

Currency unions: key variables, definitions, measurement, and statistical improvement

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“The achievement of macroeconomic stability and convergence in key macroeconomic aggregates is a necessary condition for the evolution of a monetary union.”

(Association of African Central Banks–2002)

Summary

This paper reviews issues related to the creation of currency unions with less than strong macroeconomic convergence between member countries. The issues have a number of statistical implications.

Strong convergence among economies was a precondition to join the European Monetary Union (EMU; Euro area), but it has recently been questioned whether currency unions can be formed with looser convergence. These questions reflect research showing that convergence between economies appears to be faster between currency union countries than nonmember countries, as well as pressures in planned unions in Africa to create new unions and benefit from them without a long wait for strict convergence.

In such situations, it is particularly important that statistical programs and infrastructure provide unbiased and timely signals of convergence or divergence. This provides a strong rationale for the early development of statistical systems in the union building process. This will include promoting the introduction of common statistical and accounting standards among potential union countries, and building an effective union-level statistical program. The General Data Dissemination System (GDDS) and the Special Data Dissemination Standard (SDDS) – with minor customization to union conditions – may provide a central role in this regard.

Convergence and divergence

This paper notes that currency unions may be created with less than strong macroeconomic convergence between member countries. The concept of convergence in currency unions is driven by conclusions of the Theory of Optimum Currency Areas (OCA)² that economies that

¹ Statistics Department, International Monetary Fund. The views expressed in this paper are those of the authors and should not be attributed to the International Monetary Fund, its Executive Board, or its Management.

² The inaugural paper that inspired a huge literature was Mundell, R. (1961) “A Theory of Optimum Currency Areas” American Economic Review. Vol 51. pp. 657–665. OCA has dominated thinking about currency unions ever since. It played an important role in devising procedures for selecting members of the European Monetary Union, and it continues to be used to analyze whether a group of countries should create an union. However, the OCA theory has not been static but has been modified by many contributions over the years to

are more convergent have greater benefits in being in a currency union and better odds of success. Convergence can be defined either in terms of countries having similar economic behavior, such as nearly equal rates of inflation and economic growth, or in absolute terms, such as all countries achieving a low rate of inflation, such as 2 percent per year. Forming unions with less convergence is more difficult than otherwise, but may be feasible. Enhancing statistical capacity may be particularly important in these circumstances. The General Data Dissemination System (GDDS) and Special Data Dissemination Standard (SDDS) – with minor customization to union conditions – could be particularly useful in these circumstances.

The contemporary model for forming currency unions is the European Monetary Union (EMU). Membership in the EMU requires that countries comply with a set of strictly defined convergence criteria. Other unions have emulated this model, adopting the view that convergence is necessary to form the union and creating convergence criteria similar to those in the EMU.

The rationale behind the Euro area convergence criteria seems to be that absolute convergence is needed in addition to relative convergence. Eva Srejber³ summarizes this view;

“Criteria could be described as an absolute as well as a relative measure of macroeconomic health. Absolute, since no economy benefits from, for instance, an excessive fiscal deficit or a high rate of inflation. Relative, since differences between member countries should not be too large. Of course, a common monetary policy would be made much more difficult if inflation rates were to diverge substantially already at the outset.”⁴

In Europe, the concept of convergence is built into specific statistical indicators called “convergence criteria” [see Table 1, below] that are obligatory for all countries seeking to join the Euro area or who are already members. Overall, the criteria are quite strict, requiring countries to demonstrate that their economic conditions will not destabilize the monetary union if they become members. The strict criteria also mean that conditions in all union member countries will be similar in practice so that a single monetary or exchange rate policy should be effective throughout the union and unlikely to be destabilizing on specific economies. This is seen as contributing to good policy development and effective policy implementation.

the point where its advice today may differ widely from the past. The evolution of the OCA theory is summarized by Mongelli, who identifies five phases in the development of the theory. Mongelli, F.P. “*New Views on the Optimum Currency Area Theory: What is the EMU telling us?*” ECB Working Paper No. 138. April 2002.

³ Srejber, E. “Frameworks and stabilisation policy in a monetary union” Speech at Bank of Uganda, Kampala, 17 August 2006. p. 3.

