ifo
DICE REPORT

01
2017

Spring
Vol. 15

FORUM

The Price-Stability-Target in the Euro-zone and the European Debt Crisis

Kai A. Konrad, Jörg Rocholl; Gerhard Rösl, Karl-Heinz Tödter; Francesco D'Acunto, Daniel Hoang, Michael Weber; Alan Blinder, Michael Ehrmann, Jakob de Haan, David-Jan Jansen; Harald Hau, Sandy Lai; Stephan Kohns; Otmar Issing; Stefan Homburg; Lucrezia Reichlin; Charles Wyplosz; Felix Hufeld; Dieter Wemmer

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ifo DICE Report
ISSN 2511-7815 (print version)
ISSN 2511-7823 (electronic version)
A quarterly journal for institutional comparisons
Publisher and distributor: ifo Institute
Poschingerstr. 5, 81679 Munich, Germany
Telephone +49 89 9224-0, Telefax +49 89 9224-1462, email ifo@ifo.de
Annual subscription rate: €50.00
Editors: Marcus Drometer, Yvonne Giesing, Christa Hainz, Till Nikolka
Editor of this issue: Marcus Drometer (drometer@ifo.de), Till Nikolka (nikolka@ifo.de)
Copy editing: Lisa Giani Contini, Daniela Wech

DICE Database: www.cesifo-group.org/DICE

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DICE REPORT

VOLUME 15, NUMBER 1, SPRING 2017

FORUM

The Price-Stability Target in the Eurozone and the European Debt Crisis

RESEARCH REPORT

REFORM MODEL

DATABASE

NEWS

Kai A. Konrad and Jörg Rocholl

Introduction

Seven years of the ongoing European debt crisis have transformed the Eurozone and the European Union, including the European Central Bank (ECB) and monetary policy in Europe. In recent years, we have seen zero or negative interest rates, programs of generous long-term liquidity provision for commercial banks, and large-scale purchasing programs of government bonds and other securities by the ECB. In a crisis moment, the President of the ECB announced that the ECB will do "whatever it takes" to rescue the Eurozone. The ECB also became heavily involved in macro-prudential analyses of issues related to the stability of the financial system, banking supervision, and the possible application of a banking resolution mechanism.

Based on these developments, many observers noted a broadening in the ECB's objectives and responsibilities, and some claimed that the ECB oversteps its mandate. The ECB started off as a truly European institution with board members and decision makers who focused on a narrowly defined mandate: price stability. National controversies and interests may have played some role, but they were not prominent, or even dominant, among the decision makers inside the ECB; or at least this is how the ECB appeared in public. In the last few years since 2010, the frequent crisis-EU-Council meetings and country programs became almost unthinkable in the absence of the ECB President or ECB representatives. More generally, the role of the ECB in European economic policy became most visible when the ECB President co-authored The Five Presidents' Report: Completing Europe's Economic and Monetary Union, a kind of blueprint for a possible major political and economic transformation of the European Union.

These developments and shifts provided the background for the conference on "The Price-Stability Target in the Eurozone and The European Debt Crisis" jointly organized by ESMT Berlin and the Max-Planck-Institute for Tax Law and Public Finance, which took place at ESMT on 28 September 2016, and was co-funded by the Stiftung Geld und Währung. The conference provided a meeting place for leading researchers, policy makers, and practitioners in the fields of monetary policy, central banking, and public finance. In the morning, Athanasios Orphanides (MIT – Sloan School of Management), Gerhard Rösl (OTH Regensburg), Michael Weber (University of Chicago), Harald Hau (Swiss Finance Institute and the University of Geneva), and Stephan Kohns (Deutsche Bundesbank) offered assessments of the unconventional policy tools chosen by the ECB in recent years. Jacob de Haan (De Netherlandsche Bank and University of Groningen) provided evidence about the changing self-perception of central bankers around the world, suggesting that the trend towards a broadening of the tools and objectives of central banks is not universal, but also not uncommon. Moreover, a non-negligible share of central bankers appreciate and welcome this development.

In the afternoon, Otmar Issing, the Chief Economist of the European Central Bank from its founding until 2006, gave the keynote lecture in which he highlighted the changes described above and assessed their consequences. Otmar Issing expressed concerns that the new tools, the widely held expectations about the ECB as a crisis resolution mechanism and the adoption of this role by the ECB during the crisis describe developments that can easily overburden the ECB and raise serious legitimacy concerns. Eventually these developments can lead to what may be called a paradox of power: an ECB that assumes this huge and broad mandate may lose its independence: as the only institution with problem solving power, it cannot resist and refuse to rescue if problems emerge. If other players anticipate the ECB's course of action, it may create huge problems of moral hazard. While legally independent and seemingly endowed with even more powerful tools, the ECB may lose its material independence and its room for maneuver, ending up trapped in a regime of fiscal dominance. It becomes a predictable rescue device that is unable to commit to and follow its original mandate, and eventually fails to deliver on the key objectives for which it was originally designed.

The threat of fiscal dominance, particularly in the context of the Enhanced Asset Purchase Program ("quantitative easing") of the ECB, was also the focus of a panel discussion that took place between Stefan Homburg (University of Hannover), Lucrezia Reichlin (London Business School), and Charles Wyplosz (Graduate Institute, Geneva), moderated by Philip Plickert (Frankfurter Allgemeine Zeitung). The panelists disagreed about the primary benefits of quantitative easing and its potential negative side effects. Some panelists argued that quantitative easing is beneficial, and if it does not provide a sufficient effect, one may simply need to increase the dose. Other panelists questioned whether the fundamental mechanism between liquidity and bank loans can be stimulated by further liquidity in a world with excess liquidity, without taking bank balance sheets properly into account. There were also different assessments of the risk of entering into a regime of fiscal dominance.

A further panel, moderated by Daniel Schäfer (Handelsblatt), assessed the major practical implications of the low- or zero interest regime. Felix Hufeld (President, Federal Financial Supervisory Authority) focused on the problems of supervision of financial institutions in this context and Dieter Wemmer (CFO, Allianz SE) highlighted some of the consequences for insurance companies that carry a considerable interest change risk.

The current special issue of the ifo DICE Report includes key arguments from these discussions in short essays by the high-level participants of the conference. From our perspective, the conference and these essays make clear to us that the European debt crisis is more

Kai A. Konrad
Max Planck Institute for Tax Law and Public Finance.

Jörg Rocholl
ESMT Berlin.

than a financial crisis. It is a deep crisis of the whole system of a common currency in Europe. It reveals that the European Currency Union was not a well-designed system – along some dimensions that were not at the forefront of criticism when the euro system was designed. The crisis management also raises serious doubts over whether the institutional changes to the system that occurred in recent years are suitable to make this system work better. In this respect, the conference highlights the importance of a research program that considers alternatives that are both economically desirable and politically viable.

Gerhard Rösl and Karl-Heinz Tödter

The Financial Repression Policy of the European Central Bank: Interest Income and Welfare Losses for German Savers[1]

INTRODUCTION

In the aftermath of the global financial and economic crisis, the ECB became deeply involved in activities aimed at stabilizing the financial system, over-leveraged banks, and over-indebted governments. This article addresses the costs of these monetary policy measures, which heavily exceed the typical distributional side effects of conventional monetary policy during a "normal" business and interest rate cycle. The empirical estimates presented refer to Germany.

THE BREAKDOWN OF THE FISHER-EFFECT AND THE FINANCIAL REPRESSION TAX IMPOSED BY THE CENTRAL BANK

As is well known, anticipated changes in inflation rates lead to corresponding or even proportional changes (Fisher-effect) in nominal interest rates in future savings contracts. However, since 2010 when the ECB intensified its bail-out operations in order to avoid bankruptcy in Greece, the Fisher-effect has evidently been distorted even for a prolonged time, as Figure 1 illustrates.

In a financial environment of excessive liquidity in the money (interbank) market, undercapitalized banks, and subdued credit demand on the part of the private sector, the main traditional channel of monetary policy may be clogged. Although commercial banks are still willing to absorb large quantities of base money (BM) provided by the central bank, no significant increase in credit granted to the non-bank sector will take place and, as a result, there will be no marked increase in (the growth rate of) money supply (m), i.e., no increase in non-bank liquidity, and no considerable increase in demand in the goods market. Neither CPI-inflation rates (π) nor nominal market interest rates (i) increase, as depicted in Figure 2.

By contrast, unless hoarding occurs, asset prices will increase, resulting in corresponding decreases in nominal interest rates in the capital markets. The losses of interest income, or even the erosion of the substance of savings due to artificially suppressed interest rates, can be interpreted as a special form of tax on financial assets imposed by the central bank ("financial repression tax"[2]).

TAXES ON SAVINGS AND THE PORTFOLIO REAL INTEREST RATE

However, the financial repression tax is not the only tax imposed on financial funds. Let us consider the case of a private household with financial assets worth of K_0 of which share $\beta = B_0/K_0$ is invested in interest bearing bonds B_0 and the rest in (non-interest bearing) money[3] M_0:

$$K_0 = B_0 + M_0 \quad (1)$$

After one period the household earns an average real (net) interest rate (r) on its financial portfolio to the amount of:

$$r = \frac{K_1}{K_0} - 1 = \frac{i\beta(1-\tau) - \pi}{1+\pi} \quad (2)$$

At a given portfolio structure β, a politically-intended reduction in the real portfolio (net) interest rate can principally be achieved by imposing three types of taxes on savings:

1. Increase in the tax rate of capital yields τ (capital yields tax, CYT)
2. Increase in the (CPI-) inflation rate π (inflation tax, INFT)
3. Decrease in the nominal interest rate on bonds (financial repression tax, FRT)

THE FISCAL VIEW: LOSSES OF INTEREST INCOME

In order to assess the effects of such a policy, we analyze three time periods:

1. Period A: 1992:1 to 1998:12 (Bundesbank regime)
2. Period B: 1999:1 to 2009:12 (ECB regime)
3. Period C: 2010:1 to 2014:12 (ECB low interest rate regime)

As the starting point of ECB's low interest rate regime we choose January 2010, when massive payments and the credibility problems of Greece became apparent and led to a first so called "rescue package" in May 2010 in order to avoid the official bankruptcy of the Greek government. Table 1 shows the corresponding data for the nominal interest rate, inflation rate and the real portfolio interest rate in the respective periods.

Interestingly, the change of the monetary responsibility from the Deutsche Bundesbank (period A) to the ECB (period B) did not alter the real portfolio interest rate of a representative portfolio of a German household in the first ten years after 1999. But this is not true as of 2010 onwards. Note that in period B and C the inflation rate remained unchanged, while nominal interest rates declined severely. Taking into account

Gerhard Rösl
University of Applied Sciences – OTH Regensburg.

Karl-Heinz Tödter
Deutsche Bundesbank.

[1] This paper is a simplified version of the paper entitled "The Costs and Welfare Effects of ECB's Financial Repression Policy: Consequences for German Savers" by Gerhard Rösl and Karl-Heinz Tödter (2015) and was presented at the Conference "The Price-Stability-Target in the Eurozone and the European Debt Crisis" held at the European School of Management and Technology in Berlin, 28 September 2016. Comments and suggestions by several conference participants are gratefully acknowledged.

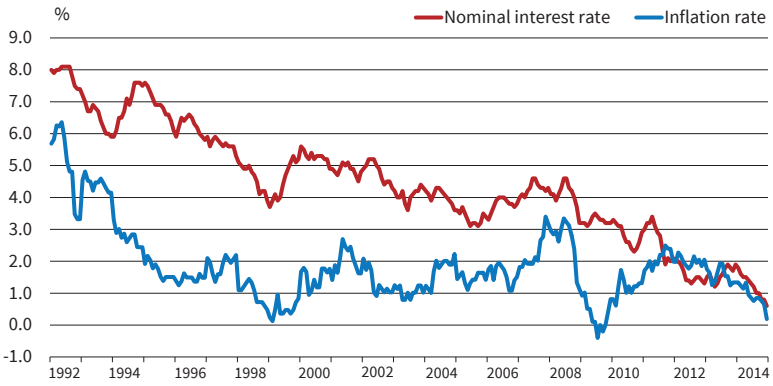
[2] Cf. among various others McKinnon (1973), Reinhardt (2012).

[3] Cf. Rösl (2014). As this study focuses on the influence of nominal and real interest rates by economic policy makers, we do not consider investment in stocks.

Figure 1

Nominal interest and inflation rates

Monthly data

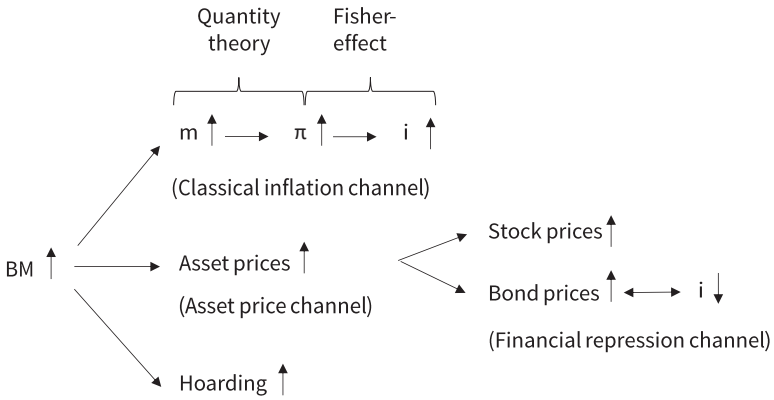


Note: Yield on public debt securities outstanding with an average maturity of 9–10 years. Consumer prices adjusted to calendar and seasonal effects.

Source: Deutsche Bundesbank. © ifo Institute

Figure 2

Transmission channels of base money



Source: The authors.

Table 1

Government bond yields and inflation rates in Germany

Period		A 1992–98	B 1999–2009	C 2010–14
Nominal interest rate*	i	0.064	0.042	0.020
Inflation rate**	π	0.026	0.015	0.015
Real portfolio interest rate***	r	0.011	0.010	-0.004

* Yield on public debt securities with average maturity of 9-10 years. ** Consumer prices adjusted to calendar and seasonal effects. *** Average real rate of return of portfolio after taxes.

Source: The authors.

that the capital yields tax rate also did not change during that period of time, the resulting reduction in the real portfolio interest rate since 2010 is clearly solely due to the financial repression policy of the ECB.

Table 2 shows the losses of interest income due to the three principle types of taxes: capital yield tax (CYT), inflation tax (INFT) and financial repression tax (FRT) in the "normal ECB regime" (period B) and the low interest rate regime of the ECB (period C). In order to separate the contributions of the different types of taxes, we start with a hypothetical base-scenario in which the nominal interest rate is set to 2.7% pa, being equivalent to the real interest rate on government bonds in the period 1999 – 2009. No capital yields taxes (τ) and no inflation (π) shall exist. According to the flow of funds statistics for Germany in 2013, the financial assets of German households add up to 5,000 billion EUR (K) and the share of interest bearing assets was 0.8 (ß).[4] In the next scenario, denoted CYT, we introduce a capital yields tax of $\tau = 0.264$ on nominal interest income.[5] In scenario CYT+INFT, inflation is introduced at a rate of $\pi = 1.5\%$ pa and, in line with the Fisher-effect, the nominal interest rate is increased to i = 4.2% pa. Both rates now correspond to their respective averages in the reference period B. In the low interest rate scenario CYT+INFT+FRT, in line with the observed averages in period C, the nominal interest rate is suppressed by the central bank to i = 2.0% pa, while the inflation rate remains at $\pi = 1.5\%$ pa.

Since 2010 German savers have faced a total sacrifice on interest income worth roughly 124 billion EUR per year. About half of this amount is due to the low interest rate monetary policy of the ECB (64 billion EUR), accounting for more than capital yields tax (28 billion EUR) and inflation tax (32 billion EUR) taken together.

WELFARE LOSS AND EXCESS BURDEN IN AN OLG MODEL

The foregone interest income calculated for German savers is not informative as far as the possible welfare losses for German households as a whole are concerned, since they do not take into account the reduction in the interest expenses of debtors in the economy, particularly on

[4] Currency in circulation and bank deposits as a percentage of total financial assets of the private household sector in Germany (average: 2008–2013); Cf. Deutsche Bundesbank (2014), p. 46.

[5] This rate results from the current German flat rate tax on capital income of 25% plus a 5.5% "solidarity surcharge" on capital yields.

Table 2

Loss of interest income due to different taxes (per year)

Period				B 1999–2009	C 2010–14
Types of taxes imposed		Base	CYT	CYT + INFT	CYT + INFT + FRT
Capital yields tax rate	τ	0	0.264	0.264	0.264
Inflation rate**	π	0	0	0.015	0.015
Nominal interest rate*	i	0.027	0.027	0.042	0.020
Real portfolio interest rate***	r	0.022	0.016	0.010	-0.003
Cumulated loss of interest income	€bn	0	28	60	124
			CYT	INFT	FRT
Additional loss of interest income	€bn		28	32	64
	ß=0.8; K = 5,000 €bn				

* Yield on public debt securities with average maturity of 9-10 years. ** Consumer prices adjusted to calendar and seasonal effects.
*** Average real rate of return of portfolio after taxes.

Source: The authors.

the part of the government sector.[6] To analyze the net welfare consequences, we use a simple overlapping generation model (OLG)[7] and we refer here to the same types of taxes (CYT, INFT, FRT) as before. With just two parameters, the OLG model is calibrated very parsimoniously: Generation length is set at T = 30 years and the discount rate of future consumption is set at 3% pa. The average values of the variables shown in Table 2 remain unchanged. Here, however, we do not reduce the nominal interest rate in the low interest rate scenario since 2010 by 2.2 pp. This would be reasonable if the low interest rate policy lasted for a whole generation. Erring on the side of caution, however, we assume that the low interest rate regime will continue for 11 years, from 2010 to 2020, until monetary policy returns to normal. In the OLG model, an interest rate decrease of 2.2 pp over 11 years is equivalent to a decline of 0.8 pp (from 4.2% to 3.4% pa) over a full generation.

Table 3 summarizes the corresponding welfare consequences. Accordingly, the capital yields tax creates a loss in consumer surplus (CS) of 4.8% of labor income. Adding inflation increases the loss in CS to 10.1% and the additional financial repression tax since 2010 increases the loss in CS to 14.1% of labor income, whereas government revenues from capital yield taxes, inflation tax and financial repression tax gradually increase to 11.1% of labor income. As a net effect, the deadweight loss (DWL) of taxing capital yields amounts to a moderate 0.4% of labor income. Adding inflation increases the DWL to 1.6%. Finally, financial repression due to subdued interest rates increases the excess burden to a sizeable 3% of labor income.

Relating these figures to German GDP data (around 2,700 billion EUR in 2013); the corresponding DWL is equivalent to 10 billion EUR in scenario CYT. Adding inflation in scenario CYT+INFT creates an additional excess burden of 33 billion EUR and a further financial repression tax on top (Scenario CYT+INFT+FRT) generates an additional excess burden of 37 billion EUR. By the way, if the regime of financial repression persisted over a full generation, the welfare loss would skyrocket to 123 billion EUR annually.

As Table 3 also shows, if the capital yields tax rises by one euro, an excess burden of nine cents is created. By contrast, government revenue raised by the inflation tax is comparatively more expensive: every euro of revenues creates an excess burden of 30 cents. By far the most inefficient way to boost government revenues is by suppressing interest rates. Every euro that reduces the interest bill of the government loads consumers with an excess burden of 53 cents. Here, an effect emphasized by Martin Feldstein is revealed most clearly: a distortion of the intertemporal allocation of consumption and savings (interest rate repression), which comes on top of already existing distortions (capital yields tax, inflation tax), creates a welfare loss that is by no means negligible any more. In other words, the small Harberger triangle of welfare economics turns into a large trapezoid.[8]

SUMMARY: SUBSTANTIAL COSTS AND WELFARE LOSSES OF LOW INTEREST RATE POLICY

Due to the low interest rate policy pursued in the euro area since 2010, German savers have lost an estimated interest income of around 65 EUR billion per year. However, this figure overstates the true burden, as this calculation does not take into account the relief cashed in by (mainly public) debtors due to cheaper net borrowing costs. Both aspects are an integral part of our analysis employing an overlapping generation model. According to our calculations, the monetary policy of ultra-low interest rates that has been conducted by the ECB since 2010 still imposes on Germany alone an additional excess burden of 37 billion EUR per year.

6 For the sake of simplicity in the model, we assume that the group of debtors only consists of the public sector. This assumption does not change the results in principle; see Feldstein (1999), Tödter and Ziebarth (1999) and Tödter and Manzke (2009), who used similar models to calculate the costs and benefits of disinflation.

7 For technical details see Rösl and Tödter (2015) and the groundbreaking work of Samuelson (1958).

8 Cf. Harberger (1964) and Feldstein (1999), p. 14.

Table 3

Welfare consequences due to different taxes on savings

Period				B 1999–2009	C 2010 –2014
Types of taxes imposed		Base	CYT	CYT + INFT	CYT + INFT+ FRT
Loss in consumer surplus (%)	CS		4.79	10.13	14.08
Government revenue (%)	TX		4.41	8.53	11.12
Deadweight loss (%)	DWL		0.38	1.60	2.96
Deadweight loss	€bn	0	10	43	80
Additional deadweight loss	€bn		10	33	37
Marginal tax inefficiency	Δλ Δλ = ΔDWL /ΔTX		0.09	0.30	0.53

Source: The authors.

ACKNOWLEDGEMENTS:

Helpful comments from Franz Seitz and Gerhard Ziebarth are gratefully acknowledged without implicating them for any remaining shortcomings. We would also like to express our thanks for the support given by "Aktionskreis Stabiles Geld".

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Francesco D'Acunto, Daniel Hoang and Michael Weber

The Effect of Unconventional Fiscal Policy on Consumption Expenditure[1]

The Euro area faces zero inflation paired with low economic growth, at a time when the effective lower bound on nominal interest rates and large budget deficits are constraining conventional monetary and fiscal policy. In this article, we discuss the theoretical and empirical evidence on unconventional measures of fiscal policy that increase inflation, spur economic growth, and keep the tax burden on households constant without inducing budget deficits.

Over six years after the end of the Great Recession in the US, most major developed economies are still showing sluggish growth, and southern European countries are suffering from austerity measures. Many experts argue that structural reforms are necessary to improve the competitiveness of these countries in the long run. But promoting a short-run increase in aggregate demand is also necessary to jump start the economy.

In his Marjolin lecture on February 4, 2016, the president of the European Central Bank, Mr. Mario Draghi, asserted, "…there are forces in the global economy that are conspiring to hold inflation down." (Draghi 2016). According to Eurostat, the annual inflation rate for the Euro area was -0.2 percent in February 2016 (Eurostat 2016). On March 10, 2016, the ECB board agreed upon a set of largely unconventional monetary policy measures, with the aim of boosting inflation and growth in the Euro area. These measures were inspired, among others, by thoughts in Bernanke (2010) and Blanchard et al. (2010). The debate on the effectiveness and the costs and benefits of these measures is still ongoing.

The conundrum facing the Euro area is how to find a recipe to support inflation, and ultimately consumption, and economic growth in a setting in which traditional monetary policy measures are not viable, and governments cannot support growth with fiscal spending because of their large debt-to-GDP ratios. In this article, we discuss an alternative to monetary interventions, which we call *unconventional fiscal policy*. Unconventional fiscal policy aims to increase growth and inflation in a budget-neutral fashion, while keeping the tax burden on households constant through pre-announcements of VAT increases. Announcements of future VAT changes are also a salient policy measure for generating inflation expectations, which could be an additional advantage compared to unconventional monetary policy and traditional fiscal policy (see D'Acunto et al. (2017) for a discussion on the relationship between salience of consumer prices and inflation expectations).

[1] This article summarizes the findings in D'Acunto, Hoang and Weber (2016) and a related post which appeared on VoxEU.

UNCONVENTIONAL FISCAL POLICY

Feldstein (2002) introduced the notion of unconventional fiscal policy measures at times of liquidity traps. Among several possible interventions, he proposed a series of pre-announced increases in value-added tax (VAT) to generate consumer price inflation, and hence increase private spending via intertemporal substitution. In his words: "This [VAT] tax-induced inflation would give households an incentive to spend sooner rather than waiting until prices are substantially higher." The intuition for this proposal is based on a simple logic: announcing a path of increasing VAT mechanically will increase future prices and current inflation expectations. Higher inflation expectations at times of fixed nominal interest rates should reduce real interest rates (Fisher equation), and lower real interest rates should increase households' incentives to consume rather than save (Euler equation). Because higher taxes reduce households' wealth and might affect households' labor supply, lower income taxes (or transfers for those households that do not pay any income tax) should accompany the increase in VAT. Designed this way, the policy measure would be budget-neutral for the government, as well as for households. It would incentivize households to consume immediately, jumpstart the economy, and hence help it to pull out of recession. In his presidential address to the 2011 American Economic Association Annual Meeting, Bob Hall reiterated Feldstein's ideas, and encouraged further research into the viability and effects of unconventional fiscal policy, both theoretically and empirically. In the United States, the proposal of announcing a national sales tax to take effect on a specified date in the future to speed up recovery at times of economic downturns has been advanced at least back in 1991, in an op-ed for the New York Times by Matthew Shapiro (Shapiro 1991). In Shapiro's words, "How would such a proposal work? […] Consumers, anticipating the tax increase, would accelerate their purchases, particularly of durable goods. This would stimulate the economy immediately, though there would be no immediate direct impact on the deficit."

THEORETICAL UNDERPINNINGS OF UNCONVENTIONAL FISCAL POLICY

Discretionary fiscal policy is often rejected as a tool for business cycle stabilization. It is less desirable than conventional monetary policy due to implementation lags, larger permanent deficits resulting in higher long-term interest rates and distortionary future taxes, and higher marginal propensities to save out of a temporary tax cut (i.e., lower (old) Keynesian multipliers). At the same time, fiscal policy might stimulate demand at times when conventional monetary policy is not viable.

Francesco D'Acunto
University of Maryland.

Daniel Hoang
Karlsruhe Institute of Technology.

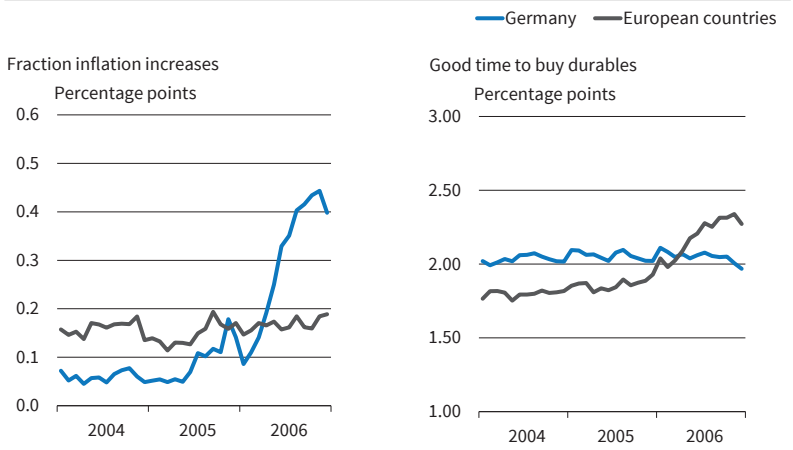
Michael Weber
University of Chicago.

Feldstein (2003) stresses that discretionary fiscal policy does not need to rely on questionable income effects, but could fully operate through an intertemporal substitution channel by increasing private incentives to spend. Higher inflation expectations lead to higher consumer spending today. Unconventional fiscal policy can be expansionary and, at the same time, avoid budget deficits.

Farhi et al. (2013) formalize Feldstein's ideas in a framework with a binding zero lower bound on nominal interest rates. An increasing path of consumption taxes and a decreasing path of income taxes generate inflation expectations and negative real interest rates and stimulate consumption, but do not distort the production decisions of firms. They find these policies can fully offset the zero lower bound constraint without relying on inefficient commitments of low future interest rates or wasteful government spending.

Figure 1

Inflation expectations and readiness to spend on durables: German vs. foreign households



Source: The authors.

EMPIRICAL EVIDENCE ON UNCONVENTIONAL FISCAL POLICY

In a recent paper (D'Acunto, Hoang and Weber 2017), we test for the effect of unconventional fiscal policy on households' willingness to purchase durable goods by exploiting a natural experiment in Germany. In November 2005, the newly formed German government unexpectedly announced a three-percentage-point increase in VAT, effective as of January 2007. Two features make this announcement suitable for testing the effect of unconventional fiscal policy compared to other changes in VAT. Firstly, the European Union (EU) imposed the announcement on the German administration to avoid an infringement procedure for the breach of the Maastricht Treaty. The VAT increase was therefore unexpected and unrelated to prospective future economic conditions, and qualifies as an exogenous tax change due to inherited fiscal deficits in the taxonomy of Romer and Romer (2010). Secondly, Germany had no monetary sovereignty as a member of the European Monetary Union. The European Central Bank explicitly excluded any increase in nominal interest rates to counteract the price pressure from a higher VAT in Germany.[2]

As expected, the announcement of the VAT increase was a major positive shock to German households' inflation expectations, but the VAT announcement affected all German households. We cannot study the behavior of German households alone, because a counterfactual is missing. To construct a viable counterfactual to German households' behavior after the shock, we look at households in other EU countries for which we obtained micro data (France, Sweden and the United Kingdom). Our empirical design uses matched households in EU countries not exposed to the VAT shock as a control group for German households. We match German and foreign households based on observables to ensure no systematic differences in the demographic composition of German and foreign households drive the results.

A concern is that these households might not behave similarly to German households. Figure 1 provides evidence that foreign households behaved similarly to German households before the shock in November 2005.

