Invited Paper

The Great East Japan Earthquake and the Japanese Economy

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The Great East Japan Earthquake was a compound of the earthquake, the tsunami, and the accident at the Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Plant. It has been the greatest national crisis for Japan since her defeat in World War II. The accident at the nuclear power plant will take a long term to resolve.

The personal suffering and material damage cost due to the earthquake and tsunami were on an unprecedented scale, as natural disasters in modern times. The number of dead and missing persons exceeds twenty thousand, and the cost of damage to stock is presumed to amount to $211.3 billion. It is expected that the damage due to the accident at the nuclear power plant, which has not been settled, will be an immense amount.

Restoration and revival demand is expected to have the effect of pushing up the economic growth rate even though the Japanese economy was depressed in the first and the second quarter of 2011. The trend in the economy will depend on the boosting effect of the revival demand, as well as the effect on business of the power supply shortage and a rise in electricity charges. In particular, developing an energy policy which balances efficiency, safety, and the environment is a pressing issue.

The Great East Japan Earthquake is the greatest challenge for the economy in post-war Japan, and her economy will be determined by the way the country fights back against this challenge. We should assume that this is the turning point for the construction of a new Japanese economy.

Keywords: Great East Japan Earthquake, Nuclear accident, Supplementary budget, Revival demand, Electricity shortage, Rise in electricity charges

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The massive earthquake and the tsunami that hit east Japan caused unprecedented personal suffering and material damage. The Great East Japan Earthquake was a compound of the earthquake, the tsunami, and the accident at the Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Plant. It has been the greatest national crisis for Japan since her defeat in World War II. The accident at the nuclear power plant will take a considerable time to resolve.

The earthquake and tsunami are natural damage, whereas the accident at the nuclear power plant can be characterized as largely a man-made disaster based on the response of Tokyo Electric Power Company and the Japanese government. Moreover, the Japanese government has also been slow to respond on the budget side to the damage caused by the earthquake and tsunami and the handling of the nuclear power accident.

The progress of restoration and reconstruction efforts has been considerably slower, even though the environment of the Japanese economy at the time when the earthquake occurred was different from the case of the Hanshin-Awaji Earthquake of 1995.

In this paper, we consider the damage caused by the earthquake and tsunami, their influences on the Japanese economy, the supplementary budgets in FY 2011, electricity power supply shortage stemming from the accident at the nuclear power plant, and the influence that a rise in electricity charges in the future will exert on the Japanese economy.

I. Situation resulting from earthquake and tsunami damage

Japan is a country where earthquakes occur commonly, and severe earthquakes also occur frequently[1]. The Great East Japan Earthquake that struck on March 11, 2011 was an unprecedented disaster in modern Japan. A large number of lives were lost. The base of living and the production base were destroyed, and disaster victims were forced to relocate.

Furthermore, the stagnation of economic activity in the ruined area has created obstacles in the chain of activities and the lives of people in various places nationwide. The earthquake has also caused great damage that far exceeds that of the Hanshin-Awaji Earthquake which occurred on January 17, 1995. The Hanshin-Awaji Earthquake was an inland, urban earthquake directly above its epicenter with a magnitude of 7.3 that was centered on Kobe City. The large earthquake of magnitude 9.0 was on the maximum domestic scale in the history of observation, and the fourth largest earthquake that has occurred in the world since 1900.

[1] About 20% of earthquakes (1996-2005) with a magnitude of 6.0 or more in the world have been generated in Japan. The Cabinet Office. (2010). *Disaster Prevention White Paper.*

The Great East Japan Earthquake was a compound type disaster that extended to a large area from the Kanto region to Hokkaido, and it was a suburban city and rural fishing village type disaster. The massive tsunami which was generated by the earthquake made the damage more extensive. The run-up height of the tsunami wave was recorded at 40.5 meters, the highest ever observed in Japan[2].

Table 1 Amount of estimated damage caused by the Great East Japan Earthquake

($, billion)

	Great East Japan Earthquake	Hanshin-Awaji Earthquake
Buildings	130.0	63.0
Lifeline facilities	16.2	6.0
Social infrastructure facilities	27.5	22.0
Agriculture, forestry and fisheries	23.8	1.0
Other	13.8	4.0
Total	211.3	96.0

Note: Cabinet Office estimates for Great East Japan Earthquake; National Land Agency estimates for Hanshin-Awaji Earthquake; Damage due to the accident at Fukushima Daiichi nuclear plant is excluded; The Great East Japan Earthquake (March 2011) was converted at 80 yen = one dollar, and Hanshin-Awaji Earthquake (January 1995) 100 yen = one dollar.