⁴ However, she also describes how local conditions can affect the degree of absolute convergence needed. She states with regards to the situation for the planned EAC currency union, “In this respect, the development among the EAC countries is very promising, as is the harmonization of statistical practices. However, given a significantly higher potential growth rate compared to the Euro area, fiscal deficits can be correspondingly larger with the debt to GDP ratio increasing.”

Table 1

Euro area convergence criteria

Rate of Inflation: No more than 1.5 percentage points higher than average of the 3 best-performing *European Union* member states.

Government deficit: The ratio of the annual government deficit to GDP must not exceed 3 percent at the end of the preceding fiscal year.

Government debt: The ratio of gross government debt to GDP must not exceed 60 percent at the end of the preceding fiscal year.

Long-term interest rates: The nominal long-term interest rate must not be more than 2 percent higher than the average rate in the three best-performing member states (based on inflation).

Exchange rate: Applicant countries should have joined the Exchange Rate Mechanism of the European Monetary System (EMS) for two consecutive years without a devaluation during the period.

For example, one high visibility convergence criterion is the 3 percent cap on the ratio of the general government deficit to GDP, which is backed up by a framework that can apply large penalties for continuing violations. Another criterion particularly relevant for applicants to join the union is the cap on the permissible rate of inflation – Lithuania was rejected for membership in 2007 because its inflation rate was 0.1 percent higher than the criterion permitted, even though its rate was lower than in numerous EMU member countries. These are strict limits that result in countries taking specific policy actions to bring their economies in line with the criteria.

A relevant question is whether future currency unions need to adopt similarly tight convergence criteria for their unions. Planned unions elsewhere have adopted convergence criteria similar to those in Europe and formally intend to converge like in Europe. However, for unions in Africa, for example, the ability of small, poor countries to meet strict criteria may be limited. Long delays may be experienced before countries meet strict criteria and a union can be formed. The delay may impose high costs and indeed may make the process unfeasible. During the wait to create a union, the countries will not be able to experience advantages of a union, such as lower financial transactions costs, more stable monetary conditions, greater exchange rate stability, better price signals, and financial market integration, etc. Such foregone economic opportunities and political pressures may make countries eager to pursue currency unions before tight convergence criteria are met.

The situation in future unions could even be circular – without the advantages that exist in currency unions of financial stability, larger efficient markets, and integrated markets, individual countries might have great difficulty in meeting the convergence criteria to enter a union where large, efficient, and integrated markets exist.

Because the European convergence criteria have legal force and are used for important purposes such as admission to the monetary union or sanctioning member countries that fail to meet the criteria, strong emphasis is placed on the quality, unbiasedness, and cross-country comparability of the statistics used to compile the indicators.⁵ Formal, union-wide

⁵ Statistical issues related to the criteria that were used in the EMU included:

The level of inflation: measured via the consumer price index. A common index was developed to accurately represent inflation within all candidate countries and in the entire Union.

The level of interest rates: short- and long-term rates on government securities or other sets of securities chosen to be comparable and descriptive of the interest rates prevailing in all countries. The methodology developed should consider the subsequent need to monitor single-currency-area interest rates.

statistical standards aligned with international statistical reporting requirements are needed. The statistics must be transparent and suitable for a wide range of analyses and public purposes. The statistics also provide the basis for regular official “convergence reports” that either certify countries are ready for membership in the union or monitor whether countries are following balanced macroeconomic paths.⁶

Table 2

Currency unions under construction

Gulf Cooperation Council (GCC): consists of six Arab countries along the Arabian Gulf comprising Saudi Arabia and smaller countries along the coast – Kuwait, Bahrain, Qatar, the United Arab Emirates, and Oman. However, at this point Oman and the UAE have announced they do not plan on joining the union. The GCC just established a Monetary Council in Riyadh to organize preparations for a union. The GCC countries have pegged their currencies to the U.S. dollar as a step toward creating the union.

African Community (EAC): Five countries in East Africa actively working to build a currency union (Tanzania, Uganda, Kenya, Rwanda, and Burundi).

Southern African Development Community (SADC): This group is working to create a currency union by 2016. It has as its core the Common Monetary Area (CMA), which is a group of countries with currencies linked to the South African Rand – Lesotho, Swaziland, and Namibia (informally). The SADC union will absorb the CMA and may ultimately include about 15 countries (CMA plus Angola, Botswana, Democratic Republic of Congo, Madagascar, Malawi, Mauritius, Mozambique, Seychelles, Tanzania, Zambia, and Zimbabwe).

