

2010


Endogenous OCA (Optimum Currency Area) Analysis and the Early Euro Experience

Thomas D. Willett
Claremont Graduate University

Orawan Permpoon
Foreign Ministry of Thailand

Clas Wihlborg
Chapman University, wihlborg@chapman.edu

Follow this and additional works at: http://digitalcommons.chapman.edu/business_articles

 Part of the [International Business Commons](#), [International Economics Commons](#), and the [Other Economics Commons](#)

Recommended Citation

Willett, T. D., Permpoon, O. and Wihlborg, C. (2010), Endogenous OCA Analysis and the Early Euro Experience. *World Economy*, 33: 851–872. doi: 10.1111/j.1467-9701.2010.01268.x

This Article is brought to you for free and open access by the Business at Chapman University Digital Commons. It has been accepted for inclusion in Business Faculty Articles and Research by an authorized administrator of Chapman University Digital Commons. For more information, please contact laughtin@chapman.edu.

Endogenous OCA (Optimum Currency Area) Analysis and the Early Euro Experience

Comments

This is the accepted version of the following article:

Willett, T. D., Permpoon, O. and Wihlborg, C. (2010), Endogenous OCA Analysis and the Early Euro Experience. *World Economy*, 33: 851–872. doi: 10.1111/j.1467-9701.2010.01268.x

which has been published in final form at DOI: [10.1111/j.1467-9701.2010.01268.x](https://doi.org/10.1111/j.1467-9701.2010.01268.x). This article may be used for non-commercial purposes in accordance with [Wiley Terms and Conditions for Self-Archiving](#).

Copyright

Wiley

Endogenous OCA Analysis and the Early Euro Experience

Thomas D. Willett*, Orawan Permpoon⁺

and Clas Wihlborg[±]

Abstract. Some have argued that the endogenous responses to the formation of a currency area are so strong that one need not worry about optimum currency area conditions ex ante. We argue that this is much too strong a conclusion. We draw on a number of recent studies to evaluate the endogeneity experiences of the euro zone in three major areas; trade flows, business cycle synchronization, and structural reforms to improve labor and product market flexibility. Simple before and after comparisons are insufficient for analysis of endogeneity. The experiences of non-euro Western European economies suggest that broader trends also had considerable influence on trade and business cycle patterns. While trade and macroeconomic conditions rose substantially within the euro zone, they also rose with and among other European economies. We argue that political economy considerations tend to dampen the magnitude of endogeneity efforts on structural reforms and that meeting conditions for entry may be a more powerful mechanism in this area than subsequent endogenous responses. We also discuss a number of areas for further research.

* Corresponding author Thomas .Willett @ cgu.edu We would like to thank two referees and the participants in the Claremont workshop on international money and finance for helpful comments.

Horton Professor of Economics, Claremont Graduate University and Claremont McKenna College, and Director, Claremont Institute of Economic Policy Studies

⁺ Foreign Ministry of Thailand

[±] Chapman University and Research Associate Claremont Institute of Economic Policy Studies

List of Figures:

Figure 1. Average internal and external trade ratios (as a percentage of total trade) of the euro zone- and the non-euro zone groups of European countries.

Figure 2. Internal and external ratios of sum of trade to sum of total trade of the euro zone and the non-euro zone groups of European countries

Figure 3: Weighted average of one year growth correlations among euro zone countries

Figure 4: Weighted average of one year growth correlations between euro zone and non-euro countries

Figure 5: Weighted average of one year growth correlations among non-euro countries

Figure 6: Weighted average of deviation-from-trend correlations among euro zone countries

Figure 7: Weighted average of deviation-from-trend correlations between euro zone and non-euro countries

Figure 8: Weighted average of one year growth correlations among non-euro countries

1. Introduction

One of the most important recent developments in the Optimum Currency Area (OCA) literature has been the analysis of how the formation of a currency area can affect factors that influence how well the currency area will work. Such considerations have been aptly named endogenous OCA analysis by Jeffrey Frankel and Andrew Rose (1998). In general, potential members of a monetary union would be expected to meet the OCA criteria better ex post than ex ante. Therefore it makes sense to apply the standard ex ante OCA criteria somewhat less stringently. If a country comes close but does not quite fully meet the criteria ex ante, it should likely go ahead and join a currency union since the odds are high that it would satisfy the criteria ex post.

There is a danger with such analysis, however. Those who favor a currency union, dollarization, or some other form of hard fix may exaggerate the degree of endogeneity and some have gone so far as to suggest that almost any currency union can become optimal ex post¹. Such arguments have been made in the discussion of a possible Asian common currency².

Views are decidedly mixed on how well the European common currency has worked to date. While many champion its success, others point to the lack of the substantially improved macroeconomic performance that had been predicted by some advocates. David Marsh (2009) argues, “The arresting truth about the Euro is that extreme judgments on its track record and

¹ Corsetti and Pesenti (2002) show that even where monetary unification does not generate increased economic integration, private sector response could lead to a self validating optimal currency area. They also show that under some condition flexible exchange rates could be superior in welfare terms even if a currency area was self-validating. It is not clear, however, that the Corsetti-Pesenti model captures the elements that would most strongly affect the operation of actual currency area. As we discuss later, political economy considerations may undercut the economic efficiency considerations analyzed by Corsetti and Pesenti.

² See, the analysis and references in Willett, Permpoon, and Srisorn (2009).

prospects, both positive and negative, can be defended with equal robustness.” (p.4) While we agree with Marsh that it is still too soon to tell just how well the economic performance of the euro zone will ultimately turn out to be, we believe that there is quite sufficient evidence from its first decade of performance to render the not surprising judgment that many of both the strongest advocates and critics missed the mark in their predictions. The euro certainly has not been the disaster that some feared. But neither has it been an unqualified boon to all of the member economies. Marsh (2009, p.9) reports an opinion poll taken shortly before the beginning of the current global crisis that found more than two-thirds of Italian, French, and Spanish citizens and more than half of Germans believed that the euro had had an overall negative effect on their economies. The financial crisis in 2008-9 has not changed the assessment of the EMU so far. While it has been pointed out that the common currency has eliminated problems of competitive depreciation within the euro area, overall the Euro countries do not seem to have fared substantially worse or better on the average than non-euro countries in Europe.

While the formal literature on endogenous OCA analysis is of recent vintage, several of the considerations at issue have long been a matter of dispute among economists and political officials. As Coeure (2004) argues “the endogeneity of OCA criteria has been at the very heart of the political debate on EMU. In a nutshell, this debate has opposed the (loosely speaking) ‘French’ view that monetary union per se would accelerate the integration of European markets and a ‘German’ view that monetary union should only be the ‘crowning’ of the integration of European markets.” (pp.342-343) Recent analysis of endogenous OCA considerations suggests that in many areas relevant for OCA criteria it is difficult to draw clear cut theoretical conclusions. For example, analysis based on economic efficiency considerations alone can make one optimistic about the likelihood of major endogenous reform to increase the flexibility of the

domestic economy. We argue that broader political economy analysis suggests that many rigidities are the result of rent seeking behavior and those who have been privileged are unlikely to give up their rents without a fight. Thus a political economy approach is much less optimistic. What we need to know more about is the relative strength of such opposing considerations. It is important to recognize that if a country is not already close to meeting the OCA criteria then it is not sufficient that endogenous responses just go in the right direction. They must be sufficiently strong to make a major difference. Argentina provides a sad example. It appears that the establishment of a currency board did on balance lead to an increase in labor market flexibility, but not by nearly enough to avoid catastrophe. (See Willett (2002)). A little reflection should make it not surprising that the formation of the euro has not generated sufficient positive endogeneities to generate remarkably improved economic performance. After all the economic effects of a currency union should in most respects closely parallel those of other forms of hard fixes and the substantial empirical literature on the effects of fixed rates on macroeconomic performance has reached substantially varying results.³

In this paper we draw on a number of recent studies to evaluate the endogeneity of OCA criteria within the euro zone in three major areas; trade flows, business cycle synchronization, and structural reforms to improve labor and product market flexibility⁴. In the first area, there is widespread consensus that the fixing of exchange rates should increase intra area trade – the

³ For an excellent recent review of this literature see Tavlas et al (2008).