Source: The Cabinet Office (June 24, 2011).

The personal suffering and material damage cost due to the Great East Japan Earthquake is unprecedented in scale for a natural disaster. In the Hanshin-Awaji Earthquake, the number of dead and missing was 6,437 people (about 80 percent were crushed to death by building collapses). In the Great East Japan Earthquake, the number of dead and missing reached 20,363 people (about 90 percent of whom were drowned by the tsunami), and 99 percent or more were in three prefectures of Tohoku, namely, Miyagi Prefecture (11,771 people), Iwate Prefecture (6,671 people), and Fukushima Prefecture (1,851 people)[3].

The Cabinet Office announced its estimate that the immediate damage cost of the destruction due to the Great East Japan Earthquake and tsunami was about $211.3 billion. The breakdown is as follows: $130

[2] The Cabinet Office (2011). *White Paper on Disaster Management 2011.*

[3] The region where the damage was large was a rural fishing village with an aging population and depopulation, and senior citizens accounted for the majority of dead and missing persons. The stricken area was about six times larger than that of the Hanshin-Awaji Earthquake even only in the coastal part of the three prefectures of Iwate, Miyagi, and Fukushima. The National Police Agency. *Publicity Matter.* August 12, 2011.

billion for buildings such as houses, stores, and factories; $16.2 billion for water services, gas, electricity and communications in the case of lifeline facilities; $27.5 billion for social, basic facilities in the case of rivers, roads, harbors and airports; $23.8 billion for facilities related to farmland and fisheries, and agriculture, forestry and fisheries; and another $13.8 billion (educational, health and welfare, etc.) in the case of institutions.

The total amount of damage was about 2.2 times higher than that of the estimated amount of damage (about $96.0 billion) caused by the Hanshin-Awaji Earthquake, which directly struck a center of dense population. The main factor was that the earthquake and tsunami damage was widespread.

As for the great earthquake and tsunami, one of the differences from the Hanshin-Awaji Earthquake is that damage related to agriculture and fisheries was extremely extensive. The cost of damage caused by flood and subsidence of farmland, destruction of woodland and fabrication facilities, the destruction of fishing boats, fishing ports, and cultivation facilities related to agriculture, forestry and fisheries became larger than the initial assumption of the Japanese government.

The damage caused by the massive earthquake and tsunami extended to the entire east Japan coastline, and the human and material damage became extensive in an economic space where the primary industries of agriculture, forestry and fisheries are especially superior. Additionally, the disaster happened during a depression in the Japanese economy that has persisted for over ten years, a crisis concerning public finance, and confusion that derives from political disorder. The fiscal strength of the central government was also different in 1995, when the Hanshin-Awaji Earthquake occurred. The situation regarding the national economy and public finance in 2011 was also quite different from 1995.

II. Impact of the great earthquake and tsunami on the Japanese economy

The massive earthquake and tsunami caused a large obstacle for not only for the ruined area but also for the whole of Japan. The region that suffered especially extensive damage, i.e., the three prefectures of Iwate Prefecture, Miyagi Prefecture, and Fukushima Prefecture, accounts for about 4 percent of total GDP in Japan. Therefore, it seems that the influence on the Japanese economy has not been large except for the restrictions caused by electricity shortage stemming from the accident at the nuclear power plant.

Besides, the immediate impact of the great earthquake on production facilities caused by the influence on activities in regions other than the stricken area has been widespread in the case of production control due to electricity shortages and the destruction

of the supply chain. Additionally, because of a decrease in personal consumption caused by deterioration in consumer sentiment, the Japanese economy during the period of April-June 2011 recorded negative growth. However, the performance of the Japanese economy is expected to change to positive growth because of a recovery in production stemming from the restoration of the supply chain, the recovery of exports, and an increase in investment in public works following the period of July-September 2011[4].