West African Monetary Zone (WAMZ): Five mainly Anglophone countries in West Africa now accelerating their push for a currency union (Gambia, Ghana, Guinea, Nigeria, and Sierra Leone). They have not yet established pegs to each other. Consideration is being given to setting up a virtual currency similar to the ECU, called the ECO, that would allow the national currencies to adjust to a common value.

ECOWAS (Economic Organization of West African States): This is a West African regional organization that encompasses both the WAMZ and WAEMU (West African Economic and Monetary Union, an existing currency union of mostly francophone countries) and regions, and is considering merging the regions into a single currency union.

Relevance of loose convergence

The issue of loose convergence is an immediate concern in at least two regions, affecting over four dozen countries, as described below.

The stock of government debt: in absolute value and as a percentage of GDP, which was calculated in a comparable way by all countries.

The evolution of public spending: in this case, definitional issues proved particularly tricky in the European case and led to long technical discussions and even to disputes.

⁶ Because the convergence criteria chosen will focus on priority macroeconomic statistics for the new union, the criteria should monitor the individual economies as well as the union as a whole.

Proposed African currency unions

The issue of whether it is feasible to create a currency union in a loose convergence situation is highly relevant for the proposed unions in Africa. Many of the economies involved face severe challenges in overcoming poverty, recovering from conflict situations, building market institutions, overcoming constraints of small size or isolation, and overcoming poor policy stances of the past. Some have large fiscal deficits and are battling against inflation. All this was before feeling the effects of the current crisis. Much progress has been made in many of these countries and they are on a path toward convergence with more sustainable economic and financial footings. They find themselves some distance from meeting strictly determined convergence criteria and still show differences from each other, but the point has been reached where it is possible to ask whether convergence is sufficient to create a union based, for example, on indicators such as single digit inflation or 5 percent ratio of deficit to GDP.

In some cases, loose convergence or even divergence might be built into the union. For example, the potential West African Monetary Zone must deal with the situation that Nigeria is a large oil exporting country, but the other countries are oil importers, including from Nigeria. This complicates union monetary and exchange policy development, but also creates a possibility of the union taking special steps to deal with the issue, such as providing fiscal transfers between countries. Such situations will be particular to each union and will need to be analyzed based on the facts and policies in each case.

One issue in many of the proposed unions, as indeed it was in the EMU, is asymmetries in the size and strength of individual union members. Nigeria, Saudi Arabia, and South Africa stand out in their respective regions. The success of establishing a union, especially one with limited convergence, may depend on the extent that the largest members may be willing to support smaller or weaker members until greater convergence can be achieved.

Euro area candidate countries

Another situation where loose convergence could occur deals with the candidate countries to join the Euro area. The financial crisis has caused tremendous economic upheaval in EU countries in Eastern Europe, and it has been suggested that they could benefit from early membership in the Euro area to help them ameliorate some of the problems caused by the crisis.

- Piatkowski and Rybinski argue for all candidate countries to adopt the Euro by 2012. It would provide economic stability to the new members and would convey an important message of solidarity. They point out that the financial crisis has created a situation where deficits and the debt ratios in candidate countries are lower than in the Euro area and inflation only marginally higher – in other words, the economies are largely convergent with the Euro area, but they are not yet fully aligned with the formal convergence criteria, and in some cases have lost ground against the formal criteria.⁷
- Willem Buiters argued as early as 2007 that the case for rapid entry of candidate countries is “overwhelming”. In the face of what he refers to as obtuseness and arrogance by the ECB and the European Commission and their unwillingness to

⁷ Marcin Piatkowski and Krzysztof Rybinski. “Let us roll out the Euro to the whole Union” *Financial Times*. June 11, 2009. Also see Stefan Wagstyl “IMF warns of strains exerted on east Europe” FT.com April 5, 2009.

bend on the convergence criteria, he argues that the candidates should make the Euro and the national currencies joint legal tenders.⁸

- *The Economist* reviewed the advantages and disadvantages of fast-track entry of the candidate countries into the Euro area. It also asked whether accelerated entry of the candidate countries would hurt the Euro, and implies that the answer is not clear.⁹

