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Unemployment as a Target for Central Banks? The Case of Hysteresis

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Abstract

One of the most interesting questions for policymakers which have emerged from the financial crisis deals with the strength of links between the demand and supply sides of the economy. The traditional view that only cyclical policies influence the former, and structural policies the latter has been challenged in two ways: by the observation that long periods of weak demand can lead to rising structural unemployment and a permanently lower capital stock – the hysteresis effects; and by the claim that stronger demand fueled by monetary policy might be able to reverse such effects.

However, the Blanchard and Summers type of hysteresis approach should not be taken one-to-one into recommendations for monetary policy. Merely referring to the hard form of "reverse hysteresis" and pressing for bold counter-cyclical monetary (and fiscal) policies to cope with hysteretic unemployment is neither necessary nor sufficient. Instead, subtler forms of hysteresis should be taken into account. They leave some room for monetary policy to maneuver, more complex way. If long-term unemployment is stagnating. Over the whole circle, even a contractionary monetary policy stance can be considered as an option. Taking hysteries as a starting point, the paper discusses policy complementarities of different kinds and ideology-driven politicial unemployment cycles. It also discusses the "two-handed approach" relying both monetary policy and structural reforms.

Arbeitslosigkeit als Zielgröße für Zentralbanken? Hysterese, Reformen und der "Two-handed Approach"

Zusammenfassung

Eine der interessantesten Fragen, mit der sich Politiker seit der der Finanzkrise konfrontiert sehen, betrifft die Stärke des Zusammenhangs zwischen der Nachfrage- und der Angebotsseite der Wirtschaft. Die klassische Ansicht, dass nur zyklische Politiken die erstere und ausschließlich Strukturpolitiken die zweite beeinflussen, wurde auf zweifache

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Weise in Frage gestellt. Erstens führten lange Phasen schwacher Nachfrage zu steigender struktureller Arbeitslosigkeit und einem dauerhaft niedrigeren Kapitalstock – die sogenannten Hysterese-Effekte. Zweitens zeigte sich, dass eine stärkere Nachfrage, beispielsweise durch die Geldpolitik, zu einer Umkehr dieser Effekte beitrug.

Der Hysterese-Ansatz nach Blanchard und Summers sollte jedoch nicht wörtlich genommen und eins zu eins in Empfehlungen für die Geldpolitik aufgehen. Lediglich auf die harte Form der "umgekehrten Hysterese" zu verweisen und mutige antizyklische monetäre (und fiskalische) Maßnahmen zur Bewältigung der Hysterese-Arbeitslosigkeit zu fordern, ist weder notwendig noch hinreichend. Stattdessen sollten subtilere Formen der Hysterese berücksichtigt werden. Sie lassen in der Tat Spielraum für die Geldpolitik, aber auf etwas komplexere Weise. Falls die Langzeitarbeitslosigkeit stagniert, wäre sogar ein kontraktiver geldpolitischer Kurs optimal. Ausgehend vom Hysterese-Phänomen werden in diesem Beitrag Politik-Komplementaritäten unterschiedlicher Art sowie ideologiegesteuerte politische Zyklen der Arbeitslosigkeit untersucht. Darüber hinaus wird der „two-handed approach" erörtert, der die Geldpolitik und Strukturreformen strategisch kombiniert.

Keywords: Monetary policy, inflation, unemployment, structural reforms, hysteresis, Phillips curve

JEL-Codes: E24, E42, E52

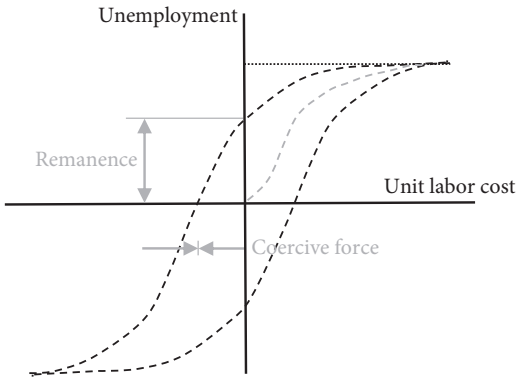
"You can't change the carpenter into a nurse
easily … monetary policy can't retrain people"
(*Charles Plosser*, in: O'Grady 2011).

I. Introduction

On its own, the secular stagnation approach does not explain the decline in potential output that was a major feature of the experience throughout the EMU and the entire industrialized world since the financial crisis. However, potential output and thus equilibrium employment have declined in almost every EMU country simultaneously with declines in actual output and the output growth rate. This feature may well be explained by hysteresis, i. e., the dependence of a system's current state on its history. In the case of hysteresis, an increase in unit labor costs, a demand shortfall and a higher output gap today lower the future potential path of output and (un-) employment. To this extent, under the hard form of "reverse hysteresis", high unemployment levels call for bold counter-cyclical monetary policies compensating for the original demand shortfall plus the "coercive force" to eliminate "remanence" effects.

But is the hard form of "reverse hysteresis" really backed by the facts? And under what conditions does counter-cyclical monetary policy help to reduce unemployment?

The paper analyses why and how unemployment is relevant for central banks, taking the case of unemployment hysteresis as the basic framework. However, it



Source: Adapted from Belke/Goecke/Werner (2014).

Figure 1: The Macroeconomic Unemployment Hysteresis Loop

also extends the analysis to complementarities of monetary policies and structural reforms and the role of unemployment for monetary policies in the political business cycle literature.

ECB President *Mario Draghi*'s 2014 speech in Jackson Hole, Wyoming, entitled "Unemployment in the Euro area" and his subsequent speech in 2015 addressed the question of why high unemployment is relevant for central banks and their policies. This question appeared especially urgent after decades of excessively careful treatment of labor market issues by central banks such as the Bundesbank and the early European Central Bank. Both wanted to ensure that markets understood that (un-)employment is not a central bank target in and of itself, but that unemployment serves via its impact on wage growth as an early indicator of future inflation.

Two strategy pillars were utilized to support this endeavor: structural and cyclical policy. These two pillars which include monetary policy are highly interdependent. Structural reforms raise output and make the economy more resilient to shocks. This renders structural reforms important for any central bank that uses unemployment as an intermediate target to achieve price stability, but they are especially relevant in a monetary union.

Resilience is crucial for members of a monetary union to prevent shocks from leading to higher unemployment systematically, and over time, from causing permanent economic divergence (*Belke/Baas* 2018). This has direct implications for price stability, which is crucial in ensuring low unemployment and equally important in guaranteeing the integrity of the Euro area. It is against this backdrop that the European Central Bank (ECB) has often advocated in favor of stronger governance of structural reforms, making resilience part of its "common DNA" (*Draghi* 2014; *Draghi* 2015).

Structural reforms have an equally important effect on employment and on growth when taking(low) productivity growth into consideration. Until recently, potential growth had been projected to remain well below pre-crisis growth rates. This implies that a significant share of the economic losses resulting from the crisis would turn permanent, with structural unemployment maintaining double-digit levels and youth unemployment remaining elevated in several Euro area member countries. Low growth would also make it more difficult to work through the debt overhang still present in some member countries. What is more, low potential growth can exert an immediate impact on the monetary policy tools available: On the one hand, it may make it more likely that to fulfill its mandate, the central bank will run into the lower bound and be forced to to employ unconventional policies. On the other hand, however, it may create bottlenecks to inflation-free growth during recoveries and thus lead to monetary tightening (*Cœuré* 2017; *Draghi* 2015).

However, the long-term performance of the Euro area also points to opportunities. Since many economies are still far from what one might describe as best practice, structural reforms promise gains that are both easier to achieve and larger overall. There is still vast potential in the Euro area to increase output, employment, and welfare. Reforms should not be delayed based on arguments that monetary policy is still at its lower bound and recovery is still halting (*Draghi* 2015; *Cacciatore* et al. 2017).

