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Natural Disasters

**Economically speaking, are they
net contractionary or stimulative events?**

Witness the March 2011 triple disaster in Japan. Will the end result be a raft of new infrastructure and other spending that proves to be a net stimulus to the Japanese economy? Or has the catastrophe produced such a dark cloud of gloom over the country itself that the net result is contractionary? What about the recent natural disasters in the heartland of the United States—flooding, tornados, wildfires? Economically speaking, are these net stimulative events, particularly for the construction trades? Or do these events create a sense of uncertainty, highlighting the uncertainties of the debate over climate change? How does Haiti fit into this discussion? The state of Louisiana after Katrina?

The views of 17 important thinkers.



*The whole story
was rehearsed in
large scale in
World War II.*

SAMUEL BRITTAN
Columnist, Financial Times

This is not a difficult question. A tsunami or severe flood or storm reduces national wealth—a once-for-all effect. The only exception would be if it hit a completely barren and uninhabited place, but such areas are now extremely rare. It also reduces, on impact, the annual flow of output and income.

Any stimulus results from the rebuilding efforts. This will be the case whether the reconstruction efforts are privately or publicly financed. The only exception is if the government offsets its reconstruction expenditure with a one-for-one increase in taxation to pay for it; but that is extremely unlikely, especially in the early stages.

What happens next depends on the initial state of the economy. If it has been working well below capacity, the effect is to stimulate output and employment. Indeed, on some assumptions multiplier effects could lead to a higher real national income than before the disaster. But care is needed in defining “below capacity.” Such a state of affairs does not exist simply because businesses would like more orders. It exists only if output could be increased without an acceleration in the rate of inflation.

If on the other hand the economy is already against the limits of capacity, the main effect would be an increase in the inflation rate and probably some reduction in the exchange rate or a deterioration in the balance of payments. As the economy is usually somewhere between the two extremes, there is ample room for argument; but this is no different in principle from the disputes occurring in normal times between, for instance, the doves and the hawks on the Federal Reserve Open Market Committee. But the doves are more likely to win because of the psychological atmosphere created by the disaster.

The whole story was rehearsed in large scale in World War II when at last the U.S. economy fully recovered from the Depression and moved onto a rapid growth trajectory. Some of this effect may be explained by wartime controls, for example on prices, which enabled

the economy to sustain a higher level of activity than it otherwise would. But this is by no means the whole story.

One is left wondering why peacetime budget deficits to reduce unnecessary slack in the economy are greeted in some quarters with hysterical opposition while much larger deficits to pay for wars and destruction are greeted with equanimity.



*The question
remains open,
theoretically and
empirically.*

AGUSTÍN CARSTENS
Governor, Bank of Mexico

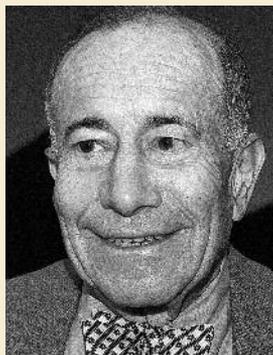
Natural disasters are associated with the destruction of physical and human capital, translating into an immediate decrease in GDP. However, the question of whether natural disasters have a positive or negative impact on short- and long-term growth rates remains open, theoretically and empirically. Indeed, the Solow-Swan model of growth predicts that growth rates will increase immediately after a disaster and will return to their steady state once GDP attains its pre-disaster trend. Nevertheless, the endogenous growth framework does not have such clear implications. For instance, assumptions such as increasing or decreasing returns to scale on the knowledge production function could lead to either a decrease in the long-run growth rate or to an unchanged steady state, respectively. Furthermore, rigorous empirical studies have not reached a consensus with respect to the transitory and permanent impacts of a natural disaster (Cavallo and Noy, 2010).

In spite of the apparently inconclusive evidence, the economic effect of a natural disaster seems to depend on the reconstruction capacity of a country. Empirical evidence suggests that in some cases, mostly for developed economies, a natural disaster could even result in a higher long-run GDP growth rate (Crespo, Cuaresma et al., 2008). If a country has the ability to use the opportunity to get rid of outdated technologies and invest in new ones when the reconstruction effort takes place, the adoption of these innovations could lead to higher production, lower costs, and a more efficient use of the nation’s resources. However, this possibility of renovat-

ing infrastructure seems to arise only when specific factors come together.

The literature has pointed at some of the most important factors that enable technology absorption following a disaster (Beasley and Burgess, 2002; Kahn, 2005; Toya & Skidmore, 2007; Crespo Cuaresma et al. 2008; Noy, 2009; Noy and Vu, 2010). In particular, strong institutions that generate the right incentives for firms and households to adopt better technologies, such as contestable and open markets, in both inputs and goods, seem to be fundamental for a successful reconstruction. Another instance is a deep and solid financial system, which allows the swift shift of resources to the areas in greatest need and to the projects with the highest social returns. In the same vein, more skilled human capital will facilitate the employment of new technologies. In addition, government accountability is required to guarantee the best use of available resources. All of these elements seem to enable the efficient use and coordination of resources for reconstruction.

It is relevant to note that the factors that help recovery from a natural disaster are crucial in mitigating the initial drop in GDP in the first place and, more importantly, in promoting growth in normal times. Hence, although there is not enough evidence to predict the net effect of a natural disaster on economic activity, it seems that the best manner in which to face a disaster is to promote policies that increase productivity at all times.



In the medium and longer terms, natural disasters can be stimulative.

