

ECONOMIC RECOVERY AFTER THE 2001 GUJARAT EARTHQUAKE: MARKET DYNAMISM AND PUBLIC POLICY

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SUMMARY

In this paper, we explore the manner in which the Gujarat earthquake of 2001 affected the regional economy, by primarily focusing on the market dynamism and the manner in which it aided the response mechanism and by analyzing the public policy adopted for the resurgence of the economy. The earthquake caused a general price level increase, which is attributed to the economic boom triggered by reconstruction and new investment. With regard to the latter, thus far, the tax incentives provided by both the national and the state governments have been successful.

INTRODUCTION

The Gujarat earthquake of 2001 is noted in the history books as one of the greatest disasters, which killed approximately 20,000 people and caused property damage to the extent of Rs. 9,900 crores (2.1 billion USD)¹. As is true in the case of major disasters, economic recovery was one of the most important issues with regard to the affected area.

The purpose of this paper is to explore both the manner in which the affected market economy responded to the disaster and the public policy adopted by the government affected the market dynamism.

The first section of this paper analyzes the impact of the earthquake on the overall economy. Various economic indicators have been used to assess the impact of the earthquake. The major finding presented in this section is that the earthquake generated a boom in the secondary (manufacturing) and tertiary (services, retail, finance, etc.) sectors, which did not happen in the Great Hanshin-Awaji Earthquake of 1995. We explore the conditions that triggered the economic boom after the earthquake.

The second section analyzes the policy arrangement for economic resurgence in Kutch through innovative investment-promotion policies. The most significant and distinct policy is the tax incentive scheme to attract new investments to the region, and this appears to be successful. We explore several reasons and historical/political contexts

that enabled the policy to be effective. This would be a valuable lesson for the economic recovery policies of prospective disaster-affected regions.

ECONOMIC IMPACT

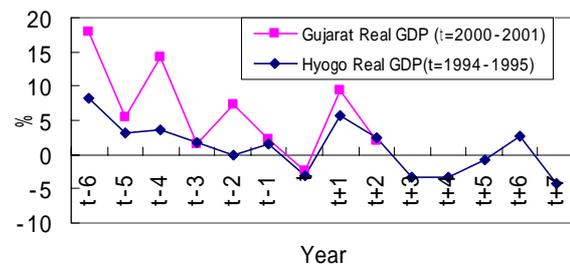
GDP Movement

Horwich² has concluded that “Natural disasters in large advanced economies tend not to significantly reduce current aggregate output or induce an associated rise in the general price level” because “it is the capital stock, not output, that is directly reduced by the disaster” and “resource substitutions occur.”

Figure 1 compares the growth rate of GSDP (Gross State Domestic Product) of Gujarat with the GDP growth rate of Hyogo Prefecture, where the Kobe earthquake of 1995 occurred. Both the lines are standardized at the year of the earthquake as t. The economic trends before and after the earthquake are very similar; the downward trend prior to the earthquake, negative growth in the year of the earthquake, the peak in the following year, and the subsequent decline.

However, the factors associated with such an economic trend are different. One significant difference between Gujarat and Hyogo lies in the sectoral composition of the GSDP and GDP. According to the statistics of the year 2001-02 for Gujarat, 18.4% of the contribution to GSDP is that of the primary sector, such as agriculture, forestry, logging, and fishing; 37.5% was contributed by the secondary sector, such as manufacturing, electricity, gas, and water supply; and 44.1% was contributed by the tertiary sector, such as trade, transportation, communication, and other services. However, the contribution of the primary and secondary sectors to the Hyogo GDP was comparatively less—only 0.7% from the primary sector, 38.0% from the secondary sector, and contrarily, 61.3% from the tertiary sector in the year 1996-97. Therefore, the stories underlying these two similar economic trends should be different.

Figure 2 shows the sectoral contribution to the GSDP in Gujarat. The production in the primary sector solely decreased, while the production in the other sectors increased. It is evident that the primary sector shrank the GSDP growth in 2002-03. This was not



Note: The values for Gujarat in t (2000-01) and t+1(2001-02) are provisional, whereas the value in t+2 (2002-03) is a quick report.