The costs of reforms – and the gains that can potentially be reaped from them – depend critically on how they are implemented. Effective structural reforms will unleash positive effects that will become evident quickly, even in an environment of weak demand. Furthermore, the accommodating ECB monetary policy implies that the benefits of reforms materialize faster. What is needed to ensure lasting stability, prosperity, and low unemployment is therefore a combination of demand- and supply-side policies (*Draghi* 2014; *Cacciatore* et al. 2017).

1. Why is High Unemployment Relevant for Central Banks?

A situation of high unemployment affects everyone in society. It is often a personal tragedy for the unemployed themselves that has lasting effects on lifetime income. And it creates job insecurity and undermines social cohesion for the employed. It places a burden on public coffers and impacts election outcomes, potentially creating partisan cycles in central bank policies. Unemployment plays a crucial role in the macroeconomic dynamics underlying short-term and medium-term inflation (the Phillips curve) and thereby also affects central banks themselves. Unemployment that deviates from the equilibrium is a central ingredient of the Taylor rule, and it creates an environment of uncertainty for experts attempting to make recommendations for monetary policy

rates based on labor market figures. Even when prices are stable, high unemployment poses a threat to social cohesion (due, e. g., to increasing inequality) and creates mounting pressure on central banks to provide an adequate response (*Draghi* 2014).

This raises a key question: how much we can really affect unemployment in the long term, and are the drivers of unemployment mainly cyclical or structural in nature?

2. Cyclical Versus Structural Factors

There is no doubt that cyclical factors have played a role in the increased unemployment observed in recent years, and judging rom the current situation in the Euro area, those factors are still at work. Recent GDP data show that wage growth recovery has indeed been weak, even in countries that have suffered less from the crisis. This is an indication of sluggish demand. It appears that doubts in the recovery are hampering business investments and impeding the rehiring of unemployed workers. At the same time, much of the unemployment emerging from the crisis has become long-term and structural, at least in some countries.

3. An Adequate Response to High Unemployment

What implications does the current situation have for policymakers? An obvious implication is the need for action in two main policy areas: aggregate demand policies and national structural policies (*Draghi*'s "two-handed approach", see *Draghi* 2014).

Demand-side policies are not only important to address the cyclical behavior of unemployment. They are also crucial in helping to prevent a weak economy from exacerbating hysteresis effects (*Cœuré* 2017; *Draghi* 2014). Here, hysteresis refers to the phenomenon in which a system's state is dependent on its history. Although under normal conditions, uncertainty would make central bankers more cautious of overshooting, ECB President *Mario Draghi* and others argue that the current situation requires a different response: *Draghi* argues that "doing too little" is more dangerous than "doing too much" since this could cause cyclical unemployment to become structural and push wages and prices upward.

The kinds of aggregate demand-side policies referred to above can only be effective if action is taken simultaneously on the supply side. The conditions at work in Euro area, as in other advanced economies, are determined by the preceding financial cycle. These conditions range from low inflation and low interest rates to significant debt overhangs in both the private and public sectors. In this situation, and under the zero lower bound constraint, monetary policy

risks becoming ineffective at generating aggregate demand, while the current debt overhang constrains fiscal space.

The crisis has raised numerous policy questions that turn on the issue of how, and how strongly, the demand and supply sides of the economy are linked (*Summers* 2014). The notion that cyclical policies primarily affect the demand side and structural policies the supply side has been challenged in two respects: first, by the long periods of weak demand, leading to increased structural unemployment and a permanently reduced capital stock, otherwise known as hysteresis effects; and second, by the idea that counter-cyclical monetary (or fiscal) policy could boost demand and thus reverse these effects (*Cœuré* 2017).

These insights go back several decades to *Blanchard/Summers*' seminal "insider-outsider" model, which showed how recessions can lead to higher "structural" unemployment rates, even after shocks have waned (*Blanchard/Summers* 1986).

The hysteresis phenomenon received renewed interest during the financial crisis, when industrialized countries underwent the largest drop in demand since World War II, exposing their economies to significantly higher risks of hysteresis than ever before. For policymakers, this raised the question of whether an entirely different approach to monetary policy was needed to avoid persistently high unemployment: Rather than raising rates to stay ahead of the game when price pressures are mounting, should they instead wait and see if unemployment turns out to be cyclical rather than structural (*Cœuré* 2017)?

The present paper aims at contributing to this debate from a Euro area perspective. It asks two key questions: Is there indeed evidence of significant hysteresis effects, and if so, should this change the way the ECB makes its monetary policy decisions? This is embedded in a broader discussion of the relationship between unemployment and monetary policy.

The remainder of the paper proceeds as follows in order to deal with the overarching question whether and in what ways unemployment may be relevant for the practical conduct of monetary policy and even monetary policy strategies, especially in the currently rather topical scenario of unemployment hysteresis and fears of secular stagnation. In Section 2, the neo-Keynesian mainstream view which confronts monetary policy with a unique natural rate of unemployment is characterized as the mainstream benchmark. The next three sections add hysteresis and secular stagnation to our analysis. For this purpose, Section 3 elaborates on different forms of the hysteresis approach to unemployment. In Section 4, the relation among unemployment, monetary policy, and secular stagnation in EMU is elucidated. Section 5 then deals with the not-so-trivial implications of unemployment hysteresis for monetary policy.

The paper then turns towards the issue of explicit or implicit macroeconomic policy coordination in the next three sections. In section 6, we deal with the in-

teractions among supply-side and demand-side policy measures based on the so-called two-handed approach I. Section 7 investigates the interactions among monetary and fiscal policy measures, the so-called two-handed approach II. Section 8 checks whether monetary policy itself can serve as a driver of structural reforms. The final two sections complement our analysis by discussing political business cycle considerations and of empirical realisations equilibrium interest rates as a motivation of central banks to target unemployment. Accordingly, Section 9 assesses the interaction among unemployment, ideology and monetary policy. Section 10 finally deals with equilibrium real interest rates, secular stagnation and unemployment and asks whether there is a role for monetary policy in this context. Section 11 finally concludes.

II. The Neo-Keynesian Mainstream View: Monetary Policy and a Unique Natural Rate of Unemployment

As a general rule, economic policy should only have goals it can realistially attain. From a neo-Keynesian perspective, monetary policy can realistically stabilize inflation around a given target and resource utilization around an estimated sustainable long-run rate. Fixed targets can be set for inflation and monetary policy because it is monetary policy that determines the inflation rate in the long run. This makes it possible to achieve average inflation over a longer period at, or close to, a given target (*Svensson* 2017).

But when it comes to the long-run sustainable rate of resource utilization (measured by the maximum long-run sustainable employment rate or minimum long-run sustainable unemployment rate), it is not monetary policy but rather non-monetary factors that play the decisive role. These factors affect the structure of the economy and can fluctuate over time. And since directly observing or measuring them may not be possible, it is not appropriate to set a fixed monetary policy target for the long-run rate of resource utilization. This rate instead has to be estimated, and such estimates are always uncertain and require revision (FOMC 2017; *Svensson* 2017).

For these reasons, increasing the long-run sustainable rate of resource utilization cannot be accomplished through monetary policies, but only through structural policies. This is where unemployment becomes relevant for monetary policy: not in terms of its ultimate targets, but in terms of its medium-term targets. Deviations from equilibrium unemployment (and also deviations of actual inflation from equilibrium inflation, as measured by the Phillips curve) point to the future development of inflation, which is the focus of central bank policies (*Svensson* 2017).

There are exceptions, however. Central banks may be forced to consider hysteresis effects of monetary policy on the labor market participation rate or un-

employment rate. But generally they do not believe that monetary policy can be used to solve structural problems (*Svensson* 2017).

