

Review:

Economic Problems During Recovery from the 1995 Great Hanshin-Awaji Earthquake

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This paper reviews academic work on local economic recovery from the 1995 Great Hanshin-Awaji Earthquake in Kobe, Japan, and notes the implications for disaster management policies in large-scale disasters. The primary conclusion is that the earthquake disaster revealed Kobe's economic vulnerability. During recovery, the urban economy could not meet reconstruction demands, and had to compete with cities overseas, due to economic globalization. More emphasis should thus be placed on pre disaster measures that enable the local economy to maintain economic activities if disaster strikes and to have a competitive or unique economic structure that enables local economic survival despite temporary interruptions due to disasters.

Keywords: economics, recovery, public policy, globalization, Great Hanshin-Awaji Earthquake

1. Introduction

This paper summarizes problems occurring during local economic recovery from the 1995 Great Hanshin-Awaji Earthquake in Kobe, Japan, and notes the implication for disaster management policies in large-scale disasters. Despite the size and the severity of economic impact of the earthquake, very few economic studies were presented internationally¹, because the earthquake had only a negligible effect on the nation's macroeconomic performance². As discussed later, the damaged area, including Kobe city, suffered from economic depression, although Japan's capital of Tokyo was at odds with Kobe on whether economic deprivations are due to the earthquake. Kobe holds that it should have been given more national assistance in recovery, while Tokyo insists it is mainly a macroeconomic effect, since other areas not affected by the earthquake are suffering equally.

Both micro- and macroeconomic effects, in fact, are probably operating here according to some economists, who have tried to distinguish between macro and local effects on the economy, by modeling mechanisms be-

hind the local economy, evaluating damage, and tracking Kobe's historical economic development. This paper reviews these attempts to understand the nature of local economic recovery and economic problems brought by large-scale disasters.

This paper is organized as follows: Section 2 reviews research articles, which related damage estimation that is most essential for the economic related discussion. Section 3 discusses research articles, which examine the economic recovery from the macro economic view point. Section 4 discusses microeconomic topics. Sections 5 and 6 discuss labor and financial markets, both of which universally exist in any prospectively damaged economy. Sections 7 and 8 discuss chemical shoe manufacturing and port industry, both of which had been key industries in Kobe and have been struggling very hard to survive since the disaster. Section 9 concludes this study, reviewing the policy implications for mitigating economic damage and facilitating recovery.

2. Economic Damage

To identify the scale of economic damage due to a disaster is the most important element of recovery to discuss the magnitude of policy intervention. Some national ministries, mainly the Ministry of Land, Infrastructure and Transportation, is to evaluate damage to public facilities and infrastructures to identify the reconstruction cost for allocating budgets. However, there was an extra need to grasp the total damage to identify the magnitude of economic impact, especially for the national and prefectural governments, to form a recovery plan and policy decision-making, because the disaster caused significant damages to the private sector as well as the public infrastructure. **Table 1** summarizes damage estimations of this earthquake.

The National Land Agency³ announced the estimated total damage as 9,600 billion yen on February 14, 1995, 27 days after the earthquake. The Hyogo prefectural government announced the total damage cost within the pre-

1. Almost the only exception to this was the work of George Horwich [1].
2. The EPA [2] concluded that at least a 2.0% GDP increase would be expected by reconstruction demand that would exceed production loss due to physical capital damage by the earthquake.

3. The National Land Agency is now the Ministry of Land, Infrastructure, and Transport, due to the integration of the Ministry of Construction, the Ministry of Transport, the National Land Agency, and the Hokkaido Development Agency in 2001.



Table 1. Summary of loss estimations proposed after the earthquake.

Estimated	Loss	Released	Notes
Land Agency	9.6 trillion yen	2/14	all Japan
Hyogo Pref. Govt	9.9 trillion yen	4/5/95	within Hyogo
Kansai Industry Renovation Center	Direct	9.9 trillion yen (within Hyogo) 120 billion yen (out of Hyogo)	2/6/95
	Indirect	3.5 trillion yen (value-added) 7.3 trillion yen (gross output, 1995)	2/6/95 assuming no reconstruction
Sakura Research Inst.	9.6 trillion yen	2/13/95	
Mitsubishi Research Inst.	6.2 trillion yen	2/8/95	
Toyoda and Kochi (1997)	Direct	13.3 trillion yen	1997 using individual survey data
	Indirect	7.2 trillion yen (1995)	1997 based on questionnaire

