The Optimum Currency Area Approach to European Monetary Integration: Framework of Debate or Dead End?

European monetary integration led to a renaissance of the theory of optimum currency areas (OCA) culminating in the 1999 award of the Nobel Prize to Robert Mundell. There has been a flood of research on the asymmetry of shocks in Europe, on exchange rate adjustment within the European Monetary System, and the ex ante optimality of EMU. However, this recent research has tended to undermine the OCA framework. One challenge stems from the Lucas (1976)-Critique: monetary integration must now be understood as a fundamental change of the policy regime, making the enumeration of OCA criteria to be fulfilled *ex ante* a futile exercise. Another challenge is implied by the modern asset view of the exchange rate: eliminating exchange rate instability is the benefit of currency unification, rather than a cost in terms of losing the exchange-rate as an instrument of adjustment. Thus, I conclude that the OCA approach is a dead end for debates on monetary integration in general, and the EMU policy framework in particular. The theory of exchange-rate based policy coordination under uncertainty provides for a readily available and arguably more relevant alternative.

*Keywords:* theory of optimum currency areas, European monetary integration, economic policy coordination, Lucas Critique, exchange rate stability, uncertainty
1. The OCA approach: Why take issue?

“The theory of optimum currency areas is back.” Thus, George Tavlas (1993: 663) begins his survey that made “The ‘New’ Theory of Optimum Currency Areas” known to a wider public. The renaissance of the theory culminated in the 1999 award of the Nobel Prize to Robert Mundell, primarily for inventing this approach to monetary integration.¹ Eminent scholars in this field maintain that the OCA approach has attained the status of “a framework of debate” for researchers and policymakers in Europe (Bayoumi/Eichengreen 1999: 208).

In this essay, I will argue that the ensuing literature has been more of a Trojan Horse for the OCA Empire than a fortification. OCA theory has become untenable in light of two theoretical developments that arose shortly after the establishment of the new approach. This fact is not only of academic interest: taking these developments into account reveals that the OCA approach fails to grasp important features of European integration and has been misleading policy debates. However, an alternative approach -- drawing on the literature on macroeconomic policy coordination -- is in sight.

The theoretical challenges stem from two concerns. For one, OCA theory is not easily reconciled with the theory of economic policy post Lucas (1976), i.e. the famous critique of the then predominant approach to economic policy. Today, monetary integration must be understood as a fundamental change of the policy regime, making the enumeration of OCA criteria to be fulfilled ex ante a futile

¹ Cf. the contributions in the special issue of the Journal of Policy Modeling (Salvatore 2000).
exercise. The other challenge originates in the modern theory of the exchange rate to which Robert Mundell has significantly contributed. If the exchange rate is an asset price, it is principally a source of monetary instability. Contrary to what OCA theory tells us, the exchange rate then is no longer a reliable instrument for adjustment lost in a monetary union. Taken together, the Lucas Critique and modern exchange rate theory have undermined basic tenets of the OCA framework.

A new approach to monetary integration is already evolving. With respect to EMU, there is now a growing interest in the literature on macroeconomic policy coordination that flourished in the 1980s (Mooslechner/ Schuerz 1999, Wyplosz 1999). My intention is to draw upon the theory of exchange rate based policy coordination under uncertainty for this new approach (Hughes Hallett/ Holtham/ Hutson 1989; Gosh/Masson 1994). Uncertainty is a straightforward way to take into account both the Lucas Critique and modern exchange rate theory. This new approach to monetary integration can deal with any variety of coordinated exchange rate stabilisation. Moreover, it could account for characteristic features of European monetary integration that OCA theory cannot:

The driving forces behind currency unification were (and are) attempts at reducing exchange rate instability and asymmetries between the member countries as well as imposing structural reform, not the elimination of transaction costs.

European monetary integration was not intended as a choice between freely floating and irrevocably fixed exchange rates. Rather, it began with the European Payments Union even before the customs union was formed, followed in the 1970s by the target zones of the ‘snake in the tunnel’ and the European Monetary System (EMS).
Today, it is characterised by the operation of two interdependent monetary integration arrangements, EMU proper for the ‘ins’ and EMS II for the ‘pre-ins’.

The future of EMU and its impact on the international financial system will revolve around economic policy coordination, not only among EMU members in the realm of fiscal and social policy, but also between EMU ‘ins’ and EMU ‘outs’ in the realm of monetary policies, on the one hand; between EMU, the US, and possibly Japan in the realm of exchange rate policies, on the other.  

In the following section, I outline how research on EMU seemed to revive OCA tradition. In the third section, I indicate why the Lucas Critique and modern exchange rate theory fundamentally call into question OCA theory. An alternative approach will be sketched in the fourth section, namely monetary integration as exchange rate based policy coordination under uncertainty. The article concludes with an outline of the arguments in favor of this framework, in particular why adherence to the OCA approach has distorted the focus of policy debates.

2. Research on EMU: Where Do We Stand?

What arguments have been used to support the old-new OCA approach to European monetary integration? In this section I define the characteristics of these arguments, both to structure the subsequent discussion and to draw attention to the all but self-evident ingredients of this approach. Briefly put, there are three:

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2 This is the underlying assumption of many ongoing research projects, e.g. the ESRC funded project on “National and Supranational Economic Policy to Correct Internal Disequilibrium Under EMU” at the European Institute. Cf. Ardy (2000), Begg/Hodson (2000), and Mayes (2000).
Ever since Mundell (1961) literally became the point of departure for a new field of research, the problem of forming a currency area has been viewed as one of adjustment to asymmetric shocks, i.e. to region- or country-specific exogenous disturbances.

The exchange rate was seen as a flexible instrument of adjustment to asymmetric shocks. This instrument has to be given up in the formation of an OCA which thus amounts to trading off an increase in adjustment costs for a decrease in currency transaction costs.

The increase in adjustment costs will be less of a concern if shocks are predominantly symmetric to begin with or, alternatively, if other adjustment mechanisms like factor mobility or fiscal federalism can substitute for exchange rate changes. Whether the EMU makes economic sense therefore means to evaluate ex ante the various OCA criteria, i.e. the structural characteristics of the prospective members' economies which determine their adjustment capacity.

