Understanding Secular Stagnation

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IPP Policy Briefs

n°73

July 2021

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One of the most severe challenges facing Western economies is a structural lack of demand due to population aging. This results in a situation of secular stagnation, characterized by depressed inflation, weak economic growth, and under-employment. This has been the case in Japan for the past 25 years, and should not evolve in the near future. The Eurozone and, to a lesser extent, the U.S. have now been in a similar situation for over a decade.

While monetary policy is ineffective, fiscal policy has the potential to prop up demand. This requires implementing a massive stimulus such as to temporarily "overheat" the economy to permanently escape the low inflation trap. As the pandemic comes to an end, many countries across the world are implementing fiscal stimulus packages of unprecedented magnitudes. This offers a unique opportunity to bring stagnation to an end. The recent stimulus measures announced and implemented in the US correspond to such a strategy. The Eurozone, by contrast, has no such plans.

- Over the last few decades, population aging has led to a structural lack of demand, resulting in depressed economic activity.
- To offset this trend, monetary policy has reduced the interest rate all the way down to 0%, but has now reached a lower bound and cannot further stimulate the economy.
- Secular stagnation corresponds to a situation with zero interest rate, near zero inflation, and under-employment. Japan has been stuck into stagnation for the last 25 years, the Eurozone and the U.S. since the Great Recession of 2008.
- Higher inflation induces households to consume now rather than later. The optimal policy therefore consists in raising inflation sufficiently to restore full employment.
- This can be achieved through a pump-priming fiscal policy that temporarily overheats the economy, such as to kick-start inflationary pressures on wages and on prices.
- As the Covid pandemic comes to an end, many countries are implementing massive fiscal stimulus packages, which offer a unique opportunity to get out of the low inflation trap. The U.S. seems willing to risk excessive inflation to avoid the Japanese predicament. The Eurozone's response pales in comparison.

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For the past quarter century, the Japanese economy has been trapped into weak economic growth and near zero inflation. Highly expansionary monetary and fiscal policy have not been sufficient to overcome the problem.[1] The money supply has been multiplied tenfold, with hardly any effect on prices that have remained nearly constant over the past two decades; while the debt-to-GDP ratio exceeds 250%, with long-term interest rates still close to 0%.

Since the Great Recession of 2008, the Eurozone and the U.S. have been walking in the footsteps of Japan, resulting in the same paradoxical combination of high money supply and high public debt with low inflation and low interest rates. How can we account for such macroeconomic disorders?

This state of permanent depression, known as "secular stagnation", corresponds to a situation where households' spending is lower than the economy's ability to produce goods and services. In other words, the economy suffers from a persistent lack of demand.

In this note, we begin by documenting the structural trends underlying the lack of demand. We then explain the economic mechanism behind secular stagnation, before reviewing the possible solutions. Covid-19 has induced governments across the world to implement stimulus packages of unprecedented magnitude. We therefore end this note by assessing the ability of these packages to bring stagnation to an end.

The structural decline in demand

Macroeconomic analysis traditionally distinguishes the supply side from the demand side of the economy. The supply side corresponds to production, which is the output produced by all the firms of the economy using capital and labor. The demand side corresponds to the purchase of the goods and services produced by the economy. It has four components: consumption, investment, government purchases, and net exports. Households purchase consumption goods for their own enjoyment. Firms buy investment goods, such as machines, computers, and software, that they need for production. The government buys military equipment, pays for schools, and invests in infrastructures. We also need to include net exports, since foreigners purchase some of the domestic production, while some of domestic purchases are imported from abroad.

The *production capacity* of the economy corresponds to the output produced under full employment. It is determined by the supply side. **Economic efficiency requires demand to be equal to the production capacity of the economy.** If demand is weaker than production capacity, the economy fails to produce as much as it is able to, resulting in depression and unemployment. If demand is stronger, the economy produces more than it can sustain, resulting in overheating and rising inflation. Throughout my analysis, the policy objective is to have an economy that produces at full capacity.

