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Should monetary policy take account of national labor market asymmetries in a currency union?

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Abstract

This paper investigates the design of optimal monetary policy in a currency union with asymmetric national labor markets. For this purpose a stylized theoretical two-country model is introduced where the occurrence of inflation differentials is a reflection of asymmetries in the labor market flexibility between the two countries. Through numerical simulations it is shown that a larger weight of the country with the more sclerotic labor market in the loss function of the monetary union's central bank is more advantageous at the monetary union's level than a simple weighting scheme based on the relative economic size of both countries.

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1 Introduction

According to the Optimal Currency Area (OCA) theory, the adequacy of a one-size-fits-all monetary policy in a currency union depends to a major extent on the macroeconomic homogeneity existing among the participant economies. In the case of the European Monetary Union (EMU), it is widely acknowledged that the national labor market institutions differ in various aspects such as employment protection legislation, wage flexibility, degree of unionization and the shaping of the unemployment benefit system. Given the degree of labor mobility (another OCA criterion) existent among the EMU Member countries is still rather low (Bertola (2000) and Braunerhjelm et al. (2000)), such differences are likely to be one of the most important source of asymmetry in the transmission of monetary policy shocks in EMU (Berben et al., 2005), see also Walsh (2005), Trigari (2009) and Christoffel et al. (2009).

In this paper I investigate how a Monetary Union's Central Bank (MUCB) should weight the relative importance of national inflation rates and output developments in a currency union with heterogeneous national labor markets such as the EMU. To my knowledge, Abbritti and Mueller (2007) is the only study – besides this one – which focuses on this topic undertaken so far.[1] The present study, however, differs from Abbritti and Mueller (2007) in a variety of non-trivial aspects – from the general theoretical framework to the very specification of the labor market and thus the nature of the labor market heterogeneity in the model monetary union –, delivering thus additional insights on this issue to those of that study.[2]

The remainder of this study is organized as follows: In section 2 a stylized two-country monetary union model with asymmetric national labor markets is introduced. In section 3 the problem of a one-size-fits-all monetary policy in a heterogeneous currency union is characterized within this theoretical framework. Section 4 analyzes the implications of different country-weights for the performance of monetary policy in a currency union, showing that a greater focusing on the inflation developments of the country with the more sclerotic labor markets reduces the monetary union's deadweight-loss at the monetary union level. Section 5 draws some concluding remarks from this study.

[1] Important research on the implications of (different types of) macroeconomic heterogeneity in a currency union such as EMU for design of monetary policy has already been done: Benigno (2004) shows that in a currency area with countries featuring different degrees of nominal rigidity, an inflation targeting policy in which a higher weight is put on the inflation of the country with the highest degree of nominal rigidity is nearly optimal. Alternatively, Lombardo (2006) focuses on the role of product market competition for the design of monetary policy. He concludes that ceteris paribus, the welfare-maximizing central bank should react more aggressively to the inflation pressure generated by the more competitive economy.

[2] Abbritti and Mueller (2007) model labor market frictions through hiring costs which increase in the degree of labor market tightness, as well as through the assumption of real wage rigidities. The first friction type makes the slope of the Phillips Curve steeper, and the second makes it flatter, as inflation becomes less sensitive to unemployment changes. The monetary policy implications of their study for monetary policy in a currency union are: a) monetary policy should give a negligible weight on unemployment and b) in presence of symmetric shocks and asymmetric labor markets the MUCB should give a larger weight to the inflation of the country with more sclerotic labor markets. In contrast, in the theoretical framework of this paper actual employment is determined by a labor matching function along the lines of Pissarides (1992) and Mortensen and Pissarides (1994), and labor market heterogeneity is represented by different matching technology levels. Price inflation is not explained by a standard New Keynesian Phillips curve, but results instead from the discrepancy between labor demand and actual employment (under a constant mark-up pricing), which in t u r n depends directly on the efficiency in the labor matching function.