Mainstream macroeconomics generally relies on what is known as the "accelerationist" Phillips curve, described by Milton *Friedman* (1968) in his presidential address to the American Economic Association in 1967. A simple form of this Phillips curve is:

$$\pi = \pi - 1 + \alpha(U - U^*),\ \alpha < 0 \quad (1). \tag{1}$$

Inflation depends on lagged inflation, which is often understood as a proxy for expected inflation, but also on unemployment's deviation from the natural rate, or the non-accelerating inflation rate of unemployment (NAIRU), U^*.[1] According to *Friedman*, shifts in aggregate demand resulting from monetary or other policies affect unemployment only in the short run, while in the long run, U always returns to U^*. U^* is not affected by aggregate demand but determined by the supply side of the economy, in particular by frictions on labor markets. In the long run, therefore, monetary policy cannot cause long-run changes in unemployment. Conventional wisdom among economists is that monetary policy cannot push U away from U^* for more than a few years, and that longer-term changes in unemployment are determined by changes in the natural rate.

Supporters of a "heterodox" hysteresis approach question this conventional wisdom. While they agree with equation (1), they disagree with the idea that only supply-side factors influence U^*. *Blanchard/Summers* (1986) and *Lindbeck/Snower* (1988), for example, argue that the path of actual unemployment can affect the natural rate. If U exceeds U^*, there are mechanisms that pull U^* upward. Current unemployment can therefore be described by the entirety of its history. In other words, the unemployment variable has a "unit root" (*Belke/Goecke*, 1996). Since aggregate demand influences U, hysteresis means that demand also drives U^*. Hysteresis may thus be central to understanding long-run unemployment movements in many countries (*Ball* 2009).

In this hysteresis scenario the unemployment rate plays a role for monetary policy as a central target, because temporary monetary policy interventions can have permanent effects on unemployment, i. e., shift the natural rate of unemployment. This corresponds with the so-called hard form of "reverse hysteresis" (*Cœuré* 2017). However, there is near observational equivalence in limited sample periods with persistence, i. e., unemployment returning to its unique equilibrium value after a long time of adjustment. However, policy implications change

[1] This is an old-fashioned backward-looking Phillips curve, replaced in modern research by the forward-looking New Keynesian Phillips Curve. See, for instance, *Ball* (2009).

dramatically if persistence instead of hysteresis is assumed: monetary policy should not take care of unemployment in first instance.

III. Hysteresis in (Un)employment

Discussions of macroeconomic hysteresis revolve around two broad issues (*Ball* 2009; *Belke/Goecke/Werner* 2014): first, the question of whether there is clear empirical evidence of hysteresis effects. To test the hypothesis that the non-accelerating inflation rate of unemployment (NAIRU) and thus the long-run dynamics of unemployment are independent of aggregate demand, *Ball* (2009), *Blanchard/Cerutti/Summers* (2015), and *Fatás/Summers* (2017) reviewed past results and presented new evidence. All three papers firmly rejected this hypothesis.

The second broad issue in this discussion revolves around the nature of hysteresis (*Ball* 2009; *Belke/Goecke/Werner* 2014). How do short-run unemployment movements affect the NAIRU, and what causes these effects to be stronger or weaker in different countries and time periods? And – particularly in the context of this paper – what are the implications for monetary policy?

According to *Ball* (2009), there is substantial evidence that some form of hysteresis exists, but no clear explanation why. There appear to be non-linear relationships between unemployment, the natural rate, and inflation, but the non-linearities are difficult to identify, making it even more difficult to derive policy implications. And while hysteresis seems to have become an important phenomenon since the financial crisis, it is still inadequately understood and therefore requires further research (see also *Summers* 2014; *Summers* 2015). The topic of hysteresis was neglected in the years immediately preceding the crisis and needs urgently to be addressed now.

In this context, it is important to differentiate between two variants of hysteresis in unemployment: the unit root version proposed by *Blanchard/Summers* (1986) and others and hysteresis in the sense of a path-dependent unemployment-real wage relationship inferred from ferromagnetism (*Cross* 1988; *Belke/Goecke* 1999; *Belke/Goecke/Werner* 2014).

1. Blanchard and Summers' Variant of Unemployment Hysteresis

Giving serious consideration to hysteresis can dramatically impact how unemployment movements are explained and what prescriptions are made for monetary policy. It also affects how we answer the question of why unemployment matters for monetary policy. According to *Ball* (2009), hysteresis does not reject Friedman's model but generalizes it, expanding the factors that cause the

U^* in equation (1) to change over time to include movements in actual unemployment and supply-side variables.

A number of recent papers have sought to identify the mechanisms by which recessions reduce potential output and increase the natural rate of unemployment (for a survey, see *Ball* 2014). While varied, the results suggest that recessions dramatically reduce capital accumulation, producing long-term effects on (un-)employment due to reduced labor force participation (cf. insider-outsider approach, human capital approach) and potentially slowing the growth of total factor productivity. This latter effect is more poorly understood but may be due to a decrease in the emergence of businesses utilizing new technologies. These findings, and the gaps therein, underscore the need for further research on the mechanisms underlying hysteresis.

Assuming that there is hysteretic unemployment, can policymakers repair the damage of the Great Recession? The answer to this question is unclear as well, but *Ball* (2014) and others argue that hysteresis effects can be reversed if monetary or fiscal policy creates a strong economic expansion. This effect is referred to as "reverse hysterisis". Favorable financing conditions such as low interest rates would, according to this idea, induce procyclical investment and increase the capital stock, and increased job opportunities would then increase workers' labor force attachment. In past research, Ball finds that expansionary policy can indeed reduce the natural rate of unemployment (*Ball* 2009). A strong expansion today might thus push potential output back to its pre-crisis path. If that does not occur, the expansion might at least reverse the declines in the growth rate of potential GDP, preventing the damage of the Great Recession from snowballing.

But this hard form of "reverse hysteresis" has been called into question by those who model macroeconomic hysteresis analogously to ferromagnetism in physics ("true hysteresis").

2. ("True") Hysteresis

Relations between economic variables are often characterized by a situation where initial conditions and the past realizations of economic variables matter. That is, past (transient) exogenous disturbances and past states of the economic system do have an influence on current economic relations. Typical examples are the dynamics of (un-)employment over business cycles, i. e., the dynamics of the so-called "natural" (equilibrium) rate of unemployment, and the dynamics of the nexus of exchange rate and exports. Since the standard characteristics of hysteresis apply – i. e., permanent effects of a temporary stimulus, resulting in path-dependent multiple equilibria – these economic phenomena are correctly titled as "hysteresis" (*Cross/Allan* 1988). In labor economics the concept of hys-

teresis has already been introduced by *Phelps* (1972) but was popularized by *Blanchard/Summers* (1986), *Lindbeck/Snower* (1988) and, in the context of capital shortage, *Sachs* (1986). In this strand of literature, employment decisions are typically interpreted as investment-type decisions confronted with irreversible hiring and firing costs.

Analogous to magnetism, the pattern of hysteresis depends on the scope: based on sunk-adjustment costs (e. g., entry costs of starting hiring) microeconomic behavior (e. g., of single firms on labor markets) shows a discontinuous switching-pattern (being active on the labor market or not) as described by a non-ideal relay, analogous to the magnetism of a single iron crystal. Correspondingly, the macroeconomic dynamics of aggregate economic variables (e. g., the (un-)employment figure of a whole country, based on an aggregation over firms with heterogeneous cost structures) show a pattern similar to the well-known hysteresis-loop of an entire piece of iron. The aggregate macroeconomic loop is characterized by a smooth/continuous transition between different "branches" of the loop, occurring with changes in the direction of the (e. g., real wage or oil price) movement.