⁴ Two recent papers have surveyed much of the endogenous OCA literature, Paul De Grauwe and Francesco Paolo Mongelli (2005) in the context of the Euro and Barry Eichengreen (2002) in the context of the debate over dollarization. The European Central Bank recently held a major conference on this subject. The contributions from that conference are ably surveyed in Mongelli and Vega (2006). We will not duplicate their fine surveys by summarizing in detail the recent literature, but will draw upon them to offer brief characterizations of this literature and raise some considerations that we think are new or at least insufficiently emphasized. We also draw heavily on the provisional version of the massive study by the European Commission on EMU@10.

questions are by how much and over what time frame?⁵ The second area of business cycle synchronization is influenced both by the first area of the magnitude of changes in trade flows, by their composition between intra and inter industry trade, and by patterns of shocks including national fiscal policies, which may have considerable exogenous components. We find, as have a number of other studies, that there has been a post euro increase in both intra area trade and business cycle synchronization. While this is consistent with endogenous responses, we find that similar increases have occurred between the euro zone countries and other Western European countries. Thus, simple before and after comparisons will fail to give an accurate picture of the degree of endogenous responses generated by the common currency itself. In our third area to be investigated, increases in the flexibility of domestic economies, some responses may come directly through private sector responses, but most discussions focus primarily on government induced policy reform. Here we would expect political economy considerations to play a stronger role and our review of recent analysis in this area suggests that they indeed do. As with fiscal policy, it appears that the need to meet initial entry requirements for joining the euro zone provided a much stronger spur to reforms than have the realities of living with fixed rates since.

2. Effects on Trade Flows

There has been a substantial disconnect between the previous literature on the trade effects of exchange rate uncertainty and the literature on currency unions. Studies have generally found the first type of effect to be fairly small while the work on currency unions by Andy Rose found huge effects; his initial estimates suggest a doubling or tripling of trade from joining a

⁵ Theoretically the fixing of exchange rates can have a negative as well as a positive impact on intra-euro trade as noted, for example, by Glick and Wihlborg (1997)

currency union [Rose, Lockwood, and Quah (2000)]. It was pointed out later that Rose's results were driven by small and poor countries adopting the currency of larger country (Persson, 2001). Later, Baldwin (2006) reported that the initial intra trade effect of euro, adoption of a common currency by large countries, was only five to ten percent with the caution that the figure may change with the new data.

Intra euro country trade as a percent of GDP grew very rapidly from around 25% in the mid 1990s to over 40% by 2000. This growth has since leveled off and the ratios for 2001 through 2004 have fluctuated in the range of 40 to 42%. This does not fit with standard assumptions about the dynamics of the effects of creating a common currency. Some studies such as the UK Treasury's economic review have assumed that full adjustment would take 20 to 30 years, but no theoretical basis for such an expectation has been offered.

In order to get a cleaner picture of the effects of the euro on trade patterns we look at trade among groups of countries relative to total trade, rather than relative to GDP. If the euro has reduced the costs of trading within the currency union relative to costs of trading between currency areas, intra euro trade in percent of total trade of the euro countries should have increased. Figure 1 shows averages of euro- and European non-euro countries' trade shares with euro and non-euro countries. Figure 2 shows trade shares defined as ratios of the sum of trade within a group or between groups of countries relative to the sum of total trade of each group. The non-euro countries are Norway, Sweden, Switzerland and the UK.⁶ The figures show intra-euro trade relative to total trade of the euro countries, trade between euro and the non-euro countries relative to total trade of euro and the non-euro countries, and trade between non-euro countries relative to total trade of these countries. The patterns are very similar in the two

⁶ Denmark was not included because while it has adopted the euro it has maintained a fixed rate with the euro, making it difficult to classify as in or out for our purposes.

figures. Both figures show that the introduction of the euro in January 1999 was initially associated with a substantial increase in the ratio of intra-euro trade to the total trade for the euro countries. It is also clear from the figures, however, that looking just immediately before and after the introduction of the euro can be quite misleading. There was no substantial increase in this intra-euro trade share over the whole period 1994-2004. The years 1997 and 1998 were years with substantial declines in the intra-euro trade share and the increase in the trade share in 1999 looks like a restoration of normal trade patterns. Thus it may be worth investigating whether the policies of convergence to the Maastricht criteria in some way actually inhibited euro zone trade before 1999.

Figure 1. Average internal and external trade ratios (as a percentage of total trade) of the euro zone- and the non-euro zone groups of European countries.

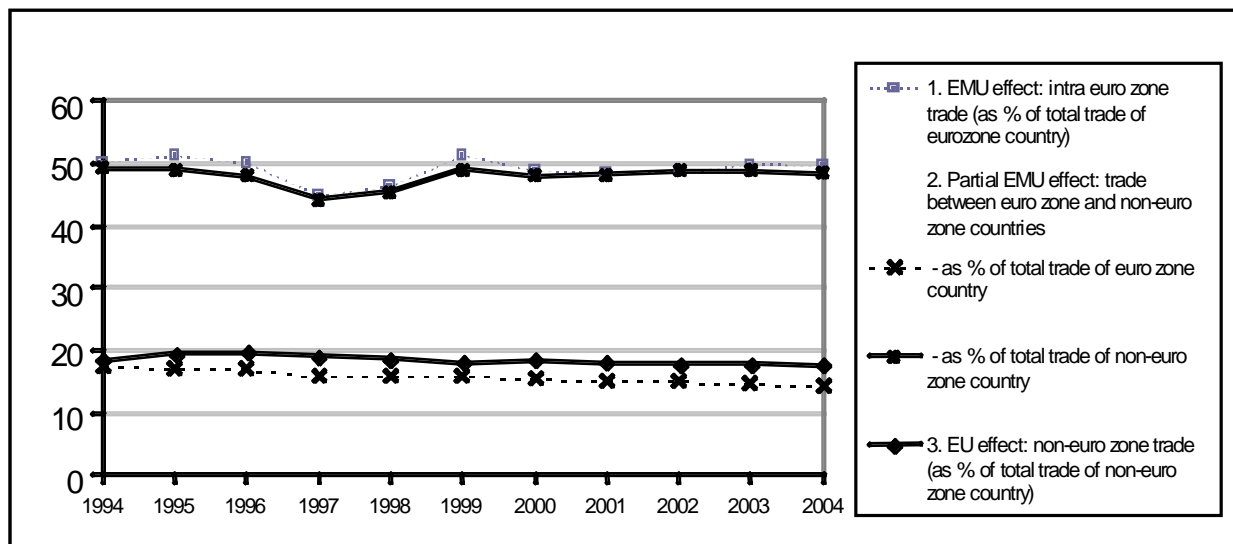
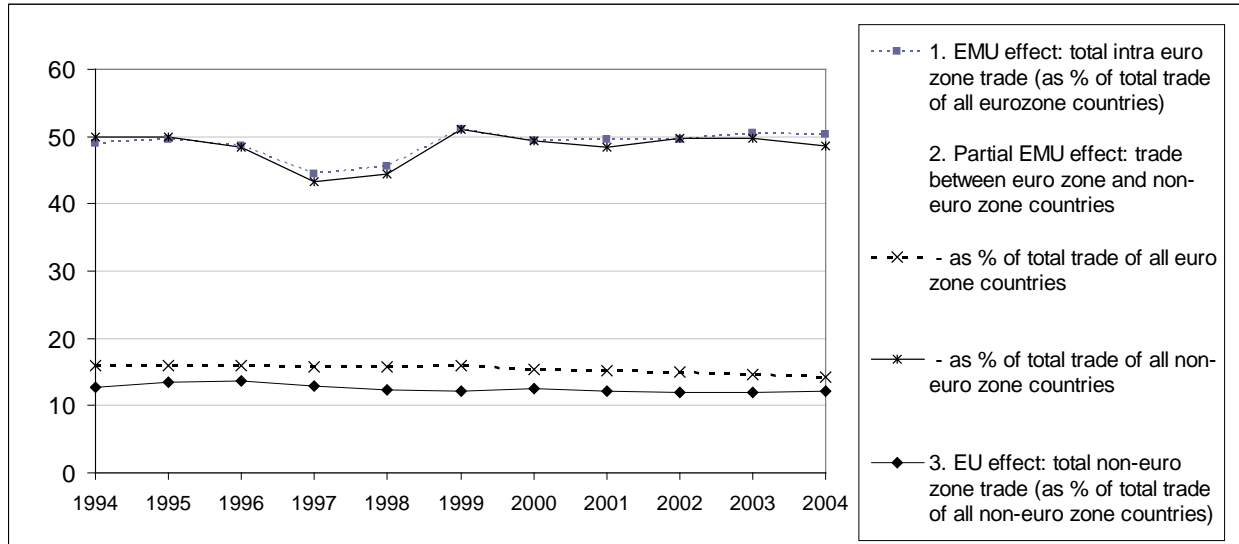