The following sketch of research results on the OCA criteria will be highly selective since the literature does not suffer from a lack of well-balanced and concise surveys (cf. Tavlas 1993, De Grauwe 1997a: ch.2, Bayoumi/Eichengreen 1999). Notwithstanding their comprehensive nature, these surveys fail to ask whether the approach remains tenable in view of the issues that made the ‘new’ theory distinguish itself from tradition.

a. Research on the Anatomy of Shocks in the EU
Attempts at estimating the symmetry or asymmetry of shocks was closely related to the search for prime candidates, the core countries, to enter the EMU (Bayoumi/Eichengreen 1993). Shocks are interpreted to be symmetric if disturbances are strongly correlated between countries. Thus, Emerson et al. (1992) concluded this to be the case for countries whose GDP tended to move together. This conclusion is premature, however, since co-movements of GDP may either be due to the exogenous disturbance that affect all countries alike or, alternatively, due to an effective response of the country that has been specifically affected. If such an adequate response required a differential interest rate policy, this would not bode well for EMU where there is only one monetary policy for all member countries.

Other estimation techniques tried to sort out the various sources of disturbances and revealed a core-periphery pattern of EMU, the core being defined as those countries whose disturbances follow those of Germany (Bayoumi/Eichengreen 1999: 188-190). Unfortunately, if measured shocks themselves depend on the exchange rate regime -- not only their transmission --, then their observed correlation does not provide an appropriate test for an OCA (Pisany-Ferry 1999: 219).

One way out is to dig even deeper by evaluating the OCA criterion that goes back to Kenen (1969): The likelihood of asymmetric shocks is low if the respective countries’ manufacturing is well-diversified. There is then simply no role for the exchange rate to correct the terms of trade in case such shocks occur because the two currency areas would be equally affected by any shock. In a seminal article, Krugman (1993) has argued that diversification may be reduced in the aftermath of monetary integration. Three phenomena – scale-sensitivity of production, less than perfect household mobility, and non-negligible but declining transportation costs --
may produce this outcome. Firms producing at increasing returns to scale will then have an incentive to concentrate production in certain locations where demand and/or skilled labour are readily available. The regions of the monetary union would thus become more susceptible to asymmetric shocks than the pre-union countries. In theory, this raises the prospect of an *ex ante* optimal currency area that -- paradoxically enough -- becomes sub-optimal by forming one.

Empirical explorations of the Krugman (1993) hypothesis that monetary integration leads to more regional specialisation have been inconclusive. By using more disaggregated data than earlier studies, Brülhart (1998) finds an inverse relationship between the importance of scale economies and the intensity of intra-industry trade to be the main source for the ambiguity of forces towards agglomeration or dispersion of economic activities. Those sectors with the highest share of intra-industry trade seem to produce efficiently at small scales (Brülhart 1998: 326, 331). This would make for dispersion rather than agglomeration. But the author supposes that increases in scale are first accompanied by a rising share of intra-industry trade which then declines, thus reenforcing the agglomerate force of scale economies. Obviously, this may become relevant for branches that operate at inefficiently small scales before integration, such as telecommunications and banks which are merging relentlessly ever since the arrival of EMU has become a safe bet.

Helg et al. (1996) explores a most fundamental question in this context, namely whether specialisation in and of itself makes for the predominance of asymmetric, country- or region-specific shocks. They find that country-specific shocks so far
dominate sector-specific shocks. But the incidence is not necessarily asymmetric, at least not for the core countries of the EU. The explicit or implicit coordination of policies may count for the symmetrisation of otherwise asymmetric shocks (Helg et al. 1996: 1031, 1034, 1039). This points back to a possible endogeneity of policies, i.e. policies adjusting to an evolving structure.4

b. Research on Exchange Rates in the EMS

To the best of my knowledge, the effectiveness of exchange rates as shock absorbers has rarely been directly addressed.5 However indirectly, the research on whether the EMS was “a Deutschmark zone” and research on what caused the EMS crises of 1992/93 shed some light on this question.

Considerable debate has surrounded whether the EMS was, in fact, a Deutschmark zone (De Grauwe 1997a: 97). If so, the exchange rate was not a shock absorber for the satellite countries irrespective of the bilateral exchange rates being pegged or not. A satellite currency area has to follow the interest rate moves of the key currency area, usually to prevent a flight from domestic assets with all its disruptive effects on price stability and the volatility of financial markets. While not all empirical indicators point in that direction, there seems to be a consensus, that the EMS was in fact a Deutschmark zone.

4 Cf. De Grauwe (2000) for a standard model in which the ECB adjusts her monetary policy to the evolving asymmetries of shocks or transmission in the Euro area.
5 But see Belke/Gros (1999) and the literature cited therein for indirect evidence, namely that real exchange rate volatility was problematic for labour markets in EMU countries.
Explanations for the EMS crises in 1992/93 tend to support the conclusion that exchange rates were all but predictable shock absorbers even for mature Western European economies. In these crises, parities like that between the German mark and the French franc or the Swedish krona were attacked for which no explanation relying on fundamentals were plausible. They had to be explained by herding behavior, i.e. the parity between the German mark and the Swedish krona broke because that between the German mark and the Italian lira could not be kept. The rationale for such a chain reaction may be that participants in financial markets knew that the Swedish authorities would fear the loss in competitiveness with respect to Italian firms and thus be less inclined to EMS preserving monetary policy (Gerlach/Smets 1995, Eichengreen/Rose/Wyplosz 1996).

In sum, this indirect evidence on the role for exchange rates in adjustment suggests that giving up the possibility of temporary exchange rate changes be less a cost than a benefit. There are two reasons this is so: first and foremost, the parity can no longer be attacked and, secondly, the satellite currency area may enjoy a somewhat lower interest rate than hitherto. Rather, a satellite currency area would lose a source of (asymmetric) shocks.

Recent research has also tackled the question for real effects of eliminating bilateral exchange rate instability. Ricci (1998) and Fontagné/Freudenberg (1999) argue, both theoretically and empirically, that reducing uncertainty associated with exchange rate shocks has an effect on the location of monopolistically competing firms. Thus the share of intra-industry trade will change. The two models come up with opposite results, however: Ricci (1998) derives an endogenous worsening of an OCA due to a
decline in the share of intra-industry trade, Fontagné/Freudenberg (1999) predict endogenous improvement due to a rise.

Finally, one can ask whether currency unification was really necessary or whether measures to further the integration of European capital markets would not have been of prior relevance. After all, capital mobility is another OCA criterion that the early literature established, albeit its endorsement was somewhat more skeptical than that of other criteria. In particular, Fleming (1971: 472-73) warned that capital movements could lead to a widening gap between regional investments and savings in the case of supply shocks.