Under uncertainty, the "band of inaction" on the micro level widens which results in a widening of the play area on the aggregate level. This has to be taken into account by monetary policy if it is acting under a hysteresis scenario. If it acts, it should do so boldly in order to push unemployment beyond the area of weak reaction (*Belke/Gros* 2003). In this perspective, unemployment gets more "important" for monetary policy (*Belke/Goecke* 2009). But it does so in a non-trivial manner, as suggested also by Lawrence Summers.

It is important to understand the macroeconomic policy implications of "true" hysteresis, which are quite different from an interpretation of hysteresis in (un-) employment as a unit root in the respective time series. If, for instance, monetary policy reduces uncertainty, the effect on employment is ambiguous. Instead, monetary policy triggers structural change in this scenario. This is because those firms inclined to fire are doing it now. In turn, those firms which were close to hiring before monetary action do so now.

Empirical research in economics is using different methods in order to capture path-dependent effects. First econometric approaches tried to describe these effects by time-series processes with unit- or zero-root dynamics. However, since unit-root-dynamics are not related to genuine multiple equilibria but on the order of integration of the time series, these first attempts were expanded by more sophisticated time-series models integrating structural breaks, threshold-cointegration or non-linear autoregressive distributed lag-models. Another branch of empirical studies tries to keep closer to the original concept of the macro-loop, trying to apply an explicit *Mayergoyz-Preisach* aggregation procedure (*Mayergoyz* 1986; *Mayergoyz* 2003; *Preisach* 1935) for heterogeneous firms,

if microeconomic information is available based on panel-data, or by using simple algorithms analogous to mechanical-play in order to apply simple OLS-regression methods on a filtered/transformed input-output relation.

IV. Hysteresis in Unemployment, Monetary Policy, and Secular Stagnation in EMU

With the collapse in demand that followed the Great Recession – the most severe collapse since World War II – there was renewed interest in the question of hysteresis, and policymakers began to question whether this should change their approach to monetary policy. Should they raise rates in response to rising price pressures to stay ahead of the game? Or should they wait in hopes that unemployment turns out to be cyclical rather than structural (*Cœuré 2017)*?

If supply-side factors adequately explained the forecasts of slow growth for EMU member countries, it would be unnecessary to discuss demand issues. Yet during the crisis, both prices and quantities went down, whereas a pure supply shock would have led prices to increase with declining quantities (*Blanchard/Cerutti/Summers* 2015). The secular stagnation approach cannot explain the decline in potential output, which has been a major feature of the crisis throughout the EMU and the entire industrialized world. Empirical evidence indeed shows that potential output has declined along with actual output (hysteresis effects) and with the output growth rate (super hysteresis, see *Ball* 2014) throughout virtually the entire EMU. And with hysteresis, demand deficits and higher output gaps today push the potential future output path downward (*Fatás/Summers* 2017).

Hysteresis works through several channels: not only labor market channel (according to both the insider-outsider approach and the human capital approach) but also the capital and inequality channel. Consistently high unemployment reduces the effective supply, and a negative output gap reduces capital expenditures. This points to how economies may move toward equilibrium in the face of real rates above the full-employment real interest rate. Supply potential may fall to the level of demand when investments in physical capital, labor, and product innovations are discouraged (*De Long/Summers* 2012). Such hysteresis effects lead to what could be referred to as an inverse Say's Law: "A lack of demand creates a lack of supply potential." According to this idea, high unemployment levels call for counter-cyclical monetary policies.

The discussion up to this point brings us to an important question (*Reifschneider* et al. 2015): How much of the reduction in aggregate supply over recent years has been an endogenous response to weak aggregate demand that monetary policy ought to be working to mitigate, and how much is an exogenous development that monetary policy has to simply accomodate?

Starting with the identification scheme of demand versus supply factors in a hysteretic macroeconomy developed by *Blanchard/Cerutti/Summers* (2015), econometric analysis of demand-side versus supply-side determinants of permanently lower (hysteretic) output growth for EMU countries should be on the research agenda now, taking into account that the demand side and the supply side interact in case of hysteresis. For this purpose threshold-cointegration models and an algorithm well-established in empirical hysteresis research analogous to mechanical-play and well-suited to apply simple OLS-regression methods on a filtered/transformed input-output (i. e., aggregate demand-output growth) relation should be applied (*Belke/Goecke/Werner* 2014; *Blanchard/Summers* 1986). The impact of monetary policy is thus modelled to work through an area of weak reaction of investment, growth and unemployment until a critical threshold of the monetary impulse is reached which leads to strong spurts in employment. As suggested by *Summers* and others, the unemployment rate matters for monetary policy in a sophisticated und up to now not fully elaborated way.

The magnitude of the estimated hysteresis effect may then be regressed on the degree of structural rigidities in order to determine the importance of the supply side as a catalyst of permanent effects of adverse cyclical developments on output growth. Needless to state that supply-side hysteresis whereby supply-side distortions – including dysfunctional institutions, policies, rules, regulations and practices – depress current and expected future potential output growth, which in turn depresses effective demand, can also be a serious problem, notably in the Eurozone. High costs of hiring and firing workers may turn labor into a quasi-fixed factor and could thus discourage complementary capital formation. The same holds true for incentive-dulling taxes, intrusive and distortionary regulations of product and labor markets and slow legal procedures, all of which discourage investment and hiring (*Buiter* 2015).

V. Hysteretic Unemployment and its Not-So-Trivial Implications for Monetary Policy

The preceding sections have revealed that it is time to consider the possibility of hysteresis seriously (see also *Fatás/Summers* 2016). But is there any room for doing something on the monetary (and/or the fiscal) policy side to fight hysteretic unemployment?

1. Monetary Policy in the Presence of a Hard Form of "Reverse Hysteresis"

The literature provides ample evidence that cyclical events have permanent effects on GDP. These effects are evident in any model in which the driving forces of endogenous growth are affected by cyclical shocks (*Fatás/Summers* 2016).

If we take the possibility of hysteresis seriously, this can transform our understanding of monetary and fiscal policy. The damage inflicted by recent episodes of fiscal consolidation has wide-ranging implications for macroeconomic policies in times of crisis (especially for excessively restrictive monetary policies such as inflation targeting). The potential long-term benefits of smooth cyclical fluctuations may be much greater than previously believed. The positive effects of expansionary policies, fast recoveries, and long-lasting economic booms on GDP must be therefore taken into consideration in the design of stabilization policies (*Fatás/Summers* 2016).

As noted by *Fatás/Summers* (2016), policymakers are finally taking the possibility of hysteresis seriously and discussing the possibility that weak demand can lead to slow growth and permanent scars. In this same vein, *Lagarde* (2016) commented that "the longer demand weakness lasts, the more it threatens to harm long-term growth as firms reduce production capacity and unemployed workers are leaving the labor force and critical skills are eroding. Weak demand also depresses trade, which adds to disappointing productivity growth." Understanding the potentially long-lasting effects of stabilization policy may be a first step in the right direction. Further academic research should seek to equip policymakers with the tools to apply these insights in creating effective policy frameworks (*Fatás/Summers* 2016).

What does this imply for monetary policy overall? Concerns about secular stagnation have been used to justify more expansionary policy based on arguments that deflation is more risky than inflation, stagnation more risky than overheating, and low credit growth more risky than excessive credit growth. When short rates are near the zero bound and when expansionary policy could have negative side effects, it becomes questionable whether such a policy can be effective. How much can a central bank's future interest rate policy commitments affect current expected real interest rates? If they do have impacts, how large will they be and to what extent will they be accompanied by currency weakening? These impacts may operate by moving demand from one country to another. But in a world where many countries face the challenge of secular stagnation, this is not always a realistic strategy (*Summers* 2015).