Figure 2. Internal and external ratios of sum of trade to sum of total trade of the euro zone and the non-euro zone groups of European countries



It can also be observed that the share of trade of the non-euro countries with the euro countries follows the same pattern as the intra-euro trade. In other words, the share falls in 1997-98 and increases again in 1999. The share of trade of the euro countries with the non-euro countries seems to be trending downwards during the whole period, however. Neither of these observations is easily explained by the creation of the EMU. Finally, the intra non-euro country trade as percent of total non-euro country trade remains more or less constant during the period.

A more favorable view of trade creation effects is given by looking at the ratios of intra euro trade to GDP. These do jump around the time of euro creation. So, however, do the ratios for our non-euro groups, suggesting that other factors than the creation of a currency union were at work. This is discussed further below.

An important issue concerns the expected time pattern of the trade effects of the euro. A clear pattern of adjustment is not evident in Figures 1 and 2. Only the years 1997-98 stand out

while the euro areas trade shares remain nearly constant over the 10-year period. A recent IMF working paper by Hamid Faruquee (WP/04/154) uses a gravity model to estimate that through 2002 the euro had boosted intra area trade by around 10 percent. Faruquee found considerable variation across countries, concluding, “While the three largest euro area economies generally display trade gains similar to the average, considerable dispersion around this estimate exists for the smaller countries.” (p.20). Some have given the developments beginning in 1999 the interpretation that the euro has generated considerable trade creation while avoiding any substantial trade diversion⁷ (See, for example, Micco, Stein, Ordoñez (2003) and Faruquee (2004)). Baldwin (2006) reports that the “consensus” figure for the trade expansion caused by the EMU is 13 percent. According to the data presented here this interpretation seems to require either that we consider 1997 and 1998 as representative for the pre-euro period or that some other factor had a depressing effect on intra-euro trade after 1999. An alternative interpretation, however, is that something else besides the creation of the euro has been going on. See, for example, Dominguez (2006).

In summary, the evidence to date on the endogenous trade effects of the creation of the euro is difficult to interpret. We lack a clear theoretical framework for analyzing the expected time path of such effects. Our interpretation lies close to Ben Bernanke (2004) when he argues, “evidence drawn directly from the recent European experience does not generally support the view that adoption of a common currency had a major effect on the magnitude or direction of trade. True, euro-area exports did surge after the adoption of the euro... However, cyclical conditions and the early weakening of the new currency no doubt played a critical role in that

⁷ When trade diversion is discussed in this context it refers to a shift of trade from one group of countries to another as a result of reduced transactions and information costs within one group. The negative welfare effects associated with trade diversion in customs union theory are not associated with the kind of trade diversion we discuss here.

increase... Also, striking is ... that the share of total euro-area exports destined for other members of the euro zone did not increase” (p.182). It is clear, however, that we need to develop a better understanding of the factors that have influenced the growth of trade in general before we can fully assess the trade effects of the creation of the euro. In particular, effects of the common currency per se should be distinguished from “EMU-effects”. The former would be caused by reductions in transactions costs and exchange rate risk, while EMU effects would be caused by changes in the institutional and macroeconomic environment in many countries after substituting the ECB for central banks with low credibility with respect to inflation control.

3. Output- and Consumption Growth Correlations

One difficulty with before and after comparisons with the euro is that the best date to use for a break is not unambiguous. With the long run up to the actual introduction of the euro, its effects should have been widely anticipated. But for how long? There is no easy answer. To give a clean comparison we compare 1980 to 1990 with 1999 to 2005⁸, i.e. we end the before period at the earliest date used for the start of euro effects and begin the after period with the latest plausible date⁹. As is shown in Figure 2 and 3, both the output correlations and consumption correlations among the euro countries rose substantially. However, so did the correlations with

⁸ The countries under consideration comprise 12 EMU countries and 4 outside countries (Norway, Sweden, Switzerland, and United Kingdom). The GDP data is obtained from World Development Indicators (WDI). The correlations are calculated by using pairwise correlations between a pair of countries’ real GDP growth rates. The average correlations of euro zone countries with other Euro zone countries are GDP-weighted averages of 66 correlations among EMU countries $((144-12)/2)$. The averages for outside-the-euro-zone countries correlations with Euro zone countries are the averages of 48 correlations between the four outside countries and the twelve euro countries. Finally, averages of non-euro zone countries are calculated from six correlations of four outsiders.

⁹ We have checked alternative periods and found that this does not affect the qualitative nature of the results.

and among the non-euro Western European countries.¹⁰ Indeed recent research by Flood and Rose (2009) indicates that there were increased correlations across the industrial countries as a whole during the period and that over recent decades there have been several cycles of the industrial economies moving into and out of phase.

Figure 3: Weighted average of one year growth correlations among euro zone countries

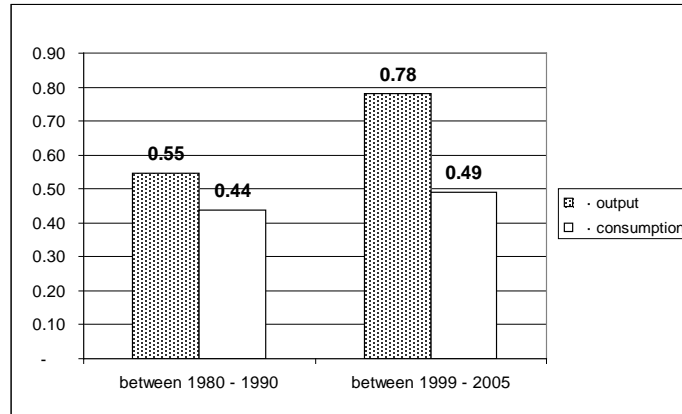
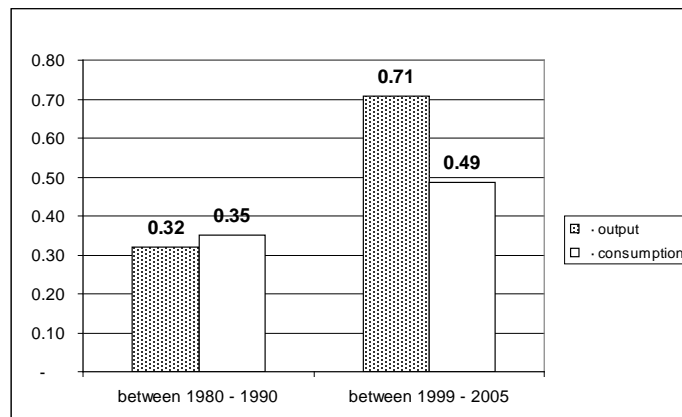
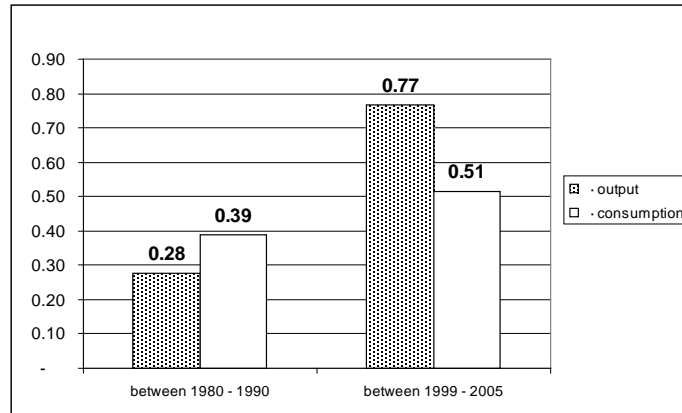


Figure 4: Weighted average of one year growth correlations between euro zone and non-euro countries



¹⁰ The results are consistent with those of Montoya and Haan (2007) who analyzed the correlations of Gross Value Added (GVA) deviations from trends of 53 regions in 12 euro countries with that of euro zone business cycles and found that the correlations increased over time, particularly after 1992.

