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FIGHTING INFLATION WITH CONVENTIONAL AND UNCONVENTIONAL FISCAL POLICY: THE CASE FOR A NEW MACROECONOMIC POLICY ASSIGNMENT

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ABSTRACT

The study discusses the distribution of roles between monetary and fiscal policy in stabilising the price level. It questions the view that price level stabilisation should be the sole responsibility of central banks. It argues that there is a case for national governments also being responsible for price stability. The main results are the following: In the case of demand shocks, fiscal policy can react in a more timely and targeted manner than monetary policy. In the case of supply shocks, fiscal policy can shift the Phillips curve by varying indirect taxes, with price brakes and income policies. This is an advantage over monetary policy, which can only influence inflation indirectly by shifting the IS curve. In the recent energy crisis, the effects of this "unconventional fiscal policy" have been assessed quite positively. The case for a price stability mandate for national fiscal policy is particularly strong in the euro area. In the case of national supply and demand shocks in individual countries, the ECB can only provide an insufficient compensation, and its reaction has counterproductive effects in the rest of the monetary union. E.g., with a national price stability mandate, between 2014 and 2016, Germany would have been obliged to stimulate its economies, thereby supporting the ECB's fight against deflation.

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Fighting inflation with conventional and unconventional fiscal policy: The case for a new macroeconomic policy assignment

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Executive Summary

For decades, inflation control has been regarded as the **domain of central banks**. An active role in stabilising the value of money is attributed to fiscal policy only in deflationary phases, when interest rate policy reaches the limits of the "effective lower bound" (ELB). This division of macroeconomic roles is also reflected in the **Maastricht Treaty**, which gives the European Central Bank sole responsibility for price stability and commits budgetary policy primarily to the objective of a balanced budget.

With the wave of inflation triggered by the war in Ukraine, however, this dogma has begun to falter. Not on the basis of new macroeconomic insights, but out of a need to protect households from the huge price hikes, almost all countries have taken various measures to directly reduce inflation. These spontaneous and completely uncoordinated "**unconventional fiscal policies**" (Dao, Dizioli, Jackson, Gourinchas, & Leigh, 2023) are generally seen as quite positive in retrospect.

This study takes this innovation in economic policy as an opportunity to fundamentally rethink the widely accepted **"assignment" of stabilisation policy**. It begins by showing how this division of responsibilities has become established worldwide under the influence of monetarism. **"Inflation targeting"** by independent central banks became the model for successful monetary policy in the 1990s.

Accordingly, during the discussions on the creation of a European Central Bank, there was no doubt that it had to be independent and committed to the objective of price stability. At that time, there was no discussion of the contribution that Member States' fiscal policies could make to stabilising the price level within the national framework and, ultimately, within the overall system.

Historical hindsight shows that there has also been an **alternative understanding of roles**. In the "functional finance" framework, which goes back to Abba Lerner, fiscal policy is given symmetrical responsibility for fighting unemployment and inflation. Almost identical formulations can be

found in the German Stability and Growth Act of 1967, and US policy at the time also gave fiscal policy a leading role in fighting inflation.

The theoretical basis of this study is a simple **new Keynesian model** (IS/PC/MP model) which can be used to study the stabilisation contribution of monetary and fiscal policy in the presence of demand and supply shocks. In the case of **demand shocks**, the **equivalence of monetary policy and conventional fiscal policy** is shown. In this sense, there is no theoretical justification for the primacy of monetary policy in the fight against inflation. Within the framework of the model, it is also possible to illustrate the **destabilizing dynamics** that arise **when the ELB is reached** when a shock cannot be offset by fiscal policy.

The equivalence of monetary policy and unconventional fiscal policy also holds when responding to supply shocks by changing aggregate demand. However, monetary policy, like conventional fiscal policy, faces the problem of a **trade-off,** whereby stabilisation of the price level is accompanied by adverse effects on output. This is the **innovation of unconventional fiscal policy**. Since it can shift the Phillips curve directly, for example by varying indirect taxes, it opens up the possibility of controlling inflation at no cost to output and, at the same time, without affecting inflation expectations in the event of temporary shocks.

The equivalence of monetary policy and conventional fiscal policy can be tested beyond the model framework using the criteria of targeting ("targeted") and lagged effects ("timely"). In terms of **targeting**, fiscal policy has clear advantages as its measures have a direct impact on aggregate demand. Moreover, measures can be differentiated according to target groups. Monetary policy, on the other hand, faces the problem that its measures need to be transmitted through the financial system and that, in the case of aggregate demand, they primarily affect the construction industry. They also tend to have **undesirable side effects** on the exchange rate, the stability of the financial system, the sustainability of public finances and the distribution of income and wealth. The benefits of fiscal policy in the fight against inflation have been emphasised in recent publications by the International Monetary Fund.

Monetary policy also does not perform particularly well in terms of **transmission lags**. The rapid fiscal response of many governments to the COVID pandemic and the impact of the war in Ukraine belies the textbook wisdom that fiscal policy is associated with long decision lags ("**inside-lag**"). Conversely, monetary policy still has transmission lags of a year or more ("**outside-lag**").

With regard to the **benefits of unconventional fiscal policy** presented in the model framework, it is important to bear in mind in practical implementation that it is not easy to tell whether large energy price shocks are permanent or temporary in nature. In the case of a **persistent shock**, unconventional fiscal policy should not offset the primary effect. However, it can use income policy measures to help mitigate the second-round effects associated with such a shock. An example of a successful measure is the **inflation compensation premium** adopted by the German government in September 2022. It has helped to dampen collectively agreed wage increases and thus also second-round effects.

With regard to the reductions in energy and general excise taxes implemented in many countries, hindsight shows that they were able to make a **stabilizing contribution to inflation developments**, not least because the price shocks that occurred in 2022 turned out to be less persistent than initially expected. This finding is supported by analysis from both the International Monetary Fund and the European Central Bank.

There may be limits to unconventional fiscal policies based on reducing indirect taxes in countries with high debt levels. Here, however, there is the possibility of **compensating by increasing direct taxes**, which may prove useful anyway, given the demand-enhancing effects of lower indirect taxes.

The importance of fiscal policy in fighting inflation, but also in stabilising the price level in general, is particularly evident in the institutional framework of the **European Monetary Union**. The **IS/PC/MP model** can be used to describe, for a monetary union, the adverse effects of **idiosyncratic shocks** on the rest of the currency area. A positive demand shock in one member

country, which is not offset by national fiscal policy, leads to negative effects in the other member countries. Because of the single nominal interest rate policy, the ECB cannot prevent such disturbances: It can pursue a targeted policy for the currency area average. However, the average then results from the coexistence of too high and too low inflation rates as well as positive and negative output gaps at the member state level.

The economic policy implication of this analysis is that, at the current stage of monetary union integration, it would be sensible to **commit national fiscal policies to the objective of price stability**. With the benefit of hindsight, it can be shown that in this way the **overheating in the periphery-countries** in the first half of the 2000s could have been detected at an early stage. Similarly, in the years 2014 to 2016, when the ECB's interest rate policy was at the zero lower bound, there would have been an obligation for most member states to pursue a **more expansionary fiscal policy** if inflation rates at the national level were well below 2%. Countries with debt-to-GDP ratios above 90%, for example, could have been exempted from such an obligation.

Overall, this study shows that there is no theoretical or economic justification for the traditional allocation of roles in stabilisation policy, which assigns monetary policy a primacy in the fight against inflation. Monetary policy instruments have little specificity and long lags in their effectiveness. Finally, central banks are only needed in the fight against inflation if **fiscal policy itself is the cause of inflation**, as described, for example, in the "Fiscal Theory of the Price Level". Of course, one has to reckon with the fact that, for **political-economic reasons**, a government may be unable or unwilling to dampen aggregate demand with restrictive policies. But then one must be aware of the fact that stabilization by the central bank is only a **"second-best" solution**.

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1 Introduction

After a long pause due to the "great moderation" and "secular stagnation", the fight against inflation has returned to the centre of economic policy discussion. A central question here is the macroeconomic assignment to monetary policy and fiscal policy: is it mainly or predominantly the task of central banks to use interest rate policy to bring inflation back to a normal level? Or do national governments have faster-acting and more targeted instruments at their disposal? For the "prevailing opinion" it was and is unquestionable that the central bank has the primacy for price stability. An active stabilisation policy role of fiscal policy is only regarded as necessary if the central bank has reached the "effective lower bound" with its interest rate policy.

The discussion about the stabilisation policy role of monetary and fiscal policy has been given new impetus by the recent wave of inflation. In almost all countries, governments have attempted to soften the upward pressure on prices by varying indirect taxes and other measures. This fiscal policy, described as "**unconventional**", is predominantly viewed positively. This innovation provides the occasion to fundamentally review the prevailing macroeconomic policy assignment.

In particular, this study will use a simple New Keynesian model to examine the advantages and disadvantages of monetary policy on the one hand and fiscal policy on the other in stabilising the inflation rate. A distinction is made between supply and demand shocks. At the same time, the analysis is symmetrical, so that not only inflationary but also deflationary shocks are considered. Moreover, not only traditional fiscal policy, which controls aggregate demand with its instruments, is considered, but also the fiscal policy referred to as "unconventional", which directly influences the prices of individual groups of goods, especially via indirect taxes.

Beyond this model analysis, further advantages and disadvantages of monetary policy as well as conventional and unconventional fiscal policy in controlling the inflation rate can be identified. Important criteria for the effectiveness of stabilisation policy are the **side-effects** ("targeted") and the **time-lags** ("timely") of policy measures. With regard to the side effects of inflation control, the

impact on financial stability, international competitiveness, the sustainability of public finances and income and wealth distribution must be taken into account.

In addition, **the instruments of unconventional fiscal policy** will be discussed in more detail. These have particular advantages in the case of supply shocks in that they can directly influence the aggregate supply curve. In contrast, in the case of such shocks, monetary policy and conventional fiscal policy can only control the inflation rate via aggregate demand, which is associated with negative effects on economic growth. Depending on the cause of a supply shock (temporary or permanent energy price shocks, labour cost shocks, exchange rate shocks), different instruments of unconventional fiscal policy are required.

The institutional framework of the **European Monetary Union** raises special implications for the macroeconomic policy assignment. The New Keynesian model can be used to identify the negative effects of national supply and demand shocks in one member state on the rest of the currency area. It becomes clear that the European Central Bank with its uniform interest rate policy is only partially able to prevent such negative transmission. This is particularly the case when there is a simultaneous positive demand shock in one part of the currency area and a negative supply shock in another. The **early years of monetary union** provide an illustrative example of this. While a credit boom led to overheating with above-average inflation rates in the peripheral countries, German wage moderation led to very low wage and price increases in Germany.

The need for fiscal stabilisation of price levels at the level of the larger member states does not only result from the negative transmission of idiosyncratic shocks. It also results from the limited possibilities for monetary policy to act in the event of **negative supply and demand shocks**. Developments in the years 2014 to 2016 have made it clear that, due to the zero-lower bound, it has not been possible for the ECB to achieve a targeted inflation trend even with massive bond purchases. With national responsibility for price development, German fiscal policy in particular would have been required to at least show a balanced budget instead of budget surpluses.

The experience shows that national governments are not willing to accept such a stabilization role which can be explained by the **positive externalities** of national stabilization efforts. While political integration could help to overcome these externalities, it is not very likely that major efforts will be made in this direction. Therefore, the only solution would be a **legal obligation** for the EMU member states establishing a responsibility for contributing to price stability at the national level. This obligation can be made conditional on the fiscal space of a member state. Such an obligation could be included in the Stability and Growth Pact which so far lacks a macroeconomic stabilization dimension.

At a more general level, this study shows that fiscal policy is better suited for dealing with inflationary shocks than monetary policy. Its measures can be designed in a more targeted way, and they require shorter time-lags. The case for monetary policy in the fight against inflation rests therefore only on **political-economy considerations**: the government itself is the cause of a positive demand shock or the government is unwilling to implement restrictive fiscal policy measures which are unpopular. But has to be aware of the fact that inflation stabilization by monetary policy is always "**second best**".

2 The changing role of fiscal policy in stabilising the price level

In theory, fiscal policy can be used to control aggregate demand symmetrically and therefore able to stabilize inflation in the case of macroeconomic shocks. However, the economic policy debate is dominated by the idea that monetary policy has primacy in the fight against inflation. Fiscal policy is at best called upon in phases of deflationary developments, when a central bank reaches the "Effective Lower Bound" (ELB) for its interest rate policy.

2.1 Asymmetric role assignment

The assignment of stabilisation policy roles for monetary policy and fiscal policy is traditionally characterised by an **asymmetry**. The task of Keynesian fiscal policy, which emerged as a reaction

to the Great Depression, is primarily seen as ensuring that full employment is achieved in a **situation of unemployment** through deficit spending.[1] This asymmetric perspective is characterised not least by Modern Monetary Theory, which sees the main goal of economic policy in a government guarantee of employment (Kelton, 2020).

In the **fight against inflation**, on the other hand, monetary policy is usually assigned the main responsibility. The theoretical basis for this is monetarism, which was washed into the economic policy debate with the inflation wave of the 1970s. Milton Friedman, the most prominent representative of this paradigm, summed it up as follows:

> *"Inflation is always and everywhere a monetary phenomenon."* (Friedman, 1963).

The high rates of inflation in the early 1970s and 1980s led to this idea gaining increasing acceptance. The influence of monetarism was particularly strong in Germany, where the departure from the collapse of the Bretton Woods monetary system opened up new room for manoeuvre for the German Bundesbank. In its 1974/75 annual report, the German Council of Economic Experts formulated the basic ideas of the new **"stability policy concept"** as follows:

> *"Monetary policy flanked by flexible exchange rates is an extremely powerful instrument. Since the Bundesbank can control the central bank money supply and since the development of the central bank money supply dominates monetary expansion, and since inflation is permanently impossible without monetary expansion exceeding the growth of potential output, monetary policy can enforce a desired or deemed permissible increase in the price level, even if there is a sufficiently assured connection between money supply and inflation only in the medium term. It is therefore obvious that monetary policy is the appropriate instrument for stabilising the price level."* (German Council of Economic Experts, 1974, Tz. 396)

Accordingly, the German Council of Economic Experts at the time assigned only a very reduced stabilisation policy role to fiscal policy:

> *"If the money supply is strictly limited, it is no longer necessary to demand a generally anti-cyclical fiscal policy from the public budgets."* (German Council of Economic Experts,

[1] As Blanchard's book (Blanchard, 2023) makes clear, little has changed to this day.