Another issue that monetary policy has to address is how long periods of zero interest rates affect financial stability. This issue is even more acute when there is wide-ranging government intervention into asset markets: How does this affect risk-seeking behavior and financial intermediation? Does it, for instance, make asset bubbles more likely (*Summers* 2015)? Investments like these, which were obviously not worthwhile when interest rates were low and only became worthwhile after rates were lowered further, are unlikely to produce social benefits.

Summers (2015) concludes from this discussion that monetary policy can be used effectively. He points out that in times of secular stagnation, the instinct to

ease monetary policy may well justified. But he notes that the evidence suggests that this is a decidedly second-best solution to increase private spending and public investments (*Summers* 2015).

With regard to what can be described as "reverse hysteresis" in its hard form, *Reifschneider* et al. (2015), like *Summers*, draw relatively strong monetary policy conclusions, arguing that a significant portion of the recent negative supply side impacts may have been endogenous to weak aggregate demand. This runs contrary to the conventional wisdom that policymakers should simply accommodate aggregate supply conditions. Endogeneity of supply with respect to demand is a persuasive argument for a strong policy response to dwindling aggregate demand.

What is at issue here is the blurred distinction between supply and demand shocks and monetary policy's capacity to alleviate endogenous negative developments in supply-side conditions. Many macroeconomic models treat aggregate supply shocks as exogenous and as lying beyond the sphere of influence of monetary policy. But if changes in aggregate demand do influence some elements of aggregate supply, monetary policy may actually be able to have an effect.

One example of this is capital spending. *Reifschneider* et al. (2015) carried out a simulation of what monetary policy can do to mitigate a loss of capital stock and aggregate supply after a major aggregate demand shock. As shown by *Blanchard/Summers* (1986), *Ball* (1999), and *Blanchard* (2003), and recently by *Stockhammer/Sturn* (2012) as well as *Erceg/Levin* (2013), demand shocks may affect unemployment duration and labor force attachment in the long term – impacts that an activist monetary policy might be able to mitigate. This is one important aspect of how unemployment matters for central banks and central bank policies. Furthermore, demand shocks and monetary policy may even be able to have medium-term impacts on potential output by increasing new business formation and promoting research and development.

Reifschneider et al. (2015) discuss what the blurred distinction between the supply and demand sides means for an "optimal" monetary policy. In and of itself, the possibility of adverse demand shocks affecting potential output by way of hysteresis-like effects leads to a more activist monetary policy aimed at mitigating damage to the supply side in both the present and future. However, other aspects – such as potential unintended effects of aggressive monetary policy on financial stability or inflation dynamics – may suggest the need for monetary policy restraint. In the face of these uncertainties, policy choices will depend not only how much policymakers think demand shocks will affect GDP or employment, but also on the risks they see in using accommodative monetary policy to offset adverse negative impacts on the supply side.

VI. Monetary Policy Under Uncertainty and (Un-)Employment Hysteresis

1. The Option Value of Waiting

If one would like to assess the importance of unemployment for central banks, it is also worthwhile to look at the impacts of uncertainty on the effectiveness of monetary policy which is confronted with hysteretic unemployment (*Belke/Goecke* 2009). The main intuition can be shown employing a model based on the theory of the "option value of waiting" with investment-type decisions such as hiring and firing decisions on the labor market. Uncertainty of future revenues, current and expected interest rates are the forces which drive employment (i. e., investment) decisions. Under uncertainty and with sunk costs a firm is faced with the option of hiring (i. e., investing) at date t or delay the employment decision to the future date t+1 when the uncertainty has been resolved. In this scenario, a central bank's monetary policy may affect the hiring (i. e., entry) decision of the firm via variations of its short-term interest rate. It can be shown that uncertainty leads to a higher firing (i. e., exit) interest rate trigger and to a lower hiring (i. e., entry) interest rate trigger. This "weak" relationship between employment and the interest rate is augmented by revenue uncertainty. As a result of option value effects, the relationship between the interest rate and employment is weakened by uncertainty. Thus, monetary policy gets into a kind of uncertainty trap and may be rather ineffective to fight unemployment in an uncertain economic environment.

2. Unintended Side Effects and Uncertainty: Financial Instability and Unanchored Inflation Expectations

In *Reifschneider* et al. (2015), optimal-control simulations are used to show how monetary policy could respond to the endogeneity of supply with regard to demand, leaving other considerations aside. They also discuss how aspects such as increased risks of financial instability or inflation instability could lead to restraint in central banks' monetary policy responses to cyclical weaknesses like unemployment.

Their simulation results show that optimal monetary policy becomes much more accommodative after major financial crises if the natural rate of unemployment and labor force participation show hysteresis-like effects that monetary policy could potentially be used to address. However, *Reifschneider* et al. (2015) also show that if policymakers fear negative impacts on financial stability or if they are afraid this may lead to an unanchoring of inflation expectations, they may find it appropriate to avoid aggressive responses to severe recessions. The overall atmosphere of uncertainty in which policymakers operate may en-

courage them to take a cautious aproach. This is the "option value of waiting under uncertainty" with monetary policy, well-known from options theory (*Belke/Goecke* 2005; *Belke/Goecke* 2009).

3. Monetary Policy Under Subtler Forms of Hysteresis

If structural unemployment had risen during the crisis as much as *Blanchard/Summers'* (1986) hysteresis approach suggests, there would have been a more rapid emergence of inflationary pressures because the unemployment gap would have been closing more quickly after the recovery. This did not occur, however – either in the Euro area or in many other economies (*Cœuré* 2017).

This raises the question of what is behind the sluggish rate of inflation. Here, we should keep in mind that subtler forms of hysteresis may exist that can affect our understanding of labor market slack. These subtler forms are the "scratches rather than the scars" (*Cœuré* 2017).

So what role should monetary policy play in dealing with hysteresis effects? Although the ECB's main task is to address price stability and not employment, the two variables generally enter into a "divine coincidence" when aggregate demand is weak: after adverse shocks hit the economy, unemployment rises and inflation falls. Only a reduction of labor market slack can create the conditions for wage and price pressures to increase, allowing inflation to return to the ECB's target with regard to price stability (*Cœuré* 2017).

This corresponds to recent observations in the Euro area. The ECB's credit-easing package of June 2014 has resulted in over five million new jobs. Model-based evidence shows that the ECB's policy has played an important role in this: overall, monetary policy has been driving the recovery, with support from falling oil prices (*Cœuré* 2017).

According to one school of thought, aggressive monetary policy action to fulfill the ECB's price stability mandate has mitigated hysteresis risks by fostering the financial conditions for increased growth and employment (*Cœuré* 2017). Here, it has been argued that the ECB's approach has been successful in overcoming a destabilization of inflation expectations, which can lead to a highly pernicious form of hysteresis (*Cœuré* 2017). Such a destabilization could have shifted the Phillips curve inwards and permanently reduced the inflation rate that the economy gravitates toward after shocks have worn off. And indeed, survey data show that inflation expectations have remained close to the ECB's definition of price stability over the medium term.

A second school of thought, however, argues that it is only at later stages or at turning points in the easing cycle that labor market dynamics and the possible impacts of hysteresis begin to play a more important role in monetary policy

decisions. Now that the Euro area is in recovery, policymakers therefore have to judge when inflationary pressures can be expected to emerge, justifying a gradual removal of policy accommodation.

An important aspect of this discussion are the conditions on the labor market. Wage developments are a driving force behind service price inflation and thus also headline inflation. As a result, a central bank's monetary policy has to take into account how much slack can be expected in the economy, especially on the labor market.

Ignoring these aspects – particularly the possibility that there is more labor market slack than headline unemployment measures suggest – would raise the risk of tightening policy too early. Restricting growth would cause the ECB to fail in meeting its medium-term inflation mandate, and would keep people in unemployment unnecessarily.

