Macroeconomic crises are common as well as economically, socially and politically costly. Fiscal policy plays an important role in alleviating the costs of the crisis. However, recent experiences suggest that the public finances are often unprepared for a crisis. Deficits and debt levels prior to the crisis are commonly too high, limiting the government’s ability to support the economy through the crisis and the recovery phase. In this article, I argue that theoretical macroeconomic models’ underlying assumption of a stable long-run equilibrium may partially explain why governments fail to prepare the public finances for a future crisis. In the standard equilibrium models, crises are seen as one-off events caused by external factors, which creates a false impression of long-run economic stability. The models thus indirectly indicate that there is no need to prepare for a potential crisis. Using forecast data, I demonstrate how the equilibrium perspective dominates macroeconomic thinking and how it contributes to too-high debt ratios prior to a crisis. I end the article by discussing how to design fiscal policy rules based on a crisis rather than an equilibrium perspective.

Key words economic crisis • equilibrium • macroeconomic models • fiscal policy • national debt • fiscal frameworks

Key messages
• Public finances are commonly unprepared for dealing with an economic crisis.
• This is partially explained by the economic models’ assumption of a stable long-run equilibrium.
• Incorporating a crisis perspective in the design of fiscal policy rules would improve welfare.

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Introduction

Macroeconomic crises are common. High-income countries have experienced at least three major crises during the first two decades of the 21st century: the international
financial crisis of 2007–09; the European debt crisis of 2011–15; and the COVID-19 pandemic of 2020/21. Crises are even more common among low- and middle-income countries (Reinhart and Rogoff, 2009). Crises are costly to society: they reduce output and cause higher unemployment (Reinhart and Rogoff, 2009; Andersson and Karpestam, 2014). The costs are not only economic: health outcomes deteriorate (Reeves et al, 2012; Economou et al, 2013), and there is an increase in political populism and extremism (Funke et al, 2016; Eichengreen, 2018). Although crises are both common and costly, economists commonly fail to spot the crisis in advance and often underestimate the effects of the crisis once it begins to unravel (Jonung et al, 2009). In addition, most countries tend to be economically unprepared for even the possibility of a crisis, leaving them vulnerable once the crisis hits the economy.

Fiscal policy is a clear example of countries being unprepared for a crisis. Increased public spending and lower taxes during and after a crisis is an essential part of minimising the impact of the crisis. Supporting the economy is expensive, and public debts grow rapidly as a result (Reinhart and Rogoff, 2009; Balduzzi et al, 2020). Higher debt levels, in turn, increase the risk of a fiscal crisis following the original crisis (Reinhart and Rogoff, 2009; Andersson and Karpestam, 2014; Alessina et al, 2019), which worsens the country’s real economic, social and political outcomes (McManus and Ozkan, 2015).

Weak public finances and the lack of fiscal space during and after a crisis are often explained through the deficit-bias hypothesis, which states that governments run large deficits due to political competition (Hallerberg and von Hagen, 1999; Velasco, 2000) and limited concern for the effect of the public debt on future generations (Alesina and Tabellini, 1990; Beetsma and Uhlig, 1999). The solution to the problem is to construct fiscal policy rules that limit how much the government can borrow and to provide supervision over the long-run stability of the public finances through strategies such as independent fiscal policy councils (Krogstrup and Wyplosz, 2010; Jonung, 2018).

Here, I would like to provide an alternative explanation, namely, the key assumption of a stable long-run equilibrium around which most macroeconomic models are build. The equilibrium assumption implies that there is a stable outcome that the economy supposedly gravitates towards by itself in the long run. This assumption is imposed to be able to solve the model mathematically. As the economy is assumed to be stable in the long run, crises are treated as one-off external and exogenous events resulting from mistakes or bad luck, not as normal parts of the economic process (Stiglitz, 2011). There are, of course, external events that may cause an economic crisis, such as a pandemic. However, there are also crises that originate from within the economic system. Models built around the assumption of a stable long-run equilibrium create the illusion of a stable economy, which, in practice, does not exist. This illusion spills over to the formulation and evaluation of economic policies. Governments can take on more debt when the economy is expected to be stable as compared to the case when it must prepare the public finances for a future crisis. Public debt levels rise, and governments become unprepared for the fiscal consequences of a crisis.

To illustrate the point empirically, I rely on gross domestic product (GDP) forecasts from the Organisation for Economic Co-operation and Development (OECD) and the European Commission. Forecasts represent the joint judgement of qualitative models and personal judgements of the future state of the economy (OECD, 2016). They broadly capture the consensus view among economists at the time of how the economy will develop in the future. They also play an important part in the
formulation and evaluation of fiscal policy. I then discuss how these stable growth forecasts affect fiscal policy and may lead to too-high government debt levels before crises. I end the article with a discussion of how to design fiscal rules based on a crisis rather than an equilibrium perspective.