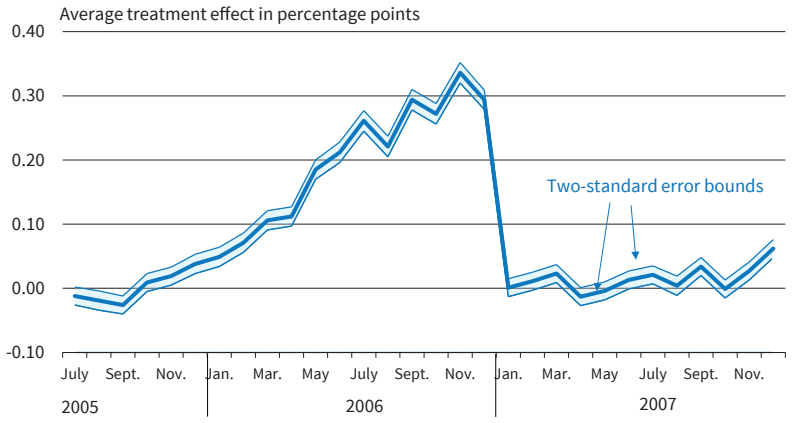
We construct a difference-in-differences identification strategy. We compare the willingness to purchase of German households with that of foreign households, both before and after the VAT shock. To run the analysis at the household level, we match German households with similar foreign households before the announcement of the VAT increase in November 2005. The matching is based on the propensity score, estimated with observables that are homogenously elicited across countries through the harmonized questionnaire of the EU Directorate General for Economic and Financial Affairs. We test formally that German and foreign households are indistinguishable across the matched observables after the matching.

In January 2006, German households were 3.8 percentage points (s.e. 1.5 percentage points) more likely to be willing to purchase durable goods than before the shock, and compared to the matched foreign households. The effect built up in 2006. Figure 2 reports the size of the monthly estimated effect over time. The effect peaked at 34 percentage points in November 2006. The average treatment effect dropped to zero in January 2007 once VAT actually increased and higher inflation materialized. A back-of-the-envelope calculation suggests the three-percentage-point increase in VAT resulted in 10.3 percent higher real durable consumption growth.

[2] In the words of the president of the Bundesbank at the time, Mr. Axel Weber: "We know what the effects of the VAT increase are; as is the case for oil prices, we do not consider one-off effects."

Figure 2

Change in the readiness to spend on durables: German vs. foreign households



Source: The authors. © ifo Institute

In a large class of models, changes in VAT might affect households' decisions to purchase durable goods through income or wealth effects, rather than inflation expectations. We show that German households' income expectations did not change after the government announced a change in VAT, and hence income effects cannot explain our results. As for wealth effects, changes in non-distortionary taxes do not change household behavior under Ricardian equivalence. If Ricardian equivalence fails, a tax increase results in a negative wealth effect, which would suggest our design identifies a lower bound of the true effect. Inflation expectations might also affect consumption decisions through a redistribution channel in state-of-the-art heterogeneous-agent models. We argue in D'Acunto, Hoang and Weber (2016) that a sizable redistribution channel is unlikely in our setting. We also argue that housing-wealth effects and uncertainty channels are unlikely drivers of our results.

WHAT SHOULD THE ECB AND EUROPEAN GOVERNMENTS DO?

The theoretical and empirical research discussed above has clear-cut implications for policy makers. These implications are especially relevant at times of low inflation and low growth, paired with the non-viability of conventional measures of monetary and fiscal policy, as is currently the case in the Euro area. A series of pre-announced VAT increases and a simultaneous reduction in income taxes – or direct transfers for those households that do not pay income taxes[3] – would result in a predictable increase in inflation without inducing additional uncertainty. They would increase consumer spending and hence growth today, and would not lead to higher budget deficits, all while keeping the total tax burden of households unaffected. Ideally, the last of the series of increases in VAT becomes effective after the end of the liquidity trap once conventional monetary policy has regained power. The governments should reverse the tax changes during normal economic times to keep the gunpowder dry for the next economic slump. The reduction in VAT after the end of the liquidity trap could result in an additional boost in consumer spending.

These measures should be easier to implement in a consensus-based institutional setup like the current European Council compared to other fiscal and monetary proposals. They could satisfy both the instances of Central and Northern European countries, which do not want to tolerate higher budget deficits in the Euro area, as well as the instances of Southern countries, which want to exploit fiscal policy to spur growth without further increasing the high tax burden on households. The fact that these measures do not involve further monetary stimulus or negative interest rates, but open a path to future interest rate increases, means that they would not be opposed by the banking, corporate and household sectors of Central European countries.

If Mr. Draghi wants to counteract the "forces that are conspiring to hold inflation down," Euro area governments and the European Council might be his best allies after all.

[3] European governments have implemented direct transfers to selected groups of taxpayers and non-taxpayers in the last few years, which were not counteracted by higher VAT taxes to neuter their effect on the government budget (e.g., see the "Renzi bonus" in Italy).

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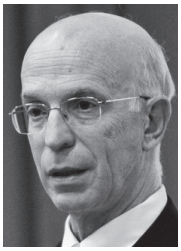
Alan Blinder, Michael Ehrmann, Jakob de Haan and David-Jan Jansen

Monetary Policy after the Crisis



Alan Blinder
Princeton University.

Michael Ehrmann
European Central Bank.

Jakob de Haan
De Nederlandsche Bank, University of Groningen, and CESifo.

David-Jan Jansen
De Nederlandsche Bank.

TRANSITORY OR PERMANENT CHANGES IN MONETARY POLICY?

A key question today is to what extent changes in monetary policy introduced during the financial crisis will prove to be temporary, or whether we are seeing permanent changes in the practice of monetary policy. In Blinder et al. (2016), we aim to shed light on this question by discussing four themes: the mandate for monetary policy, the instruments, the role of communications and the place of the central bank within government. We discuss insights from academic research on these themes and present the results of two surveys of 55 central bank governors and 159 academics which we conducted between February and May 2016.[1]

The financial crisis has transformed monetary policy in various countries, which is most clearly shown by the range of unconventional instruments deployed, such as asset purchase programs, forward guidance and negative interest rates. The severity of the crisis and the resulting urgency to act did not leave much time to weigh up the pros and cons of different options. Necessity was often the mother of invention. We conclude that many of these changes are here to stay and expect future monetary policy to be more often based on a broader central bank mandate. Furthermore, the central bank's toolbox will contain a broader range of instruments than before the crisis, in which communications play a key role. Increasing erosion of central bank independence cannot be ruled out.

THEME 1: BROADER MANDATES, ALSO IN NON-CRISIS COUNTRIES

Broader central bank mandates appear to be gaining support. A majority of the respondents indicated that the crisis had caused them to reconsider the central bank mandate, central bankers (62 percent) even more so than academics (54 percent). Central bankers whose countries were affected by the crisis in particular have reconsidered the mandate. Thinking, however, has changed more broadly: central banks in non-crisis countries, for instance, are also likely to have reconsidered their mandate. The underlying tendency reveals that respondents particularly favor widening the mandate to include financial stability; a preference expressed, remarkably, to the same extent among countries not directly hit by the crisis. This represents a fundamental shift from the pre-crisis consensus that central banks should primarily aim for price stability.

THEME 2: BROADER RANGE OF INSTRUMENTS

In quite a few countries, the crisis does not seem to have affected the basic approach to monetary policy in a drastic way. This is clearly illustrated by the fact that 70 percent of central bank governors did *not* consider using interest rates near zero, negative rates, or quantitative easing (QE) in any form. In that sense, the world of central banking has not changed nearly as much as concentrating on the Fed, the ECB, the Bank of England, and the Bank of Japan, or, for that matter, on the academic literature, might indicate.

Opinions on the future use of these unconventional monetary policy instruments differ. For example, there is far from any consensus on the future use of QE. Some 21 percent of central bankers believe purchasing government bonds should *not* be a routine instrument in the future, whereas nearly 40 percent think it is too early to make a call. Academics are more positive, as 68 percent believe that purchasing government papers should remain an option.

Similarly, opinions on the use of negative interest rates differ. Only 22 percent of central bank governors wish to keep this option, whereas over half think it is too early to say. Again, academics are more unanimous: 53 percent would leave the option open of using negative interest rates in the new normal.

The only common ground between central bankers and academics is the use of macro-prudential instruments. In line with wider mandates, three quarters of respondents – both central bankers and academics – are of the opinion that these instruments must continue to be available.

Lastly, a notable aspect is that central bank governors who deployed an instrument previously are keener to keep it for future use should the need arise. The likelihood of a positive assessment of QE (using government papers) is 25 percentage points higher if a central bank governor has used the instruments (Table 1, column 3).

THEME 3: EVEN MORE COMMUNICATIONS ABOUT MONETARY POLICY

It was evident before the crisis erupted that communications play a key role in monetary policy (Blinder et al. 2008). Our surveys show that the importance of communications increased further during the crisis. Over 80 percent of the central bank governors stated that they intensified communications during the crisis. Roughly half indicate that they plan to keep using communications, and 20 percent state that they will even step up communications.

Probably the best-known example of communications during the crisis is the "whatever it takes" speech of Mario Draghi in July 2012, but communications increased on a much larger scale. For example, the Fed-

[1] The academics are members of renowned research networks (NBER and CEPR). Most respondents are from the United States, the United Kingdom and the euro area.

Table 1

Effect of use of instruments on their positive assessment

	1	2	3	4	5	6
	Low interest rates	Negative interest rates	QE using government papers	QE using other assets	Macroprudential instruments	Forward guidance
Increase in likelihood of positive assessment	41 *	17	25 *	15	40 *	43 *

Note: Marginal effect (in percentage points) for probit model in which a (0, 1) variable based on responses from central bank governors was the dependent variable. Based on 55 observations. * = significant at the five percent level.

Source: The authors.

eral Reserve and the Bank of Japan both announced formal inflation objectives in early 2012. The Fed also started hosting press conferences following interest rate decisions, the Bank of England decided to disclose the minutes of monetary policy meetings sooner and the ECB began to publish its monetary policy accounts in early 2015.

Probably the most complex form of communications, forward guidance, became more prominent after the initial lower limit of nominal policy rates had been hit, helping to steer rates by managing expectations. Roughly half of the central banks in our sample say they used some form of forward guidance during the crisis. Those who used it are 43 percentage points more likely to assess this instrument positively (Table 1, column 6). A clear consensus is still lacking, however, on the exact form that forward guidance should ideally take. The biggest group of central bankers (39 percent) prefers qualitative forward guidance, but around a quarter tends to make it dependent upon incoming economic data (data-based or state-contingent forward guidance). Again, consensus is far higher among academics, with nearly 70 percent opting for data-based guidance.

THEME 4: CHANGING CENTRAL BANK INDEPENDENCE?

During the crisis, central banks in many countries faced increasing criticism. Nevertheless, our respondents indicate that central bank independence has remained unchanged to date. However, academics in particular are concerned about independence going forward. Almost 40 percent feel independence is jeopardized either "to some extent" or "to a great extent".

Central bankers are less worried about their independence, with over 70 percent indicating that their institution's independence over the next few years is a subject of no or minor concern. As our samples were not fully comparable, with most academics being from the United States, the United Kingdom and the euro area, we also made a comparison with central bank governors from advanced economies. This group of central bank governors, which makes for better comparison with academics, also states that independence is not a primary concern.

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Harald Hau and Sandy Lai

Local Asset Price Dynamics and Monetary Policy in the Eurozone

Harald Hau
University of Geneva and
Swiss Finance Institute.

Sandy Lai
University of Hong Kong.

With hindsight the debate over whether Europe constitutes an optimal currency area overlooked the elephant in the room. Following Robert Mundell's considerations, the expert debate in the 1990s focused on the question of whether Europe's capital and labor markets were sufficiently integrated to cope with different real shocks. Financial stability considerations and the fear that a common European monetary policy might endogenously trigger asymmetric financial boom and bust cycles in periphery countries did not feature in the debate and was not foreseen by the US critics of the common European currency either.

Yet such a financial cycle has morphed into the most profound challenge facing the Eurozone: an initial boom triggered by excessively low real rates inflated real price and wage levels in periphery countries, created a debt overhang problem, and engendered the massive transformation of private debt into public debt with joint liability among Eurozone countries. The resulting low growth, mass unemployment and potentially large fiscal transfers all undermine the political legitimacy of the common currency project.

This short article summarizes new evidence on how low real rates in some Eurozone countries encouraged risk-taking on the part of households, created capital flows from low-risk money market funds into riskier equity funds, and inflated equity prices. We highlight that the segmentation of the European equity market is an important element of the asymmetric transmission of monetary policy: we show that monetary policy that is too expansionary for a Eurozone country generates local equity fund inflows, largely boosts local asset prices, and thus magnifies the local boom; whereas an integrated capital market would distribute the inflationary effect over the equity market of the entire currency union.

ONE NOMINAL RATE, BUT MANY REAL RATES

A central bank controls the short-term nominal rate throughout the currency union. But differences in the local inflation rate imply that the real rate can be very different from country to country within the currency union. Figure 1, Panel A illustrates this heterogeneity of real short rates for eight Eurozone countries during the period from 2003 to 2011. Arguably more relevant for the risk allocation of households are the expected real short rates plotted in Figure 1, Panel B, which subtract household expectations of future inflation from the nominal rate. First differences of real rates shown in Panels C and D indicate considerable variation in monetary policy conditions across different countries within the Eurozone.

Did this local variation in monetary policy conditions trigger a corresponding variation in household risk-taking? In other words: is there a risk-taking channel of monetary policy? Europe's fragmented capital markets provide a unique way of addressing this question. Spanish investors mostly hold their financial assets with Spanish money market, bond, and equity funds, whereas the capital market investments of French or Austrian households are intermediated by French and Austrian funds, respectively. Using this association between household locations and fund locations, we can aggregate net flows into the local equity and money market funds as a measure of local household risk-taking for the eight Eurozone countries. We exclude Luxembourg, Belgium and Ireland from this analysis because their fund flows are more likely to be co-determined by non-residents or corporate investments (especially in Ireland).

IS THERE MORE RISK-TAKING IF THE REAL RATE DECREASES?

The correlation between decreases in the real short rate and the corresponding quarterly fund flows is indeed strong, as shown in Figure 2, Panel A. It is of considerable economic and statistical significance: a decrease in the real short-term interest rate by ten basis points predicts a quarterly equity fund inflow of about one percent of fund assets and a permanent inflow of about 1.4 percent. At the union level, this corresponds to an aggregate net equity inflow of 8.7 billion EUR. For money market funds, we find the reverse correlation of similar magnitude. This suggests that households shift their portfolios from riskless money market investments to high risk equity investments when faced with decreased local real rates.

DO HOUSEHOLDS REACT TO THE REAL SHORT RATE OR THE LOCAL BUSINESS CYCLE?

The risk-shifting behavior of households could plausibly be a response to the investment opportunities provided by the local business cycle. A booming local economy could simultaneously trigger higher inflation and thereby lower real rates and make local stock market investment more desirable. To remove this alternative channel, we identify local funds that predominantly invest in other countries, for example, a Spanish equity fund investing in UK equity. If the equity investments of Spanish households are driven indirectly by the Spanish business cycle, rather than by the local real short rate, we should see hardly any correlation between Spanish short rate changes and Spanish fund flows into funds with a foreign investment focus outside Spain. Figure 2, Panel B, shows that the equity flow sensitivity is similarly strong for those flows that are not destined for the local economy. This suggests that household risk-shifting towards risky equity investment is mainly

driven by changes in the local real short rate but not by return expectations related to the local business cycle. If investment opportunities related to the local business cycle were to have caused the local fund flows, we would expect Panel A and B to look very different.

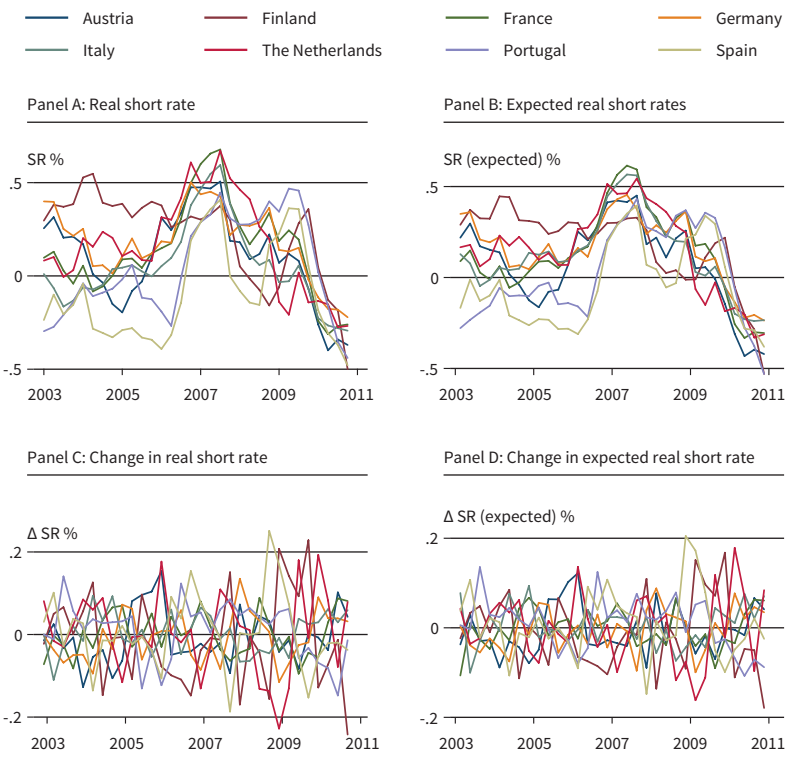
EQUITY PRICE INFLATION DURING THE FINANCIAL BOOM

The last and most controversial element of the puzzle concerns the distortion of asset prices over the boom and bust cycle. Equity prices influence the investment and employment policies of financially constrained firms (Hau and Lai 2013), and equity price inflation can therefore contribute to overinvestment. In order to investigate the asset price effect of equity fund flows, we divide the publically listed companies in each of the eight Eurozone countries into those investable by funds (with sufficient amount of equity publically traded) and those that funds consider non-investable because of a low amount of freely traded equity. Figure 3 marks investable stocks by red circles and the 20 percent least investable stocks by black crosses. Public investability is not strongly related to stock size and non-investable stocks exist in most industries. A measure of local equity price inflation can be constructed from the return difference between investable and non-investable stocks over the sample period.

To constrain the inference of asset price inflation driven by the monetary policy effect of real short rate variations, we use a system of two equations that jointly estimate the equity flow dynamics triggered by real short rate changes and the relationship between these estimated equity flows and the return difference of investable and non-investable stocks in each country.

Figure 1

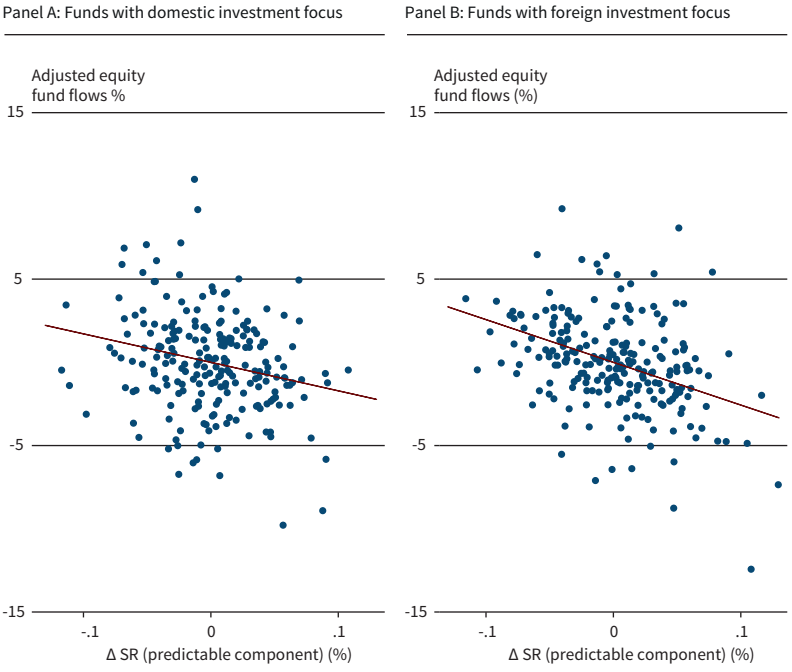
Cross-country variation of real monetary policy rates



Note: Plotted in Panels A and B are the quarterly real short-term interest rate (SR) and expected real short-term interest rate [SR (expected)], respectively, for each of the eight Eurozone countries in the period 2003/q1-2010/q4. Panels C and D plot the quarterly change of the real short rate (ΔSR) and the quarterly change of the expected real short rate [ΔSR (expected)].
Source: Hau and Lai (2016).

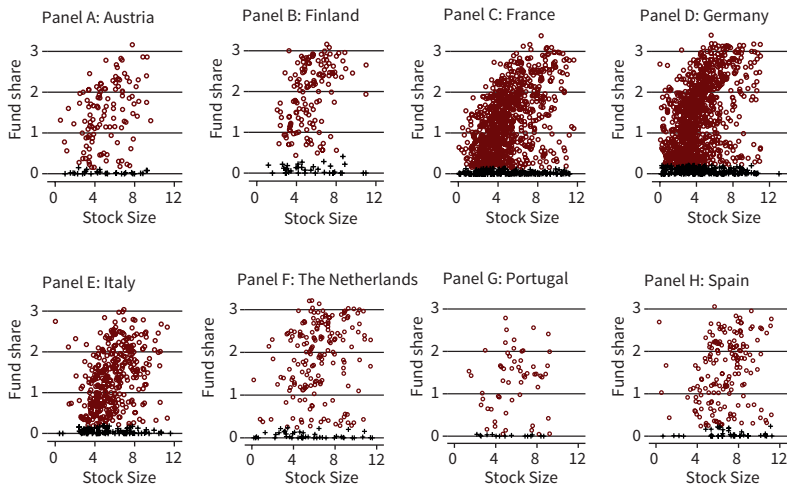
Figure 2

Equity fund flows and real short rate changes



Note: The figure shows the quarterly adjusted equity fund flows (from 2003/q1 to 2010/q4) for the eight Eurozone countries against the quarterly predicted change of their respective local real short-term interest rates (ΔSR). Panel A plots the flows for equity funds with a domestic investment focus; and Panel B, for equity funds with a foreign investment focus.
Source: Hau and Lai (2016).

Figure 3



Note: The aggregate fund ownership shares for stocks in eight Eurozone countries are plotted against the stock size (log scale). The 20% of stocks with the lowest fund ownership share in each country are marked by black crosses, and all other stocks are marked by red circles.
Source: Hau and Lai (2016).

We find that a ten basis point decrease in the local real short rate creates a two percent valuation gap between investable and non-investable stocks accounted for by equity inflows. We highlight that this represents an economically large effect. Assuming that the central bank varies its nominal target rate by a full percentage point, we would expect the union-wide asset price inflation to vary by 20 percent. Alternatively, a local inflation effect of one percentage point can inflate local stock prices by just as much. The corresponding income effect for households is likely to boost consumption, which can feed back into higher local inflation. The risk-shifting channel, combined with Europe's financial market segmentation, is therefore a powerful accelerator of asymmetric local boom and bust cycles.

THE ROLE OF FINANCIAL OPENNESS

As foreign investors are the sellers whenever variations in the local real short rate trigger equity inflows, a more internationally diversified target portfolio of local households helps to diffuse the equity price pressure. The average home bias of European household portfolio differs considerably and can be proxied by the share of the local market capitalization held by all domestic equity funds. If we give more weight to countries with more home bias in equity investment, we should expect to see a larger local equity price inflation for the same magnitude of real short rate decreases.

This intuition is indeed borne out by the data. Replacing equal weights for all eight countries by regression weights proportional to the equity share of local funds in the local market capitalization, we find that the equity inflation effect doubles. This means that for countries with a relatively closed equity market, a one-percentage-point variation in the real short rate explains variations in the aggregate equity market valuations of 40 percent.

CONCLUSION

A currency union such as the Eurozone sacrifices local monetary autonomy for the sake of capital mobility and fixed internal exchange rates. But the ensuing variation in local monetary policy conditions inside the currency union can give rise to financial instability, as argued in this summary of recent research. Bordo and James (2014) come to similar conclusions for the gold standard period, which saw a comparable trade-off. Financial market segmentation and home biases in investment magnify the financial stability risk in a currency union. The greater financial fragility of a large common currency area was not foreseen at the inception of the euro.

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Stephan Kohns

Monetary Policy and Financial Stability[1]

INTRODUCTION

Among many other issues, the global financial crisis brought to the fore the question of how monetary policy and financial stability interact – in both a positive and a normative way.

Understanding this relationship and its implications for monetary policy is an ongoing process, with many research questions and their policy implications still remaining open. To arrive at a first conclusion, it helps to recall the pre-crisis consensus and how the financial crisis challenged this consensus, before elaborating on what elements a reassessment of the role of financial stability for monetary policy could comprise.[2]

THE PRE-CRISIS CONSENSUS

The experience of the global financial crisis has brought the "monetary consensus" formed in the years prior to the crisis under scrutiny.

While the details of monetary policy differed notably across central banks, the primary objective under the pre-crisis consensus was price stability. Steering short-term interest rates was considered an adequate means of achieving this objective.

With the exception of Japan, the interest rate lower bound was deemed a theoretical curiosity of little practical relevance. Model-based forecasts of output and inflation played a prominent role in the monetary policy decision-making process. As capital markets were mostly assumed to be efficient under the consensus view, however, financial market imperfections and their potential macroeconomic effects were regularly left out of the forecasters' equations.

Although temporary disruptions such as asset price bubbles were considered possible, using interest rates to prick bubbles at an early stage – i.e. "leaning against the wind" – was thought to be too blunt an instrument to contain such disruptions, not to mention the difficulties of correctly predicting the onset of an asset price bubble in real time.

An inflation-targeting monetary policy was, therefore, supposed to follow two guiding principles regarding financial market developments: respond to asset price movements only if they affected the rather short-run inflation forecast, and intervene only once a financial crisis had occurred, minimising – or "mopping up" – the damage through vigorous interest rate cuts, and eventually through liquidity injections.

In addition, microprudential regulation and supervision – with their focus on individual financial institutions – were regarded as adequate means of preventing financial crises and ensuring financial stability, and it was feared that mingling monetary policy with financial stability objectives would dilute the target of price stability.

HOW THE FINANCIAL CRISIS HAS CHALLENGED THE CONSENSUS

Stephan Kohns
Deutsche Bundesbank.

With hindsight, the pre-crisis consensus led to excessive risk-taking in the financial system. The crucial triggering factor was not so much low interest rates *per se*, but expectations that the central bank would behave in a very specific way. The fact that monetary policymakers more or less explicitly promised to provide support in the event of a financial crisis encouraged the development of collective moral hazard. The role of monetary policy in encouraging, or at least facilitating such excessive risk-taking, was probably underestimated.

Furthermore, it became obvious that microprudential policy alone is not sufficient to guarantee the stability of the financial system as a whole, as it does not grasp potential systemic implications of developments at the level of the single institution. Additionally, the crisis has highlighted how financial instability undermines the central bank's capacity to safeguard price stability.

Hence, the stability of the financial system as a whole became a policy objective in its own right with its own instruments. Macroprudential policies – designed to target specific sectors of the financial system, rather than just focusing on individual financial institutions – are key to achieving this goal. The necessary instruments have been or are in the process of being made available.

HOW TO RECONCILE MONETARY POLICY AND FINANCIAL STABILITY

As regards the role financial stability considerations should play in the conduct of monetary policy, the interaction with macroprudential policy has several dimensions. In the long run, the two policy areas ultimately complement each other. In the short run, however, conflicts between monetary and macroprudential policy can arise, especially if the business and the financial cycles exhibit different frequencies.

For example, an expansionary monetary policy to stimulate inflation transmits, among other channels, through stimulating banks' lending activity. This conflicts with macroprudential policy if the financial cycle demands that lending activity be reined in. Such interactions imply that monetary policymakers – more so than before the crisis – have to make up their minds about the relationship between monetary policy and financial stability.

On the one hand, it seems clear that monetary policymakers have to take into account financial market

[1] Disclaimer: The views expressed do not necessarily reflect the opinions of the Deutsche Bundesbank.

[2] For a more comprehensive presentation of the arguments, including references, see Deutsche Bundesbank (2015).

developments, given the awareness of the existence of the risk-taking channel and the limited experience and knowledge available to date concerning the effectiveness of the new macroprudential instruments.

On the other hand, the interest rate instrument is blunt, and there could be risks to the credibility of monetary policymakers and the effectiveness of their policies in terms of ensuring price stability once they also take financial stability into consideration.

Depending on how much weight is assigned to these aspects, it is possible to arrive at quite different policy conclusions.

At one end of the spectrum lies what might be called the *idealised perspective*. From this point of view, monetary policymakers – while being fully aware of the impact that developments in the financial sphere have on the transmission mechanism and taking into account the possible effects of macroprudential policy – should remain focused on price stability. Macroprudential policymakers, on the other hand, should stay focused on financial stability and use their own toolkit to achieve that goal.

The idealised perspective is founded on the assumption that each policy area – especially the newly created area of macroprudential policy – is more or less fully capable of precisely and effectively reducing the key problems in its own sphere.

Furthermore, from this perspective, monetary policy contributes relatively little to the development of financial imbalances, which means that the risk-taking channel is viewed as being of secondary importance. Similarly, the policy rate is regarded as an ineffective tool for containing or avoiding risks to financial stability.

The key difference between the idealised perspective and the pre-crisis consensus lies essentially in establishing an effective and credible macroprudential policy. Monetary policy can then, as before, focus exclusively on the objective of price stability.