CHARLES WOLF

Distinguished Corporate Chair in International Economics, RAND Corporation, and Senior Research Fellow, Hoover Institution

In the near-term, natural disasters are unambiguously contractionary. Japan's triple earthquake, tsunami, and nuclear disasters since March 2011 have contracted Japan's GDP by 2–3 percent.

But in the medium and longer terms, and under favorable conditions, natural disasters can be stimulative (for example, following China's Chengdu earth-

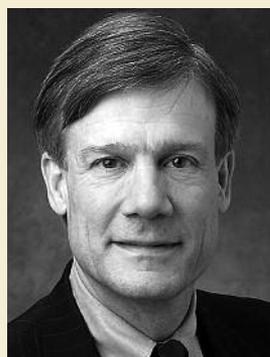
quake in 2008, Indonesia's Sumatran tsunami in 2004, and South Korea's separation from the North in the 1950s—the latter both a natural and unnatural disaster).

So, perhaps it may be better to pose the question another way: Under what conditions are natural disasters likely to be net stimulative?

In addition to a longer time horizon, the stimulative conditions include: (a) possibly enhanced motivations for both government and the private sector to mobilize expanded investment to meet priority needs; (b) opportunities to modernize technology and increase productivity along with the package of replacement and repair of damages wrought by the disaster; (c) galvanized foreign assistance (both financial and technical, and from both governmental and non-governmental sources); and (d) unity and cohesion of political leadership, public solidarity, and public policy (perhaps supplanting a pre-disaster regimen of divisiveness and wrangling).

Absent these stimulative conditions, the contractionary effects of natural disasters may well endure, including persistently weakened consumer demand resulting from lingering fears and uncertainties induced by the disaster, more risk-averse investors enfeebled by the disaster's after-effects, and possible emigration of "best and brightest" from the impacted country or area.

As a wild guess, I'd opine that the stimulative effects are likely to predominate in Japan, the contractionary effects more likely to predominate in Haiti, while the effects in the United States lurk somewhere in between.



Claims that natural disasters can bring economic benefits are far-fetched.

JAMES E. GLASSMAN

Senior Economist and Managing Director, J.P. Morgan Chase & Co.

It is often said that, aside from the human toll, natural disasters can bring economic benefits. The rebuilding of damaged facilities generates new economic activity, faster growth, and more jobs. Indeed, many may be tempted to see this year's speedy rebuilding from the

destruction caused by the Great East Japan Earthquake and tsunami of 2011 as an example of the economic benefits that can come from a natural disaster. In addition, some believe that natural disasters, by clearing away aging infrastructure and equipment, allow newer and more efficient capital to replace older vintages, in the same way that forest fires clear the way for new growth. Some credit the stimulus provided to repair earthquake damage for California's eventual recovery following the 1991 national recession.

Nonetheless, claims that natural disasters can bring economic benefits are far-fetched. If this were so, governments could counteract economic downturns and spur new growth simply by destroying property.

For sure, the recovery from a natural disaster creates new activity and jobs for a while, but such activity can never replace the lost output caused by a natural disaster. At best, the rebuilding effort will only return economic output back to where it was before the natural disaster. That's because the destruction of productive facilities temporarily lowers the level of economic output until the damage is repaired. In other words, natural disasters produce a V-shaped profile of economic activity, at first lowering output and then boosting it as damaged property is replaced. Such a V-shaped profile of output is a worse outcome than the alternative flat but high level of output that would have occurred in the absence of the natural disaster. The spur to growth associated with rebuilding eventually restores national output to where it had been, but an economy that has suffered from a natural disaster most likely can never fully recoup the output that was lost in the aftermath of the natural disaster and during recovery. For that to occur, national output temporarily would need to rise above the level it had been operating at, most likely leading to an inflation threat.

Are there benefits related to clearing the decks—replacing old inefficient capital with newer, more productive facilities? New equipment may be more efficient, but if the capital in place had economic value, its destruction will be a loss to the economy. If there were an economic justification to replace old facilities with newer capital, this likely would have occurred on its own in the absence of a natural disaster.

Natural disasters are a part of life and cannot be avoided, but the response to such events can mitigate the economic loss. The lost output caused by a natural disaster provides a strong rationale for devoting massive resources to restoring productive facilities as quickly as possible. The quicker a country is able to recover from a natural disaster, the less costly the long-term economic damage—the lost opportunities—that it will suffer.

This opinion is the author's own and not necessarily that of J.P. Morgan Chase.



The Japanese example is intriguing.

RICHARD JERRAM
Chief Economist, Bank of Singapore

The academic literature suggests that economies only suffer lasting economic damage from a natural disaster if they are relatively small and poor. Large, high-income countries can reallocate resources in response, so an impact on the overall economy is hard to find. The recent disasters in Haiti and the United States seem to fit into that framework, although at the same time we need to take care to avoid a callous disregard for the human dimensions.

Japan is intriguing, since although it is a large, developed economy, the March earthquake threatens to produce lasting damage for four reasons. First, public finances are in such a desperate position that Japan is struggling to produce a budget. This means there will be limits on the speed and scale of the relief effort and it probably means an extension of the deflation that is corroding the health of the economy. Government debt already seemed to be at unsustainable levels before the disaster, and the reconstruction costs will bring the timing of a crisis closer.

Second, the public's safety concerns seem likely to produce a political response to the nuclear disaster that will damage the economy. Moving away from nuclear power will involve higher energy prices, in addition to the cost of scrapping existing, economically viable, and apparently safe facilities. This is not just a problem for Japan.