**Equilibrium models and crises**

*Predicting the outcome using equilibrium models*

Most mainstream macroeconomic models are either partial-equilibrium models that study how an individual market behaves, or general-equilibrium models that study how several markets interact. An economic equilibrium is a situation where: (1) supply and demand are balanced; and (2) the market outcome will not change unless there is some unexpected external factor that disrupts the market. There are different kinds of equilibrium models, and the equilibrium is not always economically efficient. Models may also include the possibility of more than one equilibrium. The purpose of equilibrium models is to mathematically derive the economic outcome and to use the model to make predictions of how the economy will respond, for example, to a change in policy or technology.

Macroeconomic general-equilibrium models include several interacting markets, such as the goods market, the labour market and the money market. The general equilibrium requires that all markets are in equilibrium at the same time and that their respective equilibriums are compatible with each other. Simply put, these models, similar to many other models, consist of: households that consume, save and supply labour; firms that produce goods and invest in new capital and technology; and policymakers in charge of economic policies. The behaviour of each actor is modelled using the representative agent approach, that is, all households are expected to behave in the same way, as are all firms and policymakers. Each actor is rational and behaves according to a predefined decision rule, that is, households maximise utility and firms maximise profits. Based on these components and rules for how different actors interact, it is possible to derive the equilibrium solutions, that is, the economic outcome.

A key feature of the equilibrium is that it is stable unless there is an external force, for example, a shock such as a new unexpected technological discovery, in which case, the economy moves to a new equilibrium. Given the new circumstances, the new equilibrium is stable until there is another external shock. One of the main purposes of these models is to allow, for example, policymakers to evaluate the effects of a new policy ceteris paribus in a world with several markets and actors. Without a stable equilibrium, such predictions become difficult. While the equilibrium is a necessity for the purpose of the model, it is also a limitation, as it limits the applicability of the models during a time of crisis, when the economy is anything but stable. Examples of such macroeconomic models, but by no means the only ones, are the dynamic stochastic general equilibrium (DSGE) models, which have become popular in both academia and the policy world (Blanchard, 2018).¹

It should be noted that equilibrium models have an important role to play in macroeconomics, and they provide vital insights into how the economy operates. However, they are only suited for certain kinds of analysis and only offer a partial understanding of the economy. There is a need for a broader set of models based on fundamentally different assumptions and approaches to model the economy.
Criticism of mainstream macroeconomic models is not new. Following the international financial crisis of 2007–09, the level of criticism grew heavily. The critique followed three main lines. The first line of criticism focused on the models’ unrealistic assumptions and that they fail to incorporate important aspects of economic behaviour (see, for example, Colander et al, 2009; Stiglitz, 2011; 2018a; Romer, 2016). Here, the critique focused on the assumptions of rationality and homogeneity among the actors. According to the critique, as the assumptions are unrealistic, the model’s predictions will obviously be poor. The second line of criticism highlighted that the models require external and, by the model, unpredictable shocks to generate change (Kay and King, 2020). As the model cannot explain the forces of unforeseen events such as a crisis, the model’s prediction of how the economy will develop in the future is only accurate for a situation when nothing happens. Such models cannot help us to understand why crises occur or help us to predict that a crisis is likely to occur in the future. The third line of criticism focused on how the models were applied by economists. Kay and King (2020), for example, argue that economists trust the models’ predictions too much and fail to recognise their limitations. Colander et al (2009) emphasise that economists failed to communicate the limitations of their models, leading to a misplaced trust in the models’ predictions among policymakers and the public.

Over time, attempts have been made to correct some of the models’ weaknesses (Blanchard, 2016; 2018). However, the models still rely on a stable equilibrium as a key building block. Alternative models, such as Schumpeterian models or models inspired by chaos theory, have not caught on and remain on the fringes of the economic literature.

**Macroeconomic crises**

The theoretical focus on equilibriums has left the field of crises less explored, at least from a theoretical point of view. What constitutes a crisis lacks a clear theoretical definition. A crisis is most commonly defined as an event that leads to a major economic loss. It could be a loss of output (a depression) or a large decline in asset prices (a financial crisis). The main cause of the crisis may vary from economic factors to wars and natural disasters, like the present COVID-19 pandemic.

The often ad hoc definitions of an economic crisis are illustrated by the literature on crises. For example, Boucher Breuer and McDermott (2013) define a depression as a decline in per capita income of 20 per cent or more. Barro and Ursua (2008) use a lower threshold of 10 per cent decline in income, while Reddy and Minoiu (2009) look at periods of no or negative growth. Reinhart and Rogoff (2009) define six different types of financial crises based on similar, more or less ad hoc, criteria. Take, for example, their definition of banking crises as either: (1) a bank run that leads to the closure, merging or takeover by the public sector of one or more financial institutions; or (2), if there are no bank runs, the closure, merging or takeover of, or large-scale government assistance provided to, an important financial institution that marks the start of a string of similar outcomes for other institutions. Laeven and Valencia (2012), on the other hand, define a banking crisis as having occurred if at least three out of the following six criteria are satisfied: (1) extensive liquidity support; (2) bank restructuring gross costs are at least 3 per cent of GDP; (3) significant bank nationalisations; (4) significant guarantees put in place; (5) significant asset purchases;
and (6) deposit freezes and/or bank holidays. The definitions are similar and aim to capture a banking sector in distress. However, the definition offered by Reinhart and Rogoff (2009) is broader and captures additional banking crises compared to definition of the Laeven and Valencia (2012).