For reference, let us take the economic effects of the Great Kanto Earthquake in 1923. In that year, Japan's real economic growth rate had been a negative 4.6 percent, but in 1924, the economy recorded a high growth of 12.5 percent. Moreover, in the case of the Hanshin-Awaji Earthquake, the real GDP growth rate in 1995 was 2.5 percent, followed by 2.9 percent the next year. As for the impact that the Hanshin-Awaji Earthquake exerted on the Japanese economy, the positive effect of the revival of demand on the economy exceeded the negative effect of a decrease in production and consumption in the ruined area.

The rate of GDP growth in 2011 is expected to be nearly zero due to negative growth in the first and second quarter. On the other hand, it is estimated that 2012 will see a change to positive growth stemming from a revival in demand for investment in public works[5]. It is expected that the revival in demand caused by the great earthquake will greatly exceed that of the Hanshin-Awaji Earthquake, and exceed the effect of the resurgence in economic activity. Moreover, there is a possibility that part of the surplus production capacity of manufacturing will be canceled.

Thus, the effect of an expansion in the revival of demand is apparent, and the effect of improving the economic growth rate will be large in the long run, even though the catastrophe will have a negative effect on economic growth in the short term[6]. The Japanese economy has been in a whirlpool

[4] Since the Great East Japan Earthquake, employment (excluding the stricken area) and price levels have been stable. The Cabinet Office. (2011). *Annual Report on Japanese Economy and Public Finance.*
There was a shift to a surplus after an interval of three months in June because of the production recovery but the trade balance in March, April, and May showed deficits. The Ministry of Finance. *Trade Statistics of Japan* (News Release: July 21, 2011).

[5] International Monetary Fund. (June 17, 2011). *World Economic Outlook Update.*
http://www.imf.org/external/pubs/ft/weo/2011/update/02/index.htm (August 12, 2011).

[6] As the catastrophe hastens the decline of inefficient industries and they are converted to more efficient forms, this raises the possibility that economic growth will be promoted. Skidmore, M. & Toya, H. (2002), p.664.

of secular stagnation since the 1990's, and the great earthquake occurred during a time when there were still many constraints. These include the advancement of an aging society accompanied by a low birth rate, a critical fiscal structure, and the expanding public debt balance. In addition, the nationwide electricity shortage and the rise in electricity charges that originated from the accident at the nuclear power plant will strongly influence the economic activity of enterprises and households.

The progress of the declining birthrate and the growing proportion of elderly people in the population will reduce production and consumption. Therefore, maintaining economic energy is based on the issue of how to strengthen export competitiveness. Under the annual revenue structure (FY2011), it is in no way possible for the tax revenue to exceed debt finance. Reform of the tax system is inevitable because it will have to deal with the annual expenditure pressures of social security-related expenditure and debt-servicing costs. Moreover, the public debt balance, which has reached about 1.8 times GDP, has very clearly reduced the elasticity of fiscal and monetary policy. The power shortage and the rise in electricity charges that originated from the accident at the nuclear power plant are raising the production cost of enterprises and reducing the global competitiveness of Japanese firms. As a result, the overseas transfer of enterprises has been promoted, and there is a possibility that the hollowing out of domestic industries will occur.

III. Budget policy for the Great East Japan Earthquake

Restoration and recovery from natural damage cannot of course be entrusted to the market mechanism. Budget measures and responses on the legislative side are pressing issues because of restoration and the revival of the stricken area. The first supplementary budget was approved on May 2 and the second supplementary budget on July 25 in FY 2011. The third supplementary budget, which is aimed at real revival, is expected to be approved this autumn. The approval and execution of the supplementary budget relating to restoration and revival have been accomplished later than in the case of the Hanshin-Awaji Earthquake.

1. The first supplementary budget

In order to ensure early restoration from the Great East Japan Earthquake, the expenditures which will be required in the current year have been budgeted. In Table 2, let us take a general view of expenses related to the Great East Japan Earthquake and the financial resources summed up in the first supplementary budget in FY 2011. These amount to about $50 billion in total.

The amount of $6.0 billion in disaster relief is composed of disaster relief expenses such as the provision of providing temporary housing, contribution of condolence money to bereaved families and consolation payments for disaster victims, disaster assistance loans, livelihood welfare fund loans, and emergency

support to disaster victims. The maximum item borne among these is the disaster relief expense of $4.5 billion, so the central government may provide first aid help based on the "National Disaster Act".