Third, the disaster in Japan has highlighted the vulnerabilities of extended supply chains. As a result, firms are under pressure to duplicate production facilities, and in many cases this will involve production shifting offshore. This involves a cost to companies due to the loss of economies of scale, although other economies might benefit, to some degree, from direct investment inflows.

Finally, it seems that the disaster might exacerbate the demographic headwind facing the country. Many firms seem likely to close due to the disaster, either because their productive facilities have been destroyed, or because the short-term drop in economic activity—

coming so soon after the recession caused by the global financial crisis—will put them out of business. In Tohoku in particular, but elsewhere in the country as well, some business owners will go into retirement, which will cut into the productive capacity of the economy.

Considering the above factors, it seems remarkable that the March 11 disaster has not led to a weaker yen, which continues to look overvalued against other major currencies.



Developed countries experience a positive effect while developing countries tend to suffer reductions in economic activity.

JOSÉ DE GREGORIO
Governor, Central Bank of Chile

Natural disasters have serious economic consequences. In principle, one can distinguish between supply and demand effects. The former are related to the transitory disruption of economic activity and the longer-lasting damage to capital and infrastructure, as well as the loss of human lives. The latter refers to the effects on activity and production triggered by the boost of extraordinary expenditures associated with the disaster and the rebuilding of the capital stock and infrastructure. In turn, the ability to carry these expenditures is linked to the ability of the country to finance the cost of the reconstruction. The combination of both will determine the net impact of the disaster. The available empirical evidence (see Noy, 2009; Cavallo and Noy, 2009; and Raddatz, 2009) suggests that developed countries experience a positive effect on GDP growth in the aftermath of a disaster, while developing countries tend to suffer reductions in economic activity. In addition, often in developing countries these events are followed by episodes of social disorder which might be an additional explanation for the disruptive effect that disasters tend to have on these countries' economic performance.

One of the most recent and severe disasters was the earthquake (8.8 on the Richter scale) and tsunami Chile suffered on February 27, 2010. In terms of direct impact, it was estimated that the net stock of capital suffered a destruction of near 3 percent, while the (seasonally adjusted) monthly indicator of economic activity

decreased by 6.8 percent the following month. The government estimated that the total costs in damages were close to US\$30 billion. Fortunately, the reconstruction started quite rapidly, including a four-year government plan of nearly US\$8.5 billion as well significant private efforts. Aggregate activity variables displayed a V-shaped evolution. For instance, real GDP dropped 2.1 percent in the first quarter of 2010 but increased by 4.1 percent in the following quarter, investment decreased by 2 percent in the first quarter and rose by almost 23 percent in the second, while the unemployment rate rose by 0.4 percentage points the month following the disaster but recovered to pre-earthquake levels by April 2010.

Overall, the annual GDP growth rate for Chile in 2010 was 5.2 percent, which of course was influenced not only by the earthquake and tsunami but also by the recovery from the recession that had affected the country in 2009. In fact, a counterfactual exercise performed with the models used at the Central Bank of Chile indicates that the net effect of the earthquake and tsunami was between 0.7 percent and 1.3 percent of real GDP growth of 2010. This takes into account the direct effect of capital destruction and the disruption of economic activity as well as the investment that followed, that in the case of Chile was favored not only by the government plan but also by the insurance payments coming from abroad. From an aggregate perspective, Chile had a recovery from the earthquake more in line with the evidence for high-income countries, due to a dynamic private sector and a strong institutional and macroeconomic policy framework.



For Japan, neither stimulative nor contractionary in the long-term.

TADASHI NAKAMAE
President, Nakamae International Economic Research

The strength, or even existence, of a political and economic infrastructure will determine whether tragedies such as natural disasters have a contractionary or stimulative effect on an economy. The lack (or weakness) of such infrastructure would cause an economy to contract sharply and for a long time. For wealthier countries,

the effect would be either neutral or perhaps stimulative, but only in the short-term, as reconstruction demand would be temporary, especially if the process is efficient. The site of the natural disaster also matters. In a vital hub, the damage is likely to be larger causing chaos, and therefore a medium-term contraction, in the economy.

The recent earthquake and tsunami in Japan illustrate some of these points. Latest estimates show that the total damage excluding the nuclear catastrophe was ¥16.9 trillion (3.5 percent of GDP), of which ¥10.4 trillion was commercial buildings, factories, and housing, and ¥2.2 trillion was social infrastructure such as roads, rivers, and ports. The biggest damage was to the private sector. Yet only 1 percent of Japan's total productive capacity was damaged and four months later most of this has already been restored. By May, Japan's industrial production had declined 20 percent. It is expected to recover to pre-disaster levels by September, according to a manufacturer's forecast survey conducted by the Ministry of Economy, Trade, and Industry.

The reason why industrial production fell so steeply underlines the importance of this area's role within the supply chain, and the supply chain itself. The supply chain proved remarkably resilient and adaptable, and was running at almost full capacity by June. Whether production will increase once it reaches pre-disaster levels after the summer will depend on domestic and overseas demand.