Figure 5: Weighted average of one year growth correlations among non-euro countries

We find similar patterns in the behavior of the correlations of both economic growth and consumption growth. The former is a commonly used measure of the degree of business cycle correlations. Consumption correlations depend on the degree of financial market integration as well. With economically and financially integrated economies we would generally expect to see high correlations of both economic growth and consumption growth¹¹. Figures 3-5 show that the growth of consumption correlations is approximately the same for the euro and the non-euro zones internally as well as between the groups. The magnitude of the increase in output growth correlations among non-euro countries is greater after the initiation of the euro than the magnitude of the increase in the euro countries themselves, and the output correlation levels within the two groups of countries reach nearly the same level. Thus, it appears as if the OCA endogeneity effects on the correlations of output growth rates worked more strongly for the

¹¹ There is a possibility that greater trade integration could lead to lower growth correlations if it led to more inter industry specialization. On these issues, see the analysis and references in de Haan et al (2005).

countries that did not adopt a common currency¹²! We know of no plausible story as to why this would be. Obviously the creation of the euro was not the only thing going on¹³.

Of course, there are many different techniques for measuring the degree of business cycle synchronization. (See, for example, the excellent survey by de Haan et al (2005)). But our conclusion that something besides the euro was going on seems to hold up across a wide variety of methods. For example, using several different methods, and 1991-92 as the break period. Altavilla (2004) found a major shift in the co-movement of a number of European economies away from the United States toward Europe and concluded from this that, “the establishment of the European currency union has resulted in better business cycle synchronization” (p.894). He does not to emphasize, however, that similar results are found for the UK, which did not join the euro zone. Whether there have been significant changes in business cycle synchronizations following various events is made even more difficult because of the tendency for “business cycles in the euro area [to] have gone through periods of both convergence and divergence ”(de Haan et al. (2005)). And more important than what changes have occurred is that “the business cycles of many euro countries are still substantially out of sync”. Thus based on their extensive survey de Haan et al disagree with Trichet’s optimistic assessment that “economic developments are becoming more and more correlated in the [euro] area” (2001, p.5). The statement seems to have greater validity for the EU as a whole than for just the euro area.

As a robustness check we also look at the correlations between deviations from trend¹⁴ as an alternative for measure of business cycle synchronization. The (already high) output

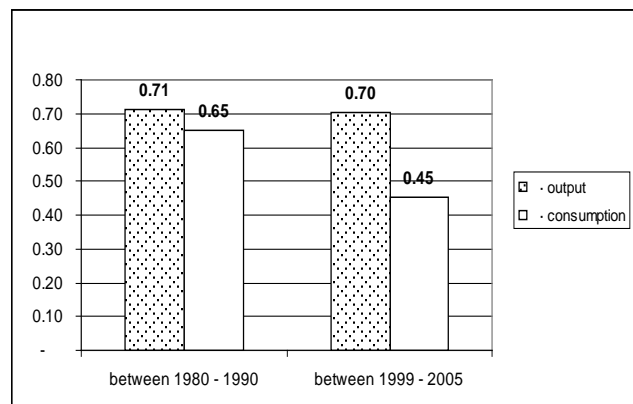
¹² Investigation of the average correlation coefficients of real output growth rate of each European country with the 12 euro zone countries finds that countries in each group have correlations around the same level as the group average except for Finland, which behaves like the outside euro zone countries in the period of 1980-1999 and between 1980-1994. The same patterns hold with respect to two and three year correlations.

¹³ For additional analysis of these issues see Crowley (2006) and Giannone and Reichlin (2006).

correlations of the euro countries barely changed after 1999 (Figure 6) while the correlations among the non-euro countries increased sharply (Figure 8) as did correlations between euro and non-euro countries (Figure 7). These observations are consistent with those for output growth correlations. However, unlike the simple consumption growth correlations, the deviation from trend consumption growth correlations in Figures 6-8 fell substantially within the euro area and to a lesser extent within the group of non-euro countries.

Two observations can be made from comparisons of both growth rate and deviation from trend correlations: Output correlations increased substantially more (or fell less) than consumption correlations in both the euro zone and the non euro zone, and the increase in output correlations was substantially greater in the non-euro zone than in the euro zone. These observations are consistent with the findings of the Euro@10 report (p.48).

Figure 6: Weighted average of deviation-from-trend correlations among euro zone countries



¹⁴ The trend of the original series was generated by the Hodrick-Prescott filter.

Figure 7: Weighted average of deviation-from-trend correlations between euro zone and non-euro countries

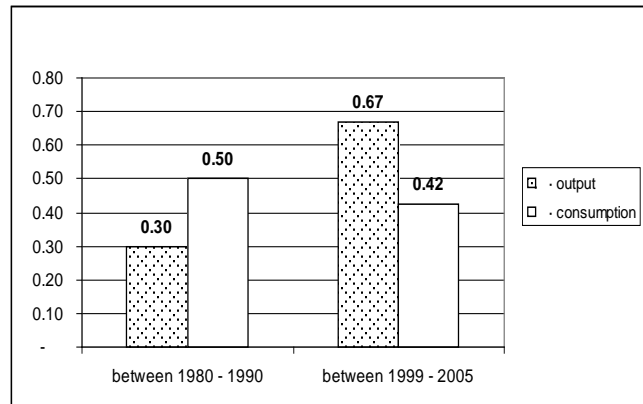
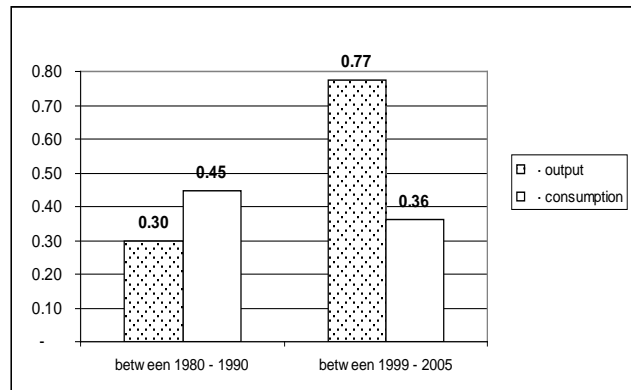


Figure 8: Weighted average of one year growth correlations among non-euro countries



Consumption correlations relative to output correlations are sometimes used as an indicator of financial integration. The argument is that higher degrees of financial integration will allow greater income smoothing and therefore would generate consumption patterns across countries that are more correlated than output correlations. The basic idea is similar to the Feldstein-Horioka measure of capital mobility that looks at correlations between domestic saving and investment and is subject to the same criticism that these correlations can be affected by the pattern of shocks as well as the degree of capital mobility. The patterns shown in Figures 3-8 are not easily explained by increased financial integration within and between the country groups, however. In general output correlations rose while consumption correlations fell after the euro

was launched. Thus other factors influencing output- and consumption growth correlations need to be considered.