Demand adjusts to the production capacity of the economy through the interest rate. If households' or firms' propensity to spend is depressed, then a fall in the interest rate discourages households from saving and induces firms to borrow to invest. This props up demand. Conversely, if demand is excessive, a higher interest rate cools it down.

One of the most important evolution of the global economy over the past four decades is a large structural decline in demand. This is shown by the downward trend in interest rates throughout the Western world (figure 1). Indeed, ever lower interest rates have been required for demand to be strong enough for the economy to produce at full capacity. In fact, as we shall see in the following sections, over the last decade, interest rates have not been able to fall sufficiently to ensure full employment, resulting in secular stagnation.

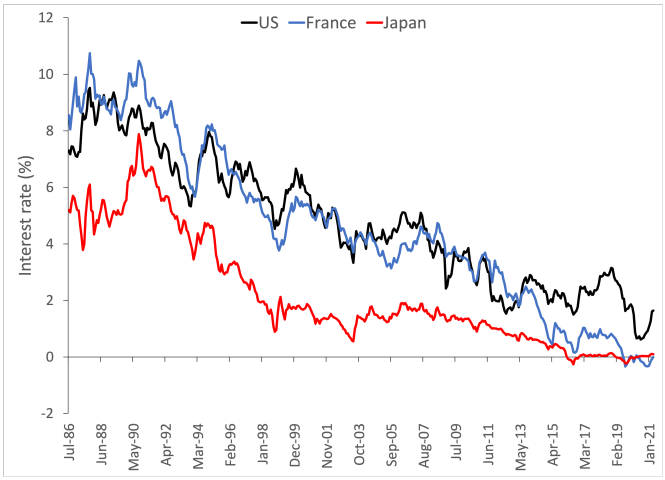

Figure 1: Interest rate on 10 year government bonds

Source: Federal Reserve (for the U.S.), OECD (for France), Ministry of Finance of Japan (for Japan)

How can we explain this structural decline in demand? There are a number of reasons, but the most important one is population aging. Due to many decades of low fertility, Japan has been aging faster than other Western economies (figure 2). As a result, it is also where the interest rate has declined fastest. Interestingly, the most rapidly aging economies, such as Japan or Germany, have had large current account surpluses over the last two decades, which is an additional sign of depressed demand (since these countries rely on foreign demand to export domestic production, while purchasing relatively few im-

[1] An expansionary monetary or fiscal policy consists in increasing the money supply (the quantity of money "printed" by the central bank) or the level of government spending such as to expand the output level.

ported goods from abroad).

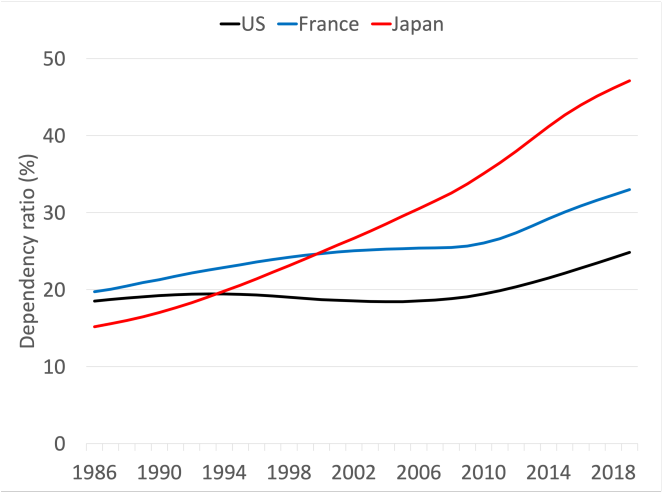

Figure 2: Dependency ratio

Note: The dependency ratio is defined as number of people aged 65 or older, divided by number of people from 15 to 64.
Source: World Bank

Old workers save for retirement. But, even retirees tend to save a lot, either as a precaution against medical or long-term care expenses or to bequeath wealth to their children and grand-children.[2] Not only does aging raise the supply of savings, it also reduces the demand for investment, which further depresses demand. Indeed, firms are reluctant to invest to enhance their production capacities within economies that are shrinking due to reduced population size.

