DIW Weekly Report 20+21 2019

A policy bulletin from the German Institute for Economic Research

Economy. Politics. Science.

DIW BERLIN

179 Report by Jan Philipp Fritsche and Patrick Christian Harms

20 Years of common European monetary policy: reasons to celebrate

- ECB monetary policy is more adept at stabilizing the economy than national central banks prior to the euro introduction
- In the euro area, monetary policy has become more independant of exchange rates

LEGAL AND EDITORIAL DETAILS

DIW Berlin — Deutsches Institut für Wirtschaftsforschung e. V.
Mohrenstraße 58, 10117 Berlin
www.diw.de
Phone: +49 30 897 89–0 Fax: –200
Volume 9 May 15, 2019

Publishers
Prof. Dr. Tomaso Duso; Prof. Marcel Fratzscher, Ph.D.; Prof. Dr. Peter Haan; Prof. Dr. Claudia Kemfert; Prof. Dr. Alexander Kriwoluzky; Prof. Dr. Stefan Liebig; Prof. Dr. Lukas Menkhoff; Dr. Claus Michelsen; Prof. Karsten Neuhoff, Ph.D.; Prof. Dr. Jürgen Schupp; Prof. Dr. C. Katharina Spieß

Editors-in-chief
Dr. Gritje Hartmann; Mathilde Richter; Dr. Wolf-Peter Schill

Reviewer
Stefan Gebauer

Editorial staff
Renate Bogdanovic; Dr. Franziska Bremus; Rebecca Buhner; Claudia Cohnen-Beck; Dr. Daniel Kemptner; Sebastian Kollmann; Bastian Tittor; Dr. Alexander Zerrahn

Sale and distribution
DIW Berlin Leserservice, Postfach 74, 77649 Offenburg
leserservice@diw.de
Phone: +49 1806 14 00 50 25 (20 cents per phone call)

Layout
Roman Wilhelm, DIW Berlin

Cover design
© imageBROKER / Steffen Diemer

Composition
Satz-Rechen-Zentrum Hartmann + Heenemann GmbH & Co. KG, Berlin

ISSN 2568-7697

DIW Weekly Report 20+21 2019

AT A GLANCE

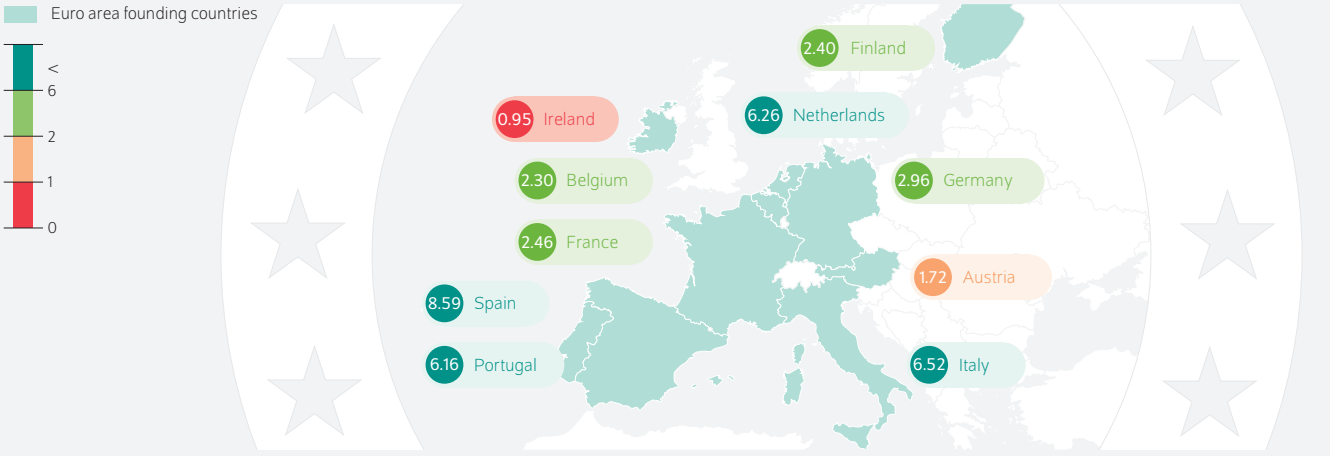
20 Years of common European monetary policy: reasons to celebrate

By Jan Philipp Fritsche and Patrick Christian Harms

- Study uses empirical methods to examine whether the ECB's monetary policy provides better economic stabilization than its national predecessors
- Monetary policy's ability to stabilize the economy has improved in the euro area countries, with peripheral countries particularly benefiting
- This stabilizing ability in the euro area has developed at least as good as in the rest of the world, although the ECB is responsible for the entire monetary union
- Deepening of the monetary union and European fiscal policy reforms must now be prioritized

In every country except for Ireland, common European monetary policy has helped stabilize the economy more than national monetary policy previously did

Relative change in monetary stress in Euro area founding countries, 1999–2017 compared to 1978–1999



Source: own calculations.

Remark: Luxembourg was not considered, because it was in a monetary union with Belgium prior to the introduction of the Euro.

FROM THE AUTHORS

"The expectations of euro critics have not come true. The European Central Bank has managed to keep inflation rates stable, it has also succeeded in stabilizing the economy in Eurozone countries better than its national predecessors did."