1974, Tz. 416)

Even though the monetarist strategy of controlling the money supply was only implemented by the German Bundesbank and the Swiss National Bank in practical monetary policy, there has since been a widespread consensus that the main responsibility for the goal of monetary stability must lie with the central bank. Supported by empirical studies (Alesina & Summers, 1993), which showed a negative correlation between monetary policy autonomy and the inflation rate, most economists in the 1990s called for the **independence of monetary policy** as an essential prerequisite for the realisation of this task.

Michael Woodford (2001) has summed up this paradigm as follows:

> *"On one hand, it is often argued that inflation is purely a monetary phenomenon, and hence that only the choice of monetary policy matters for what level of inflation one will have. And on the other, the celebrated "Ricardian equivalence" proposition implies that insofar as consumers have rational expectations, fiscal policy should have no effect upon aggregate demand, and hence no effect upon inflation."*

This thinking found its way into practical monetary policy with the strategy of "**inflation targeting**". It was first implemented in 1989 by the Reserve Bank of New Zealand and is currently practised by 45 central banks (IMF, 2001). The comparison of inflation forecasts with the inflation target of the central bank is decisive for this. It shows whether it is possible to achieve the inflation target with the path for central bank interest rates expected by the markets (Bofinger, 2021).

The ECB (2021, p.) describes this "**consensus assignment**" (Kirsanova, Leith, & Wren-Lewis, 2009) as follows:

> *"By the end of the last century, a broad agreement emerged in favour of central bank independence with a medium-term price stability objective for the central bank. According to this view, an independent central bank would achieve price stability over the medium term by setting short-term interest rates. Fiscal policy would provide automatic business cycle stabilisers (such as unemployment benefits), fulfil other social efficiency and equity objectives,*

and keep public debt stable. There would be little role for discretionary, countercyclical fiscal policy."

The asymmetrical policy assignment of roles also characterises the **Maastricht Treaty**, developed in the early 1990s, which enshrines the ECB's commitment to the objective of monetary stability and, at the same time, its political independence as the cornerstone of the European Monetary Union. Article 127 TFEU reads as follows:

"The primary objective of the European System of Central Banks (hereinafter referred to as the ESCB) shall be to maintain price stability."[2]

In contrast, a **responsibility of national fiscal policies** for price stability is addressed only indirectly. Article 120 TFEU states:

"Member States shall conduct their economic policies with a view to contributing to the achievement of the objectives of the Union, as defined in Article 3 of the Treaty on European Union, and in the context of the broad guidelines referred to in Article 121(2)."[3]

Article 3 of the Treaty on European Union specifies these objectives as follows:

"The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, (...)".[4]

The fiscal policies of the euro area member states are thus primarily governed by the 1997 **Stability and Growth Pact**, which essentially limits the task of national budgetary policy to the goal of budgetary discipline:

"Whereas adherence to the medium-term objective of budgetary positions close to balance or in surplus will allow Member States to deal with normal cyclical fluctuations while keeping the government deficit within the 3% of GDP reference value." (Article 4)[5]

The authors of the Stability and Growth Pact were not aware that there could be limits for the macroeconomic stabilization by monetary policy:

[2] Article 127 TFEU
[3] Article 120 TFEU
[4] Article 3, Treaty on European Union
[5] Article 4, Stability and Growth Pact

> *"The SGP is not designed to support monetary policy in a lower bound environment in which monetary and fiscal policies can become strategic complements rather than substitutes."* (ECB, 2021, p. 59)

Accordingly, there is a lack of institutional arrangements for the one stability policy responsibility of national fiscal policies:

> *"Mechanisms supporting the explicit coordination of discretionary monetary and fiscal policymaking were not foreseen, as the optimal contribution of fiscal policy to macroeconomic stabilisation was thought to follow from allowing automatic stabilisers to operate freely and symmetrically over the cycle."* (ECB, 2021, p. 29)

Subsequently, the idea that national fiscal policies could also bear a responsibility for the goal of monetary stability has not played a role in economic policy discourses. This is most evident in the "**macroeconomic imbalance procedure**" introduced in 2011. Its function is *"to identify, prevent and correct potentially harmful macroeconomic imbalances that could affect the economic stability of a particular EU country, the euro area or the EU as a whole"* (European Commission, 2023).

Specifically, 14 macroeconomic indicators are used for this purpose. However, the inflation trend is not taken into account, as no other variable is able to signal a macroeconomic imbalance.

Reaching the zero interest rate limit in the monetary policy of the Federal Reserve and the ECB at least led to the recognition of the necessity of fiscal policy in the **fight against deflation**:

> *"Fiscal policy, in conjunction with monetary policy, can have a more significant impact on the economy precisely when the effectiveness of monetary policy alone may be constrained by the lower bound. A rise in government consumption or investment, a consumption tax cut or an increase in government transfers are likely to have larger multiplier effects near the lower bound than further away from it. Such fiscal interventions may be expected to raise aggregate demand, output and inflation to some extent, under any circumstances."* (ECB, 2021, p. 7)

2.2 A Symmetrical policy assignment for fiscal policy

With the dominance of the asymmetrical assignment of roles of fiscal and monetary policy, however, one could always find economists who advocated a symmetrical assignment for fiscal policy. This idea is particularly clear in concept of "functional finance" by Abba Lerner (1943, p. 39):

> *"The first financial responsibility of the government (since nobody else can undertake that responsibility; my emphasis PB) is to keep the total rate of spending in the country on goods and services neither greater nor less than that rate which at the current prices would buy all the goods that it is possible to produce. If total spending is allowed to go above this there will be inflation, and if it is allowed to go below this there will be unemployment. The government can increase total spending by spending more itself or by reducing taxes so that the taxpayers have more money left to spend. It can reduce total spending by spending less itself or by raising taxes so that taxpayers have less money left to spend. By these means total spending can be kept at the required level, where it will enough the buy goods that can be produced by all who want to work, and yet not enough to bring inflation by demanding (at current prices) more than can produced."*

It is characteristic of this symmetrical assignment of roles to fiscal policy that monetary policy in "functional finance" is only assigned an accommodative role in combating underemployment:

> *"In applying this first law of Functional Finance, the government may find itself (...) spending more than it collects in taxes."* In this case, *"it would have to provide the difference by borrowing or printing money."* (Lerner, 1943, p. 40)

In the period after the Second World War, the symmetrical assignment initially still played an important role in economic policy thinking. E.g. Fritz Neumark (1962, p. 185), a renowned German economist at that time stated:

> *"(...) applied fiscal policy aims at controlling both inflation and deflation."*

Accordingly, the German "Act to Promote the Stability and Growth of the Economy" of 1967, § 1 contains a formulation that largely coincides with Lerner's statements on "functional finance":

"The Federal Government and the states shall observe the requirements of macroeconomic equilibrium in their economic and financial policy measures. The measures shall be taken in such a way that, within the framework of the market economy, they contribute at the same time to the stability of the price level, to a high level of employment and to external equilibrium with steady and adequate economic growth".[6]

This role assignment was probably shaped not least by the fact that Germany had been involved in the Bretton Woods fixed exchange rate system at the time. In this monetary arrangement, the Bundesbank's room for manoeuvre in terms of stabilisation policy was very limited.

However, a symmetrical fiscal role assignment is also found at the same time in the United States, which would have had sufficient room for manoeuvre in monetary policy due to its dominant role in this fixed exchange rate system. Thus, the Economic Report of the President from 1968 states:

"After a hard look at the alternatives, it has been and remains the conviction of both the Administration and the Federal Reserve System that the Nation should depend on fiscal policy, not monetary policy, to carry the main burden of the additional restraint on the growth of demand that now appears necessary." (Council of Economic Advisors, 1968, p. 83ff) (Council of Economic Advisors 1968)

As Blinder (2023) reports, there has been no subsequent use of fiscal policy as an inflation-fighting tool in economic history.

2.3 Renaissance through the Unconventional Fiscal Policy

A renaissance of the symmetrical allocation of roles to fiscal policy occurred with the wave of inflation at the beginning of the 2020s, which was mainly due to the energy price shock triggered by the Ukraine war, but also to overly expansive compensation for the COVID shock in the United States. In an effort to prevent the full impact of the rise in energy prices from being

[6] German "Act to Promote the Stability and Growth of the Economy" of 1967

passed on to private households and companies, almost all countries have taken a variety of compensatory measures.

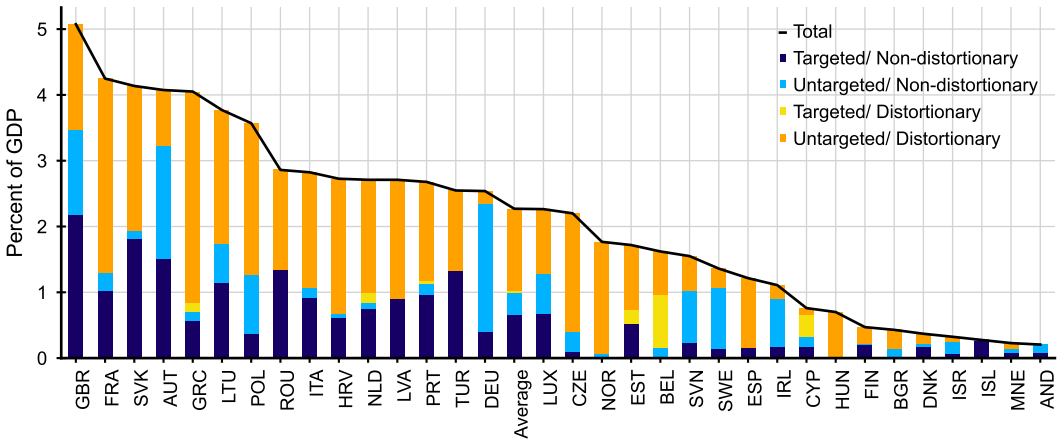

Figure 1: Fiscal Costs of Household Support Measures in 2022 and 2023. (Source: Amaglobeli et al. (2023)).

As the chart based on calculations by the International Monetary Fund (Amaglobeli et al., 2023) makes clear, the measures can be divided into "**non-distortionary**" and "**distortionary**", whereby the former are income transfers that have no influence on the price system and the latter are interventions that have a direct impact on the prices of certain energy sources and thus on the inflation rate. On average, the countries show a clear dominance of measures with price effects that also benefit all population groups ("**non-targeted**"). It is remarkable that in Germany the share of non-targeted measures is far above average.

For the **euro area**, the ECB (2023) estimates that roughly half of the fiscal support was used for measures to directly influence prices and half for direct transfers. The instruments used were mainly indirect taxes and subsidies.

In line with the traditional paradigm, European economists surveyed by the Chicago Booth in June 2022 were mostly negative about these measures. They were of the opinion that it would be

better to raise interest rates.[7] The Scientific Advisory Council at the Federal Ministry of Finance expressed a similar opinion in a statement dated 23 August 2023:

> *"Fiscal policy should not try to influence price developments by lowering indirect taxes."* (BMF Scientific Advisory Council, 2023, p. 16)

It reflects the traditional view that fiscal measures that aim to curb inflation are labelled as **"unconventional fiscal policy"** (Dao et al., 2023). But it becomes clear that the conventional asymmetric role assignment, according to which monetary policy alone is responsible for price stability, needs to be reconsidered.

The problem here is that there is comparatively little theoretical and empirical literature on the subject. On the one hand, this is due to the fact that the developed economies had not been confronted with any major inflation problems in the past decades ("Great Moderation"). Rather, in the 2010s, the risk of deflation was at the centre of the discussion. On the other hand, the discussion on fiscal policy has been so strongly influenced by the perspective of underemployment that the potential for fighting inflation has not received more attention. A current example of this is the book by Blanchard (2023), in which "functional finance" is only discussed for full employment policy.

3 A simple macroeconomic model as a theoretical basis

It is therefore first necessary to create a theoretical basis for the macroeconomic role assignment to monetary and fiscal policy. A simple New Keynesian IS/PC/MP model developed by Bofinger, Mayer, and Wollmershäuser (2006) is suitable for this purpose. It consists of three elements:

- an **IS curve** dependent on the real interest rate,
- a **Phillips curve** extended by expectations and
- a description of the behaviour of the **central bank** (MP), which either pursues an optimal policy by being guided by a macroeconomic loss function, or is guided by a rule, such as

[7] The question was: *"Fiscal measures putting a cap on consumer energy prices would be a more appropriate immediate response to increased inflation in the euro area than raising interest rates."* Chicago Booth (2023)

the Taylor rule in particular.

The main difference of this type of model compared to other simple macroeconomic models is that it is based on the **real interest rate** (Romer, 2000), whereas the IS/LM model and the AS/AD model were formulated for the nominal interest rate.[8] We will show below that the use of the real interest rate offers considerable analytical advantages both for the case of a deflationary shock and for mapping macroeconomic interdependencies in a monetary union. Moreover, the model maps the inflation rate, whereas traditional macroeconomic models operate with the price level. Finally, the model explicitly deals with supply and demand shocks.

3.1 Model description

The **IS curve** can be mapped with the following equation:

$$y = a - b \cdot r + g + \varepsilon_1 \tag{1}$$

A negative functional relationship is assumed between the output gap and the real interest rate (r), which is described by the parameter b. This can be derived from an Euler equation, but also from a simple Keynesian investment function. **Fiscal policy** is represented in simplified form by the factor g, which can be interpreted as the percentage deviation of government spending from a neutral level. Demand shocks can be represented with ε_1. The parameter a is an unspecified constant.