2 The Model

Two small open economies $\mathcal{A}$ and $\mathcal{B}$ which form a monetary union and are therefore subject to a single common monetary policy by a central monetary authority (the MUCB) are assumed. These two economies are supposed to be identical in every aspect (including their economic size, measured here by the level of total labor supply L_t in both economies) but the degree of flexibility of their respective labor markets, with $\mathcal{A}$ featuring a more flexible labor market than $\mathcal{B}$. In the following the defining model equations for a single economy are discussed, assuming identical specifications for the other economy.

Concerning goods production, in order to keep the model as simple as possible, I assume that output is produced through a linear single-input factor technology, that is

$$Y_t = F(N_t) = A_t N_t, \qquad (1)$$

where N_t denotes the actual (realized) level of employment and A_t represents the average labor enhancing technology level (for notational simplicity I assume however that $A_t = 1 \; \forall \; t$ in the following). In the same manner, full employment output Y_t^f, is simply a function of the actual level of the total labor supply in the economy L_t, expressed as $Y_t^f = F(L_t) = A_t L_t$ with $A_t = 1 \; \forall \; t$.

Using the full-employment output level as a point of reference, the log excess aggregate demand in the economy is assumed to be given by

$$y_t^{\mathrm{D}} = \ln(Y_t^{\mathrm{D}}/Y_t^f) = \alpha_y y_{t-1} - \alpha_{yr}(i_{t-1} - \pi_t - (i_o - \pi_o)) + \alpha_\eta \eta_{t-1} \qquad (2)$$

where y_{t-1} represents the output gap (to be defined below) in the previous period, i_o denotes the steady state nominal interest rate, π_o the steady state inflation rate, and η the log real exchange rate (defined as $\eta = \ln(P^*/P)$, with P^* and P being the price levels in the foreign and domestic economies, respectively).[3] Obviously, the goods market is in equilibrium (and therefore $y^{\mathrm{D}} = 0$) for $y_t = 0$, $i_{t-1} - \pi_t = i_o - \pi_o$ and $\eta_t = 0$.

In this simplified framework the level of output produced by firms – and therefore their labor demand – is determined solely by the level of aggregate demand Y_t^{D}. Confronted with Y_t^{D} firms set thus their labor demand according to eq.(1), that is

$$L_t^{\mathrm{D}} \;\; = \;\; Y_t^{\mathrm{D}} = \exp(y_t^{\mathrm{D}}) Y_t^f. \qquad (3)$$

Due to the existence of labor market frictions, however, the actual level of employment N_t is not necessarily consistent with the labor demand by firms L_t^{D}, so that $L_t^{\mathrm{D}} = N_t$ does not hold in the normal case. Instead, the actual number of employed workers at time t is determined by the level of remaining jobs from the previous period (determined in turn by the exogenous job separation rate ρ)[4] and by the "matches" at the beginning of the actual period. At time t, the number of employees is thus determined by

$$N_t = (1 - \rho) N_{t-1} + m(U_t, V_t) \qquad (4)$$

[3]For simplicity this will be the only open-economy term we will analyze here, leaving the incorporation of direct foreign goods demand as a determinant of domestic economic activity for further research.

[4]Hall (2005) and Shimer (2005) find that the rise in unemployment during economic slowdowns is caused not by a higher rate of job destruction (at least in the U.S. employed workers do not get fired more frequently than in economic booms), but by a lower rate of job creation. The assumption of an exogenous job separation rate is also met for instance by Gertler and Trigari (2009) and Christoffel and Linzert (2006). Campolmi and Faia (2006) and Trigari (2009), in contrast, assume that the job separation rate depends partly on the position of the economy within the business cycle, making the separation rate of employment partly endogenous.

where $m(U_t, V_t)$ is a Cobb-Douglas matching function

$$m(U_t, V_t) = \mu U_t^{\xi} V_t^{1-\xi}, \quad \xi \in (0,1) \tag{5}$$

with μ denoting the matching technology level, $U_t = L_t - (1-\rho)N_{t-1}$ the number of unemployed workers and $V_t = L_t^{\mathrm{D}} - (1-\rho)N_{t-1}$ the number of vacancies at the beginning of period t.