Irrespective of the definition of a large loss, the empirical evidence suggests that crises are common. Figure 1 illustrates output crises (Panel A) and banking crises (Panel B) for 23 high-income developed countries. I define an output crisis in two different ways: (1) GDP per capita declines by 2 per cent per year or more in a given

**Figure 1:** Banking crises, 1800–2010, and growth crises, 1871–2016

Panel A: Banking crises

Panel B: Growth crises

year; or (2) GDP per capita declines by 5 per cent or more in a given year. These definitions are purely subjective and only used to illustrate the occurrence of relatively large declines in output. I also illustrate banking crises as defined by Reinhart and Rogoff (2009) and Laeven and Valencia (2012). The sample for the growth crises stretches from 1870 to 2016. The sample for the Reinhart and Rogoff banking crises extends from 1800 to 2010, and that for the Laeven and Valencia banking crises extends from 1970 to 2010.

Two features stand out from Figure 1. First, crises are frequent, irrespective of definition. Often, growth crises and banking crises coincide. Second, until 1950, at least one country faced a crisis in a given year. There are few years with no country facing a crisis. After the 1950s, there are periods with no crises, and, in particular, banking crises are rare from the end of the Second World War until the late 1970s. This was a period of relatively strict banking regulations. From the 1980s onwards, the frequency of banking crises increases again. A major difference compared to the pre-1950 period is that crises tend to become more global over time.

The economic effects of these crises are severe, not just in the short run, but also in the long run. The economy will recover some of the lost ground; however, severe crises commonly shift the economy to a lower growth trajectory, thereby inflicting permanent losses on the economy (Cerra and Saxena, 2008; Andersson and Karpestam, 2014). This stands in contrast to business cycles, for which the effect is only short-term and cancels out over time. While it is possible to ignore business cycles in the long-run modelling of the economy, we cannot ignore the effects of major economic crises.

Crises are notoriously difficult to predict, despite being common. Early warning systems to detect the risk of events such as a financial crisis (see, for example, Kaminsky et al, 1998; Borio and Drehman, 2009; Alessi and Detken, 2011) tend to have low power. Indicators may predict a heightened risk for a future crisis, but they seldom predict when the crisis will occur, how severe it will be or how long it will last (Spange, 2010). The irregular and complex nature of crises is one reason why they are difficult to incorporate into equilibrium models, where an actor follows a predictable rule of behaviour.

### Macroeconomic forecasts: return to the equilibrium

A simple way to illustrate how the equilibrium concept dominates economic thinking is to study forecasts of major macroeconomic aggregates, such as GDP. Forecasts reflect both the joint judgement of economic and statistical models, and economists’ qualitative judgements. The OECD (2016), for example, writes that ‘forecasts are not directly generated from a single global model, but instead rely heavily on expert judgment which is informed by inputs from a range of different models, with forecasts subjected to repeated peer review’. Similarly, the European Commission (2020a) writes that ‘forecasts are not based on a centralised econometric model, but are analyses made by experts at the Directorate General for Economic and Financial Affairs, using models and field knowledge’. Forecasts are thus more than just the outcome of one specific model; rather, they broadly represent the thinking among economists. Forecasts also play an important role in the design of economic policies and the evaluation of the long-run sustainability of the public finances (European Commission, 2016; 2019).
Government growth forecasts often overestimate growth due to political pressures (Jonung and Larch, 2004). Overly optimistic growth forecasts allow the government to spend and borrow more while pretending that it is following a sustainable fiscal path. Such a bias in the growth forecast could affect our analysis. However, the OECD has no direct influence on the design of fiscal policies, and any potential bias is likely to be small. The forecasts from the European Commission, on the other hand, may suffer from such a bias since the European Commission has some influence on the design of fiscal policies. However, a main task for the European Commission is to ensure that individual countries follow the fiscal rules stipulated in the Stability and Growth Pact, which should limit the size of any potential bias. In summation, the forecasts studied in this article are likely to represent the respective organisations’ best guess of how the economy will develop in the future, without any obvious bias due to political pressures.

Data sample

I collect GDP growth forecasts from the OECD and the European Commission. Each organisation produces two sets of forecasts: one during the spring and one during the summer. I rely on the spring estimates published by the OECD in the Economic Outlook Volume 1 each year and on the European Commission’s European Economic Forecast. Each publication includes two forecasts: one for the incumbent year and one for the following year. Here, I focus on the forecast for the next year. Each forecast is based on information available up until the time of publication. However, it takes time to prepare the reports, and there is a lag between the end of a period and the availability of data covering that period. Consequently, the GDP forecasts for next year are, in effect, a forecast of GDP two years into the future. A two-year time frame does not represent the long run, but it does provide an overview of how the economy is expected to develop over more than one year.

The OECD forecasts cover the period 1989 to 2019, and the European Commission forecasts cover the period 1999 to 2019. The sample period is eventful and includes several major economic events, such as the European exchange rate crisis of 1992–93, the dot-com bubble of 2000, the international financial crisis of 2007–09, and the euro debt crisis of 2010–15. For many countries, the period also includes a secular decline in the trend growth rate.