It is beyond the scope of the present inquiry to define the role of capital markets as a substitute for exchange rate changes as this would require reviewing the vast literature on the efficiency of financial markets. There is, however, some consensus as regards the related question whether capital market integration could have made EMU unnecessary. Although empirical indicators do point to closer integration of financial markets between OECD countries since the 1980s, this has not led to measurable effects on the diversification of income risks or the efficiency of capital formation. In these respects, the effects are much stronger between regions within a currency area such as the U.S. or Canada. Thus, currency barriers do matter and cannot be easily overcome by mobile capital (Cooper 2000).

c. Research on the Ex Ante Optimality of EMU
The OCA-criteria of diversification and capital mobility have already been dealt with above. Four criteria remain to be addressed: openness, convergence of inflation rates, the capacity of labor markets to adjust, and fiscal federalism.

**Openness**

McKinnon (1963) has advanced the argument that a bilateral exchange rate is dispensable between very open economies. An open economy is a price-taker in world markets so that changes in the exchange rate would translate into price changes. Moreover, the business cycles of very open economies tend to be synchronised if foreign demand has a large share in each other’s domestic income. Therefore, an open economy that gives up its exchange rate with respect to its major trading partners would be “losing” an instrument of adjustment that in fact had never existed.

Theoretical research cast doubt on the openness criterion, however. In his impressive attempt to put the OCA approach on a firm microeconomic footing, Ricci (1997: 32) concludes that an increase in openness has ambiguous effects on the net benefit from integration. While the elimination of transaction costs related to currency exchange are judged to be positive, the relevance of trade shocks has a negative impact the less correlated they are. Depending on the correlation between shocks and relative monetary variability, the outcome of monetary shocks is uncertain. More openness may decrease the net benefit from integration if monetary shocks are positively correlated and domestic variability is less than the foreign one.

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6 Cf. Cooper (2000) for an excellent outline of the history of exchange rate regimes and the related history of
On the basis of empirical research, Frankel/Rose (1996, 2000) argue that the European countries opened up to each other on the way to EMU. They regress different measures of bilateral correlations in real activity on different measures of trade intensity.\footnote{Different measures are used because there are no simple empirical measures for the concepts of “trade intensity” and “business cycle correlation”. In fact, the sixteen (sic!) measures of business cycle correlation yield very different results (Frankel/Rose 1996: 14-15).} Trade integration led to a synchronisation of business cycles so that countries that embarked on the road to Maastricht are likely to satisfy the openness-criterion ex post if not ex ante (Frankel/Rose 1996: 3). There is a problem of simultaneous causation, however. In particular, it might have been the convergence in monetary policies between EMS countries that has led to a positive association between trade and economic activity (Frankel/Rose 1996: 15). In fact, Angeloni/Dedola (1999) find increasing correlation of business cycles among the major EMS countries to be an outcome of closely linked monetary policies, not of their openness.

\textit{Convergence of inflation rates}

Fleming (1971) stipulated convergence in inflation rates as a precondition to forming a currency area. Inflation convergence is the long-run condition for current account economic thought.
balance, i.e. necessary to maintain relative purchasing power parity when the exchange rate is fixed.

Theoretical research has turned this criterion on its head. Convergence is now the intended consequence of forming a currency area between countries with different inflation histories in the past. “The advantage of tying one's hand” (Giavazzi/Pagano 1988) is to import long-run stability by giving up on exchange rate adjustments which in the past were used to accommodate inflationary price- and wage-setting. One can read this as the story behind Italy seeking EMS membership, even if that meant to fundamentally alter the policy mix of the past.8

Convergence of inflation rates was one of the Maastricht-criteria and the success of prospective EMU members was spectacular in this respect (De Grauwe 1997a: 136-138). The recent literature has interpreted this as an empirical endorsement of the view that convergence is an endogenous result of the integration process, not an OCA criterion to be fulfilled ex ante (Tavlas 1993: 676).

\textit{Labor market adjustment}

For Mundell (1961), the mobility of labor determined the extent of the OCA. Real wage flexibility and variations in regional employment may also substitute for exchange rate changes. The latter may be economically more efficient if the social
costs of labor relocation are higher than the social costs of unemployment (Bayoumi/Eichengreen 1999: 193), a possibility that may be relevant for the political economy of Europe.

Theoretical research has thus examined in some sophistication the workings of national labor markets. The institutionalisation of the wage bargain, the existence of social safety nets, and the interaction with price-setting in commodity markets as well as monetary policy all have a bearing on the relative importance of the three adjustment mechanisms. The hump shape hypothesis of Calmfors/Driffill (1988) is the most notorious result of this literature since it, in a nutshell, contains the message “institutions matter”. This hypothesis posits a non-linear relationship between the degree of centralisation of the wage bargain and macroeconomic outcomes like the inflation or unemployment rate, such that the lowest and the highest degree of centralisation promise to be best for macroeconomic stability and adjustment. If monetary integration implies a decentralisation of the wage bargain relative to the realm of monetary policy, this implies an endogenous improvement or worsening of labor market adjustment for the different member countries, depending on the initial degree of centralisation. In this way, “the response of wages is itself a function of the exchange rate regime” (Bayoumi/Eichengreen 1999: 193).

Unsurprisingly, empirical research has not entirely confirmed the Calmfors-Driffill (1988) hypothesis. Specifically, the hypothesis is not robust to how one measures the centralisation of the wage bargain. What has been established is that labor mobility in Europe is infamously low compared to the U.S. Real wage flexibility is

8 The article uses the idea of time-consistent policy which started off with Kydland/Prescott (1977). They
low in the short-run; in the long-run, however, European real wages seem to be as
sensitive to unemployment as in the U.S. (Coppel/Durand/Visco 2000: 15). Due to a
low speed of adjustment, variations in employment bear the brunt of adjustment over
the time-horizon that Mundell (1961) had in mind.

Fiscal federalism

The early OCA theory maintained that the domain of fiscal policy and that of the
currency area must coincide (Fleming 1971: 478-479; Kenen 1969: 45-47). Fiscal
transfers to and from regions that are hit by an asymmetric shock have to
compensate for exchange rate changes in an OCA. Considerations of scale
economies, cumulative effects of firms‘ location decisions, and transaction costs
combined to centralise the function of stabilising fiscal transfers.