— Jan Philipp Fritsche, author —

20 Years of common European monetary policy: reasons to celebrate

By Jan Philipp Fritsche and Patrick Christian Harms

ABSTRACT

Twenty years after the introduction of the euro, this Weekly Report uses an empirical analysis to assess the performance of monetary policy in the EMU founding states. It is often claimed that the monetary policy of the European Central Bank (ECB) cannot outperform its national predecessors, as the euro area countries experience different business cycles yet share a common interest rate. However, the present analysis shows that the ECB's common monetary policy has been more adept at stabilizing the economy than most of its national predecessors from the perspective of the member states. With a common currency, European monetary policy has also become largely independent of exchange rates. However, the central bank is unable to counter long-term macroeconomic imbalances. To protect euro area countries from crises more effectively, priority should be given to reforming the monetary union and fiscal policy as well as to completing the Banking Union and the Capital Markets Union. Mistakes in crisis management must be openly discussed in order to address the temptation some have to renationalize economic and monetary policy; the ECB's monetary policy should not be a scapegoat.

Twenty years have passed since the introduction of the euro. Most of the fears of those opposed to the common currency have not materialized. The European Central Bank (ECB) pursues a stability-oriented monetary policy for the entire currency area and is able to ensure more stable prices than national central banks including the German *Bundesbank*.[1] The mandate of the ECB—to focus primarily on inflation and to consider economic performance only if the inflation target is met—also allows the public to understand monetary policy decisions. The euro now serves as the world's number two reserve currency behind the US dollar, avoiding transatlantic tensions in international monetary policy.[2]

Even so, polemics have increasingly targeted the single currency and the ECB following the global financial crisis of 2008 and the European sovereign debt crisis.[3] However, criticism of the euro and the ECB is not limited to politicians and the media; many economists also regularly speak on the subject. While their resulting recommendations differ considerably — some of them argue for partial or complete dissolution of the euro[4], others for greater integration and coordination[5]—, the underlying analysis is the same: a single monetary policy cannot achieve positive results because the monetary union consists of many countries with different preferences, economic structures, and business cycles. The asymmetrical business cycles in the euro area countries

1 The average inflation rate in Germany in the 20 years before the euro was introduced was 2.8 percent. Between 1999 and 2018, it was 1.4 percent; in the euro area during the same period, the average inflation rate was 1.7 percent (Statistisches Bundesamt (2019): Verbraucherpreisindex für Deutschland – Lange Reihen ab 1948; Eurostat).

2 For more on these fears, cf. Martin Feldstein, "The European Central Bank and the euro: The first year." Working Paper 7517, National Bureau of Economic Research (available online; accessed April 28, 2019. This applies to all other online sources in this report unless stated otherwise).

3 The rejection of the euro played a central role in the founding of the AfD (*Alternative für Deutschland*, Alternative for Germany) party. In France, Marine Le Pen has long supported both a "Frexit" as well as the claim that the ECB would help establish a German economic dictatorship in Europe. Heinz-Christian Strache, the current Austrian Vice-Chancellor, once asked, "Now who will protect domestic taxpayers from the ECB?" and in 2014, Beppe Grillo, the head of the Italian Five Star Movement, stated that they were "not waging war against ISIS, but rather against the ECB." There is a high degree of skepticism about the ECB's monetary policy beyond these political movements as well.

4 Cf. Aldo Belloni, Roland Berger, and Meinhard Knoche, "Europäische Währungsunion: Thesen und notwendige Schritte zur Krisenbewältigung," in *Außenpolitik in der Wirtschafts- und Finanzkrise*, eds. Josef Braml, Stefan Mair, and Eberhard Sandschneider (2012), 317–328 (in German).

5 Cf. Henrik Enderlein, "Die Krise im Euro-Raum: Auslöser, Antworten, Ausblick," Bundeszentrale für politische Bildung (2010) (in German; available online).

DOI: https://doi.org/10.18723/diw_dwr:2019-20-1

Box 1

Rule-based monetary policy and the ability of the central bank to stabilize the economy

Macroeconomic theory specifies two important requirements for a successful stability-oriented monetary policy. First, a central bank should make consistent and transparent decisions. Therefore, modern central banks are given a high degree of independence, have a clear objective (such as an inflation target), and try to avoid discretionary decisions. The literature refers to this as rule-based monetary policy.[1] Second, monetary policy decisions should only take factors into account that play a role in economic stabilization, such as domestic inflation, output, or employment. Other factors, such as exchange rates or the weather, which only indirectly influence these economic factors should not be monetary policy targets. From this perspective, exchange rate interventions are not a part of stability-oriented monetary policy.[2] A very simple rule that could be followed by a central bank could be, for example, that rising inflation is countered with overproportionate increases in interest rates. The more precisely such a rule is formulated and communicated, the more predictable central bank policy becomes. A transparent policy simplifies the expectations, as companies and households can plan more easily, and in the best case, monetary policy is a source of stability and security. The central bank having a misplaced or constantly changing focus leads to a complex interest rate policy that is either hard to predict or predictably poor for the development of the real economy – monetary policy's ability to stabilize declines. It is then difficult for companies and households to foresee what interest they will have to pay on loans, loans become too expensive[3] due to possible risk premiums and monetary policy being too restrictive, or it is difficult for employees to assess real wage developments.