In addition to population aging, a number of other dynamics at play in the economy have contributed to the structural decline in demand. Rising inequality has resulted in purchasing power being concentrated within the hands of wealthy households with high saving rates. A lower rate of productivity growth has made households and firms more pessimistic about the future and, therefore, less inclined to consume and invest. In addition, thanks to automation, investment goods have become cheaper over time, which has reduced firms' spending on investment. Finally, emerging economies, such as China, tend to have high saving rates, which further depresses demand at the global level.[3]

The decline in demand has deep structural roots that are unlikely to be reversed any time soon. As we shall now see, the effect is so strong that it can no longer be offset through a lower interest rate, resulting in permanently depressed economies. The lack of demand is one of the most daunting challenges currently facing high income countries.

Falling into the liquidity trap

To have full employment, the interest rate constantly needs to adjust to ensure that demand is equal to the production capacity of the economy. A major issue for macroeconomic policy is that, if the central bank is passive and the money supply remains constant (as was the case under the Gold Standard), this process can be slow and inefficient, resulting in major fluctuations in economic activity and in unemployment. Monetary policy therefore needs to be active by constantly adjusting the interest rate such as to maintain full employment.

More precisely, central banks follow an inflation targeting strategy, with the inflation target typically set equal to 2% per year. Whenever demand is too weak, firms tend to cut their prices, thereby reducing inflation below the 2% target. The central bank responds with a sharp cut in its interest rate, which is passed on to households and firms through the banking and financial sector. This induces households to save less and consume more. It also induces firms to borrow more such as to invest more. In addition, a lower interest rate results in a depreciation of the domestic currency, which stimulates exports. Conversely, whenever demand is too strong, inflation tends to rise above 2%. The central bank then hikes its interest rate, which prevents the economy from overheating. By keeping inflation on target, the central bank effectively ensures that the economy produces at full capacity.

This monetary policy framework has been so successful that its predominance since the early 1980s has led to the "Great Moderation", en episode of macroeconomic history characterized by historically low volatility in inflation, output, and unemployment throughout the Western world. Yet, the Great Moderation ended in 2008 with the worst economic and financial crisis since the Great Depression. How can we make sense of this evolution?

In the mid-2000s, many middle-class households in the U.S. and in southern European countries were relying on extensive borrowings to sustain fairly high consumption levels. It eventually became clear that the resulting accumulation of private debt was not sustainable. When the market sentiment turned in 2007 and 2008, these debtors were forced to sharply cut their consumption levels. This resulted in a large drop in demand and in reduced inflation. Central banks responded by cutting their interest rate, eventually reaching 0%. But this was not sufficiently low to offset the downward pressure on inflation.

[2] De Nardi, M., French, E., Jones, J.B., McGee, R. (2021), "Why Do Couples and Singles Save During Retirement?", Minneapolis Fed, working paper.

[3] The following two papers have decomposed the decline in demand in the U.S. and both have found population aging and the productivity slowdown to be the main drivers of this evolution. Eggertsson, G.B., Mehrotra, N.R., Robbins, J.A. (2019), "A Model of Secular Stagnation: Theory and Quantitative Evaluation", *American Economic Journal: Macroeconomics*, 11(1), 1–48. Rachel, L., Summers L.H. (2019), "On Secular Stagnation in the Industrialized World", *Brooking Papers on Economic Activity*, spring, 1-54.