At the other end of the spectrum lies what might be called the *integrated perspective*. According to this view, the objectives of price stability and financial stability, and the instruments and transmission mechanisms of monetary policy and macroprudential policy, are so closely interwoven that both macroprudential and monetary policy instruments should be used to ensure financial and price stability at the same time. The risk-taking channel plays a notable role in the build-up of financial stability risks. Moreover, the intensive preventive contribution of monetary policy to ensuring financial stability is deemed necessary in order to protect credibility regarding the price stability objective. Such a perspective represents a radical departure from the pre-crisis consensus.

Within this spectrum, an intermediate position – which might be termed an *extended perspective* – may prove superior. The cornerstone of this view is that monetary policy fundamentally remains geared to price stability. The objective of financial stability is achieved primarily by macroprudential policy. However, it seems questionable whether an excessively pronounced financial cycle, and thus risks to financial stability, can be eliminated with macroprudential tools alone. Monetary policy, therefore, should not focus too narrowly on achieving a relatively short-term inflation target, but also take a longer-term perspective. In this way, monetary policy helps counteract the occurrence of undesirable developments in financial markets, which could spill over to the real economy and thus jeopardise price stability over the medium to long term.

The extended perspective suggests a "symmetrical" monetary policy stance over the financial cycle: a monetary policy stance that is not only eased aggressively during a marked downturn, but tends to be stricter in upswings, implying a less persistent expansionary policy stance following a period of economic downturn.

Although aggressive monetary policy action is specifically called for during business cycle downturns, the meat of crisis resolution lies in "repairing" the balance sheets in the private sector, which means, above all, eliminating the debt overhang. Monetary policy is only of limited help and less suited to this task; conducting a prolonged expansionary monetary policy could bring the risk-taking channel to bear and may therefore be counterproductive.

If a crisis occurs, despite a more symmetrical monetary policy stance and other preventive measures, micro- and macroprudential, structural and fiscal policies would play an important role in its resolution – and in creating the conditions that decrease the probability and scope of future financial crises.

All in all, an approach based on the extended perspective could have the potential to unify the objective of price stability in the medium term and the contribution made by monetary policy to financial stability and, hence, price stability in the longer term.

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Otmar Issing

Overburdened Central Banks[1]

INSTITUTIONAL OVERBURDENING

Over decades, if not centuries, the reputation of central banks has gone through ups and downs. The Great Moderation marked a period in which inflation came down from rather high levels. Growth and employment were at least satisfying and output variability declined substantially. Was this "goldilocks economy" the result of mere luck due to a decline in exogenous shocks (Stock and Watson 2003); or did it stem from improved macro policies, especially monetary policy (Romer and Romer 2002)? The jury is still out on this question. But this period nevertheless significantly enhanced the reputation of central banks and central bankers. It was almost inevitable that expectations regarding the future actions of central banks and their ability to control the economy reached an unprecedented peak as a result; a peak that was to prove unsustainable. The prestige enjoyed by central banks was further enhanced in the context of the financial crisis when the latter saved the world from a rerun of the Great Depression of the 1930s.

The latest Annual Report of the BIS (2016) presents a concise assessment: "And yet the extraordinary burden placed on central banking since the crisis is generating growing strains. During the Great Moderation, markets and the public at large came to see central banks as all-powerful. Post-crisis, they have come to expect the central bank to manage the economy, restore full employment, ensure strong growth, preserve price stability and foolproof the financial system. But in fact, this is a tall order on which the central bank alone cannot deliver. The extraordinary measures taken to stimulate the global economy have sometimes tested the boundaries of the institution. As a consequence, risks to its reputation, perceived legitimacy and independence have been rising" (p. 22).

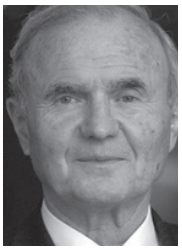
Disappointments with "politics" in general, combined with a loss of trust in politicians, helped to concentrate expectations on the competence of central banks. The crisis of the European Monetary Union (EMU) is a special case, which is characterized by the ECB being seen as the "only game in town". This phenomenon will be analyzed later.

TWO DIMENSIONS

"Institutional overburdening" has two dimensions: one arises from exaggerated expectations of what central banks can achieve ("expectational overburdening") – as explained by the BIS.

The other dimension is "operational overburdening" i.e., overloading the central bank with more and more responsibilities and competences. The biggest challenge is implied in the responsibility for financial stability. The financial crisis triggered an intensive discussion as to what extent central banks should be made directly responsible for financial stability and how they should act to deliver on this goal. A consensus has emerged that preserving price stability is not enough. As the phase of the Great Moderation demonstrated, huge risks to the stability of the financial sector can develop while low inflation is preserved. Following Minsky, a stable environment might even foster the build-up of financial fragility, ending in a collapse of the entire system.

Is there a trade-off between price stability and financial stability? This is the key question arising from the above consensus. While a short-term conflict cannot be excluded, there is no reason to sacrifice price stability over the medium to long term with the aim of fostering financial stability (Issing 2003). However, a central bank loses its reputation if it is perceived to have underestimated, or even neglected the challenge related to financial instability. This is basically true, almost independently of whether the central bank has an official/legal mandate in this field or not.



Otmar Issing
Center For Financial Studies – Goethe University Frankfurt.

THE ECB – A SPECIAL CASE

To date overburdening might be recognized to apply more or less to all major central banks. The ECB, on the other hand, is unique in the sense that it is the central bank of – in the meantime – 19 states. This arrangement puts the ECB in a special position that implies a kind of "extra institutional overburdening" which goes beyond the challenges identified above.

The establishment of the Single Supervisory Mechanism in 2014 extended the ECB's mandate, making it even more important than before. In the very short period of its existence conflicts between banking supervision and monetary policy have already emerged. This arrangement may negatively impact the behavior of financial intermediaries. The latter might be encouraged to take higher risks because they know that the supervisor does not want to lose its reputation and has the means to protect banks from running into serious trouble. However, taking responsibility for banking supervision also implies a substantial reputational risk.

An unprecedented degree of central bank overburdening has emerged in the course of the EMU crisis. This became obvious in May 2010 when the ECB started to take political responsibility by buying the government bonds of countries that would otherwise have experienced substantial increases in long-term interest rates. The ECB's action was widely interpreted as a kind of a guarantee for the membership of every country in EMU, as well as for the existence of the euro itself. This notion was driven to the extreme by the famous "whatever it takes" announcement by the ECB's president. Further monetary policy decisions by the ECB from which prob-

[1] A largely extended version will be published in International Finance. I am grateful to Sabine Kimmel for valuable comments.

lem countries and banks profited mostly support this view.

Decisions by the European Court of Justice and the German Constitutional Court in 2016 all in all have rejected the accusation that the ECB exceeded its mandate and violated the Treaty. It is difficult to understand the economic logic behind the legal argumentation. Mervyn King (2016), a prominent former central banker who is widely respected for his concise and well-founded observations, recently came out with this clear statement: "The proposal for outright monetary transactions is a transfer from countries that can borrow cheaply to countries that can't borrow cheaply. There's no point dressing it up with fancy language such as measures to improve the transmission mechanism of monetary policy. It's a straight transfer from countries that have credibility in their ability to run their public finances to countries that don't. From that perspective, it clearly violates the no-bailout clause of the European Treaty, and it runs completely counter to this vision of the monetary union" (King 2016, 47).

The more the policies of member states fail to fulfill their responsibility, the more the ECB is seen as the only institution within the EMU with the power and the ability to act, as well as the only body that disposes of the necessary instruments to do so. In this context it boils down to providing credit at low interest rates and buying government bonds to prevent the emergence of larger spreads in long-term interest rates. These actions undermine, and may ultimately destroy the functioning of financial markets as guardians of sound fiscal (and other) policies. As a result, member states can delay or even dismiss badly-needed reforms without the risk of losing credibility in the financial markets – at least for an extended period of time. The implicit and explicit strategy of the ECB has been to take additional expansionary monetary policy measures to compensate for missing structural reforms (Coeure 2016). The ECB has reacted to this criticism by emphasizing that it has no mandate to "punish" member states for a lack of structural reforms. But does the ECB have a mandate to suppress market reactions that would signal lack of confidence in national policies? Under these circumstances, how credible is the strong request for structural reforms in every Introductory Statement by the president repeated in testimonies to the European Parliament and in numerous speeches?

The perception of the ECB as the "only game in town" demonstrates an existential disequilibrium in the distribution of political power in EMU. It signals an extreme case of central bank overburdening in almost every respect – creating exaggerated expectations in its potential to solve all kind of problems, as well as assigning a political role for which a central bank has not, and must not have a mandate.

The extension of the ECB's tasks and its increasing political role will, and has already, triggered a debate on the legitimacy of such power given to an independent central bank in a democratic society. The irony lies in the fact that no matter whether the ECB's actions in the longer run prove successful or not, the status of its independence will be at stake anyway.

THREAT TO INDEPENDENCE

The status of the independence of central banks is increasingly being undermined by two developments. The first one arises from instruments with distributional consequences like cheap credit to special groups, banks or companies. It is true that any monetary policy decision will inevitably also have distributional consequences. These are normal side effects, whereas the instruments mentioned have direct, planned discriminatory effects. Decisions of this kind must remain in the domain of politics, which are ultimately controlled by voters, and cannot be the competence of an independent central bank.

The other conflict with the status of independence is implied in acts of coordination with fiscal policy. The more monetary policy measures are de facto an act of fiscal policy – see the case of the ECB – the more they are exposed to criticism that this does not comply with the central bank's status as an independent body. To the extent that the central bank yields to political pressure, independence might still exist "de jure", but is abandoned "de facto". This, in turn, leads to fiscal dominance.

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Stefan Homburg

Effects and Risks of Unconventional Monetary Policy

INTRODUCTION

During and after the Great Recession of 2008/09, the European Central Bank (ECB) adopted far-reaching measures, including reductions in the main refinancing rate, a long-term refinancing operation (LTRO), outright purchases of selected government bonds (SMP), and more generous collateral requirements. These actions resulted in a considerable increase in the monetary base, which peaked in 2012 and was reversed thereafter because LTRO expired gradually. In a second phase, which started in 2015 and is commonly referred to as quantitative easing (QE), the ECB provided a further round of bank loans (TLTRO) combined with central bank purchases of various assets such as covered bonds, asset backed securities and corporate bonds. The main component of this second phase, however, is the public-sector purchase program (PSPP), which consists of large-scale purchases of government bonds. After March 2015, the ECB's total monthly asset purchases amounted to 60 billion EUR; from March 2016 on this figure was increased to 80 billion EUR.

In the literature on this topic, monetary interventions during 2008-09 are largely uncontroversial; most economists agree with the view that the ECB acted as a lender of last resort during the financial crisis and the associated recession. This article attempts to evaluate the second phase, i.e., the QE program commencing in 2015, when no recession was in sight. From a theoretical perspective, the article considers possible reasons for and risks related to such unprecedented monetary measures. Its main conclusion is that QE has no notable benefits, but comes with considerable risks, mainly stemming from the deepened interaction of monetary and fiscal policy.

ECONOMIC EFFECTS OF QE

To provide some background, Figure 1 documents the evolution of the eurozone monetary base (high-powered money, H) between 2008 and 2016 and compares this with developments in the M1 money stock and the eurozone's nominal gross domestic product (NGDP). While expansionary monetary policies can take many forms (e.g., interest rate reductions, extensions of credit lines, or relaxation of eligibility terms), their common identifying element is an expansion of the central bank's balance sheet that represents an increase in the money base. Measuring the ECB's policy stance in this way, Figure 1 shows that monetary policy was moderately expansive until 2011, when the LTRO program started. Due to the fact that the bank loans granted through LTRO were limited to a maximum duration of three years, this expansion expired automatically. From 2015 onwards, however, the money base skyrockets, and there is no end to its expansion in sight yet.

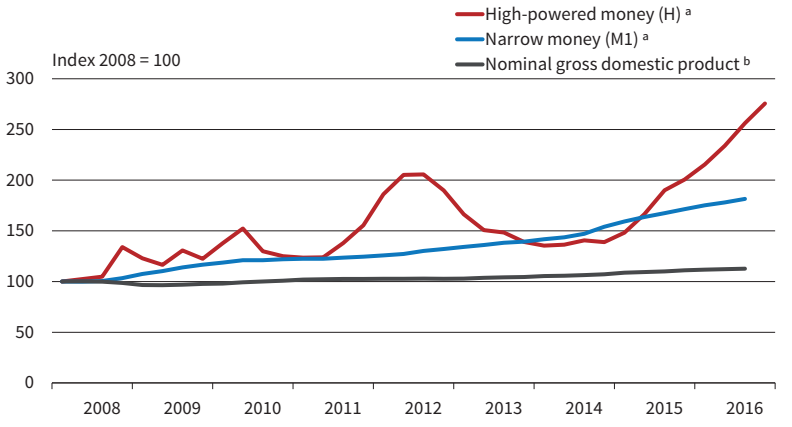
Crucially, the large swings in the money base were neither mirrored by corresponding swings in the money stock, nor did they produce inflation or growth. Quite on the contrary, M1 money and the NGDP evolved more or less steadily, and their growth was slow. During the entire period 2008–2016, eurozone NGDP grew by only 13 percent, or 1.3 percent annually. The comparably stronger growth in the money stock of 81 percent, or 6.8 percent annually, is consistent with the decrease in nominal interest rates over the period shown, because the lower opportunity cost of money balances diminish the circular velocity. The money base, by contrast, almost tripled during the period shown, and it is very likely to outstrip M1 growth to an even greater degree during 2017.

To account for the implied inapplicability of the money multiplier approach, which stipulates a constant ratio M1/H, it is important to recall the central premise of this approach. Commercial banks need high-powered money to meet reserve requirements and to satisfy their customers' currency demand. The multiplier model's key assumption is that banks never hold excess reserves, but always increase credit and deposit money up to the point where reserves just meet the legal and currency requirements. Under this premise, any increase in the money base induces corresponding increases in credit and the money stock, which stimulate commodity demand and ultimately elevate the NGDP.

Stefan Homburg
Leibniz University
Hannover.

Figure 1

Evolution of the monetary base, the M1 money stock and nominal gross domestic product in the eurozone, 2008–2016



a Quarterly, outstanding stocks at the end of the period. b Quarterly.
Source: ECB; Eurostat.

One may object to this analysis that monetary policy is commonly described today in terms of changes in key interest rates (the target federal funds rate in the US, the main refinancing rate in the eurozone). Since commercial banks always operate on their demand curve for reserves, however, this is not a matter of substance, but of exposition. The money base is the ultimate anchor of modern currency systems because all monetary variables are linear in this variable. A key interest rate, by contrast, can hardly assume the role of a nominal anchor because its components – expected inflation and the real interest rate – are endogenous and volatile. Put differently, a given nominal interest rate may indicate an expansionary or a restrictive monetary policy stance respectively, depending on the current levels of expected inflation and real interest. Hence, considering the evolution of the money base is more convenient from an analytical point of view.

Figure 2 suggests that the money multiplier model worked well in the eurozone until 2008. Its central premise, zero excess reserves, was essentially fulfilled. The stochastic residuum of reserves, first analyzed by Poole (1968), averaged at about only one billion EUR. From September 2008 onwards, however, excess reserves surged drastically, in a pattern that closely resembles the pattern shown by the money base in Figure 1. In particular, excess reserves rose to almost 800 billion EUR in 2012 as a result of the LTRO operation. They subsequently declined and would probably have returned to zero under conventional monetary policy. With QE, excess reserves resumed their previous growth.

What do these graphs mean for the effectiveness of QE? As mentioned above, central bank reserves are normally scarce for commercial banks, and this shortage is reflected by positive interest rates in the overnight interbank markets. Under these circumstances, an increase in the money base, i.e., the provision of additional reserves, induces banks to create credit and deposit money, which stimulates the economy. When reserves become superabundant, as after September 2008, the accustomed transmission mechanism breaks down because credit and money creation are no more restricted by reserves; and the superabundance of reserves is indicated by an interbank interest rate of nearly zero. The features that may now limit credit creation are a lack of credit demand, credit rationing, shortage of bank equity, or bank regulations. It is not entirely clear which of these factors dominates, but the main principles of optimization theory imply that relaxing a constraint that has already slack (the reserve constraint) will not change economic behavior.

The upshot of this line of reasoning is that further increasing reserves will fail to lift the inflation rate immediately because it will hardly affect M1 money growth. This argument is reinforced by the observation that QE was similarly ineffective in Japan and the US (Homburg 2017). In these currency areas, drastic monetary expansions depressed interbank interest rates to nearly zero, induced vast amounts of excess reserves, but had no visible effects on inflation and growth. QE may have reduced nominal interest rates in Japan and the US, but its original objective was to stimulate NGDP.

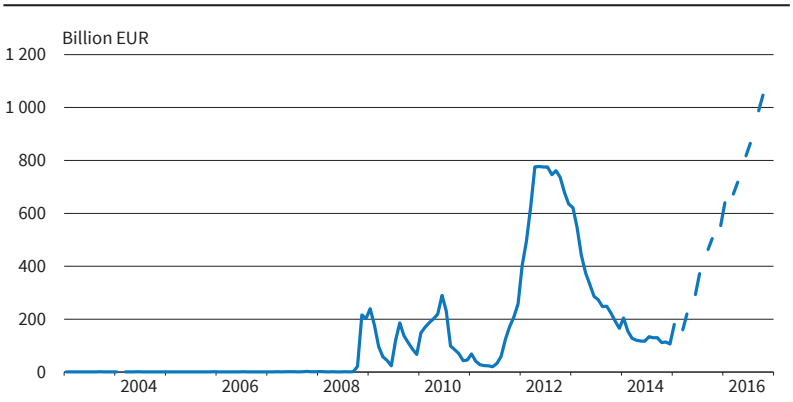
RISKS OF QE

The preceding section argued that further expansions in bank reserves and the money base are unlikely to stimulate credit, the money stock and eurozone NGDP because banks are not reserve-constrained. Considering the commercial banks' balance sheet in Figure 3 suggests that if the ECB provides more reserves in exchange for government bonds held by banks, this operation constitutes a mere *asset swap* for banks and has no further effect if reserves and bonds bear an interest close to zero. In approximate terms, banks obtain zero-interest reserves in exchange for zero-interest bonds.

Different outcomes emerge, however, if the ECB buys assets not from banks, but from third parties such as insurers and pension funds. In this case, QE increases bank reserves and bank deposits, which amounts to a *balance sheet extension* rather than an asset swap. Under the Basel III framework, which does not only limit risk-weighted capital ratios, but also the unweighted overall leverage ratio (the ratio of tier 1 capital and the balance sheet total), QE is likely to have unintended consequences on bank behavior. Banks that have difficulties in raising additional tier 1 capital must reduce their provision of loans to the private sector if QE impairs their leverage ratio through boosts in reserves and deposits. Bucalossi and Scalia (2016) expect that QE will markedly downgrade eurozone leverage ratios in 2017. Notably, such a crowding-out of private investment by government

Figure 2

Eurozone excess reserves [a], 2003–2016



[a] Including deposit facility.
Note: The strokes represent missing values.
Source: ECB.

debt does not operate through the accustomed mechanism of higher interest rates, but functions stealthily through the interaction of QE and leverage requirements.

A second danger of QE results from the above observation that the eurozone's monetary system became unanchored. At present, eurozone credit expansion is inhibited by factors such as a scarcity of bank equity and regulations. In the US, these obstacles to credit creation and inflation are already being removed. What if they were to be removed in the eurozone in the more distant future? Theoretically, the ECB could reduce the money base through "quantitative tightening" operations, i.e., vast asset disposals. Such counter-measures, however, are unlikely from a practical perspective, because they would entail massive increases in interest rates and hazards for the principal debtors, the governments of the eurozone.

This leads to the third risk, which is the most important. In 2011, when overindebted eurozone member states like Italy and Spain were at the brink of default while other countries like Greece, Portugal and Ireland had already been bailed out by fiscal measures, the ECB discovered a new objective, namely, the preservation of the eurozone. As a result, ECB president Draghi promised to bail out insolvent member states "whatever it takes". Draghi's announcement of the "outright monetary transactions program", or OMT, was a real game-changer: Notwithstanding that government debt ratios have steadily *risen* since, the risk spreads of the peripheral countries were considerably reduced.

The announcement of OMT and the implementation of QE completed the dismantling of the precautionary pillars of the Maastricht treaty that were designed to exclude the well-known moral hazard problems of any currency union: The first pillar, the preventive arm of the Stability and Growth Pact, was disregarded from the outset by many member states. The second pillar, the non-bailout rule, has been violated since 2010. QE dispensed with the foreclosure of monetary state financing as the third pillar and, equally importantly, invalidated the count on market discipline through risk premia as the fourth and last pillar.

Contradicting the popular "austerity" narrative, the peripheral countries, including France, have raised their debt-to-GDP ratios permanently, as documented in Figure 4. This outcome falls into line with economic theory and historical experiences of currency unions. Italy illustrates the underlying political mechanisms particularly well: its government introduced a property tax in 2012 to make public finances sustainable, and repealed this measure in 2013 because it felt safe under the new regime of monetary financing. While only Greece and Italy exceeded a debt-to-GDP ratio of 100 percent in 2008, Portugal, Spain and France have caught up since.

Figure 3

Commercial banks consolidated balance sheet

Reserves	Tier 1 capital
Bonds and loans	Deposits / liabilities

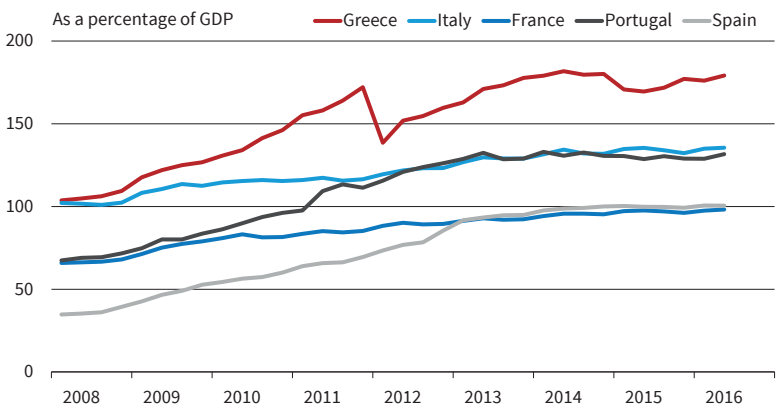
Source: The author.

CONCLUSION

To sum up, strong increases in reserves and the money base through QE are highly unlikely to affect inflation and growth in an environment where banks are already flooded with reserves. The traditional transmission mechanism simply is not functioning. On the other hand, the incentive effects of a monetary policy that soaks up large shares of public debt (perhaps all public debt, if it is pursued for a longer period of time) and the resulting moral hazard are considerable. This article does not conclude with a positive recommendation for QE because the intersection of reasonable and politically feasible solutions is an empty set.

Figure 4

Government debt, 2008-2016



Source: Eurostat.

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Lucrezia Reichlin

Non-Standard Monetary Policy and Financial Stability[1]

INTRODUCTION

Since the financial crisis in 2007–08, central bank balance sheets in advanced economies have expanded significantly. This expansion has not led to inflation risks (at least not to date), but it has raised concerns about financial stability, which have been especially vocal in the euro area.

This short piece addresses the issue of the financial stability implications of non-standard monetary policies. It summarises views that Huw Pill and I have expressed in a more extended form in Pill and Reichlin (2017). We have argued that the effect on financial stability of central bank balance sheet expansions is ambiguous that it differs depending on the nature of such expansion, and that it is influenced by other policy actions in a complex way.

MOTIVATIONS FOR BALANCE SHEET EXPANSION AND IMPLICATIONS FOR FINANCIAL STABILITY

In order to provide a framework for understanding the link between non-standard monetary policies and financial stability, it is important to recognise that two different types of such non-standard policies can be distinguished, arising from two distinct motivations, but both in response to situations in which financial markets are dysfunctional and frictions are pervasive. In the first case, central banks step in to provide support to the private sector in order to maintain the functioning of financial markets, which would otherwise cease to operate effectively. The central bank acts in this situation as a "central counterparty of last resort", enabling transactions that are necessary for the operation of the financial system as a whole, and hence for the wider economy; and which the private sector on its own would otherwise fail to intermediate. Essentially, this is little more than an application of Bageot's (1873) rule. At times when liquidity in the interbank market dries up, central banks should stand ready to "lend freely to banks, but only against good collateral and at a penalty rate" so as to contain panic and prevent the breakdown of financial intermediation.

In the euro area, a clear example of this was the adoption by the ECB of fixed rate / full allotment tender procedures for its monetary policy operations in October 2008. This was done at a time when the interbank money market had seized up as a result of widespread concerns about counterparty risk following the failure of Lehman Brothers in mid-September. With its actions the ECB became a de facto central counterparty, replacing private interbank intermediation, which had ground to a halt.

Having set its policy terms, the central bank's role in this type of intervention is essentially *passive*. Private sector institutions – i.e. banks – resort to the central bank's facilities in response to their own difficulties in dealing with one another. And the extent to which they take advantage of the facilities offered is driven by their own views of market opportunities and risks. Indeed, use of central bank facilities can be seen as a recovery from the abnormally defensive positions, which caused the malfunctioning of the interbank market (i.e. hoarding central bank liquidity and/or reluctance to take on counterparty risk).[2]

In the second case central banks intervene in financial markets in order to exploit additional channels of monetary policy transmission, beyond the conventional impact of changes in the policy interest rate. They may be particularly prompted to do this when the effectiveness of the traditional channel is blocked or reduced by the zero lower bound.

The leading example of this type of intervention in the euro area is the asset purchase programme initiated by the ECB in 2014, and extended to sovereign debt in March 2015. Such central bank asset purchases – according to the ECB's explanation of their rationale – are intended to trigger portfolio rebalancing effects. By buying (sovereign) bonds with medium- or long-term maturities, and by lowering the rate at which they pay interest on excess reserves, central banks lower the return on safe assets and increase the incentive for private sector participants to shift their asset portfolios further out along both the credit risk and maturity spectra. Other things being equal, this will push up the prices of riskier assets and promote the expansion of credit creation, thereby supporting growth in economic activity and the price level.

Unlike the first type of non-standard monetary policy intervention, central banks' implementation of the second type is inherently active. Having announced the remit of an asset purchase programme, the central bank itself initiates the trades that give it effect, and the central bank thereby directly controls the resulting expansion of its balance sheet.

Whereas the first – passive – type of intervention can be seen as setting out to repair a broken or damaged transmission mechanism, and is therefore naturally a complement to conventional monetary policy, the second – active – type, by virtue of the fact that it is seeking to exploit a different transmission mechanism, may be thought of as a potential substitute for conventional monetary policy.

The distinction is important when considering the impact of non-standard monetary policies on financial stability. From this perspective the first, passive type of intervention should be beneficial, as its immediate aim

Lucrezia Reichlin
London Business School.

[1] This article borrows extensively from Pill and Reichlin (2017).

[2] For a comprehensive analysis of *'passive'* monetary policies by the ECB since the autumn of 2008, see Pill and Reichlin (2016).

is to prevent a potentially disastrous collapse in the financial system itself. Any increase in private sector risk-taking can be seen as a return to normality as far as the risk-taking appetite of private sector institutions is concerned, once the system of financial intermediation has been restored. By contrast the second, active type of non-standard monetary policy works explicitly by encouraging private sector market participants to acquire assets that they would otherwise deem either too risky, too expensive or both.

However, even in this case, the effect on financial stability is not unambiguous. However, by acting directly on the longer end of the maturity spectrum, rather than solely via short-term money market interest rates, this type of policy intervention has the effect of flattening and lowering the yield curve, and thereby reducing the incentive for banks and other intermediaries to undertake maturity transformation. So while it is true that such active, quantitative easing policies entail an increase in risk-taking by the private sector as a whole, the effect on banks and other financial intermediaries – and hence for financial stability – should actually be supportive.

It must be stressed that conventional monetary policy easing via a decrease in the interest rate target may also have negative implications for financial stability. In that case, as with asset purchases, the central bank increases the incentive for the private sector to invest in riskier assets. However, while a decrease in the interest rate target and a programme of asset purchases both encourage risk intermediation, standard policy encourages maturity transformation whereas asset purchases do the opposite. The key difference is that while a decrease in the policy rate causes a decline in the equilibrium rate on riskier assets through an increase in the spreads, active balance sheet policies, by lowering the risk premium, have a dampening effect on the spread. Insofar as financial stability risk originates from banks engaging in maturity transformation, asset purchases carry fewer risks for financial stability than traditional monetary policy.[3]

Paradoxically, when flagging financial stability concerns are related to the ECB's asset purchases, the argument is turned upside down. Rather than emphasising the risk mitigation effects of a flat yield curve, it is observed that the latter, by stressing the profitability of banks and insurance companies and pension funds, actually causes instability. To the extent that banks earn returns from maturity transformation (as is the case for important segments of the European banking sector, and particularly for the mutual and regional banks), the flatter yield curve implied by quantitative easing threatens their earnings outlook. For banks holding legacy portfolios of questionable assets and seeking to re-capitalise by retaining earnings, a flatter yield curve lengthens the period of adjustment (and may even make it infeasible). Moreover, for pension funds and insurance companies that have defined-benefit liabilities (i.e. they have promised a certain positive return to their customers), holding assets with low or negative returns eats into their capital and reserves. Institutions that were poorly capitalised at the outset are, by nature, particularly vulnerable to these concerns.