It is important to note that none of the large central banks follow an explicit rule for setting interest rates by mandate. This is mainly because a perfect rule that takes full account of all eventualities can be neither clearly derived nor implemented in practice. Therefore, every central bank will retain a bit of leeway in order to be able to respond to particular situations with a certain degree of flexibility. However, this leeway should not be arbitrary, as successful monetary policy requires confidence in the long-term validity of monetary policy principles. Finally, it is more important to find a rule that is sustainable, easy to understand, and capable of achieving the monetary policy objective satisfactorily than to strive for a "perfect rule." There is a lively debate in the scientific community as to whether an optimal rule should include target variables in addition to inflation, such as output or financial market-specific parameters. It is widely accepted, however, that deviations from rules are suboptimal from a theoretical perspective—even if they appear justified from today's point of view—because any deviation jeopardizes the credibility of the rule.[4] There may be many reasons for a central bank to deviate from a stabilizing monetary policy rule: for example, the central bank changing its monetary policy strategy or it must deviate from the rule because other factors (such as exchange rate fluctuations in a fixed exchange rate regime) force it to do so. A number of studies on monetary policy uncertainty confirm the economic consequences of such unexpected interventions:[5] the growth losses caused by uncertainty can be substantial.

This study deliberately estimates a rule that ignores the fact that the national central banks in the EMS had to set interest rates in such a way that the exchange rate remained stable. This is needed to examine the ability of monetary policy to stabilize prices and real economic developments before and after the introduction of the euro. The error term will exactly capture the fact that national banks had to deviate from a stabilizing rule in order to maintain within the exchange rate corridor.

Equally, the fact that the ECB sets interest rates for the euro area as a whole is also ignored. The rules are estimated in such a way that they only contain two factors, inflation and output of the domestic economy, which are justified from a theoretical perspective.[6] Our approach to measuring monetary policy's ability to stabilize enables us to compare the systems. We can measure deviations from national stabilization policy due to international agreements and compare them. Both the commitment to the EMS as an exchange rate regime and the fact that the ECB does not target only the domestic variables of the economy are considered.

1 Fynn E. Kydland and Edward C. Prescott, "Rules rather than discretion: The inconsistency of optimal plans," *Journal of Political Economy* 85, no. 3 (1977): 473–491.

2 Richard Clarida, Jordi Galí, and Mark Gertler, "Optimal Monetary Policy in Open versus Closed Economies: An Integrated Approach," *American Economic Review* 91, no. 2 (2001): 248–252 (available online).

3 Or too inexpensive if, for example, the central bank erratically reduces the key interest rate too much compared to the "optimal" level.

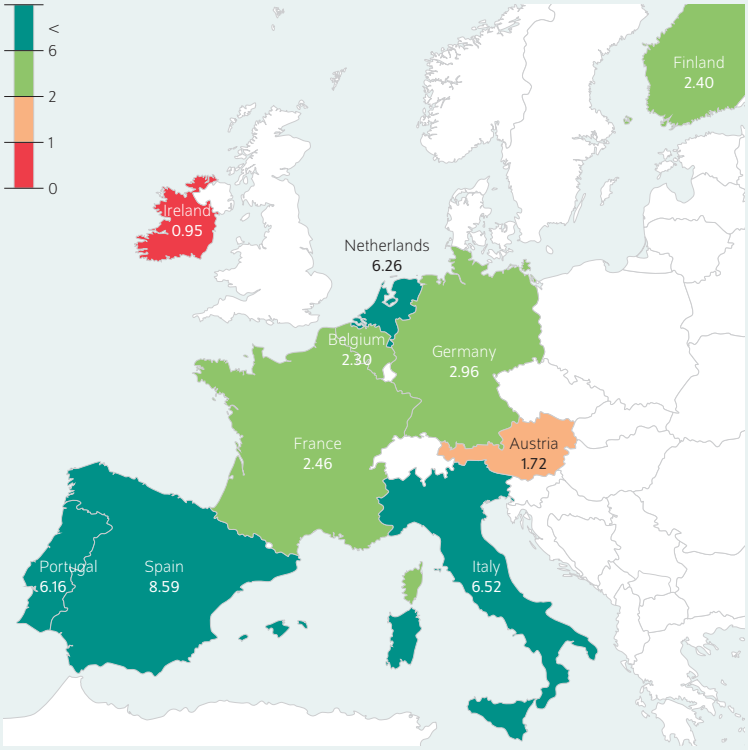
4 Kydland and Prescott, "Rules rather than discretion."

5 The measure of monetary stress used here is closely linked to the concept of monetary uncertainty. Nevertheless, there are conceptual differences. While uncertainty focuses primarily on unpredictability of monetary policy, the ability to stabilize the economy also includes predictable unfavorable developments. An example would be a development where a central bank dominant in the EMS raises interest rates and other central banks are under pressure to do the same to stabilize the exchange rate, even though domestic economic conditions in the countries would require an interest rate cut.