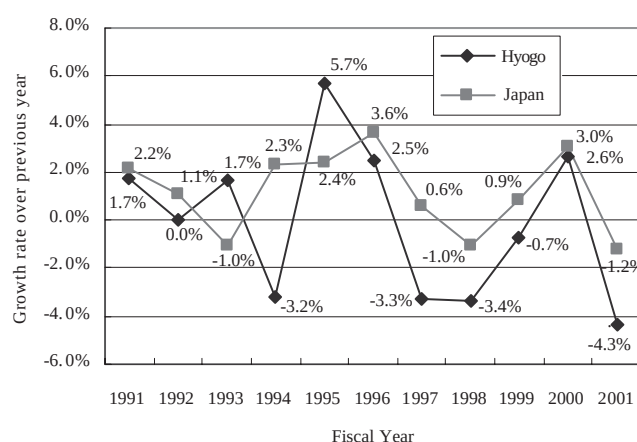
Note: Toyoda and Kochi [1] is in Japanese. Toyoda [5] explains the basic idea and procedure of the estimation in English.

fecture as 9,926.8 billion yen on April 5, 1995. At present, about 10 trillion yen has been established as a widely accepted account.

In addition to the estimation conducted by governments, there was the estimation by the Center for Industrial Renovation of Kansai⁴. According to this, the total damage in Hyogo prefecture was 9,886.5 billion yen, and it was estimated as 120 billion yen out of the prefecture on February 6, 1995. The total damage was 10,006.5 billion yen. The Sakura Institute of Research announced 9,612 billion yen on February 13. Mitsubishi Research Institute, Inc., underestimated it as 6,271.4 billion yen on February 8.

Toyoda and Kochi [3] questioned those numbers from the academic viewpoint. According to their estimation, direct damage in affected municipalities⁵ was 13,270 billion yen. The estimation of Toyoda and Kawauchi was calculated by multiplying by the average damage cost of affected firms, and number of affected firms. The Hyogo prefectural government calculated by multiplying by the ratio of building damage, and assessed the value of fixed assets. They estimated the average damage based on the questionnaire of firms, thus their number would be closer to the actual number.

Many statistical analyses have been made for the direct cost, but little has been done for the indirect cost, which is defined as the total loss of opportunity by the earthquake. The national and Hyogo prefectural governments have not conducted official estimation of indirect cost. SRI [4] calculated the loss of output in added value that includes the ripple effect at 3,482.2 billion yen, and the loss of output in gross value at 7,296.4 billion yen, assuming that no reconstruction work would be done. Toyoda and Kochi (1997) calculated it as 7,200 billion yen based on a questionnaire on affected firms, which was conducted

**Fig. 1.** GDP Growth Rate: Japan and Hyogo.

one year after the earthquake. They did not specifically mention whether indirect damage was considered as the gross value or as added value. If they considered indirect damage as the gross value, the estimated number of SRI would be quite similar⁶ to Toyoda and Kochi (1997).

3. Macroeconomic Trends

Figure 1 shows the path of GDP growth in Hyogo and Japan during the 1990s. As in most cases, the earthquake caused an economic boom in FY 1995, one year after the earthquake. Although it grew positively in FY 1996, Hyogo experienced a serious recession in FY 1997 and FY 1998.

There were several reasons for this recession. First, reconstruction work was almost completed by the end of FY 1996. Since the economic boom during FY 1995-96 was sustained by reconstruction activities, the completion of work shrank the economy of Hyogo. Second, this recession was partly caused by national economic conditions.

4. The Center for Industrial Renovation of Kansai is now the Kansai Institute for Social and Economic Research (KISER) on 2002, due to the consolidation of three research institutes.

5. Affected municipalities are the 10 cities of Kobe, Amagasaki, Akashi, Nishinomiya, Sumoto, Ashiya, Itami, Takarazuka, Miki, and Kawanishi, and the 10 towns Tsuna, Awaji, Hokudan, Ichinomiya, Goshiki, Higashirura, Midori, Seidan, Mihara, and Nandan.

6. Since the survey stated that indirect damage "implies damage cost from losing opportunity and clients (not including reconstruction cost)," it can be assumed that the answers to the questionnaire was made by the gross value.

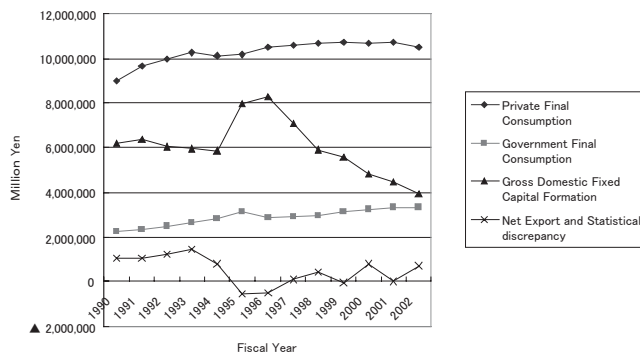


Fig. 2. Gross Domestic Expenditure in Hyogo Prefecture: 1987 to 2002 (93SNA).