One factor affecting the difference between output and consumption correlations is the relative importance of asymmetric aggregate demand and supply shocks in industries where output and sales variability may differ as a result of adjustment of inventories or unfilled orders. Another factor is fiscal policy coordination. We discuss the role of asymmetric demand and supply shocks first.

Glick and Wihlborg (1985) show that the relative variability of output and sales within a country depends on the nature of shocks. Supply side shocks contribute mostly to output variability while demand side shocks contribute mostly to sales variability. It follows that reduced asymmetry (increased correlation) between countries of supply side shocks tends to increase output correlations the most while reduced asymmetry between countries of demand side shocks tends to increase sales (consumption) correlation the most. Thus, one interpretation of the data is that in both the euro and the non-euro zone the asymmetry of supply side shocks has fallen more than the asymmetry of demand side shocks. The latter asymmetry may even have increased according to the deviation from trend correlations. The relative decline in the asymmetry of supply side shocks contributing to increased output growth correlation seems to be most pronounced in the non-euro zone.

The similarity of developments in the euro and non-euro areas is not a mystery. The largest trading partner of each non-euro area country is typically a euro area member and non-euro countries typically border on different euro area countries. Thus, asymmetry of shocks within the euro area would translate directly into asymmetry of shocks in the non-euro area. Why the introduction of the euro would contribute to an increased weight of demand shocks as a

source of asymmetry is harder to explain, however. We ask next whether fiscal policy behavior in the euro area can explain the observations.

Fiscal policy can affect the behavior of output relative to consumption. It can be used to smooth consumption even if it does not affect output. Thus, if there is an increase in output growth correlations as a result of the EMU, an increase in the political pressures to use fiscal policy counter-cyclically and an increase in fiscal policy correlations can be expected as well. These tendencies should be strengthened by the lack of centralized fiscal policy within the EU. On the other hand, increasing financial integration could reduce the pressures to use countercyclical fiscal policy, since these markets contribute to consumption smoothing. Politically, however, governments appear to be more concerned about output and employment stabilization than about consumption stabilization. The fiscal limitations provided in the Growth and Stability Pact could also reduce the use of counter cyclical fiscal policy, although the effectiveness of the pact has been widely questioned.

The recently released Euro@10 report (European Commission, 2008) notes (Ch 5) that fiscal policies have become less procyclical during the last decade as a result of shorter recognition lags. It also notes that persistent fiscal deficits have diverged among the EMU-members. This divergence in aggregate demand policies could explain increased asymmetry (reduced correlation) of aggregate demand shocks and increased divergence between output growth- and consumption growth correlations as observed above. If aggregate demand management by means of fiscal policy were conducted in response to supply shocks the correlation of consumption growth rates and the correlation of output growth rates should have been changing in the same direction.

We can conclude with the observation that the relative changes in output and consumption growth correlations within the euro and the non-euro areas are a puzzle that is not easily explained by financial integration, asymmetry of shocks and fiscal policy behavior. Further research is needed to explain the observed correlation patterns.

4. Structural Reforms

While there are some differences in the papers they review, both Eichengreen (2002) and De Grauwe and Mongelli (2005) note that theoretical analysis can be found in support of conclusions that locking in the exchange rate could lead to either an increase or a decrease in the degree of wage flexibility. A public choice perspective suggests that whatever the net direction, the magnitude of effects is likely to be relatively modest, especially for larger economies, since groups that benefit from existing rigidities are likely to be little influenced by effects on aggregate economic efficiency.¹⁵

As the OECD [2007] notes in its recent summary of its studies on structural reform “Political obstacles to reform are of two kinds. In some instances, economic efficiency goals may be seen to clash with the attachment to existing policies of individuals or groups... Most often, however, it is the mismatch between the real or perceived costs and benefits of reform that generates opposition to them. Reforms frequently entail highly visible costs concentrated on clearly identifiable groups of people ... while benefits generally come later, may be seen as more uncertain, and are more widely diffused across society”(p.170-171). Or as Alesina and Giavaggi

¹⁵ This point is emphasized in the literature on the political economy of exchange rate regimes and currency crises where the influence of interest groups are frequently cited as important contributors to delays in needed structural and macro policy reforms. See, for example, Bird and Willett (2009) and Frieden, Ghezzi, and Stein (2001). As a reviewer pointed out to us, a related possible cause of reform avoidance is the reduced likelihood of exchange market crises within a currency union. Such crises have often been an important spur to reform.

(2006) put it “Because over protected minorities enjoy privileged access to politicians, it is no surprise that deregulation invites so much fierce opposition” (p.81). Alesina and Giavaggi go on to ask “what about the prediction of the euro optimists that ... European countries would push forward into the area of structural reforms?... a few countries did introduce some labor market reforms (Denmark, Sweden, and to a lesser extent Italy and Germany) ... but overall the pace of structural reform in Europe has been too slow and too timid” p.147. The Euro@10 reports notes (Ch 6) that “there is evidence that reform efforts have slowed down since the launch of the single currency.”

Coeure (2004) also sees a lack of substantial progress. “As for labour mobility, there has been little change in Europe in recent years. Available evidence of higher labour market flexibility... probably has little to do with the euro, although it can be argued that labour market reform in ‘periphery’ countries such as Spain was initially triggered by the prospect of the EMU.” (p. 344)

The logic of many of the optimistic endogenous OCA arguments about increased labor market flexibility implies that larger national currency areas should have substantially more flexible labor markets than smaller ones, since we can think of the larger currency area as smaller regions that have joined together into currency area. The larger the currency area, the less an individual region’s cyclical situation would be taken into account in setting the area’s monetary policy. Thus the greater would be the unemployment and output costs of labor and goods markets rigidities assuming that monetary policy is an effective countercyclical instrument¹⁶. These higher costs are expected to provide incentives for greater flexibility in labor

¹⁶ Of course, this argument would hold more strongly, the less synchronized were business cycle conditions across the regions. Note that our argument does not assume that the basic the adjustment costs of individual firms vary between large and small economies.

markets. However, there are strong indications that the formation of the EMU has not strengthened these incentives sufficiently to offset status quo biases and lead to a substantial increase in flexibility.

The comparison of the United States with most European economies would fit the hypothesis that larger currency areas should have more flexibility, but comparisons between large and small European currency areas don't fit so well. For pre-euro Europe the posited strong positive correlation of size with flexibility just does not exist. Indeed, while it is difficult to develop good measures of labor market flexibility, we believe that a plausible case could be made that the pre-euro correlation for Europe was negative rather than positive. Certainly the large economies of France, Germany, and Italy have not been widely considered to have more labor market flexibility than the small economies of Austria, Denmark, the Netherlands, Sweden and Ireland.

Indeed, the OECD (2007) finds that in general in Europe small countries inside and outside the euro zone have undertaken more labor market reform than larger ones. One possible reason they note is greater homogeneity of the population. A second reason they suggest is “greater openness to trade which increases competitive pressures and eases concerns that structural reform could lead to imbalances between aggregate demand and supply” (p.172). Furthermore, small, open economies exposed to international competition and external shocks face greater costs of not having adjustment mechanisms in place. It is not clear-cut how these considerations would be influenced by joining a currency area. There would presumably be greater trade competition vis-à-vis the countries within the currency area, but also likely greater scope for short run imbalances between aggregate demand and supply. The OECD points to conflicting considerations. While noting that “external monetary anchors may increase the

pressure to undertake structural reform” (p.173), they also note the view that accommodative monetary policies could provide a safety net for the short run unemployment effects of reforms, thus increasing their political feasibility. They conclude “Empirically, there is no compelling evidence that an external anchor helps or hinders structural reform in general, but there is some indication that major structural reforms could be aided by monetary policy autonomy” (p.173)¹⁷. Thus, based on comparisons across the size of European currency areas, we see little basis for optimism that joining the euro zone should generate a substantial increase in labor market flexibility.