Both the OECD and the European Commission publish forecasts for several countries. For simplicity, I focus on six countries representing a wide range of different types of economies: Greece, Italy, Spain, Sweden, the UK and the US. Greece, Italy, and Spain represent Southern European countries that have adopted the euro, were heavily affected by the international financial crisis in the early 2010s. Sweden is a small, open economy with its own currency that remained relatively unaffected by the international financial crisis but did experience a domestic banking crisis in 1991–93 and a fiscal crisis in the mid-1990s. The UK and the US are two large economies. Both were relatively highly affected by the international financial crisis but avoided a full-scale sovereign debt crisis in the 2010s. However, both countries suffered from a minor fiscal crisis for a brief period. Greece, Italy, the UK and the US have experienced a decline in the trend growth rate, while trend growth in Spain and Sweden is relatively stable over time.
Analysis of the GDP forecasts

Figure 2 illustrates the actual GDP growth rate (black dotted line), the OECD forecasts (black line) and the European Commission forecasts (grey line). Each country is represented by a separate panel. From the figure, we can observe a few general tendencies. First, the correlation between the OECD forecasts and the European Commission forecasts is high: between 0.85 (for the US) and 0.96 (for Greece). Each organisation may have its own models and professional forecasters, yet their predictions tend to coincide. There is clear evidence of herd behaviour when it comes to forecasting.

Figure 2: GDP growth and OECD forecasts from the spring of the previous year, 1989–2019

(Continued)
Second, there are some year-to-year variations in the growth forecasts – often, no more than a few tenths of a percentage point. However, excluding these minor variations, the forecasts tend to be relatively stable over long periods, in line with the assumption of a stable long-run equilibrium. Third, the forecasts struggle to pick up changes in the underlying trend growth rate. For example, the Italian growth trend declined following the exchange rate crisis in 1992/93. The GDP forecasts, however, expected growth to return to the 1980s’ level every year until the early 2000s. Prior to the burst of the dot-com bubble in 2000, growth was relatively high in Spain, Sweden, the UK and the US. The forecasts, on the other
hand, consistently indicated the return to the lower growth rate that these countries had experienced prior to the boom. In the 2010s, following the international financial crisis, growth remained low in most countries compared to previous decades. Notably, the US experienced a decline in the average growth rate by up to 1 percentage point per year. Again, it took the forecasts several years to pick up this decline. For the US, the OECD forecasts overestimated the US growth rate for six consecutive years.

Fourth, the forecasts never predict a major crisis. This is unsurprising given how difficult it is to predict crises. The forecasts also struggle to predict the outcome
during a crisis: they consistently overestimate the speed of recovery. For example, the speed of recovery was overestimated for Sweden in 1991–94, Italy in 1991–94 and 2008–17, Greece in 2009–19, Spain in 2008–13, and the US in 2010–18.

Fifth, the only time the forecasts are accurate over a longer period is when the economy is relatively stable in terms of a stable average growth rate with only modest business-cycle fluctuations. Among the six countries, only Sweden in 2000–19 qualifies as such a case. Forecasts based on the equilibrium perspective are accurate only when the economy is stable, which tends to be the exception rather than the rule.

**Figure 3:** GDP growth and the OECD GDP forecasts for the present and next year, 1989–2019

![Panel A: Greece](image)

![Panel B: Italy](image)
A further illustration of how economic thinking is influenced by the equilibrium perspective is shown in Figure 3. This figure illustrates the expected change in the growth rate between the two forecast points: the incumbent year and the next year. An arrow pointing upwards implies that the growth rate is expected to increase from the incumbent to the next year, and an arrow pointing downwards implies that the growth rate is expected to decrease. Given the similarity between the OECD forecasts and the European Commission forecasts, I focus on the OECD forecasts, as they cover a longer period.

According to the arrows, the forecasts over the two years are consistently pointing towards a return to an average growth rate. If actual growth is below
the average, the arrow points upwards, indicating that growth is expected to accelerate. If actual growth is above the average, the arrow points downwards, indicating that growth is expected to decelerate. In other words, growth is expected to move towards the average (equilibrium) growth rate over time. During a crisis, growth is often far below the average. The return to the average is thus expected to take longer than two years: the arrow does not reach all the way to the average value. However, the direction of travel towards the average is clear. The empirical evidence suggests that the expected speed of recovery is too high. Actual growth tends to stay below the average for a relatively long
period. The overestimation of the speed of recovery is most visible for Greece in 2009–13, but the same tendency is true for Spain in 2009–14 and for Sweden in 1991–93. It is also visible, though to a lesser degree, for the US in 2009–11 and for the UK in 1990–93 and 2009–12.

Table 1 summarises the average forecasting error for the forecast for the next year (that is, the forecast two years into the future). Column 1 presents the forecasting error for the full sample period, column 2 presents the forecasting error for the period prior to the international financial crisis of 1990–2007, column 3 presents the forecasting error during the international financial crisis of 2008–10, and column 4 presents the forecasting error for the post-financial crisis period of 2011–19.