Figure 1: GSDP and GDP growth rate in Gujarat and Hyogo

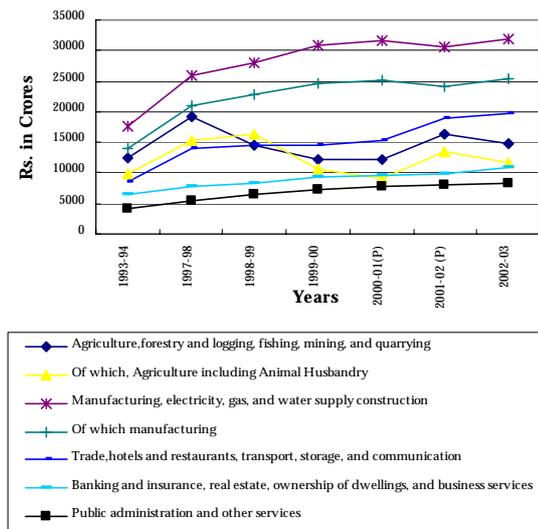


Figure 2: Sectoral Contribution to GSDP in Gujarat

because of the earthquake but due to the scarcity condition caused by the lack of rainfall during the monsoon. The production in the secondary sector decreased in 2001-02 because of the earthquake; however, it recovered in the following year. The tertiary sector has been growing every year. It appears that the earthquake accelerated the growth rate in 2001-02. This is probably because several persons and projects associated with reconstruction were committed to the Gujarat State.

In the case of Hyogo, neither the secondary nor the tertiary sector had grown as compared to these sectors in Gujarat. The negative growth in t+3 and t+4 was primarily because of the contraction of the secondary sector. Contrarily, the tertiary sector showed a steady growth, although it had been affected in the year of the earthquake and in the subsequent year. The contraction of the secondary sector is primarily caused by the macroeconomic conditions. During the 1990s, Japan experienced deindustrialization, in which manufacturing bases shifted out of Japan due to the increasing strength of the yen and the cost reduction pressure.

Price movement after the earthquake

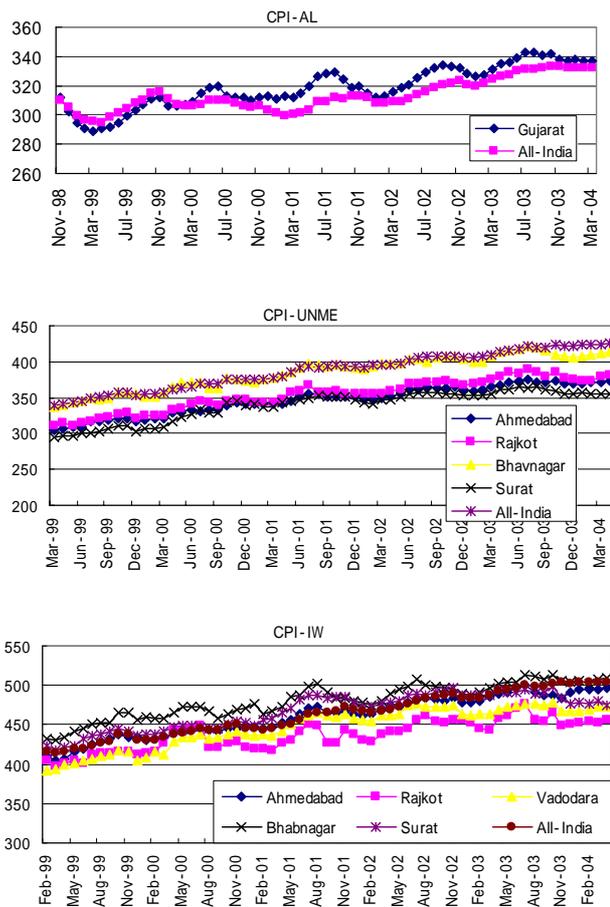


Figure 3: Consumer price indexes in Gujarat

In the assessment report of March 2001, the World Bank¹ has concluded that there has not been, and is not expected to be, a perceptible effect on prices in the disaster area. This view is along with the conclusion of Albara-Bertrand³ that disaster does not induce inflation. We attempted to monitor the prices in several cities of Gujarat, such as Ahmedabad, Rajkot, Vadodara, Bhavnagar, and Surat. Although no substantial damage was observed other than in Ahmedabad and Rajkot, it is worth investigating the other cities since there must have been some significant impact of the earthquake if the reconstruction demand had spread to these cities. Figure 3 shows the movements of the three types of CPI—for industrial workers (IW), for urban non-manual employees (UNME), and for agricultural laborers (AL)—from April 1999 to April 2004. With regard to the CPI-AL, the figures for entire Gujarat were adopted due to the non-availability

of city-wise statistics.