PRACTICAL CONSIDERATIONS AND CHALLENGES

The clear cut distinction drawn above between passively providing liquidity and actively boosting the return on risk bearing assets presupposes that the central bank is able to avoid taking credit risk when acting as 'central counterparty of last resort' by insisting on 'good collateral'. However, as it became all too clear during the financial crisis, it is not always easy – or even possible in theory – to distinguish between liquidity and solvency problems in real time. As a result, the central bank aiming to play this role in practice plays the role of 'market maker of last resort', taking positions in the market and accepting risks on its balance sheet in the form of transactions with counterparties of uncertain creditworthiness and/or collateral of uncertain value.

Consequently, the ECB's fixed rate / full allotment programme was not a purely passive intervention of the kind described above. In fact, many of the measures implemented by central banks during the financial crisis can be seen as having elements that are supportive of market functioning, as well as elements that promote portfolio shifts in favour of greater risk-taking and thereby support macroeconomic growth.

Crucially, the actions of the central bank have an effect on the nature of the market failure they are intended to address. Whereas individual banks concerned about idiosyncratic credit risk in their private counterparts are susceptible to a market failure owing to adverse selection,[4] the central bank – by restoring the market to its normal functioning – changes the nature of the idiosyncratic risk faced by each market participant.

More broadly, this highlights the need to take a general equilibrium approach in order to make an assessment of non-standard monetary policies – understanding their impact on the wider economy, as well as the impact on the financial system of such macroeconomic effects. In this context the ECB has surely been right to argue that, if successful, the beneficial effects of non-standard monetary policies on financial stability via an improvement in overall macroeconomic conditions would surely outweigh any of the short-term negative effects of such policies described above. Specifically, by boosting recovery and staving off the break-up of the euro area, the ECB has more than compensated for the initial adverse impact of some of its unconventional policies on bank profitability.

A broad analysis of the impact of non-standard monetary policies needs to take into account the risk that private sector participants become 'hooked', such that they come to depend on the continuation of such

[3] This observation has been recently formalised by Woodford (2016).

[4] This is the situation analysed by Heider, Hoerova and Holthausen (2015).

policies in normal times. To put it another way, necessary emergency measures should not blunt the incentives for governments, regulators and the private sector to address the underlying structural problems in the financial system and the economy more broadly. Should those incentives to deal with the fundamental weaknesses be absent, central bank intermediation could increase the risk to financial stability over the medium term. While important, this is surely not an argument against the use of non-standard policy measures per se, as the structural agenda can be addressed by other policy interventions in any case.

The relationship between non-standard monetary policy measures on the one hand, and the outlook for financial stability on the other, is thus complex. While it depends crucially only on the character of the non-standard policy, it will also be influenced by other policy actions and the horizon over which an assessment is made.

In the context of the euro area, key areas of policy action are the consolidation of the banking sector, a solution for the stock of non-performing loans and a realistic approach to recapitalising banks. In a fragmented banking sector, with many banks still under-capitalised, potential risks to financial stability stemming from non-standard measures are real and potentially significant, but these problems can and should be addressed with different policy tools.[5]

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[5] See Reichlin and Valle (2016) for a proposal addressing problems of the banking sector.

Charles Wyplosz

How Far Should Unconventional Central Banking Go?

Charles Wyplosz
The Graduate Institute, Geneva and CEPR.

INTRODUCTION

The world's major central banks have radically altered their strategies since 2008 as they grappled with the great financial crisis and its various consequences. One view (Issing 2016) is that they have gone too far, and that their actions will result in inflation and loss of independence. Another view is that the crisis has been at least as violent as the 1929 krach on Wall Street, but nevertheless we have not seen the decade of economic misery that followed when central banks clung to narrow dogmas (Friedman and Schwartz 1963). History did not repeat itself because we learnt from the past (Bernanke 2000).

These two views are apparently inconsistent yet each carries some truth. Unconventional monetary policies have saved the world from acute distress, but they have come with potential side effects. This article argues that we should recognize both success and risks. Central banks have been forced by the turn of events to leave their comfort zone and to adopt a more sophisticated view of their task and of how monetary policy operates. This is not a new view, just a more elaborate one.

CENTRAL BANK MANDATES

Having adopted policies that often led to double-digit inflation rates in the 1970s, central banks have developed a consistent framework that combined two key principles. The first principle is the Tinbergen rule that policy can achieve as many objectives as it has instruments. The second principle is that inflation is a monetary phenomenon. Together, these principles have been interpreted as implying that central banks should have one objective, price stability, because they have one instrument, either the money supply or the policy interest rate. This led to clear mandates and to policy independence.

This strategy worked well as long as the world conformed to the many implicit assumptions that lie behind the principles. The world has changed, however, and the assumptions are no longer valid, so the mandate had to evolve. The Tinbergen rule assumes certainty (Brainard 1967). This may be a reasonable approximation as long as the financial markets are stable. When major financial instability introduces massive uncertainty, however, the Tinbergen rule breaks down. In addition, central banks are the only institutions that can effectively deal with acute financial instability, when large cash injections are required in a matter of hours (Friedman and Schwartz 1963). A central bank mandate that ignores these simple facts is simply incomplete.

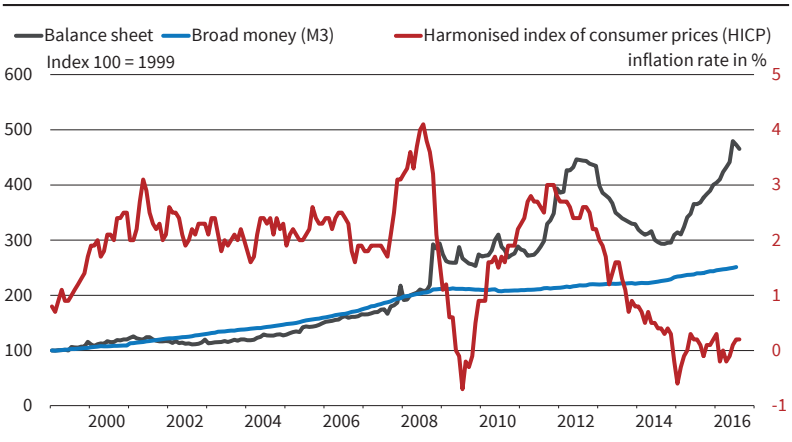
Secondly, the famed link between money and inflation has always been troublesome. Its theoretical basis is robust, but which is the relevant monetary aggregate? Over the years, views have changed, not because of theoretical innovations, but because the data were not cooperating. The financial crisis has shown that we need to think deeper about that link. Figure 1 displays two monetary aggregates of the Eurozone – the size of the ECB's balance sheet and M3 – and the inflation rate. Before the crisis, the link between the monetary aggregates was far from stable; after the crisis it completely dissolved. The reason is that banks did not "transmit" as they focused on their own difficulties and undertook to deleverage. Inflation declined for six years while the monetary aggregates rose, spectacularly so in the case of the size of the ECB's balance sheet. This breakdown of time-honored principles is probably temporary and directly related to the financial crisis. Indeed, this is the point: since 2008, monetary policy cannot be business as usual.

FISCAL DOMINANCE

While central banks had every reason to step in and adopt policies out of the traditional box, they have been taking risks. Among them is the possibility that, for all their power and clout, they may fall victim to fiscal dominance, which means that their future actions will be constrained by concerns over public budgets. When they purchase public debts, these debts effec-

Figure 1

Monetary aggregates and inflation in the Eurozone



Source: ECB (2016).

tively cease to exist since debt service paid to the central bank is rebated to the government *ceteris paribus*. Debt financing has long been recognized as the number one source of future inflation.

Central banks routinely acquire public debt instruments as they carry out their normal monetary policy operations. They even hold private stocks and bonds. This is considered normal because purchases and sales are seen as temporary and explicitly part of monetary policy. Unconventional policies are also meant to be temporary monetary policy actions, albeit in a new form because the interest rates have reached their presumed lower bounds. Why, then, all the concern with fiscal dominance?

One reason is scale. The fear is that these considerable purchases will not be reversed, or not fully. That, indeed, is the current conventional wisdom. It is believed that quantitative easing (QE) has entered the central bank toolkit and will remain there so central banks may never revert to previous lower levels of bond holdings. Yet this remains monetary policy and it does not portend inflation.

The other concern is that central banks stand to suffer large losses when the time comes to raise interest rates. Worse still, they may come under pressure from governments that fear higher debt service, which would indeed be fiscal dominance. We do not know whether this risk will materialize, but what we do know is that central banks are conscious of it. At present, however, it is far too early to draw any conclusions.

MORAL HAZARD

When it occurs, fiscal dominance is ominous, but it can even be threatening if it is simply thought to be about to occur. If governments believe that they are on the verge of achieving fiscal dominance, they may be tempted to forego fiscal discipline. This is why central bank independence is essential, but is not a black and white issue, and is therefore quite fragile.

The proper response to this very serious risk of moral hazard is not to cry wolf when there is no such threat. The outcry – and legal proceedings – against the ECB's Outright Monetary Transactions (OMT) is a good example of misguided reactions. After three years of a highly contagious debt crisis that governments failed to stop, just three words ("whatever it takes") reversed the devastating trend. Instead, the proper response is to build institutions and procedures that effectively impose fiscal discipline on member governments, unlike the ill-designed Stability and Growth Pact (Wyplosz 2013). The culprit is the pact, not the ECB.

POLICY EFFECTIVENESS

It has now become conventional wisdom that unconventional monetary policies become less and less effective as they expand. There are many plausible theoretical reasons behind this, including decreasing returns and growingly adverse side effects, but what is the evidence? Panizza and Wyplosz (2017) formally explore the question and find limited support to back up this hypothesis. As is often the case, conventional wisdom may turn out to be an unsubstantiated guess.

Even if decreasing effectiveness sets in, it is mistaken to conclude that these policies should be discontinued as a result. Other policy responses need to be contemplated. A first option is simply to pursue more unconventional monetary policies. Another response would be for governments to step in with counter-cyclical fiscal policies. This has occurred in various countries to some degree, although not in the Eurozone. The Eurozone governments have failed to cooperate with the ECB, and thus to alleviate the need to expand its unconventional policy. This failure has many roots. One of them is that many governments already face high public debt levels and felt constrained by the pro-cyclical restrictions of the Stability and Growth Pact. Another reason is that less indebted governments happen to face better growth prospects and are quite reasonably unwilling to raise their own debts for no necessary domestic purpose.

Misguided conventional wisdom has also played a role: it has been asserted that fiscal policies do not work, or even that they work in reverse (the negative multiplier view). These views have once again been rejected formally by the data (e.g., Blanchard and Leigh 2013). At any rate, when governments do not cooperate and inflation remains far below the inflation rate implied by its own definition of price stability, the ECB has no choice: it must do its utmost to fulfill its mandate.

CONCLUSIONS

The happy years when central banks could just aim at price stability are over. They may return, once the tailspin effects of the great financial crisis have faded, and once adequate bank regulation, supervision and resolution procedures and proper fiscal discipline institutions are in place. In the meantime, central banks have largely been left to deal single-handedly with a crisis of historical proportions. Drawing lessons from the Great Depression, they have innovated in many ways, including by adopting unconventional policies.

The results are plain to see: we have avoided another Great Depression; but the experiment is not over yet. Central banks will have to phase out their policies, normalizing interest rates and shrinking their bloated balance sheets. Mistakes may happen. At this stage, and contrary to early criticism, inflation has not reappeared, quite the contrary in fact. So far, so good.

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Felix Hufeld

Nothing under the Sun is Forever

Aristotle had a problem with interest rates. Money was intended to be used in exchange, he wrote, but interest meant the birth of money from money. "That is why of all modes of getting wealth this is the most unnatural," wrote the man who gave economics its name. Aristotle would presumably have been highly satisfied when, in July 2016, a ten-year German Bund was issued with a zero-percent coupon for the first time.

In the financial sector, of course, the mood is different. Interest rates have remained at very low levels for years – and there is no change in sight. The historically long period of low interest rates is no longer just troubling those specifically affected by the collective savings or risk mitigation business model, such as life insurers, *Pensionskassen*[1] and *Bausparkassen*[2]. Low interest rates are now an issue affecting everyone in the industry who is dependent on interest income. 75 percent of the business of banks in Germany depends on net interest income. So a knowledge of higher mathematics is hardly required to recognise that a lot of credit institutions are going to get into difficulties if interest is as good as abolished.

The insidious thing about the current situation is that the pressures caused by low interest did not arise overnight, but slowly yet surely are eroding credit institutions' balance sheets like a slow drip of acid, adding to their already existing profitability weakness. In addition, it must be remembered that in recent years companies have received a strong boost from some positive effects, which cannot simply be repeated at will. These effects included, for example, more favourable terms for refinancing, higher volumes caused by the favourable lending conditions, which have created a virtual boom in certain forms of financing, and in particular the very low burdens, or even positive impact from the valuation results. This could easily give the impression that in fact, everything is fine. Yet a simple look back would not only be misleading, but would ultimately actually be dangerous. Competition in the business segments mentioned is extremely strong and, at some point, the economic tailwind will ease off. We have to pay close attention to ensure that no bubbles or risk concentrations occur.

All our analyses show that the low interest rate environment will weigh heavily on banks' balance sheets. As supervisors, it is our duty to take a close look at this situation. We do this in the Supervisory Review and Evaluation Process (SREP), among other things, where we check whether companies supervised by the Federal Financial Supervisory Authority (BaFin) are holding sufficient own funds for all material risks, particularly with a view to the interest rate risk in the banking book. BaFin puts institutions where this risk is particularly high under the microscope and asks them how they intend to cover the interest rate risk in the banking book in times of falling earnings prospects.

We also look at what strategies banks are developing as a whole to compensate for dwindling interest income. Are they reducing costs? Are they strengthening their capital base? Are they scrutinising their business models and looking for ways to expand their non-interest bearing operations? Are banks offering their services at appropriate prices, for example? Even although there is no panacea and it is sometimes easier said than done, banks do have options and they should make use of them. The reason for this is that one thing is sure: institutions' reliance on net interest income certainly cannot stay as it is.

Felix Hufeld
Federal Financial Supervisory Authority (BaFin).

It is, however, not just banks that are facing major challenges due to the low interest rate environment: insurers are too. Life insurers, in particular, are struggling greatly with the historically low rates. They are suffering from visible drops in their investment income. It is difficult to tell how the situation will develop in the long term. It may be that, in the long run, not all companies will be able to withstand the pressure. However, we remain confident that German life insurance undertakings will be able to meet their commitments in the short to medium term.

The initial results of Solvency II have shown us that life insurers – and the insurance industry in general – have adjusted to the new supervisory regime and managed the transition from a book value to a market value approach. The transitional measures and volatility adjustment stipulated in the regulations are achieving the desired effects. That is no bad news, but the transitional measures will gradually run out within 16 years. They do not solve the problems, they just provide some time to adapt. Some insurers will need to make major efforts to strengthen their capital base. We also pay close attention to those insurers whose performance raises questions for the medium term. We want to know how they intend to ensure that their capital base is sufficient when the transitional measures have run out.

Since 2011, life insurers have had to make an additional provision to the premium reserve, the *Zinszusatzreserve* (ZZR) to compensate for the reduction in their investment income in times of low interest rates. This instrument is an important lever for ensuring greater stability. As a capital buffer, the ZZR is fundamental for insurers. However, we also need the additional provisions to protect the insured from the erosion of the economic substance of their life insurance. At the end of 2016, the pot for life insurers contained approximately 44 billion EUR. The ZZR will continue to increase in the years ahead. Of course, that represents a major burden on companies. We are keeping a close

[1] *Pensionskassen* are one of the two types of institutions for occupational retirement provision (IORPs) existing in Germany.

[2] *Bausparkassen* are credit institutions whose business objective is to accept *Bauspar* deposits (*Bauspareinlagen*) from *Bauspar* customers (*Bausparer*) and to grant *Bauspar* loans (*Bauspardarlehen*) from these aggregate savings to *Bauspar* customers for residential economic measures.

eye on developments, both at the level of individual life insurers and industry-wide.

As with banks, business cannot continue as usual for insurers in a stable, low interest rate environment. They, too, must use the options available to them to readjust their business policies. For example, companies can try to drive costs down and think about reinsurance solutions. They can work on their product range and develop new products with new forms of guarantee. The traditional guarantee products are not even offered by some insurers anymore, but of course, they are still possible. In the current market situation, the fact that the maximum technical interest rate for new contracts has been limited to 0.9 percent since January 2017 is, however, correct and unavoidable.

As for *Pensionskassen*, they are suffering at least as much from the low interest rates as life insurers. Their portfolio consists almost entirely of contracts, which oblige them to pay life-long pensions to the insured. These people are getting older and older, on average, which puts an additional burden on results. Against this background, *Pensionskassen* have been taking actions to support their ability to provide their benefits in full using their own resources. However, in case a benefit reduction should be necessary, the subsidiary responsibility laid down in the German Occupational Pensions Act usually holds the employer liable. It is possible, of course, for the employer to provide additional funds to the *Pensionskasse* to avoid such reductions in benefits.

It is beyond dispute that the sustained period of low interest rates poses great challenges to the financial sector – and it is not just regulators and supervisors who are aware of this. It is my impression that companies, too, have grasped the need for changes given the current outlook. However, there is less of a consensus of views when it comes to regulatory measures. In particular, there are, naturally, differing opinions on the right amount of regulation and supervision, depending on the respective perspective.

Of course I understand it when companies criticise regulation with a view to their costs. However, the past financial crisis brought it painfully home to us that we cannot do without an appropriate regulatory framework for the financial sector – and one which is effectively enforced. Good regulation and a functioning supervisory system are prerequisites for stability in the financial markets and – which is almost more important – for justified confidence in the stability of those markets.

Customers must be able to be confident that their deposits are secure and that the providers of insurance and pensions will be able to provide the promised benefits, even in times of low interest rates. As supervisors, therefore, we need the right tools at hand, so that companies in the low interest environment do not take excessive risks in order to fulfil their objectives and obligations. However, we have not observed a general trend of this nature as yet, neither among banks nor insurers.

But we need to remain alert. Nobody knows how long the low interest phase will go on – and even a rise in rates could cause difficulties if it came suddenly. It would not just be banks that offer long-term financing and have their own short-term financing, which would run into problems then – life insurers would be affected too. Many insurers have already invested large volumes under current conditions. More recent fixed income securities, in particular, could turn into hidden liabilities. So, if we were granted a wish, we would have to ask for a gradual rise in interest rates. Unfortunately, the good fairy only exists in fairy tales and despite various attempts to conjure it up, no real change to interest rates is in sight.

On the other hand, Anton Fugger, one of the most important financial businessmen of the late German Middle Ages, said: “Nihil sub sole perpetuum – nothing under the sun is forever”. And so the clouds darkening the interest rate skies may, at some point, clear again. Until that time comes, we have to work together to create strong and stable financial markets.

Dieter Wemmer

How Do Low Interest Rates Affect Financial Institutions and Stability?[1]

THE LOW-INTEREST RATE ENVIRONMENT

Global financial markets have witnessed a secular decline in interest rates since the the mid-1990s. This development was initially largely driven by the effects of globalization on production and increased trade, resulting in lower inflationary forces, especially in developed economies. In the wake of the financial crisis in 2008, this development was exacerbated by material interest rate reductions and additional emergency actions taken by various central banks to stabilize markets. The following public bail-out programs for the banking sector led to a government debt crisis that was particularly pronounced in weaker parts of the Eurozone, with the resulting flight to quality further depressing rate levels, especially for high quality issuers. Since then, market participants have experienced a steady decline in interest rates driven by the ECB's extraordinary quantitative easing program. This development culminated in unprecedented low rate levels in late 2016, which even turned negative for high quality benchmark bonds like the 10-year German Bunds, as illustrated by Figure 1.

The development is even more disconcerting in view of the fact that over 70 percent of total outstanding German public debt now provides negative returns. For the Eurozone as a whole, just over 50 percent of sovereign debt is traded at negative yields. This proportion rises to nearly 95 percent for short-term debt with a maturity of two years or less.

While at the time of writing this article rates have slightly increased due to inflationary expectations triggered by the new US administration, overall interest rates remain at an extremely depressed level.

ECB MONETARY POLICY – A VICIOUS CIRCLE?

While the ECB has argued for some time that the extreme low-yield environment and quantitative easing is needed to re-ignite growth in Europe, a growing number of market observers are questioning the effectiveness of this policy. One of the key problems in that context from our perspective is the adverse effect of extreme low rates on trust (i.e., business confidence) and savings ratios. While conventional economic wisdom would predict that low interest rates lead to reduced savings and increased consumption thereby supporting economic growth, in reality the opposite can be observed. The private households savings ratio in Germany increased between 2013 and 2016 by nearly ten percent as people understood that they need to compensate for lower interest rates with higher savings in order to keep their personal old age provisioning stable (especially against the background of an ailing public pension system). During the same period, business confidence in Germany stagnated, typically resulting in lackluster investments in the real economy and low growth.

In addition, the ECB's quantitative easing measures distorted bond markets by artificially increasing demand for eligible bonds, resulting in lower yields and the crowding out of actual investors. The same effect can be observed in real economy investments, where the ECB's "cheap money" policy in some countries is fostering public deficit spending, again effectively crowding out actual investors.

Finally, ultra-low interest rates increase the risk of asset price bubbles, particularly in the real estate sector and the stock market. A significant increase in market volatility can already be observed in various asset classes.

As a result, the ECB may be inclined to continue quantitative easing and extend the low interest rate policy in order to stabilize markets and trigger growth, ultimately resulting in a vicious circle.

Dieter Wemmer
Allianz SE.

SOLVENCY II COMPLICATES THE SITUATION

The insurance industry has traditionally functioned as a volatility dampener in times of market disruptions, as also demonstrated during the last financial crisis. Unfortunately, the newly-introduced Solvency II requirements might actually challenge the "natural" role of insurers. While Allianz fundamentally supports Solvency II as a modern, risk-based supervisory framework, we are concerned in this context over some of its critical shortcomings.

Solvency II rightly incentivizes the matching of assets and liabilities for insurers. However, the underlying economics also result in a higher duration gap as interest rates decline. This, in turn, triggers higher demand for long-term bonds to re-balance the asset-liability profile, pushing interest rates down even further and fostering the pro-cyclicality of investments.

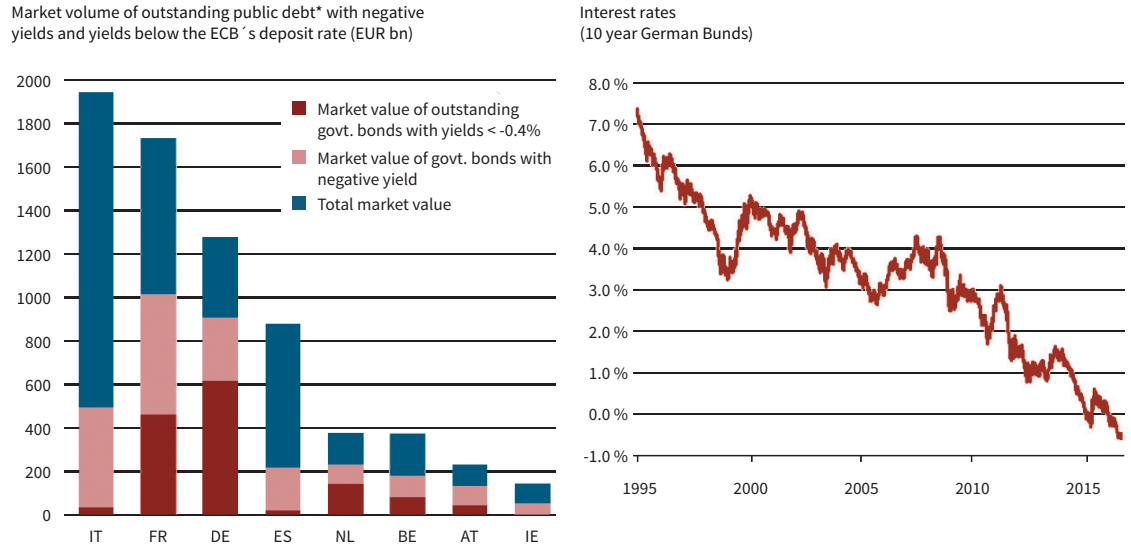
Furthermore, the Solvency II Standard Formula tends to distort asset allocation. The lack of risk charges for government bonds fosters excessive investments in this asset class at the expense of other investments. An inadequate thrust towards financing the public deficit rather than the real economy may result.

Last but not least, the currently incomplete reflection of the insurance business model results in artificial volatility. Solvency II requires a substantial risk capital charge for credit spread risk, which ignores the fact that (life) insurers can typically follow a "buy and hold" strategy (due to long-term stable liabilities), so that spread risk becomes irrelevant (and only default risk at maturity remains important). Unfortunately, this inadequate reflection of the underlying business and

[1] This article is based on a presentation by the author during the Price Stability Target Conference in Berlin, 28 September 2016.

Figure 1

Development of interest rates



Note: Over 70% of German public debt with negative interest rates.
Source: Bloomberg/Allianz GI.

related risks forces insurers to act pro-cyclically (i.e., selling into falling markets) and display herding behavior.

Against this background, we believe that the EU legislators should tackle those critical shortcomings as early as possible in order to foster financial market stability and avoid market dislocations as an unintended consequence of regulation.

STRATEGIC REACTION OF INSURERS

The problems associated with the low-yield environment and new regulation pose an unprecedented challenge to the insurance industry as a whole. In response, the industry has started to review strategic options with a focus on the investment approach, as well as changes to product offerings.

On the *asset side*, insurers should narrow their portfolio´s duration mismatch by increasing the asset duration including the use of derivatives as relevant (e.g., when investments with long durations are not available). In addition, increased investments in alternative asset classes like real estate, infrastructure, renewable energies and private equity can help to extend the duration, while also providing attractive returns (subject to adequate risk management capabilities of the insurer).

On the *liability or product side*, insurers need to redesign their long-term saving products in particular. New, innovative products with lower guarantees (regarding level and timing) and increased flexibility (e.g., resettable guarantees) are important to reduce risk capital requirements, while at the same time providing attractive product features and return upside potential to customers. In addition, a stronger focus on products covering biometric risks like mortality and longevity (in contrast to market risks) is meaningful.

ALLIANZ'S RESPONSE TO LOW INTEREST RATES

In line with the considerations above, Allianz's response to the low-yield environment and Solvency II requirements has been a complete redesign of the product portfolio focusing more strongly on biometric risks and a significant increase in alternative investments within the asset portfolio.

We are pleased that the new range of products has gained substantial consumer demand since their inception in 2012, amounting to approximately 90 percent of total new sales in 2016 (see Figure 2).

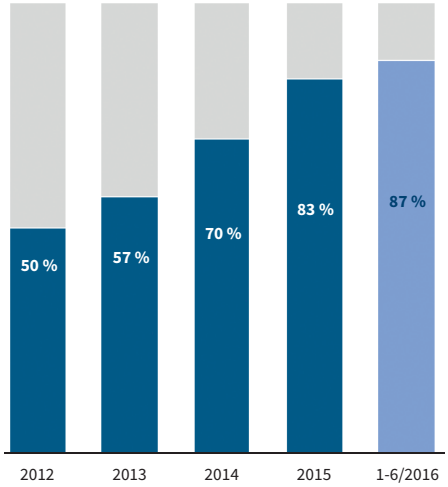
Similarly, on the asset side Allianz has also substantially increased duration by focusing on long-term alternative assets for new investments (see Figure 3). This helped to substantially reduce the duration gap between assets and liabilities while providing attractive returns for our policyholders.

SUMMARY

The economic environment and the low-interest rate environment are likely to remain challenging for insurers, while new regulation might result in higher volatility and pro-cyclicality. In response, insurers need to adapt their product offering and investment strategy, which can be done successfully, as the example of Allianz illustrates. These activities should, however, be complemented by enhancements to Solvency II, so that insurers can fulfill their traditional role of financing long-term real economic growth and dampening capital market volatility again in the future.

Figure 2

Allianz new product range and sales success

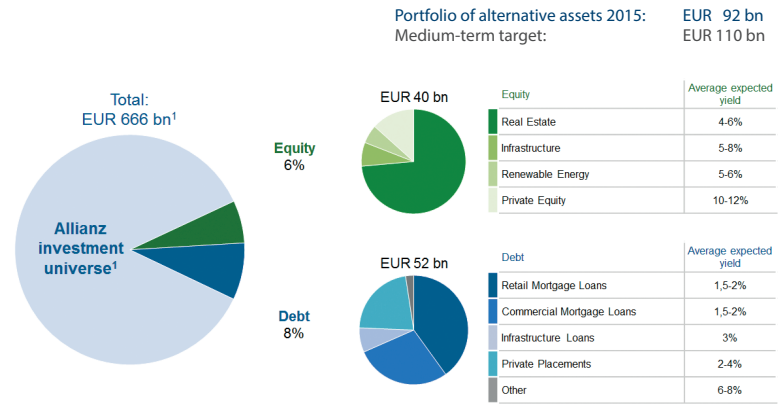


Note: Strong demand for the new concepts.
Retail business: Portion of new guarantee concepts, including biometric risks (in % of valuation sum).

Source: Allianz SE.

Figure 3

Alternative asset portfolio as part of the Allianz investment universe



Source: Allianz SE.

Geert Bekaert, Campbell R. Harvey, Christian T. Lundblad and Stephan Siegel

Economic and Financial Integration in Europe[1]

ABSTRACT

We use industry valuation differentials across European countries to study the impact of membership in the European Union as well as the Eurozone on economic and financial integration. In integrated markets, discount rates and expected growth opportunities should be similar within one industry, irrespective of the country, implying narrowing valuation differentials as countries become more integrated. Our analysis of the 1990 to 2007 period shows that EU membership significantly lowers discount rate and expected earnings growth differentials across countries. By contrast, the adoption of the euro is not associated with increased integration. Our main finding that EU membership increases integration, while euro adoption does not, remains unchanged when the sample period is extended to 2016. However, we observe that the EU membership effect is smaller between 2008 and 2016 compared to the pre-crisis period.