To dispose of disaster waste (debris, etc.) caused by the earthquake and tsunami, a cost of $4.4 billion has been allowed for as a subsidy to the stricken local governments. As for costs that are more than a constant amount, the ratio of central government grants for these kinds of public services is increased from fifty percent to eighty or ninety percent. The full amount is treated as part of the remainder of central government assistance based on local bonds (disaster measures bonds). One hundred percent of the amount of repayment of principal and interest is covered by local allocation tax, and an immediate load on the stricken local governments is avoided.

Public works in response to the disaster are divided into disaster recovery public works and general public works spending, amounting to $13.1 and $2.0 billion, respectively. The restoration target of the former is facilities related to rivers, roads, harbors,

Table 2 The first supplementary budget

($, billion)

Financial demands		Financial resources	
Disaster relief	6.0	Reduction of existing expenditure	46.4
Disposal of disaster waste	4.4	Non-tax revenue	3.8
Public works in response to disaster	15.1	Public debt	-
Rebuilding of facilities	5.2		
Disaster-related public tnancing programs	8.0		
Local allocation tax	1.5		
Other disaster-related spending	10.0		
Total	50.2	Total	50.2

Note: 80 yen = one dollar (May 2011).
Source: The Ministry of Finace

and agriculture, as well as an airport, and the latter target is public works concerning urgent repair of public civil engineering facilities needed in an emergency.

As for the rebuilding of facilities, the total amount is $5.2 billion. Half of this is for school facilities expenses, and the rest is for social welfare facilities, agricultural and forestry facilities, police, fire-fighting and disaster prevention facilities, and common facilities such as small and medium-sized cooperative associations.

Disaster-related public financing programs are composed of loans for rebuilding businesses and stabilizing the management of small and medium-sized enterprises, loans for

rebuilding housing devastated by the disaster, loans for rebuilding businesses and the stabilization of the agriculture, forestry and fisheries industries, low-interest loans for the improvement of private school facilities, and these programs which total $8.0 billion.

Local allocation tax has been increased for disaster response as a financial resource that local governments can use with discretion. An amount of $1.5 billion has been added as local allocation tax in FY 2011, and it is delivered as a special allocation tax.

Other disaster-related spending totals $10.0 billion, and the breakdown is as follows: spending for activities of the Self Defense Forces, fire-fighting, police, and the Coast Guard, special measures for reduction or exemption of healthcare insurance contributions, support for the payment of fishing boat insurance and fishermen's mutual aid insurance, measures for the recovery of fishing grounds and aquaculture facilities, aid to support the rebuilding of disaster victims' lives, employment, school attendance support for affected students, measures related to electric power supply and demand at companies, and measures to ensure the stable supply of fuel.

Financial resources allotted to the above-mentioned expenses were covered by the review of existing expenditure in the budget in FY 2011 and non-tax revenue. A reduction in existing expenditures of $46.4 billion was imposed. The breakdown is as follows: a reduction in the government's financial contributions to basic pensions transferred to the Pension Special Account, a reduction in child allowance, a reduction in official development assistance, etc.

Non-tax revenue of $3.8 billion comprises the independent administrative agency payment and the public works load revenue. As a result, annual expenditure increased by $3.8 billion on a net basis from the initial budget in FY 2011.

Thus, financial resources for the first supplementary budget were covered by reducing the existing expenditure in the initial budget in FY2011, and the procurement of financial resources through government bonds was not carried out. However, the postponement amount for the pension contribution of government of about $31.1 billion will be put in to the Pension Special Account in later years, and will be substantially the same as the procurement of financial resources through the issue of deficit-covering bonds.

2. The second supplementary budget

The second supplementary budget was approved on July 25th. In this budget, additional restoration measures to supplement the items that were not in time for the first supplementary budget were included. Financial expenses are small-scale at $25.0 billion, and there are contents that make amends for the first supplementary budget based on the restoration situation.