The effect of the earthquake on the CPI-AL appears to be obvious. Prior to the earthquake in January 2001, the indices of Gujarat and those at the All-India level had been almost equivalent, whereas after the earthquake, the index of Gujarat has been almost higher than that of India. Although the other two types of indexes have had a less evident impact than the CPI-AL, the regression analysis clearly shows the impact of the earthquake. The prices in each city in Gujarat were regressed on the average prices at the All-India level to eliminate the nationwide effect, and dummy variables were created for the year subsequent to the earthquake in order to identify the effect of the disaster. These results are listed in .

Table 1: Regression Results—Testing the Earthquake Effect on CPIs

Types of CPI.s (Sample Period)		CPI-IW (Feb99 to May 04)					CPI-UNMW (Mar99 to May04)				CPI-AL (Nov98 to Apr04)
		AHM	RAJ	VAD	BHA	SUR	AHM	RAJ	BHA	SUR	Gujarat
Constant	Coef.	38.780	157.617	39.264	132.161	116.427	38.757	27.271	35.250	38.738	-78.794
	t-stat.	4.076**	8.511**	2.553**	9.55**	6.872**	7.291**	3.472**	4.207**	3.11**	-3.925**
All India	Coef.	0.910	0.603	0.877	0.751	0.750	0.793	0.841	0.901	0.771	1.265
	t-stat.	44.482**	15.159**	26.525**	25.242**	20.606**	58.147**	41.711**	41.917**	24.109**	19.82**
Dummy (Feb01 - Jan02)	Coef.	4.362	-1.5698	12.145	5.867	14.807	1.991	1.225	3.427	8.670	9.275
	t-stat.	2.968**	-1.570	5.112**	2.744**	5.657**	2.227**	0.928	2.432**	4.138**	5.245**
R-Squared		0.970	0.792	0.921	0.913	0.879	0.983	0.967	0.967	0.909	0.864
Number of Obsevation		64	64	64	64	64	63	63	63	63	65

Note: * indicates 5% significance

AHM: Ahmedabad, RAJ: Rajkot, VAD: Vadodara, BHA: Bhavnagar SUR: Surat

With regard to the CPI-IW and CPI-UNMW, a positive significant impact of the dummy is observed in all the cities except Rajkot. The CPI-AL also displayed a significant positive impact of the dummy variable. It should be concluded that there was a general price increase in the year subsequent to the earthquake in Gujarat.

However, some questions persist, such as the reason why Rajkot, which is one of the cities nearest to the affected area, showed no significant impact on prices, or the reason why Surat, which is a city rather distant from the affected area, showed the largest price increase among the investigated cities. One possible answer is that this price increase cannot be directly associated with the reconstruction works because the price increase is not observed in construction materials and wages but in commodity prices. As we have seen in Figure 1, Gujarat experienced a rapid growth at a rate over 10% in 2001-02, which was primarily achieved by the expansion of the tertiary sector. It is plausible that the increased demand in the tertiary sector had generated an inflation gap in the state economy and raised the prices of commodities. Therefore, we could conclude that the price increase was not directly caused by the reconstruction works; rather, it was caused by the economic boom associated with the rehabilitation work after the earthquake.

INDUSTRIAL RESURGENCE AND ECONOMIC DEVELOPMENT – PUBLIC POLICY IMPLICATIONS

Kutch district, which was the most affected region, has several disadvantages when it comes to attracting industrial investment. It is located in the far-western region of India and is relatively distant from the major markets such as Mumbai and Delhi. The

transportation cost is considerably higher and gets added to the cost of commodities/raw materials. Water scarcity is a major problem in Kutch as it is essential for most industries. The third major disadvantage is the lack of facilities for waste disposal and the emission regulations. The soil of Kutch is highly vulnerable to salinity ingress, which can cause major problems for industrial equipments. Being a border district sharing its boundaries with Pakistan has also affected industrial development in this district. Due to the aforementioned and several other problems, mostly geopolitical in nature, the district has been unable to attract industrial investment. Characterized by a vast expanse of desert and very scanty rainfall (approximately 350 mm annually), this region's economy is extremely fragile. However, this region is bestowed with a good coastline, which has enabled considerable development in shipping and allied businesses.