However, setting a negative interest rate is not possible. Money, either bank deposits or bank notes, are financial assets yielding a 0% return. Hence, nobody would be willing to buy a bond yielding a negative return. Monetary policy is therefore constrained by a "zero lower bound" on the interest rate.[4]

In an attempt to raise inflation back to their 2% target, central banks have implemented massive "quantitative easing" programs, whereby they bought unprecedented large quantities of bonds, by printing money. The resulting fourfold increase in the money supply in the U.S. and in the Eurozone hardly produced any inflation (figure 3). Indeed, once the interest rate is at the zero lower bound, money becomes an attractive savings device. Households choose to save the newly created money, which is therefore not inflationary. The economy is "liquidity trapped": increasing the money supply is like pushing on a string. **We therefore are in a paradoxical situation where central banks have never been so active, but have also never been so powerless.**

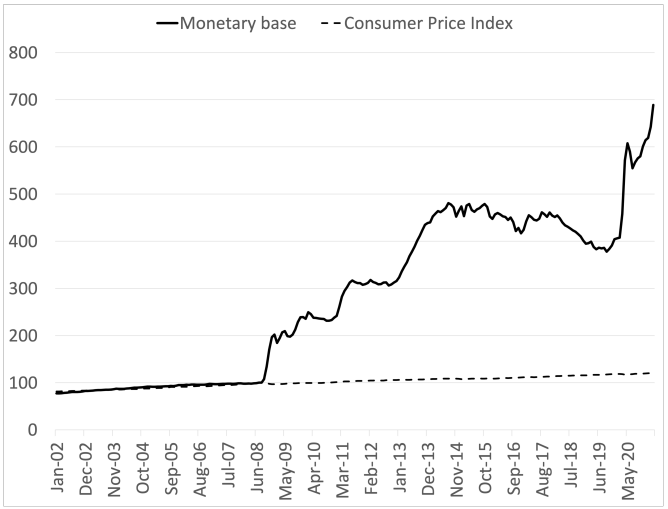

Figure 3: Quantity of money issued by the Fed and Consumer Price Index

Note: Both series were normalized to 100 in August 2008.
Reading: In 2014, the monetary base (the quantity of money issued by the central bank) was nearly five times larger than in 2008; while the Consumer Price Index was only about 8% higher than in 2008.
Source: Federal Reserve (for the monetary base) and Bureau of Labor Statistics (for the CPI)

The mechanics of secular stagnation

In the mid-1990s, Japan was the first industrialized country to fall into the liquidity trap. A quarter century later, it is still there. While the rate of unemployment in Japan is low, part-time employment is particularly high, which is a sign of labor market slack. Moreover, the lack of inflationary pressure on wages and on prices confirms that the economy fails to produce at full capacity. **Japan is a showcase of secular stagnation, where the lack of demand has become a permanent state of affairs. The Eurozone and, to a smaller extent, the U.S. are now facing the same predicament.** What are the mechanics of secular stagnation?

While prices and wages gradually adjust over time, this fails to bring the economy back to full employment. This comes from the nature of the process of wage adjustments. In practice, wages are neither completely flexible, nor completely rigid. They are instead sluggish, especially when they need to adjust downward, since workers are very reluctant to accept wage cuts. Under secular stagnation, firms' labor demand is smaller than workers' labor supply, resulting in under-employment. Hence, from the perspective of the labor market alone, wages are excessively high. The downward rigidity of wages prevent the labor market from clearing. But, what happens as wages become more flexible?

More flexible wages respond to under-employment by declining at a faster rate. This reduces firms' cost of labor, which induces them to set lower prices. The rate of inflation therefore goes down, which induces households to postpone their consumption expenditures and to raise their saving rate. Indeed, if the prices of cars, computers, or holidays increase at a slower rate, then households are in no hurry to spend their money. In sum, more flexible wages lower inflation, which further depresses demand, which aggravates under-employment. This is the "paradox of flexibility": the main friction of the economy is the downward sluggishness of wages but, as wages become more flexible, the labor market is even more depressed.

Hence, **the gradual adjustment of wages and prices cannot bring the economy back to full employment.** This phenomenon is the cornerstone of Keynes' (1936) General Theory of Employment, Interest and Money. It implies that under-employment is not a partial equilibrium phenomenon due to excessively high wages in the labor market. It is instead a general equilibrium phenomenon resulting from the interaction between the financial market, the markets for goods and services, and the labor market. More precisely, because of the zero lower bound, the interest rate is excessively high in financial markets, which depresses households' demand for consumption and firms' demand for investment in the markets for goods and services, which reduces firms' labor demand below workers' labor supply in the labor market, resulting in under-employment.