By defining $u_t = U_t/L_t$ and $v_t = V_t/L_t$ as the unemployment and vacancy rates, respectively, and assuming for the total labor supply that $L_t = \bar{L}$, we can reformulate eq.(4) in terms of the employment rate $e_t = N_t/\bar{L}$ as

$$e_t = (1-\rho)e_{t-1} + m(u_t, v_t). \tag{6}$$

Making use of the fact that $L_t^{\mathrm{D}}/\bar{L} = Y_t^{\mathrm{D}}/\bar{Y}^f = \exp(y_t^{\mathrm{D}})$, we can rewrite eq.(6) as

$$e_t = (1-\rho)e_{t-1} + \mu(1-(1-\rho)e_{t-1})^{\xi}\left(\exp(y_t^{\mathrm{D}}) - (1-\rho)e_{t-1}\right)^{1-\xi} \tag{7}$$

As this labor market module is formulated, due to the existence of labor market frictions, firms usually do not obtain their desired level of labor demand L_t^{D}, but get N_t instead. As a consequence, the more sclerotic the labor markets are, the larger will be the discrepancy between L_t^{D} and N_t, and therefore, the looser will be the link between the aggregate demand and the actual production in the economy, and the higher will be the domestic price inflation.[5]

Concerning the dynamics in the goods markets, due to the explicit incorporation of labor market rigidities in this theoretical framework, the level of production in the economy is not only determined by the aggregate demand, but it is also influenced in a direct manner by the degree of flexibility of the labor markets. Accordingly, we must differentiate between the full-employment production level $Y^f = \bar{L}$ and the potential output level

$$Y^p = e_o \bar{L} \tag{8}$$

where e_o represents the steady state employment rate in the economy, which is fully determined by structural labor market factors, as it will be shown below.[6]

Making use of eq.(7) we can express the actual output gap y (defined here as the log deviation of actual, realized output level to potential output) as

$$y_t = \ln(Y_t/Y_t^p) = \ln\left(\frac{N_t}{e_o L_t}\right) = \ln(e_t/e_o). \tag{9}$$

Note that in equilibrium $y_t^{\mathrm{D}} = 0$ and $e_t = e_{t-1} = e_o$, what in turn implies that $y_t = 0$. Inserting these equilibrium values in eq.(7) and solving for the steady state employment rate delivers

$$e_o = \frac{\mu}{(1-\rho)\mu + \rho}. \tag{10}$$

[5]Note that our formulation of the employment rate dynamics differs significantly from traditional search and matching labor market models, because here the vacancies are determined basically by the goods aggregate demand pendant on the labor market (since $L^{\mathrm{D}} = Y^{\mathrm{D}}/z$) and not, as usual, through a forward-looking decision process including Bellman equations and in there intertemporal cost-benefit considerations of both workers and firms. However, as it will become clear alongside this paper, this specification of the employment dynamics will suffice for the argumentation of this paper.

[6]Note that while this formulation is rather non-standard, it reflects the fact that in a more sclerotic economy the level of potential output is likely to be lower than in a more flexible economy.

As stated before, the more sclerotic the labor market is, the larger is the discrepancy between the employment level consistent with the firms' labor demand and the actual employment. It is thus natural to assume that such "disequilibrium" between L_t^{D} and N_t will influence nominal wages. Let us thus assume a modified backward-looking Phillips curve relationship according to which

$$\pi_t^w \quad = \quad \beta_{py} \ln(L_t^{\mathrm{D}}/N_t \cdot e_o) + \alpha_\pi \pi_{t-1}^w \tag{11}$$

where π_t^w is the nominal wage inflation, β_{py} the slope of the Phillips Curve and α_π the degree of wage inflation persistence in the economy.