In contrast, recent research focused on the interaction of financing and spending in a
decentralised system of fiscal policy (Bayoumi/Eichengreen 1999: 193-195; De
Grauwe 1997a: ch.9). Would EMU change the incentives for excessive budget
deficits? An integrated capital market as well as joint liability of members may
induce governments to engage in more debt finance (and thus more spending) than
before monetary union. On the other hand, capital movements may sanction
profligate governments if investors in public debt are unable to call upon a bail-out
by the central bank or other member countries. Thus, the theory stated the necessity
for no-bail out clauses and/or balanced-budget rules. The Stability and Growth Pact
of 1997 which contains both can be seen as an offspring of this literature (Buti/Sapir

 showed in a Phillips curve framework that a credible (time-consistent) equilibrium need not be the optimum.
The empirical research casts some doubt on the effectiveness of these clauses and rules, however: they seem not to have been particularly binding constraints in the U.S. where they have been in effect for quite some time (von Hagen 1992).

Recent research has also taken into consideration that a system of fiscal transfers is never simply a given fact but instead must be established. In existing federations, like the U.S. or Germany, stabilisation is largely provided as a by-product of fiscal redistribution (Italianer/Pisany-Ferry 1994: 170-171). This is problematic for a monetary union that is not yet a political union. Therefore, Italianer/Pisany-Ferry (1994) suggest a mechanism specifically designed to accomplish only stabilisation of about the same magnitude as fiscal transfers in the U.S., namely lowering state income fluctuations by 15-30 percent. This could be achieved at a much lower cost.

In recent research, the traditional OCA criteria have survived but play a rather different role. They play only a secondary role for the adjustment to region-specific shocks but are either the intended results of currency unification (capital mobility, convergence of inflation rates, openness, wage and price flexibility) or meant to compensate for the one-size-doesn’t-fit-all monetary policy (fiscal federalism). Thus they represent important characteristics of the economic structure that evolves or is deliberately created after the macroeconomic policy regime has changed.

3. The ‘New’ theory of the OCA: Just How new is it?
European monetary integration was intended to overhaul the policy regime as well as to eliminate exchange rate instability between member countries. This section illuminates the theoretical background behind these motives.

\[ a. \textit{The Lucas Critique and the Endogeneity of the Optimum Currency Area} \]

The Lucas (1976) Critique states that the structure of an economy is endogenous to the economic policies applied to it. That is, actual behaviour and expectations that govern market supply and demand will change if there is a change in policy as regards (to offer a few examples) progressive taxation, employment programmes or the monetary stance of the central bank. In his original (1976) article, Lucas cast this message in macroeconometric terms. In the following I want to show, first, why the Mundell (1961) tradition is implied by the Lucas Critique even though it was not its explicit target, and, secondly, that the more recent literature must conceptualise monetary integration differently from that tradition.

The evolution of an economy at any time $\tau$ may be analytically described by the vector $y_{\tau+i}$ ($i = 0, 1$) of endogenous variables, such as the unemployment rate and investment expenditure; the vector $x_\tau$ of (supposedly) exogenous or driving variables, such as the discount rate or the budget deficit; and by a vector of random shocks $\varepsilon_\tau$ which are usually assumed to be independently and identically distributed, with mean zero and constant variance. The dynamic behaviour of this economy can then be represented by the most general difference equation (1).

\[
(1) \ y_{\tau+1} = f(y_\tau, x_\tau, \varepsilon_\tau)
\]
The function $f(\cdot)$ which translates current variables and shocks into future outcomes is usually unknown. However, the early theory of economic theory assumed $f(\cdot)$ to be a fixed mechanism of translation. This would mean, for instance, that an additional amount of current public spending (an element of the $x_\tau$-vector) implied a known additional amount of future private investment spending (an element of the $y_{\tau+1}$-vector), even if it was not quite clear how consumer behaviour or financial and labour markets contribute to this constant ratio of current public spending to future private spending. The task of the econometrician is to assess this function $f(\cdot)$ by estimating the values of a set of parameters $\theta$ which would make the values of an explicitly specified function $F(\cdot)$ equal to the values $y_{\tau+1}$ generated by $f(\cdot)$:

$$f(y, x, \varepsilon) \equiv F(y, x, \theta, \varepsilon)$$

Policy evaluation in the pre-Lucas (1976) theory meant to simulate, given knowledge of function $F(\cdot)$ and parameters $\theta$, how a policy, that is a specified set of present and future realisations of some $x_\tau$, would affect $y_{\tau+1}$. In contrast, Lucas (1976) maintained that theory and experience suggest that agents will adapt to arbitrary sequences of policies as well as the result of implementing policies is thus different from the policies themselves. Formally, his critique amounts to saying that policy outcomes (some $x_\tau$) are themselves a function of the present state of the economy ($y_\tau$ and random shocks $\eta_\tau$) as well as the discretionary measures $\lambda$ (‘policies’). Moreover, $\lambda$ also has an impact on parameters $\theta$ since economic behaviour adjusts to anticipated policies.

$$x_\tau = G(y_\tau, \lambda, \eta_\tau)$$

$$\theta = \theta(\lambda)$$
Equation (3) formalises that $\lambda$ represents only the discretionary, controllable part of economic policy but does not count for the final outcome. The thrust of the Lucas Critique is summarised in (4): $\theta$, treated as structural parameters in Tinbergen’s theory of economic policy, are structural variables, determined endogenously by policies. The notorious example for $\theta$ are inflationary expectations which were assumed to be static as in the original Phillips curve, but are adaptive or even rational in the “expectations-augmented” Phillips curve. From equations (1)-(4) we thus obtain the following result:

\[(5) \quad y_{t+1} = F[y_t, G(y_t, \lambda, \eta_t), \theta(\lambda), \varepsilon_t]\]

Clearly, ‘policies’ formalised as a change in $\lambda$ do no longer have a clear-cut impact on $y_{t+1}$ anymore. Since they have a bearing on policy ‘outcomes’ $x_t$ as well as on structural variables $\theta$, these effects may offset each other. This opens up the possibility of multiple equilibria or even results that are undesirable from the policymaker’s point of view. This is the point of departure for the literature on credibility problems or dynamic inconsistency of economic policy -- issues that were centrally important to the theory of European monetary integration.

The following table summarises what this implies for the Mundell tradition and the ‘New’ theory of optimum currency areas, respectively.