Following the collapse of the bubble economy in the early 1990s, the Japanese economy was crippled due to huge amounts of bad loans. In addition, tightened Japanese fiscal policy, such as the hike in the consumption tax rate from 3% to 5% in April 1997 and the legislation of the Fiscal Structural Reform Law in November 1997, fueled the gravity of the economic situation.

Yamaichi Securities Ltd., one of the largest Japanese securities companies, and the Hokkaido Takushoku Bank, one of the major banks in Japan, went bankrupt in November 1997. To protect other banks from a possible chain of bankruptcies, the Japanese government introduced a system of prompt corrective action for banks to improve their capital adequacy ratio. Such a governmental policy made banks reluctant to extend loans. This resulted in a credit crunch, which affected small businesses, particularly in Hyogo, because they did not have access to direct financing measures.

The Asian currency crisis, which was triggered by the devaluation of the baht in July 1997, affected both the Japanese and Hyogo economies. In October 1998, exports from Kobe port to Asian countries declined by 24.3% compared to the previous year. The long-term trend of a strong yen accelerated the deindustrialization of Japan. During the 1990s, numerous Japanese companies shifted their manufacturing bases abroad to avoid the pressure of increasing costs in the domestic market.

Figure 2 shows gross domestic expenditure in Hyogo. Several important findings can be derived from this figure. First, private consumption is fairly stable compared to other series. A slight decrease in FY 1994 and 1995 is attributed to emigration due to the earthquake, since consumption per capita remained approximately the same: 1.86 million in FY 1994, 1.87 million in FY 1995, and 1.88 million yen in FY 1996. While the consumption of durable commodities was expected to increase, the temporary suspension of economic activity in affected areas, and the in-kind gifts from outside areas, might have reduced their consumption. This phenomenon is called the “gift economy,” which will be discussed in next section.

Second, gross fixed capital formation (investment) appeared to be affected by the earthquake. Reconstruction

investment peaked in FY 1996, and it has been decreasing ever since. In FY 2002, it was approximately 4.0 trillion yen, about two-thirds of its pre-earthquake level. It is worth mentioning that this downward trend in investment was not triggered by the earthquake but had begun in FY 1991 due to the collapse of the bubble economy and deindustrialization.

Third, government consumption increased slightly in FY 1995. This was primarily due to increased governmental activity in response to the disaster. Fourth, the net exports of Hyogo to other areas decreased drastically, from positive to negative. This implies that a large portion of the reconstruction demand spilled over into other areas. Hayashi [6] indicates that within the first five years following the earthquake, approximately 90% of the total reconstruction demand had ‘spilled over’ beyond from Hyogo economy.

4. Microeconomic Observations

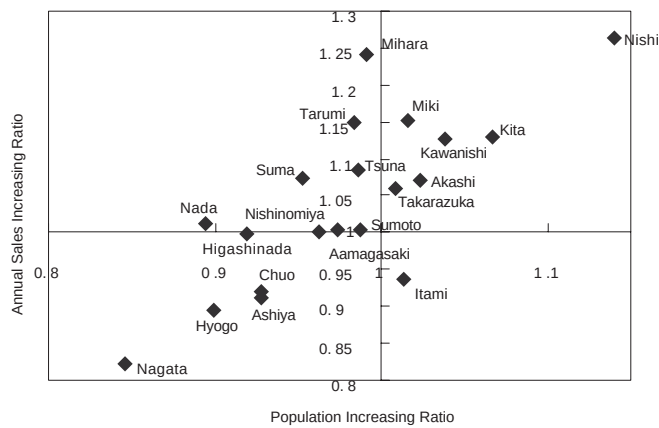
4.1. Price Adjustment

Some quantitative simulations such as that by Hagiwara [7] said that a price increase was observed in all industries. As a matter of fact, it was not observed in actual affected areas (Horwich [1], Inada [8], Nagaoka [9], Hyogo pref. [10]). There were several explanations why the price increase did not occur. Inada (1999) summarized the economic recovery process for four years after the earthquake as follows. The disaster was supposed to shift the aggregate supply curve upward through damage to facilities in industries, and to increase prices along with the aggregate supply curve. The price increase did not happen, however, so the aggregate supply curve went down, and it remained in equilibrium smaller than pre-earthquake production. As collateral evidence for the decreasing demand, Inada indicated the decrease in exports due to the suspension of Kobe port operation and total sales of department stores.