Regarding the price inflation dynamics in this stylized framework, in the most parsimonious manner a traditional constant mark-up pricing over nominal wages is assumed, so that the real wages remain constant, and price inflation equals wage inflation in every period. Substituting π_t^w by π_t (the price inflation rate) and making use of the fact that

$$\ln(L_t^{\mathrm{D}}/N_t \cdot e_o) = \ln\left(\frac{L_t^{\mathrm{D}}/\bar{L} \cdot e_o}{N_t/\bar{L}}\right) = \ln\left(\frac{\exp(y_t^{\mathrm{D}}) \cdot e_o}{e_t}\right) = y_t^{\mathrm{D}} - y_t$$

see eqs.(2) and (9), we can reexpress eq.(11) as

$$\pi_t = \beta_{py}(y_t^{\mathrm{D}} - y_t) + \alpha_\pi \pi_{t-1} \tag{12}$$

Note that in contrast to Abbritti and Mueller (2007), where the presence of hiring costs in the labor markets affects the evolution of the real marginal costs and thus of the price inflation via the New Keynesian firms' price setting behavior, according to this particular inflation dynamics specification, it is the log difference between the labor demand by firms (corrected by the steady state employment rate which comprises the structural labor market factors) and the actual employment level and not necessarily the real marginal costs per se (nor the output gap or the expected future inflation) which is the main driving force of price (wage) inflation.[7] Eq.(12) thus incorporates explicitly the role of labor market flexibility for the occurrence of inflation in an alternative manner to what is done in the New Keynesian literature, since it states that as long as the economy is flexible enough to produce enough goods and services to serve aggregate demand, no inflationary pressure on wages (and prices) takes place. On the contrary, the more sclerotic the labor markets are, the larger will be the discrepancy between the aggregate demand of goods and services and the actual level of production, and thus the larger will be the pressure on domestic wages (and prices).

Lastly, the following simple operational monetary instrument rule is assumed[8]

$$i_{\mathrm{T}} \quad = \quad i_o + \phi_\pi(\pi_t^{\mathrm{T}} - \pi^*) \tag{13}$$

where i_o denotes the steady state nominal interest rate, π_t^{T} the target inflation rate (to be defined below) and π^* the inflation target (which in the following will be assumed to be equal to steady state inflation rate π_o), and ϕ_π the responsiveness of the monetary policy instrument interest rate

[7]Note that whether the sole inclusion of forward-looking, rationally expected inflation could resolve all the problems of a one-size-fits-all monetary policy in a heterogenous monetary union is still an open question, addressed to some extent in Angelini et al. (2008).

[8]That is, in the words of Svensson (2003, p.1), a rule which "expresses the central bank's instrument (usually a short interest rate, the *instrument* rate [. . .]) as an explicit function of information available to the central bank".

to deviations of inflation from its target level (with $\phi_\pi > 1$).[9] The MUCB's target inflation rate π^T is finally defined here as

$$\pi^T = \omega_A \pi^A + (1 - \omega_A)\pi^B \tag{14}$$

where ω_A represents the weighting parameter for the member country $\mathcal{A}$ to be discretionarily determined by the MUCB.

3 The One-Size-Fits-All Problem of Monetary Policy in Asymmetric Monetary Unions Revised

For the following simulation exercise let us assume that ω_A is given by the relative economic size of economy $\mathcal{A}$ within the monetary union (in an analogous manner to the ECB's practice) and equal to 0.5, given the assumed same economic size of both economies, and this despite of the different degrees of labor market flexibility assumed for both economies.

Table 1: Baseline calibration parameters

Labor Markets	**Goods Markets**	**Phillips Curve**	**Monetary Policy**
$\mu_A = 0.8$	$\alpha_y = 0.9$	$\beta_{py} = 0.2$	$\phi_\pi = 2$
$\mu_B = 0.4$	$\alpha_{yr} = 1$	$\alpha_\pi = 0.6$	
$\rho = 0.1$	$\alpha_{y\eta} = 0.05$		
$\xi = 0.4$			