<table>
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<tr>
<th>Table 1: The Lucas Critique and the OCA approach</th>
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Traditional OCA theory & OCA theory post Lucas (1976)

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<tr>
<th>Monetary Integration</th>
<th>policy and policy outcome identical, i.e. $x_t$ in (1)</th>
<th>a policy in contrast to the policy outcome, i.e. $\lambda$ in (3) and (4)</th>
</tr>
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<tbody>
<tr>
<td>OCA criteria</td>
<td>exogenous parameters like $\theta$ in (2)</td>
<td>endogenous variables like $\theta$ in (4)</td>
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Table 1 indicates that traditional OCA theory failed to distinguish between monetary integration as the fixing of a bilateral exchange rate and the market result of fixing it, while recent models post Lucas (1976) have to distinguish between the policy, namely the unification of monetary policy, and the policy outcome, for instance the synchronisation of national business cycles. The criteria for an optimum currency area can be represented by $\theta$, i.e. structural characteristics of the member countries such as labour mobility or the degree of openness, in old and new models (last row). However, research on European monetary integration has shown that all these criteria will be affected by currency unification along the lines of the Lucas Critique so $\theta$ is itself a function of monetary integration.

And yet, the Lucas Critique has just been taken as a nuisance that plagues all applied empirical research, namely that it has to rely on historical data to predict outcomes in a future that fails to obey the ceteris paribus-clause. Consequently, more sophisticated empirical analysis has sought to control for structural breaks brought about by EMU (Bayoumi/Eichengreen 1999), at first glance a straightforward way to up-date OCA theory. However, a conclusion that confines itself to the ‘operationalisation’ of the OCA approach in my view underrates the theoretical
significance of the Lucas Critique and may even be unwarranted for its empirical application. Unwarranted, because the Lucas Critique -- viewed as a general prescription for empirical policy evaluation -- amounts to a “denial of invariance” that is not justified under any circumstances but has itself to be established (Hendry 1995: ch.14). A case in point where “denial of invariance” is unwarranted may be the labour mobility of the median worker in the various national income distributions. Nor does the Lucas Critique imply a statement about the specific changes that take place in the course of monetary integration. Because it relies on rational expectations, the outcome depends on the underlying model. And yet, the OCA approach is hardly ever modelled explicitly. Taking the Lucas Critique seriously deprives the OCA approach of its usefulness for designing policies which, after all, remains its most redeeming feature.

\[b. \textit{The exchange rate as an asset price}\]

Even an OCA approach that takes the endogeneity of the criteria into account does so on a dubious premise. The premise is, put simply, that the exchange rate is a reliable policy instrument. Only then will there be room for a cost-benefit-calculus: the loss of the exchange rate is basically the only entry on the cost side. It can be more or less compensated depending on how perfectly the OCA criteria are met. But what if there is no such cost (at least not for most countries) because for them eliminating some bilateral exchange rates would actually do away with a source of

\[9 \text{ Cf. Emerson et al. (1992) for early explorations into the regime change that EMU would bring about by using stochastic simulations in forward looking expectations models. I am grateful to Alexander Italianer (European Commission) to bring this to my attention. But these explorations within an OCA framework suffer from the ‘denial of invariance’ critique.- Bayoumi (1994) and Ricci (1997, 1998) are impressive attempts at explicitly}\]
asymmetric shocks? The exchange rate is an intertemporal price and thus susceptible to stock-flow dynamics (and the expectations thereof) induced, at least in part, by economic policies. This can lead to volatile exchange rate reactions that, in turn, force rational monetary authorities to take the exchange rate as a target rather than an instrument.

In its most general form, the exchange rate $s$ at any point in time $\tau$ can be written as the weighted sum of the fundamentals $z$ and the expected future exchange rate (variables $s$ and $z$ are natural logarithms, $E$ is the expectations operator). Fundamental determinants $z$ are specified by the underlying structural model just like $x$ in equ. (1). This model is typically based on either the monetary approach where the vector $z$ represents the monies and real incomes of the two currency areas, or the portfolio approach where $z$ stands for wealth and the various domestic and foreign assets in which wealth can be held.

$$s_\tau = (1-\alpha)z_\tau + \alpha E_s z_{\tau+1} \quad 0 \leq \alpha \leq 1$$

Expectations are assumed to be rational, i.e. consistent with the structural model. Thus, we can solve the dynamic equation (6) in first order differences by backward induction. This requires to apply the “law of iterated expectations” according to which $E_\tau(E_{\tau+1}s_{\tau+2}) = E_\tau s_{\tau+2}$.

$$s_\tau = \alpha \sum_{i=0}^{\infty} (1-\alpha)^i z_{\tau+i} + [1-\alpha]^{i+1} \cdot E_s z_{\tau+i+1}$$

This solution tells us that today’s exchange rate is a function of all present and future realisations of fundamental variables as well as of expected exchange rates in the future. Both terms provide channels for reputation phenomena, for being deemed a modeling the OCA approach. In order to do so, they have to take recourse to a rather simplistic view of the
hard or soft currency. For instance, monetary and fiscal policy are fundamental determinants of the exchange rate in a simple portfolio approach where both policies affect the level and structure of net wealth held by private agents, the latter via its effect on rates of return and perceived risk premia. But in case a shock hits the economy, the same actual policies generate different exchange rate outcomes depending on private agents’ beliefs that these actual policies will be abandoned or maintained, respectively. Such beliefs may be rationally grounded in governments’ different debt positions, different levels of reserve holdings, etc. which determine a government’s ability and incentives to stick to an exchange rate or inflation target. The required rise of the interest rate to defend the parity may be too expensive for the government and possibly catastrophic for firms and the banking sector.

This is where the expectations term in (7) comes into play. This term represents a fundamental problem of indeterminacy. Even if fundamentals are rationally expected, there can be rationally expected deviations from the fundamentally determined exchange rate. 10 If, to stay with the example offered above, the fundamental determinants are susceptible to stochastic shocks, the same actual policies may generate quite different outcomes in a debtor and in a creditor country. While one economy with sound fundamentals can easily adjust, the debtor country will experience a speculative attack on its currency. The second term on the right

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10 Direct solving for this first order difference equation (for constant $z_t = z^*$) yields $s_t = z^* + A\alpha^t$ where $z^*$ is the steady state value of $z$ and $A$ is the initial condition $A = s_0 - z^*$. In other words, if there is a deviation of $s$ from $z^*$ in the beginning, this will lead to further deviations of $s$ from $z^*$ ($\alpha^t > 1$, except for $\alpha = 1$). The formula (7) reveals that it is expectations which generate such a cumulative movement.