Likewise, the aforementioned changes in labor contracts would mean that inflationary pressures might build up more slowly. This, too, needs to be taken into consideration in monetary policy deliberations.

Simultaneously, a close eye should be kept on developments in long-term unemployment, labor force participation rates, and hours worked so that the ECB can evaluate how structural unemployment is likely to evolve.

If long-term unemployment does stabilize at some point, with no clear signs of a further decline in the near future, this would increase risks of inflationary pressures emerging at higher unemployment levels. This would lead to a decline in the level of slack that is relevant to medium-term price stability. To fulfill their mandate, policymakers would then have to begin tightening policy at an earlier stage (*Cœuré* 2017).

Some analysts have called such a response premature since, if hysteresis effects can emerge from a lack of demand, they could also be reversed by excess demand. If pressure in the economy is high, companies might, for instance, reactivate or retrain workers who had been considered to be unemployable. According to *Rudebusch/Williams* (2016), an optimal monetary policy should allow inflation to overshoot its target as a means of reducing long-term unemployment.

This view has been challenged in two key respects. First, in the Euro area, unlike in the US, the approach of letting inflation overshoot to bring more people back into employment would not allign with the ECB's mandate. The idea of "divine coincidence" mentioned above is only appropriate when employment developments fit the ECB's definition of price stability. Beyond this point, trade-offs are not an option (*Cœuré* 2017).

A second respect in which this view has been challenged is with regard to the probable efficacy of such a policy. There is evidence from the United States that

the participation rate may become partially endogenous to demand if discouraged workers begin looking for work again as the labor market becomes stronger. There has been no evidence of this, however, in the Euro area: here, participation has been increasing over time (*Cœuré* 2017). As a result, the question is whether long-term unemployment is indeed responsive to continued policy accommodation (*Cœuré* 2017).

The evidence on this question is ambiguous. Although some see monetary policy as having been too accommodative in 2005 and 2006 (a period in which policy rates were often lower than standard Taylor rule predictions), the share of long-term unemployed has remained relatively unchanged in the Euro area over the same period.

Even if accommodative policy has positive effects, spurring investment and employment, one still cannot predict whether employers will then hire chronically unemployed people or if they will simply fall back on "insiders" without recent wage raises or new university graduates. A recent study of the Spanish labor market confirms this view: job-finding rates tend to become less responsive to improvements in the aggregate labor market over time (*Bentolila/García-Pérez/Jansen* 2017).

One could even go one step further and ask whether allowing inflation to overshoot its target could be a means of dealing with subtler forms of hysteresis in the economy that are related to uncertainty and investment. *Cœuré* (2017) finds ample evidence that investment would have been lower today if it had not been for the ECB's policies and the impulses they created. Central banks cannot, however, address every cause underlying weak capital formation: if, for instance, weak long-term growth expectations are affecting investment in some way, then the answer cannot be provided by monetary policy alone, unless one gives credence to the idea of "reverse hysteresis" in a very hard form.

If weak long-term growth expectations do become self-fulfilling, then one could expect to see signs of hysteresis in the natural rate of interest, or "r-star". A lower r-star would push the interest rate level at which policy becomes expansionary even lower, fueling concerns about monetary policy's ability to address hysteresis in its more advanced forms. It is important to guard against central banks falling into an "anxiety trap" (see also the discussion above on the "option value of waiting"). The solution must lie in addressing structural causes of low trend growth and long-term unemployment by creating policies that support productivity and that minimize labor market dualities as well as social exclusion (*Cœuré* 2017).

To prevent "scratches" from becoming scars, they require early, effective remedies. To the extent that investment is affected by legacies of crises – for instance, the debt overhang in parts of the private and public sector (the Fisher-Minsky-Koo channel of debt deflation, see *Minsky*, 1986) – history shows

that deleveraging virtually always necessitates an approach that mixes growing the economy out of debt with debt write-downs. This means that structural policies like streamlined insolvency frameworks, better judicial efficiency, and supervisory action against non-performing loans are of critical importance (*Cœuré* 2017).

Action must also be taken at the EU level. If efforts were undertaken to complete the Single Market, this would create incentives for more firms to invest and grow because they would have access to a larger market and could then utilize economies of scale. Progress with the Capital Markets Union (CMU) would also help boost productivity by encouraging capital reallocation.

These first considerations thus indicate that counter-cyclical monetary policy alone is not able to fight hysteretic unemployment. Structural policies and reforms have to accompany it in a way explained in the next section.

VII. Interactions Among Supply-side and Demand-side Policy Measures: The Two-handed Approach I

A two-handed approach to macroeconomic policies in times of high unemployment has occasionally been derived from the hysteresis approach. Expressed in terms of the hysteresis loop, demand-side measures reduce the amount of necessary supply side measures to get rid of the "remanence" and supply side measures/structural reforms reduce the so-called "coercive power" well-known from ferromagnetism, i. e., the demand side stimulus necessary to bring the economy back to full employment (*Belke/Goecke/Werner* 2014; *Buiter* 2015; *Draghi* 2014).

This type of two-handed approach which admits monetary policy some (though conditional on structural reforms) role in fighting high unemployment can be traced back to the hysteresis approach. It alludes to the fact that a combination of supply-side and demand-side measures is the most efficient way to tackle the bad performance of economic variables such as unemployment which exhibit path-dependence.[2] In this sense, unemployment is relevant for central banks in a way which is "filtered" by structural reforms. If the incentives for reform are not diminished by an expansionary monetary policy, the incentives to fight unemployment are rather high. Much of the incentive to react to unemployment with monetary policies thus depends, from a game-theoretic point of view, on the relatively time elapsing until monetary policy and decisions to implement structural reforms take effect ("last mover advantage", *Belke* 2002).

[2] For an excellent survey in this regard, see the comprehensive volume on hysteresis in unemployment edited by *Rod Cross* (1988).

The main argument behind this type of two-handed approach runs as follows. According to this view, the application of supply-side oriented measures lowers the magnitude of the demand shock necessary to reverse the effect of an adverse shock in the past ("coercive power"). For instance, reforms of labor market institutions make unemployment a less relevant target for monetary policy in the wake of oil price shocks in a currency union (*Belke/Baas* 2018). Demand-side measures, in turn, enhance the probability of supply-side reforms. Since supply-side measures are often proposed by politicians adhering to neoclassical theory and demand-side measures are favored by those who are advised by Keynesian economists or are heavily influenced by unions, policy advice derived from a hysteresis model (which essentially represents a mixture of neoclassical and a keynesian-type model) typically has a high chance to lead to a political consensus. Moreover, politicians are rewarded for reform efforts with long-lasting benefits.

The main focus behind this view is on the "two-handed approach" to economic policy originally brought forward by the Centre for European Policy Studies' Macroeconomic Policy Group, Brussels, in the midst of the eighties (*Blanchard* et al. 1986).

However, if politicians understand the special kind of dependence expressed by hysteresis models and legislation periods are limited to, let's say, four years, there might as well be an additional incentive for them to punish future governments with a bad economic performance today (which has an impact on the performance tomorrow and so on). In other words, high unemployment could theoretically be highly relevant for monetary policy but the monetary policy stance is not geared towards lowering unemployment. In this case, the chance of sound policies due to policy advice giving based on hysteresis models is admittedly rather limited. Hence, policy advice giving based on hysteresis models should be concentrated on the beginning of the legislation period.

VIII. Interactions Among Monetary and Fiscal Policy Measures: The Two-handed Approach II

Another interesting and topical variant of a two-handed approach is the monetary and fiscal policy interaction indicated as necessary in view of high "hysteretic" unemployment by, for instance, Willem Buiter and Ben Bernanke advocating helicopter money (*Belke* 2018).