The currency and interest rate stability provided by being in the Euro area would lessen the number of problems that need to be dealt with. The recent financial crisis has caused some of the countries to move away from various convergence criteria for Euro area entry, thus delaying their formal entry – for example, the post-crisis levels of government debt to GDP due to crisis-rescue efforts could cause countries to exceed the 60 percent convergence criterion ceiling for the next half decade or more. If candidate countries are permitted to join prior to fulfilling the standard monetary union convergence criteria, a *de facto* loose convergence situation would result. However, it must be emphasized that this option has been rejected by the ECB and thus it is only hypothetical.¹⁰

Endogeneity

Endogeneity is the concept that countries within a union will converge economically and become more like an Optimum Currency Area (OCA)¹¹ and thus be better served by a single monetary and exchange policy. This convergence might be expressed in multiple ways – trade expansion between union countries, production processes spread through the union, sharing of economic risks due to cross investment between countries, integration of financial markets and the opening of capital markets to promote efficient and productive investment. Kenen also mentions the effects “of a full-fledged monetary union on capital markets and capital movements and ... the impact on the ability of households and others to self-insure against various shocks by holding internationally diversified portfolios”.¹²

⁸ Willem Buiter. “Euroisation while playing by the rules: a proposal for the Euro as joint legal tender for EMU candidates” October 4, 2007. <http://maverecon.blogspot.com/search/label/European%20Union>.

⁹ *The Economist*. “Fear of Floating” June 11, 2009. The article quotes Buiter to the effect that inflation convergence is best achieved after membership, also that floating exchange rates are dangerous and that the most important thing is to get into the union and remove the threat of currency crisis.

¹⁰ The President of the ECB, Jean-Claude Trichet has stated, “The adoption of the Euro cannot be a substitute for the need of domestic policy adjustment. This would go against the economic logic which underlies the convergence process in Europe. And it is important to bear in mind that the premature adoption of the Euro can make it more difficult for a country to cope with the challenges ahead. Without sustainable convergence, the monetary policy stance of the ECB would be inappropriate for the country concerned. In this case, the country in question could face the risk of excessive output and inflation volatility, as it would lack important tools to stabilize economic conditions at home. Thus, Euro adoption cannot take place until major imbalances in the country have been eliminated and provided appropriate sustainable convergence has been achieved as required by the Treaty.” Jean-Claude Trichet: Hearing before the Economic and Monetary Affairs Committee of the European Parliament. Introductory remarks by Mr Jean-Claude Trichet, President of the European Central Bank, Brussels, March 30, 2009.

¹¹ The OCA theory has examined conditions in which countries could benefit from ceding their monetary and exchange policy independence by irrevocably linking their currency to another currency, and by extension joining into a monetary union.

¹² Kenen, P. “What can we learn from the Theory of Optimal Currency Areas” in HM Treasury. *Submissions on EMU from leading academics*. 2002.

Probably the best known study of the endogeneity effect is by Rose,¹³ who showed that trade growth between country pairs within unions was twice as strong as between non union pairs of countries. Others have found similar effects. Kenen concludes that “one must attach great weight to this trade-promoting effect when weighing the overall benefits and costs of a monetary union. It says that a currency union permits its member countries to realize more fully the welfare-raising gains from trade, and it should also promote growth. Furthermore, it has strong implications for the functioning of a monetary union.”¹⁴

However, the endogeneity view may heavily reflect evidence from Europe where the EU strongly promoted integration of the European economies; that is, convergence was a policy goal in Europe supported by a wide range of actions. It is possible that convergence is not an inevitable consequence of being in a union, nor would it necessarily be the case that additional convergence follows once some threshold of convergence is crossed. This argument is unresolved, but for future unions, the lesson may be that in order to gain advantages of a union continuing work towards convergence will be needed even after the union is formed.¹⁵

Loose convergence

Much of the discussion about the OCA leads to the important issue of what degree of convergence is needed to support union development? Several proposed unions are concerned whether a union can be formed first without achieving strict convergence between the potential members such as was done in Europe. Can a union be formed if countries are progressing toward convergence, and then complete the convergence process once the union is formed? Similarly, when are conditions suitable to establish an ECU-type¹⁶ system in which countries fix their bilateral exchange rates? Is convergence sufficient, or must countries first converge toward highly favorable levels (very low inflation, very low debt ratios, etc.) to succeed in forming a union?¹⁷

These questions are critical for regions considering creating currency unions. Long delays might result if strict convergence criteria such as used in Europe were required, and unions may never actually be achieved. Nevertheless, the general sense of the OCA theory would be that a high degree of convergence is clearly desirable. For example, national inflation differentials imply that member countries’ real exchange rates will change against each other affecting their relative competitiveness – conditions that could destabilize the union.

