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Putting the economic shock of the coronavirus in context

(1) Overview using a macroeconomic model

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Executive Summary



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- *The economic shock from the coronavirus pandemic is fundamentally different from a recession driven by a drop in demand. Specifically, it is a supply shock triggered by a shutdown of economic activity imposed to prevent the community transmission of the virus.*
- *A demand shock resulting from a decline in demand can be reversed or at least mitigated by policies to boost demand, but such measures are impotent in the face of a supply shock like the current one.*
- *The coronavirus shock has led to an economic crisis in which businesses—following government recommendations—have fully or partially shut down their operations, resulting in a loss of sales for companies and of wages and jobs for employees. If nothing is done to address this and large numbers of business exits or failures produce a surge in unemployment, Japanese GDP may fall even further, plunging the nation into a full-fledged depression.*
- *The government must provide immediate cash assistance to affected businesses and individuals. In particular, a moratorium on taxes and other payments to the government is needed as soon as possible, along with cash compensation for forgone income and business losses.*

The coronavirus shock

The COVID-19 virus has led to a sharp contraction in economic activity involving personal contact because of the virus's ability to spread, coupled with a lack of natural immunity due to its novel structure. In Japan, the Cabinet Office conducted a series of interviews with industry representatives to discuss the impact of COVID-19 on the real economy and found a dramatic drop in demand across a wide range of industries. A few examples are given below.

■ Third round of interviews (March 21, 2020)

- Department stores: Sales in March 2020 expected to fall by 40% from year-before levels. (Compares with declines of 10.1% during global financial crisis, 14.7% after Great East Japan Earthquake in 2011, and 19.7% after March 2015 consumption tax hike.)

■ Fourth round of interviews (March 23, 2020)

- Railways: Passenger volumes on both high-speed shinkansen and ordinary train lines down more than 50% starting in late February.
- Chauffeured bus rentals: Projected sales down 79% in March and 64% in April over year-before period (as of March 16).
- Aviation: Revenues expected to fall more than JPY400 billion over next four months and JPY1 trillion for full year.
- Travel: Sales expected to decline by more than JPY1 trillion during first six months of 2020.

■ Fifth round of interviews (March 24, 2020)

- Concerts and entertainment: In market with annual sales of about JPY900 billion, losses from already canceled events total JPY175 billion, with total losses amounting to JPY330 billion when expected cancelations are added.

The coronavirus outbreak caused sales to disappear suddenly in all of these sectors. Moreover, the magnitude of the losses appears likely to equal or surpass those seen during the global financial crisis of 2008-09.

It also remains to be seen whether efforts to halt the spread of the virus will be successful¹⁾. We cannot rule out a scenario in which the outbreak is prolonged, which makes it impossible to determine how long the current contraction in economic activity will last. It seems likely that even more sales will be lost going forward.

This is a supply-side shock

It is important to understand that demand-side factors are not responsible for this loss of sales. That is what makes the economic shock from the coronavirus very different from a typical recession, which occurs when a reduced appetite for goods and services on the demand side leads to a loss of aggregate demand. A variety of factors may be involved, but in general, demand declines when consumers and businesses grow more pessimistic about the outlook for the future.

In contrast, the economic shock from the coronavirus is not the result of a weakened appetite for goods and services among consumers and businesses.

NOTE

1) This report was written at the end of March.

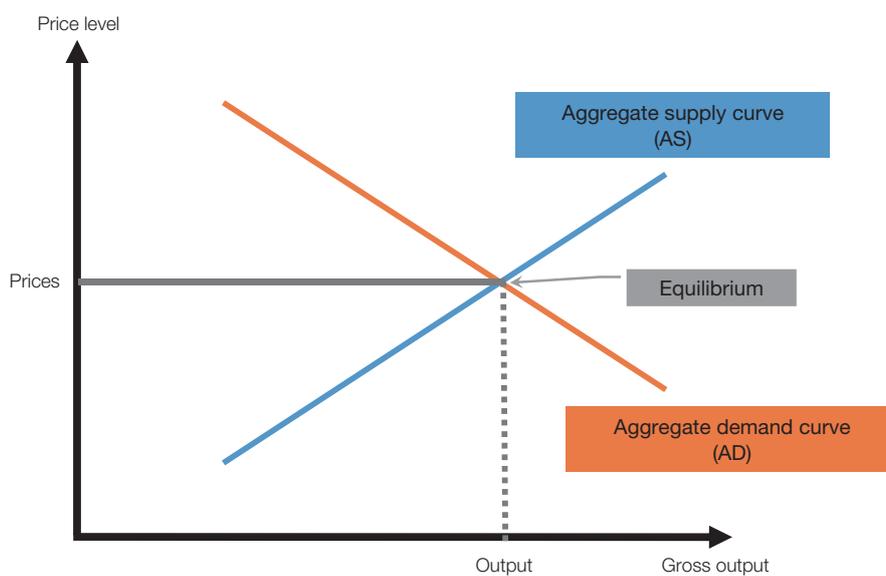
Had it not been for the virus, the spring sumo tournament, which was held in an empty arena, would have attracted huge crowds. Tickets were sold out for all fifteen days of the preceding tournament in January. It is difficult to imagine a scenario in which demand for sumo tournaments drops to zero in the space of just two months.

