-32.97	-40.43
Dingxi	296.15	1885	264.6	252.28	6.28	-34.93	-41.46
Longnan	268.72	1929	213.7	280.90	15.90	-31.45	-35.13
Pingliang	222.18	3618	411.0	388.55	62.55	-36.10	-36.96
Qingyang	254.8	3506	266.0	414.33	66.33	-33.32	-39.13
Linxia	190.79	1940	270.9	236.70	23.70	-34.75	-40.40
Gannan	66.43	2789	206.8	144.82	9.82	-30.94	-35.78
Average	176.63	5942	290.9	314.74		-30.82	-42.54

1: Pop02: Population in 2002, 10,000 persons

2: GDPp03: GDP per capita, RMB10,000 yuan, 2003

3: GDPch: Percentage change of GDP per capita, 992 to 2003

4: Fdpc02: Food production per capita in kilograms, 2002

5: Fdchan: Change of food production per capita in kilograms, 1992-2002

6: Areachan: Percentage change of overall sown areas, 1992-2002

7: Grainchan: Percentage change of sown areas for grain production, 1992-2002

Data for 1992 and 2002 are based on Statistical Yearbook of Gansu, 1993 and Gansu Yearbook, 2003. Data for 2003 are based on Introductions to and reproduction of sections of 2004 Gansu Yearbook by various authors, published on line, accessed in April 2006.

As the data in Table 2 suggest, Zhangye's population size of 1.270 million was a little less than the average among the 13 districts in the province in 2002, and the economic performance in Zhangye was just slightly above average in 2003 measured in terms of GDP: its GDP per capita ranked number 4 among the 13 districts. Table 2 also shows that Zhangye's economy developed rapidly between 1992 and 2003, more so than the average districts in the province. The GDP per capita in Zhangye experienced a 378.5 percent increase during the 11 years between 1992 and 2003, surpassed only by Wuwei (462.6 percent increase) and Pingliang (411 percent increase).

Agriculture has apparently played a significant role in the above-average performance of Zhangye's economy. Zhangye was one of the leading grain providers in the province in both 1992 and 2002 and was one of the four out of the thirteen districts that experienced a reduction of food production per capita. The reduction of grain production per head in two of these four districts, namely, Jiuquan and Jiayuguan, however, was about six and two times respectively more than the reduction in Zhangye. While Zhangye's grain production per capita declined from 684 kilograms in 1992 to 620 kilogram in 2002 (a reduction of close to 64 kilograms), Jiuquan produced 373 kilograms less food per capita from 715 kilograms in 1992 to 341 kilograms in 2002. In other words, the top leading food provider in the province was Jiuquan that was followed by Zhangye in 1992, and the difference was only 31 kilograms between the two districts. But by 2002, Zhangye ranked number one in terms of amount of food produced per capita in the province, and it produced more than 40 percent more food per capita compared with the district that ranked the second in terms of food production per capita in 2002. Wuwei, which is another large district just to the east of Zhangye and the second largest food producing district in the province, only produced close to 440 kilograms of food per capita in 2002.

Two other indicators to show the change of agricultural structure are (1) amount of cultivated land and (2) the change of usage of the cultivated land from the traditional grain production to a diversified range of crops in various districts. Changes of these variables reflect the extent to which a community makes the transition from an agricultural and traditional economy to a more diversified economy that emphasizes non-agricultural economic component and/or farming of products with more cash values such as herbs, vegetation, etc. All the 13 districts in the province significantly reduced the land that was used for overall agricultural production. The change ranges from more than 14 percent decrease in Jinchang to more than 37 percent decrease in Tianshui with a mean of 29 percent over the ten-year period. Zhangye's sown area was reduced by almost 33 percent, slightly more than the provincial average, which suggests that Zhangye is a normal case in the province in terms of changing its economic structure from traditional agriculture and farming to non-farm economy.

Data in Table 2 also show that sown area devoted to grain production experienced more reduction compared with the reduction of overall sown area in all the districts. Jiayuguan, the smallest district in the province, for example, reduced the area for grain production by almost 80 percent, while reducing the overall sown area by about 22 percent, suggesting that significant efforts were made in Jiayuguan to reduce the traditional agricultural structure that depended on grain production. Another example is the district of Jiuquan, the largest district in the province in terms of geographic area located in the most western part of the province. Jiuquan reduced its overall sown area by about 35 percent, but it managed to reduce its sown area for grain production by almost twice the proportion: more than 68 percent. Zhangye, while reducing the overall sown area by about 33 percent as was mentioned above, reduced its sown area for grain production by approximately 40 percent, which is almost the average (41 percent) amongst all the districts. This figure, once again, suggests Zhangye's normal-range position when it comes to diversifying its economy, particularly agricultural economy.

Table 3. PERCENTAGE AND CHANGE OF OUTPUT VALUES OF FIRST, SECOND AND THIRD ECONOMIC SECTORS IN THE 13 DISTRICTS IN GANSU PROVINCE, CHINA, 1992 AND 2003.