The second building block of the model is an expectations-augmented **Phillips curve**:

$$\pi = \pi^e + d \cdot y + \varepsilon_2 \tag{2}$$

Accordingly, the inflation rate is determined by inflation expectations π^e, the output gap y and a supply shock ε_2. For the sake of simplicity, it is assumed that the central bank is credible. Therefore, inflation expectations π^e correspond to the central bank's inflation target π_0. It is assumed that supply shocks have no effect on aggregate demand.

[8] As these models are formulated for a stable price level, the nominal rate is identical wit the real rate.

Unconventional fiscal policy can be included in the model with a variable h which is zero in normal times. In the case of positive supply shocks, it can take on a negative value, for example, as fiscal policy reduces VAT.

$$\pi = \pi_0 + d \cdot y + h + \varepsilon_2 \tag{3}$$

The behaviour of the central bank is mapped with the concept of the **macroeconomic loss function**, which was developed by Svensson (2003).

$$L = (\pi - \pi_0)^2 + \lambda \cdot y^2, with \lambda \geq 0 \tag{4}$$

The parameter λ describes the relative preference of the central bank for the inflation gap and the output gap. At $\lambda = 0$ the central bank pursues strict "inflation targeting", as it does not take output costs into account in its policy. For values of $\lambda > 0$, Svensson speaks of "flexible inflation targeting".

Inserting the Phillips curve into the loss function and minimizing it to y, one gets the optimal output gap:

$$y^{opt} = -\frac{d}{(d^2 + \lambda)} \cdot (\varepsilon_2 - h) \tag{5}$$

Inserting it into the Phillips curve, one gets the optimal inflation rate:

$$\pi^{opt} = \pi_0 + \frac{\lambda}{(d^2 + \lambda)} \cdot (\varepsilon_2 - h) \tag{6}$$

Since both equations do not include ε_1, one can already see that demand shocks can be perfectly compensated for in this model framework.

Substituting the optimal output gap into the IS equation yields the central bank's optimal real interest rate:

$$r^{opt} = \frac{a}{b} + \frac{1}{b} \cdot (\varepsilon_1 + g) + \frac{d}{b \cdot (d^2 + \lambda)} \cdot (\varepsilon_2 + h) \tag{7}$$

Provided that fiscal policy behaves passively (i.e. g and $h = 0$), the optimal real interest rate results from one of the components $\frac{a}{b}$, which can be interpreted as a **neutral interest rate** in the sense of r-star (Laubach & Williams, 2003). The central bank reacts to both demand shock (ε_1) and supply shock (ε_2). At the same time, the equation illustrates that the central bank can behave passively if fiscal policy reacts to the demand shock with government spending and to the supply shock with unconventional fiscal policy.

3.2 Demand shocks

In the case of **demand shocks**, this model shows **an equivalence of monetary policy and fiscal policy** in macroeconomic stabilisation. In the case of a positive shock, the IS curve shifts upwards. This leads to a positive output gap. In the π/y diagram, the Phillips curve yields an inflation rate that is above the central bank's inflation target. As equations for Y^{opt} and π^{opt} show, this shock can be perfectly compensated.

- **Monetary policy** can realise a point on the new IS curve that closes the output gap through higher real interest rates.
- **Fiscal policy** can shift the IS curve back to its initial position through lower government spending.

In this simple model framework, it does not matter whether the shock is compensated by **fiscal policy directly** via a variation of g (figure 2, right), or indirectly by the central bank via an interest rate reaction when $g = 0$ (figure 2, left). From this point of view, monetary policy and fiscal policy can be used in the same way to fight inflation.

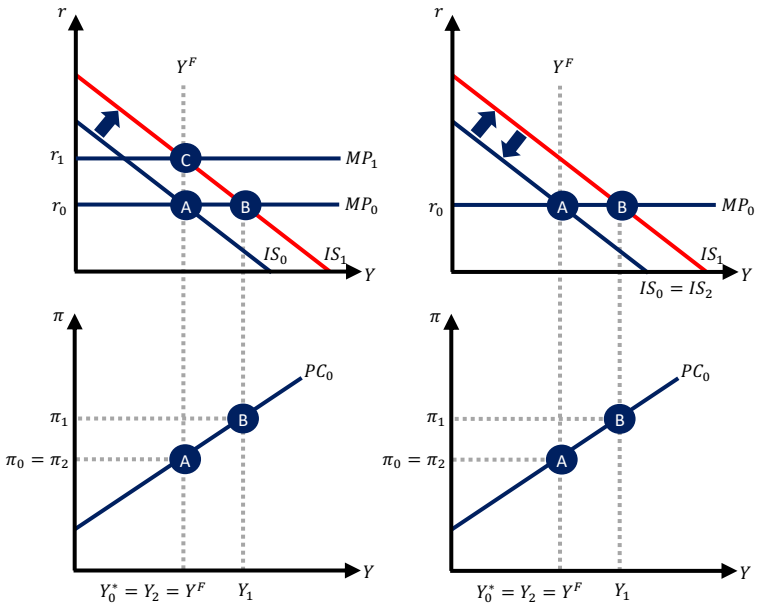

Figure 2: Demand shock in the IS-MP-PC model.

However, the equivalence of monetary and fiscal policy in the case of demand shocks does not apply in general. In the case of a **negative demand shock**, the options for monetary policy are limited by the **zero lower bound (ZLB)** or, more precisely, the effective lower bound (ELB) for nominal interest rates (Christiano, Eichenbaum, & Rebelo, 2011; Erceg & Lindé, 2013). The problem can be better illustrated in a model formulated for the real interest rate than in a model based on the nominal interest rate.

The Fisher equation serves as the starting point for this analysis:

$$i = r + \pi^e \tag{8}$$

At the zero nominal interest rate bound, i.e. at $i = 0$, this becomes:

$$r = -\pi^e \tag{9}$$

A **lower limit for the real interest rate** is thus determined by inflation expectations. When the ZLB is reached, the real interest rate is no longer a variable that can be controlled by the central bank in the sense of an optimal policy. The equation can be seen as a **destabilising monetary**

policy rule, since the real interest rate rises when - in the case of deflation - negative inflation expectations increase. Such a "rule" thus contradicts the Taylor principle (Davig & Leeper, 2007), according to which an increase in the inflation rate must lead to an increase in the nominal interest rate, which, expressed in percentage points, must be stronger than the increase in the inflation rate.

Graphically, this can be depicted using the IS curve in the r/y diagram. The starting point is an equilibrium situation in which the optimal real interest rate corresponds to the neutral value $\frac{a}{b}$ (point A in figure 3). Inflation expectations (π^e) correspond to the central bank's inflation target (π_0) A negative demand shock shifts the IS curve from IS_0 to IS_1. If inflation expectations remain unchanged, the central bank can lower the nominal interest rate to the ZLB. In this constellation, the real interest rate is then $r = -\pi^e$. With the extent of the negative demand shock assumed in the chart, the lower limit for the real interest rate leads to a negative output gap and a negative inflation gap (point B in figure 3).

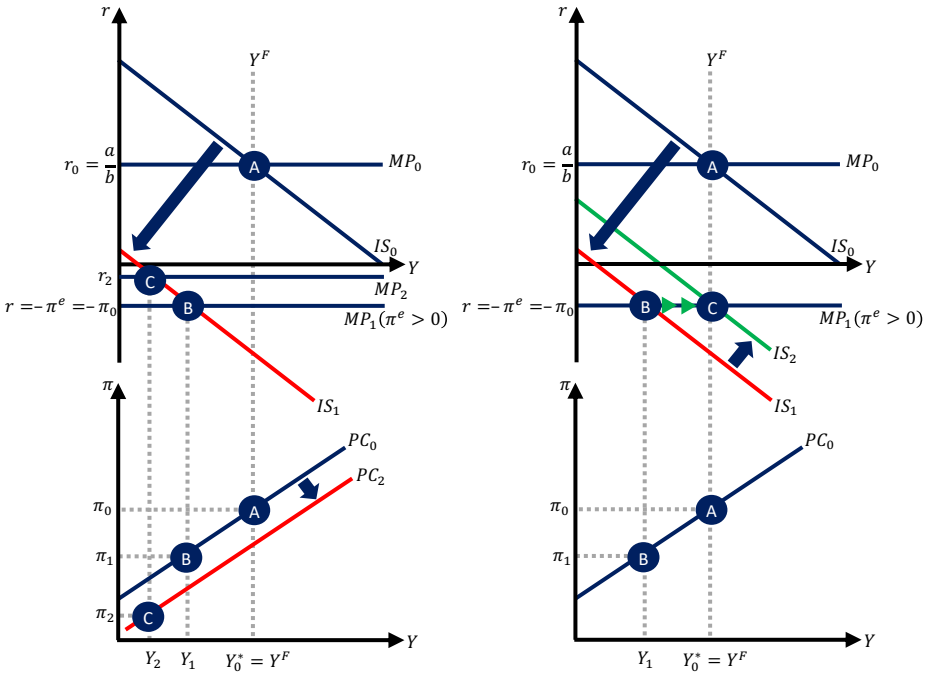

Figure 3: Zero-lower bound in the IS-MP-PC model.

Without fiscal policy becoming active, the problem would arise in this model framework that **inflation expectations**, which are initially still anchored at the central bank's inflation target, would be oriented towards the realised lower inflation rate. The lower bound for the real interest rate would thus move upwards and reinforce the negative output gap (point C in figure 3, left). At the same time, the Phillips curve shifts downwards. This leads to the even lower inflation rate π_2 (point C in figure 3, left). If expectations are guided by this, the real interest rate would rise even further. The result is thus a **destabilising process** of falling inflation rates and falling inflation expectations.

The original equilibrium can only be reached by an **expansionary fiscal policy** by making additional government expenditures in the amount of $\frac{g}{b}$ and thus shifting the IS curve from IS_1 to IS_2 (point C, figure 3, right). This can prevent the entire destabilising process.

The real interest rate model illustrates that the problem of the ZLB is not only that the central bank is capable of acting. Rather, it results in a **destabilising deflationary process** that can only be stopped by the intervention of fiscal policy.

Thus, if the goal of stabilising the price level is understood symmetrically, so that it also includes the need to prevent deflation, it becomes clear that monetary policy alone is not able to achieve this goal in the case of strong negative demand shocks. A comprehensive economic policy role assignment must therefore not release fiscal policy from the obligation to achieve price stability. This reveals a serious deficit of the Maastricht Treaty, which is characterised by the notion of a stability policy omnipotence of monetary policy.

3.3 Supply shocks: the role of unconventional fiscal policy

In the case of a positive **supply shock** ($\varepsilon_2 > 0$), especially an energy price shock, there is an upward shift of the AS curve in this model framework (point B, figure 4). Monetary policy and conventional fiscal policy can be used to respond to this shock with a shift in the IS curve. Seen

in this way, there is also an equivalence of monetary policy and conventional fiscal policy here.

However, this policy response is associated with a **trade-off between output stabilisation and inflation stabilisation**. A reduction of the inflation rate to the central bank's target value can only be achieved at the cost of a negative output gap (point C, figure 4). With a central bank target function with $\lambda > 1$, a solution is chosen in which the shock is partially compensated for by a reduction in the inflation gap and a reduction in the output gap (point D in figure 4).

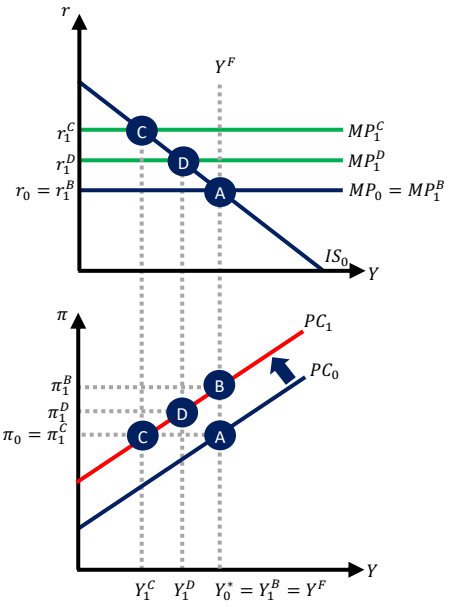

Figure 4: Supply shock in the IS-MP-PC model.

If one goes beyond the comparative-static framework of the model, there is also the problem in the case of supply shocks that the higher inflation rate leads to a **"de-anchoring" of expectations**, so that $\pi^e > \pi_0$ (figure 5). In this case, it is no longer possible for the central bank to realise the optimal combination of $y = 0$ and $\pi = \pi_0$.

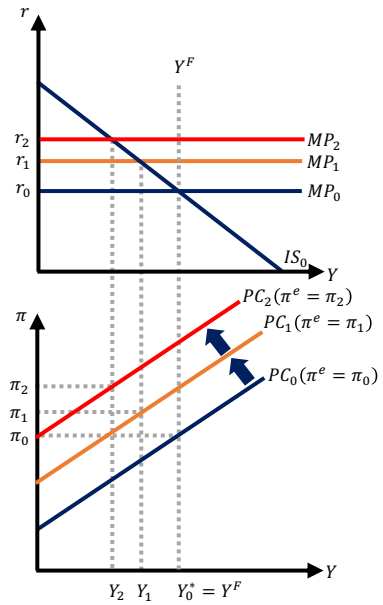

Figure 5: Supply shock with adaptive expectations in the IS-MP-PC model.

The central bank must then aim for an even stronger output gap via a restrictive policy in order to stabilise expectations again. Put simply, monetary policy and conventional fiscal policy can only reduce inflation by creating a recession and unemployment.

This leads to the concept of **unconventional fiscal policy**. It can, in the event of a supply shock leading to point B, shift the PC curve directly back to the initial position (point A, figure 6), e.g. by reducing indirect taxes. Thus, it becomes possible to avoid the "trade-off" between output-stabilisation and inflation-stabilisation as well as the resulting second-round effects on the inflation rate.