6 Clarida, Galí, and Gertler, "Optimal Monetary Policy in Open versus Closed Economies," and Dominic Quint, "Is it really more dispersed?" *International Economics and Economic Policy* 13, no. 4 (2016): 593–621

Figure 1

Relative change in monetary stress after the Euro introduction
In Euro area founding countries, 1999–2017 compared to 1978–1999



Remark: Luxembourg was not considered, because it was in a monetary union with Belgium prior to the introduction of the Euro.

Reading example: The reduction refers to monetary stress (see Box 3). Since 1999, monetary stress has been 8.6 times lower in Spain that it had been prior to 1999.

Source: own calculations.

Spain, Italy, the Netherlands and Portugal have benefited strongly from the common monetary policy.

limit the ECB's ability to conduct an appropriate monetary policy with a single key interest rate for all member states, the argument goes.[6] This thinking led to the "One size fits none" hypothesis, which now is often cited as an argument that the euro area's monetary policy is flawed by construction.[7] This hypothesis goes back to the beginnings of the optimum currency area theory,[8] which states that whenever a currency area is divided into smaller regions, the stance of monetary policy cannot be completely suitable for every region as long as there is some degree of disparity in inflation and economic developments.[9]

We should not leap to the conclusion that, based on this theory alone, the ECB's monetary policy must be flawed. In addition, the optimum currency area theory has developed further and now takes political institutions into account.[10] Finally, the assessment of the ECB's monetary policy should be measured against real alternatives and considerations regarding rule-based and stability-oriented monetary policy (Box 1) should be taken into account. This Weekly Report compares the ECB's monetary policy with the policies of its national predecessors and other central banks in terms of their ability to stabilize the economy and their degree of dependence on exchange rates.

Ability to stabilize the economy as criterion for successful monetary policy

We compare the ability of the ECB's monetary policy to stabilize the economy in individual euro area member states with the period before the euro, when the European Monetary System (EMS, Box 2) determined monetary policy. In addition, euro area countries are compared to other economies that have their own currency and an independent central bank. This can be used not only to assess how monetary policy has changed over time for the initial euro area countries, but also to compare this development over time with other countries.[11]

What criteria should be used to evaluate such changes? Today, there is a broad consensus that monetary policy should be politically independent with a sharply defined mandate that aims for economic stability (see Box 1). In order to examine how effectively monetary policy was able to stabilize the economy before and after the introduction of the euro, this study measures the consistency of the ECB's policy and to what extent it focused on national business cycles. Therefore, we use empirical estimates of three equation models, in which one of the equations describes how the central bank sets interest rates (Box 3). The other two variables, in addition to the interest rate, reflect inflation and output.[12]

ECB's monetary policy stabilizes the economy more effectively than its national predecessors

Monetary policy's ability to stabilize the economy before and after the introduction of the euro is examined for the initial euro area countries that were also members of the EMS. We

6 See Marius Clemens and Mathias Klein, "A stabilization fund can make the euro area more crisis-proof," *DIW Weekly Report*, no. 22+23 (2018) (available online).

7 André Sapir and Guntram B. Wolff, "Euro-area governance: what to reform and how to do it," *Bruegel Policy Brief*, no. 1 (2015) (available online); Charles Wyplosz, "The six flaws of the eurozone," *Economic Policy* 31, no. 87 (2016): 559–606; Henrik Enderlein, Lucas Guttenberg, and Jann Spiess, "Blueprint for a cyclical shock insurance in the euro area," *Notre Europe/Jacques Delors Institute Studies & Reports* (2013) (available online).

8 Robert A. Mundell, "A theory of optimum currency areas," *The American Economic Review* 51, no. 4 (1961): 657–665.

9 Dominic Quint, "Is it really more dispersed?" *International Economics and Economic Policy* 13, no. 4 (2016): 593–621 compares, for example, the euro area countries in this respect with regions in the United States and with the German federal states before the introduction of the euro.

10 Paul De Grauwe, *Economics of Monetary Union* (Oxford University Press, 2000).

11 In particular, this approach makes it possible to take account of any common monetary policy trends.

12 Both variables are defined as optimal targets in the macroeconomic literature. Exchange rates are deliberately not modeled in order to identify central bank interventions to stabilize exchange rates as deviations from stability-oriented monetary policy. See Richard Clarida, Jordi Galí, and Mark Gertler, "Optimal Monetary Policy in Open versus Closed Economies: An Integrated Approach," *American Economic Review* 91, no. 2 (2001): 248–252 (available online).

Box 2

EMS, monetary policy, and crises

The European Monetary System (EMS), which existed from 1979 until the introduction of the euro, consisted of two elements: the European Exchange Rate Mechanism (ERM) and the European Currency Unit (ECU), which served as an accounting unit.[1] The economies participating in the ERM set central rates in relation to the ECU currency basket and limited exchange rate fluctuations to +/− 2.5 percent[2] around this rate.[3] The international foreign exchange markets determined the fluctuations between these upper and lower limits while central rate adjustments were the result of political negotiations and required the approval of all participants. The participating central banks were obliged to defend the upper and lower limits by buying and selling their own currencies as well as foreign currencies. They also could act providently within the fluctuation margins.[4]

In order to counter structural economic divergences, such as wage, inflation, and foreign trade developments, many adjustments to central rates took place, particularly in the early 1980s. Generally, some countries tended to devalue their currencies more often (France and Italy) and others (Germany and the Netherlands) only appreciated them.[5] Therefore, Germany and the *Bundesbank* in particular played a dominant role in the EMS.