The other type of evidence that we can bring to bear is the recent experiences of countries that have adopted hard fixes and the experience to date within the euro area. On the interpretation of these experiences there is less than full agreement. Based on reviewing the early experiences of Europe and of Argentina, Eichengreen (2002) concluded, “There is some anecdotal evidence that a hardening exchange rate commitment and monetary union are encouraging efficiency – enhancing reforms in Argentina and Europe, but systematic analysis suggests that reform remains partial and incomplete.” (pp. 6-7). The experience of German reunification also shows little evidence of strong positive responses.

De Grauwe and Mongelli (2005) interpret the European experience more optimistically. They conclude that “the preliminary empirical evidence suggests that EMU does create incentives to introduce more labour market flexibility.” (p.28) We have no reason to quarrel with this judgment, but note that it gives little basis for optimism that the euro zone countries will see a substantial increase in labor market flexibility. It appears that with Argentina’s currency board there was also a net increase in labor market flexibility, but the degree of increase was far too

¹⁷ The OECD summary draws particularly on recent studies by Duval and Elneskov (2005) and Ho et al (2006)

little to prevent a severe recession. There has been no dearth of talk, from economists and political officials alike, of the need for structural economic reforms in Europe. But the amount of effective action has been far less.

The experience of Denmark as a hard peg but non-euro country suggests that effective labor market reform tends to make a hard peg more politically feasible but from this observation it does not follow that a hard peg or euro membership provides effective political incentives to implement reforms.

One possible explanation of the lack of effective action in the euro zone is that political leaders do not really understand the need for reform. As Michael Woolfolk, senior currency strategist at the Bank of New York puts it, “Is it possible to have a common currency in countries without a flexible market economy? Certainly many euro zone politicians would like to think so.” (FT, 05/05/05, p.12).

An alternative explanation more congenial to standard public choice analysis is given by *New York Times* columnist Floyd Norris “Some thought the euro would force economic reform, but the pace of change has been slow at best... The news within many a European country is of various groups and unions fighting to preserve and expand their benefits, with no regard for the country’s overall competitive position, let alone that of the continent.” (NY Times, 04/29/05, C1).

The latter interpretations fit with the quip ascribed to a European political leader that runs “we all know what needs to be done with structural reforms, what we don’t know is how to get reelected after we do them”. A potent example of this problem is given by the reactions to French Prime Minister Dominique de Villepin’s proposals for labor market reform in 2006.

Labor unions and students staged national strikes in March 2006 with participation in demonstrations estimated at between 400,000 and one million and strikes or disruptions at almost half of France's universities. These reactions in turn led to substantial conflict within the government.¹⁸ In the end the government caved in and abandoned the reform proposal.

While there appears to have been some increase in labor mobility within the euro area, there are also mounting concerns about immigration that suggest strong limitations on effective cross-country mobility of workers. There is, of course, higher mobility among some types of professionals, but this would seem far from sufficient to meet the labor mobility criteria for an OCA.

Most endogenous OCA analysis is silent about the time horizons over which endogenous reforms should be expected to be undertaken, so it is still possible that eventually substantial labor market reforms may be implemented. The experience to date, however, suggests that major recessions would likely be required to force such reforms. The OECD (2007) finds that "Deep economic downturns are typically associated with increased intensity of reform ..." but go on to note that "this empirical regularity is of little help to policy makers, insofar as experiencing a major crisis is hardly a productive way to promote structural reform" (p.171). The power of anticipatory effects that would avoid such recessions so far appears to be weak.

Our point is not to argue that regime shifts cannot sometimes stimulate substantial changes in wage and price behavior. As De Grauwe and Mongelli (2005) argue, there has been on average a substantial increase in wage and price discipline in Europe as compared with the 1970s. As they also note, however, much of this had been accomplished before the launch of the euro. We likewise have considerable evidence from other countries, especially in Latin America,

¹⁸ See "French ministers at odds over reforms" *Financial Times*, March 10, 2006, p.2.

that shifting to low inflation policy regimes can over time substantially affect private sector expectation and responses. But the evidence also suggests that such endogenous responses can be induced through domestic policy shifts such as central bank independence and inflation targeting as well as exchange rate anchors. That is why the pass through from exchange rate changes to domestic wages and prices has dropped so substantially in a number of Latin American countries. Such dramatic changes, however, may not give a very good indication of how much flexibility can be induced within currency areas in response to non-monetary shocks.

Real exchange rate changes within the euro-area can be seen as indicators of the need for structural adjustment to induce greater flexibility. Lachman (2007) notes that the behavior of real exchange rates within the euro zone indicate a need for reform. Traditional OCA analysis views exchange rate changes as substitutes for wage flexibility and labor mobility. According to this view, large and persistent changes in real exchange rates in terms of unit labor costs indicate that there is a need for exchange rate changes as a result of insufficient flexibility in labor markets.¹⁹ Real exchange rate changes can also occur for other reasons, however.

The pattern of real exchange rate changes in the euro-area is determined by inflation differentials across EMU-members. Because of Balassa-Samuelson considerations a country with high productivity growth would have higher inflation without a loss in competitiveness in equilibrium. On the other hand, wages increases above productivity increases could yield disequilibrium inflation that leads to a loss of competitiveness. From just looking at overall inflation rates these two types of inflation cannot be distinguished. More disaggregate analysis

¹⁹ Of course, some question the extent to which exchange rate flexibility is a good substitute for wage and price flexibility, in part because of the possibility that flexible rates may be a source of shocks as well as an adjustment mechanism. Even strong advocates of using exchange rate adjustments generally see them as only as a second best partial substitute for wage and price flexibility, On the limitations of flexible rates in promoting adjustment see Chinn and Wei (2009).

suggests that there has been substantial internal disequilibria within the euro zone, not just Balassa-Samuelson inflation differentials.

Both producer prices and unit labor costs have diverged substantially among EMU members since 1999. Andrén and Oxelheim (2006) show, for example, that the ratio of producer prices in Portugal to those in France has increased more than 30 percent since 1999. Over the same period on some measures there has been about a 15-percentage point divergence in competitiveness between Italy and Germany.

The Euro@10 report notes that the maximum competitiveness gain, 15 percent, has been experienced by Germany while the maximum loss, 15 percent, was experienced by Spain and Ireland. Other countries experiencing substantial losses were Greece, Italy, Portugal and the Netherlands. The report also notes that a striking feature of gains and losses has been their persistence. Whether a loss in competitiveness in a country represents a need for labor market reform depends on the starting point and the cause of the loss. For example, Ireland may have entered the euro area at a high real exchange rate. If so the real exchange rate change represents an adjustment towards a sustainable rate. Various shocks may also cause changes in equilibrium real exchange rates. On the other hand, the losses of competitiveness experienced by Portugal, Greece and Italy appear likely to be indicators of serious deficiencies in their adjustment mechanisms. To date there has been little evidence of strong internal adjustment mechanisms operating to reduce imbalances within the euro zone (See Wihlborg, Willett, and Zhang (2009)). As Marsh (2009) comments, “The danger for the euro’s next decade is that necessary structural changes in uncompetitive industries will be faced by rising unemployment.” (p. 253)

The overall experience on labor market and structural reforms in the euro area is well captured in the following quote from the former Dutch central banker, Andre Szasz, who helped

negotiate the Maastricht Treaty. Interviewed with respect to the June 2008 celebration of the tenth anniversary of the creation of the euro, he stated, “We always knew that a one-size-fits-all would cause problems. What we hoped for was flexible non-monetary policies [such as labor market liberalization]. With the benefit of hindsight, this was not a realistic expectation”²⁰

5. Concluding Remarks

The euro has proved neither to be the disaster that the strongest critics predicted nor the rose garden envisioned by some of its strongest supporters. One theme that runs through our look at the early years of economic performance under the euro is that we must be careful about drawing lessons from simple before and after comparisons. Eichengreen (2008) emphasizes how any evaluation of the EU and the EMU experiences depends on the choice of the counter-factual. It is not always easy to distinguish between the effects of EU wide initiatives and the effects of the euro itself.²¹ Similarly, effects of policy regime shifts within the EMU are not easily separated from currency union effects. In considering developments in international trade and macroeconomic performance a look at the experiences of some of the other European countries suggests that developments for the euro countries may have been heavily influenced by broader trends, not just the creation of the euro. Thus, for example, while the introduction of the common currency has been accompanied by a rapid growth of trade among members, trade has also grown rapidly between members and non-members. Likewise, while the correlations of growth rates among euro countries rose substantially after the creation of the euro, the correlations of the

²⁰ Quoted in NYT “An impossible Dream, the Euro finds its way” June 3, 2008, c3.