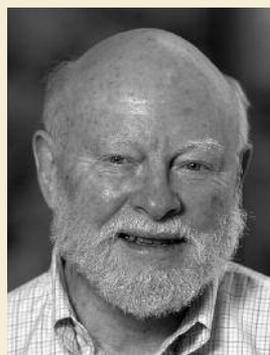
The recovery of social infrastructure has been slower. The removal of immense amounts of rubble in northeast Japan has been incredibly slow because of the lack of machinery and other tools. However, the government would have to spend more than ¥1 trillion in such machinery compared with ¥50 billion in a regular year. Not only would it be difficult to procure such a large amount of equipment, economically, it makes more sense to stagger the clean-up and spend, say, ¥200 billion instead. Another thorny issue is the reconstruction of local infrastructure, such as railways. The shinkansen (bullet train), which was inland and thus unaffected by the tsunami, was back up and running in two months as it is a much-needed and profitable route connecting the northeast with Tokyo. However, even before the disaster, local lines, especially along the devastated coast, were unprofitable and were in danger of being closed down. Now there is considerable debate as to whether they should be rebuilt at all. These issues are for the government (central and local) to decide and with a hysterical media dogging them, this could take quite a while.

Thus far, the twin disasters have been neither stimulative nor contractionary for the Japanese economy in the medium to long term. However, Japan has suffered a third related disaster—a nuclear one. Japan will not be able to rely on nuclear power for the next twenty years.

Currently only fifteen out of Japan's fifty-four nuclear power stations are operating. Each working plant needs to close for annual safety checks and they require approval from local governments to reopen. Given current public sentiment, this approval is unlikely to be obtained easily if at all. Businesses and media are worried that this will cause an electricity shortage that will hamper economic growth. Alternative energy sources such as solar and wind are still cost-prohibitive. Yet there is considerable room for more efficient electricity generation and transmission. The reason Japan lags in this area is because of the monopoly held by Tepco and other regional electricity companies, and the archaic regulations that supported them. Reform, through massive deregulation, including competition and the breaking up of the big incumbents, would lower electricity prices (currently among the highest in the world), and encourage innovation.

There is also great potential in the energy-savings market, such as LEDs and more energy-efficient appliances, a traditional area of strength for Japan's electrical manufacturers. Moreover, even though other countries are also racing to develop similar technologies, Japan may well have an edge now, as needs must when the devil drives.

I believe Japan's energy problems will be solved by reducing demand rather than increasing supply. This will require a big investment—a long-term advantage for economic growth.



*It depends on
the state of public
finances and
access to capital.*

RONALD MCKINNON

*Professor Emeritus of International Economics,
Stanford University*

For the country in question, further information about the state of the public finances and its access to external credit is necessary. If its government already has large domestic and foreign debts, and foreign creditors are very suspicious of new lending, then an expensive natural disaster will only worsen the situation. Countries such as Haiti, Argentina, or Greece are now economically highly vulnerable.

At the other extreme, countries with high saving and positive net wealth in the international economy can weather natural disasters more easily. They are the most likely to get a positive “Keynesian” fillip from reconstruction spending. China is a case in point where domestic saving runs to about 50 percent of GDP, much of it in the form of deposits in state-owned banks.

In 2008, China was hit by two major shocks: the great Sichuan earthquake in May and the great man-made global credit crunch in the second half of 2008. The earthquake quickly elicited a bank-financed reconstruction program helped by fiscal transfers from Beijing. The global credit crunch hit foreign trade particularly hard with Chinese exports falling more than 40 percent. But this sharp fall in its very large export sector was quickly offset by a sharp rise in domestic bank-financed spending leading to a surge in imports. Remarkably, China’s high growth of 10 percent per year only dipped to 8 percent in 2008 into 2009, before recovering in 2010 and 2011 to a “normal” 10 percent. As with the earlier Asian crisis of 1997–98, China’s prompt fiscal action helped its smaller East Asian trading partners to recover more quickly.



The economic consequences can be complex because of financing and cross-border considerations.

GARY KLEIMAN

Senior Partner, Kleiman International Consultants

The economic consequences of the Japanese and similar physical catastrophes have proven more complex as they feature financing and cross-border dimensions beyond those of national output and environment. In Japan’s recent post-earthquake case, parallels have often been drawn to the mid-1990s devastation in Kobe, where industries and structures were readily rebuilt and became net GDP contributors after the immediate loss. Then the public debt was not at the current stratospheric level of 200 percent of GDP in gross terms, and although over 90 percent is underwritten by domestic retail and institutional investors, the additional cost of the Fukushima region cleanup will resort to special budget allocations so as not to further compromise market-based fiscal sustainability.

The direct and portfolio investment implications in the aftermath were also pronounced throughout Asia and other developing regions. Auto production in locations such as Thailand and Mexico, often for re-export to China and large Latin American markets, was interrupted, while funds sponsored by banks and securities firms pulled back from currencies, bonds, and equities in Brazil, South Africa, India, and Turkey. Japanese syndicated loan participation was curtailed for infrastructure projects in the Middle East and Africa where commercial players operate alongside government and multilateral sources.

From a sovereign perspective, despite its net international creditor position, Tokyo also increased overtures to Beijing to diversify its \$3 trillion-plus reserve holdings into yen paper. Local commercial borrowing has likewise been upset by rating downgrades and potential insolvency without official rescue of the Tepco electricity company which is the largest corporate issuer and a major stock market listing. These financial sector burdens, along with an anti-nuclear backlash crimping energy capacity, are likely to outweigh direct recovery push effects.