Double loan measures and expense related to compensation for the accident at the No. 1 nuclear power plant in Fukushima are the core measures. As for expense related to the Law on Compensation for Nuclear Damage, the total amount is $3.4 billion. This is expenditure concerning payments to Tokyo Electric Power Company based on government-amended contracts, health hazard investigations, and the installation of radiation monitoring posts, etc. The amount of $4.7 billion in expenses related to victim support is composed of expenses related to the double debt problem measures allotted to a reduction in the interest load of stricken small and medium-sized enterprises, and support for the rebuilding of victims' lives. A total of $10.0 billion has been allocated to restoration and the revival reserve fund because it flexibly meets financial demand that cannot be foreseen. In addition, a total of $6.8 billion has been allocated as local allocation tax (special allocation tax) because it chiefly meets special financial demand such as those impinging upon stricken local governments.

Table 3 The second supplementary budget

($, billion)

Financial demands		Financial resources	
Expense related to Law on Compensation for Nuclear Damage	3.4	Surplus receipt in the previous year	25.0
Victim support	4.7	Resources for the local allocation tax	18.2
Revival task force management	-	Public finance law article 6 surplus	6.8
Restoration and revival reserve fund	10.0		
Local allocation tax	6.8		
Total	25.0	Total	25.0

Note: 80 yen = one dollar (July 2011).

Source: The Ministry of Finance

On the other hand, the surplus is composed of financial resources for the local allocation tax and the public finance law Article 6 which deals with surpluses, but financial resources for the second supplementary budget are covered by the accounting surplus in FY 2010. The accounting surplus for local allocation tax is automatically distributed to local governments. Half of the net surplus has to be allotted to government bond repayments based on the Article 6 of the Public Finance Law, but will be used in the full amount in the second supplementary budget. It seems that debt financing has been avoided. However, about 36 percent of fiscal resources can be considered as depending on the issue of government bonds when considering future fiscal burdens.

3. Real revival budget and fiscal resources

In the first and the second supplementary budget in FY 2011, urgent victim support and urgent restoration measures were the main items. The scale of the third supplementary budget, which aims to promote the real revival of the stricken area, is expected to exceed $125 billion and greatly to exceed the revival budget for the Hanshin-Awaji Earthquake.

The content of the measure focuses on the relocation of houses to higher ground and the industrial promotion plan for the stricken area. As regards financial resources for the revival budget, Article 8 of the Fundamental Law on Recovery from the Great East Japan Earthquake provides for financial resources in the revival budget and it provides for the following purposes. That is, “Revival fiscal resources for the Great East Japan Earthquake shall be procured by issuing government bond (revival bonds); these will be managed distinctly from other government bonds and the repayment resources shall be clarified beforehand”. Based on this, the Great East Japan Earthquake Revival Plan Conference[7], which is the Prime Minister’s advisory council, proposes to cover the repayment of fiscal resources through the issue of revival bonds by increasing taxes, namely, the “fundamental taxes” of individual income tax, corporate income tax, and the consumption tax.

The Japanese economy has been experiencing a shortfall in demand for a long time. A tax increase for individual income tax will further reduce consumer demand, and a tax increase in corporate income tax will make Japan fall behind other nations in international tax rate reduction competition,

[7] It was based on Article 18 of the Fundamental Law on Recovery from the Great East Japan Earthquake.

while there is also the possibility of promoting the overseas relocation of enterprises. An increase in the tax burden on households and enterprises will offset the economic effect of revival demand, and there is a possibility that the Japanese economy will remain in a state of long-term stagnation.

The natural damage caused by the massive earthquake and tsunami was an unforeseeable event, and urgent financial demand was generated[8]. Moreover, the reconstruction of buildings, lifelines and social overhead capital destroyed by the earthquake and tsunami will contribute not only to the present generation but also future generations. So, such generations should also pay for some part in the redemption of government bonds. This will contribute to securing the equity of the burden between generations. Therefore, it is reasonable to cover the financial resources for restoration and revival by issuing government bonds.

Even if we issue construction debt of billions of dollars over several years as financial resources for the reconstruction effort in the ruined area, the increase in the national debt service expenditure for a single FY is not excessive when considering a repayment over 60 years[9]. Therefore, the repayment of fiscal resources for the issue of government bonds for the reconstruction effort need not be prepared separately. It is preferable to cover restoration and revival fiscal resources for the stricken area from the viewpoints of securing intergenerational equity and demand stimulation, etc. through the issue of government bonds[10].

IV. Accident at the nuclear power plant and the Japanese economy

Human factors also undoubtedly contributed to the disaster caused by the accident at the Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Plant, even though the damage caused by the massive earthquake and the tsunami was natural damage. The influence on the entire economy of the nuclear accident is far larger than the damage from the earthquake and tsunami. The impact that the electricity shortage and the expected rise in electricity charges will exert on the Japanese economy will be more extensive.