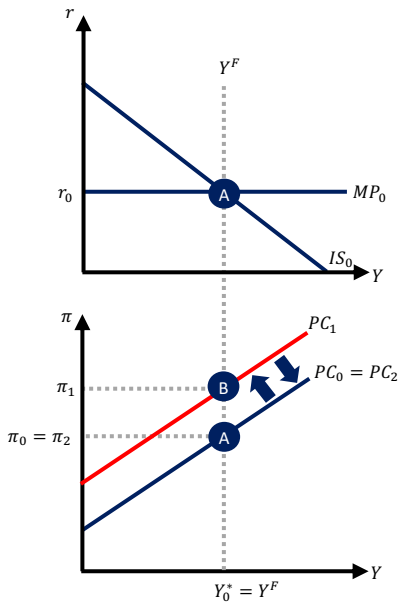

Figure 6: Supply shock with unconventional fiscal policy in the IS-MP-PC model.

The superiority of unconventional fiscal policy over conventional fiscal policy (and monetary policy) presented here in the simple model framework is confirmed by the model analyses of Dao et al. (2023, p. 29):

> *"(...) UFP measures were surprisingly effective in helping smooth inflation. We reach this conclusion through two distinct exercises: a semi-structural model and an empirical model. The first approach relies on the IMF's semi-structural large scale New Keynesian model. It yielded two important results: UFP measures can help smooth inflation in the face of large transitory energy shocks; moreover, the model suggests that conventional fiscal policy would have been of little help in curbing inflation."*

3.4 Fiscal policy shocks

So far, it has been assumed that fiscal policy is basically neutral and only uses its instruments to stabilise shocks if monetary policy is not able to do so. However, fiscal policy can be an independent cause of positive demand shocks. An example of this is the fiscal policy of the United States during the COVID pandemic. Massive transfers to households by the Trump and Biden administrations have led to unusually strong increases in household disposable income

(figure 7).

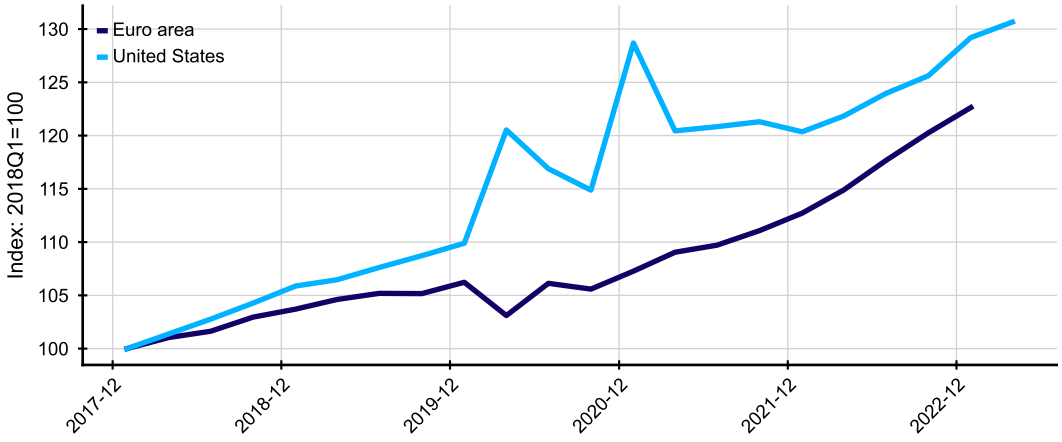

Figure 7: Household Disposable Income (Index: 2018Q1=100). (Source: FRED St. Louis FED, Eurostat).

The inflationary effects of these measures are illustrated by an analysis by Di Giovanni, Kalemli-Özcan, Silva, and Yildirim (2023, p. 1):

> *"Our baseline results show that over the Dec19-Jun22 period, aggregate demand shocks explained roughly two-thirds of total model-based inflation, and that the fiscal stimulus contributed half or more of the total aggregate demand effect."*

In the model framework used here, such a fiscal policy would be depicted as $g > 0$. From the perspective of monetary policy, this is then an inflationary demand shock, which would require a similar interest rate policy response as with $\varepsilon_1 > 0$. In principle, in this model framework the central bank is able to compensate for all expansionary fiscal shocks with an oppositely directed restrictive interest rate policy.

Such fiscal shocks are the essential justification for an independent central bank. If the state's fiscal policy comes into conflict with monetary policy, it must inevitably lose out, since, unlike the ZLB, there is no upper limit for the real interest rate. For a detailed analysis of the interaction of monetary and fiscal policy, see Bofinger and Mayer (2007).

4 Limits of equivalence in demand management: side effects and impact delays

The simple model analysis leads to the conclusion that monetary policy and conventional fiscal policy are equally capable of controlling the inflation rate via aggregate demand, provided that the central bank does not hit the ZLB. However, if one goes beyond this model framework, substantial differences in the use of the two policies can be identified. These become clear if one takes as a criterion the generally accepted rule that stabilisation policy measures should be **"timely, targeted and temporary"** (ECB, 2009). The differences mainly concern the targeting and the time lags of the measures used.

4.1 Targeting and undesirable side effects ("Targeted")

It has become clear from the model structure that **fiscal policy** can **directly** influence aggregate demand, while conventional **monetary policy** can only do so **indirectly** via the interest rate mechanism.

The COVID pandemic and the Ukraine crisis have illustrated how fiscal policy can directly and specifically control aggregate demand (IS curve) and the PC curve with a variety of conventional and unconventional measures. In Germany, for example, the purchasing power of private households was stabilised with direct transfers (such as the energy price flat rate and short-time allowance) and hybrid measures (gas price brake). Tax measures (e.g. the expansion of the loss carryback) and lump-sum transfers supported businesses during the pandemic. As part of the unconventional fiscal policy, indirect taxes were eliminated (EEG levy) or reduced (VAT on gas).

The advantages of fiscal policy over monetary policy in terms of calibration are also emphasised by the International Monetary Fund:

> *"Different fiscal policies can be calibrated and used to support the disinflation effort while mitigating the increase in poverty and income inequality at the same time. Monetary policy*

does not have the mandate to address income inequality, nor can it be targeted in the way that fiscal policy can." (IMF, 2023, p. 37)

These advantages of fiscal policy can also be shown in macroeconomic models:

"Fiscal policymakers are able, in principle, to design policies that target a specific subset of households or firms. As an example, macroeconomic models with heterogeneous agents suggest that the effects on aggregate demand of a budgetary transfer policy are likely to be greater if the transfer targets households that have a high marginal propensity to consume." (ECB, 2021, p. 8)

Compared to fiscal policy, the effects of monetary policy are thus undifferentiated and associated with major side effects. This is due to the fact that the central banks basically only have the transmission channel of short-term and, in the case of bond purchases, also longer-term interest rates. The transmission is indirect as it affects the real economy mainly via the financial system (chart).

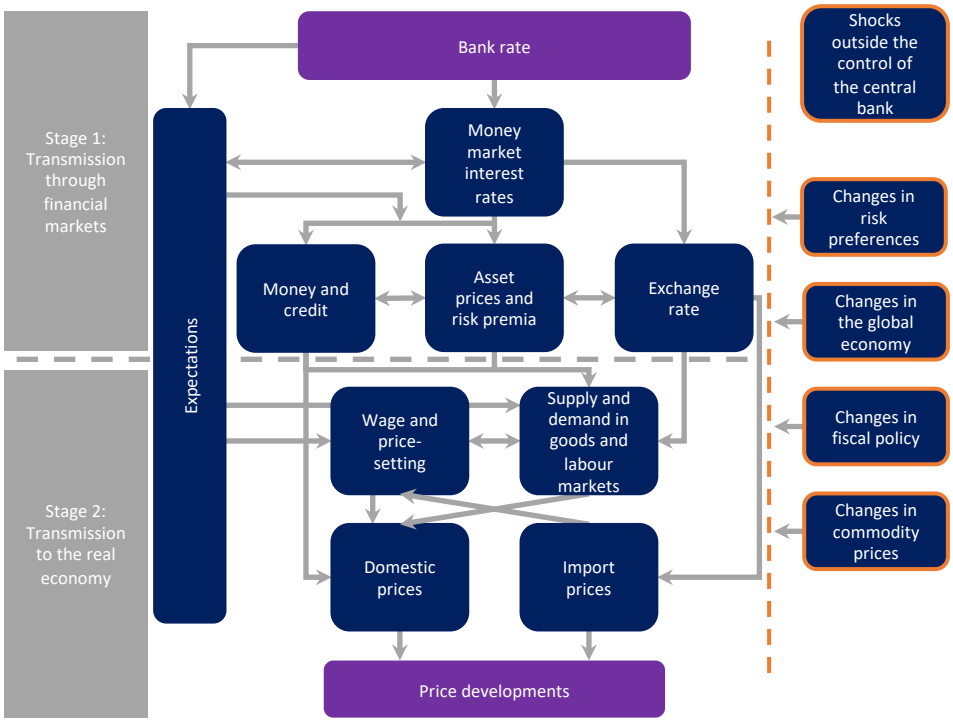

Figure 8: Transmission process of monetary policy. Source: based on Mann (2023)

Theoretically, the transmission process can be accelerated via expectation effects, but the empirical evidence for this channel is low.

> *"(...) the bulk of the evidence does not support the notion that changes in monetary policy directly affect household or firm inflation expectations in a systematic way- over and above any impact on actual inflation and activity."* (Bandera, Barnes, Chavaz, Tenreyro, & von dem Berge, 2023, p. 26) (Tenreyro 2023)

Catherine Mann, a member of the Monetary Policy Committee of the Bank of England, therefore describes the effectiveness of monetary policy as follows:

> *"Monetary policy is a relatively blunt instrument and works mostly at the margin, it is ill-equipped and not intended to deal with large relative price movements like the one we're seeing currently. We do not have in our toolkit the policies that can cushion the blow for those in need or that can spread the weight across time and across the income distribution..."* Mann (2022)

In theoretical models, the influence of interest rates on consumption decisions plays a central role. In reality, however, it turns out that there is no empirical evidence for the Euler equation that depicts this relationship. For an overview, see Ascari, Magnusson, and Mavroeidis (2021, p. 131):

> *"Yet, numerous studies have pointed out that the baseline Euler equation model does not fit the aggregate consumption data well. First, (...) aggregate consumption appears unresponsive to the real interest rate. In other words, the estimated EIS in consumption is very low for the standard specification of the Euler equation. Havránek (2015) conducted a meta-analysis on 169 published studies and concluded that the average estimate of the EIS [elasticity of intertemporal substitution; PB] in aggregate data is zero, once corrected for publication bias."*

With regard to the effects on **bank lending**, the problem arises that in most countries a large proportion of bank loans are granted for the real estate sector:

> *"The share of mortgage loans in banks' total lending portfolios has roughly doubled over the course of the past century-from about 30% in 1900 to about 60% today."* (Jordà, Schularick, & Taylor, 2016, p. 110)

As can also be seen in the current restrictive phase, interest rate policy measures thus primarily affect overall economic demand via the real estate sector.

The problem with monetary policy transmission is not only the **indirect effects** of restrictive interest rate policy measures, but also the associated undesirable **side effects**.

- Higher interest rates tend to lead to an **appreciation of the domestic currency**. This effect can be desirable because the appreciation dampens inflation (Mann, 2023). But it can also be undesirable if the international competitiveness of domestic industry suffers as a result.
- Higher interest rates can threaten the **stability of the domestic banking system**, especially if, as is currently the case in the euro area, they follow a long period of very low interest rates during which banks have engaged in a high degree of maturity transformation.
- Higher interest rates also have a negative impact on the **sustainability of public finances**. This is especially true for countries that have a high public debt ratio.
- Higher interest rates also have undesirable **effects on income distribution** via higher interest rates for smaller businesses and due to the fact that low-income households hold fewer interest-bearing assets (Alfaro, Faia, & Minoiu, 2022)

Adrian and Gaspar (2022) have examined these different effects of monetary and fiscal stabilisation in a study. They show that both approaches lead to similar effects on the inflation rate and economic growth.

- However, with **monetary stabilisation**, higher interest rates lead to rising public debt and currency appreciation.
- In the case of **fiscal stabilisation**, the direct negative demand effects have the advantage that no increase in interest rates is required. The currency depreciates. With lower interest rates and a lower primary deficit, public debt falls. The decline in inflation is somewhat smaller because of the devaluation. Adrian and Gaspar (2022) point out, however, that this effect could be reduced if more countries were to follow this approach.

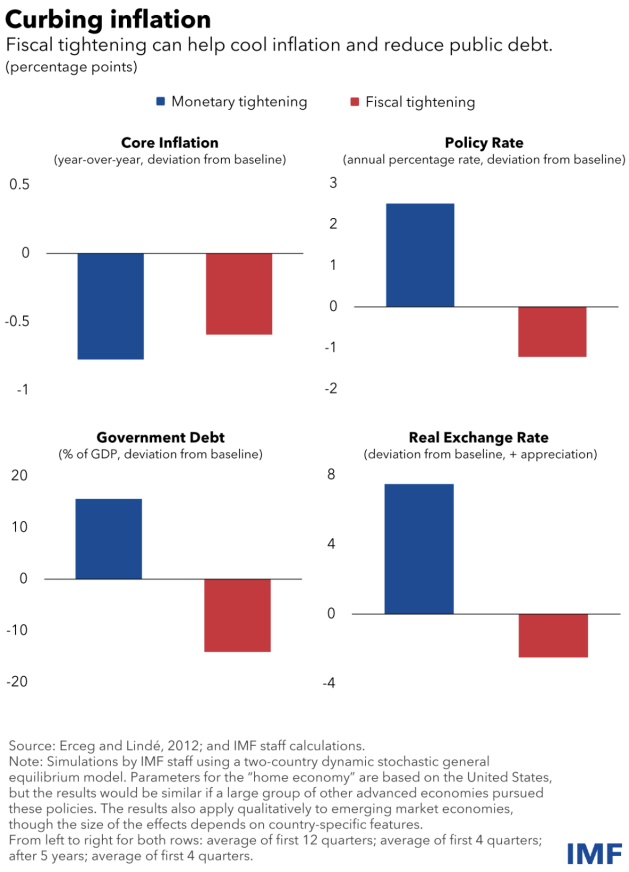

Figure 9: Curbing inflation. Source: Adrian and Gaspar (2022)

Adrian and Gaspar (2022) point to the problems caused by the anti-inflationary policy of the United States in 1980/81 under Federal Reserve Chairman Paul Volcker as a negative example. The sharp rise in interest rates led to a collapse of the real estate market and a historically unique appreciation of the US dollar. Since industry was hit very hard by this, there were calls for trade restrictions. The two authors conclude:

> *"That historical episode is relevant for many countries facing similar challenges today. A more balanced removal of policy stimulus, including fiscal restraint, can reduce the risk that some parts of the economy – especially those most sensitive to interest rates – experience disproportionate effects, or that large swings in the currency heighten trade tensions."* (Adrian & Gaspar, 2022)

4.2 Inside- and outside-lags of stabilisation policies ("Timely")

In assessing the effectiveness of monetary and fiscal policy in combating inflation, it is not only the accuracy of targeting that is crucial but also the lags in the effects of the stabilisation policy measures. A distinction is usually made between inside lag and outside lag:

- **Inside-lag** describes the time lag between the occurrence of a shock and the decision to take an economic policy measure to avert it.
- **Outside-lag** is the time lag between the adoption of an economic policy measure and its effect on the shock.

