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SUMMARY

This paper reviews existing research papers on the recovery of the regional economy from the Great Hanshin-Awaji Earthquake of 1995, focusing on the labor and the financial market, and states the prospects for future research topics. We can derive some unique economic lessons from this earthquake because it was probably the only major earthquake to have damaged a mature urban economy in which the economic growth rate was rather low, and the population had almost peaked.

INTRODUCTION

The National Land Agency1 (of those times) announced the estimated total damage to be 9,600 billion yen on February 14, 1995, 27 days after the earthquake. Following this announcement, the Hyogo Prefectural Government announced the total damage cost within the prefecture to be 9,926.8 billion yen on April 5, 1995. At present, approximately 10 trillion yen has been established as the accepted figure. Hyogo Prefecture was the region most affected by the earthquake. Since the 10 cities and 10 towns2 that were affected accounted for more than 60% of the Prefectual GDP, Hyogo’s economy was severely affected by the earthquake.

This paper overviews the economic recovery path of Hyogo Prefecture with a survey of existing literatures mostly written by economists. Since the purpose of this paper is to derive some lessons regarding economic recovery from a disastrous earthquake, it focuses on two markets in particular; the labor market and the financial market. Both these markets must exist in any type of economy and should be paid attention to for economic recovery.

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1 The National Land Agency is currently known as the Ministry of Land, Infrastructure and Transport. This is a result of the integration of the Ministry of Construction, Ministry of Transport, National Land Agency, and Hokkaido Development Agency in 2001.
2 The 10 cities and 10 towns are as follows: Kobe City, Amagasaki City, Akashi City, Nishinomiya City, Sumoto City, Ashiya City, Itami City, Takarazuka City, Miki City, Kawanishi City, Tuna Town, Awaji Town, Hokudan Town, Ichinomiya City, Goshiki Town, Higashirura Town, Midori Town, Nishidai Town, Mihara Town, and Nandan Town. The Disaster Relief Act was applied to these areas in Hyogo Prefecture.
RECOVERY PATH OF THE HYOGO ECONOMY: AN OVERVIEW

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 subsequent to 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, the reconstruction works were almost completed by the end of FY 1996. Since the economic boom during FY 1995-96 was sustained by the reconstruction activities, the completion of the works shrunk the economy of Hyogo. Second, this recession was partly caused by the national economic conditions. 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, the 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. In order to protect the other banks from a possible chain of bankruptcy, the Japanese government introduced a system of prompt corrective action for banks to improve their capital adequacy ratio. However, this measure made the 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 had been triggered by the devaluation of the baht in July 1997, also affected both the Japanese and the Hyogo economies. In October 1998, exports from the Kobe port to Asian countries declined by 24.3% as compared with the previous year. Moreover, the long-term tendency of strengthening the yen also accelerated the deindustrialization of Japan. During the 1990s, numerous Japanese companies shifted their manufacturing bases abroad in order to avoid the pressure of increasing costs in the domestic market.

Figure 1: GDP Growth Rate: Japan and Hyogo

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3 The Japanese fiscal year begins in April and ends in March of the following year. Therefore, according to the calendar year, the earthquake occurred in 1995. However, according to the fiscal year, it occurred in 1994.
Figure 2 shows the Gross Domestic Expenditure in Hyogo. Several important findings can be derived from this figure. First, the private consumption is fairly stable as compared to the other series. A slight decrease in FY 1994 and 1995 is attributed to the emigration due to the earthquake. In fact, the consumption per capita remains approximately the same: 1.86 million, 1.87 million, and 1.88 million yen in FY 1994, FY 1995, and FY 1996, respectively. While the consumption of durable commodities was expected to increase, the temporary suspension of economic activity in the affected areas, and the in-kind gifts from outside areas, might reduced their consumption.

Second, the 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, as much as 2/3rd 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 the increased governmental activities 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. A recent survey indicates that within the first five years following the earthquake, approximately 90% of the total reconstruction demand had leaked from the affected areas (Hayashi, 2005).