²¹ This is also emphasized by Coeure(2004).

non-euro European countries with the euro countries rose even more, so clearly something besides just the creation of the euro was going on.

Another important research need is for more theoretical analysis of the expected time horizons for different types of endogenous effects. For example, both Frankel and Rose (1998) and the UK Treasury have suggested that the full trade effects of currency unions may take decades, but we are not aware of any theoretical work that has directly addressed this issue. There has been little attention to the time frame over which endogenous responses in labor market flexibility and macro policy coordination should be expected. One set of reasoning, based on capitalizing on the political momentum of the creation of the euro, would suggest that such effects should begin to appear rather quickly.

In optimistic scenarios, forward-looking individuals foresee the changes in circumstances and undertake actions to ward off crises before they occur. There does appear to have been a good deal of such anticipatory action in the run up to the creation of the euro, but since then there have been disturbing signs of reform fatigue. Marsh (2009), for example, notes the “slackening of economic reforms in EMU members like Italy, Portugal, and Greece, which had earlier been spurred into necessary adjustment either by the need to qualify for EMU, or by periodic foreign exchange crises.” (p. 9)

This suggests that in future efforts at currency unification the focus should be placed on entry conditions more than on hopes on subsequent reforms after entry. If failure to reform sufficiently leads to major crises, this may provide a second, albeit less attractive, route to reform. The political economy literature stresses that it often requires major crises to prompt major reform efforts. Unfortunately the developments in the euro zone to date do not rule out the possibility that major crises may be needed to stimulate the types of reforms envisioned by

endogenous OCA optimists. The Financial Times writes “The problem in Italy, from Frankfurt’s perspective, is that the ‘pain threshold’ that would prompt real change has apparently still not been reached in Italy” (3-21-06, p.4). Of course, crises can also stimulate populist backlashes and increased government interventions that reduce efficiency. It is too early yet to tell how the current global financial crisis will affect the internal adjustment mechanisms of the euro but the initial signs are not encouraging. The New York Times reports that "Leaders who once spoke optimistically of fundamental changes aimed at enhancing productivity have turned to the more prosaic tasks of protecting jobs and avoiding painful political choices" (Schwartz and Saltmarsh (2009)). This reminds us that in the short run efforts to protect jobs may lead to less rather than more flexibility in the economy.

Given the relevance of political economy considerations, there is no good reason to expect that endogenous responses or spillovers would follow the same pattern in all countries. Certainly there have been substantial differences in some of the endogenous responses to the euro across member countries so far. It will be highly useful if future economics and political economy research can help lead to better understanding of the major causes of these differences. Size suggests itself as one explanatory variable (see the discussion in OECD 2007), and initial institutions structures and political configuration as others. The strength of status quo biases is likely to vary substantially across both policy areas and countries. As De Grauwe and Mongelli suggest, historical and cultural considerations may also be important. Particularly intriguing is the question they raise of whether different motivations for monetary union would be likely to affect the endogeneities generated. In approaching such issues we see considerable scope for

cross-fertilization between the literature on endogenous OCA analysis and the rich, if diffuse, literature on spillovers in the neofunctionalist literature on regional integration²².

²² For recent discussion of this latter literature, see the analysis and references in Sandholtz and Sweet (1998), and Srisorn, and Willett (2009).

References

- Alesina, A. and Giavazzi, F. (2006) *The Future of Europe: Reform or Decline?* (Cambridge: MIT press).
- Altavilla, C. (2004) "Do EMU Members Share the Same Business Cycle?" *Journal of Common Market Studies*, Vol. 42, No. 5, pp. 869-96.
- Andersen, T. M. and Spange, M. (2002) 'International Interdependencies in Fiscal Stabilization Policies'. C.E.P.R. Discussion paper No. 3580.
- Andrén, N. and Oxelherm, L. (2006) 'Exchange Rate and Interest-Rate Driven Competitive Advantages in the EMU'. The Research Institute of Industrial Economics working paper No. 576.
- Andrews, D. M. and Willett, T. (1997) 'Financial Interdependence And the State: International Monetary Relations at Century's End'. *International Organization*, Vol.51, No.3, pp. 479-551.
- Apanard, A., O. Permpoon, and C. Wihlborg (2009). 'The Impact of EMU, Exchange Rate and Monetary Regimes on Trade Flows.' May.
- Artis, M. (2003) 'Reflections on the Optimal Currency Area (OCA) Criteria in the Light of EMU'. *International Journal of Finance & Economics*, Vol.8, No.4, pp. 297-307.
- Asdrubali, P., Sørensen, B., and Yosha, O. (1996) 'Channels of Interstate Risk Sharing: United States 1963-1990'. *Quarterly Journal of Economics*, Vol.111, No. 4, pp. 1081-1110.
- Baldwin, R. B. (2006) 'The Euro's Trade Effects'. European Central Bank working paper, No. 594.
- Bernanke, B. S. (2005) 'The Euro at Five: An Assessment'. In Posen, A. S. (ed) *The Euro at Five: Ready for a Global Role?* (Washington, DC: Institute for International Economics).
- Bird, G. and T.D. Willett (2009) 'The Political Economy of Delayed Devaluation.' World Economics.
- Cappiello, L., Hördahl, P., Kadareja, A. and Manganelli, S. (2006) 'The Impact of the Euro on Financial Markets'. European Central Bank working paper No. 598.

- Chinn, M. and S. J. Wei. (2009). 'A Faith-based Initiative Meets the Evidence: Does a Flexible Exchange Rate Regime Really Facilitate Current Account Adjustment?' NBER Discussion Paper.
- Clark, W. (2003) *Capitalism Not Globalism* (University of Michigan Press).
- Cohen, D. and Follette, G. (1999) 'The Automatic Fiscal Stabilizers: Quietly Doing Their Thing' Board of Governors of the Federal Reserve System (US).
- Corsetti, G. and Pesenti, P. (2001) 'Self-Validating Optimum Currency Areas'. Paper for 5th Annual International Economic Conference, October 11-12, 2002, University of California, Santa Cruz.
- Coere, B. (2004). The Narrow Road to the Single Asian Currency: Lessons from Optimal Currency Areas and the Euro. In De Brouwer, G. and Kawai M. (eds), *Exchange Rate Regimes in East Asia*, Routledge, London.
- Crowley, P. (2006) 'Do the Comovements of Business Cycles in the EU Suggest an OCA? Evaluation using Model-based Cluster Analysis'. Paper prepared for workshop on Whither EU Integration and Cooperation, Wilfred Laurier University, April 28, 2006.
- De Haan, J., Inklaar, R. and Jong-a-Pin, R. (2005) "Will Business Cycles in the Euro Area Converge? A critical Survey of Empirical Research" CCSO Working Paper 2005/08.
- De Grauwe, P. and Mongelli, F. P. (2005) 'Endogeneities of Optimum Currency Areas: What Brings Countries Sharing a Single Currency Closer Together?'. European Central Bank working paper No.468.
- De Grauwe, P. (2006) 'On Monetary and Political Union'. Paper for the conference on Perspectives on Monetary, Financial, and Economic Integration at Kelley School of Business, Indiana on April 7 and 8, 2006.
- Dermine, J. (2003) 'The New World of Euro Banking'. In Mullineux, A.W. and Murinde, V. (Eds) *Handbook of International Banking* (Cheltenham, U.K. and Northampton: Edward Elgar).