Despite the great importance of this topic for economic policy, there is hardly any recent literature on it.

Traditionally, one **disadvantage of fiscal policy** is that it has a **long inside-lag**. For example, Mankiw (2019, p. 473) writes:

> *"A long inside lag is a crucial problem with using fiscal policy for economic stabilization. This is especially true for the United States, where changes in spending or taxes require the approval of the President and both houses of Congress. The slow and cumbersome legislative process often leads to delays, making fiscal policy an imprecise tool for stabilizing the economy."*

However, the COVID pandemic and the Ukraine crisis have shown that fiscal policy can react very quickly in an emergency. In Germany, the so-called "Bazooka", a comprehensive package of fiscal measures as a protective shield for the economy, was already passed in March 2020. On 27 March 2020, the US government passed the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), a stimulus programme worth 2.2 trillion US dollars.

Monetary policy has the advantage that it can make quick decisions, so that the inside-lag is low. However, due to the only indirect influence on aggregate demand, the **outside-lag** is relatively long compared to fiscal policy, which can directly control demand (Dupor, 2023). Milton Friedman (1961, p. 87) formulated this as follows:

"There is much evidence that monetary changes have their effect only after a considerable lag and over a long period and that the lag is rather variable."

Mann (2023) assumes a monetary policy lag of 18 to 24 months. Model analyses by the ECB (Lane, 2023) show, depending on the model, impact lags of around one year to more than two years.

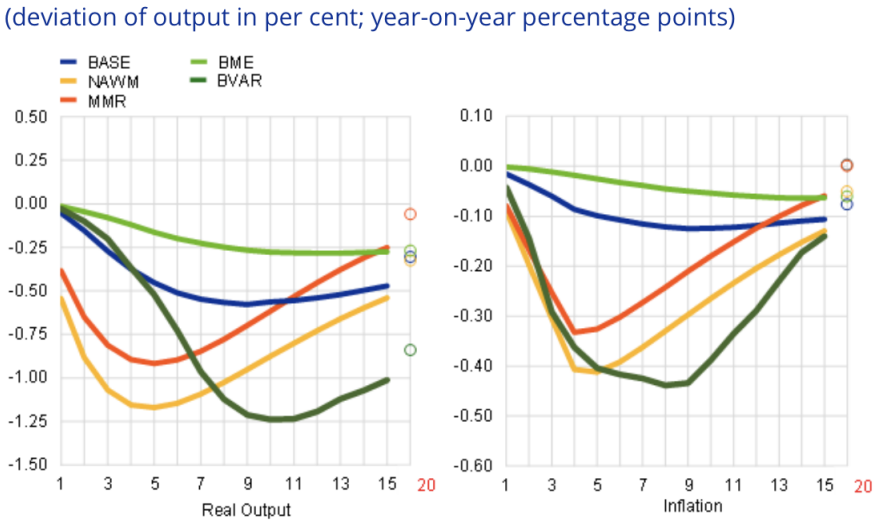

Figure 10: Model analysis for output deviations. Source: Lane (2023)

In an **extreme crisis situation**, the possibilities of monetary policy are limited by the fact that in the case of great uncertainty, as was the case during the COVID pandemic and the outbreak of war in the Ukraine, even very low interest rates can only provide a limited stimulus for new investments. This could be represented in the IS/PC/MP model by a temporary decline in the parameter b in the IS curve, which would then be very steep, i.e. with a low interest rate elasticity. The central bank would then very quickly hit the ELB with interest rate policy. The necessity of fiscal policy in crisis situations is also emphasised by the ECB (2021, p. 67):

"Fiscal policy is the most suitable instrument for addressing the detrimental impact of the pandemic on the economy."

4.3 Primacy of fiscal policy in fighting inflation

Unless fiscal policy is itself the cause of a positive demand shock, the lags and side effects of monetary policy clearly argue for assigning fiscal policy a leading role in fighting inflation in the case of demand shocks as well as supply shocks. The IMF (2023, p. 40) comes to a similar overall conclusion in its analysis of the stability policy role of fiscal policy:

> *"To summarize, a generalized fiscal contraction helps contain inflation, with a smaller drop in private consumption than in the monetary policy scenario, but its impact favors higher-income groups at the expense of the lower-income groups. These adverse distributional effects can be remedied if the fiscal contraction is accompanied by a targeted transfer program."*

However, it is not guaranteed that fiscal policy can also fulfil this task. The measures required for this, such as tax increases, are not very popular and therefore not always easy to implement politically. This is where the **political-economic advantage of an independent central bank** lies. However, one must be aware of the fact that inflation control by the central bank is always a **"second-best" solution**.

In any case, the advantages of fiscal policy in fighting inflation call for more coordination between fiscal and monetary policy. Central bank independence does not mean that monetary policy is conducted in an autistic way. A positive example for such cooperation is provided by the Bank of Canada:

> "Finally, recognizing the limits of monetary policy, the Government and the Bank also acknowledge their joint responsibility for achieving the inflation target and promoting maximum sustainable employment." Joint Statement of the Government of Canada and the Bank of Canada (2022) on the Renewal of the Monetary Policy Framework, December 13, 2021.

5 Use cases for unconventional fiscal policy

Unconventional fiscal policy did not emerge from the drawing board of macroeconomic theories and analyses. Rather, it is a child of the hardship triggered by the sharp rise in energy prices in the wake of the Ukraine war. In section 3, we have therefore first presented a simple theoretical model framework to show what its advantages are in fighting inflation compared to monetary policy and conventional fiscal policy. For a more comprehensive analysis, it is necessary to specify the supply shock more precisely in order to develop the fiscal therapy that fits it.

Since the first oil crisis in 1973/74, supply shocks have primarily involved an abrupt increase in the price of oil or, as in the course of the war in Ukraine, of energy sources in general.

The response of stabilisation policy depends on whether the price increase is permanent or transitory. The problem for economic policy is that it is difficult to distinguish ex ante between temporary and persistent shocks (Dao et al., 2023).

5.1 Permanent supply shortage: The problem of second-round effects

If the cause of higher prices is a **permanent shortage of supply**, the primary effect on the inflation rate should in principle be compensated neither by monetary policy nor by fiscal policy. Ideally, the shock would result in a jump in the general price level. The inflation rate would rise year-on-year for twelve months, only to fall back to the previous trend. This is referred to as a "**looking through**" policy (Schnabel, 2022).

However, experience shows that in practice it is not possible to isolate the effects of such shocks. The rise in the inflation rate usually leads to a demand from employees for at least partial compensation in wage settlements. Such a "**second-round effect**" can then lead to inflation expectations and inflation above the central bank's target due to rising unit labour costs. This in turn creates the need for the central bank to slow down the economy with a restrictive monetary policy.

The task of unconventional fiscal policy in this shock is therefore not to avoid the primary effect. But it can try to at least mitigate the **second-round effect**. The problem with this effect is that, strictly speaking, there should be no wage compensation in the case of an energy price shock caused by foreign trade, which means a deterioration in the "terms of trade" of an economy. However, since this is hardly acceptable from a socio-political point of view, the state can at least temporarily take over part of the real income loss of private households. The unavoidable compensation of households can thus initially be achieved with lower nominal wage increases. With a permanently higher level of energy prices, the fiscal compensation will have to be reduced later. However, it can contribute to a smoothing of the inflation rate and thus also of inflation expectations.

A practical example of this is the **inflation compensation premium** of up to 3,000 euros decided by the German federal government in September 2022. This will be granted during the period from 26 October 2022 to 31 December 2024. The inflation compensation premium has been used in numerous collective agreements and has thus contributed to dampening the increase in unit labour costs and the inflation rate.

The **gas price brake**, which was passed in Germany in October 2022, has a more indirect effect. As it is designed as a transfer based on the level of past consumption, it leaves prices unaffected as a scarcity signal. By mitigating the real income loss of private households, it also reduces the pressure on compensatory wage demands and thus dampens the second-round effect. The capping of gas at 12 cents per kilowatt hour also has an effect on consumer prices in this context, provided that regional labour prices for gas, district heating and electricity are above this cap (Destatis, 2023).

5.2 Temporary supply shortages: Starting with the primary effect

In the case of temporary supply shortages, in which speculative processes often come into play, unconventional fiscal policy can directly address the primary effect on the prices of energy sources. Although at the outbreak of the war in Ukraine it was not certain whether this would lead to a permanent reduction in the global supply of gas and oil, very many states behaved in such a way that they compensated for part of the price increase by reducing indirect taxes (Table). In retrospect, this appears to have been the adequate response to this shock. One disadvantage of these measures is that they are "untargeted", since all consumers, regardless of their income, benefit from them.

Country/Policy	Reduced energy tax/ VAT	Retailed price regulation	Wholesale price regulation	Transfers to vulnerable groups	Mandate to State-owned firms	Windfall profits tax	**Business support**	**Other**
Austria	✓	✓		✓		✓	✓	✓
Belgium	✓	✓		✓		✓	✓	✓
Bulgaria	✓	✓		✓		✓	✓	
Croatia	✓	✓		✓			✓	✓
Cyprus	✓	✓		✓	✓	✓	✓	
Czechia	✓	✓		✓	✓	✓	✓	✓
Denmark	✓	✓		✓		✓	✓	✓
Estonia	✓	✓		✓			✓	
Finland	✓			✓		✓	✓	✓
France	✓	✓	✓	✓	✓	✓	✓	✓
Germany	✓	✓		✓		✓	✓	✓
Greece	✓	✓		✓	✓	✓	✓	
Hungary	✓	✓				✓	✓	
Ireland	✓	✓		✓		✓	✓	✓
Italy	✓	✓		✓		✓	✓	
Lativia	✓	✓		✓			✓	
Lithuania	✓	✓		✓		✓	✓	✓
Luxembourg	✓	✓		✓		✓	✓	
Malta		✓	✓		✓		✓	✓
Nehterlands	✓	✓		✓		✓	✓	
Norway	✓	✓		✓		✓	✓	
Poland	✓	✓		✓		✓	✓	
Portugal	✓	✓	✓	✓	✓	✓	✓	
Romania	✓	✓		✓		✓	✓	
Slovakia	✓	✓		✓	✓	✓	✓	
Slovenia		✓	✓	✓		✓	✓	
Spain	✓	✓	✓	✓		✓	✓	
Sweden	✓	✓		✓		✓	✓	✓
United Kingdom	✓	✓		✓		✓	✓	

Green: Measures already implemented
Orange: Publicly announced measures

Table 1: Source: Sgaravatti et al. (2021), Dataset: National fiscal policy responses to the energy crisis.

As the example of Spain and Portugal shows, the primary effects of a supply shock cannot be compensated only with indirect taxes. The massive increase in the price of gas in 2022 had a significant impact on electricity prices, which are determined according to the merit-order

principle: The price for all suppliers of electricity results from the costs of the most expensive supplier. Since this was the gas-fired power plants, the other suppliers were able to realise significant windfall profits. To prevent this, the power plants in Spain and Portugal received gas at a subsidised price (European Commission, 2022). This is called the "Iberian Mechanism". The subsidy had to be financed by consumers, but since the share of gas-fired power plants in electricity generation was relatively small, the overall effect on households was positive.

5.3 Positive evaluation of unconventional fiscal policy

Although the measures of unconventional fiscal policy were undertaken in a completely uncoordinated manner by national fiscal policies, they had a noticeable dampening effect on inflation developments. A study by Dao et al. (2023, p. 1) comes to the following conclusion:

> *"Overall, we find that these unconventional measures reduced euro area inflation by 1 to 2 percentage points in 2022 and may avoid an undershoot later on."*

Gourinchas also points out that some luck was involved, as the supply shocks were less persistent than initially expected and most economies were not overheated. He sees the advantage of the unconventional fiscal policy that has contributed to a stabilisation of inflation expectations:

> "By smoothing short-term inflation fluctuations, UFP may help to avoid a sharper pass-through of supply shocks and limit de-anchoring." (Dao et al., 2023, p. 7)

A model analysis by the ECB (2023) comes to a similar conclusion:

> *"The discretionary fiscal support to shield the euro area economy from high inflation is estimated to have positive growth effects while reducing inflationary pressures, over 2022-23. However, these effects are broadly reversed over the rest of the projection horizon. This is mainly because the fiscal support in response to the energy shock is assessed to be temporary and, based on currently approved policies, to be mostly withdrawn as of 2024."*

This empirical analysis therefore supports the theoretical results derived from the IS/PC/MP model in section 3.3.

5.4 Limits of unconventional fiscal policy

The fact that it has been possible in the Ukraine crisis to at least partially compensate for the inflationary effects with instruments of unconventional fiscal policy does not mean that it is always possible to combat all supply shocks with them.

As reductions of indirect taxes increase the budget deficit, there might by limitations for unconventional fiscal policies in countries with high debt levels. However, the revenue losses could be compensated by increases in direct taxes. This would have the additional beneficial effect that the compensation of the supply does not cause a positive demand shock which increases the inflation rate. In its 2022 report, the German Council of Economic Experts has made a proposal along these lines:

> *"Especially against the background of the current problems in designing relief measures that are well targeted, it would seem conceivable to supplement these measures with more targeted increases in taxes and levies. For example, a temporary increase in the top tax rate or a strictly time-limited energy solidarity surcharge for top earners might be considered. This would limit public borrowing and with it the fiscal stimulus. The inflationary effect of the relief measures could be reduced."* (German Council of Economic Experts, 2022, Tz. 198).