Geert Bekaert
Columbia University and NBER.

Campbell R. Harvey
Duke University and NBER.

Christian T. Lundblad
University of North Carolina.

Stephan Siegel
University of Washington.

INTRODUCTION

For a long time, ever-larger flows of goods, capital and labor across national borders were seen as the welcome consequences of increased globalization. Indeed, financial economists have documented how policy changes like capital market liberalization reduced market segmentation, improved the allocation of capital, and ultimately spurred economic growth. However, the benefits of economic openness, as well as the institutions built around it, are increasingly questioned by politicians and voters alike. In June 2016, the unthinkable happened when UK citizens voted to exit the European Union ("Brexit"). It is therefore timely to assess the historical contribution of specific institutions whose policies and very existence are in doubt. In this article, we perform such an assessment for Europe; and more specifically, we examine the role that the European Union (EU) and the common currency (euro) have played in the financial and economic integration of Europe.

After World War II, the EU set out to free the movement of goods, services, capital and labor between its member countries. With a growing number of European countries joining the EU, barriers between member countries disappearing, and the introduction of a common currency, the EU and, later, the euro have been perceived as the driving forces behind the integration of European economies. However, European integration happened against the backdrop of an integration process across the world (Bekaert et al. 2011). Differentiating between a global trend and the effects of EU membership and euro adoption is, of course, critical when evaluating the consequences of the United Kingdom leaving the European Union, or Greece reintroducing its own currency in place of the euro.

Unlike existing studies on European equity market integration, which have focused on equity returns (see, e.g., Fratzscher 2002, Adjaouté and Danthine 2004, Baele 2005, and Hardouvelis, Malliaropulos and Priestley 2006), we use equity market valuations. Specifically, we evaluate financial *and* economic integration in Europe through the lens of stock market valuations of industry portfolios in different countries. Stock market valuations reflect financial integration through its impact on discount rates, as well as economic integration through its impact on capitalized growth opportunities. Integration should lead to "valuation convergence" of similar firms across different countries. Hence, we assess the degree of bilateral integration in Europe and the impact of the EU and the euro by determining whether, in a given country-pair, similar assets are valued similarly across both countries.

Most of our study focuses on the pre-crisis period from 1990 to 2007, which covers the expansion of the EU across many countries, the completion of the "single market", as well as the introduction of the euro. We initially examine the effect of EU membership on bilateral valuation differentials, as well as its components, discount rates and growth opportunities. We then consider the adoption of the euro in addition to EU membership on valuation differences between countries. Finally, accounting for EU membership and euro adoption, we also confront the recent crisis years by extending our sample period through August 2016.

MEASURING INTEGRATION

We assess financial and economic integration in Europe by measuring the extent of equity market segmentation in Europe. Our measure of market segmentation was first introduced by Bekaert et al. (2011) and has since been used by a number of researchers (see, for example, Goyenko and Sarkissian 2014; Beck et al. 2016). It is based on the simple intuition that two markets are integrated if similar assets are valued similarly.

As a starting point, consider the Gordon growth model, which assumes that the discount rate, r, is constant and expected earnings grow at a constant rate, g. If a firm pays out all earnings every year, its earnings yield simply is r-g. Hence, in this simple model, discount rates and growth opportunities are linearly related to earnings yields. Let us also assume that systematic risk is industry rather than firm specific and that the industry structure is sufficiently granular so that industries are

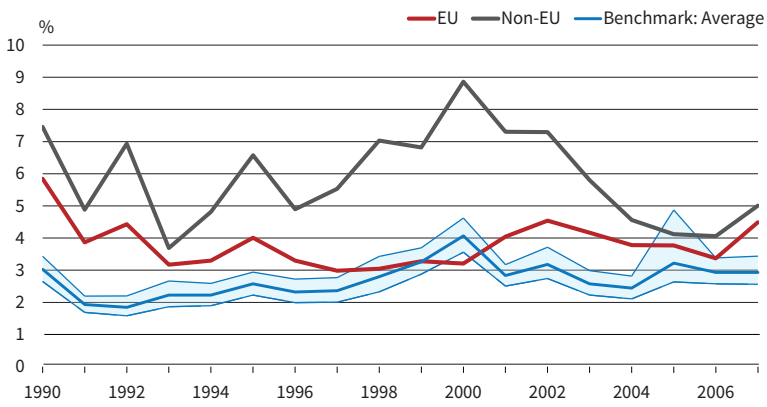
[1] This article is a shortened and updated version of "The European Union, the Euro, and Equity Market Integration," which was published in the Journal of Financial Economics in 2013. A working paper version of the original article is available for free at SSRN: https://ssrn.com/abstract=1573308.

comparable across countries.[2] Financial market integration then equalizes industry betas, as well as industry risk premia across countries. Furthermore, assume that in economically integrated countries, persistent growth opportunities are mostly industry rather than country specific or at least rapidly transmitted across countries. This is plausible as firms in the same industries face similar production processes and market conditions (again, under the null of free competition and lack of trade barriers). It then follows that the process of market integration should cause valuation differentials between industries in different countries to converge. We build on this intuition to create bilateral valuation differentials that serve as our segmentation measure.

Figure 1

Benchmarking segmentation

Full sample: 1990–2007, annual frequency



This figure presents average bilateral segmentation between 1990 and 2007 for all EU and Non-EU country pairs. For comparison, the figure shows the average US benchmark segmentations level (constructed for the set of all European countries) together with a 90% confidence interval.

Source: The authors.

Specifically, let $EY_{i,k,t}$ denote industry k's earnings yield in country i at time t and $EY_{j,k,t}$ the corresponding value for the same industry k in country j. Our main variable of analysis is the absolute value of the difference between the two industry valuations, $|EY_{i,k,t} - EY_{j,k,t}|$. The weighted sum of these bilateral industry valuation differentials is our measure of the degree of equity market segmentation between these two countries:

$$SEG_{\mathrm{i,j,t}} = \sum_{k=1}^{N_{i,j,t}} IW_{i,j,k,t} \, |EY_{i,k,t} - EY_{j,k,t}|,$$

where $IW_{i,j,k,t}$ is the relative market capitalization of industry k and $N_{i,j,t}$ is the number of industries for country-pair (i,j) at time t.[3]

Bekaert et al. (2011) discuss several biases in this segmentation measure, such as country-specific differences in financial leverage and in the volatility of earnings growth rates and discount rates. In addition, the number of firms in a particular industry should affect the accuracy of the measure. However, it is straightforward to control for these biases in a regression analysis, which is what we do.

Unlike the standard approach in the international finance literature that relies on historical return correlations or systematic risk exposures to *estimate* measures of segmentation (see Bekaert, Hodrick and Zhang 2009, and the references therein), our measure requires nothing more than industry-level valuation ratios, which are observed at every point in time.

EUROPEAN INTEGRATION OVER TIME

We construct our measure of annual bilateral valuation differentials, *SEG*, for a sample of 33 European countries listed in Appendix Table 1, using firm-level data from Datastream from 1990 to 2007. Using the Industry Classification Benchmark (ICB) framework, we form 38 value-weighted industry portfolios for all countries. For each country-pair, we compute *SEG* as described above. The number of country-pairs with non-missing data grows over time, from 120 country-pairs in 1990 to a maximum of 528 country-pairs.

During our main sample period from 1990 to 2007, the average segmentation level between European countries is 5.1%. However, for country-pairs for which both countries are EU members, the average segmentation is only 3.8%. While substantially lower than the level of non-EU country-pairs (6.0%), it is not clear whether this level is "close" to integration or not. That is because the segmentation measure uses absolute differences in earnings yields, it need not be zero even under full financial and economic integration. Therefore, we use US equity market data to measure the average level of segmentation for fictitious, randomly created, country-pairs that mimic our European pairs, but exclusively reflect US valuations.[4] To the extent that the US is financially and economically integrated, this exercise provides a meaningful benchmark to judge whether European country-pairs are segmented or not.

Figure 1 shows the average segmentation level for all EU and non-EU European country-pairs between 1990 and 2007. EU country-pairs are country-pairs where both countries are EU members, all other coun-

[2] We also assume that the world real interest rate is constant. It is well known that that real interest rate variation does not account for much variation in valuation ratios.

[3] The relative market capitalization of a given industry is calculated as the combined market capitalization of the industry in both countries divided by the combined market capitalization of all industries in both countries. With this weighting scheme, the industry structure of the country with the larger equity market has more influence on the segmentation measure.

[4] In particular, we use all US stocks that are covered by the Center for Research in Security Prices (CRSP) and Compustat to form country-industry portfolios by randomly drawing firms from the US data set, mimicking the number of firms found in a given country-industry portfolio in a given year in our European data. We then use these US data-based country-industry portfolios to calculate bilateral segmentation measures as described above. We repeat this process 500 times and thus obtain a distribution of the average level of bilateral segmentation.

try-pairs are non-EU country-pairs. At all times, EU country-pairs are less segmented than non-EU country-pairs. Figure 1 also shows the average, randomly created US benchmark segmentation level corresponding to the set of all European country-pairs, together with a 90% confidence interval. It is worth noting that, even though the US is an integrated market, the level of measured segmentation was mostly in the 2% to 4% range. With the exception of 2005, the valuation differentials of non-EU country-pairs were above the 90% confidence interval of valuation differences in the US. By contrast, the segmentation levels measured across EU countries were similar to those in the US by 2000. After 2000, segmentation was again larger across EU members than in the US, but still lower than for non-EU pairs. Importantly, this does not necessarily mean that EU membership was the cause of integration. For example, a plausible alternative hypothesis is that the general movement towards global market integration led to narrower valuation differentials across equity markets in the EU. We use a regression framework to address this question.

THE EU AND INTEGRATION

One potential problem with our full sample underlying Figure 1 is that the sample is unbalanced. Moreover, with the emergence of Eastern European countries in the 1990s, the sample composition changes substantially over time. We therefore focus our analysis on a balanced sample of the 120 country-pairs for which we have data since 1990. This sample excludes all Eastern European countries (see Appendix Table 1 for a list of all countries included). For this balanced sample of 2,160 observations, the average overall level of bilateral segmentation is 3.8%, 3.4% for EU country-pairs and 4.6% for non-EU country-pairs.

We investigate the effect of EU membership on bilateral equity valuation differentials, using a linear regression model and controlling for several potentially confounding factors:

$$SEG_{i,j,t} = a + b_{EU}EU_{i,j,t} + b_X X_{i,j,t} + c_{i,j} + d_t + \varepsilon_{i,j,t},$$

$EU_{i,j,t}$ is an indicator that is one in year t if both countries are EU members and zero otherwise, $X_{i,j,t}$ represents a set of controls related to the construction of the segmentation measure,[5] $c_{i,j}$ and d_t represent country-pair and year fixed effects. Their inclusion yields a difference-in-differences (DID) estimation, whereby the EU effect is identified by country-pairs' changes in EU membership status, while year fixed effects capture potential global integration trends. All standard errors are robust to arbitrary correlation over time within country-pairs and across country-pairs within years. Adjusting standard errors for contemporaneous correlation across country-pairs is particularly important given that country-pairs that share one country are not independent of one another.

[5] Specifically, we include the sum of the number of firms from both countries (in natural logs), as well as the average absolute difference in industry leverage, industry earnings growth volatility, and industry return volatility for a given country-pair in a given year. For details, see Bekaert et al. (2013).

Table 1, Column 1 reports the first main result. For brevity's sake, we report only the coefficient estimate and the associated standard error for the effect of EU membership.[6] EU membership reduces bilateral segmentation by 1.43 percentage points (*pp*) or by about 31% relative to the segmentation level of non-EU country-pairs.

From the Gordon growth model, we know that such a convergence in earnings yields represents a convergence in the cost of equity capital (i.e., expected returns) and/or expected earnings growth. While we measure absolute differences, EU membership typically reduced earnings yields towards the levels observed for existing EU members. Hence, our results indicate that EU membership is accompanied by a reduction in the cost of capital and/or an improvement in growth opportunities. Measuring these effects separately is of considerable interest, because the EU's impact on financial market integration likely operates through changes in the cost of capital, whereas changes in expected earnings may have been associated with a variety of EU-induced measures to promote trade, labor mobility and competition.

Using an empirical three-equation model of annual returns, earnings growth rates and earnings yields at the country-industry portfolio level, we estimate country-industry discount rates ($DR_{i,k,t}$) and growth opportunities ($GO_{i,k,t}$). We then form two measures of segmentation between countries *i* and *j*, reflecting differences in cost of capital and in growth opportunities between these countries:

$$SEG^{DR}_{i,j,t} = \sum_{k=1}^{N_{i,j,t}} IW_{i,j,k,t} |DR_{i,k,t} - DR_{j,k,t}|$$

$$SEG^{GO}_{i,j,t} = \sum_{k=1}^{N_{i,j,t}} IW_{i,j,k,t} |GO_{i,k,t} - GO_{j,k,t}|$$

The first measure, SEG^{DR}, captures the degree to which industry-level discount rates differ between two countries, i.e., the degree to which markets are not financially integrated. However, the second measure, SEG^{GO}, highlights the degree to which industry-level expected growth rates differ for a country-pair, which could reflect economic integration. As above, we focus on segmentation measured in December of each year, starting, if available, in 1990, and ending in 2007.

Table 1, Columns 2 and 3 report the results for the same DID estimation as for the aggregate segmentation measure (*SEG*). These results suggest that joint EU membership was associated with significantly lower cross-country differences in discount rates (-4.34 *pp*). The financial integration effect was sizeable and consistent with the evidence in Hardouvelis, Malliaropulos and Priestley (2007), who show that the cross-country dispersion of industry-level cost of equity dropped in Europe in the 1990s. However, the integration effects associated with EU membership went beyond the discount rate channel and also implied lower cross-coun-

[6] For the full set of results, see Bekaert et al. (2013).

try differences in earnings growth rates (-3.98 *pp*).

THE EU OR THE EURO?

The introduction of the euro in 1999 constituted another momentous change in Europe. Most, but not all, EU countries adopted the euro, with some joining later and others like the UK, Sweden and Denmark, declining to join the currency union. Given that euro adoption was often viewed as the culmination of the process towards economic and monetary integration within the EU, it is conceivable that our finding that the EU significantly contributed to equity market integration is, in fact, due to the adoption of the euro, rather than to EU membership per se.

While it is possible that our results are related to the introduction of the euro, it is also conceivable that EU membership and the move towards global market integration already integrated EU equity markets before the advent of the euro. By 1999, regional and global market integration may have moved far enough along for the euro to have only small effects. In addition, ex ante we would expect the process of financial market integration to be more important for equity valuations than the adoption of a single currency, as currency movements account for only a small part of the total variation in equity returns.

Table 1

The impact of the EU on financial and economic segmentation in Europe

Balanced sample: 1990–2007 (annual frequency)

	SEG 1	*SEG*^{DR} 2	*SEG*^{GO} 3
EU - indicator	**-0.0143** (0.0045)	**-0.0434** (0.0105)	**-0.0398** (0.0114)
Number of observations	2,160	1,962	1,962
Adj. R^2	0.47	0.49	0.27

This table reports coefficient estimates and standard errors for linear regression models of pairwise segmentation. All standard errors are robust to heteroskedasticity and to arbitrary correlation across country-pairs in a given year as well as across years for a given country-pair. All specifications contain additional control variables as well as year and country-pair fixed effects. Coefficient estimates with absolute t-statistics larger than 1.96 appear in bold.

Source: The authors.

Table 2

The EU and the euro

Balanced sample: 1990–2007 (N = 2,160; annual frequency)

	Dependent variable: *SEG* 1	 2
EU - indicator	**-0.0145** (0.0045)	**-0.0142** (0.0045)
Euro - indicator	0.0028 (0.0030)	
Exchange rate stability indicator		-0.0008 (0.0045)
Adj. R^2	0.47	0.47

This table reports coefficient estimates and standard errors for linear regression models of pairwise segmentation. All standard errors are robust to heteroskedasticity and to arbitrary correlation across country-pairs in a given year as well as across years for a given country-pair. All specifications contain additional control variables as well as year and country-pair fixed effects. Coefficient estimates with absolute t-statistics larger than 1.96 appear in bold. N denotes the number of observations.

Source: The authors.

In Table 2, Column 1, we report results from our baseline model when adding a euro indicator variable to the specification from Column 1 of Table 1. The euro indicator equals one if both countries in a country-pair are part of the euro area in a given year and zero otherwise. Perhaps surprisingly, we find a positive, although statistically insignificant effect of the euro on market segmentation. These results suggest that it is hard to make a case for a strong euro effect on market integration within Europe during our sample period. Importantly, the EU effect is not significantly impacted by the introduction of the euro indicator.

It is quite conceivable that some of the effects ascribed to the introduction of the euro in the literature on this topic are simply induced by EU membership. For example, Hardouvelis, Malliaropulos and Priestley (2006) find that several euro-adopting countries experienced increased equity market integration during the 1990s, while the UK did not; but they do not formally compare the effects of EU membership and euro adoption. Moreover, Engel and Rogers (2004) find no tendency of goods prices to converge after January 1999, but find a significant reduction in price dispersion throughout the decade of the 1990s. Goldberg and Verboven (2005) similarly document substantial price convergence in the EU's car market throughout the nineties, although absolute price differentials persisted until the end of their sample in 2000. Hence, the EU, not the euro, led to the integration of consumer markets.

However, there may have been strong *indirect* effects of the euro related to the original mission of the EU. After all, the Maastricht Treaty, drafted in 1991 and officially adopted in November 1993, set out a path to harmonize national regulation, which would culminate in economic and monetary union and the eventual adoption of the euro. It is possible that some of the EU effects we detect are related to changes only occurring in the 1990s with the adoption of the Maastricht Treaty. However, in our opinion, the euro effect should measure the actual effect of the single currency, not the capital, trade, and labor market integration that may have preceded it.

Nevertheless, we test an additional specification that changes the timing of the euro effect. We recognize that preparations for the euro may have been long underway and countries may have undertaken measures to limit exchange rate volatility some time before the euro was actually adopted.

We test the anticipation effect directly by replacing the euro indicator by an exchange rate stability indicator, which is inversely related to exchange rate volatility. Using daily exchange rates for all of our countries relative to the Deutsche Mark before 1999 and relative to

the euro thereafter, we assign the value of one to a country with zero exchange rate volatility (i.e., to all euro countries once they adopt the euro) and a value of zero to a country with 12% annual volatility (roughly that of a major floating currency).[7] For a country-pair, we employ the average value of the two countries in a pair. In Column 2 of Table 2, we show that the effect associated with this alternative measure based on exchange rate volatility is similar to the effect of the euro indicator. While the stability variable indeed moves up prior to the introduction of the euro as exchange rate volatility decreases, the estimated euro effect is essentially zero. Furthermore, the introduction of this alternative indicator has little impact on the coefficient on the EU indicator.

Table 3

Robustness

1990–2007 (annual frequency)

	At least 5 firms 1	Equal weights 2	Full sample 3
EU - indicator	**-0.0250**	**-0.0125**	**-0.0134**
	(0.0083)	(0.0041)	(0.0054)
Euro - indicator	0.0037	0.0013	**0.0096**
	(0.0035)	(0.0029)	(0.0044)
Number of observations	2,145	2,145	3,918
Adj. R^2	0.36	0.37	0.36

This table reports coefficient estimates and standard errors for linear regression models of pairwise segmentation. Column 1 includes only industry-country portfolios with at least five firms in a given year. The segmentation measure in Column 2 uses equally weighted averages of industry valuation differentials. Column 3 uses data from the full, unbalanced sample. All standard errors are robust to heteroskedasticity and to arbitrary correlation across country-pairs in a given year as well as across years for a given country-pair. All specifications contain additional control variables as well as year and country-pair fixed effects. Coefficient estimates with absolute *t*-statistics larger than 1.96 appear in bold.

Source: The authors.

ROBUSTNESS

So far, we have documented a significantly lower earnings yield differential associated with EU membership, but not with euro adoption. In Table 3, we report three robustness checks.

Firstly, in Column 1 of Table 3, we consider a segmentation measure that only includes those industries that contain at least five firms in a country and year. This should improve the precision of our segmentation measure. Implementing this rule, we lose 15 observations as no common industries are left to construct the segmentation measure. The EU effect increases by 1.00 *pp*, suggesting that measurement error may have reduced our estimate. The coefficient on euro adoption is again not significantly different from zero.

Above, we have defined our segmentation measure as the *value*-weighted average industry valuation differential. An industry's value is the sum of the industry's equity market capitalization across both countries in a country-pair. In Column 2 of Table 3, we report results when measuring bilateral segmentation as the *equally* weighted average across industries.[8] The estimated EU effect is again quite similar to the one for the value-weighted segmentation measure, at -1.25 *pp*. The euro effect is once again insignificant.

Finally, in Column 3 of Table 3, we investigate whether our results hold in the full, but unbalanced sample that uses all of our data, including many Eastern European countries whose data become available throughout the 1990s. We again include only those industries that contain at least five firms in a country and year. We find a significantly negative EU effect (-1.34 *pp*). The euro effect is positive, and, perhaps surprisingly, statistically significant (0.96 *pp*), providing further evidence that euro adoption did not increase integration in our framework.

In the results reported here, we identify the effect of the EU through changes in EU membership status. In untabulated results again using the full, unbalanced sample, we explore an alternative identification by modelling EU membership as a function of a country's distance to Brussels, which does not vary over time and addresses concerns that a country joins the EU as a function of time-varying economic conditions. We do indeed find that the maximum distance to Brussels for a given country-pair is significantly negatively related to the pair's EU membership status. Using the distance to Brussels as an instrument, we find that EU membership retains its significantly negative effect on bilateral valuation differentials. Indeed, the effect is more prominent, suggesting that country-pairs with higher valuation differentials were more likely to become EU members, biasing the previous results against finding an EU effect. For details, see Bekaert et al. (2013).

EUROPE IN TIMES OF CRISIS

Since the end of 2007, Europe has experienced a global financial crisis, several sovereign debt and banking crises, and most recently the decision of the United Kingdom to leave the EU. Our results show that EU integration efforts led to significantly lower segmentation between EU member states than non-member states up to 2007. This finding holds when explicitly controlling for the introduction of the euro, which by 2007 had not contributed to the increased equity market integration in Europe. Our results imply that policymakers should be particularly concerned with preserving "EU institutions" so that the current euro crisis does not endanger the past accomplishments of economic and financial integration

But have the recent crises already "undone" some of the integration benefits that EU countries experi-

[7] The measure is derived as a non-linear transformation of the volatility, σ, of a country's exchange rate relative to the Deutsche Mark and later the euro. Specifically, we transform the volatility into a stability measure on a [0,1] scale by computing $1/\exp(100\sigma)$.

[8] We again only include those industries that contain at least five firms in a country and year. Without this requirement, the corresponding EU effect drops to -0.21 *pp*.

Table 4

Market integration in times of crisis

Monthly frequency: January 1990–August 2016

	1990–2007	1990–2016	
	1	2	3
EU - indicator	**-0.0209** (0.0050)	**-0.0214** (0.0047)	
Euro - indicator	**0.0074** (0.0024)	**0.0092** (0.0024)	
EU - indicator until 2007			**-0.0221** (0.0047)
EU - indicator after 2007			**-0.0181** (0.0056)
Euro - indicator until 2007			**0.0072** (0.0024)
Euro - indicator after 2007			**0.0096** (0.0031)
Number of observations	25,402	37,882	37,882
Adj. R^2	0.42	0.38	0.38

This table reports coefficient estimates and standard errors for linear regression models of pairwise segmentation *(SEG)*. The segmentation measure is constructed for all country-pairs in the balanced sample, using Datastream industry index data at the monthly frequency. All standard errors are robust to heteroskedasticity and to arbitrary correlation across country-pairs in a given year as well as across years for a given country-pair. All specifications contain additional controls as well as time and country-pair fixed effects. Coefficient estimates with absolute t-statistics larger than 1.96 appear in bold.

Source: The authors.

enced prior to 2007? To address this question, we extend our sample to include data through August 2016, covering the same country-pairs as the balanced sample above. Unlike in our pre-crisis analysis, we employ monthly rather than annual data. This allows us to extend the sample through the Brexit referendum in the UK, rather than ending the sample in 2015.[9]

In Column 1 of Table 4, we show the monthly results for the 1990–2007 sample period to compare with the annual results in Table 2. The key results remain intact, constituting another robustness check of our main results. The EU effect is a bit stronger than the result in Table 2 and not too far from the finding in Table 3, where we restricted the sample to industries with at least five firms to minimize measurement error. We do find a small, but now significantly positive euro effect, which is not surprising given the positive euro effects shown previously in Tables 2 and 3.

Columns 2 and 3 of Table 4 report results for the extended sample period through August 2016. Column 2 reveals that extending the sample and increasing the number of observations by about 50% does not substantially affect the overall estimates of the EU and euro effects. The EU effect remains essentially unchanged, while the euro effect increases slightly, probably reflecting the differential economic impact of the euro crisis within the Eurozone. In Column 3, we separately estimate the EU and the euro effect for 1990 to 2007 and 2008 to 2016. We find that the EU effect changed from -2.21 *pp* during the earlier period to -1.81 *pp* during the more recent period. On the other hand, the euro effect changed from 0.71 *pp* to 0.96 *pp*. The combined effect of EU membership and euro adoption changed from -1.49 *pp* during 1990 to 2007 to -0.85 *pp* during 2008 to 2016.

[9] A second difference is that we use Datastream's pre-calculated industry indices instead of industry indices we constructed from the bottom up. In a few cases, index coverage by Datastream begins after firm-level coverage, so that we are missing 518 observations (1.3% of the expected sample size without missing observations) between 1990 and February 1992. Starting in March 1992, the data set is fully balanced.

CONCLUSIONS

Using industry-level equity market valuations, we measure financial and economic integration among European countries and study the effects of joint EU membership and euro adoption on bilateral segmentation. Our measure is based on average differences in industry earnings yields and the assumption that, in financially as well as economically integrated markets, industry earnings yields converge.

Our main result reveals that between 1990 and 2007, bilateral earnings yield differences were about 1.50 *pp* lower if both countries were EU members. EU membership significantly lowered both discount rate differentials (financial integration) as well as expected earnings growth rate differentials (economic integration) across countries. Importantly, we do not find that euro adoption increased financial and economic integration between European countries.

Extending our sample period through August 2016 does not alter our main finding: EU membership increases integration, while there is no evidence in our analysis that the introduction of a common currency has had a positive impact on integration. However, the extended sample analysis reveals that integration benefits due to EU membership decreased somewhat during recent years, while segmentation between Eurozone countries increased slightly.

Both our novel measure of integration and our results may be relevant for the important decisions facing policymakers, as well as for the future research that will analyze their actions.

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Appendix Table 1

Countries, sample composition, EU membership, and euro adoption
1990–2007

Country	First year	Balanced sample	First year of membership / adoption	
			EU	Euro
Austria	1990	X	1995	1999
Belgium	1990	X	1957	1999
Bulgaria	2003		2007	-
Croatia	1999		2013*	-
Cyprus	1995		2004	2008*
Czech Republic	1995		2004	-
Denmark	1990	X	1973	-
Estonia	2000		2004	2011*
Finland	1990	X	1995	1999
France	1990	X	1957	1999
Germany	1990	X	1957	1999
Greece	1990	X	1981	2001
Hungary	1993		2004	-
Iceland	2005		-	-
Ireland	1990	X	1973	1999
Italy	1990	X	1957	1999
Latvia	2000		2004	2014*
Lithuania	2001		2004	2015*
Luxembourg	1991		1957	1999
Malta	2002		2004	2008*
Netherlands	1990	X	1957	1999
Norway	1990	X	-	-
Poland	1994		2004	-
Portugal	1990	X	1986	1999
Romania	2000		2007	-
Russian Federation	1997		-	-
Slovak Republic	2001		2004	2009*
Slovenia	2001		2004	2007
Spain	1990	X	1986	1999
Sweden	1990	X	1995	-
Switzerland	1990	X	-	-
Turkey	1992		-	-
United Kingdom	1990	X	1973	-
Total countries	33	**16**	27	13
Total distinct country pairs	**528**	**120**	**351**	**78**

This table reports for each country the first year that the country is included in our data set, whether we include the country in the Balanced Sample as well as the first year of EU membership and Euro adoption. * denotes EU accession or Euro adoption after 2007.

Source: The authors.

Daniela Del Boca, Enrica Maria Martino and Daniela Piazzalunga

Investments in Early Education and Child Outcomes: The Short and the Long Run

INTRODUCTION

In the last few years a growing number of economists and psychologists have focused on the ways parents care for their younger children. In households where both parents work in particular, the care of children has to be at least partially delegated to the care of other members of the family or to formal childcare. Given the importance of early investments in children's development, an intense debate has focused on the availability and quality of alternative childcare modalities as substitutes for maternal time.

With the growing number of women working, the use of non-maternal childcare has increased in the last two decades, with children cared for within the extended family (mostly by grandparents) or in formal care centers. In countries like Norway, Sweden and France, where formal childcare is widely available and there is generous parental and maternity pay and support for mothers who stay at home, grandparents play a more limited role in providing childcare. In Italy, Spain and the United Kingdom, where there is little formal childcare, grandparents often care for their grandchildren (Jappens and van Bavel 2012). Figure 1 shows a negative link between public expenditure on formal childcare and the use of informal childcare in different countries.