The fundamental cause of secular stagnation is not excessively high wages, but an excessively high interest rate due to the binding zero lower bound. Once the economy is at the zero lower bound, there remains one variable to stimulate demand: inflation. If households expect

[4] In practice, there can be a small cost from storing large quantities of cash, which explains why the *Effective Lower Bound* on the interest rate is slightly below 0%.

prices to increase, they then prefer to spend now rather than wait to see their savings be eroded by inflation. Thus, higher inflation can restore full employment.

Structurally depressed demand therefore results in a multiple equilibrium situation:

- There is a "Japanese" secular stagnation equilibrium, where near zero inflation induces households to save rather than spend, which reduces firms' demand for labor, which further depresses wages and prices;
- There is a full employment equilibrium, where moderate inflation induces household to spend, which boosts firms' demand for labor, which results in full employment that sustains the upward pressure on wages and on prices.

Secular stagnation corresponds to a low inflation trap; while full employment relies on self-fulfilling inflation expectations (figure 4).

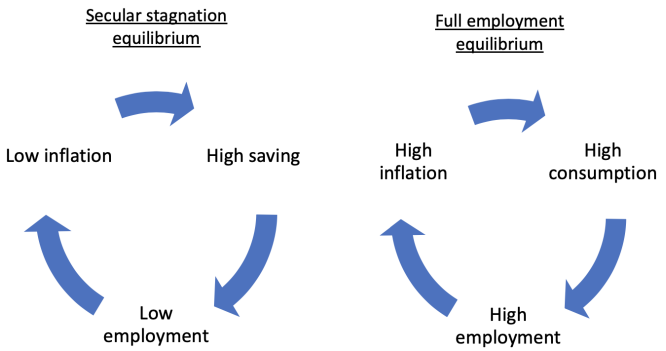

Figure 4: Multiple equilibria

Remedies to secular stagnation

The most fundamental insight from our analysis is that the optimal policy is to move the economy from the secular stagnation equilibrium to the full employment equilibrium. Hence, policies that take secular stagnation for granted and try to improve that situation are not satisfactory. This rules out a permanently higher level of government spending, since **it is not desirable to make up for the lack of private demand with higher public demand forever**.

The question therefore is: how can we induce households to coordinate on the "high inflation - full employment" equilibrium? In theory, this can spontaneously occur. The Japanese experience over the past 25 years suggests that, in practice, it is very unlikely to happen without strong government support.

First, **to move to the full employment equilibrium, the central bank's inflation target must be sufficiently high**. For instance, let us suppose that inflation needs rise to at least 3% for demand to be sufficiently strong to have full employment. If the central bank's inflation target is equal to only 2%, then it is committed to raising the interest rate as soon as inflation starts exceeding 2%. But, 2% inflation would not be sufficiently high for households to spend enough to sustain 2% inflation. This leaves secular stagnation as the unique equilibrium possibility.

Paradoxically, in this scenario, the 2% target is responsible for the depressed economy, even though under stagnation, inflation is well below 2%. This results in what Paul Krugman has called the "timidity trap"[5]: raising the inflation target by too little does not make any difference.

Empirically, it is very difficult to estimate how much inflation is required to have full employment. However, the principle is clear: inflation must be high enough for the economy to start overheating with a zero interest rate. Once inflationary pressures are sufficiently strong, the central bank can raise the interest rate to end the overheating episode and bring demand in line with the production capacity of the economy. This would raise the interest rates above the zero lower bound, therefore making monetary policy a useful tool again.

Being willing to tolerate significantly more inflation is an important part of the solution to secular stagnation. However, this is not sufficient for households to coordinate on the full employment high inflation equilibrium. To force this outcome, the government needs to "prime the pump". This can be achieved through either fiscal or tax policy.

