Olivier Blanchard/ Gerhard Illing Makroökonomie

***Pearson Studium* München, German edition**

9.6 The COVID-19 pandemic (additional section, English version January 2021)

During the first half of 2020, the COVID-19 coronavirus outbreak spread worldwide. It triggered the worst global economic downturn since the end of World War II. In the second quarter of 2020, production in most OECD countries fell much more sharply than during the financial crisis 2008/2009. Again, the IS-LM-PC model provides a good starting point to think about relevant scenarios and about the challenges policy makers were facing during the pandemic. It provides a convenient framework for understanding the impact of the pandemic on potential output and on demand, and for analyzing the role of economic policy.

The pandemic shock meant, on the one hand, a drastic drop in potential output - comparable to the oil price shocks analyzed in section 9.5. On the other hand, however, it also triggered massive demand effects: Fearing contagion risks, demand in contact-intensive sectors (tourism, restaurants, culture, education...) collapsed almost completely. In these sectors, a large part of production had to be stopped - whether triggered by reduced supply as a result of government-imposed closures or by a lack of demand to avoid contagion. Demand effects were not limited to the contact-intensive sectors alone. The loss of income in these sectors and the fear of job losses also affected demand in other sectors. At the same time, the breakdown of supply chains and other input-output linkages damaged potential output in other sectors, too.

With the outbreak of the pandemic, intense debates began about the impact of this shock on the economy and about adequate policy response. Many warned of the risk of depression in the face of rising unemployment. Others feared that the support measures would prevent necessary structural adjustments and might trigger a sharp rise in inflation.

Initially, some interpreted the crisis as a pure supply shock, damaging potential output permanently. Because those goods still available would now become scarcer and so more expensive, the pandemic would have an inflationary impact. In many countries, there were extended lock-downs for several months. Impairment to production was exacerbated by bottlenecks with many supply chains in global world trade being disrupted. While sales in contact-intensive sectors (tourism, hotels and catering, culture and education, public transport) came to an almost complete standstill, demand in some sectors soared: Digital media and online delivery services had an unprecedented boom. With people working in their home office, direct shipment of ready-made meals replaced cafeteria meals. The sales of many retail chains also increased. Some even argued that the pandemic was a welcome cleaning crisis that accelerated urgently needed digitization.

It quickly became clear, however, that the severe income losses in the contact-intensive sectors triggers a fall in demand in many other sectors as well via spillover effects. Whereas a few sectors boomed (such as toilet paper, respiratory masks and bicycles), sales of cosmetics and fashion plummeted just as dramatically as the use of buses and trains. Radical cuts in production and mobility led to a sharp drop in the price of oil as well.

But it was evident that the pandemic shock had quite different impact compared to the demand shock during the financial crisis we analyzed in section 9.4. During the financial crisis, many sectors were hit symmetrically. In contrast, the pandemic worked asymmetrically across sectors, with some being hit particularly strong. As long as consumers avoid contact-intensive industries, even the most comprehensive stimulus package could not (and should not) stimulate demand in these sectors. For that reason, to a large extent the amplification mechanisms described in chapter 3 were cut off during the pandemic: Increasing demand in one sector cannot stimulate additional demand in other sectors as long as consumers stop buying these products, being afraid of getting infected. So workers

in these sectors do not benefit from additional demand at all, disrupting traditional multiplier effects – just as supply chains were disrupted.

The high degree of uncertainty about the duration of the shock complicated policy response even further: If the pandemic can be contained quickly, contact-intensive sectors might go back to normal as soon as immunity is reached (through vaccination or herd infection). If, on the other hand, some sectors will be damaged permanently, the pandemic triggers structural change in the medium term.

9.6.1 A two-sector approach

For designing economic policy, we need to consider quite different scenarios– given the uncertainty about the duration of the shock, about medium-term potential output, and about how fast the economy may adjust to medium term after the shock. Our IS-LM-PC model provides a simple framework to think about relevant scenarios and understand the proper response to these challenges. We just need to modify it a little bit. Following Guerrieri, Lorenzoni, Straub, and Werning (2020), we divide the overall economy into two sectors:

To better understand the crucial mechanism, we consider here the case that all production in sector A has to be closed down ($Y'_A = 0$). Reality is more complex: Part of production may be restructured relatively easily (pick-up service instead of eating in the restaurant). In addition, the risk of infection could be greatly reduced by proper regulations (such as mask protection). With such measures, production in sector A will fall less dramatically: ($Y'_A > 0$); so potential output drops only to $Y'_A + Y_B$.

Sector A is highly contact-intensive with a high risk of contagion (restaurants, tourism, concert halls; schools and universities, open-plan offices, conference meetings). Sector B, on the other hand, is hardly affected by contagion risk since these products are not contact-intensive (such as delivery services, holiday on your own balcony, home cinema with flat rate subscription, e-learning, Zoom conferences). Workers earn income from working in their own sector. They consume, however, goods from both sectors (see figure 9.8). We assume that all workers are highly specialized, so they cannot switch to a job in the other sector in the short run. Aggregate spending on goods in sector A corresponds exactly to the income earned by workers in sector A. The same holds for sector B.
We denote initial potential output for the aggregate economy before the outbreak of the pandemic by Y_n.