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hand side of (7) thus opens up the possibility of rational bubbles.\textsuperscript{11} Obviously, such a bubble destabilises the exchange rate parity of both countries. But that implies -- contrary to what OCA theory tells us -- that the occurrence of asymmetric shocks, i.e. disturbances that hit only one country, may induce both countries to seek coordinated exchange rate-stabilisation. This implication of the modern asset view of the exchange rate completely changes the role of asymmetric shocks in the alternative theory of monetary integration, I will outline in the next section.

Apart from being the point of departure for an alternative approach to monetary integration, the literature on currency crises undermines the OCA approach even more directly for two reasons. First, the possibility of rational bubbles implies that, in general and in principle, the exchange rate is not a reliable instrument of policy (Cooper 2000: 25). Self-fulfilling attacks on the exchange rate peg may occur if the policy regime is expected to be endogenous to the exchange rate regime.\textsuperscript{12} In other words, if policies are presumed to change after the exchange rate peg has been abandoned, this will lead to an attack that brings forth the change of policies, if the expected policy regime switch is large enough. Second, the literature shows that instabilities may occur even in efficient markets, thus contriving monetary policy to be prepared for stabilising the exchange rate instead of using it as an instrument. Consequently, central banks do not necessarily loose a degree of freedom in currency unification.

\par\textsuperscript{11} This in turn generated a large literature on self-fulfilling speculative attacks and rational herding behaviour. The literature originated in a series of models published in Obstfeld (1995) who started this work on so-called attack models of the second generation. De Grauwe (1997b: 110-116) provides a model where the vulnerability to a self-fulfilling attack depends on the level of public debt.

\par\textsuperscript{12} For which there is empirical evidence as already mentioned in section II.2, cf. Helg et al. (1996: 1039) and Bayoumi/Eichengreen (1998: 204).
Skeptics may raise the sensible objection that rational bubbles in exchange rates do not happen all the time as this literature seems to suggest. One explanation for the conspicuously absent attack is that private actors rationally expect the monetary authorities to prevent this from happening, i.e. to intervene if a bubble develops. Such a bubble-fighting stance of the authorities is credible only under certain conditions, namely the exchange rate arrangement is binding or the stabilising intervention is not excessively expensive. This explanation for why bubbles and self-fulfilling crises do not happen all the time merely underscores that the exchange rate is not a reliable instrument but a price that must be stabilised.

While the Lucas Critique has loomed large in research on the optimality of EMU, the consequences of modern exchange rate theory have been neglected.\textsuperscript{13} Either monetary considerations are explicitly excluded as in the various proposals for a reformulation of OCA theory, as in Bayoumi (1994) and Mélitz (1995), or the exchange rate is modelled following the monetary approach as in Ricci (1997). In both approaches, the implication that an asset price is susceptible to destabilising rational expectations is ignored by assumption.

Ricci's careful and rich model hints at why there is such a neglect -- even by scholars who work both on attacks and on monetary integration. If one does not allow for intermediate cases due to exchange rate instability, exchange rate regimes are conveniently reduced to the two polar cases, fixed versus flexible. Maintaining an optimum currency area is then only a matter of monetary policy playing by the rules
(Ricci 1997: 19). In terms of the framework in Section 2, there is thus no difference between policy $\lambda$ and policy outcome $x_\tau$, just as in the approach criticised by Lucas (1976). This is problematic, not only from a methodological point of view. The monetarist assignment or outright neglect of modern exchange rate theory misses much of what appears to have driven monetary integration in Europe. If the EMS crisis of 1992/93 was self-fulfilling as plausibly argued by Gerlach/Smets (1995) and Eichengreen/Rose/Wyplosz (1996), even monetary policies consistent with the maintenance of the parities were not enough to save the system. And if there is an advantage in “tying one's hand” as Giavazzi/Pagano (1988) and others claim, there must be an exchange rate that is determined by expectations of government policies which may differ from actual policies.

Modern exchange rate theory leaves us with the result that the exchange rate is in principle a source of instability.\textsuperscript{14} This could make the query for substitute adjustment mechanisms less urgent: they may simply become less important if bilateral exchange rates are eliminated with major trading partners. The following table sums up the message that taking the exchange rate as an asset price seriously turns the basic messages of the OCA approach on its head.

| Table 2: Modern exchange rate theory and the OCA approach |

\textsuperscript{13} An exception is Buiter (2000: 11) who calls OCA theory “one of the low points of post-World War II monetary economics”, mainly because of its failure to recognise the destabilising potential of flexible exchange rates.

\textsuperscript{14} Note Robert Mundell’s present view: “asymmetric shocks can occur [...] but exchange rate changes are almost never the right way to deal with it.” (Mundell 2000: 291; cf. 294)
<table>
<thead>
<tr>
<th></th>
<th>Traditional OCA theory</th>
<th>OCA theory based on modern exchange rate approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Currency Unification</strong></td>
<td>causes the loss of an adjustment mechanism</td>
<td>eliminates a potential source of asymmetric shocks</td>
</tr>
<tr>
<td><strong>OCA criteria</strong></td>
<td>loss of the exchange rate has to be compensated according to given OCA criteria</td>
<td>less pressure on adjustment mechanisms and/or an endogenous change of OCA criteria</td>
</tr>
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In other words, if the theory of monetary integration is not just an application of pure trade theory but part of open macroeconomics, the cost-benefit calculus breaks down because losing the exchange rate is not necessarily a cost. The question then arises why we still find so many currency areas. This may be seen as a test case for the approach I shall now propose.

4. **The modern theory of monetary integration: Where do we go from here?**

An alternative approach need not be built from scratch. Instead, I propose a synthesis of two connected lines of research that thrived in the 1980s and the early-to mid-1990s, namely the theory of exchange rate based policy coordination (Hughes Hallett/Holtham/Hutson 1989; Bryant 1995: 52-55) as well as the theory of policy coordination under uncertainty (Canzoneri/Henderson 1991; Ghosh/Masson 1994). This framework is compatible with a serious consideration of both the Lucas Critique and modern exchange rate theory.
The literature on macroeconomic policy coordination is based on a simple premise: economies are interdependent. Policy coordination seeks to internalise the various policy spillovers. And yet, coordination may fail for a variety of reasons even though it would result in a net welfare gain for the parties involved. Among the most prominent reasons for coordination failure are:

Parties may not trust each other because they know that others’ incentives to deviate from policy coordination as soon as the other parties involved stick to it. This is just another variant of the notorious freerider problem that haunts cartels (Hughes Hallett/Holtham/Hutson 1989, Ghosh/Masson 1994: ch.8).