The role of monetary policy as it is understood today is not easy to identify in this system. The EMS was, on the one hand, a fixed exchange rate system, but on the other, it offered the possibility of discretionary adjustments. If central banks have to operate to a large extent on the foreign exchange markets by buying or selling their own currency, it impacts the supply of liquidity to the financial system and thus the interest rate. If, for example, the *Bundesbank* was exposed to an extremely high demand for the Deutsche Mark and thus to high revaluation pressure, it would have to increase the supply of the Deutsche Mark just as drastically in order to counteract that pressure. In most cases, such stabilization is not possible without impacting the interest rate. Conversely, a change in the interest rate motivated by monetary policy (such as a rise in interest rates to combat inflation) can trigger devaluation or revaluation pressure in another country. If the other country does not want to adjust the exchange rate but has already exhausted the means to intervene in the foreign exchange market, the only remaining option is an interest rate increase. Both cases are examples of interest rate changes that clearly do not contribute to national macroeconomic stabilization.

Such economically unjustifiable interest rate decisions regularly occurred in the EMS. As early as the beginning of the 1980s, many other central banks copied a surprising three percentage point interest rate hike by the *Bundesbank* in order to prevent a devaluation.[6] This problem was exacerbated by the gradual abolition of capital controls from 1987 onwards under the Single European Act.

Many economists believe that the largest crisis of the EMS is a direct consequence of the fall of the Berlin Wall and the *Bundesbank*'s reaction. Reunification and the resulting costs acted as a major economic stimulus package in Germany, while large parts of the EU struggled with recession or weak growth. When the inflation rate exceeded the five percent mark in 1992, the *Bundesbank* decided to raise interest rates several times. After the abolition of capital controls, the pressure exerted by the financial markets increased significantly. There was a high uncertainty about how long the central banks of the other countries would be able to keep up with the *Bundesbank* and maintain their commitment to the Deutsche Mark, despite widely diverging economic trends.

In Scandinavia, which was attacked by currency speculations first in early September 1992, the Swedish *Riksbank* attempted to stabilize its exchange rate by temporarily raising interest rates to up to 500 percent. Later, speculation also hit the EMS. The Bank of England drastically raised the key interest rate on September 16, 1992, despite the United Kingdom's weak economy, as did the Bank of Italy. Ultimately, monetary policy was unable to counter speculative pressure and both countries left the EMS.

1 The ERM is the central element of the EMS, which is why it is the focus of this box. The ERM still exists today as ERM II and serves as an official system for countries of the European Union. Countries interested in adopting the euro must participate in ERM II for two years. Since most Eastern European countries interested in the euro have already introduced it, Denmark is currently the only participating country.

2 From the outset, Belgium, Denmark, France, Germany, Ireland and the Netherlands participated in the system and used these 2.5 percent as a fluctuation margin. Italy was granted a larger margin of +/− six percent until 1990, as were Spain, which joined the EMS in 1989, the United Kingdom (1990), and Portugal (1992).

3 The EMS was already largely de facto abolished over the course of the EMS crisis in 1992/1993 when the fluctuation margins were increased to +/− 15 percent.

4 Through the "Very Short Term Financing Facility," each currency was available to the countries at short notice in a theoretically unlimited volume on the condition that the foreign currency loans were repaid after 45 and later 75 days.

5 Martin Höpner and Alexander Spielau, "Better than the Euro? The European Monetary System (1979–1998)," *New Political Economy* 23, no. 2 (2018): 160–173.

6 Between March 1979 and February 1980, the *Bundesbank* increased the discount rate from four to seven percent.

Box 3

Methodology

This study measures the ability of rule-based monetary policy measures to stabilize domestic economies. To do so, we develop a measure of monetary stress. It describes to what extent the interest rate for the respective economy deviates from rule-based and stability-oriented monetary policy. For the period following the introduction of the euro, we perform the thought experiment that policy rates of the national central banks were simply set to the ECB rate, in the euro area countries, by the central banks themselves. Then we use structural models to quantify whether these interest rates are better or worse suited for the domestic economy in question.

We measure monetary policy stress before and after the introduction of the euro from the perspective of the initial euro area countries.[1] We use structural vector autoregressions to estimate an interest rate equation as a simple monetary policy rule. Deviations from the rule are identified as monetary policy stress. Moreover, the model is based on monthly data[2] on interest rates, output, and inflation for all countries observed:
(1) $y_t = A_0 + A_1 y_{t-1} + \cdots + A_p y_{t-p} + B\varepsilon_t$,
with y_t as the vector of the endogenous variables $[y_t, \pi_t, i_t]'$ mentioned above. There is special interest in the third equation, where i_t is to the left of the equal sign.

The *average* deviation (in equation 1 the standard deviation of ε_t^i) from the monetary policy rule before and after the adoption of the euro is calculated and compared. If the standard deviation increases, the ability of this country's monetary policy to stabilize the economy has diminished. We identify the system of equations and the matrix B by sign restrictions. Our baseline sample includes the years 1978 to 2017. In addition, we shorten the sample for a robustness exercise to the period of 1986 to 2009.[3] Finally, we examine the extent to which the results can be explained by global trends and the degree of independence of a country's own currency. To do so we estimate models for non-euro area countries as well. Finally, we use time-varying regressions to examine the relationship between our measure of monetary policy stress and exchange rate fluctuations.