Buiter (2015) is much less optimistic than *Bernanke* (2015 a, b) that the challenge of secular stagnation may be resolved soon through reduced saving by China or major oil exporters. Indeed, according to *Buiter* (2015), there is unlikely to be a silver bullet against secular stagnation, and the necessary policy responses will likely have to be wide-ranging. Conventional and even unconven-

tional monetary policy (changes in the size and/or composition of the central bank's balance sheet) are not quite up to the task, in Buiter's view. The sensitivity of demand to changes in interest rates is probably too low (*Belke/Goecke* 2009) and increasing the dosage of unconventional monetary policy risks stoking asset bubbles. That is true even if steps are taken to remove the effective lower bound on nominal policy rates, as we have advocated elsewhere.[3]

Fiscal policy may be needed, but with public sector debt at high levels in many advanced economies, a combined monetary-fiscal stimulus – i. e., helicopter money – would likely be needed to close the output gap: "two-armed policies are needed" (*Buiter* 2015). *Buiter* (2014) provides a rigorous analysis of Milton Friedman's parable of the "helicopter" drop of money – a permanent/irreversible increase in the nominal stock of fiat base money which respects but relaxes the intertemporal budget constraint of the consolidated Central Bank and Treasury – the state.[3] Examples are a temporary fiscal stimulus funded permanently through an increase in the stock of base money (helicopter money) and permanent Quantitative Easing (QE), an irreversible, monetized open market purchase by the Central Bank of non-monetary sovereign debt. From this perspective, unemployment matters for monetary policy in a way which necessitates the incorporation of fiscal policy.

In a helicopter money scenario, a narrow focus on macro demand management policy will probably not be the optimal policy response. On the demand side, secular stagnation is driven by forces including excessive indebtedness and high income and wealth inequality. Under these circumstances, an optimal response may include extensive debt restructuring, where a debt overhang exists and where policy measures including tax policy, benefits policy, and education policy can stop the increase inequality (itself a possible cause of increasing hysteretic unemployment) and to some extent even reverse inequality. But, as derived in the previous section, adequate supply-side measures are also needed. Hence, policies trying to overcome hysteresis are similar to those intended to fight secular stagnation, but are not necessarily identical.

IX: Can Monetary Policy Serve as a Driver of Structural Reforms?

The pressing problem of unemployment and the choice of the appropriate monetary policy strategy represent crucial challenges in current academic and political debates. Although both issues are usually connected in the public discussion the academic discourse had neglected, at least until the mid-nineties, to provide rational arguments for such an interrelation. Until then, the incentives and disincentives for labor, product and financial market reforms on the one

[3] See *Borio/Zabai* (2016), Box 2.

side and the benefits and costs of monetary policy rules on the other side had typically been analyzed in isolation (*Belke/Polleit* 2010).

More than a decade ago, the economics of structural reforms has attracted increasing attention in the academic literature (*Abiad/Mody* 2005; *Helbling/Hakura/Debrun* 2004; *Belke/Herz/Vogel* 2006). This ongoing research is driven by the fact that, for a number of EU countries, the speed of structural changes lags behind what is deemed necessary given high structural unemployment and imminent demographic change. Policy fields where a striking contrast between needs and deeds of institutional change has been identified are, for instance, labor markets, product markets, social security and tax systems.

1. Fruitful Interplay of Monetary Policy and Reforms

Although the existing empirical literature has already started to identify important drivers and obstacles of reforms with regard to different policy field, the interplay of structural reforms and monetary policy has been neglected so far. While the theoretical literature has formulated some hypotheses on how monetary policy may act as a catalyst for reform processes, thorough empirical studies based on the experience of a large number of industrial countries have only scarcely been available until recently.

Reforms aiming at an improvement of market efficiency can only be fruitful if there is monetary stability allowing price mechanisms to fulfil their allocative function. In this sense, theory suggests a clear basic link between monetary policy and reform policy: high inflation rates are not compatible with the successful implementation of structural reforms. This insight, however, does not exclude that – within a low inflation framework – there could be ways in which monetary policy might encourage or smooth reform processes. A frequently cited argument relates to the "two-handed approach", introduced above (for example, *Bean* 1998): its basic logic is that monetary policy may be able to reduce upfront costs of certain kind of structural reforms, e. g., related to labor markets.

2. (Un-)Employment Hysteresis and Policy Complementarity

The "two-handed approach I" formulated above is in accordance with the *policy complementarity* view proposed by *Coe/Snower* (1997) and *Orszag/Snower* (1998).

A different argument (frequently mentioned in various speeches and interviews of ECB officials) is closer to the primary objective of monetary policy itself and is unrelated to any demand management considerations. According to this view, certain types of reforms of labor and product markets are able to re-

duce inflationary tendencies, for example, if measures to strengthen competition on labor markets have a dampening effect on wage and price growth.

Obviously, these kinds of reflections rest on assumptions which do not all have a solid empirical backing. For example, J-curve effects according to which a (short-run) period of costs precedes the materialization of the long-run benefits are by no means typical for all reform fields (*Helbling/Hakura/Debrun* 2004). Furthermore, it is unclear to which extent monetary policy can be effective to change the time profile of the costs and benefits of reforms. Finally, difficult questions relate to monetary credibility which could be impaired if central banks accept a temporary divergence from stability oriented monetary policy for the sake of supporting governments in their policies.

3. *The Double Dividend of Labor Market Reforms Under EMU: Discretionary Versus Rule-based Monetary Policy Revisited*

In the monetary transmission literature much attention has been paid to the question how, e. g., labor market reform, changes the conditions for the conduct of monetary policy. The opposite question, how relevant monetary policy is for structural reforms, has not been covered in a systematic way until a decade ago although there have been some very rough first insights on the table. The literature on the drivers of structural reforms sometimes includes the inflation rate (see, for instance, *Pitlik/Wirth* 2003). Furthermore, some studies are dealing with the question how relevant the exchange rate regime and EMU in particular (joint with the implied monetary policy regime) is for reform processes (*Belke/Herz/Vogel* 2006; *Castrén/Takalo/Wood* 2004; *Duval/Elmeskov* 2005).

Both high equilibrium unemployment and the inflation bias in some EU countries require fundamental reforms of labor-market institutions. Impacts of different monetary regimes inside and outside EMU on the incentives for labor-market reforms have typically been examined in a Barro-Gordon framework from the perspective of a single country (*Calmfors* 1998; *Sibert/Sutherland* 1997). Monetary policy (discretionary versus rule-based) and the degree of labor-market reforms are determined simultaneously in these studies. Hence, in these kinds of models, unemployment matters for central banks and their policies but "casuality" in this context works also the other way round.

It can be shown that discretionary policy outside EMU leads to a higher degree of reforms than rule-based policy since in the former case reforms reduce both unemployment and the inflation bias (*Calmfors* 1998). However, rule-based monetary policy inside EMU limits the benefits of reforms to a positive impact on employment. Nevertheless, total economy welfare under EMU is superior to the one under discretionary policy. Insofar as a superior instrument is available for the parallel reduction of the equilibrium inflation rate, namely a

strict monetary policy rule, the higher degree of labor-market reforms under discretionary monetary policy outside EMU only signals a kind of an overshooting (*Belke/Kamp* 1999). From this perspective, high unemployment is still relevant for monetary policy per se. However, it is not an argument for expansionary monetary policy but, on the contrary, in favour of strictly rule-based monetary policy stance.

X. Unemployment, Ideology, and Monetary Policy

A final channel through which unemployment matters for central banks and their policies is the popularity function of incumbent governments which includes the level of unemployment or the unemployment rate as an important element. If central banks are politically dependent on the governments, monetary policies may follow re-election-oriented and/or ideology-oriented political cycles. The question of political impacts on labor markets and thus of the political dimension of unemployment has recently been asked repeatedly, since permanently high unemployment in Western Europe since the 1970s and the failure of implementing reforms cannot be explained anymore by purely economic approaches of Keynesian or neo-classical provenience. At the same time, a bulk of evidence from "cross-country-studies" of significant impacts of government ideology on unemployment in Western democracies is available (*Belke/Potrafke* 2012).