The Industrial Outline and the Damages to Industries

The industrial zone set up in Kutch is not very extensive since the region has always been characterized by water scarcity and lack of infrastructure. However, Kutch has good mineral deposits, and industries related to lignite, bauxite, bentonite, etc., have flourished. The Free Trade Zone at Kandla (now a Special Economic Zone) has also been generating a considerable amount of business.

There are a total of 5313 registered small scale industries¹ (SSIs) in the region, most of which are either mineral-based, salt-production based, engineering work-based, or servicing-based industries. The total capital investment in these SSIs (as of March 2003) is approximately Rs. 953.40 million, or US \$ 21.1 million, and they employ approximately 31,330 people⁴. Most of the medium and large scale industries are located in the Kandla Special Economic Zone. The major products of these industries are ready-made garments, drugs, castor oil, steel utensils, electrical items, etc. There exist a total of 47 medium and large scale units in the district.

With regard to the damage caused by the earthquake, the industrial sector accounted for a total of Rs. 900 crores or US \$ 191 million. Out of a total of 5313 SSIs, approximately 3000 were damaged. Approximately 20 medium to large scale industries were damaged, and thousands of cottage industries were affected. It was being perceived as a doom for industries in Kutch since the businesses there were relatively small and the damage was rather extensive.

However, the state government carved out an extremely attractive package of tax holidays and incentives to promote industrial investment in Kutch in order to stabilize its economy. The following section attempts to analyze the initial response to the rehabilitation and investment policies adopted by the state government.

Compensation Packages and Incentives

Immediately after the earthquake, the government announced several compensation

¹ Small Scale Industries have been defined as industries in which the total capital investment for plant and machinery is up to Rs. 1 crore (10 million)

packages for the damaged industrial units, cottage industries, and also trade and commerce units.

The damaged units were provided with cash assistance, wherein 60% of the damage cost would be covered by the government, while 40% would be provided by the entrepreneur. An incentive system was also introduced for investments in plants and machinery. A 5% interest subsidy was granted to industries that availed loans from banks. In the case of self financing, 10% of the total investment was subsidized. All these incentives were introduced after the earthquake. The total amount disbursed for industrial units, as of March 2003, was Rs. 4744.83 lacs for 482 units under the subsidy scheme, while it was Rs. 605.60 lacs for 112 units under the interest subsidies.

Investment Promotion Policies

After the earthquake, the state government was determined to rebuild the region in a better manner. In an attempt to revive as well as accelerate the economy of the region, in collaboration with the central government, it introduced several incentives for industries to invest in Kutch. These were termed as “Tax Holidays,” under which various excise and sales tax exemptions were given for large capital investments for a period ranging between 5 and 10 years.

Exemption in Excise Duty

In the Ministry of Finance vide notification No. 39/2001-Central Excise dated July 31, 2001, the Government of India announced a five year excise holiday for the new industrial units set up in the district of Kutch. The salient features of the scheme are as follows:

- Excise exemption was offered to new units set up anywhere in the district of Kutch between 7/31/2001 and 12/31/2004.
- The exemption was available to all units which commenced civil construction and installation of plant and machinery between 7/31/2001 and 12/31/2004. Recently, the period has been further extended till March 2005.
- The facility of exemption was extended for a period of five years from the date of commencement of commercial production.
- In the case of units with an investment in plant and machinery worth less than Rs. 20 crores, the exemption available for up to a maximum of twice the value of such investment, of excisable goods every year.