As expected, the forecasting error is the largest during the crisis (column 3) and the years following the crisis (column 4). The error is the smallest for Sweden, which avoided a banking crisis during the international financial crisis. In summation, the table confirms that the likelihood and the consequences of crises are consistently underestimated by the forecasts.

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**Table 1:** Forecasting error

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</tr>
<tr>
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<td>+1.4</td>
<td>+0.7</td>
</tr>
<tr>
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<td>0.0</td>
<td>+2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>USA</td>
<td>+0.3</td>
<td>−0.2</td>
<td>+1.5</td>
<td>+0.7</td>
</tr>
</tbody>
</table>

*Note:* A positive sign implies that the growth forecast was too high.

**Figure 4:** Public debt ratios

Sources: Eurostat and St Louis Federal Reserve.
Fiscal policy

The public debt-to-GDP ratio

Fiscal problems or even sovereign debt crises, when the government defaults on some of its debts, are common from a historical perspective (Reinhart and Rogoff, 2009). The severity of the fiscal problems varies from case to case, but the tendency is clear. Similar to a financial crisis, they are caused by too much debt. Figure 4 illustrates the public debt in relation to GDP, that is, the debt-to-GDP ratio (debt ratio), from 1995 to 2019 for the six countries included in our study. The public debt is measured using the Maastricht debt for the European countries and the federal debt for the US. Most countries opted to stabilise the debt ratio prior to the financial crisis, despite relatively high economic growth. Greece and Italy stabilised the debt ratio at close to 100 per cent of GDP, while the US chose 60 per cent and the UK chose 40 per cent. Breaking this pattern are Spain and Sweden, which reduced their debt ratios from close to 65 per cent in 1995 to approximately 40 per cent in 2007. Following the crisis, the debt ratio increased substantially in all countries except Sweden, which, unlike the other countries, managed to avoid a domestic banking crisis. The rising debts became a problem for the two most indebted countries, Greece and Italy, which faced a severe fiscal crisis in the early 2010s. Spain, the UK and the USA also faced a tough fiscal situation in the early 2010s due to the rising debt levels. However, they avoided a full-scale fiscal crisis.

After the financial crisis, countries have continued with the policy of stabilising the debt ratio, now at a higher level compared to before the financial crisis. The Greek debt ratio fluctuates around 175 per cent of GDP, Italy’s fluctuates around 130 per cent, and the Spanish and the US debt ratios fluctuate around 100 per cent, similar to the level where Greece and Italy kept their debt levels prior to 2007. The UK has chosen a rate of 85 per cent, while the Swedish debt ratio remains at 35 per cent. The expected increase in the public debt ratio due to the COVID-19 pandemic in 2020 of 15 to 20 per cent in the euro area and the US (Congressional Budget Office, 2020; European Commission, 2020) will further increase the already historically high debt ratios.

The dynamics of the public debt during the last 25 years is clear: the debt ratio is flat during normal times and increases quickly to new record levels during a crisis, where it is maintained until the next crisis, when it rises yet again. When the debt level becomes too high, there is a fiscal crisis. This pattern raises questions: why do so few countries reduce the debt when the economy is growing? Why do countries choose a policy of debt-ratio stabilisation that leaves them less prepared for future crises?

Stabilisation of the debt ratio: economic crises

Stabilising the public debt ratio is a prerequisite for long-run sustainable public finances. A debt level that grows quicker than the economy will eventually cause a fiscal crisis. The size of the debt ratio is determined by several factors: the level of the nominal debt, the GDP growth rate, the interest rate and the primary budget balance. The primary balance is the difference between current tax revenues and current public expenditures net of interest payments. One way to illustrate the change in the public debt over time is through the following equation:

\[
\text{Debt ratio} = \text{Nominal debt} / \text{GDP} + \text{Primary balance} / \text{GDP} + \text{Interest rate} \times \text{Nominal debt} / \text{GDP}
\]
Macroeconomic equilibriums, crises and fiscal policy

\[ s_t = s_{t-1} + \left( \frac{r_t - g_t}{1 + g_t} \right) \times s_{t-1} - p_t, \]  

(1)

where \( s \) is the public debt ratio, \( r \) is the real interest rate, \( g \) is the GDP growth rate and \( p \) is the primary budget balance in relation to GDP. Time is denoted by \( t \). The debt ratio declines (increases) if: (1) the primary balance is positive (negative); and (2) growth is higher (lower) than the real interest rate. In other words, it is possible to stabilise the debt ratio while still running a primary budget deficit as long as the GDP growth rate is high and the interest rate is low. Countries that stabilised the debt ratio prior to 2007 (see Figure 3) relied mostly on relatively high growth and declining interest rates to keep the debt ratio constant. The primary budget balance was, on average, negative for most countries.