Source: Author

	1	2	3	4
Districts	Prima92/03	Second92/03	Third92/03	Nonstate92/03
	%/(change)	%/(change)	%/(change)	%/(change)
Jiayuguan	4.0/2.8(-1.2)	84.0/81.4(-3)	12.0/15.8(3.8)	9.9/
Jinchang	7.2/9.8(2.6)	67.7/71.9(4.2)	25.1/18.3(-6.8)	22.6/
Baiyin	18.8/13.9(-5)	63.0/52.7(-10)	18.2/33.4(15.2)	12.5/
Tianshui	33.0/18.0(-15)	38.7/40.5(1.8)	28.4/41.6(13.2)	17.1/31(13.9)
Jiuquan	32.7/20.6(-12)	39.9/42.9(3)	27.4/36.5(9.1)	20.9/
Wuwei	45.4/30.2(-15)	26.5/33.4(6.9)	28.1/36.3((8.2)	30.4/42.8(12.4)
Zhangye	49.9/34.9(-15)	21.3/33.1(12)	28.8/32.0((3.2)	33.2/38(4.8)
Dingxi	54.3/41.7(-13)	21.6/25.6(4)	24.1/32.7(8.6)	22.6/
Longnan	46.5/33.5(-13)	24.6/30.0(5.4)	28.8/36.8(8)	33.6/32.2(-1.4)
Pingliang	45.3/25.5(-20)	28.6/37.7(9.1)	26.0/36.8(10.8)	34.6/
Qingyang	47.0/20.9(-28)	43.0/44.6(1.6)	35.3/34.4(-.9)	21.2/34.1(12.9)
Linxia	40.3/32.4(-8)	33.5/32.4(-1.1)	33.2/35.6(2.4)	12.6/41.4(28.8)
Gannan	42.8/36.6(-6)	21.0/23.7(2.7)	40.3/39.8(-.5)	19.5/

1. Prima92/03: Percentage and change in output value of primary economic sector, 1992-2003

2. Second92/03: Percentage and change in output value of second economic sector, 1992-2003

3. Third92/03: Percentage and change in output value of third economic sector, 1992-2003

4. Nonstate92/03: Percentage and change of output value by non-state ownership sector, 1992-2003

Data for 1992 are based on Statistical Yearbook of Gansu, 1993. Data for 2003 are based on sections of 2004 Gansu Yearbook published on line and accessed in April 2006.

Table 3 presents two sets of data. The three columns after district names show the proportion of output value of primary, secondary and third economic sectors respectively in the 13 districts for 1992 and 2003 as well as the changes that occurred over the 11-year period. All the districts except one experienced negative growth in output values by the primary economic sector. The negative change of GDP contributed by the primary sector in Zhangye is that of middle-range. At least 4 districts experienced more reduction of GDP by the primary economic section compared with Zhangye. As far as the secondary economic sector is concerned, most of the districts except gains and a three experienced losses in the proportion of output value measured by GDP. Zhangye ranks number 1 among all the districts that saw the positive growth of proportion of GDP by the secondary economic sector. However, Zhangye's ranking fell substantially in terms of the positive changes contributed by the third economic sector to the overall GDP. Eight out of the 13 districts saw more substantial positive gains compared with Zhangye by the third economic sector between 1992 and 2003, indicating that although the change of Zhangye's third economic sector was positive, yet it did not achieve nearly as rapidly a gain as that of many other districts in the province in developing the third economic sector.

Finally, the last column in Table 3 presents the proportion of GDP by non-state owned economic sector in 1992, and in 2003, as well as the changes between them, if the data for 2003 are available. We were able to find the figure of non-state contribution to GDP in 2003 for only 6 districts with Zhangye being one of them. Although Zhangye's non-state contribution (38 percent) to the economic output value in 2003 ranks number 3 among the 6 districts we have information for, Zhangye's gain of 4.8 percentage points was only next to the last among the 6 districts. In other words, the positive change of Zhangye's non-state economy is only more rapid than Longnan that is the only district out of the 6 that experienced a loss in the change of non-state contribution to the economy.

CONCLUSION

In this paper we first reviewed the literature concerning the controversy over the GWDS in China since the late 1990s, particularly the challenges raised by researchers about the sustainability of the plan. We then discussed the unique situation that Zhangye was in because of the instrumental role that it played in Heihe River water reclamation during the time when the GWDS was implemented and China's WTO entrance was obtained. The very end of the 1990s and the early 2000s saw several events that were all immediately relevant to Zhangye: (1) the urgent need perceived and demand by the central government that Zhangye radically restrain its water consumption so as to achieve Heihe River water restoration, (2) the push for the GDWS by the central government and (3) the anticipated investment liberalization and opening up of China's West to the world market as a result of China's WTO entrance. The combination of all these events, as we have hypothesized, would affect Zhangye's economy and social environment in such a way that Zhangye would experience a rapid economic change and growth such as the higher share and rapidly growing non-state economic sector and secondary and third economic sector, and at the same time the drastic reduction of traditional farming and agricultural component in its economic structure.

For the most part, the data that we have presented have failed to support our hypothesis. By the years of 2002 and 2003, Zhangye was a very "ordinary" district in Gansu Province in terms of changing and diversifying its economy. If anything, Zhangye seemed to have increased its share of grain production for the province. Besides, its move towards the increase of private investment and the economic component based on technological development does not seem very impressive either. All these results seem to suggest that Zhangye have failed to grasp the opportunities and favorable conditions to improve its economic and social environment.

As we have pointed out, among the limitations of our research is the fact that we have failed to obtain data that measure more recent trend and changes of Zhangye and the other provincial districts. We have every intention to make up for this shortcoming in our future research and engage in further search to assess the GWDS and study its impact on individual communities and areas in Western China.

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