A specific approach is required If a supply shock is due to excessive wage demands, as was the case in Germany in the early 1970s (figure 11). Attempts to compensate for the inflationary impulses by reducing indirect taxes or through inflation premiums would set the wrong incentives for the wage bargaining parties. Here the state can only try to exert a moderating influence on the bargaining parties within the framework of "**incomes policies**".[9] If this is not possible, the only remaining option is monetary policy, which can contribute to stabilising wage development and thus the inflation rate by raising real interest rates and thereby triggering a recession.

[9] A discussion of incomes policies in the United States can be found in Congressional Budget Office (1977).

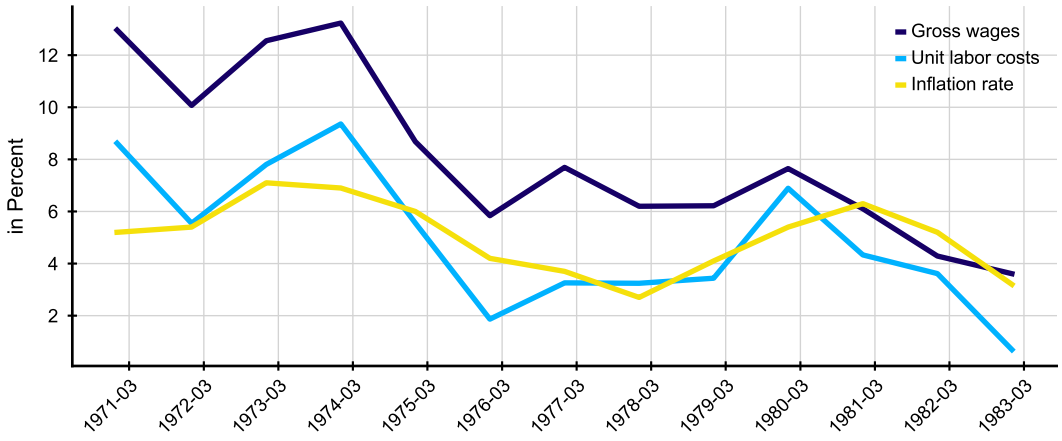

Figure 11: Gross wages and inflation in Germany. Source: Destatis

5.5 The best solution: Prevent supply shocks from happening

The past decades have made it clear that the major inflationary waves were always triggered by energy price-related supply shocks. This raises the question of the extent to which it is possible for economic policy to prevent such shocks.

The best solution is to become independent of a small number of fossil energy suppliers. **Decarbonisation** and especially the transition to renewable energies will enable countries that have so far been dependent mainly on energy imports by OPEC and Russia to tap into stable energy sources with moderate and less volatile prices. In the longer term, therefore, supply shocks emanating from energy prices are expected to become less important.[10]

For the foreseeable future, however, dependence on fossil energies will remain high. For economic policy in the oil and gas importing countries, this offers the possibility of at least partially compensating for the strong fluctuations in world market prices observed in the past by building up **strategic reserves** in phases of low prices. One example of this is the **Strategic Oil Reserve** of the United States. To dampen rising oil prices in the wake of the Ukraine war, the US government has released a total of 180 million barrels from the reserve into the market in 2022 (US Office of

[10]This does not rule out the possibility of other causes. With a growing world population and increasing drought in many regions of the world, it is to be feared that shocks may occur due to rising food prices.

Cybersecurity, Energy Security, and Emergency Repsonse, 2023). Figure 12 illustrates that the US government has repeatedly managed to build up its stocks in phases of low oil prices and has thus acted like a stabilising speculator.

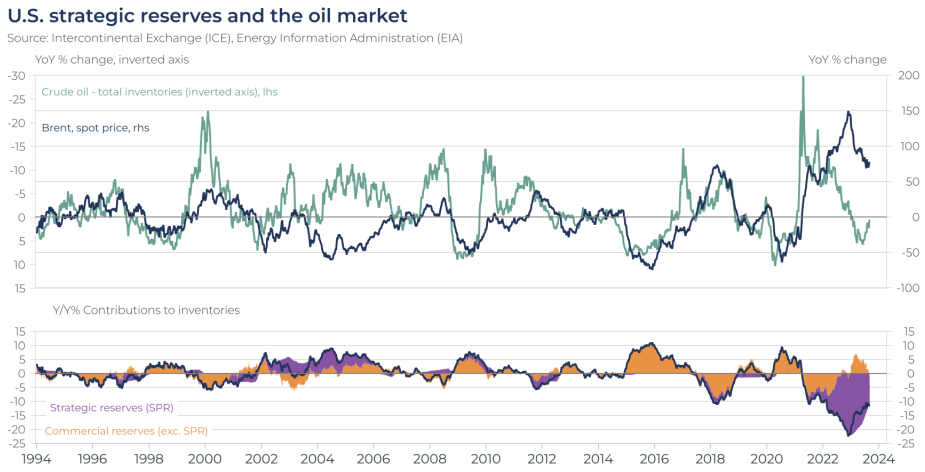

Figure 12: U.S. strategic reserves and the oil market. Source: Macrobond (2023).

Variable CO2 taxes that fluctuate in the opposite direction to world market prices would also be conceivable. In principle, the German government has already pursued this solution by suspending the increase in C02 taxes planned for the beginning of 2023. A **variable CO2 price** would have the advantage of creating predictable prices for energy for consumers, thus enabling them to better plan investments (Bofinger, 2023).

6 The importance of national fiscal policies for stabilisation in a monetary union

In a monetary union, the division of labor between monetary and fiscal policy is clear at first glance. The common monetary policy can only react to aggregate shocks. The independent national fiscal policies react to national shocks. However, they can also react to aggregate shocks if they were prepared to act in a coordinated manner.

6.1 The IS/PC/MP model for a monetary union

The problems that arise when national fiscal policies behave passively in terms of stabilisation policy can again be illustrated with the IS/PC/MP model, which must be extended accordingly for this purpose. We assume that the monetary union consists of two countries of equal size (country A and country B). For each country, the IS curve and the PC curve can be formulated as follows:

$$y_A = a - b \cdot r_A + g_A + \varepsilon_{1,A} = a - b \cdot (i^{opt} - \pi_A) + g_A + \varepsilon_{1,A} \tag{10}$$

$$\pi_A = \pi_0 + d \cdot y_A + h_A + \varepsilon_{2,A} \tag{11}$$

$$y_B = a - b \cdot r_B + g_B + \varepsilon_{1,B} = a - b \cdot (i^{opt} - \pi_B) + g_B + \varepsilon_{1,B} \tag{12}$$

$$\pi_B = \pi_0 + d \cdot y_B + h_B + \varepsilon_{2,B} \tag{13}$$

The decisive factor here is that **a uniform nominal interest rate** applies in the monetary union, so that the real interest rate for the individual countries results from the difference between the optimal nominal interest rate determined by the central bank and the national inflation rates.

Nothing fundamental changes for the central bank in the monetary union. As described above, it determines the optimal real interest rate according to the aggregate demand and supply shocks:

$$r^{opt} = \frac{a}{b} + \frac{1}{b} \cdot (\varepsilon_1 + g) + \frac{d}{b \cdot (d^2 + \lambda)} \cdot (\varepsilon_2 + h) \tag{14}$$

The optimal nominal interest rate for the monetary union is obtained by adding the inflation rate to the optimal real interest rate:

$$i^{opt} = r^{opt} + \pi \tag{15}$$

The macroeconomic interdependencies existing in a monetary union can be discussed by analysing the effects of national demand and supply shocks in this model framework.

For this purpose, we describe the model with concrete values for the individual parameters:

$$a = 1.2; b = 0.4; d = 1; \pi_0 = 2; \lambda = 1 \tag{16}$$

The initial situation is characterized by:

$$r^{opt} = 3 \text{ and } i^{opt} = r^{opt} + \pi_0 = 3 + 2 = 5 \tag{17}$$

$$y = y_A = y_B = 0 \tag{18}$$

$$\pi = \pi_0 = \pi_A = \pi_B = 2 \tag{19}$$

6.2 Idiosyncratic demand shock

For an idiosyncratic demand shock, we assume that there is a **positive demand shock in country A** of $\varepsilon_{A,1} = 0.8$. This shifts the IS curve in country A and the aggregate IS curve for the monetary union upwards. The ECB reacts to this shock according to equation 14 and raises the real interest rate from 3% to 4%. The central bank is thus able to **compensate perfectly for the shock**: the negative output gap is closed and the inflation rate in the currency area is back at 2%. The nominal interest rate, which applies to both countries, rises from 5% to 6%.

The increase in the nominal interest rate leads to different adjustments in the two countries. In **country A**, the combination of the IS curve and the PC curve results in a positive output gap of 0.67%. From the PC curve, this results in an inflation rate of 2.67%. With a nominal interest rate

of 6%, the real interest rate for country A is thus 3.33%. As a result, the ECB's interest rate hike does have a dampening effect on aggregate demand in country A. However, it is insufficient to bring about perfect stabilisation.

For **country B**, the shock in country A has deflationary effects. It is confronted with a higher real interest rate, which has a negative impact on aggregate demand. The assumptions made here result in a negative output gap of - 0.67. The inflation rate falls to 1.33% and with a nominal interest rate of 6% the real interest rate rises to 4.67%. As a result, the insufficiently compensated demand shock in country A leads to a recession in country B.

With a **passive fiscal policy** in country A, such a **negative transmission of a shock** in a monetary union is unavoidable, since the central bank with its uniform interest rate policy can only deal with the aggregate shock confronting the monetary union. For this reason, the discussion on optimal currency areas emphasises the necessity of shocks that are as closely correlated as possible among the participating countries of a monetary union (Eichengreen, 1991).

The problem of a unified monetary policy in the face of idiosyncratic shocks becomes clear when describing the example of the loss function discussed here earlier:

$$L = (\pi - \pi_0)^2 + \lambda \cdot y^2, with \lambda \geq 0. \tag{20}$$

For the **euro area** as a whole, there is neither an inflation gap nor an output gap. The central bank has achieved the "bliss point" characterized by a loss of $L = 0$. However, in the two Member States, an output gap of $+0.67$ and -0.67 and an inflation gap of also $+0.67$ and -0.67 result in a loss of 7.58 each. This would also be the average loss for the monetary union.

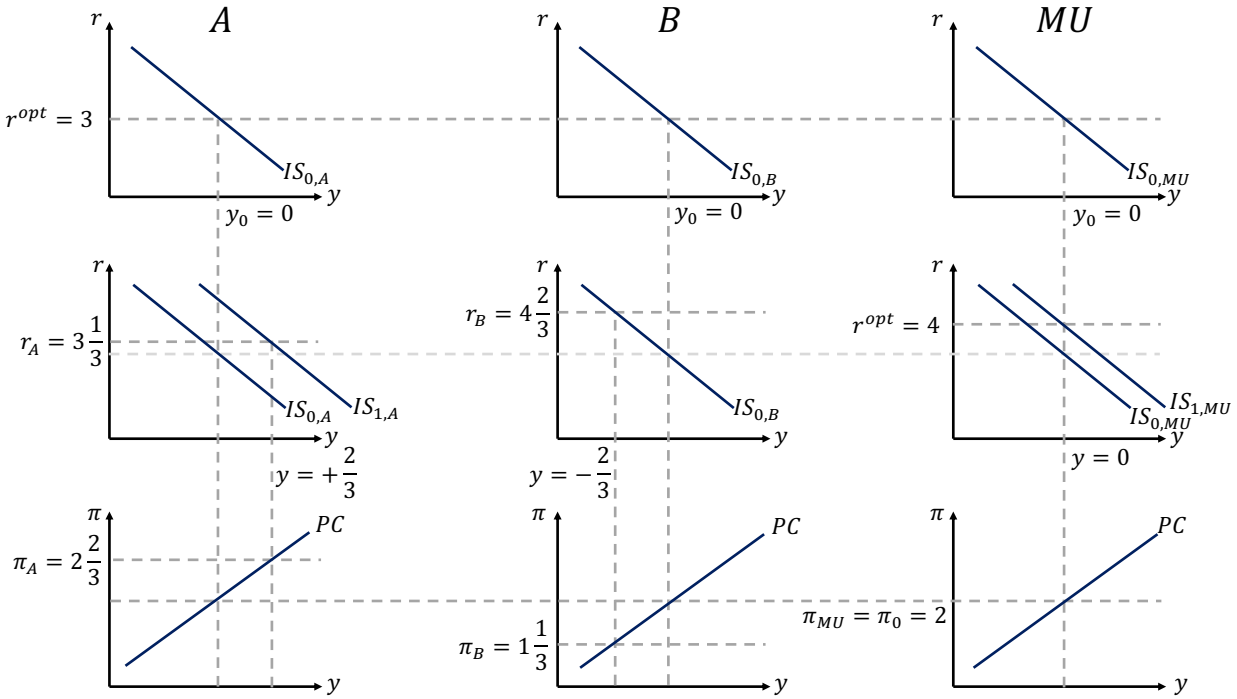

Figure 13: IS-MP-PC multi-country demand shock.

Negative transmission can be avoided if **fiscal policy** in country A is willing to compensate for the shock by a **restrictive fiscal policy**, by varying g, e.g. by reducing public spending. In Chart 13, this would lead to a shift of the IS curve back to its initial position. In this case, there would be no impact of the national demand shock on the overall system and thus on uninvolved Member States. This reaction is not self-evident, since the impact on country B is a **negative external effect** from country A's point of view and its stabilization effort implies positive externalities.