During major economic crises, the debt ratio increases substantially. In peacetime, banking crises have among the largest effects on the public debt. The ‘average’ banking crisis increases the debt ratio by 30 to 50 percentage points (Reinhart and Rogoff, 2009; Laeven and Valencia, 2012). A large banking crisis, such as the Irish crisis of 2008–12, may increase the public debt by up to 80 percentage points. Part of the increase in the public debt is due to government support to the banking sector in order to avoid a meltdown of the financial system. Another part of the increase is caused by higher spending and lower revenues due to the recession and the rise in unemployment. A third part is due to the decline in GDP. For example, the Greek debt, measured by the Maastricht debt, was €301 billion in 2009. It increased by a modest €30 billion until 2019, when the nominal debt was €331 billion. The increase in the debt ratio was much higher, from 127 per cent in 2009 to 177 per cent in 2019. The main reason for the increase in the debt ratio was not the increase in the nominal debt, but the decline in GDP, from €238 billion in 2009 to €187 billion in 2019. A change in the size of the economy can have a large effect on the debt ratio even if the nominal debt stays relatively stable.

**Figure 5:** Ten-year government bond yields during the euro debt crisis, 2010–14

Source: OECD.
An increase in the interest rate can have a similar effect on the public debt ratio as increased borrowing or a decline in GDP. Figure 5 illustrates the ten-year government bond yield (interest rate) during the time of the euro debt crisis of 2010–15. The yield began to increase in 2010 as the debt ratios rose because the international capital markets lost trust in the national governments. The loss of trust was mostly directed towards already heavily indebted countries prior to the crisis. However, the UK and the US also experienced a small increase in the interest rate in the latter half of 2010. The yield on Italian and Spanish bonds increased by 3 percentage points. The yield on Greek bonds increased by 25 percentage points.

A higher interest rate implies that the government either has to borrow more to cover the rising cost of servicing the debt or increase the primary balance to cover the increasing cost. With a debt ratio of 100 per cent of GDP and no economic growth, an increase in the interest rate by 3 percentage points implies that the government either has to increase borrowing corresponding to 3 per cent of GDP or must increase the primary budget balance by 3 per cent of GDP. With an already high budget deficit, an additional 3 per cent of GDP in borrowing accelerates the fiscal crisis. An increase in the primary budget balance of 3 per cent of GDP to compensate for the increased interest costs without increasing the public debt is politically difficult to achieve. For example, the highest primary budget balance that Germany recorded between 1991 and 2019 was 2.5 per cent. Furthermore, increasing the primary balance during a crisis or the recovery phase drains the economy of economic resources, which worsens the crisis or slows down the economic recovery. Lower growth, in turn, increases the debt ratio.

Both a decline in GDP and rising interest rates can have a significant effect on the debt ratio, not just the primary balance. Once a fiscal crisis begins, there is no easy way to end it. The country can default on its debt or ask for an international bailout. Central banks can monetise the debt by printing money and buying government bonds. One aim of the European Central Bank’s programme of quantitative easing, implemented in 2012, was to reduce high yields on government bonds in order to avoid an aggravation of the euro debt crisis and a potential collapse of the euro (Draghi, 2012). Bond yields did decline after the programme began, easing the debt crisis (see Figure 5). However, the long-run situation was not resolved, and the debt ratio remained at record levels. The monetisation gave governments the opportunity to maintain the high debt ratios rather than to reduce them and prepare the public finances for a future crisis, which came in 2020. There were also additional negative side effects of the monetisation, such as increased asset prices and private debt levels (Huston and Spencer, 2017; Andersson and Jonung, forthcoming).

Stabilisation of the debt ratio: a macroeconomic equilibrium

The equilibrium perspective affects how fiscal policy is conducted and evaluated. A common approach to test the long-run sustainability of the public finances is to forecast future expenditures and revenues. Expenditure forecasts are primarily based on expected demographic changes, such as the number of working-age people and the number of seniors. Revenue forecasts are generated based on estimates of future GDP (see, for example, European Commission, 2007; 2020c; Office for Budget Responsibility, 2018). A common assumption, in line with the assumption of a stable long-run equilibrium, is that growth and interest rates are constant in the
future. The constant long-run growth rate does not take the possibility of a future crisis into account.

The assumption of a stable long-run growth rate obviously affects the design of fiscal policy, fiscal targets and the evaluation of the public finances. Using Equation 1, it is relatively easy to calculate the future debt ratio with the help of the forecasted growth rate and interest rate. The equation also reveals the size of the necessary primary budget balance to stabilise the debt ratio at a given level, conditioned on the forecasted growth and interest rates. In a stable economy, the government may choose a relatively high debt-ratio target, as there is no need to prepare the public finances for a future crisis. From a political point of view, this allows the government to avoid making tough but necessary decisions to lower the debt ratio. Countries are left unprepared when the crisis hits the economy. This may explain the persistently high debt ratios illustrated in Figure 4.

The equilibrium perspective also affects the design of economic policies during macroeconomic crises. The forecasts illustrated in Figures 1 and 2 show that in each crisis, the economy is expected to return to the equilibrium growth rate relatively quickly. In other words, the economy is expected to recover from the crisis at a fast pace, often with limited support from the government. The need for economic policies to support the recovery is reduced when the economy is expected to correct itself. Consequently, policymakers cut back economic support too quickly, stifling the recovery. Weak public finances prior to the crisis contribute to this behaviour, as the need to stabilise the public finances to avoid a crisis becomes imminent early in the crisis. Fiscal policy becomes pro-cyclical rather than counter-cyclical, and contributes to the destabilisation rather than the stabilisation of the economy (McManus and Ozkan, 2015).