Horwich [1] expressed a different viewpoint, arguing that there was little influence on total supply, so “Natural disasters in large advanced economies trend not to significantly reduce current aggregate output or induce an associated rise in the general price level. In geographically dispersed economies, disasters are almost always localized events. But in any economy, it is the capital stock, not output, that is directly reduced by the disaster. . . Any negative macroeffects tend to be fleeting and often imperceptible. This may partly be because physical assets, which suffer the predominant loss, are not the dominant resource, and partly because resource substitutions occur, enabling the positive forces acting on GDP (coping and rebuilding) to dominate.”

About the Japanese economy, he said, “additional excess capacity came from the general weakness of the Japanese economy after 1990, and even more so of Kobe, a region in general industrial decline for some years.”

Nagaoka [9] has yet a different point, pointing out that



Source: census on commerce of 1993 and 1996, Ministry of Economy, Trade and Industry.

Fig. 3. Correlation between annual sales increase in commercial sector and population growth by city and wards.

people might hesitate to raising prices, since they had a sense of “community spirit” that was shared among disaster victims. Dacy and Kunreuther [11] used the term “sympathy” to explain this.

4.2. Population and Urban Economy

Hayashi [12] called the Great Hanshin-Awaji Earthquake a “disaster of the urban economy.” He said that the city consists mainly of tertiary industry in which advanced relations of interdependence exist. Due to such an urban economic structure, an economic circulation as following must be repeated for recovery to start: 1) accumulation of industrial activity, 2) increase in employment opportunity, 3) migration of population, 4) increase in area demand, and 5) accumulation of industrial activity. “Recovery of an urban economy was therefore to reprocess accumulation in a city for a short period of time similar to a fast-forwarding video.”

Figure 3 shows good evidence of Hayashi’s stand. As is the case with other urban economies, Kobe’s economy consists largely of the commercial sector, but it has suffered directly from population loss due to the earthquake. The commercial sector is dependent upon local demand, which is created by the local population, whereas the manufacturing sector depends on nationwide – or even global – demand, so population loss is very critical to the commercial sector.

The negative spiral of an urban economy damaged by disaster is explained by a simple model (**Fig. 4**). Disaster affects the physical fixed capital of private firms and infrastructures, which are the “input” of macroeconomic production. Aggregate supply is therefore reduced due to damage from a disaster. Disaster also affects the demand side, destroying household assets, especially houses. Although reconstruction demand might emerge, households

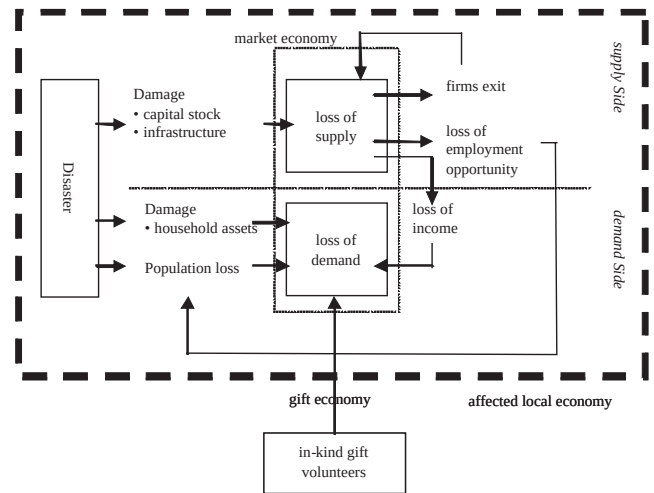


Fig. 4. Model of local economy and disaster.

must decrease financial assets or increase debt, and this may decrease consumption⁷. The population of the affected area often decreases, partly because of human casualties, but largely because of migration to non-affected areas. Kobe city, whose population was 1,520,362 on January 1, 1995, lost at least 100,000 people at the peak. It took 11 years to recover to preearthquake levels. As mentioned earlier, a decrease in consumption (**Fig. 2**) was mainly due to the population loss. This means that aggregate demand as well as supply decreased. Hence the pre-disaster number of firms and employment is excessive. So firms exited and employment opportunities were lost. This causes a secondary effect of population loss, which may in turn cause further loss in demand. Otherwise, demand is lost if the incomes of people decrease.

There was an attempt to reverse this spiral. Economists and business leaders in the Kansai region proposed a “duty-free island project” making Port Island (an artificial island constructed as a harbor facility by the Kobe city government,) a duty-free area to attract investment and customers as the center of industrial recovery. This foundered on a political rock, however, due to objections from the Ministry of Finance.