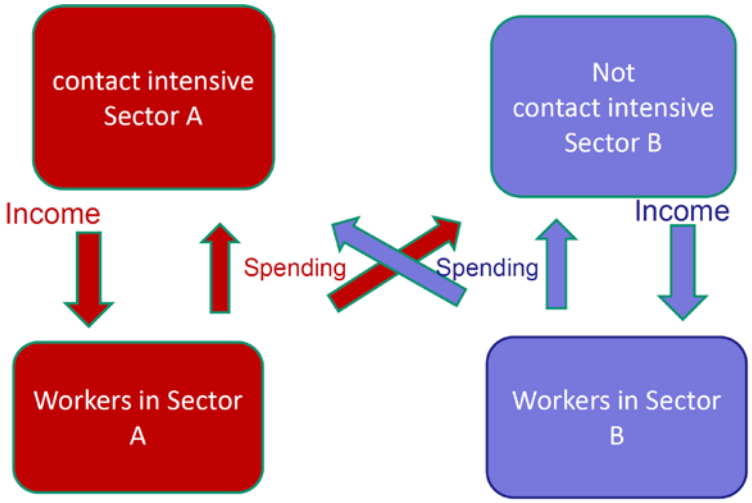


Figure 9.8 A model with two sectors

Production and consumption in sector A is highly contact-intensive, but not in sector B. Before the pandemic, there is brisk trade between sectors A and B. Workers earn income from working in their own sector; they consume goods from both sectors.

Production in the contact-intensive sector A has to stop completely after the outbreak of the pandemic. Whether closure is due to a government-imposed lock-down or due to voluntary "social distancing" out of fear of contagion makes no difference. The second case might be called a preference shock (all try to avoid high-contact products, preferring to eat at home instead of going out to a restaurant). But the effect is the same: All restaurants have to stop production. In contrast, sector B can continue to operate.

To understand the impact of the shock on the macro-economy, it helps to consider first as simplest case a short-term shock; which fades away next year (say, after immunity through vaccination). So next year we will be back to normal. In the short run, specialized workers cannot switch to the other sector. Thus, after the outbreak of the pandemic shock, potential output in the aggregate economy shrinks to the output produced in sector B:. $Y_n{}' = Y_B \ll Y_n$.

Due to the collapse of total output in sector A, all workers in that sector become unemployed. With the decline in potential output, the natural rate of unemployment increases. Closing down production in sector A is efficient. The lock-down may even succeed in eliminating the virus completely. So there is no point in stimulating demand for goods in sector A via government spending. Additional demand would only flow into sector B. As long as $Y = Y_n{}'$, there is no reason for active stimulus programs. After all, even with rising income, workers in sector B would not consume contact-intensive products of sector A due to the risk of contagion.

But what about demand in sector B? Being unemployed, workers in sector A lose all their current income (see figure 9.9). Before the pandemic, they spent a share of income on sector B products. The unemployed can maintain spending for sector B only if they use savings from the past or get loans, repaid later from future income. If the drop in consumption of goods in sector A can be substituted by increased consumption of sector B products (increased purchase of food and toilet paper in the supermarket instead of the daily canteen meal, Netflix subscription instead of going to the disco), demand in sector B may even increase. With supply being limited (scarce), this would have an inflationary effect.

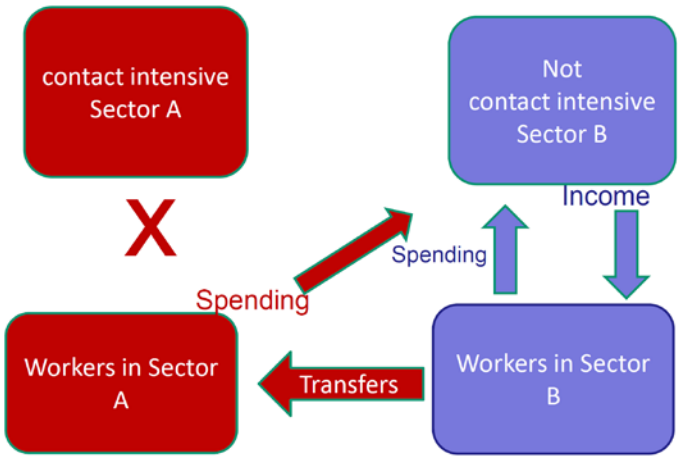


Figure 9.9 Contagion effects in our two-sector model

With the outbreak of the pandemic, production in the contact-intensive sector A needs to stop. So potential output falls. If the labor force in sector A is credit-constrained, workers can maintain their consumption in sector B only via transfer payments

However, this does not seem to be a realistic case: After all, the pandemic shock was largely unexpected. The unemployed in sector A did not save enough in the past to be prepared for such an emergency. In addition, most are facing enormous difficulties to get any credit (go into debt). A significant share of households is credit-constrained, given the high uncertainty when (if ever) they might be able to go back to work. Hardly any bank is willing to grant loans to these risk groups (see Scenario 2 in more detail later).

During the crisis, many even tend to increase saving as precaution in times of high individual uncertainty. In this case, spending for goods in sector B by workers in sector A also tends to collapse. So aggregate demand will fall more sharply than potential output, triggering negative feedback effects; production and income collapse also in sector B (see the Focus Box on the savings paradox in chapter 3). In this scenario, the lack of demand has deflationary effects. Transfer payments - such as unemployment payments or short-time allowances - can act as insurance against collapsing in demand in sector B. If they are too generous, however, they may even trigger a boom in that sector.

9.6.2 Pandemic Shock in the IS-LM-PC-Model

Obviously, there can be both inflationary and deflationary scenarios. Which effect will dominate? How should policymakers respond? In the following, we consider two scenarios within the framework of the IS-LM-PC model:

1 The pandemic shock is just a classic shock to potential output (comparable to oil price shocks).

2 The pandemic shock triggers a "Keynesian" supply shock: That means the shock in sector A leads to falling demand and thus a collapse in output in non-contact-intensive sectors as well.