¹³ Rose, A. “One Money, One Market: The Effects of Common Currencies on Trade”, *Economic Policy* 30. (2000).

¹⁴ Ibid; p. 154.

¹⁵ The states in the United States show divergent performance over many years, but the effects are mitigated by substantial fiscal transfers.

¹⁶ The European Currency Unit (ECU) was the precursor to the Euro. It was a currency unit constructed as a weighted average of participating currencies (called the “central rate”), in which the individual currencies were not permitted to diverge from a tight band around the central rate. The system permitted some flexibility but the currencies were roughly linked to each other.

¹⁷ For example, can a union be effectively formed if all countries have the same inflation rates, but at a high level; for example, around 10 percent? Does the union need to wait until inflation is subdued (under 3 percent) in all countries?

Reasons to avoid loose convergence

Reprising some of the points made earlier, there appear to be many reasons why loose convergence may not be suitable. Possible offsetting factors are discussed in the next section.

- *Inflation differentials.* Real equilibrium exchange rates may diverge, changing relative competitiveness in the union and creating balance of payments problems and differences in economic activity. National interest rates will carry different inflation premia, which may distort investment flows between member countries.
- *Growth differentials.* Economies growing rapidly may need to be cooled down, but other economies may need stimulation. It may be impossible to find a monetary policy that benefits diverging economies, or does not damage one of the economies. Also, if union countries have the same marginal propensity to import, rapidly growing economies will incur current-account deficits with other union countries, which can be potentially destabilizing. Conversely, if member countries have different marginal propensities to import, a common growth rate will result in different balance of payments effects.
- *Fiscal differences.* Different net fiscal situations will draw funds into government liabilities in countries with the largest deficits. This damages investment elsewhere in the union and potentially pulls funds into one of the weaker members. This may undermine international confidence in the strength of the currency.
- *Insufficient structural and infrastructure harmonization.* Early formation of a union might bring together countries that still have major differences in their economic and financial infrastructure, standards, and supervisory systems. Cross-border transactions may face costly frictions. These could impair the advantages of joining a union.
- *Tax and seignorage income differences.* Each member may follow different tax regimes and rely on seignorage income to different extents to finance government activities. Joining a union will create common rates of seignorage income for each member which may be insufficient for those countries that had had the highest rates of monetary growth.¹⁸
- *Different structural shocks.* If the loose convergence stems from different responses to common structural shocks, this indicates that the economies may be fundamentally different and are thus not good candidates to form a union.
- *Different adjustment mechanisms and speeds.* If countries have different structural conditions and speeds of adjustments, they may respond differently, even to common shocks or policy actions. If loose convergence reflects this, the countries may not be good candidates to join a union.
- *The common exchange rate might not be well integrated into each economy.* The ECU existed for many years before it was converted into the Euro at a one-to-one rate. This caused little shock to the price structure for each economy. These conditions are unlikely under loose convergence conditions.

¹⁸ Seignorage income can be substantial, sometimes equal to 2 or 3 percent of GDP annually.

Factors supporting unions with loose convergence

For a number of reasons, new unions might prove feasible even if convergence is not complete when the union was formed.