4.3. Gift Economy

Public concern after the earthquake was so great that, as in other well-known disasters, donations for victims flowed in from nationwide and overseas. These donations undoubtedly contributed to prompt relief of the victims, but in-kind gifts reduced consumer demand for commodities in disaster-affected areas, and in the aftermath, many local shopkeepers complained that donations had

7. It is theoretically plausible, but no negative asset effect for consumption has been observed in Kobe. As might not be expected, the amount of household bank deposits in Hyogo prefecture increased about 3.7 trillion yen from the end of FY1994 to 1996, while loans increased only 0.5 trillion yen. The reason for such an increase in deposits is still not obvious, although it is hypothesized that households shifted their assets from bonds to money. “Gift economy” mentioned earlier could also contribute to the deposit increase.

deprived them of earning opportunities. Leading sociologists has long recognized such a dilemma. R. Dynes [13] has pointed out that material assistance to victims of a disaster may disrupt the local economy. F. Cuny [14] argued that "... the relief program delayed recovery of the normal economic systems within the community." From an economic point of view, this dilemma is due to the emergence of a "gift economy" in which, because people receive goods without paying for them, the market economy is suspended.

Clearly, however, recovery from a major natural disaster should be based on a market economy because neither cities nor urban areas can develop without diversification and innovation promoted by free and continuous commercial trade. Nagamatsu [15] estimated how much was donated to Kobe by other cities, concluding that roughly 7.5% of the total Kobe household consumption was lost by in-kind donations, although data used for this estimate may not have covered all affected households.

5. Labor Market

5.1. Postdisaster in Employment Problems

Sugimura [16] specifically described postdisaster employment problems as follows: First, employment is an important part of livelihood, and the loss of employment leads to income and social isolation. Second, a strong relationship exists among recovery of employment, industry, and the economy, implying that employment does not become available unless economic recovery is achieved. Third, the employment issue is a problem of both quantity but of quality because workers and employers have different demands.

In describing the difficulty in solving the employment issue, Nakatani [17]. States that, initially, affected firms must restart business while competing with unaffected rivals. After the collapse of the bubble economy in 1991, Japanese companies underwent a period of transition; during which they moved production facilities overseas, reduced domestic production, and restructured relationships with subcontractors. Given these indications, the employment issue in affected areas was besieged by difficulties from the outset.

Yokoyama [18] made the first study summarizing the employment issue in affected areas, finding that employment was adjusted in several companies obliged to suspend or reduce business because of the earthquake, so the employment index worsened in February and March 1995, immediately after the earthquake, and after that, there was no progress in the recovery of employment. He implied that "There was a massive layoff of part-time workers due to the closing and migration of factories to areas outside the prefecture and the restructuring of branches of major supermarkets. There was an overall increase in the severity of the employment situation."

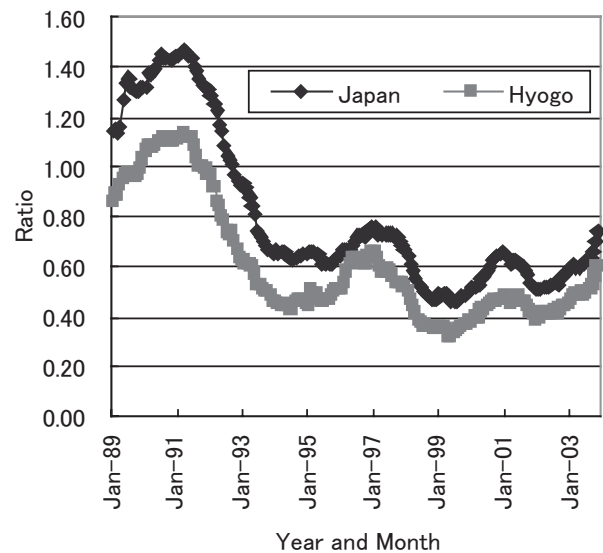


Fig. 5. Ratio of new job openings-to-applications.

5.2. Mismatch in Employment

Despite the ratio of job openings improving from 0.67 in January 1995, immediately after the earthquake, to 1.00 in August, serious mismatches in employment existed. Although prospects for new job openings were favorable, abilities of job applicants and requirements of hiring companies differed widely to the point that, in August 1995, only 8% of job applicants found jobs.