We assume that initially (before the pandemic), the economy was in medium-term equilibrium. Thus, output was at potential output Y_n; the real interest rate was at the natural real interest rate. At the beginning of 2020, in many countries the nominal interest rate was already at the effective lower bound i=0. So if inflation is at target ($\pi = \pi^e = \pi^* = 2\%$), the real interest was $r = r_n = i - \pi^e = -2\%$.

The pandemic shock causes output to collapse in the contact-intensive sector A. Closure of sector A shifts potential output to the left to $Y_n' = Y_B \ll Y_n$. Thus, in a first step, Y_n and so the PC curve in the lower part of figure 9.10, shifts to the left to Y_n'. Because demand in sector A collapses, the IS curve in the upper part of the figure also shifts to the left to IS' in the second step.

Base line scenario without spillover-effects: $Y^* = Y_n'$

As a reference point, consider first a baseline scenario: As drawn in figure 9.10, demand in sector B at the real interest rate $r = r_n$ stays unchanged even after the pandemic shock. If so, aggregate demand declines just as much as potential output: At the rate $r = r_n$, lower demand corresponds exactly to the new, now lower potential output: $Y_1^* = Y_n'$. In our baseline scenario, inflation is exactly in line with expectations; it stays stable.

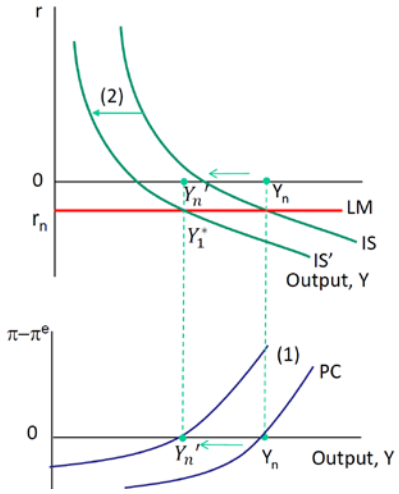


Figure 9.10 Baseline scenario

After the pandemic shock, both potential output and the PC curve shift to the left to Y_n' (1). With aggregate demand in sector A collapsing, the IS curve also shifts to the left to IS' (2). In the baseline scenario, the decline in aggregate demand at the initial real interest rate $r = r_n$ exactly matches the decline in potential output. In that case, inflation stays stable.

So in our baseline scenario, there will be neither inflation nor deflation at unchanged real interest rate r_n. Obviously, a key question is how much aggregate demand declines relative to potential output. Undoubtedly some sectors in sector B (especially those well prepared for the digital economy) will be "crisis winners". On the other hand, the loss of income in sector A tends to dampen also demand for many goods in sector B as well. It is not evident which effect will prevail. So let us now consider both scenarios in turn.

Scenario 1: Classic supply shock to potential output – Inflationary pressure in Sector B: $Y^* > Y_n'$

First, in figure 9.11 we consider a classical shock to potential output (similar to the oil price shocks in section 9.5). Again, before the pandemic, the economy was in medium-term equilibrium. The collapse of sector A triggers a substantial drop in potential output. Again, both Y_n and the PC curve in the lower part of the figure shift to the left to Y_n'.

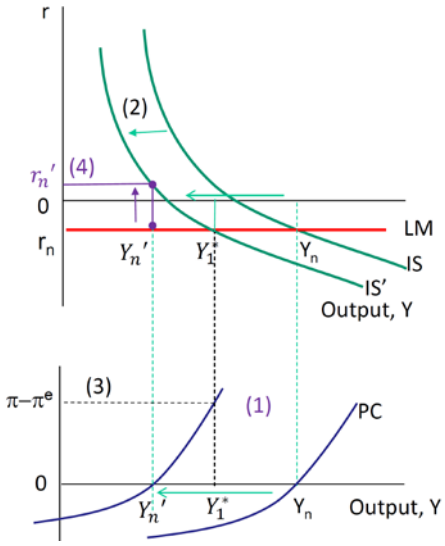


Figure 9.11 Classic supply shock to potential output

After the pandemic shock, both potential output and the PC curve shift to the left to Y_n'. In a classical supply shock, the collapse in demand barely shifts the IS curve in the upper part of the figure. Now the natural real interest rate at IS' rises to r_n'. If the central bank keeps interest rate unchanged, there will be inflationary pressures: inflation rises above the expected rate.

Since sector A collapses, aggregate demand declines. However, households now increasingly demand goods in sector B at unchanged interest rates (consumers resort to online shipping instead of retail; to-go delivery instead of drinking in the pub; protective masks instead of lipsticks). The IS curve in the upper part of figure 9.11 hardly shifts to the left to IS'; aggregate demand at IS' now exceeds reduced productive capacity $Y_1^* > Y_n'$ at unchanged interest rate $r = r_n$. Since the collapse in productive capacity exceeds the decline in aggregate demand, inflation rises as long as the central bank leaves the interest rate constant. The bottom panel of figure 9.11 shows that inflation at Y_1^* now exceeds the expected rate ($\pi > \pi^e$). Inflation rises. When expected inflation rises as well, the real interest rate will fall. To prevent the economy from overheating, the central bank has to raise the real interest rate to the new, higher natural rate r_n'. Stimulus programs (shifting the IS curve to the right) would only increase inflation pressure further in this scenario. After all, an expansionary fiscal policy cannot prevent the closure of sector A.