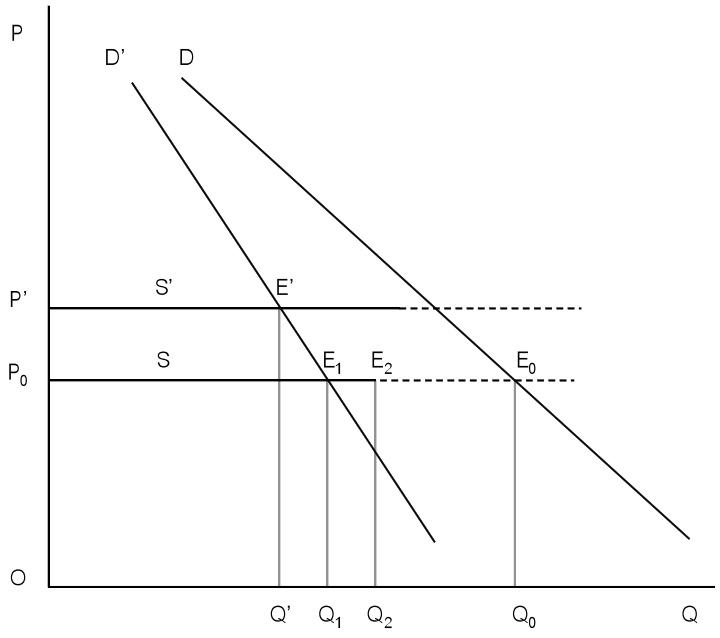
[8] Jinno, N. (2002), p.229.

[9] Konishi, S. (2011), p.30.

[10] There is a proposal to assume the issue of revival bonds underwritten by the central bank is appropriate. Iwata, H. (2011), p.29.

Figure 1 shows the influence of the restriction of electricity use (power saving) due to the electricity shortage and the rise in costs for electric power company. The quantity of electricity is shown on the horizontal axis and the price is shown on the vertical axis. Electric utilities are a natural monopoly, and electricity charges are decided by the authorization of the national government[11]. The supply curve can be roughly drawn on a horizontal axis in parallel if it is simplified, even though the fee system[12] is complex. The supply curve after the accident at the nuclear power plant is designated S, and the amount of electric power based on maximum supply is P_0E_2 (the short dotted line showing lost supply capacity). The demand curve moves on the left side from D before the accident to D' based on power saving due to the electricity shortage, and the equilibrium point shifts from E_0 to E_1. This represents a decrease in demand matched to the decrease in the capacity of electricity supply.

Figure 1 Power saving by electricity shortage and cost rise of electric power company



[11] Article 19, Clause 2 of the Electricity Business Act.

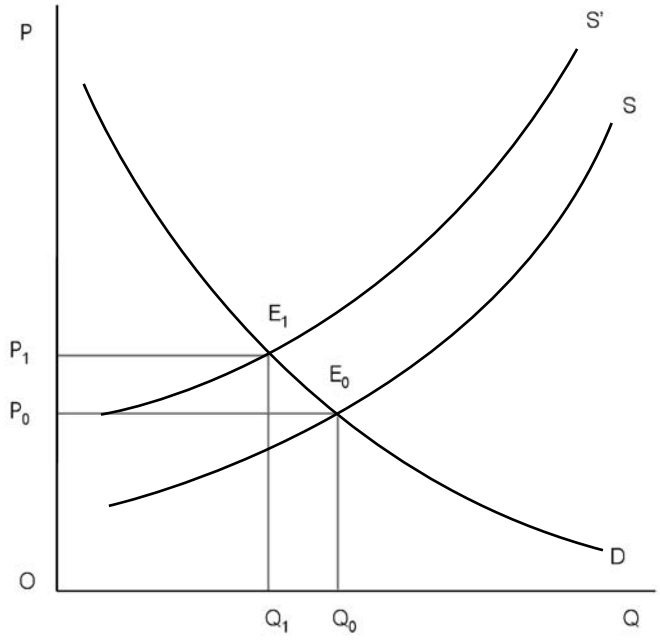
[12] For domestic use, there are three stages, and for industrial use, there is a system involving gradual increase based on extra rates of voltage.