**LABOR MARKET**

Sugimura (1999) has specifically described this as follows: First, employment is one of the important elements of livelihood, and the loss of employment leads to not only loss of income but also isolation from society. Second, there exists a strong relationship among the
recovery of employment, the industry, and the economy. This implies that employment generation is impossible unless economic recovery is achieved. Third, the employment issue is not merely a problem of quantity but also of quality because both workers and employers have diverse demands.

Nakatani (1997) has described the difficulty in solving the employment issue. Initially, affected firms had to restart their businesses and simultaneously compete with unaffected rivals. Further, after the collapse of the bubble economy in 1991, Japanese companies underwent a period of transition; they moved their production facilities overseas, reduced their domestic production, and restructured their subcontractors. According to these indications, the employment issue in the affected areas had been besieged by difficulties from the outset.

Yokoyama (1995) was the first study that summarized the employment issue in the affected areas. Yokoyama highlighted that employment adjustment was performed in several companies that were obliged to suspend or reduce business activities because of the earthquake. Therefore, the employment index worsened in February and March 1995, immediately after the earthquake, and thereafter, there has been no progress in the recovery of employment. Moreover, 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 the branches of major supermarkets. There was an overall increase in the severity of the employment situation.”

Mismatch in employment
The new job openings ratio had improved from 0.67 in January 1995, which was immediately after the earthquake, to 1.00 in August. Despite this improvement, there existed serious mismatches in employment. Although prospects for new job openings were favorable, there was a severe mismatch between the abilities of job applicants and the requirements of the hiring companies. In fact, in August 1995, only 8% of the job applicants could find employment. This tendency became more evident four years after the earthquake. Figure 3 shows the transition of the active job openings ratio in Hyogo Prefecture in comparison to the national ratio (base year: 1989). Prior to the earthquake, the job openings-to-applications ratio in Hyogo Prefecture was lower than the national standard, but during the two years following the earthquake, this ratio had improved to approximate the national standard. Although the ratio decreased after 1997, this was attributed to the national recession. However, according to the regular workers index, the
employment situation in the affected areas was worse than the national standard, which was a cause for concern.

The mismatch between the employment offers and the applications was summarized as follows. The job openings-to-applications ratio, as of August 1997, was 1.89 in the construction business, while it was only 0.22 for clerical works. Sugimura (1999) stated, “the industrial structure of the affected areas that belong to the large metropolitan area has been composed more by non-manual labor than by manual labor. Changing careers from non-manual work to manual work is difficult because of the different requirements of physical strength, skill, and psychology” (p. 123).

Another mismatch was observed in terms of age. In September 1997, the active job openings ratio in the affected areas was 0.19 for those over 45 years, while it was 0.67 for those under 45 years. However, 45% of all job applicants were over 45 years of age. According to Sugimura (1999), “this tendency is nationwide since the trend of corporate downsizing is the main factor. However, this tendency is more obvious in the affected areas.” Hayashi and Nagamatsu (2000) mentioned that there was no major difference in the job openings-to-applications ratio before and after the earthquake for those over 45 years of age. Therefore, they concluded 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 (1997) indicated that the number of part-time jobs increased in comparison to full-time jobs. In addition, large companies displayed a greater tendency to employ part-time workers than small-scale companies, and he implied that this phenomenon represented a long-term trend in the employment patterns of Japan rather than a change in the industrial structure.

Countermeasures for employment

Sugimura (1999) summarized the measures taken by the government. The first was the countermeasure for employment maintenance. The employment adjustment subsidy is a national policy that aims at the smooth transition of industrial structures. Hence, this policy targeted the declining industries. However, the subsidy was particularly applied to the layoffs resulting from the earthquake. In addition, Hyogo Prefecture also established this subsidy for employment maintenance.

Second, a countermeasure for the unemployed was also taken. The provision of special benefits for the unemployed benefit was implemented. Employment development subsidies were implemented for promoting employment. These subsidies targeted disaster victims, and those who were rendered unemploye due to the earthquake were provided for from the “Recovery Fund4.”