Scenario 2: Keynesian supply shock – collapse in aggregate demand in sector B: $Y^* < Y_n'$

Traditional macroeconomic models focus on the behavior of one representative household. Ultimately this boils down to the case described in scenario 1. In contrast, research in New Keynesian economics focuses intensively on interactions between heterogeneous agents, allowing a more detailed analysis of feedback mechanisms and coordination failures across sectors. Guerrieri et. al. (2020) apply this analytical framework to the pandemic shock. They show that the collapse in potential output in sector A is likely to trigger a decline in demand in sector B as well (see figure 9.12). They refer to this case as "Keynesian supply shock."

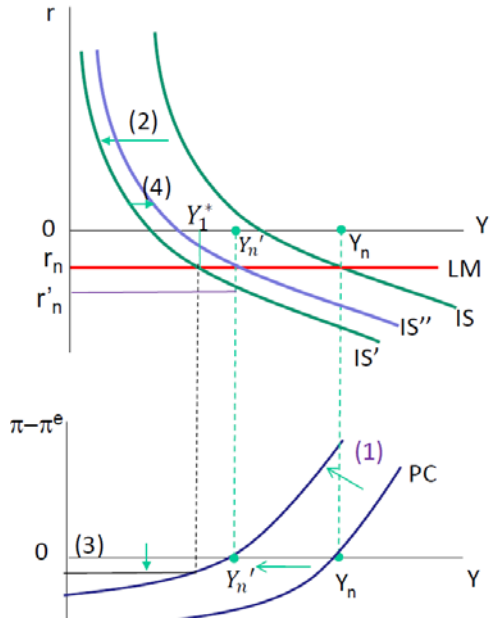


Figure 9.12 Keynesian supply shock

After the pandemic shock, both potential output and the PC curve shift to the left to Y_n'. A Keynesian supply shock occurs when the collapse in demand shifts the IS curve so much to the left that the natural real interest rate at IS' falls to r_n'. If the central bank leaves the real interest rate unchanged at r_n , inflation falls. At the lower bound of the interest rate, a deflationary spiral may set in.

Just as in the baseline scenario and in scenario 1, in the first step the pandemic shock shifts potential output - and the PC curve in the lower part of the figure - to the left to Y_n'. In figure 9.12, however, now demand collapses also in sector B. At unchanged interest rate r = r_n, output thus falls even more sharply to $Y_1^* < Y_n'$. The collapse of income in sector A causes demand to collapse in sector B as well. As long as the central bank does not adjust the interest rate, inflation falls in this case (as shown in the lower part of figure 9.12, now $\pi < \pi^e$ at Y_1^*). If expected inflation declines as well, the real interest rate rises. So a deflationary spiral can set, making the crisis worse and worse.

If the economy was already at the lower bound on interest rates before the crisis, scope for conventional monetary policy is limited. In addition, monetary policy impacts all sectors symmetrically; it cannot target the income loss in sector A. Instead, directed transfers to sector A (such as short-time allowances for unemployed) will shift the IS curve in the upper part of the figure to the right so as to ensure Y* = Y_n' in order to compensate for the loss of demand in sector B.

What conditions make scenario 2 (a Keynesian supply shock) likely? The Focus Box "Intra-sectoral and intertemporal substitutability" shows that the demand effect depends on the extent to which consumers are willing to substitute between goods across different sectors and on the extent to which they are willing (and able) to borrow from future income. Obviously, credit constraints play a crucial role: Quite a few consumers have little ability to borrow. Banks are reluctant to lend to unemployed workers – in particular given the high risk of permanent job loss.

Focus: intra-sectoral and intertemporal substitutability.

Guerrieri et. al. (2020) examine conditions such that demand declines in sector B as well. First, a key issue is the degree of intra-sectoral substitutability between goods of different sectors. If type A and type B goods are strong substitutes, demand in sector B tends to increase. With restaurants closing, demand for food can be met at the supermarket or by direct home delivery via online booking. If, on the other hand, goods in both sectors are complementary, demand in Sector B will also fall: With concerts, parties and business meetings being canceled, demand for fashion drops just as sharply as demand for cab rides and business flights. Instead, people prefer to wear jogging suits so that they can comfortably enjoy online games and Netflix series. These examples illustrate the variety of sectors - some with complementarity, others with substitutability to contact-intensive industries. Ultimately, the aggregate effect depends on the size of the different sectors.

A second key issue is the degree of intertemporal substitutability between consumption today and future consumption: If both are complementary, there are strong incentives to borrow today to smooth consumption (see chapter 15). Borrowing from future income helps to consume more goods in sector B already today. In contrast if current and future consumption are substitutes, consumption can easily be postponed into the future. Durable consumer goods are more likely to be substitutes: It is easy to wait with the purchase of a new car, but it is almost impossible to do without daily food.
If we consider both effects together, demand tends to increase in sector B if willingness to substitute across sectors exceeds willingness to substitute across time. But this works only if consumers are able to borrow without restrictions - i.e. as long as they are not subject to credit constraints. In contrast, if consumers are not able to borrow, they cannot switch consumption across sectors in the short run. As Guerrieri et. al. (2020) show, if consumers are unable to borrow, demand is almost sure to fall in the short term in the absence of transfers.

If workers in sector A are neither able to earn current income nor to get credit, they will no longer be able to keep up spending on goods in sector B. Thus, in the absence of insurance protection against the pandemic shock, a decline in effective demand in sector B is hard to avoid. Transfer payments help as insurance mechanism to prevent a collapse in demand in sector B. They shift the IS curve back to the right. Transfer payments to employees in sector A are more efficient as a fiscal stabilization instrument compared to general economic stimulus programs: they can target directly the core problem. After all, the pandemic acts as an asymmetric shock, hitting only contact-intensive sectors.