Part of the decline in Greek GDP following the international financial crisis was caused by the austerity programme introduced to deal with the debt crisis. According to the forecasts on which the programme was based, starting in 2013, the economy was expected to grow by 2–2.5 per cent per year and to maintain this level thereafter (European Commission, 2011; 2012). Growth was expected to remain stable, although the plan called for the Greek government to increase the primary budget balance from a deficit of 5 per cent in 2010 to a surplus of between 3.5 and 4.5 per cent of GDP. The actual outcome was that, until 2019, growth never reached 2 per cent and was even negative in 2013, 2015 and 2016. The fiscal policies designed to deal with the Greek fiscal crisis are likely to have made the situation worse by drastically reducing demand in an already weak economy, causing major economic, social and political damage (Economou et al, 2013; Alexiou and Nellis, 2016). The effects were not limited to Greece; they also contributed to growing political conflicts among the euro area members (Andersson, 2020).

Stabilising the debt ratio: a crisis perspective

Each crisis is different, and policy lessons from the previous crisis are not always appropriate in dealing with a new crisis (Jonung, 2015). As each crisis tends to have its own complex dynamics, it is notoriously difficult to forecast both the timing and the economic effects of crises (Spange, 2010). Redesigning mainstream macroeconomic models to incorporate crises as an integrated part of the model is difficult. Attempts have been made (see, for example, Christiano et al, 2018). However, crises are difficult
to incorporate into models where equilibrium and representative agents are two key building blocks (Stiglitz, 2018a).

To avoid future fiscal crises following a major macroeconomic crisis, the solution lies less in alternative economic models, though they are clearly needed, than in how fiscal policy and fiscal targets are designed. Rather than basing the policy and targets on the equilibrium concept, the formulation should take as its starting point the fact that economic crises are common, and they have large economic, social and political consequences unless the government takes immediate and strong action to limit the crisis from spreading throughout society. Here, fiscal policy plays an important role in stabilising society during the crisis, but it can only do so if it has a sufficiently large fiscal space prior to the crisis (Obstfeld, 2013; Andersson and Jonung, 2019a). Some theories argue that countries controlling their own currency can create their own fiscal space by monetising the debt through the central bank (that is, printing money to pay for public consumption). This argument has some merit. However, the historical record shows that the possibility of monetising the debt without causing inflation or lower economic growth is limited (Kwon et al, 2009; Reinhart and Rogoff, 2009; Andersson and Karpestam, 2014). Relying on central banks to print money to create fiscal space should be seen as the last option, not the first, option.

There are two main ways of creating sufficient fiscal space without the central bank having to monetise the public debt. One is to build up a ‘rainy-day’ fund or a sovereign wealth fund during normal times (Andersson and Jonung, 2019b). When the crisis hits the economy, the government can draw on the saved resources. The other alternative is to reduce the public debt ratio during normal times, which allows the government to borrow during the crisis without facing a fiscal crisis (Andersson and Jonung, 2019a). For a small economy that struggles to borrow internationally or lacks the credibility to access low-interest-rate loans, a ‘rainy-day’ fund is probably the best alternative. However, large public savings in a fund may drain the economy of resources, which limits public spending in key areas. For most countries, reducing the public debt ratio through strong economic growth and a moderate surplus is likely the best alternative.

The target for the debt ratio should be set low enough to allow the government to increase the public debt by 30 to 50 percentage points during the crisis without increasing the risk of a future fiscal crisis. This is the average increase in the debt during major economic crises in peacetime (Andersson and Jonung, 2019a). The first step in finding the appropriate debt ratio is thus to find the maximum level of debt the government can maintain without negative side effects. The second step is simply to subtract the fiscal cost of a major economic crisis. For Sweden, Andersson and Jonung (2019a) derive a debt ratio of between 20 and 30 per cent of GDP as an appropriate debt target. This is substantially lower than the 60 per cent maximum debt level defined in the European Union’s Stability and Growth Pact. The level of 60 per cent as the pre-crisis debt target is likely too high to avoid a fiscal crisis. An increase in the debt ratio by 50 percentage points to 110 per cent is close to the debt level of Greece and Italy in 2009. An increase in the debt ratio by 80 percentage points, similar to Ireland in 2009, would lead to a debt ratio of 140 per cent after the crisis – well above the Italian debt level in 2019. Although a 60 per cent target prior to the crisis is likely too high, the choice of debt target is likely to be country specific.
A debt target set at a low level has several advantages: first, it prepares the public finances for a crisis and thereby contributes indirectly to reducing the negative consequences that crises have on society; second, it is easy to monitor and easy to implement; and, third, it does not rely on uncertain economic forecasts. It is thereby possible to rely less on macroeconomic models and assumptions of stable long-run equilibriums.