Temporary, but massive, government spending can induce the economy to produce at full capacity. Once the economy reaches full employment, wages start rising at a higher rate, which feeds into a higher rate of inflation. The expectations of continuous increases in prices should induce households to spend more, which should make inflation sustainable over time, even once government spending is back to normal. **For this pump-priming policy to work, the fiscal stimulus needs to be sufficiently large to overheat the economy.**

Historically, one country successfully managed to escape a persistent lack of demand: the U.S. during the 1930s. The Great Depression only ended with the huge fiscal stimulus implied by World War II. In that respect, as we shall see in the next section, Covid-19 offers a unique opportunity to prime the pump.

In addition, the government can design a temporary tax policy such as to boost private demand. First, it can temporarily lower the Value Added Tax. This would make households expect future increases in VAT, which should

[5] Krugman, P. (2014), "Four observations on secular stagnation", in VoxEU.org Book on Secular Stagnation, page 61-68.

induce them to spend more now. Moreover, the government can subsidize investment, such as to induce firms to enhance their production capacities. In principle, a temporary hike in labor income taxes can reduce labor supply, which would further increase wages, adding to the inflationary pressures. Such tax policy can be an important complement to a pump-priming fiscal policy.

Once the economy is out of secular stagnation, and hence out of the liquidity trap, we are back to the "normal" world where very high levels of the money supply and of public debt can be inflationary. It is therefore important to put the country on a sustainable fiscal path. But, with good economic management, this should be easily achievable thanks to the combination of higher inflation and higher economic growth. If, before implementing the pump-priming policy, the government has issued long-term debt, rather than short-term debt, then inflation is even more powerful in its ability to reduce the real value of government debt.

In principle, another remedy to secular stagnation consists in directly addressing the structural lack of demand. This involves redistributing resources from households with a low marginal propensity to consume, to those with a high marginal propensity to consume. This can be achieved by redistributing from rich to poor, or from employed to unemployed workers. The scope for these policies is more important in the U.S. than in Europe, which already has extensive redistribution and social insurance programs. Reducing savings can also be achieved by switching from fully-funded to pay-as-you-go pension systems. However, these are already the norm in much of Europe. Hence, **the scope for raising demand through social policies seems limited on the Old Continent**.

Fiscal response to the Covid pandemic

The Covid pandemic has been a macroeconomic shock of exceptional magnitude. It has been both a contractionary supply shock and demand shock. Not only has the pandemic disturbed the production process of many firms, it has also made it hardly possible to supply safe (i.e. Covid-free) services, such as transports or restaurants. This has resulted in higher unemployment and more uncertainty for many workers, which has raised their propensity to save, thereby inducing a contraction in demand.

Throughout the pandemic, governments across the World have provided massive financial support through furlough schemes for employees, loans to businesses, and grants to ailing firms or to households. Much of this aid has been saved during the pandemic. As restrictions are being lifted and life returns to normal, some of the accumulated savings may rapidly be spent, resulting in a temporary surge in demand.

In addition, governments are implementing massive stimulus packages. While they are motivated by the need to prop up economic activity as we emerge from the pandemic, they in fact offer a golden opportunity to bring our pre-existing macroeconomic predicament, secular stagnation, to an end.

The U.S. has adopted the most daring response. In addition to massive support throughout the crisis, it has enacted a $900 billion stimulus plan in December 2020 and an additional $1 900 billion plan in March 2021, resulting in an unprecedented $2.8 trillion fiscal stimulus, about 13% of GDP. This has led to a vivid debate about whether it carries a significant inflation risk.

This inflation risk depends on three parameters: the magnitude of the *output gap*, the size of the stimulus, and the *fiscal multiplier*. The output gap is the distance between the current level of output and the production capacity of the economy. The fiscal multiplier is the increase in GDP triggered by a $1 increase in public spending. In practice the value of the multiplier depends on the nature of the spending. A transfer to households typically has a low multiplier, well below 1, since a large fraction of this transfer is saved. Conversely, government purchases have a multiplier above 1, since $1 spent increases GDP by $1, to which an indirect effect must be added thanks to higher employment and, hence, additional spending from the corresponding employees.