Ideally, transfers are designed such that spending on type B goods is maintained at exactly the same level as before the crisis. If the support is too low, demand in sector B stays below potential. If, on the other hand, it is too generous, it might even trigger a boom in that sector.

To conclude, in the absence of government support, the pandemic most probably triggers a drastic economic slump in non-contact-intensive sectors as well. Not surprisingly, almost all countries quickly took a variety of countermeasures. They responded with massive monetary and fiscal policy support programs. Central banks lowered interest rates to zero and greatly expanded programs to purchase securities as part of unconventional monetary policy. Fiscal policy was used to a much greater extent than during the financial crisis. The Focus Box: "Government support programs" compares fiscal policy measures across countries. Whether these measures were actually sufficient to shift the IS curve toward potential output or whether they even stimulated demand too much is ultimately an empirical question.

A closer look at the data is needed to assess which effect dominates. At the time of the book's completion (end of 2020), it is still too early to make a final judgment. However, the Focus Box on “Empirical Evidence” indicates that in the short run, the impact of the pandemic on output, employment and inflation was exactly as predicted by the Keynesian supply shock scenario.

9.6.3 Medium- to long-term challenges

Up to now, we took it for granted that the pandemic triggers a serious but only short-term shock, with the economy going back to normal the next year. Unfortunately, reality is much more complex. Even late 2020, it was still unclear whether the shock would be temporary or permanent. There was uncertainty how quickly new vaccines will be distributed, how effective they help against mutants, and for how long immunity might be achieved by the vaccines. In short, there is a high degree of uncertainty about how long the crisis will last - a challenge that policymakers are almost always facing. But we can easily extend our IS-LM-PC model to take the effects of uncertainty into account. As we will learn in chapter 16, in times of high uncertainty, there is a particularly strong incentive to save prudently, so the decline in consumption spending and hence the collapse in demand are much more severe.

Given the uncertainty about the duration of the shock, it is not surprising that the nature of the shock and on adequate economic policy response can be viewed quite differently. If we are confident that the virus will be defeated successfully next year, then a quick return back to the initial potential output Y_n seems possible. In that case, policy should aim to support survival of existing firms. Many businesses (airlines, hotels, artists) would need to file for bankruptcy, facing massive revenue losses. The destruction of some structures may risk permanent economic damage: collapse of highly specialized private and social capital would need to be rebuilt later at high cost. Providing liquidity assistance, tax deferrals and state-guaranteed loans can help to prevent such a collapse.

Similar effects prevail on the labor market: If ailing firms have to lay off highly qualified workers in order to cut costs, project-specific knowledge will be destroyed that needs to be rebuilt painfully once the shock has subsided. The loss of skills during prolonged unemployment causes permanent scars, severely delaying the recovery of potential output. We discussed the risk of hysteresis effects already in chapter 7. Support by short-time allowances prevents firms from laying off highly qualified workers and thus destroying important intangible human capital.

But if the pandemic shock lasts longer, structural adjustment towards less contact-intensive sectors will be inevitable. Job cuts in sector A, shifting workers to sector B, will be part of the adjustment process. The pandemic could even act as an accelerator of structural change by forcing digitization. If the shock is permanent, all workers need to switch to sector B in the long term. Economic policy faces the challenge how to design support measures in such a way that the costs of structural change stay low, limiting the rise in inequality during the restructuring process (see chapter 13).

Specialised jobs may be lost permanently in a long-lasting pandemic, calling for timely investment in retraining. Some economist argue that short-time allowances prevent the structural change required. If established firms do not lay off redundant workers, so they claim, there is not enough pressure on employees to qualify for promising new jobs aiming to avoid the fate of long-term unemployment. New innovative firms might find it more difficult to recruit employees at favorable wages. As a result, fewer sustainable jobs would be created. Other economists, however, doubt that this concern is relevant during economic crises. In such times, firms have no problems finding well-qualified workers. Instead, due to high uncertainty firms are hesitant to invest in long term projects (see the Focus Box “Uncertainty and fluctuations” in chapter 16). Supporting the "transformation process" with attractive retraining measures may help to dampen uncertainty.

Adequate policy design is even further complicated by the fact that the future path of potential output over medium to long term may depend on the specific adjustment path chosen. If the central bank persistently fails to contain a classic supply shock, inflation may get out of control over time, destabilizing potential output. Conversely, if a Keynesian supply shock is not fought decisively, a deflationary spiral may set in, triggering lasting long term damage, possibly ending in secular stagnation. If the pandemic shock leads to over-indebtedness of many households, demand might be permanently impaired. Falling into a debt trap, output may stay below potential in the long term as well.

Some economists, in contrast, argue that precisely the measures taken to fight the risk of deflation, (such as extended periods of low interest rates), contribute themselves to stagnation of the economy. They claim that low interest rates encourage excessive over-indebtedness in the private sector, keeping unprofitable zombie firms alive. Such zombie firms tie up resources, preventing young innovative entrepreneurs to prosper and so impeding the process of "creative destruction". Other economist, however, point out that resources are not scarce in times of crisis. On the contrary, young, dynamic firms benefit most from attractive access to finance. They argue that in times of crisis there is too little overall investment, rather than crowding out of demand for credit by weak borrowers.