A rise in electricity charges will be inevitable because of the compensation payments to residents and enterprises that suffer damages caused by the accident at the nuclear power plant over the long term[13]. Moreover, a rise in electricity charges due to an increase in fuel expenses at electric power company will be unavoidable when the ratio of nuclear power generation is decreased and converted to other energy sources. Therefore, the supply curve shifts from S to S' due to the rise in the costs encountered by electric power company.

The electricity shortage and the rise in electricity charges will become a large encumbrance on households and enterprises as shown in the following, and the possibility of a decrease in the potential rate of growth of the Japanese economy may be considerable. Figure 2 shows the quantity of electricity as Q on the horizontal axis, and electricity charges as P on the vertical axis.

D is the demand curve. The supply curve S of enterprises before the accident at the nuclear power plant (marginal cost curve) shifts to S' due to the rise in the

Figure 2 Rise in production cost of enterprises



[13] As it is unpredictable when and how the accident at the nuclear power plant will be resolved, people will not accept an increase in the ratio of nuclear power generation.

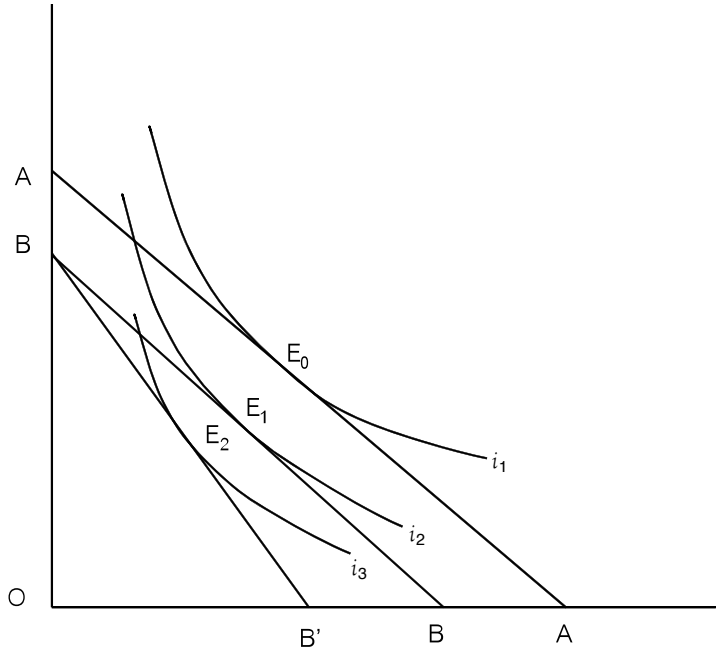
costs experienced by enterprises caused by the electricity shortage and the rise in electricity charges. Electricity is an indispensable intermediate input for all enterprises, and the amount increases in tandem with an Increase in production[14]. Therefore, the electricity shortage and the rise in electricity charges[15] cause the supply curve to move upward, and the equilibrium point shifts from E_0 to E_1. That is, the price rises from P_0 to P_1, and production decreases from Q_0 to Q_1. The rise in production costs will be generated in all enterprises. It is inevitable this will cause a decrease in GDP when we look at the national economy.

Next, let us consider the effect that the electricity shortage and the rise in electricity charges will cause at the utility level in households. Figure 3 shows the quantity of electricity on the horizontal axis and composite goods on the vertical axis. AA is the consumer's budget line before the accident at the nuclear power plant, and BB (the slope being the same as AA) is the budget line of households caused by the effect (income decrease in households) of a production decrease resulting from the electricity shortage. BB' is the budget line following raises in electricity charges. In addition, i_0, i_1, and i_2 are indifference curves. The equilibrium point moves from E_0 to E_1 (decrease in household income). In addition, increasing electricity charges moves the equilibrium point from E_1 to E_2. This is a decrease in the utility level in households (income effect plus substitution effect).

[14] Power demand and production activity have an especially strong correlation. The Cabinet Office. (2011), *Annual Report on Japanese Economy and Public Finance.*

[15] In addition, the electricity shortage and the rise in electricity charges will lead to a rise in various material prices and the short supply of raw materials.