Haiti’s reconstruction, apart from some non-concessional resources remaining from a Venezuelan oil shipment program, will be financed entirely from aid providers under the two-year \$5 billion plan agreed last year. According to the oversight authority established by the international community, the majority of funding has yet to be disbursed with near-term rubble cleanup and humanitarian assistance taking priority over durable housing, infrastructure, and employment creation. Presidential elections were recently held in a watershed peaceful political transition after the tragedy and the new administration may decide also to seek post-disaster private funding which in this era of emerging market “frontier” interest could offer a new post-disaster poor-country model for economic policy and performance improvement.



There is no way that a disaster can be viewed as good news economically, even if GDP is boosted for a few quarters.

MARTIN N. BAILLY

Senior Fellow, Economic Studies, Bernard L. Schwartz Chair in Economic Policy Development, and Director, Business and Public Policy Initiative, Brookings Institution

Immediately following a disaster, there is a loss of supply in the affected area. After hurricanes, oil spills, or floods, the people, land, buildings, and other resources can no longer supply the same level of output. Power outages can halt production, and in the wake of the Gulf oil rig explosion, oil wells were shut down. The earthquake and tsunami in Japan destroyed factories and homes, and the loss of auto parts forced shutdowns even in factories in the United States. This loss of output is matched by a loss of income for workers and companies.

The first-round effect of natural disasters, then, is that income and output (GDP) fall. Japan's GDP loss from the earthquake is estimated at 0.7 percent to 3.0 percent. Often, however, the quantitative impact of this first round is small, particularly when the disaster happens to a large diversified economy like that of the United States. Following the unnatural disaster of the World Trade Center destruction, there was little sign of an impact on overall U.S. GDP.

What happens in the next round depends on the way the country or region responds to the crisis. Japan is a strong economy and has the resources to start rebuilding quickly. It is expected that Japanese GDP will rebound as production is restored to damaged factories. Japan has pledged to rebuild the destroyed housing and social infrastructure and this increase in government spending will likely boost the economy.

The opposite case is Haiti, which was an extremely poor and badly managed economy prior to the hurricane, and whose weak economic base was severely damaged. Despite a substantial international aid response, Haiti has not recovered.

The impact of Hurricane Katrina on New Orleans lies somewhere in between. Louisiana has much greater resources than Haiti and was able to draw on assistance from the federal government. To some degree, New Orleans has been able to bounce back from the disaster, with tourists returning and the Saints back in the Superdome. However, the population, which is currently 30 percent below its 2000 level, may never fully recover.

In the short term, therefore, disasters have a negative impact on output, income, and employment. Measured by GDP, recovery spending may lead to higher output and employment after a period of time. Even this positive effect, however, is somewhat of an illusion because GDP typically does not account for all the economic losses from the disaster, notably loss of capital.

There is no way that a disaster can be viewed as good news economically, even if GDP is boosted for a few quarters as a result of recovery. And for very poor countries or people, the disaster may scar their economic futures for a long time to come.



STUART E. EIZENSTAT

Former Deputy Secretary of the U.S. Treasury, and former Under Secretary of State for Economic, Business, and Agricultural Affairs

Japan has a real chance to convert a catastrophe into a brighter economic future.

Natural disasters, like the 2011 triple disaster in Japan, the devastating 2010 earthquake in Haiti, or the category five Hurricane Katrina in Louisiana in 2005, all take an enormous toll in human lives, disrupted living, and loss of jobs, homes, and businesses on a major scale for the country or region hit. But whether, from a strictly economic standpoint, these kinds of natural disasters are stimulative or contractionary events depends greatly upon the resilience of the people, the political leadership, the state of the governance structure, the capacity of the country to absorb external humanitarian and infrastructure assistance, and the underlying state of the economy.

All natural disasters cause an immediate and temporary decline in the economy, as people, services, electricity, and infrastructure are displaced, regardless of how well-run the economy had been.

But at one end of the spectrum, Haiti at the time of the 2010 earthquake was already a failing state, with poor governance structures, low educational levels, massive government corruption, and a poor infrastructure. The earthquake killed as many as 100,000 people on a small island. The outpouring of official government assistance to Haiti from around the world was virtually unprecedented, to match a heart-wrenching story of human tragedy. This has been supplemented by the Herculean efforts of former Presidents Bill Clinton and George W. Bush to raise private capital. Non-governmental organizations have channeled billions of dollars into Haiti. More than 10,000 NGOs had been performing development work for decades before the crisis.

Mass starvation has been averted, but the disaster has not had a stimulative impact, despite the billions of dollars flowing there. The already-weak government has been further weakened. Government buildings themselves were destroyed. Tens of thousands of people continue to live in makeshift structures with blue temporary

roofs. Disease has spread. The Haitian government simply lacks the absorptive capacity to properly use and channel the foreign assistance.

There is a chance that rural agriculture in Haiti can be jump-started with proper seeds, irrigation, and training. Coca-Cola has planted thousands of mango trees for 25,000 Haitian farmers, and created a new mango drink to provide a market for the farmers, who are being trained by Coke. If a functioning government could be created, thousands of Haitians could be employed in building new roads and electrical and water systems. But the big “if” is whether a reformed, transparent, honest government can be constructed to take advantage of the international goodwill and money available to help Haiti transform this most disastrous event into a brighter future.

At the other end of the spectrum, Japan has a strong governance structure and a vibrant, creative private sector. The Japanese government estimates that the costs of reconstruction from their triple disaster will amount to at least \$312 billion, and possibly more. Since the real estate bubble burst in the 1980s, Japan has been in a series of lost decades with slow growth, allowing China recently to overtake it as the second-largest economy in the world. To finance the massive reconstruction of their electrical system, which depended heavily upon nuclear reactors destroyed in the tsunami and earthquake, Japan will rely mainly on debt financing at a time when public debt is already 200 percent of GDP, the highest among OECD countries.