In other words, the economic shock from the coronavirus is a supply-side—not a demand-side—phenomenon. It is what economists call a supply shock triggered by curbs on economic activity imposed to prevent the spread of the virus. A situation in which demand exists but consumption is impossible is effectively identical to one in which the economy has suffered a loss of supply capacity. It differs from an ordinary supply shock—e.g., the loss of supply capacity that occurs in the wake of a natural disaster—in the sense that the capacity exists but the products and services cannot be supplied.

Simplified supply shock model

Next, I will attempt to explain the impact of the supply shock triggered by the coronavirus using a simplified macroeconomic model, drawing on information presented in a series of tweets by Nobel laureate and City University of New York Professor Paul Krugman (<https://twitter.com/paulkrugman/status/1241689422090944513>).

Figure 1: AS-AD model



Source: NRI

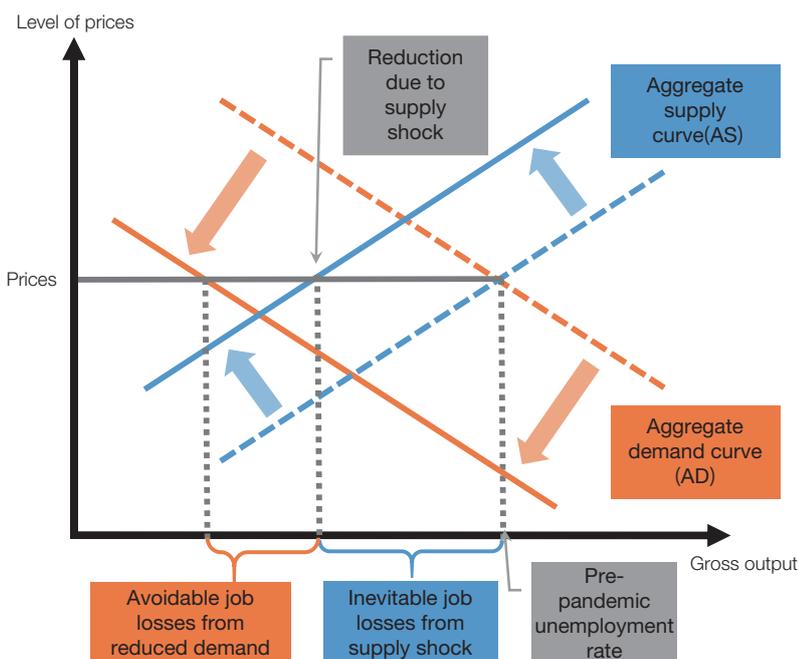
Prof. Krugman used what is called an AS-AD model, where AS refers to aggregate supply and AD to aggregate demand. This analytical framework lets us see both the supply and demand sides of a nation's economic activity and also gives us a look at the relationship between the level of prices and gross output (real GDP). In the short term, the aggregate demand (AD) curve (the orange line in Figure 1) generally slopes downward and to the right, while the aggregate supply (AS) curve (the blue line in Figure 1) slopes upward and to the right. The point where the two curves meet represents the short-term equilibrium, which is where the level of prices and output are determined²⁾.

2) The model presented in Prof. Krugman's series of tweets featured inflation on the vertical axis and employment on the horizontal axis. My notation is based on a model presented in Chapter 12 of the second edition of his textbook *Macroeconomics*, since the theoretical framework is the same.

In general, a shift in the aggregate demand curve—and particularly a shift downward and to the left—signifies a decline in aggregate demand and brings about a reduction in the level of prices (deflation) and a decline in gross output (a recession). The standard response is to deploy fiscal or monetary policy to boost aggregate demand and thereby reduce or reverse the so-called demand shock, in which the aggregate demand curve moves downward and to the left.

However, the situation becomes a bit trickier when the aggregate supply curve shifts upward and to the left. While this situation is similar to a demand shock in the sense that it brings about a reduction in output, it also leads to an increase in

Figure 2: Pandemic supply shock mechanism



Source: NRI

Pandemic-related job losses: Causes and solutions

- Shock to aggregate supply
 Reduced supply from stay-at-home orders and business shutdowns
 Aggregate supply curve (AS) shifts upward and to the left (blue arrows)
 Intersection with inflation target (horizontal gray line) shifts
- Sharp drop in aggregate demand
 Sharp reduction in consumption as people stop going out and eating out
 Aggregate demand curve (AD) shifts downward and to the left (orange arrows)
 Intersection with inflation target (horizontal gray line) shifts

Most of the job losses result from the supply shock (the blue portion in the graph) as events are canceled, people stay at home, and employees are laid off. Policies similar to those implemented following a natural disaster are needed. Specifically, government needs to keep the victims of the disaster economically afloat by providing quick cash handouts.