Figure 3 Effects on utility level of household of electricity shortage and rise in electricity charges



Thus, the electricity shortage and the rise in electricity charges will force the production costs of enterprises to rise, and also influence corporate profits and the utility in households. When alternative energy development is not successful, the budget line moves to the lower side, and a drop in demand for other goods is promoted. In addition, power supply restrictions become a backing-off pressure on economic activity in a deflationary economy, even though rises in electricity charges are likely to exert a demand-controlling effect and promote the development of alternative energy. However, the budget line will move to the lower side when alternative energy development is not successful, and a drop in demand for other goods will be promoted. In the Japanese economy, which is experiencing deflation as already mentioned, power supply restrictions will become a backing-off pressure on economic activity where production is concerned. Moreover, the resulting rise in production costs will lead to the overseas outflow of enterprises and reduce the growth rate of the national economy.

Conclusions

The catastrophe was a compound of the earthquake, the tsunami, and the accident at the nuclear power plant, and is the greatest accident that has affected the Japanese economy since the war. After this autumn, restoration and revival demand is expected to have the effect of pushing up the economic growth rate even though the Japanese economy was depressed in the first and the second quarter of 2011.

On the other hand, the power supply shortage due to the accident at the nuclear power plant in Fukushima has had a serious impact on the Kanto region in particular. There is a possibility that it will spread out to the whole country, because the local governments located elsewhere are not ready to agree to the resumption of operation of nuclear power plants, which have completed their periodic inspections (once every 13 months). Furthermore, it is inevitable that electricity charges will rise in the future. Power supply restrictions and a rise in electricity charges will thus cause a decrease in the potential rate of growth in the Japanese economy.

The response of the Japanese Government to the disaster of the earthquake, the tsunami, and the nuclear accident has not been executed expeditiously. The real revival budget has not been determined, and a stolid feeling is indisputable, even though the first and the second supplementary budgets are approved and have been executed. A coherent policy is required regarding the restoration, the revival, and the accident handling of the nuclear power plant in the long run.

The trend in the Japanese economy will depend on the effect of the economic boost from revival demand, as well as the business controlling effect of the power supply shortage and a rise in electricity charges[16]. In particular, the quality of energy policy will greatly control the Japanese economy. As for safety, efficiency, and the environment, the establishment of a balanced energy policy is a pressing issue.

The Great East Japan Earthquake is the greatest challenge for the economy in postwar Japan, and the Japanese economy will be determined by the way the country fights back against this challenge. We should assume this is the turning point for the construction of a new Japanese economy.

[16] Demand trends in foreign countries, the price of imported resources and exchange rates also control the Japanese economy.

References

Akimoto, A. (1995). *Technological Progress and Economic Development.* Tokyo: Dobunkan.

Buchanan, J.M. & Musgrave, R.A. (1999). *Public Finance and Public Choice.* The MIT Press: Cambridge.

Buchanan, J.M. (1999). *Public Principles of Public Debt: A Defense and Restatement.* Indianapolis: Liberty Fund.

Iwata, H. (2011). *Economic Reconstruction.* Tokyo: Chikumashobo.

Jinno, N. (2002). *Public Finance.* Tokyo: Yuhikaku.

Konishi, S. (June 2011). Idea of financial support for supplementary budget (the 1st) for recovery at early stage from the Great East Japan Earthquake and the idea of financial support for the local governments. *Chihozaimu.* 27-35.

Sakaiya, T. (2011). *The Third Defeat.* Tokyo:Kodansha.

Satomi, J. (2005). *Essential of Economic Theory.* Tokyo: Chuokeizaisha.

Skidmore, M. & Toya, H. (2002). Do natural disasters promote long-run growth. *Economic Inquiry.* Vol. 40, No. 4, 664-687.

Takemori, S. (2011). Revival of *Japanese Economy.* Tokyo: Chuokoronshinsha.

The Cabinet Office. (2010). *Disaster Prevention White Paper.* Tokyo.

The Cabinet Office. (2011). *White Paper on Disaster Management 2011.* Tokyo.

The Cabinet Office. (2011). *Annual Report on Japanese Economy and Public Finance.* Tokyo.

Websites

http://www.cao.go.jp/index-e.html (August 12, 2011).

http://www.imf.org/external/pubs/ft/weo/2011/update/02/ (August 12, 2011).

http://www.mof.go.jp/english/budget/budget/index.html (August 12, 2011).