For this and the following simulations the following parameter values are used: Concerning the labor markets, in country $\mathcal{A}$ the matching technology factor is $\mu_A = 0.8$ and in country $\mathcal{B}$ $\mu_B = 0.4$ (Christoffel et al. (2009) calibrate their model with $\mu = 0.42$). For the job separation rate ρ (exogenously given in this model), a value of 0.1 was chosen, which is consistent with the empirical findings (on quarterly frequency) by Hall (1995, 2005) and Shimer (2005). For the choice of the weighting parameter of the search and matching function ξ, following Walsh (2005), $\xi = 0.4$ is set. Concerning the Phillips-Curve equation, the parameter values chosen are consistent with the estimates for the EMU by Gerlach and Smets (1999). With respect to the real interest rate sensitivity of output I follow Clarida et al. (2000) and set $\alpha_{yr} = 1$. Finally, the monetary policy parameter is set $\phi_\pi = 2$.

In order to highlight the role of labor markets asymmetry in the effectiveness of monetary policy in a currency union, as next let us analyze the dynamic adjustments of two economies, assumed to be identical in all aspects but the labor market rigidity parameter μ.

[9] Given the implicit focus of this paper on the EMU, for this baseline scenario this specification seems to be appropriate since it describes a *systematic* conduction of monetary policy which comprises literally the mandate of the European Central Bank as determined by Article 105 of the Maastricht Treaty, whereafter "the primary objective of the ESCB [European System of Central Banks] is to maintain price stability." This quote, however, goes on as following: "Without prejudice of the objective of price stability the ESCB shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community [...]."

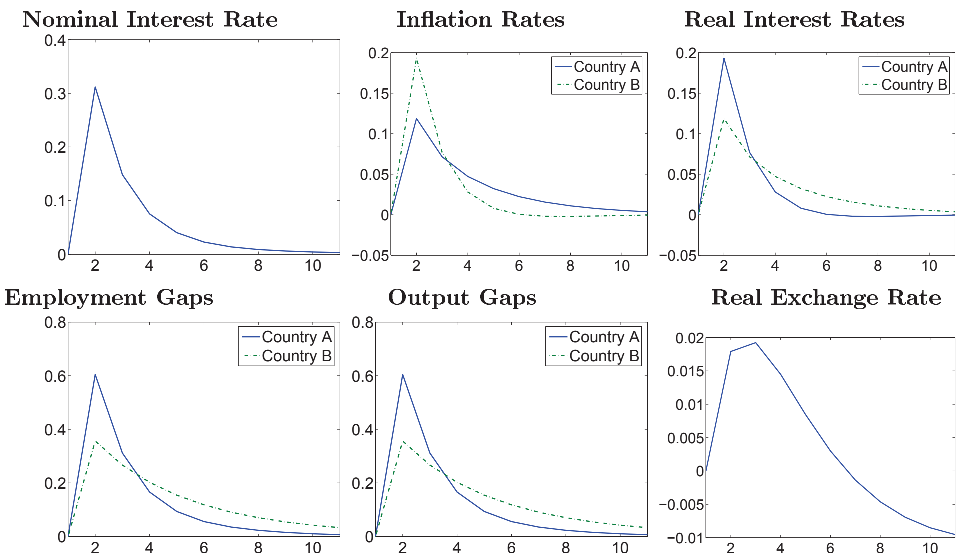

Figure 1: Impulse-response functions to a symmetric one-percent aggregate demand shock in both countries $\mathcal{A}$ and $\mathcal{B}$ (annualized values, in quarters, percent deviations from steady state)

Figure 1 shows exemplarily the dynamic adjustments to a symmetric one-percent aggregate demand shock in the two economies under a symmetric weighting of both countries' inflation rates in the monetary policy rule given by eq.(13). As it can be observed, the asymmetry in the national labor markets (represented by different numerical values of the matching technology factor μ, with $\mu_A > \mu_B$) leads to a different shock processing in both economies. Indeed, the reaction of employment and output in economy $\mathcal{A}$ (which features the more flexible labor market) is of a larger dimension but nevertheless lower persistence than is the case in economy $\mathcal{B}$.[10] In contrast, due to the particular specification of the price inflation dynamics given by eq.(12), the reaction of price inflation in country $\mathcal{A}$ is smaller than in country $\mathcal{B}$, where the labor markets (and the reaction of production) are more sclerotic, and therefore an aggregate demand shock exerts more pressure on domestic prices. Interesting is also the reaction of the log real exchange rate between both economies $\eta = \ln(P^B/P^A)$. As it can be observed in the last panel of Figure 1, a symmetric aggregate demand shock in both economies leads, through the larger reaction of country $\mathcal{B}$'s (wage and price) inflation, to an initial deterioration of its relative competitiveness position with respect to country $\mathcal{A}$, which is however reversed over time.