When designing adequate policy for the recovery phase to the medium to long term, it is crucial to understand the risks of different scenarios. If the threat of scarce resources dominates, the natural real interest rate may rise in the medium term, putting strong pressure on inflation. Fiscal rescue packages and high healthcare costs led to sharply higher government debt ratio – debt as a share of output. So some economists fear that the interest burden on the public debt might increase substantially with a rise in the natural real interest rate, putting pressure on public finance if tax revenues do not gain traction with the onset of growth.

Others argue that we need to worry less about the interest burden on public debt under current conditions. Both during the financial crisis and the pandemic, interest rates have fallen sharply worldwide, driving them below the growth rate of the economy in many countries. As we will learn in chapter 22, the debt ratio declines on its own over time as long as the growth rate of the economy exceeds the interest rate. Given such favorable conditions (which prevailed in the USA for a long time), many economists argue that credit-financed public investment programs are a sensible way to fight secular stagnation and stimulate structural adjustment.

Focus: Government Support Programs - An International Comparison

After the outbreak of the pandemic, governments quickly responded with support programs, trying to protect workers and firms in contact-intensive sectors and to prevent demand from collapsing in other sectors as well. However, across countries the measures taken differ substantially.

On March 27, 2020, in the US the President signed into law the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a 2 trillion bailout package. All taxpayers with yearly income below $75000 got a mail check of $1200 on April 15, 2020. These checks were sent across all population- regardless of how badly the recipients were affected by the crisis. Since these were not targeted transfers, a significant part of the funds did go to households that were not in desperate need. Nearly 1.1 million payments (almost $1.4 billion) were even sent to deceased by mistake. Not surprisingly, consumers used their checks quite differently (see the Focus Box on Empirical Evidence).

The CARES Act included also payments to the unemployed for four months. These payments were meant to supplement the (frequently fairly low) regular unemployment benefits paid by each U.S. state. They were paid as a weekly lump sum of $600 (in contrast to the benefits in Europe paid as a share of former net income). According to some estimates, these lump sum benefits exceeded regular income for nearly 3/4 of all recipient. The median replacement rate (the income of the unemployed relative to their income before losing their job) was nearly 150%. Correspondingly, consumption of many unemployed increased by an average of about 10%, while overall consumption in the U.S. declined by 10%. By contrast, those unemployed whose benefits were paid out with a long delay had to cut consumption by around 20%.

In Europe, support was handled quite differently. Germany expanded short-time allowance to workers in the same way as during the financial crisis. Thus, many firms did not lay off their employees, but reduced working hours. For hours not worked, the state paid 60% of the previous net wage, up to €4,687 per month. In March 2020, payments were even extended to up to 80% from the seventh

month on – conditional on the loss of pay exceeding 50%. In addition, to give incentives for structural change, retraining costs were subsidized.

Following the German model, many other European countries introduced similar rules. Since short-time workers did not lose their jobs and firms did not have to pay severance pay; they could resume production without delay as soon as the sector recovered. But support came also with some deadweight loss: Some firms sent part of their employees into short-time work, even though they could have absorbed the shock without government support. The longer the crisis lasts, the greater the risk that necessary structural change may be delayed, unless sufficient incentives to train for better qualified jobs are provided.

The pandemic crisis hit many small and medium-sized firms severely. To supplement automatic stabilizers (see chapter 2), governments designed discretionary measures to support business with tax exemption, government credit programs and subsidies for specific sectors. Some measures (additional spending, tax cuts) directly increase the budget deficit; but others (such as export guarantees, guarantees, credit lines) have a budget impact only if the firms will fail in the end despite support. Therefore they are called contingent liabilities. Again, there is huge variation in specific measures across countries. The International Monetary Fund (IMF) provides a global overview of fiscal policy measures in the regular Fiscal Monitor Report. Figure 6 shows measures with direct budgetary impact (red bars) and contingent liabilities (gray bars) for selected countries; both are calculated as share of GDP.

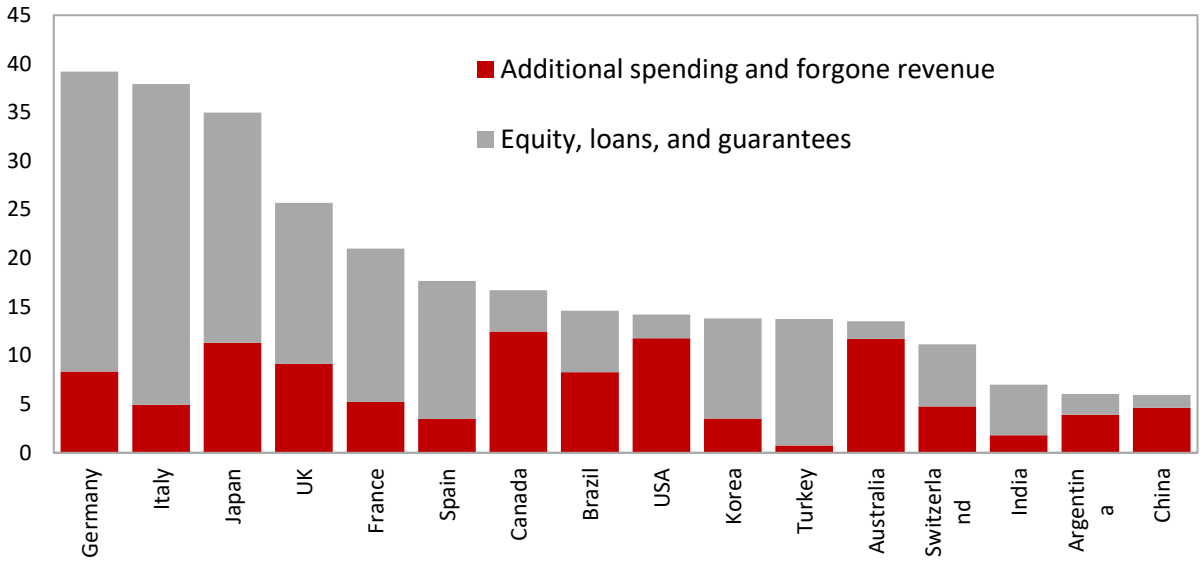


Figure 1 Discretionary fiscal policy measures during the COVID-19 pandemic.