This problem is also seen by the ECB (2021, p. 17):

> *"(...) relative to a cooperative benchmark, the fiscal stabilisation efforts of member countries in a monetary union will be sub-optimally aligned (demand externality). Once again, this outcome is supported by an externality as changes in aggregate demand via variations of fiscal policy are decided and funded at country level, while the associated benefits are enjoyed partly by other countries, and are transmitted via spillovers in integrated markets."*

6.3 Idiosyncratic supply shock

For the **idiosyncratic supply shock**, we assume a negative supply shock in country B triggered, for example, by a wage moderation ($\varepsilon_{2,A} = -0.8$). The central bank's reaction is again derived from equation 14: it lowers the real interest rate from 3% to 2.5% for the entire currency area. Since the supply shock cannot be perfectly compensated, the inflation rate falls to 1.8%. The common nominal interest rate for the currency area thus falls from 5% to 4.3%. There is a positive output gap of 0.2%

For **country B**, this results in a slightly negative output gap of -0.07% and an inflation rate of 1.13%. The real interest rate is 3.17%. Again, there is a **negative transmission to country A**. Due to the falling nominal interest rate in the entire currency area, the inflation rate in country A increases to 2.47% and there is a positive output gap of 0.47%. Deflation in country A thus generates inflation in country B.

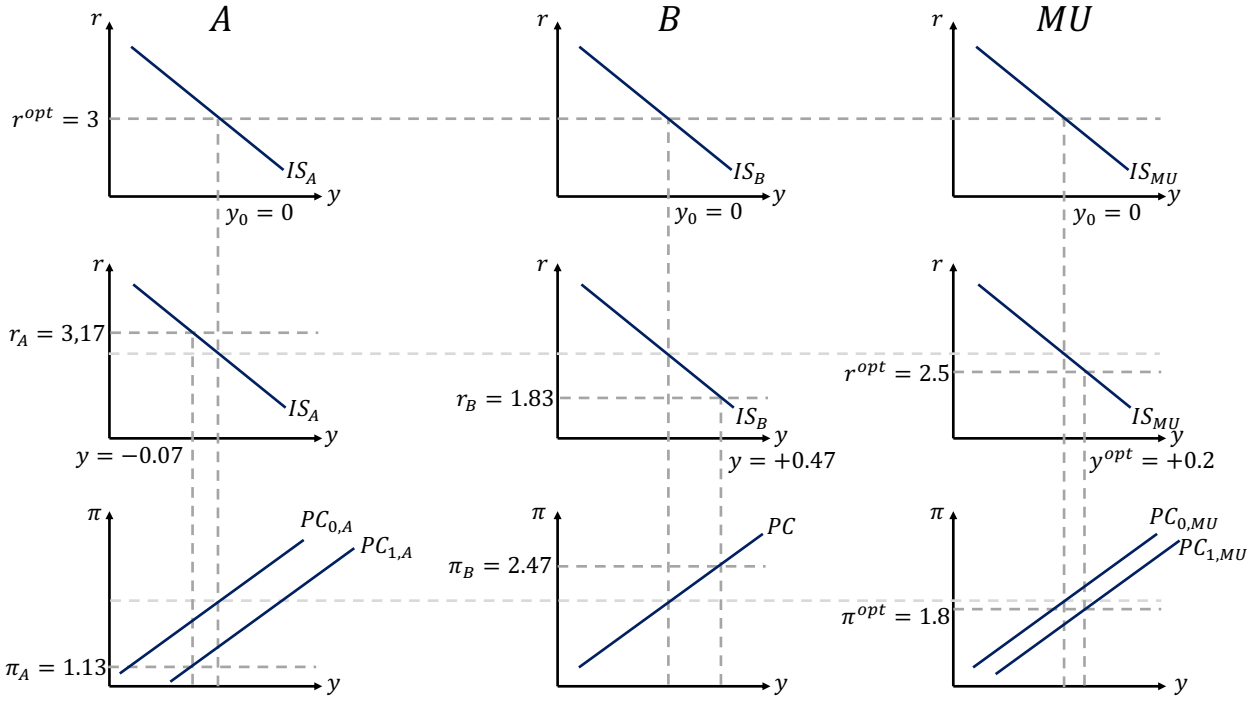

Figure 14: IS-MP-PC multi-country supply shock.

If the negative supply shock in country B were triggered by an energy price shock in that country, an **unconventional fiscal policy**, for example in the form of a temporary increase in energy taxes, would be the appropriate solution. This could compensate for the shift in the PC curve. Intervention by the common central bank would not be necessary. This would of course also apply in the case of a positive supply shock ($\varepsilon_{2,A} > 0$) with the opposite sign.

6.4 Combined shocks

This simple model framework can also be used to simulate combined shocks. For example, in the early years of the European Monetary Union there was a prolonged divergence of national inflation rates (Angeloni & Ehrmann, 2004).

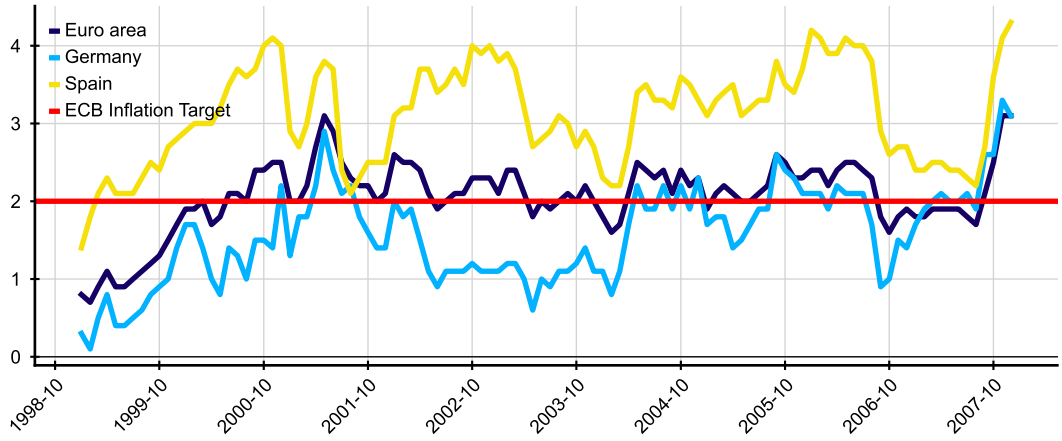

Figure 15: HICP inflation 1999 - 2007. Source: ECB Statistical Data Warehouse.

The reason for this can be attributed to the juxtaposition of a positive demand shock in the periphery countries, driven by a real estate bubble, with a negative supply shock in Germany due to **wage moderation** at the time (Bofinger, 2015).

The amplification of the positive demand shock by the German wage moderation can be seen if one first determines the values for the isolated demand shock in country A and then compares

them with those for the combined shock (table 2). Since the ECB reacts to the wage moderation (country B) with a lower real interest rate, the economic overheating in country A is amplified.

	Initial situation	Demand shock Country A	Supply shock Country B
Monetary union			
Nominal interest rate	5.0	6.0	5.3
Real interest rate	3.0	4.0	3.5
Output gap	0.0	0.0	0.2
Inflation rate	2.0	2.0	1.8
Loss	0.0	0.0	0.08
Country A			
Nominal interest rate	5.0	6.0	5.3
Real interest rate	3.0	3.33	2.7
Output gap	0.0	0.66	1.1
Inflation rate	3.0	2.66	3.1
Loss	0.0	0.82	2.42
Country B			
Nominal interest rate	5.0	6.0	5.3
Real interest rate	3.0	4.66	4.8
Output gap	0.0	-0.66	-0.7
Inflation rate	2.0	1.33	0.5
Loss	0.0	0.82	2.74

Table 2: German wage moderation simulation in the IS-MP-PC model.

Again, the comparison of the national **loss functions** with the aggregate loss function is of interest. For the currency area, the combination of demand shock and supply shock results in a loss of 0.08, for country A it is 2.02 and for country B 2.74. The average loss of 2.58 is thus considerably higher than the aggregate one of only 0.08.

Since it can be assumed that the economic costs of inflation and unemployment are not experienced at the aggregate but at the national level, one should orient oneself to the average of the national loss functions and not the aggregate loss function. Therefore, the ECB's ability to achieve its inflation target even with uncoordinated fiscal policies in the aggregate does not argue against coordinating fiscal policies:

"In unconstrained environments, in which short-term policy rates are set by the central bank

sufficiently far away from the lower bound, the single monetary policy may be able to achieve its price stability objective even if the cyclical fiscal stance of countries is not coordinated and debt levels may show significant, but sustainable, differences." ECB (2021, p. 17)

6.5 The advantages of coordinated national fiscal policies in a monetary union

An analysis by the ECB (2021) shows that national fiscal policies have often been pro-cyclical. Over the entire lifetime of the monetary union, pro-cyclical policies were consistently pursued in at least one third of the euro area (figure 16). Pro-cyclicality was particularly pronounced in the early years of the euro, during the euro crisis and in the second half of the 2010s.

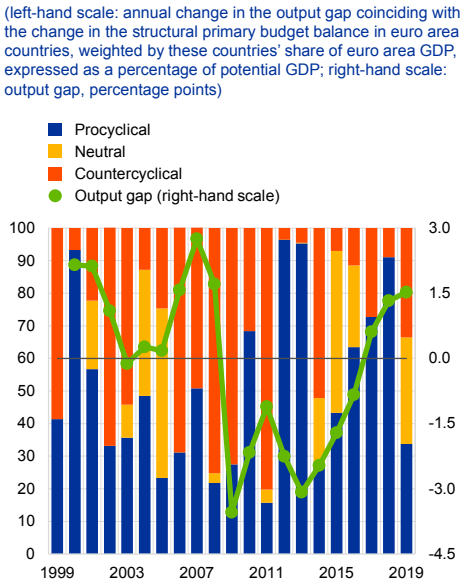

Figure 16: Cyclicality of fiscal policy in EMU. Source: ECB (2021, p. 39)

Simulations by the ECB (2021, p. 61) confirm the theoretical analysis made here and describe the benefits that would have resulted from its coordinated fiscal policy in the past:

"Fiscal policies responding in a more countercyclical manner would have smoothed the real output gap and reduced the inflation gap. Compared with the baseline, less fiscal spending before the great financial crisis would have dampened the positive output gap (...) and reduced the debt-to-GDP ratio (...). In the absence of an inflation gap during those years, the results

are similar for both alternative scenarios. After the financial crisis, and abstracting from financing difficulties during the sovereign debt crisis, additional fiscal spending would have ensured quicker closure of the output gap and a smaller inflation gap (...), with a strongly positive output gap for the patient fiscal policy scenario."

7 A commitment of national fiscal policies to the objective of price stability

Coordinating twenty national fiscal policies is a difficult task. An alternative solution could therefore be to implement a commitment of national fiscal policies to the goal of price stability by treaty. In concrete terms, such a rule could consist in obliging the governments of all member states to contribute to price stability at the national level. As a benchmark, a corridor for the national inflation rate could be envisaged, with a bandwidth of one percentage point around the ECB's inflation target of 2%.

7.1 Deviations from the ECB's inflation target

In retrospect, such a rule in the **2000s** would have helped to address early on the imbalances that manifested themselves in the **euro crisis in 2010-12**. Greece, Ireland, Spain and Portugal had inflation rates that were more than one percentage point above the ECB's 2 per cent target on several occasions and in some cases for years. Conversely, price developments in Germany were subdued due to wage moderation. However, the deviations remain below the threshold of one percentage point.

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Austria	-1.5	0.0	0.3	-0.3	-0.7	0.0	0.1	-0.3	0.2
Belgium	-0.9	0.7	0.4	-0.5	-0.5	-0.1	0.5	0.3	-0.2
Finland	-0.7	1.0	0.7	0.0	-0.7	-1.9	-1.2	-0.7	-0.4
France	-1.4	-0.2	-0.2	-0.1	0.2	0.3	-0.1	-0.1	-0.4
Germany	-1.4	-0.6	-0.1	-0.7	-0.9	-0.2	-0.1	-0.2	0.3
Greece			1.6	1.9	1.5	1.0	1.5	1.3	1.0
Ireland	0.4	3.3	2.0	2.7	2.0	0.3	0.2	0.7	0.9
Italy	-0.3	0.6	0.3	0.6	0.8	0.3	0.2	0.2	0.0
Luxembourg	-1.0	1.8	0.4	0.1	0.5	1.2	1.8	1.0	0.7
Netherlands	0.0	0.3	3.1	1.9	0.2	-0.6	-0.5	-0.3	-0.4
Portugal	0.2	0.8	2.4	1.7	1.2	0.5	0.1	1.0	0.4
Spain	0.2	1.5	0.8	1.6	1.1	1.1	1.4	1.6	0.8

Positive deviations by more than one percentage point in red.
Negative deviations by more than one percentage point in blue

Table 3: Deviations of national inflation rates from the 2% target of the European Central Bank (1999-2007).Source: IMF World Economic Outlook, April 2023.

In the years 2014-2016, when the ECB's interest rate policy was at the **zero lower bound**, a symmetrical commitment of national governments to price stability would have meant that almost all countries would have been obliged to pursue a more expansionary budget policy.

	2014	2015	2016
Austria	***-0.5***	***-1.2***	***-1.0***
Belgium	-1.5	-1.4	-0.2
Cyprus	-2.3	-3.5	-3.2
Estonia	***-1.5***	***-1.9***	***-1.2***
Finland	***-0.8***	***-2.2***	***-1.6***
France	-1.4	-1.9	-1.7
Germany	***-1.2***	***-1.3***	***-1.6***
Greece	-3.4	-3.1	-2.0
Ireland	-1.7	-2.1	-2.2
Italy	-1.8	-1.9	-2.1
Latvia	***-1.3***	***-1.8***	***-1.9***
Lithuania		***-2.7***	***-1.3***
Luxembourg	***-1.3***	***-1.9***	***-2.0***
Malta	***-1.2***	***-0.8***	***-1.1***
Netherlands	***-1.7***	***-1.8***	***-1.9***
Portugal	-2.2	-1.5	-1.4
Slovakia	***-2.1***	***-2.3***	***-2.5***
Slovenia	***-1.8***	***-2.5***	***-2.1***
Spain	-2.2	-2.6	-2.3

Table 4: Deviations of national inflation rates from the European Central Bank's 2% target (2014-2016). Source: IMF World Economic Outlook, April 2023.