This trend became more evident four years after the earthquake. Fig. 5 shows the transition of the active job openings ratio in Hyogo Prefecture compared to the national ratio (base year: 1989). Prior to the earthquake, the ratio of job openings to applications in Hyogo Prefecture was lower than the national standard, but in the two years following the earthquake, this ratio improved to approximately the national ratio. The ratio decrease after 1997 was attributed to the national recession. According to the regular workers index, employment in affected areas was worse than the national standard, which was a cause for concern.

The mismatch between employment offers and applications is summarized as follows: The ratio of job openings to applications, as of August 1997, was 1.89 in construction but only 0.22 for clerical workers. As Sugimura stated, "The industrial structure of affected areas in large metropolitan areas consisted more of non-manual than manual labor. Career changes from non-manual to manual work is difficult because of the different requirements in physical strength, skill, and psychology [16]."

Another mismatch existed in age. In September 1997, the ratio of active job openings in affected areas was 0.19 for those over 45 years of age, and 0.67 for those under 45 years of age, yet 45% of all job applicants were older than 45 years of age. According to Sugimura, "This trend is nationwide since corporate downsizing is the main factor, but this is more obvious in affected areas [16]." Hayashi and Nagamatsu [19] mentioned that no major difference

existed in the ratio of job openings to applications before or after the earthquake for those over 45 years of age, concluding that “there was no relationship between the earthquake and the severance of employment for the middle-aged.”

The final mismatch pertained to employment patterns. Nakatani [17] indicated that the number of part-time jobs increased more than that for full-time jobs. Large companies also tended to employ part-timers more than small companies, and implied that this phenomenon represented a long-term trend in employment patterns of Japan rather than a change in the industrial structure.

5.3. Programs for Employment

The first was employment maintenance. The employment adjustment subsidy is originally one of national programs that smoothes the transition of industrial structures during the economic development since the world war II. This program targeted industries such as coal mining declining due to the energy revolution. To cope with the employment problems mentioned earlier, the national government expanded the target to the industries that was damaged by the earthquake. Hyogo Prefectural government established the similar subsidy called as employment maintenance.

Second, a program for the unemployed was taken providing special benefits for the unemployed. Employment development subsidies were implemented for promoting employment. These subsidies targeted disaster victims, and those rendered jobless by the earthquake were provided for from the “Recovery Fund”⁸.

Third, the law obligating public projects in affected areas to hire a certain number of those rendered jobless by the earthquake – up to 40% of the total labor – was implemented in March 1995, but by February 1996, only 30 or fewer people had been hired based on this law. because “no penalty was charged. In fact, the contractor took employment decisions based on profitability and efficiency ... jobs were limited to simple work, such as civil engineering, utility work, fatigue duty, and those that required workers without special skills [18].”

6. Financial Market

6.1. Background – from the Bubble Economy to Earthquake

The role of financial markets in affected areas was extremely important for raising funds for recovering industries. The earthquake, however, occurred after the “bubble economy” had collapsed, when many financial institutions had to deal with non-performing loans. As Yamamoto stated, “private financial institutions have lost

their function due to the issue of non-performing loans that arose after the collapse of the bubble economy and the ensuing financial crisis [20].” Hyogo Bank was taken over by Hanshin Bank, then incorporated with Midori Bank (currently Minato Bank). Hyogo Bank had been the primary local bank in the affected area. It was started as Hyogo Mutual Bank, becoming Hyogo Mutual Loans and Savings Bank after World War II. To convert itself into an ordinary bank, it continued expanding its capital, and became Hyogo Bank in 1989 (Takigawa [21]). From 1985 to 1990, Hyogo Bank expanded its assets from 1,800 billion to 4,400 billion yen, and its capital grew from 11 billion to 64 billion yen. The loan balance for the real estate increased by 3.87 times, and its ratio over gross total assets increased from 7.8% to 16%. According to Kitano, during this period, “... Hyogo Bank has neglected major local industries, such as manufacturing, wholesale, retail, and restaurant business. They concentrated their efforts on real estate and equity investments. This was an important reason for the subsequent predicament of the regional economy [22].”

In the first half of 1990, Toyo Shinkin Bank, Kamaishi Shinkin Bank, and Matsuura Shinkin Union, which were primarily intended for small and medium-sized enterprises, went bankrupt due to the long-term inactivation of stock prices that accompanied the collapse of the bubble economy and the unprecedented fall in land prices in the Japanese market [23]. Hyogo Bank was no exception: its stock prices declined to one-third, and a business crisis became apparent in 1993. An attempt to prevent bankruptcy using call money guaranteed by the Bank of Japan, which was 17% of their total assets, “totally turned (the bank) into a lame duck [22].”