- Dominguez, Kathryn M. E. (2006) 'The European Central Bank, the Euro and Global Financial Markets'. National Bureau of Economic Research.
- Duval, R. and Elmeskov, J. (2006) 'The Effects of EMU on Structural Reforms in Labour and Product Markets'. European Central Bank working paper, No. 596.
- Eichengreen, B. (2002) 'When to Dollarize'. *Journal of Money, Credit and Banking*, Vol.34, No.1 (Feb.), pp.1-24.
- Eichengreen, B. and A. Boltho (2008), "The Economic Impact of European Integration", CEPR Discussion Paper No. 6820.
- Eiling, E., B. Gerard and F. de Roon (2005) 'International Diversification in the Euro Zone: The Increasing Riskiness of Industry Portfolios' mimeo, Tilburg University, dept of Finance.
- European Commission (2008), EMU@10: Successes and Challenges after 10 Years of Economic and Monetary Union", Directorate General for Economic and Financial Affairs, Brussels
- Faruqee, H. (2004) 'Measuring the Trade Effect'. IMF Working Paper WP/04/154.
- Flood, R.P. and A.K. Rose (2009) 'Inflation Targeting and Business Cycle Synchronization.' UCSC Conference. Preliminary and Incomplete.
- Forbes, K. J. (2005) 'Financial Market Integration, the Euro, and the Role of Growth'. In Posen, A. S. (ed) *The Euro at Five: Ready for a Global Role?* (Washington, DC: Institute for International Economics).
- Frankel, J. and Rose, A. (1998) 'The Endogeneity of Optimum Currency Area Criteria'. *The Economic Journal*, Vol.108, No.449, pp. 1009-1025.
- Frieden, J., P. Ghezzi, and E. Stein (2001) 'Politics and Exchange Rates: A Cross Country Approach' in Frieden and Stein (eds), *Politics and Exchange Rates: A Cross Country Approach to Latin America*. Johns Hopkins Press, Baltimore.
- Gaspar, V. and Philipp H. (2005) 'The Euro and Money Markets: Lessons for European Financial Integration'. In Posen, A. S. (ed) *The Euro at Five: Ready for a Global Role?* (Washington, DC: Institute for International Economics).

- Giannone, D. and Reichlin, L. (2006) 'Trends and Cycles in the Euro Area: How Much Heterogeneity and Should We Worry About It?'. European Central Bank working paper No. 595.
- Glick, R. and C. Wihlborg (1985) 'Price and Output Adjustment, Inventory Flexibility, and Cost and Demand Disturbances.' *The Canadian Journal of Economics / Revue canadienne d'Economique*, Vol. 18, No. 3 (Aug., 1985), pp. 566-573.
- Glick, R. and C. Wihlborg (1997), "Exchange Rate Regimes and International Trade" in Cohen, B.(ed), International Trade and Finance, Essays in Honor of Peter Kenen, Cambridge Univ. Press, 1997**
- Goodhart, C. (1995) 'The Political Economy of Monetary Union'. In Kenen, P. B. (ed) *Understanding Interdependence: The Macroeconomics of the Open Economy* (Princeton: Princeton University Press).
- Hairault, J., Henin, P. and Portier, F. (1997) *Business cycles and macroeconomic stability: Should we rebuild built-in stabilizers?* (Kluwer Academic Publisher).
- Hallerberg, M., Rolf, S. and von Hagen, J. (2004) 'The Design of Fiscal Rules and Forms of Governance in European Union Countries' European Central Bank working paper No. 419.
- Hallerberg, M. (2004) *Domestic Budgets in a United Europe: Fiscal Governance From the End of Bretton Woods to EMU* (Cornell University Press).
- HM Treasury (2003) 'UK Membership in the Single Currency: An Assessment of the Five Tests'. Available at: <<[http:// www.hm-treasury.gov.uk](http://www.hm-treasury.gov.uk)>>.
- Høj, J., Galasso, V., Nicoletti, G. and Dang, T. (2006) 'The Political Economy of Structural Reform: Empirical Evidence from OECD Countries'. OECD Economics Department Working Papers No.501.
- Lachman, D. (2007) 'The Real Reform Needed to Secure the Euro's Future'. *Financial Times*, 1 March 1, pp.13.

- Lee, J. and Shin, K. (2004), 'Exchange Rate Regimes and Economic Linkages'. Unpublished paper.
- Marinheiro, C. F. (2003) 'Output Smoothing in EMU and OECD: Can We Forego Government Contribution? A Risk Sharing Approaches'. CESifo working paper No. 1051.
- Marsh, D. (2009) 'The Euro: The Politics of the New Global Currency.' Yale University Press.
- Martin, P., Westbrook, J. R. and Willett, T. (1999) 'Exchange Rate Based Stabilization Policy in Latin America'. In *Exchange-rate policies for emerging market economies*, (Westview Press) pp. 141-63.
- Micco, A., Stein, E. and Ordoñez, G. (2003) 'Trade effect'. *Economic Policy*, Vol.18, No. 37, pp.319-356.
- Minford, P. (2006) 'Measuring the Economic Costs and Benefits of the EU'. Paper for the conference on Perspectives on Monetary, Financial, and Economic Integration at Kelley School of Business, Indiana on April 7 and 8, 2006.
- Mongelli, F. P. and Vega, J. L. (2006) 'What Effects is EMU Having on the Euro Area and Its Member Countries?'. European Central Bank working paper No. 599.
- Mongelli, F. P. (2002) 'New" views on the optimum currency area theory: What is EMU telling us?'. European Central Bank working paper No.138.
- Montoya, L.A. and de Haan, J. (2007) 'Regional Business Cycle Synchronization in Europe?'. Bruges European Economic Research Papers No.11.
- OECD (2007) *Going for Growth 2007* (OECD Publishing).
- Persson, T. (2001) "Currency Unions and Trade" *Economic Policy*, vol.16, no. 33, pp. 433 – 448.
- Rose, A., Lockwood, B. and Quah, D. (2000) 'One Money, One Market: The Effect of Common Currencies on Trade'. *Economic Policy*, vol. 15, no. 30 (April), pp. 7-45.
- Sandholtz, W. and A.S. Sweet (1998) 'European Integration and Surpanational Governance.' Oxford University Press.
- Schwartz,N. and M. Saltmarsh (2009) 'Crisis Leaves Europe in Slow Lane' New York Times September 10, pB1.

- Srisorn, N. and T. Willett (2009). 'Neofunctionalist Spillover Theory and Endogenous OCA Analysis: Lessons from Europe for Asia.' Prepared for the EUSA International Conference. April 23-25, 2009.
- Tavlas, G., S. (1994) 'Theory of Monetary Integration' *Open Economies Review*, Vol. 5, No. 2, pp. 211-230.
- Tower, E. and Willett, T. (1976) 'The theory of Optimum Currency Areas and Exchange Rate Flexibility'. Princeton Studies in International Economics.
- Walter, I. (2004) 'The Future (Near and Far) of Regional Science'. *Journal of the Regional Science Association International*, Vol. 83, No. 1, pp. 387-400.
- Westbrook, J. R. and Willett, T. (1999) 'Exchange rates as nominal anchors: An overview of the issues'. In *Exchange-rate policies for emerging market economies* (Westview Press) pp. 83-112.
- Wihlborg, C., T. Willett, and N. Zhang (2009) Real Exchange Rate Movements and Endogenous OCA Analysis: Lessons from the Euro Area for Asia. Prepared for the EUSA International Conference. April 23-25, 2009.
- Willett, T. D. (2002) 'Crying for Argentina'. *The Milken Institute Review*, Vol. 4, No. 2, pp.50-59.
- _____, O. Permpoon, and L. Srisorn. (2008) "Asian Monetary Cooperation: Perspectives from the European Experience and Optimum Currency Area Analysis." Paper presented at the Symposium on Asian Economic Integration, Singapore. *Singapore Economic Review*, forthcoming.