Sales Tax Incentives

In order to revitalize the economy of Kutch, the Government of Gujarat in Industries & Mines Department vide Government Resolution No. INC-102001-903-1 dated 11/9/2001 and as amended vide corrigendum dated 11/12/2001 announced sales tax incentives for new industrial units. The salient features of the scheme are shown illustrated in

Table 2

Table 2: Benefit of Sales Tax Exemption/Deferment offered to new industrial units set up in the Kutch district between July 31, 2001 and Oct. 31, 2004

Investment Range	Quantum of Sales Tax Exemption/Deferment	Period
Investment in eligible fixed assets up to Rs. 10 crores	100% of eligible investment in fixed assets	5 years
Investment in eligible fixed assets exceeding Rs. 10 crores and up to Rs. 50 crores	100% of eligible investment in eligible fixed assets	7 years
Investment in eligible fixed assets exceeding Rs. 50 crores	100% of eligible investment in eligible fixed assets	10 years

Source: Brochure on Resurgent Gujarat: Station Kutch, Published by the Industrial Extension Bureau (iNDEXTb)

Evaluation of the policy

Thus far, the industrial resurgence policies adopted appear to be yielding positive results. エラー! 参照元が見つかりません。 provides a glimpse of the investments that have been diverted toward Kutch after the declaration of the tax incentives.

Table 3: Post-Earthquake Investments Attracted due to the Tax Holidays

New Investments in Kutch after the Declaration of Tax Holidays (Amt. in Lacs)		
Medium- and large-scale projects commissioned	43	60211.89
Medium- and large-scale projects under implementation	89	729220.96
Total projects	132	789432.85

Source: District Industries Center, Bhuj. Note: 10 Lacs = 1 million

The above table shows us that the policy has attracted investment to the extent of Rs. 7,894 crores (US \$ 1.7 billion), which comprises as much as 80% of the total estimated damage. It is noteworthy that this amount does not include investments or the reconstruction costs of housing and other sectors.

However, the example set forth in Kutch in terms of adopting largely beneficial public policies cannot be very easily generalized. This is because despite Kutch's several disadvantages, it enjoys a fair number of advantages. The connectivity of Kutch to other regions has significantly improved over the past few years. Kutch has been gifted with a huge coastline and also houses Kandla Port, which is one of the major cargo handling ports in the country. The Adani Port at Mundra is also developing at a rapid pace. Several medium- and large-scale industries have invested in Kutch specifically because of the port facilities (based on inferences drawn from the interview of the General Manager, Parle Products, at Kukma). The proximity to the ocean and the salinity has also promoted the development of salt-based industries. Kutch contributes to 70% of the country's total salt production. The extreme climate in the region is also conducive for several industries. Several industrial products require an atmosphere that is devoid of or has very little humidity, and Kutch, due to its extremely dry climate, is ideal. Thus, industries such as Parle products (confectionary producers) believe that it is worthwhile

to invest in Kutch. Moreover, the rich mineral deposits of Kutch have allowed and will continue to allow a number of mineral-based and allied activities to flourish in this region.

However, the extent to which these industries are able to positively influence the economy of the region remains to be determined. It is important to note that several of the sizeable number of industries investing in Kutch adopt automated processes and require highly technically skilled manpower, which naturally would be available outside the region. In addition, the people in Kutch are not accustomed to working in industries; therefore, the quality of labor available locally is poor. The question regarding whether this will prompt the influx of population from outside the region can only be answered with time.

Kutch's environment is also as fragile as its economy. The extent to which these industries will affect the environment remains to be determined. Power also has been a problem in Kutch. Several industries might have to set up their own captive power plants, which are polluting in nature. Water is one of the most scarcely available natural resources in Kutch. The proposed project of bringing water from the River Narmada to Kutch saw some initial activity, but has remained largely stagnated due to legal reasons. It is unlikely that this project will gear up in the next 1 or 2 years, which may lead the industries to extract ground water for their use, further aggravating the water problems.

CONCLUSION

This paper examines the response of the market in the Gujarat state to the earthquake. Although consumer prices increased significantly, this may not have been directly caused by reconstruction; rather, it may have been caused by the economic boom triggered by the earthquake. One of the reasons for the economic boom was the tax incentive policy, which appeared to be rather successful. However, apart from the tax incentives, there are some other advantages for industries to invest in the region, such as the availability of some major ports, upgraded roads, and even the climatic conditions that are suitable for certain types of industries.

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