Figure 2 shows the formal childcare enrolment rates for children aged 0–2 and children aged 3–5 in several countries. The enrolment rate in formal childcare is much lower for children under the age of 3 and varies considerably across countries. Government spending in this area is highest in the Nordic countries and France, and much lower in Mediterranean countries, both as a percentage of GDP and per child.

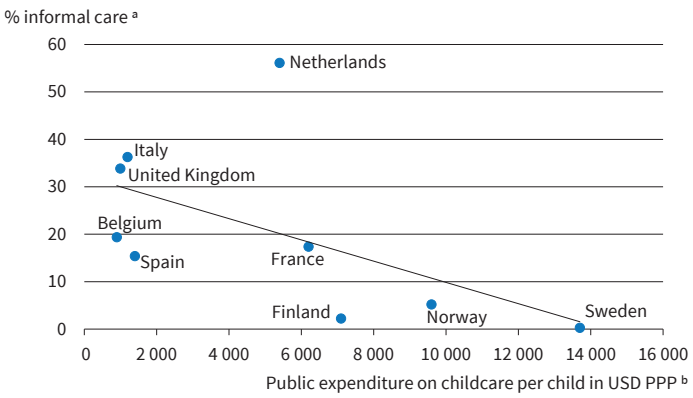
Research on the effect of formal childcare on child development has been growing in the last two decades and produced several important results.

The international comparison of children's cognitive outcomes provided by PISA (test scores in mathematics and reading performance) shows a potential link between early investments in education and student performance. In Northern European countries, where larger early investments in children are made, cognitive test scores are higher, while in Mediterranean countries, where investments are lower, children perform worse (OECD 2014).

In this article we report recent findings from the literature focusing on the impact of parental and non-parental investments on child outcomes, with attention to cognitive and non-cognitive outcomes as well as short-run and long-run effects.

Figure 1

Public expenditure on childcare and use of informal care
Children aged 0–2



a Proportion of children using informal childcare arrangements during a typical week.
b 2013 and latest available.

Source: OECD Family Database.

THE ECONOMIC APPROACH TO CHILDCARE

In order to analyze the link between early investments and child outcomes, economists have used a production function framework (Todd and Wolpin 2003). The first years of life are especially important, as child development is described as a dynamic and cumulative process, where early investments have the highest rate of return (Cuhna and Heckman 2008). The outcome is determined by parental inputs (money and time), school inputs, and endowments; cognitive and non-cognitive outcomes are largely determined in early stages. The neuroscience literature shows that children's skills are most malleable at an early age, making early investments most relevant for future life outcomes, while interventions when children are teenagers or young adults are more expensive and often less effective. Thus, early interventions are more efficient than later interventions. In this framework, cognitive and non-cognitive skills are equally important in explaining several short-term and long-term outcomes, as there is a strong link between skills such as motivation, attention and self-confidence, and performance in school (Cunha and Heckman 2008).

While child development has traditionally been a field of study for development psychologists and neuroscientists, economists have contributed to this area in a significant and original way over the past two

Daniela Del Boca
University of Turin, IZA and CHILD-Collegio Carlo Alberto.

Enrica Maria Martino
University of Turin and CHILD-Collegio Carlo Alberto.

Daniela Piazzalunga
FBK-IRVAPP, IZA, and CHILD-Collegio Carlo Alberto.

decades. Economists are interested in understanding both the drivers of economic growth at the macro level, and the drivers of individual productivity and labor market outcomes at the micro level. At the micro level, early contexts affect a person's development over his/her entire lifecycle; affecting the development of skills and abilities, they influence the productivity of individuals and potentially their costs to society (Knudsen et al. 2006). As mothers increasingly join the labor force, reducing time that they spend with their children, concerns are raised over the negative effects that their absence may have on children's development.

Other research in economics focuses on inequality and social mobility. As there exist substantial gaps between advantaged and disadvantaged children, which last and increase over an entire lifetime, investing in the development of disadvantaged children may be especially important to give equal opportunities to children from different backgrounds. These investments would help to close those gaps and reduce inequalities in the long term.

In terms of policy implications, this evidence makes investments in early childcare and the design of parental leave policies particularly relevant for two distinct goals: to encourage and sustain female employment and facilitate the reconciliation of work and family responsibilities; and to improve children's opportunities and reduce inequality at the earliest stages of life.

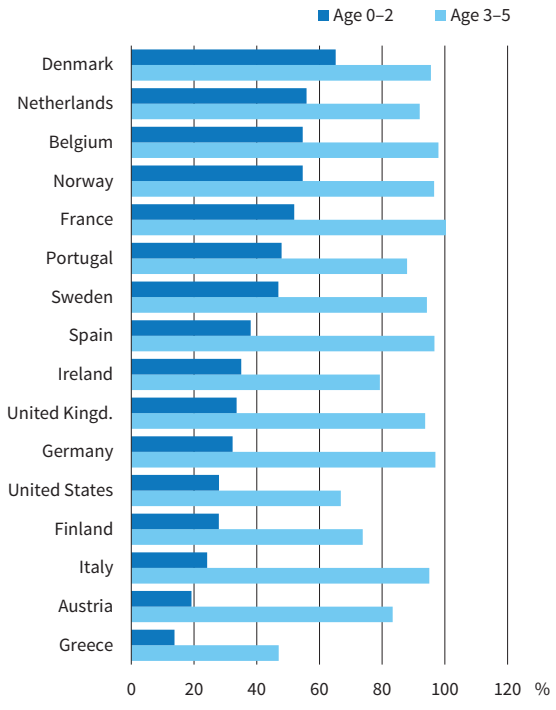
While theoretical and empirical literature in several disciplines highlights the importance of the first years of life for the cognitive and non-cognitive development of children, rigorous evaluations of the impact of different forms of childcare at the pre-kindergarten age are still rare, mainly due to the lack of adequate data, and results are mixed.

Recently, some empirical studies tried to assess the impact of early childcare on child outcomes. The main difficulties stem from the lack of data and from the endogeneity in parental preferences over childcare which, if not adequately taken into account in the identification strategy, prevent any causal interpretation of the results. Another important issue is the alternative childcare option available to the family: failing to control for the true counterfactual scenario could lead to a misleading interpretation of the results, as highlighted by Elango et al. (2015).

Below we discuss the most recent studies on US and European data, which have addressed the hypotheses presented before, dealing with endogeneity in the choice of childcare.

Figure 2

Enrolment rates to early childcare by age and country, 2014



Source: OECD Family Database.

THE ROLE OF THE FAMILY

Several recent studies in different countries have used the theoretical framework described above to explore the impact of family inputs on child outcomes. To analyze this impact, the most accurate measure of family's time investments in children is provided by time diary surveys, which usually contain detailed information about the amount of time parents spend engaged in various activities with their children. Not only is the amount of time spent with children relevant, but also (and most importantly) the quality of this time, and the distinction between active time – i.e., time spent in playing with the children – and passive time – i.e., being in the same room, but doing other activities besides childcare – is crucial.

Mothers' and fathers' care

Research exploiting time use data from the Child Development Supplement of the Panel Study of Income Dynamics shows that US mothers who are highly educated can use their time more productively, and are able to squeeze their leisure time to continue to provide similar amounts of quality time to their children when they work as when they do not (Hsin and Felfe 2014).

The size of the impact of mothers' inputs on child cognitive outcomes depends on the childcare substitutes available to the household. As most research shows, mothers' time is the most important input to a child's cognitive development. However, in recent decades, fathers' time with their children has increased markedly, partly offsetting the decline in mothers' time due to increasing employment rates.

Drawing on time use data, Del Boca, Flinn and Wiswall (2014) find that both parents' inputs are important for children's cognitive development. The study finds that parental time inputs, and especially active time, are generally more productive than financial expenditure on "child goods" (such as tutoring, toys

and games, books and so forth). The study also shows that mothers' time is particularly important for younger children, but fathers' time becomes more important as children grow up. When children grow older their own inputs become more important than mothers' and fathers' inputs, as well as school and peer groups (Del Boca, Monfardini and Nicoletti 2017).

In applied psychology, new parental inputs have been considered besides time and money, including the style of parenting itself, which defines parents' approach in disciplining their children. Baumrind (1966) proposed a typology of three parenting styles, which are distinguished mainly in terms of the relative importance parents attach to control of versus freedom for their children. According to his analysis, children's best cognitive and behavioral developmental outcomes are more often correlated with authoritative parenting (i.e., high levels of both warmth and control). These early results were tested in more recent studies, which find that parenting style is an important determinant of children's outcomes independent from other parental investments (Cobb-Clark, Salamanca and Zhu 2016, Doepke and Zilibotti 2014).

Grandparental care

When both parents work, one of the most important substitutes of their time is informal childcare provided by grandparents. Data from several countries indicate that grandparents play an important role in childcare in most cases (Jappens and van Bavel 2012).

A large proportion of grandparents provide some kind of care for grandchildren, some on a regular basis. This proportion has decreased over time in countries where subsidized universal childcare has become available, while it has remained stable or increased in countries where affordable formal childcare is unavailable.

Recent research results show that grandparents' care can positively affect some measures of cognitive outcomes, while negatively affecting others. Toddlers who received informal care from grandparents did better on vocabulary tests than those who received formal childcare, but were less prepared for school (Hansen and Hawkes 2009; Del Boca, Piazzalunga and Pronzato 2014).

In center-based formal care, better trained staff may provide a more stimulating environment, featuring more interaction with staff and other children, and more educational activities than informal care. One potential explanation of the positive effect of grandparents care on naming vocabulary is that grandparents provide one-on-one care, with children addressed verbally by adults more frequently than in formal care. In addition, grandparents provide a more stable relationship with children, whereas formal care centers are likely to be characterized by staff rotation.

These results differ considerably according to children's socio-economic backgrounds. The positive impact on a child's vocabulary associated with grandparents' care is stronger for children from advantaged backgrounds, while the negative impact on school readiness is stronger for children from disadvantaged backgrounds. Del Boca, Piazzalunga and Pronzato (2014) also explored longer-term effects and show that the negative effects of grandparental care on cognitive outcomes decline at age 7, but the differences by socio-economic background remain.

THE ROLE OF FORMAL CHILDCARE

Empirical research conducted on US or European countries generally finds that center-based childcare has positive effects on several child outcomes, both among cognitive skills (IQ, language and motor skills, school readiness, achievement tests) and their non-cognitive counterparts (better health, socio-emotional maturity, lower hyperactivity and aggressive behavior). The programs are usually more beneficial for children from disadvantaged backgrounds or from households with low socio-economic status; the channel to explain this heterogeneity in results may refer to the worse and less stimulating home environment available to disadvantaged children, while richer families may have access to high-quality substitutes of center-based childcare; another possible explanation is the lack of information about education and pedagogical methods among parents from low socio-economic status, for whom formal childcare may also play an informative role about best parenting practices (Cuhna, Elo and Culhane 2013, Cuhna 2015).

Empirical evidence on cognitive outcomes

Elango et al. (2015) report and systematize results from several studies evaluating the impact of formal childcare on children's outcomes. The first results come from the evaluation of randomized social experiments targeting disadvantaged children (the Carolina Abecedarian Project in the 1970s, Head Start, begun in 1965, and the Infant Health and Development Program in the 1980s); they find significant positive effects on early measures of IQ. Differences by gender emerge, the effect being stronger – or significant – for boys.

Additional evidence comes from universal programs both in the US and in Europe. Bernal and Keane (2011) find that center-based care has no negative effects on children's cognitive outcomes (measured by standardized vocabulary, reading and math tests) as a substitute for maternal time with children, while informal care does. Evaluating the impact of universal pre-kindergarten in Oklahoma, Gormley (2008) finds increases in cognitive, language, and motor skills, especially for black children and children of immigrant parents. Loeb et al. (2007) find that center-based care has a positive impact on reading and math scores. Brilli, Del Boca and Pronzato (2016) explore the relation between early childcare and children's performance in primary school in Italy, where early childcare supply is highly rationed and heterogeneously distributed; they find a positive effect of childcare availability, the results being stronger for low income households and in areas where childcare availability is lower. Drange and Havnes (2015) use a lottery mechanism applied in Nor-

way to allocate slots in early childcare centers to evaluate the impact on cognitive outcomes: they find that children from low income families who went to early childcare centers perform better in a language and mathematics test at 7, while no significant impact emerges among children from high income families. Felfe and Lalive (2014) use rich German data to study the impact of early center-based care on both cognitive and non-cognitive outcomes (language and motor skills, school readiness, socio-emotional maturity); they find that it is beneficial for children with less educated mothers or foreign parents.

Empirical evidence on non-cognitive outcomes

Economists usually cluster under "non-cognitive outcomes" a number of different characteristics valued at school and in the labor market, but which are not measured by achievement and IQ tests, such as behavior, personality traits,[1] goals, motivations, preferences, self-control and locus of control. However, most studies to date have focused only on behavior due to data limitations.

Compared to cognitive skills, non-cognitive skills are considered to be more malleable for longer periods of time, even though investments at early ages have larger effects (Felfe and Lalive 2013) and higher returns (Kautz et al. 2014). Moreover, non-cognitive skills also influence cognitive skills (Almlund et al. 2011).

Few studies find an increase in the behavioral problems suffered by children attending early formal care (Magnuson, Ruhm and Waldfogel 2007; Baker, Gruber and Milligan 2008), while others do not find any difference with parental care. According to a study for Denmark by Datta Gupta and Simonsen (2010), being enrolled in formal care at age 3 is as good as parental care in terms of non-cognitive outcomes; while family day care, by contrast, negatively affects children's behavior. Hansen and Hawkes (2009) find similar results for the UK: they report no effect of formal care at 9 months on the behavior of children at age 3, whereas children cared for by grandparents have more peer problems.

Other researches find instead a reduction in behavioral problems thanks to formal care (Figlio and Roth 2009; Chor, Andresen and Kalil 2016; Felfe and Lalive 2013 for disadvantaged children). After the first evaluation revealed its negative impact on the non-cognitive development of very young children (Baker, Gruber and Milligan 2008), in a later evaluation, Baker, Gruber and Milligan (2015) distinguished positive effects on disadvantaged children in terms of reduction of hyperactivity, anxiety and depression.

Effects in the medium and long run

One of the most important questions for policy purposes is how long the effects of early formal care last, and on which outcomes. Findings are mixed: while some researchers show that the positive effects of attending formal care on the cognitive abilities of children fade or dissipate within few years, others find a long-lasting effect.

As noted in the review by Elango et al. (2015), a general pattern for IQ and achievement test scores is that they fade after the beginning of primary school and, in some cases, completely vanish by teenage years. Hojman (2015) finds that, for Public Private Partnerships (PPP) and Educational Training Programs (ETP), the gap between treatment and control groups narrows because the control group gains more from schooling. Evaluating a Tennessee program with a randomized control trial, Lipsey, Farran and Hofer (2015) find that attending pre-kindergaten at age 4 has positive effects on cognitive and – to a lesser extent – behavioral outcomes at age 5. However, the cognitive effects disappear by the end of kindergarten (age 6), and at age 8–9 treated children performed worse than the control group, with no differences in terms of behavioral outcomes.

A few papers, by contrast, find significant effects on cognitive outcomes in the long run. Elango et al. (2015) report two studies that find persistent, although weakening, effects on IQ long after school entry, and they both concern pre-kindergarten interventions. Evaluating a Spanish reform, Felfe and Lalive (2014) find that high quality childcare for 3-year-olds improves children's reading skills at age 15 and reduces grade retention in primary school. In Denmark, Datta Gupta and Simonsen (2016) show that early formal care at age 2 has a positive effect on grades in language at age 16. García et al. (2016) report that a high quality program starting at age 0 and targeting disadvantaged children has a long lasting effect on IQ.

More importantly, most papers find persistent effects on adults' outcomes more broadly defined: (i) educational attainment (Cascio 2009; Havnes and Mosgtad 2011; Elango et al. 2015), which is related to (ii) better labor market outcomes (Havnes and Mosgtad 2011; Elango et al. 2015); (iii) health behavior and health outcomes (Carneiro and Ginja 2014; Elango et al. 2015; Conti, Heckman and Pinto 2015); and (iv) criminal activity (Cascio 2009; Carneiro and Ginja 2014; Elango et al. 2015).

The first puzzle in child development literature is how to reconcile those studies that also find medium-term effects on IQ, while in most cases they fade out. The second puzzle is how to explain the effects of early childhood on adult outcomes, even when IQ or cognitive gains fade out by the teenage years (see, for example, Duncan and Magnuson 2013).

On the one hand, it is worth noting that long-term effects on achievement tests were found when formal childcare was introduced at early ages (0–3), while these effects dissipate if we consider preschool/kindergarten age only (3–5). This result seems to confirm the findings by Heckman and co-authors: not only is it important to invest in early childhood, but starting earlier drives higher returns. Indeed, some evidence indicates that

[1] Usually the "Big Five": conscientiousness, openness, agreeability, emotional stability, extraversion.

investments before age 3 are more likely to improve IQ over the long term (Kautz et al. 2014).

On the other hand, even when the effect on cognitive outcomes vanishes, there is a persistent impact on adults' life outcomes. According to Heckman and coauthors, later outcomes on health, crime, and employment are mediated by the positive impact of early childhood education on non-cognitive skills, even if the impact on cognitive skills dissipates early (Heckman, Pinto and Savelyev 2013; Conti, Heckman and Pinto 2015; Elango et al. 2015). Recently, different authors have shown that changes in early non-cognitive skills have an impact on later outcomes, proving that they often have the same predictive power[2] of cognitive measures (Heckman, Stixrud and Urzua 2006, Almlund et al. 2011, Baker, Gruber and Milligan 2015).

This result highlights the importance of studying child development as a dynamic multi-skill process, as described by Cuhna and Heckman (2008), where human capital accumulation results from "self-productivity" – skills developed in earlier stages bolster the development of skills in later stages – as well as from the dynamic complementarity that results when skills acquired prior to a given investment increase the productivity of that investment.

The role of quality

While a lack of adequate data has not allowed investigation of the causal impact of different levels of quality or different pedagogical curricula on child development to date, some pioneering research suggests that they do have a role to play in shaping a bad or good substitute for parental time in terms of its impact on child development. Blau (1997) finds that the effects of group size, staff/child ratio, and provider's human capital on quality are very small. Other variables like teachers' enthusiasm, communicative skills, and dedication are potentially more important, but more difficult to measure. More recent studies find that some objective indicators of the quality of childcare before age three (namely teachers-children ratio, teachers' age and education, working hours, and group size) are of major importance in determining the positive impact on children's school readiness and their socio-emotional maturity at the beginning of primary school (Felfe and Lalive 2013). Li et al. (2012) find that experiencing high-quality childcare in both infant-toddler and preschool care has better consequences on cognitive outcomes at age 2 and 5; the quality of care-giving was assessed by professionals on a standardized scale and outcomes were measured before entering primary school; irrespective of the time of preschool care, high-quality infant toddler care is related to better memory skills. Love et al. (2003), comparing a variety of childcare centers differing in level of regulation and of staff quality, conclude that the quality of available childcare influences children's developmental outcomes and should be taken into account when evaluating childcare policies.

[2] Among personality traits, conscientiousness is considered to have the largest predictive power (Almlund et al. 2011).

Other studies have linked quality with the influence of certain program curricula and pedagogical philosophies on the teaching strategies employed in classrooms, into the two main categories of "child-centered" and "academic" approaches. According to the first approach, teachers do not impose a specific curriculum, but facilitate the child's learning by planning activities based on the child's interests, and engaging in the activities alongside the child. In an academic approach, instead, the focus is on acquiring notions related to different subject areas. Some descriptive evidence shows that by the end of preschool, children from child-centered programs have acquired greater competence in social, basic math and basic verbal skills than their peers in academically-driven preschool environments (Marcon 2002). This area of research, while interesting and potentially important, has not produced rigorous analysis and the results are quite mixed.

CONCLUSIONS

In this article we have summarized and discussed recent empirical results on the links between family, formal and informal childcare and child outcomes. We have distinguished between cognitive and non-cognitive outcomes and medium- and long-run effects.

Studies find that multiple actors contribute to the child development process: mothers, fathers, grandparents, and schools. While mothers' inputs are clearly crucial in early childhood, fathers are also important, especially as children grow older. Grandparents' inputs have mixed results, improving vocabulary, but reducing other cognitive skills.

Formal childcare appears to be very beneficial on cognitive outcomes and, in most cases, on non-cognitive outcomes, too. The results also show that the positive association between formal childcare and positive child outcomes is stronger for children in more disadvantaged homes. While children in families with higher income and more education already receive substantial early investments within their families, in low-income households they often lack the resources needed to support and stimulate child development.

As for the persistency of these effects, while the positive impact on cognitive outcomes may dissipate over time, the impact on non-cognitive skills and health drives the positive relation between formal and high-quality early childcare and life outcomes in the long run, such as higher educational attainment, lower probability of criminality, better health conditions, and better performances in the labor market.

The empirical evidence reported here suggests that policies encouraging and supporting parents' efforts to spend more time with their children during early stages of development and policies promoting the development of high-quality formal childcare have a positive impact on child outcomes.

These results have important implications for parental leave policies and the provision of affordable, high-quality childcare. Only a few studies have yielded results that are not compatible with the positive impact

of early interventions programs on children from low-income households.

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Clara Albrecht, Anita Fichtl and Peter Redler[1]

Fathers in Charge? Parental Leave Policies for Fathers in Europe

Despite the fact that most parental leave policies in European countries have also entitled men, take-up rates by fathers have been low. In turn, the traditional male breadwinner model has prevailed in the EU, even though the level of education of men and women has converged fully. At the same time, fathers do want to spend time with their newborn children (Huerta et al. 2013). A trend towards the implementation of parental leave policies for fathers – also known as "daddy months" or "daddy quotas" – has emerged. The potential goals of these policies are greater gender equality, both in the family and in the labour market, a better work-life-balance for families and stronger bonding between father and child. Encouraged by state regulations and the EU-Directive 2010/18/EU[2] parental leave take-up rates have been rising over the past decade, but still remain low.

In general, there are three different types of leave policies for parents: maternity leave, paternity/paternal leave and parental leave. *Maternity leave* (or pregnancy leave) is only available for women around the time of childbirth focusing on the pre- and post-birth health of mothers and newborns. It covers 23 weeks on EU-average (European Parliament 2015). *Paternity leave* is only available for fathers and regulates employment-protected (short-term) leave during and after child-birth in order to support the mother, to care for older children or to spend time with the family. Depending on the country, it has to be taken immediately or in the few months after child-birth. *Parental leave* is available to both mothers and fathers and usually covers a longer employment-protected period, which normally follows on from maternity/paternity leave. Parental leave can be either an individual right or a family entitlement sharable between parents. As a measure to boost the take-up of parental leave by fathers, some countries offer father-specific parental (and home care) leaves ("daddy months"), which are reserved exclusively for fathers. Other countries offer bonus weeks that are only available if both parents use a certain portion of the family entitlement and are lost otherwise. This is also known as the "use it or lose it"-approach.

To analyse fathers' involvement in childrearing in EU-28 states, we focus on paternity leave, as well as on those parts of parental leave that are solely reserved for fathers, subsequently referred to as father-specific parental leave. This means that the sharable portion of parental leave, which is almost exclusively taken by mothers, is not part of our analysis.

Paternity leave systems and father-specific parental leave systems differ considerably across countries in terms of their *duration* as seen in Figure 1. The attractiveness of take-up to fathers also depends on the compensation offered for the given period. Figure 1 also shows the *full-rate equivalent* pay in weeks for the fathers' leave period. If parental leave is paid at much lower rates than previous earnings, or not paid at all, it can put stress on household budget situations. This is especially true for male breadwinner families, which are not uncommon as men's hourly earnings in EU-28 countries are still on average 16.9 % (Eurostat 2016) higher than women's.

A deeper look into the policies of EU countries provides insights into how fathers are integrated and considered in paternal leave policies. The average paternity leave period granted in EU-28 states is 1.3 weeks, while the father-specific part of parental leave is 4.5 weeks on average. The average compensation for the total leave period equals the full-rate wage of 2.9 working weeks. Even though these differences seem vast, there are some similarities among EU countries, which enable us to identify four different types of systems.

The most common system includes a relatively short period of paternity leave with a very high compensation rate in combination with no father-specific parental leave. This is the case in the Baltic states, Greece, the Netherlands, Spain, Malta and Italy, as well as in the Eastern European countries Bulgaria, Slovenia, Hungary and Romania. Denmark and the United Kingdom also only offer paternity leave, but differ from the others in that their compensation rate is much lower. The periods of paternity leave in the countries mentioned above range from one (Italy and Malta) to thirty (Lithuania) days.

By contrast, Germany, Austria and Croatia offer no paternity leave at all. However, these three countries reserve parts of their parental leave solely for fathers. The compensation rate for these periods is comparably lower in these countries, as it ranges from 34% to 80% of the previous wage.

France, Luxembourg, Portugal, Belgium, Finland and Sweden have mixed systems in place whereby fathers are granted both paternity leave and father-specific parental leave. These countries lead the EU in the absolute leave time granted to fathers. Finland and Sweden have high compensation rates at 70% and 76% respectively, while the rates of the other countries range from 20% to 54%. This shows that those countries with the longest time periods granted solely to fathers do not necessarily offer the highest compensation rates.

Finally, Cyprus, Slovakia, Ireland and the Czech Republic do not offer any periods of paternity leave or father-specific parental leave.

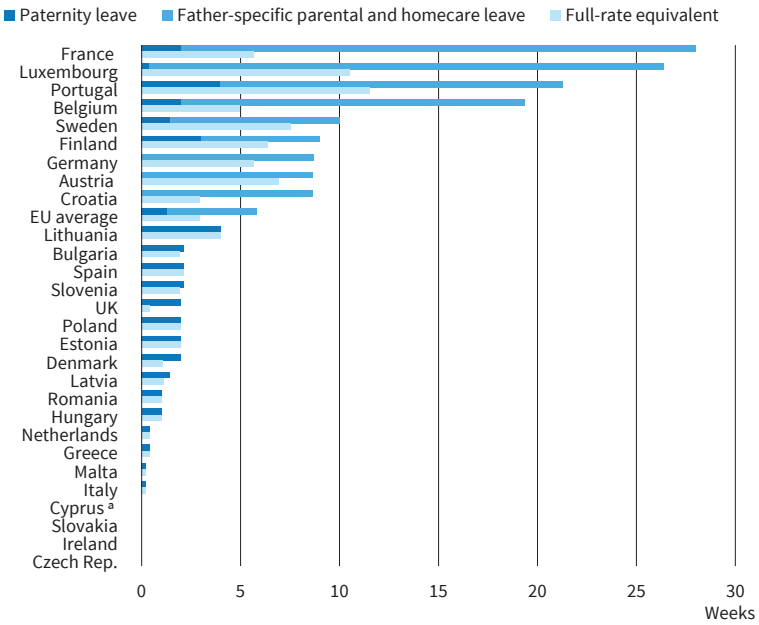
[1] ifo Institute (all).

[2] The Directive determines the right of parents to spend at least four month of parental leave with the child, with one month to be taken by each parent. In other words, the EU gives path to a one month "father´s quota" with the official goal of promoting equal opportunities and treatment between men and women.

Figure 1

Parental leave policies for fathers in EU-28 countries

Weeks of paid paternity and paid parental leave that can be taken only by the father & full-rate equivalent, 2015



Note: Full-rate equivalents shown are capped or subject to taxation in some countries.
[a] Only southern part considered.

Source: OECD Family Database.

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As almost all of the father-specific leave periods are optional, it must be noted that we have only talked about opportunities to date. The take-up rates by fathers are certainly relevant too. When comparing take-up rates in Europe, the situation in Sweden deserves our attention. Sweden was the first country worldwide to introduce a parental leave policy with earnings-related benefits available for both parents in 1975. However, fathers' take-up rates still remained low. A dramatic shift occured when a one month father's quota was implemented in 1995. Previously, only half of Swedish men took at least some parental leave, whereas almost 90% of fathers have decided to take leave after their child´s birth since 1995. It was not only the total share of fathers that increased substantially, but also the amount of days taken. While the average number of leave days by fathers was 25 prior to the reform of 1995, it rose to 35 days after the reform (Duvander and Johansson 2012). Similar developments can be observed in Norway and Finland where father-specific parental leave was introduced in 1993. In all three countries the compensation rate is relatively high (66 to 100%). With these characteristics the Nordic countries are generally considered to represent a typical dual earner/dual carer regime (Nordenmark 2015).

In Germany, a similar shift has been observed since the introduction of "daddy months". Prior to the implementation of two months of father-specific parental leave in 2007, the share of fathers who took any parental leave was 3.5%. It has since risen to 35.7% in 2015 (Federal Statistics Office 2017). In France, father-specific parental leave is compensated at a rate of 20% of the father's former wage and unsurprisingly, it is rarely taken up. By contrast, the compensation rate for paternity leave in France is 93.5%, which has led to 62% of fathers making use of it (Koslowski, Blum and Moss 2016). The case of Portugal is interesting in that ten days of paternity leave are obligatory for the father. However, its lack of enforcement keeps take-up rates below 100%. The take-up of parental leave by fathers has also increased in Portugal since the father-specific parental leave was introduced in 2009 (Koslowski, Blum and Moss 2016). More traditional countries like Italy, Greece, or Spain, where the male breadwinner model has been predominant, tend to offer long periods of parental leave without or at a low replacement rate and few father-only entitlements. This was also the case in Germany until 2007. In contrast to the Nordic welfare states, these types of systems can be labelled as conservative welfare state systems (Boll, Leppin and Reich 2014).

While research on the topic of labour market participation by women and mothers is abundant, the effects of fathers' parental leave-taking have not been studied in the same depth to date. Empirical research is mainly conducted in countries with long experience of state regulations on paternity leave. Many studies find that the impact of paternal involvement has mixed results in terms of the division of labour in households.