But Japan has a trade surplus and large foreign-exchange reserves, along with a high personal savings rate. Japan can finance much of the reconstruction internally. Its homebuilding, construction, and solar panel industries can help turn Japan’s tragedy into a growth opportunity. As a result, some experts believe that corporate profits may grow as much as 30 percent in 2012, compared to a decline of 5 percent in 2012.

Indeed, because Japan is such a critical part of the global supply chain for so many products, the disruption from its natural disasters has had a major impact around the world, including slowing growth in the United States. But Japan and the global economy are likely to snap back when Japan begins to work with all cylinders to deal with the effects of the earthquake. Here Japan has a real chance to convert a catastrophe into a brighter economic future and relieve itself of the malaise of more than twenty years. Japan has a history of natural disasters, such as the 1995 Kobe earthquake, temporarily jump-starting the economy only to see it fall back into a slow growth pattern. In part, this is because of a government structure unable to respond to twenty-first century challenges. I hope and expect the dimensions of the 2011 tragedy are so great that it will shake-up the Japanese government system and lead to a renewal of the Japan-

ese miracle we witnessed for decades following the disaster of World War II.



*Reconstruction
offers an
opportunity.*

ANDREW DEWIT

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Department of Economics, School of Policy Studies,
Rikkyo University*

Japan is a ¥500 trillion (US\$5.9 trillion) economy, and the devastated Tohoku region is only 6.4 percent of it. So the stimulus effect of reconstruction depends less on its scale and more on its content and context. The Japanese Cabinet office has estimated the reconstruction at about ¥17 trillion, or around US\$210 billion. This figure does not include the nuclear meltdowns in Fukushima, which may reach about ¥20–¥30 trillion, according to credible estimates of total compensation, cleanup, and ancillary costs.

Big numbers, to be sure, but a conventional reconstruction seems unlikely to push the economy onto a self-sustaining growth track. Japan depends on external demand, with fully 70 percent of machinery orders relying on overseas purchases. Yet the outlook for China, the United States, and the European Union suggests at the very least weakening demand over the coming quarters. The expensive yen compounds this problem, as does the success of Korea and other rivals in stealing away market share in automobiles and other crucial areas.

Making matters worse, the “Japan brand,” a premium marker reliant on perceptions of quality and “cool,” has been deeply sullied by the fallout from Fukushima. The goal of reviving Japanese agriculture through exports suffers with each discovery of radioactive substances in milk, tea, fruit, fish, seaweed, beef, and perhaps the rice crop and other foodstuffs in the fall. Medical tech and other sectors are also deeply concerned about the contagion effect, and Japan’s “All-Japan” public-private effort to export nuclear technology and services has been put on hold for the foreseeable future. Heavily damaged too is the official plan to make inbound tourism a ¥10 trillion industry in a decade. Arrivals

seemed ready to exceed ten million this year, but are now down an average of 40 percent per month.

The facts suggest Japan needs a smart reconstruction rather than porkbarrel roadwork to carry things over until the big exporters rev up. The latter may find themselves without robust export markets, a Wile E. Coyote moment for an already-weak economy struggling with very bearish consumer confidence, power shortages, poor political leadership, and other hindrances.

In this grim context, reconstruction offers an opportunity. Weighed down by the highly concentrated benefits and socialized costs of the heavily monopolized electrical utilities, Japan has been a laggard in deregulating power, adopting smart grids, diffusing renewable energy, and otherwise building the infrastructures of the twenty-first-century power economy. Yet in one fell swoop, the sunk costs of much of the old grid and its centralized generating network have suddenly been weakened as a factor in politics. Japan has a chance to make use of ample human, manufacturing, and financial capital to leapfrog into the increasingly lucrative green sector, rebranding itself in the bargain. Younger, innovative, and IT-centered capital is working with regional governments to make this prospect a reality. If the U.S. Navy can gear itself up to achieve, by 2020, “zero net energy” bases centered on the advanced grid and renewables, then surely Japan can rebuild smart and reap robust growth industries from this crisis.



The idea that natural disasters are economically good is nonsensical.

BERNARD CONNOLLY
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There are similarities between the “climate change” agenda and the nonsensical idea that natural disasters are economically helpful.

Encouraging “green” technologies is equivalent to reducing the quasi-rents of certain existing “dirty” technologies (“vintages of capital”) to zero. The elimination of quasi-rents on old vintages should always be happening in a capitalist society. But if intertemporal signals are being transmitted correctly, this will increase

future consumption possibilities—that is, if the relevant real rate of interest is at least as high as the subjective rate of time preference (unhappily, this has not in fact been the case for the past fifteen years or so). The faster the rate of technological/entrepreneurial advance, the faster the rate of scrapping. But because the general level of wages rises, a faster rate of new investment and scrapping will be associated with increased consumption possibilities over time.

Compare that with a situation in which scrapping happens because of natural disaster or because government suasion has reduced demand for the products of “dirty” technologies. In the benign mechanism, market incentives create new investment. That increases productivity and real wages, and a rising level of real wages forces scrapping of old vintages. In the disaster/green technology world, however, the liquidation of old capital and the need to replace it with new capital, but without any improvement in productivity, reduces future consumption possibilities: resources have to be uselessly diverted to replacing old.