Meanwhile, the reduction in demand is no different from that observed during an ordinary recession and can be addressed with fiscal and monetary stimulus (orange portion in graph), but this is a lower priority.

the level of prices, i.e., inflation. This is the phenomenon of stagflation, essentially a recession accompanied by rising prices. In this case the government or central bank seeking to mitigate the supply shock with policy interventions faces a trade-off. If it tries to curb inflation, output will fall further, increasing job losses, while an attempt to boost output by stimulating demand will trigger a further acceleration of inflation.

Prof. Krugman's model shows both a supply shock and the subsequent demand shock.

The supply shock resulting from the coronavirus pandemic involves a shift of the aggregate supply curve (AS; blue lines in the graph) upward and to the left. This indicates a sharp decline in supply (shown by the blue arrows in Figure 2). If prices remain constant, output declines to the point marking the intersection with the level of prices (the intersection between the blue and gray lines). And decreased output implies increased unemployment. Prof. Krugman explains that this reduction in output represents "inevitable" unemployment due to the supply shock.

"Inevitable" in this context means that containing the spread of the coronavirus is the optimal social policy. Doing everything possible to reverse the job losses would involve a return to normal economic activity, which would lead to further transmission of the virus. Hence, Prof. Krugman argues, we should not try to offset this supply shock.

Demand may also decline. This is shown by the shift of the aggregate demand curve (AD) downward and to the left (orange arrows in the graph)³. The additional decline in output due to this demand shock is marked by the intersection of prices and the aggregate demand curve. Prof. Krugman argues that unemployment resulting from the demand shock is "avoidable."

Finally, on the subject of economic policy, Prof. Krugman argues that people who have lost their jobs due to a supply shock are similar to the victims of a natural disaster and that the government's role should be to provide assistance and prevent further economic distress from destroying their livelihoods. Meanwhile, jobs lost due to a demand shock can be recovered through the application of fiscal and monetary stimulus, and here Prof. Krugman argues that normal demand-stimulating policies should be deployed.

³ A supply shock typically tends to produce higher prices and higher inflation. But if the demand shock is larger, it can offset that impact and even create deflationary pressures.

Optimal direction for economic policy

The model described above shows that the economic shock from the coronavirus is largely a supply shock rooted in supply-side factors. As such, the economic policies needed now are not policies designed to stimulate demand. Instead, the authorities should move as quickly as possible to provide financial assistance to the businesses and individuals who have lost sales and wages because of supply-side factors. The objective should be to sustain existing supply capacity for as long as possible and thereby ensure that the economy has adequate capacity once the pandemic subsides and demand recovers.

Sustaining supply capacity requires that we maintain jobs and wages and preserve businesses' balance sheets by helping to support cash flows and offering compensation for losses incurred. Moreover, it is essential that these policies be implemented rapidly. The economic contraction triggered by the coronavirus has hit the service sector hard, and given the speed of employment adjustments and the fragile financial position of many companies in that sector, the authorities need to place first priority on providing cash handouts as quickly as possible.

At the very least, the following two measures should be implemented immediately in order to prevent the supply shock from causing further job losses and business failures:

(1) Immediate moratorium on all payments (cash outflows) to government

As the end of the fiscal year approaches, we need to avoid a situation in which tax payments aggravate cash-flow problems for businesses and households. The following kinds of measures should be implemented immediately (some are already in effect):

- National and local tax payment deferments or exemptions
- Full or partial reductions in 2021 residence taxes
- Consumption tax payment deferments or exemptions
- Employee pension contribution deferments or exemptions
- Social insurance and national pension contribution deferments or exemptions
- Utility charge deferments or exemptions

(2) Cash compensation for income and business losses

The economic shock from the coronavirus has heavily affected service businesses involving frequent personal contact. The steep drop in demand for

these services will not only cause job losses in the service sector but will also have spillover effects on related industries. Demand for food and beverages has already declined, and the slowdown in service sector capex will eventually manifest itself in reduced demand for the manufacturing sector. The service sector is also characterized by an abundance of small businesses and irregular employment, which means employment adjustments are likely to happen quickly. The most effective response would therefore be to offer cash handouts as soon as possible.

An economic shock is inevitable if we are to stop the spread of the virus. However, the cost of these measures should not be borne solely by a handful of industries and irregular employees with few job protections. The recommendations to stay at home are currently creating what economists call positive externalities for society as a whole. I believe the government's role is to ensure that affected businesses and households are properly rewarded for those externalities.

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