Depending on the shape of the induced unemployment cycle, political business cycles of the Partisan type, of the Rational Partisan type and of the hysteresis-augmented Rational Partisan type are distinguished. The latter takes variant account of the path-dependence or at least persistence of unemployment (which in limited samples has nearly the same dynamic implications for political business cycles as hysteresis).

Since this feature is a stylized fact at least for EU-countries like Germany, it will be of special interest here as well. Arguably, Germany had the world's most independent central bank. Surprisingly, however, some researchers have found political business cycles even in German monetary aggregates (*Berger/Woitek* 2001; *Vaubel* 1997). This feature is of course hard to explain this with standard models of opportunistic government behavior. Instead, these authors show that the cycles originated from shifts in money demand tolerated by the Bundesbank. Such shifts occur because, when inflation preferences differ between political parties and election results are uncertain, rational investors avoid entering into long-term financial contracts before elections. Contrary to the Bundesbank's stated commitment to a "monetarist" policy rule, it appears to have allowed these changes to have an impact on monetary aggregates. In this way, unemployment becomes relevant for monetary policy.

It remains to be seen (a) whether this pattern is transferred to the regime of the Eurozone, (b) whether there is at least evidence of a partisan cycle in monetary policy instruments or alternatively (c) whether the political monetary policy cycle was finally dead in the period before the financial crisis when central banks worldwide turned towards inflation targeting (which gave no room to manipulating inflation rates in order to react to unemployment) (*Belke/Potrafke* 2012). These issues are among the hot topics of research in the field of the political economy of monetary policy in the future. Seen on the whole, there is no consensus in the literature up to now how parties affect monetary policy, but monetary surprises appear as an unconvincing driving force of traditional partisan political cycles alone (*Drazen* 2000).

Unemployment may thus matter for central banks because these banks are not independent from governments which have an eye on unemployment figures – either because they are ideologically biased towards those parts of the electorate which are met with a higher probability by high unemployment (partisan political business cycle à la *Hibbs* 1977) or because they want to become re-elected (traditional political business cycle à la *Nordhaus* 1975) (*Belke/Potrafke* 2012).

Many scholars have investigated how government ideology influences the choice of monetary policy instruments such as interest rates in OECD countries as a reaction to unemployment (e. g., *Alesina/Roubini/Cohen* 1997; *Boix* 2000; *Clark* 2003; *Sakamoto* 2008). Politicians, however, do not have a direct influence on interest rates, but are subject to institutional restrictions, most notably central bank independence. Ideology-induced politicians can therefore manipulate interest rate policies only when central banks are not independent and subject to directives of the government. In this case, high unemployment becomes relevant for monetary policy.

Some previous empirical research has dealt with this interaction between central bank independence and government ideology. In contrast to the predictions of the partisan theories, it transpires that leftist governments do not always conduct expansionary monetary policies as a reaction to unemployment higher than the natural rate: when central bank independence was high, interest rates have rather been higher under leftist governments.

The partisan approach is based on the assumption that politicians provide policies that reflect the preferences of their clienteles (partisans).[4] Leftist parties

[4] By contrast, the political business cycle theories imply that politicians, independent of their respective party couleur, will implement the same expansionary monetary policies before elections in order to lower unemployment. In other words, before elections political ideology retires to the background, and policies converge. See, e. g., *Alesina* et al. (1997) on the different approaches. On monetary political business cycle in open economies see, e. g., *Dreher/Vaubel* (2009).

appeal more to the labor base and promote expansionary policies, whereas rightwing parties appeal more to capital owners and are therefore more concerned with reducing inflation. This characterization holds for both branches of the partisan theory – the classical approach (*Hibbs* 1977) and the rational expectations approach (*Alesina* 1987). The traditional partisan theory contains that leftist governments produce higher inflation and lower unemployment. The rational partisan theory, on the other hand, predicts upward (downward) post-election blips in unemployment for rightwing (leftwing) regimes due to wage rigidities in an environment of electoral uncertainty.

XI. Equilibrium Real Interest Rates, Secular Stagnation and Unemployment: A Role for Monetary Policy?

The previous sections have shown that unemployment is relevant for monetary policy in several ways. As discussed in sections 4 and 5, one way is embedded in the current fears of *secular stagnation* and the role monetary policy plays in this context. Other facets in the context of secular stagnation not discussed yet in this paper are (a) about the numerical realization of the equilibrium real rate of interest which equilibrates savings and investment and thus guarantees full employment and (b) whether monetary policy is able to influence it and has done so in the past. If so, unemployment has become relevant for monetary policy via the real equilibrium rate of interest.

It should then be asked whether the Euro area as a whole or individual Euro area member countries are facing a period of sustained lower economic growth and high unemployment, a phenomenon known as secular stagnation, and thus, in the extreme, hysteresis in the equilibrium real rate of interest (see section 5). One way to tackle this question is to estimate equilibrium real interest rates employing, for instance, the Williams-Laubach method and comparing them to actual real rates (*Belke/Klose* 2017; *Beyer/Wieland* 2017; *Holston/Laubach/Williams* 2016). Since the financial crisis has altered the degree of leverage in several European economies, one may expand the empirical model to incorporate the financial cycle (*Juselius* et al. 2016).

Belke/Klose (2017) estimate such a model for the Euro area as a whole and for the individual Euro area member countries. As a first step, they come up with a sequence of estimations of equilibrium real interest rates in the Euro area over time, incorporating the financial cycle. As a second step, they compare the resulting sequence of estimated equilibrium rates with that of the actual ones in order to check whether real monetary policy rates were set systematically and consistently above the natural real rate thus indicating evidence of secular stagnation. A potential third step and an interesting avenue of future research would then be to empirically check the extent to which the equilibrium real interest

rate paths in the EMU as a whole and in individual member countries are determined by the degree of income inequality, i. e., the standard deviation of earnings and the capital share.

In close connection with the Williams-Laubach-estimation method of the natural interest rate one may then suggest ways in which policy can mitigate the effect of income inequality on aggregate demand and thus unemployment. The first is fiscal policy, including government spending and budget deficits. Increases in budget deficits help mitigate the fall in economic output because more government debt increases asset supply (*Auclert/Rognlie* 2018). Similarly, monetary policy can respond by lowering interest rates. In fact, the decline in Euro area interest rates observable since years could have been a response, in part, to rising inequality (*Auclert/Rognlie* 2018; *Auclert/Rognlie* 2018a).

The estimates gained by *Auclert/Rognlie* (2018) predict what might have been the effect of rising inequality on the "equilibrium" or natural interest rate – the interest rate that the ECB needs to set in order to maintain full employment without generating inflation. One implication of their findings may be that inequality might have been one of the factors bringing the ECB closer to the zero lower bound of interest rates in the aftermath of the European debt and banking crisis (*Auclert/Rognlie* 2018a). In this scenario, unemployment matters for monetary policy through the channel of inequality. In this context, inequality that raises future risk depresses the natural rate of interest, but technological advances that raise the capital share raise can have the opposite effect.

XII. Conclusions

Up to now, the euro area has not seen unemployment hysteresis in its typical form; what it has seen instead can be described as "scratches, not scars". Although this subtler form of hysteresis may call for policy accommodation over the longer term, the sole aim of such an approach would be to fulfill the ECB's price stability mandate, not to prevent an increase in structural unemployment. If these two aims did ever collide, the ECB's policy choice would be clear (*Cœuré* 2017).

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