It should be clear that for $0 < \omega_A < 1$, the MUCB instrument rule described by (13) generates dynamic adjustment in both economies which are suboptimal with respect to those which would occur if each country would be controlled by its own instrument rule (that is, $\omega_\mathrm{A} = 0$ for country $\mathcal{B}$ and $\omega_\mathrm{A} = 1$ for country $\mathcal{A}$ in eq.(13)). For $\omega_A < 1$, the more flexible country $\mathcal{A}$ is subject to an excessive tightening of its country-specific real interest rate, which leads to lower inflation and

[10]It should be clear to the reader that for the case of identical member countries, union-wide oriented monetary policy would have exactly the same effects across all country members. For the case of being optimally designed, it would be optimal for *both* countries.

output levels than would take place under an independent monetary policy (that is, for $\omega_A = 1$). This comes from the fact that the smaller output reaction of country $\mathcal{B}$ leads the MUCB nominal interest rate to react more aggressively under $\omega_A < 1$ than it would be the case under $\omega_A = 1$. Analogously, for $0 < \omega_A < 1$, the real interest rate of the more rigid country $\mathcal{B}$ is relatively lower than it would be for $\omega_A = 0$. As a consequence, the initial reaction of country $\mathcal{B}$'s inflation and output developments is larger than they would be if the MUCB would only care for $\mathcal{B}$'s developments ($\omega_A = 0$).

4 Deadweight Loss Analysis

For the following deadweight loss analysis the "baseline scenario" drawn on for comparison which is assumed to matter (also in the political sense) in economy $\mathcal{A}$ and $\mathcal{B}$ is where $\omega_A = 1$ and $\omega_A = 0$, respectively. The rationale for this choice is that at the individual country-specific level it makes sense to evaluate the performance of the MUCB's policy – given the loss of macroeconomic flexibility implied by the entrance in the monetary union – using the one-country-one-currency case as the baseline scenario. Taking however the entrance in the monetary union as a historical and irreversible fact, the corner solutions $\omega_A = 1$ and $\omega_A = 0$ are the best approximation of the one-country-one-currency case for countries $\mathcal{A}$ and $\mathcal{B}$, respectively, in a monetary union environment.

For the evaluation of deadweight losses at the monetary union's level, let us define the MUCB loss criterion as the cumulated squared average of the *absolute* percent deviations of the price inflation rates and output gaps of both economies $\mathcal{A}$ and $\mathcal{B}$ from their respective optimal paths, with ω_π and $\omega_y = 1 - \omega_\pi$ representing the relative importance of inflation and output for the MUCB, namely

$$\mathcal{L}^{MU}(\omega_{\mathrm{A}}) = \omega_\pi \overbrace{\sum_{t=1}^{T}\left(\frac{1}{2}|\pi_t^{\mathrm{A}} - \pi_{t|\omega_{\mathrm{A}}=1}^{\mathrm{A}}| + \frac{1}{2}|\pi_t^{\mathrm{B}} - \pi_{t|\omega_{\mathrm{A}}=0}^{\mathrm{B}}|\right)^2}^{\text{Inflation Rate Term}} + \omega_y \overbrace{\sum_{t=1}^{T}\left(\frac{1}{2}|y_t^{\mathrm{A}} - y_{t|\omega_{\mathrm{A}}=1}^{\mathrm{A}}| + \frac{1}{2}|y_t^{\mathrm{B}} - y_{t|\omega_{\mathrm{A}}=0}^{\mathrm{B}}|\right)^2}^{\text{Output Gap Term}} \quad (15)$$

since all *deviations* from the optimal country-specific paths of the individual member countries – either positive or negative – reflect at best the sub-optimality at the country level of a unique monetary policy.