Red bars indicate measures with immediate budget impact (additional government spending and tax shortfalls); the gray bars contingent liabilities (loan programs, equity shares, and guarantees) – both calculated as share of GDP (as of September 2020).

Source: IMF, Fiscal Monitor Database - Response to the COVID-19 Pandemic; https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

In mid-April 2020, the German government approved a comprehensive stability program with budgetary measures of around 450 billion € and contingent liabilities guarantees of around 820 billion €. An additional stimulus package of 130 billion € was launched already 6 weeks later - extending short-time working benefits and reducing the value-added tax temporary in the second half of 2020. The Corona program included healthcare spending, government investment (for digitization at schools and universities) and various programs to support businesses such as reductions in advance tax payments to improve liquidity for firms and self-employed; emergency aid for small businesses,

self-employed and freelancers (like restaurant owners and artists with little financial leeway) and access to government loans up to equity injections in hard-hit companies like Lufthansa.

In the USA, too, tax deferrals, aid for certain industries (around $50 billion for airlines) and corporate loans were used as instruments. Loans totaling initially $340 billion (later expanded to $670 billion) were granted to small firms with fewer than 500 employees. These firms did not have to repay the loans if they continued to employ their workers. However, the allocation of funds was sometimes rather chaotic, based on the so-called first-come, first-served principle: Whoever applied first received the funds, regardless of size and urgency. Many firms claimed loans in sectors that were hardly affected by the crisis.

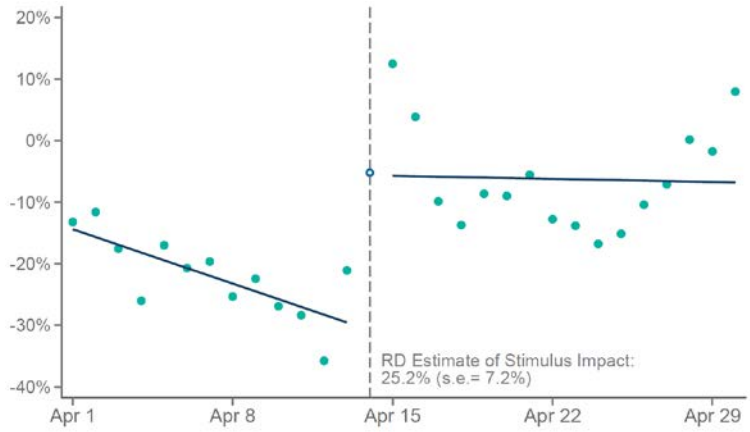
Our model showed that targeted transfers to those most affected (as implemented in many European countries) are likely to be more effective than lump-sum payments. But even in Europe, the specific design across countries varies substantially. Since most of these measures had to be designed under great time pressure, quite a few may turn out not to be efficient. With the length of the crisis expanding, support needs to focus on easing structural adjustment. Careful research is needed to evaluate the efficiency of different routes to improve policy design for future crises.

Focus Empirical Evidence: Inflation or Deflation?

The pandemic led to a dramatic collapse in output during the first half of 2020. However, according to our model even in the short run, it is not evident whether the pandemic shock has inflationary or deflationary impact. It is key to figure out whether the collapse in potential output will be stronger or weaker than the collapse in aggregate demand (remember Figs. 9.10 to 9.12). What policy response is adequate crucially depends on which effect prevails. So access to reliable data is key for decision-making. Unfortunately, many macroeconomic data are available only with long delay. In addition, they do not provide sufficient insight into the heterogeneity of supply and demand effects of different sectors. Modern data analysis using micro data can help to mitigate this uncertainty, helping to evaluate which effect dominates. Apart from using surveys conducted regularly, modern technology also allows to access daily transaction data in real time so as to provide a detailed up-to-date picture of key indicators such as consumer spending in individual sectors, retail sales and employment.

In an extensive research project at Harvard University, a large team of researchers led by Ray Chetty (2020) evaluates anonymized data from credit card companies and employment agencies. They can be used for strong differentiation of heterogeneous groups across regions or income groups. Using these data, the team was able to characterize the impact of the pandemic on the U.S. economy early on. They showed that initially, high-income households cut consumption sharply in high-contact sectors. While demand for private swimming pools picked up, demand in restaurants and hair salons dried up completely. As a result, affected firms laid off mainly low-wage workers in service sectors. Not surprisingly, consumer spending of these workers plummeted during the first half of April.

With the implementation of the CARES rescue package (see the focus box "Government support programs"), consumption of these lower income groups recovered particularly strong. Right on the first day the checks were disbursed, consumer spending by the lower income quartile increased significantly (see fig. 1). At the end of August, they were even 1.1% higher than in January. However, the composition of spending changed sharply: Demand shifted from contact-intensive sectors to non-contact-intensive sectors.



Change in consumer spending (in %) relative to January 2020

Figure 1 The impact of the CARES rescue package on consumption of the lowest income quartile.