Many comments on reconstruction in Japan are akin to the comments of those who suggested that Hurricane Katrina would be good for growth in the United States because of the reconstruction work it would necessitate. That was nonsense, on anything other than a short-term view (even though Katrina did not create the immediate pessimism that the triple disaster in Japan may have done). The resources that had to go—or were thought likely to go—into reconstruction in the affected areas of the United States meant that there were fewer resources available for anything else, so future consumption possibilities were permanently reduced. Post-Katrina investment was another way of bringing spending forward from the future. In the short term, that can increase demand (and output might increase, too, if the economy was not at full employment). But aggregate demand and, at a given real exchange rate, output in all subsequent periods would, except in notional Keynesian conditions (which may have existed in some countries for a while after Lehman, but almost certainly no longer obtain), have to be lower than if the disaster had never happened. The same is true of the “climate change” agenda: investment, induced by government action, in green technologies reduces future consumption possibilities.

Disasters and the climate change agenda will exacerbate medium-term problems. They bring spending forward, begging the question of what happens when tomorrow comes. The short-term demand-increasing effects imply real rates higher than otherwise while reconstruction or green investment is in progress. But thereafter, real rates would need to fall sharply to prevent a collapse in demand, worsening the problem of intertemporal disequilibrium in the world.



The answer depends on the conditions prevailing in the economy.

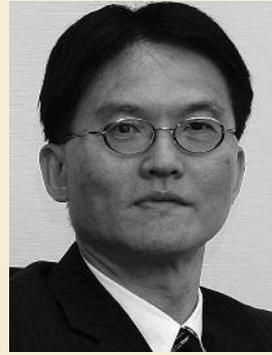
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Empirical research on the effects of natural disasters suggests that the answer depends on the conditions prevailing in the economy. If the impacted country has high per capita income, a high literacy rate, and well-developed institutions, then the effect on aggregate macroeconomic activity is likely to be hard to detect. That is not to say surviving individuals will be unharmed—in Japan, a tremendous amount of wealth has been destroyed so that inarguably, they are worse off. In addition, regional economies may very well be seriously and negatively affected (although there is less research on this issue).

A critical overarching factor is the presence or absence of an institutional infrastructure necessary to direct resources efficiently and facilitate the rebuilding process. When institutional development is lacking (as arguably in Haiti), natural disasters are likely to depress economic activity. I think this point takes on particular force if the response to the disaster erodes, rather than instills, confidence in the government's management abilities.

The recent spate of natural disasters in the United States should not have a depressing effect on economic activity—as long as it is understood that the Federal government can, and will, manage these events in the short term, and over the longer term actively prepare for increasing numbers of such disasters that will occur as global climate change proceeds. On the other hand, if some of our policy leaders continue to deny the existence of current trends, these natural disasters might have a negative effect in confidence, thereby slowing rebuilding efforts. Continued denial will also result in continuation of policies that place individuals and infrastructure at risk—after all, when we have once-in-century floods multiple times within a hundred years, one needs to re-evaluate the extent of protective measures we are now implementing.



I tend to think disasters will have a temporary positive effect, with the longer-term effect quite possibly negative.

CHI LO

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I used to think natural disasters would only have a temporary negative effect on the economy, with the net long-term impact being positive due to post-disaster reconstruction. But now I tend to think they will have a temporary positive effect, with the ultimate long-term net effect quite possibly negative. Sorry, but the world has changed.

In principle, the short-term economic effect of a natural disaster, such as the recent Japanese earthquake in March 2011, on the domestic economy is negative as wealth and the capital stock are destroyed. But the long-term net impact will be positive due to economic reconstruction, which rebuilds the capital stock with a multiplier effect on growth. Internationally, the adverse impact of the Japanese quake on global growth should be limited, as Japan on average contributes only about 3 percent to world GDP growth. Further, Japan's reliance on export-led growth means that it has been a "rider" on the global recovery rather than a "driver." So the adverse impact due to trade disruption should fade as Japan's recovery process begins. Asia as a whole will even benefit from higher exports to Japan after an initial negative shock.

But the global economy is more complicated today. So the straightforward short-term negative/long-term positive impact of a natural disaster is no longer a given. The effect may well be negative overall. This is because since the subprime crisis, governments have exhausted the traditional ammunition (both monetary and fiscal policy) that can be used for economic reconstruction. With policy interest rates close to zero in the major economies and outside budget deficits all around, unconventional policies, such as "quantitative easing," need to be used. These are supposed to be temporary fixes that will return to norms eventually. But with the world economy getting hit by one shock (natural disaster or

financial) after another, the “exit” from unconventional policy keeps being deferred.

The point is that the developed world economy has been impaired, and governments can hardly afford any post-disaster reconstruction with the existing ammunition. So the negative disaster impact may last even into the long term. Then, unconventional policy such as quantitative easing may need to be used over and over again, raising the odds of a dreadful inflationary endgame. This will only aggravate the negative disaster impact that existed in the first place. Just as Japan’s post-Kobe reconstruction in 1996 did little to end the first of its lost decades, the developed world economy runs a similar risk today when a natural disaster hits. The moral of the story is that the stimulative effect of rebuilding will likely be temporary when the underlying economic system is seriously impaired.



A lot depends on the nature and magnitude of the natural disaster.

RICHARD C. KOO

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A lot depends on the nature and magnitude of the natural disaster. If the damage is too extensive, there will be no one left alive to start a recovery. The Japanese disaster on March 11 devastated the Pacific coast of the Tohoku area, which accounts for about 6 percent of Japan’s GDP. With 94 percent largely intact, the disaster should be manageable and the forthcoming reconstruction activity should help the country’s GDP.