On the negative side, a low public debt ratio may hurt the economy by reducing economic growth if demand is suppressed by high taxation and low public demand. Any reduction of the debt ratio should thus take place while the economy is growing. A steady decline in the debt ratio during times of growth is unlikely to reduce growth. Debt ratios declined steadily from the end of the Second World War until the 1970s, while growth remained high. More recently, Sweden reduced its debt ratio from 75 per cent in 1995 to 35 per cent in 2019 (see Figure 4), without any obvious negative growth effects. In fact, average Swedish GDP growth averaged 2.3 per cent per year between 2000 and 2019, compared to 2.1 per cent in the US, 1.8 per cent in the UK and 1.4 per cent in the euro area. The tax revenues-to-GDP ratio fell from 49 to 42 per cent of GDP, at the same time as real public consumption grew by 29 per cent in real terms. While sustainable public finances and a declining debt ratio did not stifle growth, it did provide Sweden with ample room to support the economy throughout the international financial crisis and the recovery phase without facing a fiscal crisis. In addition, while the COVID-19 pandemic has pushed the debt ratio above 100 per cent in the euro area and the US, the Swedish debt level is expected to peak at 45 per cent (European Commission, 2020b). While other countries will struggle with the consequences of the pandemic on the public finances, Sweden is in the position to further stimulate the economy in the coming years should it prove necessary.

Conclusions: being prepared for the next crisis

Macroeconomic crises are common, yet public finances are seldom prepared for crises and their economic, social, political and fiscal effects. In many cases, weak public finances before the crisis contribute to worsen the effects of the macroeconomic crisis. There are many possible explanations for weak public finances. One of them, which is seldom discussed, is the dominating role equilibriums play in theoretical macroeconomics. The equilibrium approach to understanding the economy yields a biased view of economic stability. The risk of a future macroeconomic crisis is underestimated. This critique is not new. However, only limited progress has been made to incorporate crises as an endogenous component of mainstream macroeconomic models. The equilibrium perspective still heavily influences economic thinking and economic policies.

Most of the economic literature on crises is empirical. There are lessons to learn from historical crises. However, each crisis tends to have its own unique causes and dynamics, which makes it difficult to incorporate crises as part of a mathematical model. From a policy perspective, a simple solution to incorporate the crisis perspective into the design of fiscal policy rules is to set a debt-ratio target, coupled with a yearly surplus target until the debt-ratio target is reached. A low debt prior to the crisis provides fiscal space to deal with the crisis without a fiscal crisis. The economic recovery will be quicker, and the social and political consequences of
the macroeconomic crisis will be smaller. This will lead to higher welfare over the
long term.

The first two decades of the 21st century are decades of crises. It is time for
macroeconomic thinking and macroeconomic policies to incorporate a crisis
perspective, not just an equilibrium perspective, to a much greater extent than in
the past.

Notes
1 For a description of DSGE models, see, for example, Christiano et al (2010).
2 For a defence of the models, see, for example, Blanchard (2016) and Lindé (2018).
3 There are models that include crises outside the mainstream models. For example, crises
are a key component in Schumpeter’s (1939) business cycle theory. Chaos theory also
explains crises as being caused by the economy itself, rather than external forces (see,
for example, Faggini and Parziale, 2012).
4 The six crises are inflation, currency, asset, banking, external debt and domestic debt.
5 Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece,
Iceland, Ireland, Italy, Japan, South Korea, the Netherlands, New Zealand, Norway,
Portugal, Spain, Sweden, Switzerland, the UK and the US.
6 Crises may also have some positive effects, such as growth-enhancing reforms that
strengthen the stability of the economy over the long run (Andersson, 2016). However,
the gains from such reforms are often insufficient to cover the losses.
7 The Maastricht debt covers the entire public sector: national, regional and local
governments, as well as the social security systems.
8 For information about the euro debt crisis, see, for example, Stiglitz (2018b) and
9 Sweden suffered from a similar situation in the 1990s despite having its own currency
(Andersson and Jonung, 2019a).
10 Draghi argued that the increase in bond yields were the outcome of ‘unfounded fears
on the part of investors’ (Draghi, 2012).
11 The assumptions were criticised at the time, yet the criticisms had no effect on the
actual policies (see, for example, Varoufakis, 2017).
12 The so-called ‘modern monetary theory’ claims that the government can fund its
obligations through the central bank when the economy is below full employment (see,
for example, Kelton, 2020). This claim is based on assumptions with weak empirical
support (see, for example, Mankiw, 2019; Palley, 2019).
13 How much debt a country can maintain is likely to vary from country to country.
Most estimates fall in the range of 70 to 90 per cent of GDP (Barrett, 2018; Fall et al,
2015; Reinhart and Rogoff, 2010). However, there are those who argue that higher
debt ratios are possible as long as interest rates and inflation are low (Blanchard, 2019;
Mitchell et al, 2019).
14 Sweden introduced a surplus target in 2001 of 1 per cent of GDP over the business
cycle. The aim was to reduce the public debt to lower interest costs and to prepare the
public finances for demographic change. Preparing for a future crisis was not one of
the explicit motives (Andersson and Jonung, 2019a).

Conflict of interest
The author declares that there is no conflict of interest.
References


European Commission (2020a) About the economic forecasts. Information on the methodology and coverage of the economic forecasts published in this section, .