Cools, Fiva and Kirkeboen (2015) find that the introduction of a four-week paternal quota in Norway and the subsequent increase in fathers' leave-taking behaviour[3] had positive effects on children's exam scores at the end of compulsory schooling. This is particularly true in families where the father has a higher level of education than the mother. The children's improved school outcomes cannot directly be linked to the four weeks fathers spent at home, but that time might have led to a change in household roles in the longer run. Rege and Solli (2013) find for Norway that the introduction of a four-week paternal quota goes along with a shift in time and effort from market to home production. As a result, and in line with Cools, Fiva and Kirkeboen (2015), childcare-related tasks are distributed more equally within families (Rege and Solli 2013). Evaluating a reform in Sweden in 1995, Ekberg, Eriksson and Friebel (2013) do not find a permanent

[3] Fathers' leave-taking rose from 2.6% for children born prior to the reform in March 1993 to 24.6% for children born in April of the same year right after the introduction of the reform.

impact on time input of the father in the household. Though the fathers`use of parental leave increased by 50%.

In a study on German leave-taking fathers, Boll, Leppin and Reich (2014) provide evidence for the fact that father-specific parental leave led to an increase of over one hour/week spent on childcare. Schober (2014) also finds evidence that the 2007 German reform and the subsequent higher parental leave take-up rates of fathers led to an increase of 36 minutes in the time they spent on childcare on weekdays in the child's first year, compared to children born prior to the reform. 18 to 30 months after the reform fathers still spent 26 minutes more with their child. By contrast, Kluve and Tamm (2013) find no significant changes in the time spent on childcare for fathers. They study the effects of the 2007 German parental leave reform by comparing the behaviours of parents with children born just before and right after the implementation.

Huerta et al. (2013) conduct a study on fathers' leave-taking and fathers' involvement in childcare in four OECD countries. They find that fathers who take leave for over two weeks were more likely to be involved in childcare during the child's first year of life than those who did not take any leave. Even when children were two to three years old, fathers who had taken leave were still more involved.

Few papers study some other possible impacts of paternity leave. Cools, Fiva and Kirkeboen (2015) find neither proof of increased female labour market participation nor of positive effects on fertility or marital stability due to the paternity leave reform in Norway. Rege and Solli (2013) examine the effects of the same reform and find that fathers' four week leave decreased future earnings by 2.1% and that mothers' labour supply was unaffected.

Finally, it is important to mention that the take-up rates of leave by fathers in EU countries depend on many factors other than the availability and compensation of "daddy months". Those include the flexibility of leave arrangements, the degree of job protection of parental leave, the workplace culture and the availability of affordable childcare, as well as the current gender norms and cultural expectations. All in all, an ongoing trend towards the implementation of well-designed policies for fathers' involvement in child-rearing can be observed in EU countries. Fathers' use of parental leave is largest when it is well-paid and accompanied by other family-friendly policies such as flexibility regarding working hours. However, persistent positive effects are not to be expected immediately, but need to be evaluated in the long run, as prevailing societal norms only change gradually.

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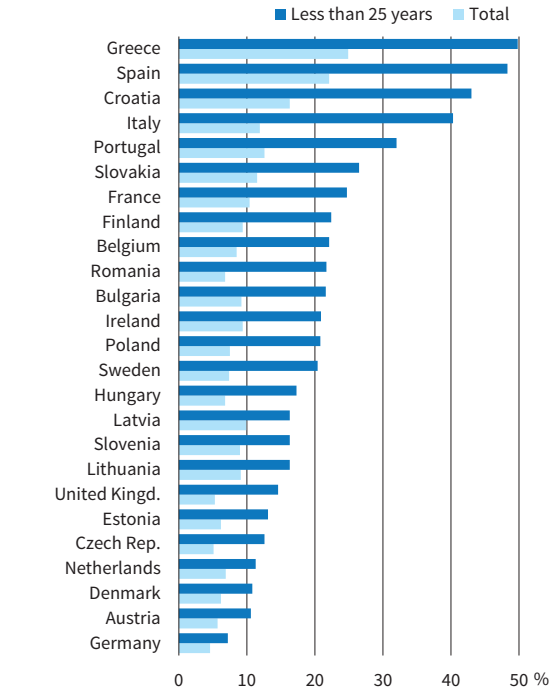
Katrin Oesingmann[1]

Youth Unemployment in Europe

Figure 1

Youth and total unemployment rates, 2015



Source: Eurostat (2016a). © ifo Institute

Unemployment rates are an important macroeconomic indicator for describing the economic condition of an economy. Unemployment figures in the media are usually reported for the total population, but it is worth taking a more differentiated look at unemployment figures. For example, one can distinguish between the unemployment rates of different age groups in the active labour force. The unemployment rates of the younger generation can be quite different from those of the total working population or older generations for various reasons. Moreover, as the population is ageing in many European societies, the age of the median voter is shifting and might encourage politicians to design labour market policies that specifically target older age groups.

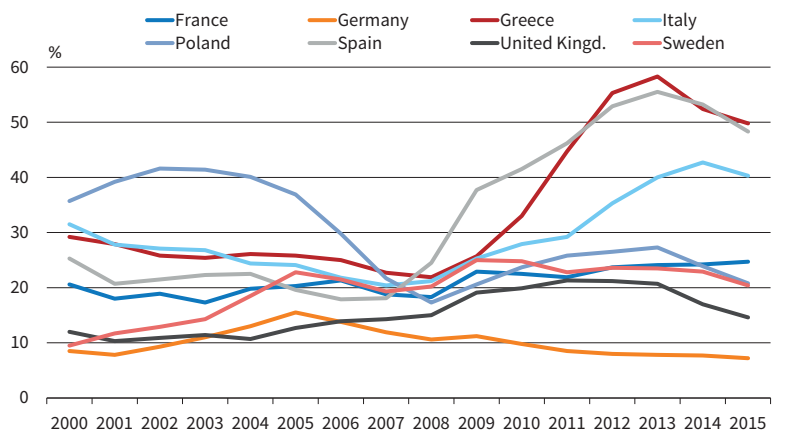
Figure 1 shows the unemployment rates of young people aged between 15 and 24 years compared to the total unemployment rates in the European countries in 2015.[2] As shown in Figure 1, the youth unemployment rate is largely higher than the total unemployment rate in almost every country shown in the figure. The most striking rates are those of youth unemployment in Greece (49.8%), Spain (48.3%), Croatia (43%), Italy (40.3%), Portugal (32%), Slovakia (26.5%) and France (24.7%). Italy is the country with the highest difference between the total unemployment rate and the youth unemployment rate, with a youth unemployment rate that is 28.4 percentage points (pp) higher than the total unemployment rate. There are several other countries in which youth unemployment is considerably higher than total unemployment like Greece (24.9pp), Spain (26.2pp), and Croatia (26.7pp). In countries like Germany, Austria, Denmark and the Netherlands where youth unemployment rates and total unemployment rates are the lowest in Europe, there is also a gap between total and youth unemployment. Looking at the European countries shown in Figure 1 reveals a huge divergence in Europe concerning youth unemployment. On the one hand, there are countries like Greece and Spain where almost half of the young labour force does not have a job, and on the other hand, there are Austria and Germany, where "only" 10.6% and 7.2% of the respective young labour force is unemployed.

Like total unemployment rates, youth unemployment rates rose in almost all European countries after the financial crisis. Nevertheless, youth unemployment is not a recent phenomenon that can be entirely ascribed to the Great Recession. Most European countries that are currently struggling to integrate their young people into the labour market faced high youth unemployment rates prior to the financial and subse-

Figure 2

Youth unemployment rates, 2000-2015

Selected countries



Source: Eurostat (2016b). © ifo Institute

[1] ifo Institute.

[2] The youth unemployment rate is the ratio of unemployed persons aged 15–24 as a percentage of the active population (the labour force) aged 15–24 (Eurostat 2016a and 2016b). Unemployed persons are defined as persons who were without work during the reference week, were currently available for work and were either actively seeking work in the past four weeks or had already found a job to start within the next three months (Eurostat 2016a).

quent economic crisis. Figure 2 shows the youth unemployment levels in selected European countries from 2000–2015. Italy, Greece and Spain already faced unemployment rates above 20% in the beginning of the 2000s. Poland is the only country where the youth unemployment rate fell compared to the level seen in 2000. In Germany the youth unemployment rate in 2015 was almost the same as in 2000.

Recently another ratio has been used to describe the economic situation of the young people, the so called youth NEET rate. NEETs are defined as "Young people neither in employment nor in education and training". The indicator on young people who are neither in employment nor in education and training corresponds to the percentage of the population of a given age group that is not employed and not involved in further education or training. The following equations show the difference between the youth unemployment rate and the NEET rate (O'Higgins 2015):

$$Youth\ unemployment\ rate\ = \frac{no.\ of\ young\ people\ who\ are\ unemployed}{no.\ of\ young\ people\ in\ the\ labour\ market}$$

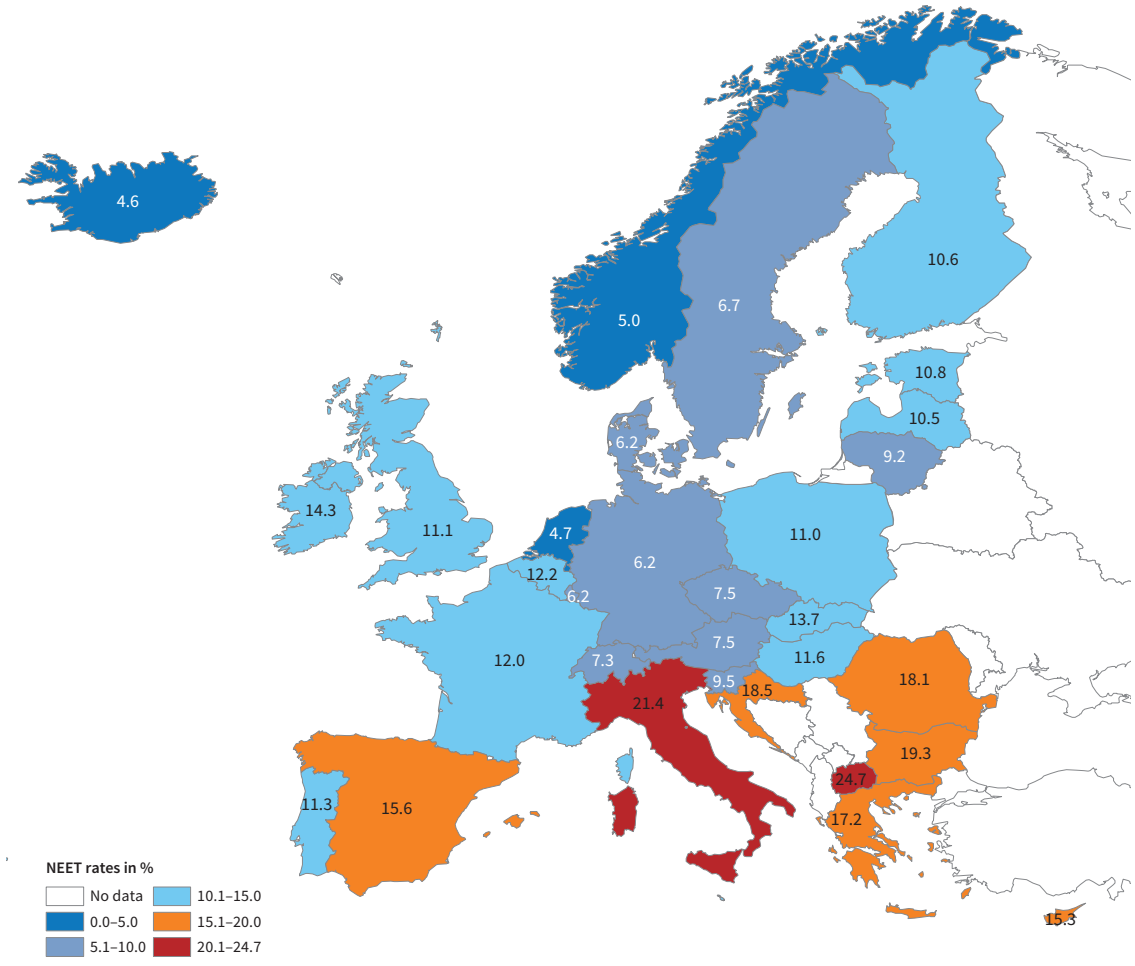
$$Youth\ NEET\ rate\ = \frac{no.\ of\ young\ people\ who\ are\ not\ employed\ or\ in\ education}{no.\ of\ young\ people}$$

The NEET rate refers to the total population of young people and therefore seems to be more adequate to describe the situation of the youth in total. The youth unemployment rate may be high in a given country, but it only represents the situation of a small proportion of the youth if only a small number of young people in that country is actively searching for a job and can be counted to the active labour force. Hence the NEET rate also includes those not actively seeking work and those occupied with "other things" like looking after family members/children, travelling etc. (O'Higgins 2015). Figure 3 shows a map of Europe indicating the latest NEET rates in different European countries. Italy and Macedonia face the highest NEET rates amongst the European countries with levels above 20%, followed by Bulgaria (19.3%), Croatia (18.5%), Romania (18.1%), Greece (17.2%) and Spain (15.6%). The lowest NEET rates can be found in Iceland (4.6%), the Netherlands (4.7%), Norway (5.0%), Luxembourg, Denmark, Germany (6.2%) and Sweden (6.7%).

Beside the high unemployment and NEET rates, another major concern is the strong labour market divide between youths and adults when it comes to the types of contracts that they receive. Youths are currently strongly over-represented in temporary con-

Figure 3

Young people neither in employment nor in education and training (NEET) rates in Europe 2015



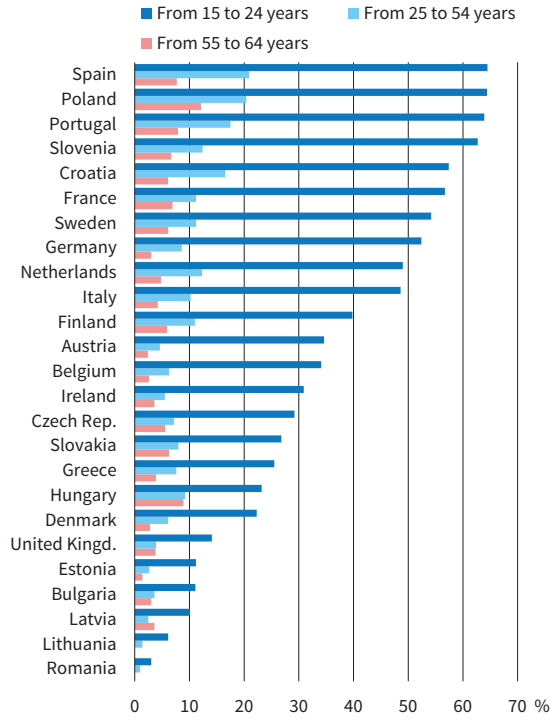
Source: Eurostat 2016c.

tracts, which is reflected in high levels of temporary and part-time employment amongst young people. The longer-term impact of these contractual forms is becoming a significant issue (O'Higgins 2015; Berlingieri, Bonin and Sprietsma 2014). Figure 4 shows the percentage of temporary contracts among young people, which is significantly higher than those among older employees. As Figure 4 illustrates, a high proportion of 15–24 year-olds are employed based on temporary contracts. Spain, Poland, Portugal, Slovenia, Croatia, France, Sweden and Germany are countries where the proportion of temporary contracts within the younger generation is over 50%. In the older age groups of 25 to 54 years and 55 to 64 years, by contrast, temporary contracts are relatively rare.

What are the reasons for the higher unemployment rates of young people and the high proportion of temporary contracts within this generation? In addition to the economic situation and aggregate demand that influence unemployment rates in general, institutions play a fundamental role in employment, and especially in the employment of young people. The most frequently cited institutions influencing the (youth) labour market outcomes are the educational and training system and labour market institutions.[3] As far as labour market institutions are concerned, employment protection legislation, wage-setting institutions, and the wage negotiation process, play a fundamental role (Berlingieri, Bonin and Sprietsma 2014). These factors generally play an important role for unemployment and employment, but can especially foster higher youth unemployment rates. Many countries tried to liberalise labour market institutions by offering the possibility of contracting employees with temporary, fixed-term contracts, but at the same time not changing the layoff conditions for permanent employees. The outcome is that the labour market in many countries is divided between older employees with a secure permanent job and the younger generations, who are typically locked into temporary and often "precarious" employment for a long time (Berlingieri, Bonin and Sprietsma 2014). In a so called dual labour market, unions tend to primarily defend the interests of workers with permanent contracts, or the "insiders", in terms of their wage-setting institutions and wage negotiation process. As a result, unions do not pursue the goal of creating jobs for the unemployed (outsiders) and mainly focus on insiders' wages and employment interests. The duality of the labour market therefore leads to the protection of employees with contracts for a longer period and leaves younger employees to fixed-term contracts or contracts with less unemployment protection. In addition, when it comes to dismissals, the younger employees are more affected. Moreover, as a result, youths are far more affected by dismissals when a recession comes along than adults on permanent contracts. The strong level of employment protection for permanent contracts contributes to the high proportion of youths with temporary contracts (Berlingieri, Bonin and Sprietsma 2014).

Figure 4

Proportion of temporary contracts by age groups, 2015



Source: Eurostat (2016d). © ifo Institute

The need for structural reforms of labour market institutions to offer better employment possibilities to the younger generation is there; hence these reforms may take some time. Another option for young people in countries with high youth unemployment could therefore be to emigrate. The European Commission states that "Labour mobility helps to address labour shortages and skills gaps. From a macroeconomic point of view, it helps address unemployment disparities between EU Member States and contributes to a more efficient allocation of human resources". Moreover, "In the host country incoming workers benefit the local economy by addressing skills shortages and labour market bottlenecks. They help widen the range of services available and boost competitiveness. In the countries of origin, mobile workers alleviate the burden on public accounts (if previously unemployed) and help to revive the national economy by sending remittances" (European Commission 2014). As the unemployment situation is especially severe for the younger generations, the EU facilitates youth labour mobility in particular by making young people aware of job opportunities in other EU countries. The European Job Mobility Portal (EURES) provides information, advice and job matching services for the benefit of workers and employers, as well as any citizen wishing to benefit from the principle of the free movement of workers.

Hence it is argued that migration within the Eurozone is not sufficient to adjust macroeconomic imbalances (Eichhorst, Hinte and Rinne 2013), and youth

[3] For further details on the role of the educational and training system see Berlingieri, Bonin and Sprietsma (2014) and O'Higgins (2015).

mobility still seems to be low within Europe (Berlingieri, Bonin and Sprietsma 2014). Most barriers to migration and to finding a job in the country of migration are language barriers and the recognition of qualifications. A recent study reveals that, although there is the possibility of free labour movement within the EU, European countries differ in their recognition of foreign educational qualifications, which in turn affects the migration rate to destination countries (Capuano and Migali 2016). The long-term effects of enduring youth unemployment are severe and often described by the term "lost generation". Youths affected by (long-term) unemployment run several other risks like, for example, enduring and old-age poverty. In response, several European countries therefore put action plans on the agenda after the financial crisis and the subsequent great recession to reduce youth unemployment (DICE Database 2012). The potential migration of young people and the implicit brain drain that this would have entailed may have put countries under pressure to react. Recent measures to combat youth unemployment mainly include active labour market policies and labour market training (O'Higgins 2015; Eichhorst, Hinte and Rinne 2013). Moreover, strategies have been put on the agenda at a European level as well, namely the so called "Europe 2020 strategy" and the "Youth Guarantee", which was adopted in 2012 (Berlingieri, Bonin and Sprietsma 2014). Other initiatives beyond Europe include the G20 Target to reduce youth unemployment by 15% through 2025 and the OECD Action Plan for Youth (OECD 2016).

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Jonathan Öztunc and Daniela Wech[1]

Macroprudential Policies – Motivation, Usage and Effectiveness

INTRODUCTION

In the 2007-08 global financial crisis, it became evident that unsustainable imbalances had evolved during the previous, seemingly stable period of output and inflation. These imbalances consisted of excessively leveraged financial institutions, high household indebtedness and maturity mismatches in the banking system. The ensuing recession after the crisis also demonstrated the significant negative impact that such financial instabilities can have on the economy (Blanchard, Dell'Ariccia and Mauro 2014). Freixas, Laeven and Peydró (2015) consider the recent financial crisis as a systemic risk event that has been building up endogenously over time. In their view, key features of systemic risk are its endogenous build-up in the financial system, its threat to the financial system as a whole and its potentially large negative effects on the real economy. Key indicators of such a build-up of systemic risk include asset price bubbles, excessive risk-taking or credit booms. In fact, the recent empirical literature has identified credit growth and asset price booms as the most robust predictors of financial crises (Akinci and Olmstead-Rumsey 2015).[2]

While the financial crisis has shown the strong interactions between financial market developments and the real economy, academics and policymakers have started to recognise shortcomings in the regulatory approach prior to the crisis (Claessens 2014). According to Freixas, Laeven and Peydró (2015), the banking system took an excessively high level of risk, which the existing regulation in place was unable to properly take account of. The regulatory approach prior to the crisis was largely microprudential-oriented, i.e. related to risks on an individual institutions level.[3] Microprudential regulation takes financial institutions in isolation to ensure that each of them is individually solvent. The standard microprudential regulatory approach is based on a moral hazard argument. For example, the expectation of a government bailout ex post incentivises creditors to engage in riskier activities ex ante (De Nicolò, Favara and Ratnovski 2012). However, even if moral hazard is dealt with at the individual level and individual institutions are sufficiently solvent, this does not mean that the financial system as a whole is stable. The reason for this is the interconnectedness of banks and other financial institutions through contagion, pecuniary externalities via asset price fluctuations or strategic interactions that can lead to correlated risk exposure. This interconnectedness is the reason why it does not suffice to view the financial system as an aggregate of individual financial intermediaries that have to be regulated. A microprudential approach alone is not able to sufficiently take account of the financial system as a whole and to cope with the build–up of systemic risk (Freixas, Laeven and Peydró 2015, Claessens 2014, Blanchard, Dell'Ariccia and Mauro 2014, De Nicolò, Favara and Ratnovski 2012). This is why macroprudential policies have become more prevalent again. However, the fundamental rationale for the usage of macroprudential policies does not lie in the build-up of systemic risk per se, but the market failures and different externalities that constitute systemic risk in the first place (Claessens 2014).

The following section gives an overview of the different types of externalities that justify macroprudential policies. We subsequently describe a macroprudential policy index constructed by Cerutti, Claessens and Laeven (2015) and use this index to examine the usage of macroprudential policy measures among developed and emerging economies. This is followed by a short overview of selected papers on the effectiveness of macroprudential policies. The last section outlines possible directions for future research on that topic.

THE FUNDAMENTAL RATIONALE FOR MACROPRUDENTIAL POLICIES – THE EXTERNALITY VIEW

Based on a broad body of academic literature, De Nicolò, Favara and Ratnovski (2012) identify the following three types of externalities: firstly, *strategic complementarities* can arise due to the strategic interaction of banks, agents and other financial institutions. They often happen during the expansionary phase of a financial cycle. Strategic complementarities describe a situation where decisions of different agents mutually reinforce each other because the payoff for a certain strategy increases with the number of agents pursuing the same strategy. A number of sources for such strategic complementarities have been identified in the literature such as increased competition between banks in boom times, the incentive structure of bank managers or the anticipation of a government bailout in the case of a financial downturn. Due to such complementarities, financial institutions are likely to have correlated credit and liquidity risk exposure. Banks become exposed to similar risks and the quality of their portfolios depreciates during the boom, which can lead to vulnerabilities for the financial system.

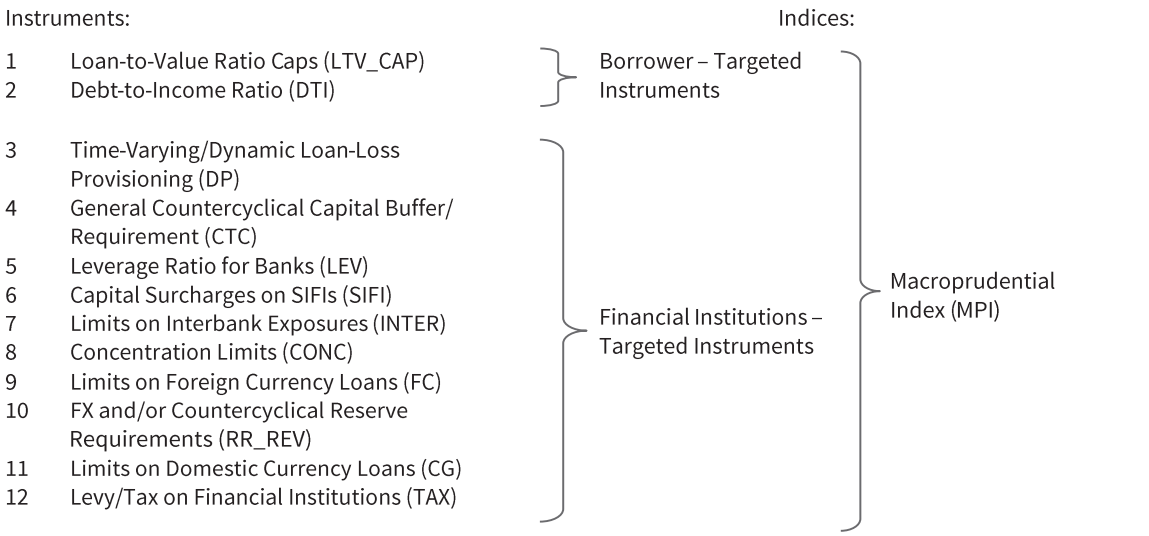
Secondly, *fire sales* and *credit crunches* typically occur in the downturn of a financial cycle. Fire sales describe a situation in which an investor is forced to sell an asset when buyers are also concerned. If the number of buyers is limited, the asset may be sold at a price below its fundamental value, creating a loss for the investor. In addition, the decline in that asset price can also lower the prices of similar assets. This incurs fur-

[1] ifo Institute (both).

[2] See also Schularick and Taylor (2012), Gourinchas and Obstfeld (2012), Mendoza and Terrones (2012) and Dell'Arricia et al. (2012).

[3] The microprudential approach is partial equilibrium in nature (Blanchard, Dell'Ariccia and Mauro 2014).

Box 1
Dataset on Macroprudential Policies



Source: Cerutti, Claessens and Laeven (2015), authors' compilation.

ther losses for other financial institutions. Hence, fire sales amplify already existing financial distress in the system through a pecuniary externality. When fire sales lead to declining asset prices, this may also reduce the collateral value of borrowers' assets. This, in return, can reduce their access to external finance, which may eventually result in a credit crunch with further negative effects on the real economy.

Thirdly, *externalities related through interconnectedness* can occur in the following way: the distress or failure of one bank can affect other financial institutions due to bilateral balance sheets and other exposures, movements in asset prices (as explained above) and aggregate feedback effects from the real economy. Systemically important financial institutions (SIFIs) are particularly affected by interconnectedness externalities since they are often too complex, operate internationally and have high interbank market linkages, which makes them "too big to fail". This also creates a perverse incentive for banks to become systemically important in the first place (Claessens 2014).

The fact that these market failures can bring about systemic risk in the financial system with significant consequences for the economy has illustrated the importance of better understanding the usage and effectiveness of different macroprudential policies. For this reason, we present the dataset by Cerutti, Claessens and Laeven (2015), who have constructed overall indicators for macroprudential policies. Their dataset is also very granular because it provides information on the usage of different, very specific macroprudential instruments. In the next section, we present this dataset and its construction.

DESCRIPTION OF DATASET ON MACROPRUDENTIAL POLICIES

Cerutti, Claessens and Laeven (2015) document the use of different types of macroprudential policies for 119 countries from 2000 until 2013. This dataset is constructed on the basis of the Global Macroprudential Policy Instruments (GMPI) survey conducted by the IMF's Monetary and Capital Department during 2013–2014. The department recorded responses directly from country authorities, and cross-checked them with other sources to ensure a high quality. Cerutti, Claessens and Laeven (2015) make use of 12 macroprudential instruments that are displayed in Box 1. They code each instrument as a binary measure on an annual basis with 1 indicating that the measure is implemented. The degree of the intensity of a respective measure is not captured, but only the information on whether the measure is in place or not. The authors build three indices on the use of macroprudential policies. These are the comprehensive Macroprudential Index, an index on Borrower-Targeted Instruments and another wider index on Financial Institutions-Targeted Instruments. Box 1 also illustrates how the indices are made up. The index on Borrower–Targeted Instruments is created as the sum of Loan-to-Value Ratio Caps and Debt-to-Income Ratio (1–2). The index on Financial Institution–Targeted Instruments is created as the sum of macroprudential instruments 3–12.[4] Cerutti, Claessens and Laeven (2015) also calculate an overall Macroprudential Index (MPI) as the sum of all 12 instruments.