However, in this instance, the disaster hit the electricity generation capability of the region badly, and that is affecting the entire Kanto region where Tokyo is located. This means over 40 percent of Japan’s GDP is affected via electrical shortages. Streets and train stations are dark (although still not as dark as the Washington, D.C., metro), and people and businesses have been asked to conserve electricity. Prime Minister Kan’s insistence that all nuclear power plants in the country go through stress tests at the same time is making even people in Osaka and other regions worry about the reliability of the electricity supply.

Since modern society depends on electricity, the issue is making businesses less willing to invest and consumers less willing to spend. This means private sector savings is increasing in an environment of zero interest rates. This is a worrisome macroeconomic combination because the central bank cannot encourage the private sector to borrow and invest the additional savings by lowering interest rates. If left unattended, the economy would start losing aggregate demand equivalent to the unborrowed savings.

The only remedy in this environment for keeping the economy out of a deflationary spiral is for the government to borrow and spend the unborrowed private savings. Fortunately, with the government bond yield significantly lower than before the earthquake, the bond market is signaling that there has been an inflow of additional savings and that it is ready to finance the government’s reconstruction spending. On the other hand, those who only look at the size of the budget deficit and not the price, that is, the government bond yield, such as rating agencies and orthodox academics, are making noises that government should not increase borrowing. If the government ignores the bond market signals and listens to these “warnings,” the March 11 natural disaster could turn into a man-made disaster called recession which would make everything more difficult, including the rebuilding of disaster-struck areas. The government should embark on fiscal consolidation only after the electricity supply issue is resolved, which may take one to two years, and the private sector regains its forward-looking attitude.



The recent earthquakes in Japan will have an extraordinarily large impact on the economy.

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When asset prices go up, a virtuous cycle begins. People feel as if they have become rich and increase consumption, and then this causes asset prices to rise even higher. When asset prices go down, the story is just the opposite. Fluctuations of asset prices

have an immense impact on the economy, which is obvious when we look at the history of the Japanese bubble economy and its collapse.

What's significant about a natural disaster is that, often, "assets disappear but loans from financial institutions remain," creating a reverse wealth effect. In this sense, a natural disaster appears to be a net contractionary, rather than a stimulative, event.

Nevertheless, it is unusual that a natural disaster wreaks havoc on the economy, though it could have an impact within the margin of error. In other words, a natural disaster that would have a huge impact on the economy is a rare circumstance. So, while the recent triple disaster in Japan was certainly a terrible tragedy, the triple disaster alone should not have affected the economy very seriously.

The problem is that the recent disaster occurred when Japan's finances were on the verge of a meltdown. The financial distress of Japan is far more severe than that of Greece. But, unlike in the case of Greece, even if Japan goes bankrupt, people in other countries will not be directly affected, as 95 percent of Japanese government bonds are held by the Japanese people. Just because of this, the global community is not expressing serious concerns at this moment.

But it does not mean that the situation is alright because no concerns have been expressed. Japan had an accumulated deficit of ¥923 trillion at the end of March of this year. Namely, repayment will still take ninety-four years, even when ¥10 trillion is repaid each year. The revenue of Japan is ¥48 trillion this year. Hence, only if Japan spends ¥38 trillion or less can it pay back ¥10 trillion. But it is going to spend as much as ¥92 trillion this fiscal year. If this was the case, the deficit could never be paid back after two hundred years or even after three hundred years.

Furthermore, with so much accumulated deficit now, government finances won't be able to withstand any more interest rate hikes. The deficit of ¥923 trillion means that, for every 1 percent increase in interest rates,

there will be a ¥9.4 trillion increase in interest payments.

By the way, Japan had only ¥60 trillion in tax revenues even at the peak of the booming economy, called the bubble, in 1989 (though the consumption tax rate was lower at 3 percent, compared to the current 5 percent).

If interest rates rise as a result of an economic recovery or an increased risk of a financial collapse, tax revenues will never be enough to cover the incremental interest payments. And now the enormous capital demand for reconstruction needs has been added to the huge accumulated deficit. I believe that a day will come soon when JGBs will fail to sell out in auctions.

In order to avoid a possible shutdown of government functions, the Bank of Japan should have no other choice than to underwrite JGBs, which is currently prohibited by law. The moment that happens, though, the prices of both JGBs and stocks will crash. The yen will also plummet, as the Bank of Japan will lose its credibility. Moreover, since the Bank of Japan will print massive amounts of yen notes, a fall in the value of the currency—inflation—will occur.

So unlike other disasters, the recent earthquakes in Japan will have an extraordinarily large impact on the economy. It will be the second economic defeat for Japan. The day of this second defeat did not fall on March 11 (the very day of the earthquakes). In fact, the defeat has not occurred yet. It will occur on the day when JGBs fail to sell out in auctions, which is expected to come in the near future.

After the end of the war on August 15, 1945, Japan shifted from militarism to democracy. The United States and the United Kingdom turned from enemies to friends. The financial cliques, known as *zaibatsu*, were dissolved, and farming lands were redistributed. A strong shockwave of the same degree of magnitude is expected to hit the Japanese economy and market.

Earthquakes usually do not significantly impact the economy, but it looks different for Japan this time. The shockwave, however, seems to affect Japan only, and its impact on the global economy should be limited. ◆