Policymakers may fear that coordination would lead to unfavorable structural changes in the economy, for instance firms and unions becoming more aggressive in their price- and wage-setting behavior because they anticipate a coordinated devaluation strategy (Rogoff 1985).

There may be uncertainty or disagreement about the underlying economic model of the other party, making each party reluctant to engage in coordination on such shaky foundations (Frankel/Rockett 1988).

The exchange rate is not only a prime transmitter of national policies on others. It may also be a means to overcome the notorious coordination failures in that exchange rate stability serves as a surrogate rule for more comprehensive policy

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15 Albeit existent, these gains may be too small for governments to bother. Cf. Bergin/Jorda (2000) for a recent discussion of the gains from monetary policy coordination and the empirical finding that gains may be larger but working through channels other than documented in the coordination literature.
cooperation (Hughes Hallett/ Holtham/ Hutson 1989). Imminent coordination failure implies that exchange rate based policy coordination takes place under uncertainty. Moreover, a stochastic setting is the way to take care of the Lucas Critique and modern exchange rate theory. Following Ghosh/Masson (1994), the idea can be captured by formulating the policy multipliers as stochastic variables. Multiplier uncertainty is uncertainty about the effects of policy instruments on target variables. More specifically, uncertainty as regards the domestic multiplier \(d\) captures possible change in the structure of the domestic economy as the Lucas Critique suggests (Ghosh/Masson 1994: 14-15). Uncertainty with respect to the transmission multiplier \(t\) may be generated by exchange rate volatility that is immediately affected by monetary integration.

Absent coordination, each authority of a country \(i\) maximises (8) subject to (9). This constraint (9) shows that the (vector of) policy outcome \(x\), for instance the effective exchange rate or exchange rate determined targets such as the price-level and the current account, is a (for simplicity: linear) function of domestic and foreign policies \((\lambda_i, \lambda_j)\), such as interest rate or open market policies.

\[
(8) \quad \max_{\lambda_i} U_i = -\frac{1}{2} E\{x_i^2\} \\
(9) \quad x_{i\tau} = G[d_i, t_i, \lambda_i, \lambda_j, \eta_{i\tau}] = d_i\lambda_i + t_i\lambda_j + \eta_{i\tau}
\]

The Lucas Critique has also been incorporated in that the authority of a country \(i\) maximises an objective function in which the policy outcome \(x\), not the ultimate economic goal represented by \(y\), is the argument. This seems to me an inevitable

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16 I illustrate only rule-based optimizing coordination in contrast to discretionary and/or regime-preserving cooperation because this approach is closest to the framework of equs. (3) to (7). Cf. Kenen (1990) and Bryant (1995) for very accessible discussions of the pertinent issues. Readers who are not interested in the analytics of an alternative framework may proceed to the next section without missing the main argument.
consequence of the Lucas Critique if policymakers act consistently or rationally. In this line of reasoning, it is monetary instability (x) that the authorities would target directly by using, for instance, interest rate policy (λ) if the model entails monetary instability to have a negative impact on employment (y), the ultimate goal. This latter connex, as stipulated by (1), has to remain implicit in the following sketch of the framework. The connex is enshrined in the reduced form of the multipliers d and t, which are themselves functions to be derived from an explicit structural model.17

The issue of coordination usually arises if governments have more objectives than instruments to pursue them. In the presence of policy interdependence, governments can then use coordination as an additional instrument to pursue one more target which typically internalises the external effect. In case of uncertainty, however, it will not suffice for a government to have as many means as targets (Ghosh/Masson 1994: 43). A stochastic target variable duplicates because it is the average level as well as the volatility that counts. Applying elementary statistics, a utility function like (8) can be rewritten as $E(x_i^2) = (\bar{x}^2 + \sigma_x^2)$, i.e. as the sum of the mean $\bar{x}$ squared and the variance $\sigma_x^2$ of the stochastic variable $x_i$. This creates the potential for policy coordination being a mutually advantageous exercise even if there were no gains from coordination without this uncertainty. The Nash solution for this kind of coordination results from the first order condition (10) which yields the reaction function (11).

$$\frac{\partial U_i}{\partial \lambda_i} = -E\left\{d_i(d_i\lambda_i + t_i\lambda_j + \eta_{it})\right\} = 0$$

\[
\lambda_i^N = -\frac{\mathbb{E}[d_i t_i \cdot \lambda_j + d_i \cdot \eta_{it}]}{\sigma_{d_i}^2 + \bar{d}_i^2} = -\frac{\bar{d}_i \cdot \bar{t}_i \cdot \lambda_j + \bar{d}_i \cdot \eta_{it}}{\sigma_{d_i}^2 + \bar{d}_i^2}
\]

In case of symmetry, i.e. if \(d_i = d_j = d\) and \(t_i = t_j = t\), the Nash reaction function is simply:

\[
\lambda^N = \frac{-\bar{d}}{\sigma_d^2 + \bar{d}^2 + d \cdot \eta_{t}}
\]

This implies that for positive variance of the domestic multiplier \(\sigma_d^2\), monetary policy does not fully offset shocks to monetary stability because the more active the use of policies, the greater the risk of increasing volatility (Ghosh/Masson 1994: 60). Uncoordinated action can be overly contractionary or overly expansionary, depending on the qualitative effect of transmission.\(^{18}\)

It is straightforward to show that the authorities can improve. Coordination means to maximise a common objective function (13). If the coordinated solution (14) differs from the Nash solution, there are gains from coordination. Thus, for the symmetric case:

\[
\max_{\lambda_j, \lambda_i} U = -\frac{1}{2} [\mathbb{E}[\chi_i^2] + \mathbb{E}[\chi_j^2]]
\]

\[
\chi^C = \frac{-(\bar{d} + \bar{t})}{\sigma_d^2 + \sigma_t^2 + (\bar{d} + \bar{t})^2} \cdot \eta_{t}
\]

It is the uncertainty and interdependence brought in by the exchange rate that gives rise to this gain from coordination. This can be shown by setting the mean and the variance of transmission zero in (14), i.e. \(\bar{t} = \sigma_t^2 = 0\), which yields (12). In this

\(^{18}\) If \(\lambda\) is negatively transmitted (“Beggar-thy-Neighbor”), then the Nash equilibrium is uniquely too contractionary to a positive shock \(\eta\). If \(\lambda\) is positively transmitted (“locomotive”), it depends on preferences regarding the tradeoff between the level and the volatility of the target variable (Ghosh/Masson 1994: 61).
scenario, there are gains from coordinating policies because of transmission uncertainty.