1 Luxembourg is not included because of its special economic structure and monetary policy link with Belgium.

2 The monthly data are based on the authors' own values interpolated using quarterly data. They allow differentiated statements on monetary policy, as changes in monetary policy can take place more frequently than once a quarter.

3 In order to test the robustness of the results against the chosen method and the sample used, an alternative identification approach is used in addition to identifying via sign restrictions, and the time series for all countries are shortened. The alternative method is based on identification by heteroskedasticity. Shortening the period excludes the results being distorted by the crisis in the euro area, the restriction of monetary policy by reaching the zero interest rate limit stating in 2014, and by technical progress in monetary policy until the late 1980s. The sign restrictions prove to be particularly robust against extreme events and are therefore regarded as a basic method.

perform the thought experiment that the national central banks would have pursued a consistently independent monetary policy and set the ECB interest rate for themselves. The ability to stabilize the economy is quantified by a measure of monetary policy stress developed for this study. The measure describes to what extent the interest rate for the respective economy deviates from rule-based and stability-oriented monetary policy. The standard deviation of monetary policy stress is calculated for before and after the introduction of the euro, then we compare the the two values. If the standard deviation increases, the ability of a country's monetary policy to stabilize the economy has diminished.

Using this approach, we can determine the extent to which monetary policy's ability to stabilize the economy has changed for the respective country since the introduction of the euro (Figure 1). If the factor is larger than one, the ability to stabilize has improved;[13] this applies to all countries in the sample except for Ireland. Spain, Italy, the Netherlands and Portugal experienced the largest improvements with factors of 8.6, 6.5, 6.3, and 6.2, respectively. Germany and France have middle-ranking values of about three and 2.5, respectively.

Note however, that there are some structural factors within the sample period, which have to be considered separately. Until the late 1980s, the monetary policy of individual countries and the EMS as a whole were reformed. Countries such as Portugal and Spain joined the EMS in the late 1980s and early 1990s.[14] Similarly, the financial crisis might distort the results from 2009 onwards, as the zero interest rate threshold became effective in many countries as a result.

To exclude the above influences, the sample is restricted to the period of 1986 to 2009. The results are qualitatively the same: the monetary union led to better stabilizing policy for the domestic economy in at least nine out of ten original euro area countries.[15]

Interpretation: causes and catalysts of improvement

Monetary policy has been formalized and became more independent worldwide

In the periods observed, there is a global trend towards an improvement in monetary policy's ability to stabilize the economy, as shown by the improvement in the measure for non-euro area countries (Figure 2). The general trend is driven by the moderation of business cycles ("Great Moderation") worldwide during this period as well as by the professionalization and formalization of monetary policy. In the United

13 Irish GDP and deflator data show large fluctuations, particularly since the introduction of the euro, which are more likely to be related to the relationship between economic structure, methodology, data collection, and data measurement than to fundamental fluctuations over time. See Report of the Economic Statistics Review Group (ESRG) (2016) (available online).

14 In the United States, the Volcker disinflation in the late 1970s and early 1980s could have played an important role. Inflation in Europe is also likely to have been affected by this.

15 There is also an improvement in Ireland during the shortened period; only the coefficient for Austria is just under one.

States, for example, the Federal Reserve has started publishing official Federal Funds target rates in February 1994. Previously, market participants had to derive the unknown target from the behavior of the central bank in the markets.[16] In addition, many central banks have become more independent institutions since the start of the sample, which has enabled them to pursue a stability-oriented monetary policy and to exclude exchange rate interventions or political factors.[17] These technical reasons are likely to have contributed to the fact that now, central bank interest rate adjustments ("monetary policy shocks") unexpected by market participants tend to have lower variance in most industrialized countries. Considering this general improvement, it is noteworthy that the GDP-weighted improvement for the euro area countries is slightly higher than that for the non-euro area countries, although in the latter, each country still has its own national central bank.[18]

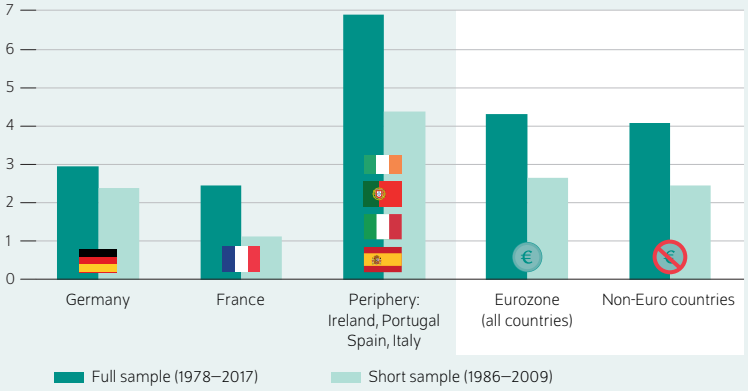
Independence from exchange rates with a common currency