THE USAGE OF MACROPRUDENTIAL POLICIES

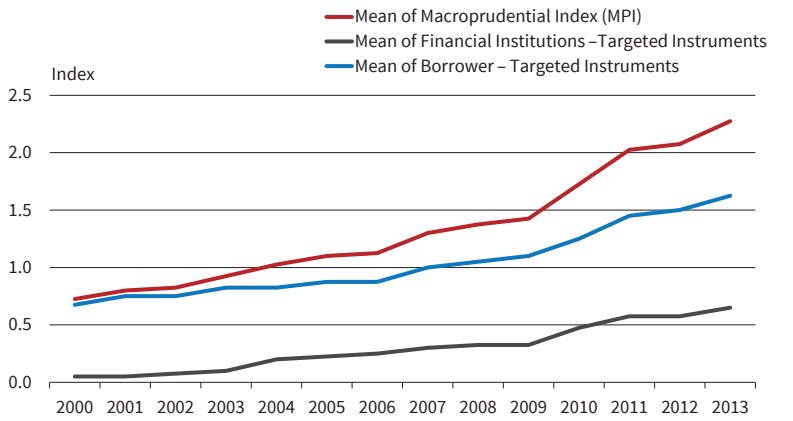
In this section, we analyse the usage of macroprudential policy measures in those countries that are included in the DICE Database.[5] In 2013, the countries applied 2.275 instruments on average. The mean of Borrower – Targeted Instruments was much higher (1.625) than the mean of Financial Institutions – Targeted Instruments

[4] The distinction between Borrower- and Financial Institutions-Targeted Instruments is similarly applied in studies such as Bank of England (2011) or Schoenmaker and Wierts (2011).

[5] These 40 countries are the EU countries except for Denmark, Greece and Luxembourg for which the index is not available; Macedonia, Norway, Switzerland and Turkey, as well as Australia, Brazil, Canada, China, India, Japan, Korea, Mexico, New Zealand, the Russian Federation and the United States.

Figure 1

Mean of macroprudential policy indices, 2000–2013



Source: Authors' calculations based on Cerutti, Claessens and Laeven (2015). © ifo Institute

(0.65). This is remarkable since the Borrower – Targeted Index is the sum of only two instruments compared to ten. All three indices depict a positive trend, indicating that the usage of macroprudential policies has increased over the last decade on average. After the financial crisis 2007-08, the plotted lines become steeper. This is in line with politicians starting to share a greater recognition for the relevance of macroprudential policies. Loan–to–Value Ratio Caps and Debt–to–Income Ratios that target borrowers have been more common before the financial crisis and adopted already for quite some time. The increase in Borrower-Targeted Instruments was more pronounced than that of Financial Institutions-Targeted Instruments.

Table 1 shows the development of the usage of each individual instrument among the 40 countries considered during the time period from 2000 to 2013. The percentages indicate the shares of countries having a certain instrument in place in a given year. In 2000, only two instruments – Limits on Interbank Exposures (INTER) and Concentration Limits (CONC) – were implemented in more than two countries. The latter was in place in over one third of the 40 countries. Spain and Canada were the only countries that had established three macroprudential policy instruments in 2000. In the following years, the percentage of countries using a specific instrument either remained constant or increased. None of the countries considered ever abolished any instruments with the exception of Bulgaria (FX and/or Countercyclical Reserve Requirements (RR_REV) in 2008).

The increase in the share of countries using a specific instrument was particularly pronounced after the financial crisis: in both 2007 and 2008, five instruments were used in more countries than in the respective previous year; in 2010, it were even seven instruments. Six instruments were more widely used in 2011 and 2013 respectively. The largest increase in the usage of one instrument (+12.5 percentage points) occurred in 2011 when Levy/Tax on Financial Institutions (TAX) was used by more EU-countries. In 2013, half of the 40 countries had Concentration Limits (CONC) in place, 37.5 percent Loan-to-Value Ratio Caps (LTV_CAP), 32.5 percent Limits on Interbank Exposures (INTER) and 30.0 percent Levy/Tax on Financial Institutions (TAX). In 2013, the overall Macroprudential Index was highest in China with a value of eight, followed by Canada, Switzerland and Turkey with a value of five respectively. The MPI was also comparatively high in several Eastern European countries (values of four or five) as well as in Korea and Norway (value of four respectively). With a value of zero, it was lowest in Estonia, Slovenia, Malta, Ireland and the United Kingdom.

THE EFFECTIVENESS OF MACROPRUDENTIAL POLICIES

Cerutti, Claessens and Laeven (2015) examine whether the usage of macroprudential policies measured by their indices has an effect on credit and house price growth based on a sample of 119 countries from 2000 until 2013. In their findings, macroprudential policies are associated with lower growth rates in credit, but the effect is weaker in more developed and financially open economies. Macroprudential policies also have some negative impact on house prices. Developing their own indices of macroprudential policies from the first quarter 2000 until the fourth quarter 2014 for a sample of 57 advanced and emerging economies, Akinci and Olmstead – Rumsey (2015) find that developed and emerging economies use macroprudential polices more actively after the financial crisis. In their results, macroprudential policy variables also have a statistically significant negative effect on bank credit growth and house price inflation.

Dell'Ariccia et al. (2012) focus specifically on credit booms as episodes of rapid credit growth. Credit booms can create distinctive financial stability risks and can be a feature of a build-up in systemic risk. However, not all credit booms end up badly. In their sample, about a third of credit booms end up in a full-blown financial crisis. Their results show that macroprudential policies reduce the likelihood of a credit boom, as well as decrease the probability that a boom ends in a financial crisis.

Zhang and Zoli (2014) focus on the use of macroprudential policies in 13 Asian economies and 33 economies in other regions. According to them, Asian economies have used macroprudential measures more extensively compared to countries in other regions. In their findings, macroprudential policies have also reduced credit growth in Asia, although only housing-related measures were significant.

Table 1

Usage of instruments, 2000–2013, in percent

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Loan-to-Value Ratio Caps (LTV_CAP)	5.0	5.0	7.5	10.0	15.0	15.0	15.0	17.5	17.5	17.5	25.0	32.5	32.5	37.5
Debt-to-Income Ratio (DTI)	0.0	0.0	0.0	0.0	5.0	7.5	10.0	12.5	15.0	15.0	22.5	25.0	25.0	27.5
Time-Varying/ Dynamic Loan-Loss Provisioning (DP)	2.5	2.5	2.5	5.0	5.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
General Countercyclical Capital Buffer/Requirement (CTC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0
Leverage Ratio (LEV)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	7.5	7.5	7.5	10.0	10.0	10.0
Capital Surcharges on SIFIs (SIFI)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.5	5.0
Limits on Interbank Exposures (INTER)	15.0	17.5	17.5	20.0	20.0	20.0	20.0	27.5	27.5	30.0	32.5	32.5	32.5	32.5
Concentration Limits (CONC)	37.5	42.5	42.5	45.0	45.0	45.0	45.0	47.5	47.5	47.5	50.0	50.0	50.0	50.0
Limits on Foreign Currency Loans (FC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	5.0	7.5	10.0	12.5	12.5	15.0
FX and/or Countercyclical Reserve Requirements (RR_REV)	5.0	5.0	5.0	5.0	5.0	7.5	7.5	7.5	5.0	5.0	7.5	7.5	7.5	7.5
Limits on Domestic Currency Loans (CG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Levy/Tax on Financial Institutions (TAX)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0	5.0	10.0	22.5	27.5	30.0

Source: Authors' calculations based on Cerutti, Claessens and Laeven (2015).

In short, there appears to be some tentative overall evidence in the recent academic literature that macroprudential policies can reduce credit growth.

CONCLUSION

In our article, we outline the motivation for the usage of macroprudential policies, which lies in externalities that create systemic risk. Some studies already suggest that macroprudential policies can be effective in curbing credit growth, and thereby in reducing the build–up of systemic risk. Research could be deepened in the following areas. One can further examine the extent to which macroprudential policies interact with other microprudential or macroeconomic policies, such as monetary policy (see, for example, Dell'Arricia et. al 2012, Bruno, Shim and Shin 2015). Apart from that, using macroprudential policies will probably come at a cost and may have unintended distortive effects on financial markets. Arregui et al. (2013), for example, develop an analytical framework that enables to weigh up the costs against the benefits of macroprudential policies.

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Hoang Ha Nguyen Thi and Till Nikolka[1]

Marine Capture Fishery Policies

Fish products are a crucial element of food supply. This is why the sustainability of fishing and aquaculture has become a major goal on many countries' policy agendas. Key challenges such as rebuilding fisheries, the potential for green growth in aquaculture, and combating illegal, unreported and unregulated fishing are increasingly pressing. This article examines the development of marine fishing and aquaculture and assesses recent developments in both national and international fishing policies.

RECENT TRENDS AND CHALLENGES

In order to understand the challenges faced by policy makers, it is crucial to examine recent trends in marine capture production and aquaculture. Global marine capture production peaked in 1996 at 86.4 million tons, and has been relatively flat since then. The share of OECD countries in total world catch has decreased from 40 percent in the late 1980s to 30 percent today with the most important producers being the US, Japan, Chile, Norway, Korea, Mexico and Iceland. As shown by Table 1, these OECD countries amount to 75 percent of total OECD marine capture production. On the other hand, the volume of Asian countries as a share of total world catch has increased. Today, ten of the top 18 producers are from Asia, with China and Indonesia at the top.

As substitutes for some marine capture products, aquaculture products have grown steadily important in global fish production. Aquaculture has consistently been the fastest growing of all food commodities, with an overall annual growth rate of 8.6 percent between 1983 and 2012. OECD countries have increased aquaculture production by over 50 percent in terms of value and by 25 percent by volume in the last ten years. However, as can be seen from Table 2, world aquaculture production today is mostly centered in Asian countries such as China, India, Vietnam, Indonesia and Bangladesh, which make up 80 percent of global aquaculture production. This is predominantly lower-value freshwater species aquaculture production (FAO 2014).

In the face of growing demand for fish products, many countries are struggling with several challenges related to fisheries and aquaculture. One of the major challenges concerning marine capture production is to rebuild fisheries in a way that takes economic, social and environmental dimensions into account (FAO 2015). Unregulated fishing operations often come with economic losses, since fish are common goods that are non-excludable, but at the same time rivaling in consumption. Thus, without regulation and policy coordination, the economic efficiency and sustainability of fishing is at risk. The problems associated with rebuilding fisheries include the tensions between developing and developed countries as well as the administration of high sea fisheries. The development of long-term alternative employment and livelihood opportunities for fishing communities is essential in order to sustainably rebuild fisheries. Sustainable fisheries and the protection of fish stocks are a highly international issue and policy makers increasingly recognize the need for policies beyond the national level.

MULTILATERAL AGREEMENTS ON FISHERY POLICIES

At the international level, fishery policies are mostly bilateral and multilateral agreements providing regulation subject to two or more countries. As can be seen from "Selected Multilateral Agreements, Protection of Fish" (DICE Database 2011), there has been a steadfast pace in multilateral agreements that cover topics ranging from the "Convention concerning fishing in the high sea" (Varna in 1959) to the "Convention for the conservation of southern bluefin tuna" (Canberra in 1993). The largest agreement, the "Agreement for the implementation of the law of the sea convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks", has 79 members as of 2011. The number of amendments in many multilateral agreements shows that fisheries have been a continuing subject of discussion and renegotiations. The "International Convention for the high seas fisheries of the North Pacific Ocean" (Tokyo in 1952) has seen seven amendments between 1959 and 1991 and the "Treaty on fisheries between the governments of certain Pacific Island states and the government of the United States of America" (Port Moresby in 1987) has seen four amendments.

Beyond the development and coordination of policies, another key challenge for the sustainability of fisheries is monitoring and combating illegal, unreported and unregulated (IUU) fishing. IUU fishing harms the environment and threatens biodiversity by diminishing policy effects aimed at creating sustainability. In addition, IUU fishing harms the market for legally caught fish and thus reduces the prospects for economic growth and food security typically associated with fishing. It also undermines labour standards. IUU typically results from a lack of management and enforcement capacities in many developing countries, a lack of control over the activities of developing and developed countries in third countries and at high sea, as well as overcapacity and redundant assets, which provide incentives for IUU fishing. IUU fishing then results in foregone government revenues, depressed prices for legally caught fish and suboptimal resource use. The "Convention on the high seas" from 1958 aims at addressing the issue of IUU fishing at high sea (DICE Database 2011).

[1] ifo Institute (both).

Table 1

Marine capture fisheries: Major producers (tonnes)

2012 Ranking	Country	2003	2011	2012	Variation 2003-2012	Variation 2011-2012
1	China	12 212 188	13 536 409	13 869 604	13.60%	2.40%
2	Indonesia	4275 115	5 332 862	5 420 247	27.00%	1.70%
3	United States	4912 627	5 131 087	5 107 559	4.00%	-0.50%
4	Peru	6053 120	8 211 716	4 807 923	-20.60%	-41.50%
5	Russia	3090 798	4 005 737	4 068 850	31.60%	1.60%
6	Japan	4626 904	3 741 222	3 611 384	-21.90%	-3.50%
7	India	2954 796	3 250 099	3 402 405	15.10%	4.70%
8	Chile	3612 048	3 063 467	2 572 881	-28.80%	-16.00%
9	Vietnam	1647 133	2 308 200	2 418 700	46.80%	4.80%
10	Myanmar	1053 720	2 169 820	2 332 790	121.40%	7.50%
11	Norway	2548 353	2 281 856	2 149 802	-15.60%	-5.80%
12	Philippines	2033 325	2 171 327	2 127 046	4.60%	-2.00%
13	Korea	1649 061	1 737 870	1 660 165	0.70%	-4.50%
14	Thailand	2651 223	1 610 418	1 612 073	-39.20%	0.10%
15	Malaysia	1283 256	1 373 105	1 472 239	14.70%	7.20%
16	Mexico	1257 699	1 452 970	1 467 790	16.70%	1.00%
17	Iceland	1986 314	1 138 274	1 449 452	-27.00%	27.30%
18	Morocco	916 988	949 881	1 158 474	26.30%	22.00%
Total 18 countries		58 764 668	63 466 320	60 709 384	3.30%	-4.30%
OECD-top 7		20 593 006	18 546 746	18 019 033	-12.50%	-2.80%
OECD-7' share of world (OECD)		25.8% (72.6%)	22.5% (73.9%)	22.6% (74.7%)	-	-
OECD-34		28 346 747	25 098 495	24 113 070	-14.90%	-3.90%
OECD-34's share of world		35.60%	30.90%	30.30%	-	-
World total		79 674 875	82 609 926	79 705 910	0.00%	-3.50%

Source: FAO (2014).

LOCAL AND REGIONAL FISHERY POLICIES

In many cases, however, existing multilateral agreements are not sufficient to secure sustainable fisheries (FAO 2015). To this end, local and regional policies play an important role. The EU conducts a "Common Fisheries Policy", which was first introduced in 1983 and subsequently revised every ten years (European Union 2016). This policy consists of a comprehensive set of regulations dealing with management, international relations, markets and trade as well as the financing of fisheries. Producer organizations have to set up and submit plans for the production and marketing of fish in order to be eligible for EU financial schemes. In addition, there are common marketing standards with uniform characteristics for certain fish products sold in the EU. On top of this, the Common Fisheries Policy sets principles regarding bilateral fisheries agreements ("Sustainable Fisheries Agreements"). Bilateral fisheries agreements in the EU have to include provisions limiting access to resources that are scientifically demonstrated to be surplus to the Coastal State's own catch capacity. It also includes a clause on the protection of human rights and gradually increases ship owners' contribution to access costs. The EU Sustainable Fisheries Agreements also aim to better promote sustainable fisheries in partner countries by making EU sectorial support more targeted and subject to regular monitoring. In 2014, the new Common Fisheries Policy was introduced, emphasizing the need to ensure sustainable fishing. It requires quotas to be set in reference to Minimum Sustainable Yield (MSY) by 2015 in most cases. The new Common Fisheries Policy stops discarding through the introduction of a landing objective. The landing objective is to be gradually introduced from 2015 on; by 2019, it is to be implemented for all commercial fisheries in European waters. It requires all catch to be kept on board, thus driving greater selectivity in fishing and ensuring more reliable data on catches. In doing so, it aims to rebuild all fish stocks to MSY levels by 2015 or 2020 at the latest. In addition, the Council Regulation (EC) No. 1005/2008 introduced a system to prevent, deter and eliminate IUU fishing. Under this regulation, products can only be sold in EU markets if they are certified as legal by the flag state. The regulation includes specifications on the criteria for determining a fishing vessel as engaged in IUU fishing, port inspections, catch certificates, a list of non-cooperating third countries and sanctions.

Some Asian countries like Korea, China and India have introduced integrated ocean management (OECD 2015). Korea has one of the longest-running integrated

ocean management plans in the world. In the mid-1990s, the Korean Ministry of Maritime Affairs and Fisheries introduced a long-term development strategy for ocean-related matters in order to balance environmental and fisheries issues, to integrate coastal management and monitoring of fisheries and to provide a coherent policy for the shipping industry, port construction and maritime safety. In 2013, the Korean Ministry of Oceans and Fisheries was created, providing a fully integrated approach to all marine issues. China is also moving towards a unified marine governance approach. In 2013, the State Oceanic Authority (SOA) was formed, which deals with maritime boundaries, fisheries supervision, the control of smuggling at sea, illegal activities and environmental surveillance. In addition, the National Ocean Committee was formed, formulating China's ocean development strategy. Similarly, in India the National Fisheries Development Board (NFDB) was set up in 2014. It promotes the fisheries sector and coordinates activities related to fisheries that were previously supervised by different ministries and departments.

In some regions, regional fisheries management organizations (RFMOs) also aim at improving the management of high seas fish stocks as well as developing co-operations between states that share fish stocks in several exclusive economic zones (FAO 2015). RFMOs are organizations that bring together several countries with a common interest in managing particular fish stock (e.g., the Commission for the Conservation of Southern Bluefin Tuna) or fish resources (e.g., the Commission for the Conservation of Antarctic Marine Living Resources) in a particular region and agree to adopt binding management rules. However, it can be very difficult to prevent overfishing at high sea through RFMOs because they do not cover the complete fish stock affected and often do not include ecosystem management tools or precautionary approaches. In addition, some countries are not part of the relevant RFMOs or do not abide by their rules even if they are.

Aquacultures are often regarded as a way of increasing fish production without endangering the protection of fish stocks. The EU "Blue Growth" initiative, for example, stresses the potential for EU aquaculture to fill the gap between domestic production and consumption in the EU (EU Commission 2016). However, unsustainable aquaculture production can also harm local ecosystems and thus requires policy regulation. Many countries have developed policies to adequately support green growth in aquaculture. This is particularly important since aquaculture is the fastest-growing food-producing sector in the world, supplying 50 percent of all fish consumed globally. In order to ensure sustainability in aquaculture, countries have

Table 2

Asian countries extend their lead in aquaculture production
Major producers including top five OECD countries (tonnes)

2012 Ranking	Country	2003	2011	2012	Variation 2003-2012	Variation 2011-2012
1	China	25 083 253	38 621 269	41 108 306	63.90%	6.40%
2	India	2315 771	3673 082	4 209 415	81.80%	14.60%
3	Vietnam	937 502	2845 600	3 085 500	229.10%	8.40%
4	Indonesia	996 659	2718 421	3 067 660	207.80%	12.80%
5	Bangladesh	856 956	1523 759	1 726 066	101.40%	13.30%
6	Norway	584 423	1143 820	1 321 119	126.10%	15.50%
7	Thailand	1064 407	1201 455	1 233 877	15.90%	2.70%
8	Chile	567 259	954 845	1 071 421	88.90%	12.20%
9	Egypt	445 181	9886 820	1 017 738	128.60%	3.10%
10	Myanmar	252 010	816 820	885 169	251.20%	8.40%
11	Philippines	459 615	767 287	790 894	72.10%	3.10%
12	Brazil	273 268	629 609	707 461	158.90%	12.40%
13	Japan	824 057	556 761	633 047	-23.20%	13.70%
14	Korea	387 791	507 052	484 404	24.90%	-4.50%
15	United States	545 971	397 292	420 024	-23.10%	5.70%
Total 15 countries		35 594 123	57 343 892	61 762 101	73.50%	7.70%
Top 15' share in world		91.40%	92.50%	92.70%	-	-
OECD-top 5		2 909 501	3 559 770	3 930 006	35.10%	10.40%
OECD-5' share in world (OECD)		7.5% (61.7%)	5.7% (64.6%)	5.9% (66.7%)	-	-
OECD-34		4 717 344	5 509 565	5 893 720	24.90%	7.00%
OECD-34's share in world		12.10%	8.90%	8.80%	-	-
World total		38 915 699	62 011 524	66 633 253	71.20%	7.50%

Source: FAO (2014).

developed institutional frameworks, including certification, spatial planning and public-private partnerships in order to improve the prospects of aquaculture and to decrease the costs associated with diseases, waste, escapees and energy use. In 2011, the OECD adopted its Green Growth Strategy (GGS), providing a conceptual and policy basis for countries' fishing and aquaculture activities. The idea was to achieve both economic growth and sustainability, which is particularly relevant for fisheries since they depend heavily on environmental resources. In addition, the OECD collects data on budgetary policies in participating countries in order to provide internationally comparable data to support evidence-based policy analysis.

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New at DICE Database

RECENT ENTRIES TO THE DICE DATABASE

In the first quarter of 2017, the DICE Database received a number of new entries, consisting partly of updates and partly of new topics. Some topics are mentioned below.

- Dataset on macroprudential policies
- Overview of recent reforms promoting crowdinvesting
- Partial retirement schemes
- Retirement schemes for workers in arduous or hazardous jobs
- Private Health Insurance – subscriber characteristics
- Primary care in Europe: Role, mode of provision and remuneration
- Legal entitlement and/or compulsory early childhood education and care
- Press Freedom Index
- Transparency of government policymaking
- Control of corruption
- Corruption Perceptions Index
- Share of individuals and enterprises using the Internet for interacting with public authorities

The interactive graphics application Visual Storytelling has been further expanded.

Forthcoming Conferences

CESifo Area Conference on Public Sector Economics

27–29 April 2017, Munich

The conference is intended to give an overview of the current research undertaken by members of the Public Sector Economics area of the network and to stimulate interaction and co-operation between area members. All CESifo research network members are invited to submit their papers which may deal with any topic in Public Economics. Please note that Area Conferences are open to CESifo Network Members only. The keynote lecture "Ending the Ideological Macroeconomic Battles: The Public Finance Approach to Optimal Fiscal Policy", will be delivered by Bas Jacobs, Erasmus University, Rotterdam.
Scientific organiser: Prof. Rick van der Ploeg, Ph.D.

CESifo Area Conference on Global Economy

4–6 May 2017, Munich

From 4–6 May 2017, CESifo will hold its annual meeting for the Global Economy research area, intended to allow presentation of current research undertaken by its members and to stimulate interaction and co-operation between area members. The keynote lectures will be delivered by Costas Arkolakis (Yale) and Dave Donaldson (Stanford). Unlike in previous years, this year's Global Area conference will run over three days. Sessions will begin at approximately midday on Thursday 4th May 2017. On the morning of Friday 5th May 2017 participants of the Global Area conference will then be invited to a special session, marking the 200th anniversary of David Ricardo's Principles of Political Economy and Taxation. Speakers will include: Sam Kortum (Yale), Douglas Irwin (Dartmouth), Peter Neary (Oxford), Daniel Bernhofen (American University) and Richard Baldwin (Geneva). The Global Area sessions will then continue on the afternoon of 5th May and will end at approx. 2pm on Saturday 6th May.
Scientific organiser: Prof. Dr. Peter Egger

1st Doctoral Workshop on the Economics of Digitisation

12–13 May 2017, Munich

This 2-day international workshop (a joint initiative of CESifo Group Munich, Liege Competition and Innovation Institute, Telecom Paris Tech, and Toulouse School of Economics) will gather in Munich doctoral students involved in research in the field of the Economics of Digitalisation with both theoretical and empirical focus. The keynote lecture will be delivered by Tommaso Valletti (Chief Competition Economist of the European Commission and Professor of Economics at Imperial College London).
Scientific committee: Paul Belleflamme (Université Catholique de Louvain), Marc Bourreau (Telecom ParisTech), Alexandre de Corniere (Toulouse School of Economics), Oliver Falck (CESifo Group Munich), Axel Gautier (Université de Liege), Lukasz Grzybowski (Telecom ParisTech).
Scientific organiser: Prof. Dr. Oliver Falck

4th IIPF Doctoral School on Dynamics of Inequality

23–25 May 2017, Munich

The organisers of the IIPF doctoral school are calling for applications for the fourth annual school which will take place in Munich in May 2017.
Scientific organisers: Prof. Dr. Uwe Sunde, Prof. Matteo Cervellati, Ph.D.

CESifo Area Conference on Employment and Social Protection

26–27 May 2017, Munich

All CESifo Research Network members are invited to submit their papers, which may deal with any topic within the domains of employment and social protection. The area has a wide scope of relevant research. It covers positive and normative research questions that are usually pursued in economic research on social policy, family policy and labour market policy. Further, it covers research questions that deal with inequality, redistribution and the political economy of redistribution and conflict. The keynote lecture at the 2017 conference will be delivered by Ronny Razin (LSE).
Scientific organiser: Prof. Dr. Kai A. Konrad

Venice Summer Institute 2017: Exchange Rate Adjustment in the Euro Area

12–13 June 2017, Venice

Economic performance in the euro area has been very heterogeneous since 2010. Intra euro-area real exchange rates, however, have not adjusted very much during the last six years. This is arguably a major cause of the euro area's current woes. Yet, to date, there is no consensus as to why there is so little exchange rate adjustment. The workshop provides a platform for discussing recent developments and research on the issue, also with a view towards informing actual policy making in the euro area.

Keynote speakers: Barry Eichengreen, University of California, Berkeley, and Charles Engel, University of Wisconsin - Madison

Scientific organisers: Prof. Dr. Zeno Enders, Prof. Dr. Gernot Müller

Venice Summer Institute 2017: New Evidence on Consumption, Household Behaviour, and Inequality

12–13 June 2017, Venice

Household-level data on consumption expenditure underpin key policy questions, both microeconomic and macroeconomic, including monetary policy, tax policy, social security, and their relation to consumption, savings, and inequality. While the measurement of consumer expenditures at the household level poses difficult challenges, the last few years have seen much innovation in how such data can be collected and analysed. This workshop will bring together international experts to consider these innovations as well as the application of new and improved sources of data to key areas of policy and research. The workshop will stress the close interaction between economic theory, measurement, and econometric methods.

Keynote speakers: Erik Hurst, University of Chicago, and Luigi Pistaferri, Stanford University

Scientific organisers: Prof. Thomas F. Crossley, Ph.D., Prof. Hamish Low, Ph.D., Prof. Dr. Joachim Winter

Venice Summer Institute 2017: Dynamics of Conflict - Results from Theory and Experiments

14–15 June 2017, Venice

The military conflicts in Ukraine and Syria, conflict in Afghanistan and Iraq, the terrorist threat and the deterioration of international relationships, but also trade wars and other less violent forms of international conflict remind us of the continuous role of conflict in the international sphere. This conference considers the dynamics of such conflicts, bringing together research from economics and political science that studies the factors why and how a conflict may escalate or cease, the role of sanctions, the role of mediation, the role of ethnic and religious diversity, and the role of international institutions such as the United Nations or of military alliances.

Keynote speakers: Dominic Rohner, University of Lausanne, and James D. Fearon, Stanford University

Scientific organisers: Prof. Toke Aidt, Ph.D., Prof. Dr. Kai A. Konrad, Prof. Dan J. Kovenock, Ph.D.

Venice Summer Institute 2017: Place-Based Policies

14–15 June 2017, Venice

The aim of this workshop is to discuss empirical and theoretical approaches that investigate the effects of regional policies and to learn more about the underlying mechanisms and consequences. Beyond those topics, the workshop should serve as a platform to address more broadly local public policies that influence the geography of the economy.

Keynote speakers: Patrick Kline, University of California Berkeley, and Henry Overman, London School of Economics

Scientific organisers: Prof. Dr. Tobias Seidel, Prof. Dr. Jens Suedekum, Prof. Dr. Maximilian von Ehrlich

Venice Summer Institute 2017: Fiscal Competition and Mobility: Theory and Empirics

16–17 June 2017, Venice

This workshop will focus on how governments set fiscal policy in the presence of mobile agents and how these agents respond. The workshop will feature both theoretical and empirical papers and welcomes papers containing both approaches. A goal of the workshop is to facilitate interactions between researchers focused on fiscal competition / tax competition and researchers who study the mobility of the tax base and location decisions.

Keynote speakers: Andreas Haufler, University of Munich, and Henrik Kleven, London School of Economics

Scientific organisers: Dr. David R. Agrawal, Prof. William H. Hoyt, Ph.D.

New Books on Institutions

The Internationalization of Government Procurement Regulation

Edited by Aris Georgopoulos, Bernard Hoekman and Petros C. Mavroidis

Oxford University Press, 2017

The Effects of Political Institutions o Varieties of Capitalism

Matthew P. Arsenault

Palgrave Macmillan, 2017

Constitutional Preferences and Parliamentary Reform

Explaining National Parliaments' Adaptation to European Integration

Thomas Winzen

Oxford University Press, 2017

THE DATABASE FOR INSTITUTIONAL COMPARISONS IN EUROPE

The Database for Institutional Comparisons in Europe – DICE – was created to stimulate the political and academic discussion of institutional and economic policy reforms. DICE is a unique database offering comparative information on national institutions, regulations and economic policy. Although DICE is not a statistical database, it also contains data on the outputs (economic effects) of institutions and regulations where relevant.

DICE covers a broad range of institutional themes: Banking and Financial Markets, Business, Education and Innovation, Energy, Resources, Natural Environment, Infrastructure, Labour Market, Migration, Public Sector, Social Policy, Values and Country Characteristics.

The information is presented in tables (text or data), graphics (interactive application Visual Storytelling), and reports. In most cases, all EU countries are covered as well as some other major OECD countries. Users can choose between current comparisons and time series that show developments over time.

DICE combines systematic information from a wide range of sources, presenting a convenient one-stop service for your data needs.

DICE is a free-access database.

Feedback is always welcome. Please address your suggestions/comments to:

DICE@ifo.de