In sum: I suggest to draw on the literature of macropolicy coordination under uncertainty to substitute for the OCA framework. This approach is not only more satisfactory from a methodological point of view. It would also explain the stylized facts of European monetary integration and, as I will show in the last section, it serves as a more effective guide to policy debates.

5. European monetary integration: Why an alternative framework of debate?

There are basically three considerations that endorse exchange rate based policy coordination under uncertainty as the arguably more appropriate framework:

It may explain why governments seek monetary integration although -- or even because -- the respective economies are susceptible to asymmetric shocks.

The approach is more general in that it allows not only for the polar cases of currency unification and free floating but also for intermediate regimes such as EMS I and II.

Finally, it allows for more plausible explanations why European countries have engaged in monetary integration and will continue to do so even if that requires fundamental changes in the domestic policy regime.
As regards the first argument: even if one grants that currency unification is about adjustment to disturbances, exchange rate based policy coordination seems to allow for a role of asymmetric shocks that is more in line with the history of European monetary integration. German unification immediately comes to mind as the paradigmatic country-specific shock. And yet, it resembled other asymmetric shocks insofar it made itself felt in a German monetary policy that, from the Bundesbank’s point of view, was appropriate for German economic conditions, for instance the evolution of the DM against the US dollar or the business cycle. However, the Bundesbank’s monetary policy was not necessarily in line with the economic conditions in the EMS countries, e.g. their current accounts or employment dynamics. Thus, from these countries’ point of view, the Bundesbank’s policy was a source of exogenous country-specific disturbances. Unification of monetary policies promised to eliminate or at least to attenuate this source.

But was the OCA approach at least plausible for Germany where the DM exchange rate came close to being an effective instrument? Not necessarily. The presence of exchange rate volatility can again explain why a key currency country may be interested in policy coordination despite its having an asymmetric chance of self-assertion in the absence of coordination (Gros 1996). A devaluation shock, say for Italy and the UK in the EMS crises of the early 1990s, was inevitably a revaluation shock for the German economy. For quite some time, the post-1993 EMS structure of exchange rates amounted to an overvaluation of the DM (De Grauwe 1997b: 104-106). All this points to the possibility that even the monetary authorities issuing a key currency may achieve a superior targeting mix of both goals, for instance a lower level of inflation for a given amount of variability (via the exchange rate) or
less volatility for a given inflation rate than in the uncoordinated situation. More generally, uncertainty being an independent source of gains from policy coordination, provides a simple and perfectly general rationale for monetary integration taking place between unequals, between strong and weak currency areas, for which there is no explanation to be found in the OCA approach.

This reference to the dynamics of the EMS leads to the second case for an alternative: an approach that deals not only with the polar regimes of fixed versus floating exchange rates is apt to track both the continuity and the changes in moving from one kind of coordinated exchange rate stabilisation to the other. Since it makes explicit the constraints as well as the degree of goal attainment for different members of a monetary integration scheme, the approach allows for an analysis of the inherent dynamics towards closer or loser coordination: from the snake to the EMS, some out of the EMS, others into EMU.

For that very reason, the theory of policy coordination may also explain the existence of so many small, open, and weak currency areas for which maintaining a stable exchange rate is a severe restraint on economic policy. It has been one of the fundamental insights of OCA theory that exchange rate flexibility is not an all-or-nothing issue. Since countries are different in regards that the OCA criteria suggested to be most relevant, they may want flexible rates with some currency areas, fixed with others (Ishiyama 1975). Given these fundamental differences and accordingly different incentives for monetary integration, it might be superior or

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20 Cf. Tsoukalis (2000) and Dyson (2000, ch.2) for closely related arguments.
more practical to seek stabilisation in between the polar exchange rate regimes. Thus, a unified framework is required that could treat various degrees of coordinated exchange rate stabilisation. Currency unification then amounts to a special case. It is monetary policy unification, i.e. automatic coordination, that entails various degrees of coordination in fiscal, social and structural policy matters (Wyplosz 1999).

There is a third argument in favour of this approach and arguably the most important: even proponents of a renewed OCA approach admit that it is not the “ridiculous savings“ in transaction costs which made European governments seek a monetary union (Pisany-Ferry 1999: 218). Rather, it was the standard case for policy cooperation, namely to internalise policy spill-overs. This has already been outlined with respect to the dominance of the Bundesbank policy which was a source of asymmetric shocks. In the long run more important still may prove the attempt to overcome the notorious Eurosclerosis, i.e. to contrive structural reforms of market and policy regimes (Emerson et al. 1992). National policy regimes did change and are meant to change by stipulation of the Maastricht criteria regarding public finances and independence of the central bank as well as by implementing its offspring, the Stability and Growth Pact to monitor and sanction budget deficits. The Maastricht strategy deeply affects the relationship between monetary policy, fiscal policy, and wage determination. For those who see policymakers as vote-maximising interventionists, the Maastricht strategy to monetary union provides for a startling prospect, namely that of politicians‘ tying their hands. This strategy has instrumentalised the Lucas Critique by using monetary policy as a disciplining device for the macropolicy regime.
But herein lies a problem and not a solution. Proponents of an OCA approach in particular might ask: why would one want to constrain fiscal policy in a situation where national monetary authorities give up on exchange rate changes and where labor mobility is too low to play a significant role in adjustment? However, I consider the very adherence to the OCA approach as being to blame, at least partly. It was a dead end for debates on the EMU policy framework insofar the OCA approach did not signal any need for future policy coordination. The set-up enshrined in the Stability and Growth Pact is intended to discipline and to exclude prospective members, not to facilitate their cooperation (De Grauwe 1997a: 155). But this will be all but inevitable for the smooth working of both the EMU and the EMS. Yet it must do so on an ad hoc basis if the theory of monetary integration keeps on subscribing to the OCA approach. In contrast, the alternative framework would directly address the relevant policy issues of European monetary integration.
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