As Figure 2 clearly shows, for $\omega_\pi = \omega_y = 0.5$, that the function $\mathcal{L}^{MU}$ depends negatively on ω_A is due to the fact that the output gap term dominates the inflation rate term in $\mathcal{L}^{MU}$. If however the inflation rate has a higher relative importance in the MUCB loss function $\mathcal{L}^{MU}$ (that is, for $\omega_\pi > \omega_y$), and in the extreme case is the only term that matters for the MUCB ($\omega_\pi = 1$, $\omega_y = 0$), then the policy conclusions are diametrically opposite: In such a case, the MUCB attains the lowest deadweight loss by setting $\omega_A = 0$, that is by focusing solely on the inflation developments in country $\mathcal{B}$. Such a result is quite intuitive: since a larger labor market rigidity implies a smaller output reaction and a larger inflation reaction to exogenous shocks (see eq.(12)), a focussing on $\mathcal{B}$'s developments seems optimal if indeed only aggregate inflation matters for the MUCB. If in contrast the aggregate output developments also matter for the MUCB, then a higher weight on $\mathcal{A}$'s developments seems a more adequate strategy to follow for the MUCB.

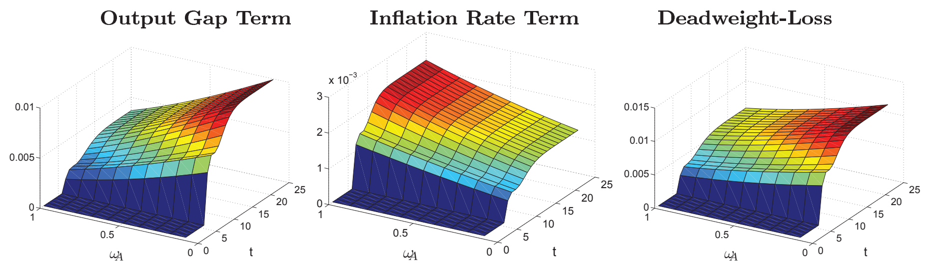

Figure 2: MUCB deadweight-loss measure $\mathcal{L}^{MU}$ for $0 < \omega_A < 1$ resulting from a symmetric aggregate demand shock in both countries (for $\omega_\pi = \omega_y = 0.5$)

Let us now investigate the robustness of these results with respect to different degrees of labor market heterogeneity. For this the dynamic adjustments of the model resulting from a symmetric cost-push shock are simulated again setting $\mu_{\rm B} = 0.1$ and letting $\mu_{\rm A}$ take different values in the interval $0.1 - 1$.

Figure 3 shows the deadweight-loss measure $\mathcal{L}^{MU}$ (for $\omega_\pi = \omega_y = 0.5$), as well as its output and inflation rate components resulting from a symmetric aggregate demand- and a symmetric cost-push shock for different degrees of labor market heterogeneity (expressed by $\mu_{\rm A} - \mu_{\rm B}$) and different values of the country-weighting parameter $\omega_{\rm A}$ at the 20 quarter horizon.[11]