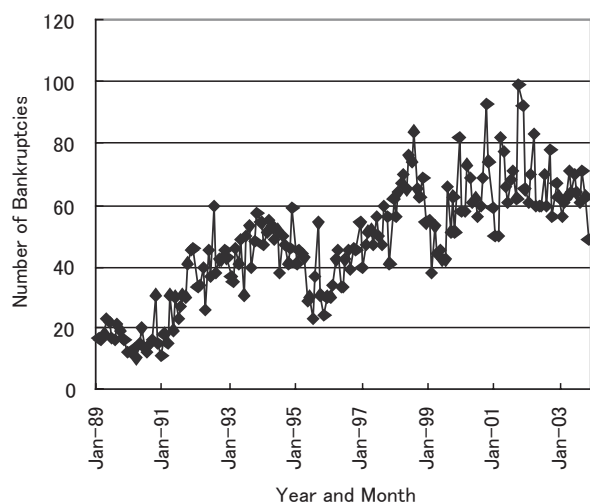
6.2. Postearthquake Finance for Recovery

The governments played an important role in the private sector’s financing of its recovery after the earthquake by loan guarantees, interest subsidies, and private housing reconstruction loans. This section examines recovery lending, as outlined by Yamamoto [20].

Credit with a loan guarantee from the government was considered a safe asset by private banks, so major financial institutions, which were looking for safe assets, had a positive attitude toward recovery lending. Small and midsize financial institutions, which did not have strong resources, could not be positive, however, so among the system loan guarantee of 534.4 billion yen, 243 billion yen was provided by the end of June 1995 from four major local banks and 395 billion yen from major financial institutions outside the affected area.

The Bank of Japan was determined to implement the special reconstruction loan within 500 billion yen to support the recovery of loans by local financial institutions. Since interest rates in short-term financial markets were lower than the official bank rate, however, major banks did not use this special reconstruction loan, and Hyogo Bank and Hanshin Bank received the highest amount of benefits as they had been struggling to raise funds.

8. The Recovery Fund was established by the Hyogo Prefectural and Kobe City Governments. The share of the endowment was 2:1. The final total scale of the fund was 90 billion yen, while interest receipt, which can be spent for the disaster recovery, was 35 billion yen for 10 years. The fund was primarily established to bypass the inflexible public budget system to provide more flexible support for affected people.



Source: Teikoku Data Bank

Fig. 6. Number of Bankruptcies in Hyogo Pref.

The number of bankruptcies in 1995 and 1996 was lower than that in any ordinary year because of the recovery of loans supported by the government (478 bankruptcies in 1995 and 482 in 1996 in Hyogo Prefecture). Nevertheless, the number of bankruptcies increased rapidly to 619 in 1997.

Figure 6 shows this increase by month, indicating that the number of bankruptcies increased in 1997 and subsequent years rather than immediately after the earthquake due to accumulated deficits under the macroeconomic recession, as mentioned earlier.

7. “Chemical Shoe” Manufacturing

Synthetic, or “chemical,” shoes made of plastic and rubber at relatively reasonable prices, have long been a major industry in Kobe’s western Nagata ward. Although formal statistics do not exist, almost all of the 192 chemical shoe firms, belonging to the Chemical Shoe Industrial Union of Kobe, were in Nagata ward. Of these, 158 were partially or totally destroyed by the earthquake or fire; 80% of 1,600 related firms, were small-scale or private businesses. The reason for such concentrated damage was the huge fire, fueled by chemicals and gas used in “chemical shoe” production.

Yoshida [24] characterized this industry as follows: first, the production process was divided into very small pieces, with each piece undertaken by firms of different scale and style, including work at home by widows. Second, the shoe companies, making up the core of the industry, were relatively small-scale. Third, the industry used a unique system of “rental factories” in which parent firms owning factories lent idle facilities to small-scale businesses, enabling businesses without sufficient funds for their own production facilities to operate, especially those who had just started business. Seki [25] indicates

Table 2. Chemical shoe production in Kobe.

	Production* ¹	Value* ²	Notes
1965	7,613	20,902	
1969	10,402	45,255	Production peak
1971	9,883	53,257	“Nixon” shock
1973	6,052	52,041	First Oil shock
1978	4,474	75,315	Second Oil shock
1985	4,740	77,766	Plaza accord
1990	4,475	86,588	Production value peak
1994	3,131	65,987	
1995	1,416	28,514	Great Hanshin-Awaji Earthquake
1996	1,626	36,535	
1997	1,687	41,694	
1998	1,851	45,878	

*¹ ten thousands of pairs

*² million yen

Source: Mitani [26]

that Nagata functioned as a new business “incubator.”