Coibion, Gorodnichenko, and Weber (2020) evaluate a survey panel of households to analyze how American households used the checks sent to them as part of the CARES Act. Their analysis suggests strong heterogeneity: The lowest income group used 30% of the funds directly to purchase necessities. Obviously, a substantial proportion of American households had limited ability to buy even such daily goods without the support of checks. While 30% of recipients (mainly poorer households) used all the money for consumption, 40% of the population did not increase consumption at all. Thus, a substantial part of these funds was saved or used to pay off debts. Overall, the aggregate marginal propensity to consume turned out to be rather low - about 0.4. Thus, on average, only 40 cents of every dollar in transfer payments were spent.

While the savings rate increased, the measured rate of inflation declined. We need to be careful, however, how to interpret such data. Measurement of the inflation rate gets fuzzy when a substantial part of specific goods is no longer available. After all, as long as all restaurants and hotels stay closed, there are no official prices to calculate restaurant and accommodation services. Moreover, due to short-term changes in consumer spending, the original basket of goods may no longer be representative. However, all indicators point towards a downward trend: Despite empty supermarket shelfs for quite a few specific goods, overall inflation in the USA (as measured by the PCE index) fell from 1.9% to 0.5% between January and May and stayed low during the following months. In December 2020, the Fed predicted inflation to be just 1.2% in 2020 and 1.8% in the following year, below the target of 2%. For tat reason, the Fed decided to adopt an even more expansionary policy. It agreed to tolerate inflation overshooting 2% for a certain period of time, as long as the average inflation rate stays at 2%.

In Germany and the Euro Area, inflation also declined during the pandemic. End of 2020, the rate for the harmonized consumer price index even turned negative. Again, there is some blurring: In Germany, part of the decline in inflation is due to the reduction in VAT for the second half of 2020. But the trend was similar across all the euro area. The European Central Bank expected price pressures to remain subdued through 2022 in the face of weak demand, low wage pressures and the appreciation of the euro exchange rate.

Balleer et. al. (2020) examined price-setting behavior of German firms in May 2020, relying on survey questions in the monthly ifo business survey. Their study gives insight into the relative importance of supply- and demand-side effects during the Covid 19 pandemic. It showed that both occur simultaneously, but demand effects played a dominant role in the early stages of the corona crisis. Individual firms were affected quite differently by the pandemic; nevertheless, a clear majority reported negative effects on their production plans. Accordingly, the probability of planned price cuts increased by up to 5 percentage points, while that of price increases decreased slightly. According to Balleer et. al. (2020) producer price inflation declined by up to 1.5% by August 2020.

Figure 2 The Savings Rate during the Covid Pandemic in the Euro Area

Source: Eurostat till 1. Quartal 2020; ECB Projections till 4. Quartal 2022; Blogpost Philipp Lane, ECB, The outlook for the euro area, 11. September 2020

Just like in the U.S.A., private savings rose sharply in Europe at the beginning of the crisis (see Fig. 2). Two quite different reasons play a role: on the one hand the lack of consumption opportunities, on the other hand the incentives to take precautions in times of high individual uncertainty. These two reasons have quite different implications about how demand will evolve, once things go back to normal. If the first reason prevails, pent-up demand might be unleashed in a rapid spending boom once stores reopen. Some see already “Roaring Twenties” around the corner –just like after the Spanish flu subsided in the 20th century. If, on the other hand, precautionary savings dominate, weak demand is likely to drag on for quite some time until recovery sets in – in particular if infections pick up again. There is a risk that, while some sectors will boom, many others will stagnate. Understanding why savings rose so sharply despite large bailouts is important for getting policy right during the easing phase.

Based on European Commission household surveys, the ECB estimated in September 2020 that around 2/3 of the sharp increase was due to the first motive (forced saving); just under 1/3 to the second (hoarding as a precautionary motive in the face of high uncertainty). This provides some indication of pent-up demand, which could translate into a consumption surge once things settle down. But while there is almost always a catch-up effect for durable consumer goods after crises, consumption of many services (haircuts, disco visits, graduation trips, Oktoberfest) is difficult to postpone. Moreover, even though precautionary saving accounts for only 1/3 of the total effect, it nevertheless has increased at a historically unusually high rate. If you read this text, you will know more precisely whether or how much the inflation rate has risen again since December 2020.

References

Balleer, A., Link, S. Menkhoff und P. Zorn (2020), Nachfrage oder Angebot? Erkenntnisse aus dem Preissetzungsverhalten deutscher Unternehmen während der Coronakrise, ifo Schnelldienst 7 / 2020, S. 13-16, Link, VOXEU

Chetty, R., J. Friedman, N. Hendren, M. Stepner und das Opportunity Insights Team (2020), How Did COVID-19 and Stabilization Policies Affect Spending and Employment? A New Real-Time Economic Tracker Based on Private Sector Data, NBER Working Paper No. 27431, Link, Economic Tracker

Coibion, O., Y. Gorodnichenko und M. Weber (2020), How Did U.S. Consumers Use Their Stimulus Payments? NBER Working Paper No. 27693, Link, VOXEU

EZB (2020), COVID-19 and the increase in household savings: precautionary or forced? ECB Economic Bulletin, Issue 6/2020.

Guerrieri, V., G. Lorenzoni, L. Straub und I. Werning (2020), Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages", NBER Working Paper No. 26918, Link, VOXEU

IWF (2020) Fiscal Monitor Database - Response to the COVID-19 Pandemic, Link

Lane, P. (2020). The outlook for the euro area, Blogpost 11. September 2020, EZB, Link