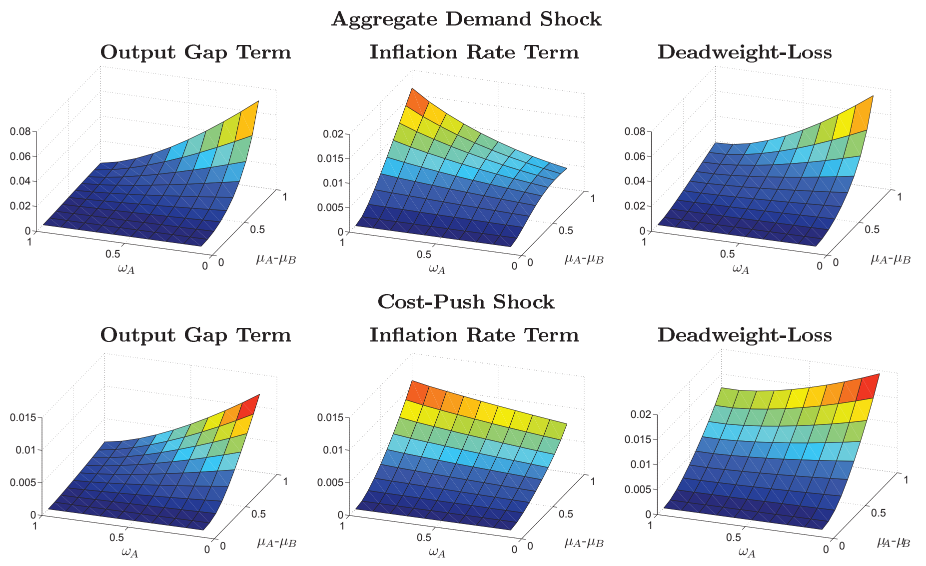

Figure 3: MU Deadweight Loss Measure $\mathcal{L}^{MU}$ at 20 Quarter Horizon

As these 3D diagrams clearly show, the deadweight-loss minimizing country weight ω_A depends

[11]The same qualitative results are observable at all horizons.

directly on the relative weight with which the output gap and the inflation rate terms enter in the MUCB loss criterion $\mathcal{L}^{MU}$ given by eq.(15) (and of course on the specific values of ω_π and ω_y).

Note that in Figures 2 and 3 the deadweight loss criterion $\mathcal{L}^{MU}$ was build using equal weights of the output gap and inflation rate term, i.e. $\omega_\pi = \omega_y = 0.5$. This, however, was done solely for illustration purposes. Indeed, if we in turn take a deeper look on the sources of inefficiency in the actual theoretical framework, it turns clear that the inflation rate term should be predominant (if not the only term) in the MUCB deadweight-loss measure $\mathcal{L}^{MU}$, as the occurrence of inflation in the analyzed model is a straightforward reflection of the existent labor market rigidity in both countries. Since for an (increasing) asymmetry in the labor market rigidity between countries $\mathcal{A}$ and $\mathcal{B}$, the reaction of inflation to symmetric shocks is relative larger in the more sclerotic country (which here has been assumed to be country $\mathcal{B}$), it is thus more advantageous for the MUCB to put a higher weight on the inflation rate of that country.

It should be clear that if in contrast the output gap term was more important in the MUCB's deadweight-loss criterion and the MUCB would decide to focus more on country $\mathcal{A}$'s developments, it would wrongly focus on the more efficient country, creating in fact an even more inefficient outcome in country $\mathcal{B}$. This result corroborates the previous findings of Benigno (2004), Lombardo (2006) and Abbritti and Mueller (2007), in the sense that, in the absence of independent fiscal policies as analyzed e.g. in Galí (2008), the MUCB should in fact focus on the inflation developments of the country with the larger degree of inefficiencies.

5 Concluding Remarks

Despite of the simplicity of the theoretical setup underlying the analysis of the conduction of monetary policy in a currency union with asymmetric labor markets such as EMU, its implications are quite relevant for actual policy-making. They open up the question whether an alternative country-weighting scheme which explicitly accounts for the macroeconomic characteristics of the monetary union's member economies in the MUCB loss function would indeed be more welfare-enhancing that the standard relative country-size weighting as long as not only the national labor markets, as it was the case studied here, but also other important macroeconomic characteristics in the member economies differ significantly from each other. Within the stylized framework discussed here, if the main goal of the MUCB is to stabilize (minimize) the variability of price inflation at the monetary union level, a higher weight of the developments of the country with the more sclerotic labor market (and where inflation reacts stronger to shocks) in the monetary policy rule would be the optimal strategy to follow. This strategy seems indeed to be more adequate the larger the labor market heterogeneity existing in the monetary union.

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