With the introduction of the euro, a large potential for improvement in monetary policy's ability to stabilize has been realized since the dissolution of the EMS. The ECB is one of the most politically independent central banks.[19] Before that, interest rate policy was often used to stabilize exchange rates (Box 2), and stabilizing inflation and output was subordinate. The German *Bundesbank* played a dominant role at the time.[20] In fact, this study shows that before the introduction of the euro, the influence of the Deutsche Mark exchange rate contributed significantly to monetary stress in Italy, the Netherlands, Belgium, Spain, Finland, and Austria.[21]

However, this does not explain the improvement in economic stabilization in Germany. The fact that the euro has become a leading currency and has made countries more independent of global interest rate changes seem to be additional influencing factors. To illustrate this, we examined the time-variable relationship between monetary stress in Germany and the other original euro area countries and the respective US dollar exchange rates (Figure 3). The parameters for eight countries (Spain, Germany, Finland, France, Ireland, Italy, the Netherlands, and Portugal) prior to the introduction of the euro differ from zero occasionally, suggesting that it was indeed the exchange rate against the dollar that had an impact on monetary policy. Since the ECB has taken control, the dollar's influence on monetary policy stress is no longer observed and statistically insignificant in all countries.[22] We can therefore conclude that the ECB policy is largely free of external influences following the introduction of the euro.

Figure 2

Relative change in monetary stress for several regions
1999–2017 compared to 1978–1999; 1999–2009 compared to 1986–1999



Source: own calculations.

Even when considering a shorter period of time, the Eurozone periphery countries were the ones who benefited the most from a common monetary policy.

Conclusion: more euro area integration should have priority now

There are good reasons to celebrate the euro as a success. Since the establishment of a common currency, monetary policy has been able to focus on inflation and economic management, largely ignoring exchange rate developments. The economic size of the euro area is likely to play a role as well: The individual monetary policies of small economies such as the initial euro area countries would certainly not have achieved this on their own.[23]

Since the introduction of the euro, the ability of monetary policy to stabilize the economy in "crisis countries" (Italy, Spain, and Portugal) has improved significantly, and monetary policy has played a smaller role than before in explaining the variance in the business cycle. This suggests that

16 Many central banks today are much more efficient than in the past at implementing their short-term interest rate targets. Cf. Ulrich Bindseil and Kjell Nyborg, "Monetary policy implementation: A European Perspective," Norwegian School of Economics, Department of Finance & Management Science, Discussion Paper no. 2007/10 (2007).

17 For example, the Banca d'Italia and the Bank of England were not granted independence over monetary policy until 1981 and 1997, respectively. Monetary policies which, for example, take governmental interests into consideration, cannot be explained by models based on rule-based monetary policy, and in this study, they automatically lower the ability to stabilize in all industrialized countries. See Andreas Michael Andreades, "History of the Bank of England," (2013) and Franco Passacantando, "Building an institutional framework for monetary stability: the case of Italy (1979–1994)," *PSL Quarterly Review* 49, no. 196 (2013).

18 The 1999 gross domestic product was used to weight the individual countries.

19 See N. Nergiz Dincer and Barry Eichengreen, "Central bank transparency and independence: updates and new measures," *International Journal of Central Banking* (2014) (available online).

20 See Francesco Giavazzi and Alberto Giovannini, "Models of the EMS: Is Europe a Greater Deutschmark Area?" Global Macroeconomics: Policy Conflict and Cooperation (1987): 237–272. Box 2 gives two examples in which other central banks had to follow the *Bundesbank* in their monetary policy although the economic development in these countries might have required a different monetary policy approach.