- Once a union is created, numerous common institutions and practices may be introduced, which can foster convergence. New union institutions may be seen as an important cooperative step that can create impetus for overall development in line with a common vision. The process of creating the union institutions is also a process that can contribute to improved economic and financial prospects and convergence between member countries.
- Evidence has been collected showing that membership in a union promotes greater intra-union trade.
- The union currency may be stronger than the currencies of individual members. This can create more stable economic conditions conducive for economic growth.
- The strength of the union currency can expand overall demand for the currency and reduce cocirculation¹⁹ of foreign currencies within the member economies. This can increase seignorage income of the union and its member countries.
- Creating a currency union can contribute to building trade, tourism, or other types of economic unions. The common currency can facilitate intra-union trade, capital, labor, and other factor flows that create larger, more competitive, more resilient markets.
- A currency union can create a larger market, permitting economies of scale and greater competition.
- Price transparency increases across borders, which benefits consumers and allows more efficient use of capital.
- Regional infrastructure investment (which may be important for overall economic development) is facilitated by denominating investments, costs, and benefits in a common unit. This applies not only to infrastructure investments across different countries in the region, but also to the discounting of costs and returns over time.
- Some economies may lack resources or conditions to be able to stabilize economic and financial conditions on their own, and thus may not be able to converge with other members of the union. The union, or larger members of the union, may be able to provide guidance, oversight, or assistance.
- There was great uncertainty whether the EMU would work, and therefore starting the process under the most favorable conditions (including a high degree of convergence) was prudent. Its success might allow future unions to learn from its experiences and might give some confidence that success is possible with somewhat less convergence.²⁰
- Risks can be shared within a union, reducing the threats of destabilization to each of its member countries. Additional resources to address instability may be available.

¹⁹ Cocirculation is the use of two or more physical currencies within an economy. It can occur due to many factors, but a foreign currency is often likely to cocirculate when the national currency is perceived to be weak. Successful introduction of a union currency would reduce the incentives for holding and using foreign currencies.

²⁰ The less-than-strict adherence in Europe to the fiscal convergence tests under the EMU's Stability and Growth Pact has raised questions in some proposed unions if this indicates there is some room for flexibility.

The feasibility of loose convergence

To conclude, there are many reasons why introducing a currency union with only loose convergence between union members can create problems. The cautions provided in the OCA literature are well founded, and countries considering forming a union before a high degree of convergence is achieved should do so cautiously and fully aware of the difficulties that may be faced.

However, there are also reasons why a union based on loose convergence might succeed. Indeed, convergence might not be possible without a boost from union institutions and policies. Convergence is good, and convergence with adherence to strict criteria is better. However, building a union with loose convergence may be the best choice in some situations. Moreover, the idea is gaining acceptance that countries with little initial integration can benefit from the risk sharing properties of unions and can successfully create unions.²¹ A strong political commitment to building a new union would, of course, contribute to finding solutions to overcome any remaining obstacles in loose convergence situations.

If countries seek to create currency unions starting with only loose convergence, three issues may be requisite.

- Conditions among potential union countries are similar enough to potentially be handled by the common union policies.
- Countries feel confident they can abandon the advantages of independent monetary and exchange policies.
- Countries have access to resources to defend their positions. This can be either their own resources, access to special facilities, or common union resources.

There are three important cautions, however.

- *Revocability.* The looser the convergence, the greater the advantage of retaining flexibility in case shocks hit or problems develop. Thus, construction of a regional exchange rate bloc may be a good alternative, at least initially. Countries can agree on bilateral rates, cooperate on monetary policy, and provide mutual support, but retain their national currencies in order to be able to make rare but necessary exchange rate adjustments.²²
- *Strong union institutions.* Even though there might be adequate macroeconomic and financial convergence, effective union institutions must be built and put in place before starting the union. This includes both technical institutions, such as settlement houses, but also policy institutions that can provide unbiased and high-quality policy direction based on union conditions. Simultaneous institution building and convergence make sense.
- *Enhanced surveillance/assistance.* Where there is loose convergence, problems may be more likely. Therefore, enhanced surveillance on the more divergent economies may be called for, and it may be useful for the union to provide

²¹ Bøwer states, "While the initial OCA framework warns countries with asynchronous business cycles about joining a currency due to the resulting loss of national monetary policy and exchange rate adjustments, Mundell II suggests that it is exactly those countries with asymmetric shocks which may benefit most from adopting a common currency and the resulting risk-sharing and income insurance mechanism. In other words, a country that considers joining a currency union, such as the new EU member states, may not want to wait..." Bøwer, U. "Risk Sharing, Financial Integration, and "Mundell II" in the Enlarged European Union" Institute of European Studies Paper # 060801. (University of California, Berkeley, 2006) p. 6.

²² This also permits countries time to get used to cooperating with each other. Also, the regional bloc format permits time for progressively stronger union institutions to be constructed and gradually put into place.

assistance to countries to become convergent as soon as possible. Milestones to move progressively toward convergence should be considered, and backsliding must be avoided.