To have a sizable increase in inflation, the stimulus must be large enough to raise demand sufficiently to close the output gap. This requires the following condition to hold:

$$\text{Stimulus} * \text{ Fiscal multiplier} \geq \text{Output gap}.$$

There is uncertainty about the empirical magnitude of both the fiscal multiplier and the output gap.

We can nonetheless easily get a sense of the current U.S. situation. In January 2020, just before the pandemic, unemployment was down to 3.5% with some inflationary pressure on wages, which presumably implied an output gap close to zero. Since then, if output had continued to increase at 2% par year, it would be about 4% higher than it currently is. This suggests an output gap of $850 billion. Regarding the multiplier, about half the stimulus consists of government spending with a multiplier of about 1, while the other half consists of transfers with a multiplier closer to 0.4.[6] This suggests an average multiplier of 0.7. Hence, we can expect the $2.8 trillion stimulus to increase GDP by about $2 trillion over the first year, which is much larger than the $850 billion output gap, implying substan-

[6] The U.S. Council of Economic Advisers (2014 Economic Report of the President, table 3-5) has estimated a multiplier of 1.5 over 6 quarters for government spending, which gives 1 per year, and about 0.6 over 6 quarters for transfers, which gives 0.4 per year. This is in line with the empirical literature on the topic.

tial overheating and inflation.

However, much uncertainty remains. First, it could well be that the output gap was not so close to zero before the pandemic and that the fiscal multiplier is much smaller due to a longer time lag before actual spending occurs. Second, even if the economy overheats, it is not clear how much inflation will result. **There is a risk that inflation gets out of control; but there is also a risk that inflation does not rise sufficiently to be self-sustaining, as would be required to bring stagnation to an end. Faced with this daunting trade-off, the U.S. seems willing to risk excessive overheating and inflation, such as to avoid the Japanese predicament of two or three lost decades.**

Faster population aging and even lower inflation suggests that the Eurozone is much more seriously afflicted by secular stagnation than the U.S.. This should advocate for an equally large fiscal response. While European government did provide generous fiscal support during the pandemic, their stimulus program is far smaller than in the U.S.. The European Union has agreed on a €750 billion stimulus, which was hailed as a historical achievement by European leaders. However, nearly half of it consists of loans, and the rest will be spent over the next five years among the 27 EU countries. This adds up to a tiny fraction of GDP, much below 1% per year. This will be insufficient to prime the pump through higher inflation.

As the global pandemic comes to an end, inflationary pressures are likely to intensify temporarily thanks to a stronger foreign demand for exports, to bottlenecks in the supply chain, or to the rapid spending by households of the savings they have accumulated during the pandemic. Under such circumstances, **all policy levers should be geared towards further enhancing demand such as to escape the low inflation trap for good: higher government spending, lower VAT (such that households spend before it rises back to its previous level), investment subsidies, and a monetary policy commitment to allow for higher inflation.** The stimulus can be withdrawn once inflation expectations are anchored at a sufficiently high level, allowing monetary policy to recover its ability to manage demand through changes in the interest rate.

To alleviate concerns about fiscal sustainability, this policy should be financed by issuing long-term debt. If public debt is not sustainable then, to avoid a sovereign default, the central bank would have to monetize that debt. Thus, an unsustainable accumulation of debt can be inflationary. The concern is that inflation rises far too much and becomes out of control. But, if the government has issued long-term debt, then the price of that debt rapidly falls as inflation increases, which mechanically reduces the debt-to-GDP ratio. This should practically eliminate the risk of losing control over the price level. Financing a large stimulus through short-term debt or through money creation, as under helicopter drops of money, carries a much greater risk of excessive inflation.

Secular stagnation results from powerful adverse forces that will not be easily overcome. **Escaping stagnation is possible, but requires a clear strategy and bold policy decisions. So far, Europeans have shied away from such a route.**

Authors

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