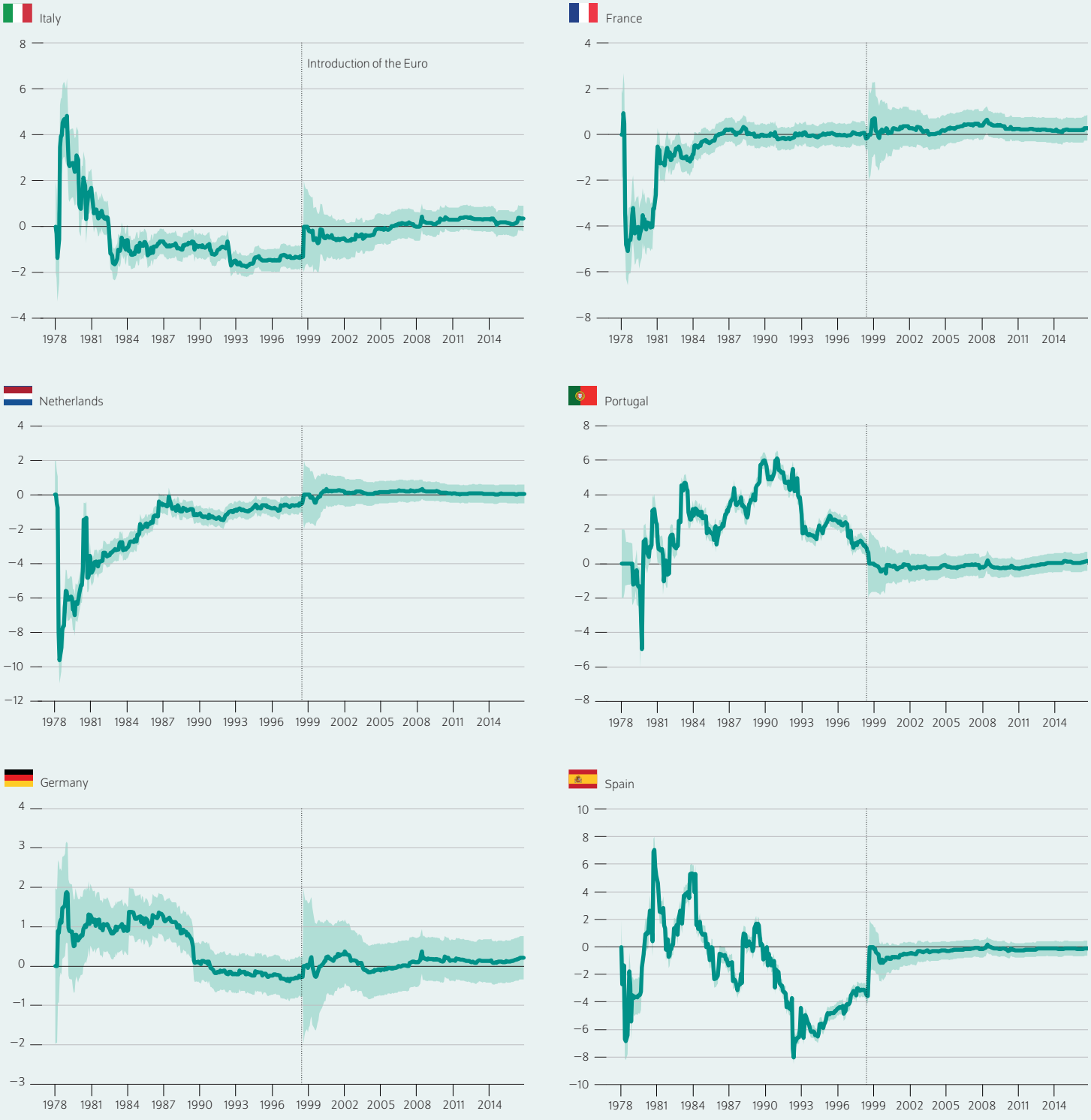
21 This result cannot be found for France, Ireland, or Portugal.

22 See the graphs of the time series starting from the black line marking the introduction of the euro (Figure 3).

23 For more on the decisions for certain exchange rate systems, see Stanley Fisher, "Exchange Rate Regimes: Is the Bipolar View Correct?" International Monetary Fund, speech from January 6, 2001 (available online).

Figure 3

Relation between monetary stress and US-Dollar exchange rate for selected countries
Monetary stress/exchange rate



Source: own calculations.

Since the Euro introduction, the exchange rate has not had any significant influence on monetary policy in any of the six countries.

other explanations for the crisis and macroeconomic imbalances must be found.

For example, the currency area has not sufficiently continued to integrate beyond monetary policy. The European Union has so far budgeted a negligible amount of money for fiscal risk sharing.[24] As a result, countries hit especially hard by the global financial crisis had to bear all the costs themselves. To address this issue, suggestions such as a European unemployment insurance or a euro area budget, which is currently under discussion, seem to be purposive.[25] The banking sector also plays a central role for the euro area's stability, which is why the banking union was established in the EU in the first place. It urgently needs to be completed, and the German federal government has a special responsibility in the process. To prevent a new sovereign debt crisis, national budgets must be sustainable in the long term and refinancing costs must remain at a bearable level, even if the next recession strikes. It's time for an open and unbiased debate on jointly issued bonds, for example in the context of the proposed euro area budget.[26] In addition, the consequences of the fiscal adjustment and labor market reforms needed in the crisis countries were clearly underestimated.[27] These missteps in structuring the monetary union and in crisis management must be openly discussed.

24 Likewise, other risk-sharing mechanisms, such as the capital market, are comparatively weakly developed. See Céline Allard et al., "Toward a fiscal union for the Euro Area," *International Monetary Fund Staff Discussion Notes* 13/9 (2013) (available online).

25 Clemens and Klein, "Stabilization fund".

26 See Philipp Engler and Christoph Grosse-Steffen, "Sichere Anleihen für die Währungsunion," *DIW Wochenbericht*, no. 36 (in German; available online).

27 Olivier Blanchard and Daniel Leigh, "Growth Forecast Errors and Fiscal Multipliers." NBER Working Paper No. 18779, 2013 (available online); Chapter 3 of International Monetary Fund, *World Economic Outlook: Subdued Demand, Symptoms and Remedies* (October 2016) (available online); as well as Philipp Engler and Mathias Klein, "Austerity Measures Amplified Crisis in Spain, Portugal, and Italy," *DIW Economic Bulletin*, no. 8 (2017) (available online).

Jan Philipp Fritsche is a Research Associate and PhD Student at DIW Berlin | jfritsche@diw.de

Patrick Christian Harms is a Research Assistant and PhD Candidate at the University of Hamburg | patrick.harms@wiso.uni-hamburg.de

JEL: C32, E42, E52, F45

Keywords: Economic and Monetary Union, ECB, Euro Area, Structural Vector Autoregressions, Monetary Policy Stress, Sign Restrictions, Heteroskedasticity