The comparative advantage of the industry had shrunk since before the earthquake (**Table 2**) – a trend that had already started in 1990 and was accelerated by the earthquake.

Until mid-1960, the industry was export-driven. As Asian products from Hong Kong and Taiwan emerged, the industry changed its market from international to domestic due to the loss of price competitiveness. During the 1980’s, this change had been completed and Asian products were imported to domestic markets. The 1985 Plaza Accord, that triggered a sharp rise in the strength of the yen, accelerated this trend. Since the import of chemical shoes increased sharply, the industry had to compete with Asian products in the Japanese market. Many shoe makers were in the midst of attempting to replace their products with more value-added ones, such as natural leather products, when the earthquake struck. Although 70% of affected firms restarted business within 2.5 months after the temblor, production did not recover to even half of the previous level, primarily because cheap Asian products took over the market. In this sense, the decline in the “chemical shoe” industry was a structural matter rather than an earthquake damage problem. Recovery assistance programs provided by the government to damaged firms included: (1) provision of temporary workspace, (2) provision of permanent workspace, (3) rent subsidies for private workspace, and (4) “soft” loans.

Ashizuka and Kagono [27] hold that few firms benefited from “soft” loans because they require that applicant firms have a certain level of financial ability to their business on their own, and most who truly needed money were below that level.

In fact, industry resurgence requires a long-term competitive strategy, not direct government assistance, to differentiate their product from others and add commercial value. In this context, some firms tried promoting “ther-

apy shoes” produced individually to fit the customer’s feet.

8. Port Industry

In 1980, Kobe was Japan’s largest port and, the third largest in the world in the amount of containers processed. By 2003, Kobe had fallen to thirty second largest in the world. The decline was undoubtedly triggered by the earthquake, which caused an estimated 1 trillion yen in damage. Devastation was so extensive that only one-third of port capacity had been recovered in October 1995, 9 months after the earthquake.

Again, however, as with the “chemical shoe” industry, the problem was more structural than earthquake-related. Port business has an “economy of scale,” meaning that the more cargo a ship carries, the cheaper the cost of shipment of each cargo. Due to such an industrial structure, most of the cargo is shipped by a few “hub” ports, among which very large ships connected to reduce the shipment cost per cargo. Aoki [28] points out that Kobe port had already lost its “hub” function before the earthquake.

The Asian currency crisis was a direct trigger in the port’s decline. Kobe port has such strong connections with East Asian countries that over half of export was to these ports. Currency depreciation in these countries made foreign products relatively expensive, turning their international trade balances from a deficit to a surplus. This had a tremendous impact on Kobe port, with Japanese imports already poor due to Japan’s terrible economic situation.

As stated, the most basic problem behind all this was the deindustrialization of Japan, and the shifting by manufacturers of their production base overseas. This alone robbed Japanese ports as a whole, not only Kobe port, of their hub function.

9. Conclusions

The 1995 Great Hanshin-Awaji Earthquake was the only major earthquake disasters to hit a highly developed metropolitan economy. The local economy has since suffered from both earthquake damage and macroeconomic depression.

The economic situation was so severe that the growth rate became negative two years after the disaster. This was a significant contrast from the findings of Albar-Bertrand [29], which holds that disaster accelerates economic growth in developing countries.

Disaster is an opportunity to enhance production capacity in a growing economy, accelerating depreciation of old fixed assets, and recovery investment improves the productivity of the economy⁹.

As F. Cuny stated, “A disaster traumatically brings into focus all the basic problems in a society” (Cuny [14]) as

was the case in Kobe. Economic problems facing Kobe were surely triggered by the earthquake. But the city was already struggling with basic issues before the event. Structural change and reform, rather than compensation for damage, was the key for resurgence of the economy.

What is emphasized here is that: (1) the impact of reconstruction work on the modern urban economy is limited. Because of the industrial structure of the urban economy, it cannot absorb the reconstruction demand, most of which spilled over into the surrounding economy. (2) The relationship between disaster recovery and globalization is an important one. Both the chemical shoe and port industries have suffered from overseas competition. In a highly competitive market, local industry which is suspended even temporarily by disasters would easily be taken over by industry in other countries due to “globalization,” – a key concept in understanding economic recovery in the 21st century. Economic recovery is not a problem of earthquake damage as such, but of potential international competitors. These facts imply that more emphasis should be placed on pre-disaster economic preparedness rather than on recovery efforts. Disaster reveals weaknesses in the affected economy, so building a strong economic structure, competitive or unique in the global economy, is the most effective measures against local economic disaster.

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