4 The Recovery Fund was established by the Hyogo Prefectual Government and Kobe City Government. The share of endowment was 2:1, respectively. The final total scale of the fund was 90 billion yen, while the fruit of the fund accounts for 35 billion yen for 10 years. The fund was primarily established to bypass the
The law obligating public projects in affected areas to hire a certain number of those rendered unemployed by the earthquake (up to 40% of the total labor) was implemented in March 1995. However, by February 1996, only 30 or less people were hired based on this law. The reason was that “no penalty was charged. In fact, the contractor took employment decisions based on profitability and efficiency … the jobs were limited to simple works, such as civil engineering, utility work, fatigue duty, and those that required workers without any special skills” (Yokoyama, 1995)

FINANCIAL MARKET

Background—from the bubble economy to the earthquake

The role of the financial markets in affected areas was extremely important for raising funds for the recovery of the affected industries. However, the earthquake occurred after the collapse of the bubble, when several financial institutions had to deal with non-performing loans. Yamamoto (1999) stated, “Based on the relationship between recovery lending and regional finance in particular, private recovery lending has lost its function due to the issue of non-performing loans that arose after the collapse of the bubble economy and the ensuing financial crisis.”

Hyogo Bank was taken over by Hanshin Bank, then incorporated with Midori Bank (currently known as Minato Bank). Hyogo bank had been the primary local bank in the affected area. It was started as Hyogo Mutual Bank, and after the WWII, it changed into Hyogo Mutual Loans and Savings Bank. Aiming at conversion into an ordinary bank, this bank continued expanding its capital, and became into Hyogo Bank in 1989 (Takigawa, 2000). From 1985 to 1990, Hyogo Bank expanded its assets from 1,800 billion yen to 4,400 billion yen, and its capital grew from 11 billion yen to 64 billion yen. The loan balance for the real estate increased by 3.87 times, and its ratio over the gross total assets also increased from 7.8% to 16%. According to Kitano (2001), during this period “… Hyogo Bank has neglected the 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.”

In the first half of 1990, Toyo Sinkin Bank, Kamaishi Sinkin Bank, and Matsuura Sinkin Union, which were primarily intended for small and medium-sized enterprises, went bankrupt because of 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 (Yoneda, 1999). Hyogo Bank was no exception to this; therefore, their stock prices declined to one-third, and a business crisis became apparent in 1993. They attempted to prevent the bankruptcy using the call money guaranteed by the Bank of Japan, which was 17% of their total assets. In fact “it had totally turned into a lame duck” (Kitano, 2001).

Financing Recovery after the Earthquake

inflexible public budget system in order to provide flexible support for the affected people.
The governments played an important role for the private sector to finance its recovery after the earthquake by means of loan guarantees, interest subsidies, and private housing reconstruction loans. This section examines the recovery lending after the earthquake, as outlined by Yamamoto (1999).

Credit with a loan guarantee from the government was considered as a safe asset by private banks. Therefore, major financial institutions, which were looking for safe assets, had a positive attitude toward the recovery lending. On the other hand, the small and mid-size financial institutions, which did not have strong resources, could not develop this positive attitude toward it. As a result, among the system loan guarantee of 534.4 billion yen, by the end of June 1995, 243 billion yen were provided from four major local banks and 395 billion yen were from major financial institutions located outside the affected area.

The Bank of Japan, the Japanese central bank, was determined to implement the special reconstruction loan within 500 billion yen in order to support the recovery of loans by the local financial institutions. However, since the interest rates in the short-term financial markets were lower than the official bank rate, the 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.

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 4 shows this increase in the long run by month. This indicates that the number of bankruptcies increased in 1997 and in the subsequent years rather than immediately after the earthquake. The reason for this increase was the accumulated deficit due to macroeconomic recession, as mentioned previously.

**CONCLUSION**

Two important findings could be derived from this analysis. The first is the limited capability of the reconstruction demand in contributing to the local economic recovery, particularly in a mature urban economy such as the Hanshin area. This fact was observed in the GDE statistics shown in Figure 2 and from the gap between labor demand and supply. The second finding is that the path of economic recovery from a major disaster is
determined by macroeconomic conditions to a considerable extent. This fact becomes more evident when we consider the case of India, described by Nagamatsu and Parikh (2005), which was considerably more successful thanks to the boom in the Indian economy.

REFERENCES