Of course, national responsibility for price stability should not be applied mechanically. For example, one could make the obligation to pursue a stimulative fiscal policy dependent on the **level of a country's debt**. With an arbitrary debt-to-GDP ratio ceiling of 90%, relatively many countries (bold/italic in the table) would have been obliged to make a fiscal contribution to avoiding deflation in the Eurozone in 2014-2016. The European Central Bank could then have avoided negative interest rates as well as its extensive purchase programmes for public and private bonds.

Even in the current situation with a particularly strong variance of national inflation rates, it may be asked whether a restrictive monetary policy of the ECB is the optimal solution for the entire currency area. An alternative to higher interest rates, which slow down economic activity even in countries that do not have problems with inflation, would in principle be targeted fiscal measures in member states with a price trend significantly above the 2 per cent target.

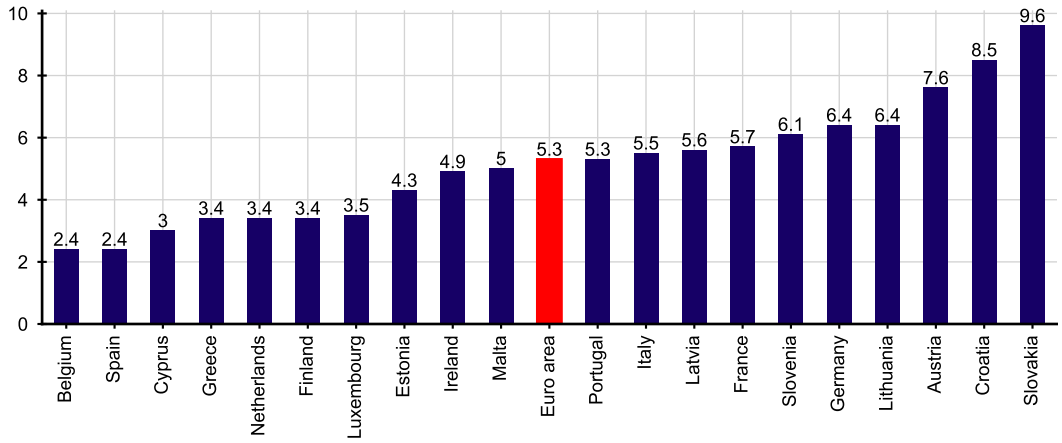

Figure 17: HICP inflation euro area (August 2023). Source: ECB Statistical Data Warehouse.

A forward-looking economic policy would be guided by forecasts for the years 2024 and 2025. As the ifo Institute's forecast for the years 2024 and 2025 shows, even for the large economies of the euro area with currently still high inflation - with the given economic policy data sets - a clear calming of inflation can be seen. There would therefore be no need for a restrictive fiscal policy.

	2022	2023	2024
Germany	6,2	2,7	1,9
France	5,6	2,5	2
Italy	6,2	2,1	1,6
Spain	3,3	2,1	1,9
Euro area	**5,5**	**2,3**	**1,7**

Table 5: Ifo Institute forecast for the large euro area member states. Source: ifo Institute (2023) forecast of 7 September 2023.

7.2 The euro area as an incomplete monetary union

An obligation for the member states to pursue price stability at the national level raises the question of why such an assignment does not already exist in other currency areas, especially the United States. One answer can be found in the differences in regional inflation rates. While in July 2023 inflation rates in the euro area currently show a high degree of divergence, they were relatively closely distributed around the mean in most regions of the United States (figure 18).

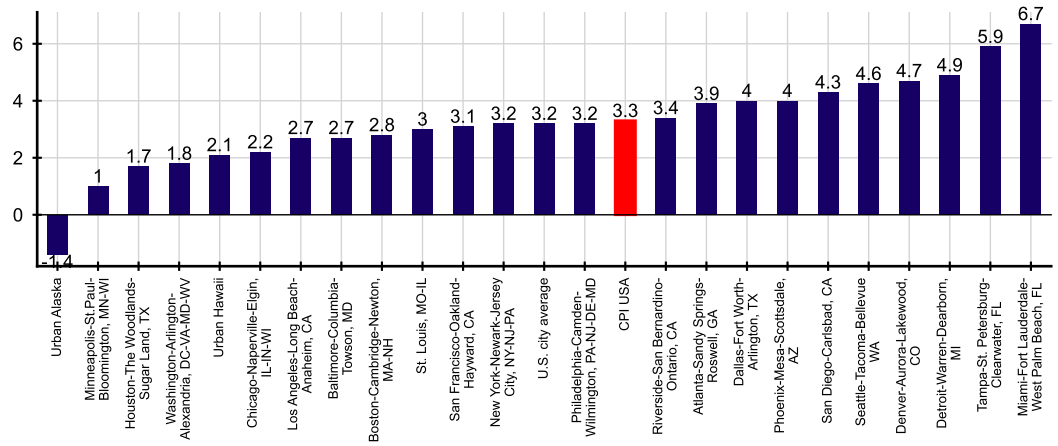

Figure 18: Inflation rates US metropolitan areas (July 2023). Source: Bureau of Labor Statistics.

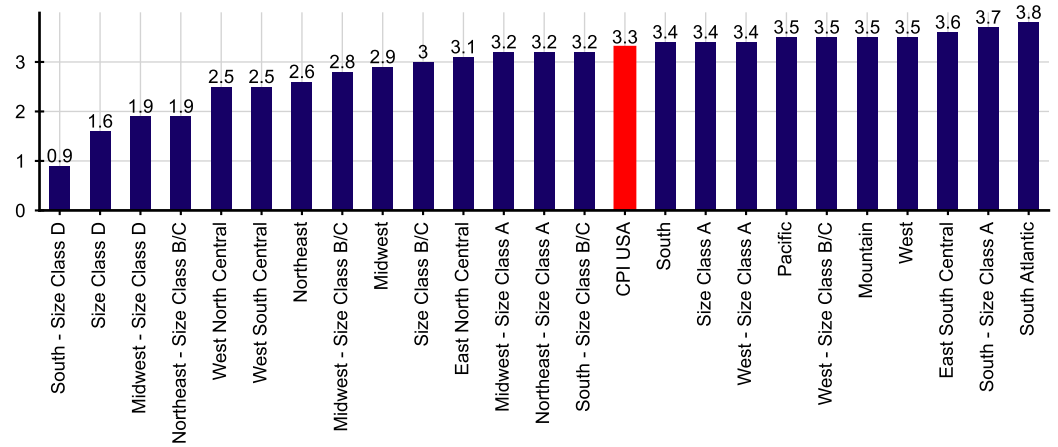

Figure 19: Inflation rates US regions (July 2023). Source: Bureau of Labor Statistics.

The lower variance of inflation rates between the regions of the US compared to the variance of inflation rates of the euro area member states is evident for the entire inflation period since 2020.

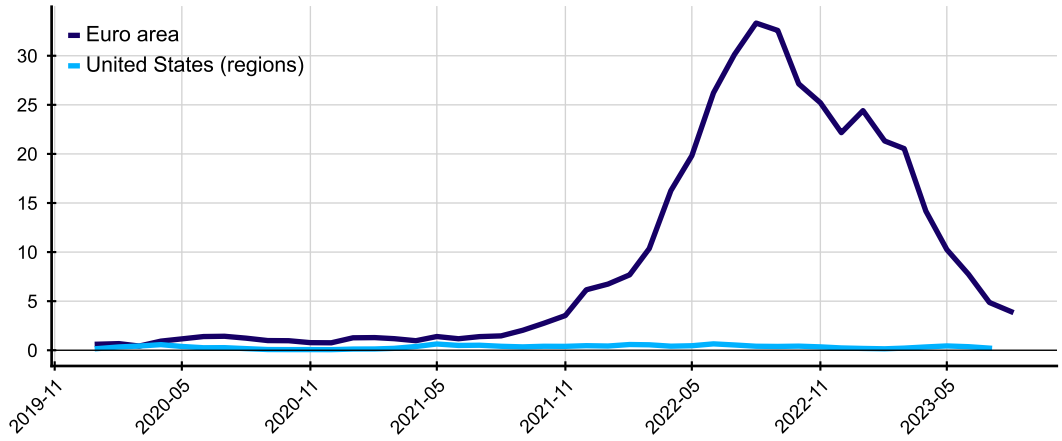

Figure 20: Difference in variances of US inflation and Euro area inflation. Source: Bureau of Labor Statistics, Eurostat.

A low variance of inflation rates is a crucial prerequisite for the effectiveness of a single monetary policy, since only this ensures a reasonably uniform real interest rate within the currency area. Larger differences have a destabilising effect, as the real interest rate in the high-inflation countries is then lower than in the low-inflation countries.

The comparison with the United States makes it clear that even 24 years after its foundation, the European Monetary Union is still not a fully integrated currency area, especially in times of crisis. This is not least due to the lack of political integration.

Since progress towards a political union is unlikely, it would make sense to create a contractual obligation for the member states that assigns them a responsibility for national monetary stability. This seems particularly necessary because national stabilisation policies - as shown in the model - are associated with positive externalities. The best place for such an obligation would be the Stability and Growth Pact which would be transformed into a Pact that is not only aimed at the stability of public finances but also of price stability at the national level.

8 Summary

For decades, almost all economists have agreed that central banks have the main responsibility for fighting inflation. In contrast, fiscal policy is only attributed a macroeconomic responsibility in deflationary phases in which monetary policy reaches the limits of its ability to act due to the "Effective Lower Bound" (ELB).

In the current wave of inflation, many states have now taken a series of measures under the pressure of the enormous energy price increases, with which they have directly contributed to lowering inflation rates. This "**unconventional fiscal policy**" is considered successful overall.

This leads to the fundamental question of whether the generally accepted stabilisation policy assignment, in which fiscal policy plays a secondary role at best, actually describes an optimal division of labour between the two policy areas.

In this study, therefore, the effects of monetary and fiscal policy in the case of demand and supply shocks were first examined with a simple New Keynesian model. In the case of **positive demand shocks**, an equivalence of monetary and conventional fiscal policy is shown. Thus, there is no justification for a primacy of monetary policy in fighting inflation. In the case of **negative demand shocks**, monetary policy can reach the ELB. In the IS/PC/MP-model which is based on the real interest rate, this results in a lower bound for the real interest rate, which is determined by inflation expectations. Without support from fiscal policy, negative demand shocks can lead to a destabilising process in which increasing deflation expectations lead to an ever higher real interest rate.

In the case of **supply shocks**, there is also an equivalence between monetary policy and conventional fiscal policy. However, since both policies can only influence the aggregate demand curve, a trade-off arises between stabilising the inflation rate and stabilising output. This is where the innovation of unconventional fiscal policy becomes apparent, which can directly shift the supply curve, especially with a variation of indirect taxes, and thus avoid the "trade-off".

While conventional fiscal policy is at least equivalent to monetary policy in the model, fiscal policy has clear advantages when the two policy areas are considered from the perspective of **"targeted" and "timely" effects**. The better calibration of fiscal policy results from the fact that it can directly control demand, whereas monetary policy can only do this by transmitting its impulses through the financial system. Indirect demand management through central bank interest rates entails **undesirable side effects** on the exchange rate, the sustainability of public finances, the stability of the financial system and the distribution of income and wealth. These can be avoided by fighting inflation with fiscal policy.

In terms of **impact lags**, a disadvantage of fiscal policy is traditionally seen in a long **"inside-lag"**, i.e. the time between the occurrence of a shock and the entry into force of a compensating measure. However, the COVID pandemic and the Ukraine crisis have shown that governments can react very quickly fiscally in times of crisis. In contrast, the disadvantage of monetary policy is a longer **outside-lag**, i.e. the time between the entry into force of a measure and the effects on macroeconomic targets. The few current studies on the "long and variable lags" Friedman (1961, p. 87) of monetary policy show that it takes at least one year for monetary policy to have its full effects on the inflation rate.

This shows another advantage of unconventional monetary policy, which can achieve very direct and rapid effects on the inflation rate with the instrument of indirect taxes. In the case of unconventional fiscal policy, however, the problem arises that in the case of supply shocks triggered by rising energy prices it is not easy to distinguish whether they are permanent or transitory in nature. The latter can be compensated unproblematically by changes in indirect taxes. In the case of permanent price adjustments, unconventional fiscal policy can only help to mitigate second-round effects. In the current wave of inflation, unconventional fiscal policy was favoured by the fact that the increase in the price of energy sources was less persistent than had originally been feared.

All in all, therefore - in contrast to the prevailing distribution of roles in economic policy - every-

thing speaks in favour of assigning fiscal policy a dominant role in stabilising the inflation rate in the event of demand and supply shocks. Monetary policy is ultimately only needed when governments themselves are the cause of a positive demand shock or when they are unwilling or unable to take a stabilisation policy leadership role due to short-term interests or lack of political support. If the central bank takes over inflation control for **political economy reasons**, one must be aware of the fact that it is always a "**second-best**" solution compared to fiscal stabilisation.

In a **monetary union**, there are even further implications for the macroeconomic policy assignment. As the New Keynesian model shows, in the event of national demand and supply shocks, the common central bank can only react to such disturbances partially - according to a country's share in the economic output of the currency area. Thus, the shock in the country of origin is only partially compensated and transmitted with a negative sign to the rest of the currency area. Even if a target inflation rate can then be achieved for the currency area as a whole, **welfare losses result at the member state level** due to output gaps and deviations from the central bank's inflation target. Such effects can only be avoided by obliging national fiscal policies to contribute to the achievement of price stability in their country.

The experience with the European Monetary Union shows that with such an assignment, the **overheating in the peripheral countries in the 2000s** could have been recognised early and appropriate stabilisation policy measures taken. Likewise, in the years 2014 to 2016, when the ECB was operating at the ELB, national fiscal policies could have contributed to bringing the inflation rate closer to the ECB's inflation target, at least in the countries with relatively low debt-to-GDP ratios, through expansionary fiscal stimuli.

Since stabilisation policy activities at the national level are associated with **positive externalities**, nation states are not expected to undertake them on their own initiative. Therefore, a contractual obligation should be created that assigns the member states a responsibility for monetary stability in their country. This role assignment can be included in the Stability and Growth pact and be conditioned to the level of public debt of a country in the case of too low inflation rates which require expansionary fiscal policies.

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