Union responses to economic shocks

A key question for unions is the nature of shocks hitting the union and how the union is constituted or has policies to deal with various types of shocks. The key distinction is between *symmetric* or *asymmetric shocks*. Symmetric shocks affect all union member countries in similar ways – an example could be a sharp hike in food prices that affects all union countries and creates union-wide balance of payments problems. Asymmetric shocks hit union member countries differently. For example, a hike in oil prices will stimulate the economies of union countries that produce oil, but can cause balance of payments problems and recession in other union member countries that import oil.

A second question is whether the union policy effects are symmetric or asymmetric. A monetary union can operate only a single monetary or exchange rate policy and does so in the hope that all member countries are affected in similar ways. Unions have problems in formulating policies if different parts the union react in different ways to a common policy.²³

The appropriate union policy response depends on whether shocks are symmetric or nonsymmetric. A single unified policy for the entire union is more likely to be successful for symmetric shocks. In contrast, asymmetrical shocks might be handled poorly by a single union policy because countries face different conditions. In the face of asymmetric shocks, countries within unions cannot rely on traditional monetary policy and exchange rate instruments because there are now controlled by the union, and therefore must rely on other policies available to them (such as taxation, public expenditure, market development, etc.) to deal with the shocks.²⁴

In the Euro area, the strict convergence criteria can be considered as a policy-oriented response to a long history in which countries struggled against inflation and exchange rate instability and to gain fiscal control. Germany provided a model for price control and fiscal tightness that contributed to exchange rate strength; other countries struggled to achieve similar success and were often punished by markets if their policies lapsed, or sometimes even appeared to lapse. The convergence criteria were designed to guarantee that anti inflation and firm fiscal policies would be maintained in the union even though countries no longer feared currency repercussions of poor policies once they were in the union.

In theory, symmetrical shocks are easiest for a union to handle, but an interesting empirical investigation of shocks found that such shocks are by no means the most common. Bayoumi and Eichengreen²⁵ estimated the cross-country correlations of demand shocks between

²³ An example could be the influence of low Euro rates in promoting large capital movements into real estate in selective Euro area countries, such as Spain, Portugal, and Ireland, but not into similar investments in other union countries, such as Germany. Excessive construction and rising asset prices in those countries led to situations where tighter monetary policy could have been used. Conversely, continuing capital flows into those areas tamped down investment in other areas where it was needed. When the boom receded, the countries that had experienced the overbuilding suffered the most severe downturns as construction and real estate prices collapsed.

²⁴ Also, smaller countries in unions face an additional challenge that union policies are more likely to be responses to the shocks hitting the largest countries in the union. Due to their lack of independent economic power, the small countries may find that they are always the ones forced to make the adjustments.

²⁵ Bayoumi, T. and Eichengreen, B. *One Money or Many. Analyzing the Prospects for Monetary Unification in Various Parts of the World*. Princeton Studies of International Finance 78. (Princeton, N.J.: Princeton) 1994.

countries within various regions of the world in order to test the degree to which the assumptions of the OCA apply. Their data, which end in the early 1990s, showed correlations between countries that ultimately would become Euro area members were often quite low, suggesting that OCA conditions did not prevail. For example, the correlation between the two anchor economies – France and Germany – was only 30 percent, and between two very close economies – Netherlands and Germany – only 21 percent. Common shocks existed but at best the correlation was usually no higher than 60 percent. This suggests that numerous asymmetrical shocks will continue to affect union countries, which has important implications for planned new unions.

- First, the EMU was successfully created with much less than perfect OCA conditions.
- Second, national authorities within unions will face shocks for which applying union wide policies for money, interest rates, exchange rates, reserves, etc., may not be appropriate.
- Third, countries must deal with asymmetrical shocks by continuing to exercise the policies that have not been ceded to the union. Effective policy research, development, and implementation in the remaining areas of national competence become more important.
- Moreover, in the proposed unions, the nature of the shocks and their responses could be different than in the Euro area.
- The planned unions generally are comprised of commodity exporters. They may be affected symmetrically by global shifts in commodity prices, and asymmetrically because of the different commodity endowments.
- Planned unions currently lack the diversified industrial base that existed in Europe, which may make adjustment more difficult.
- Planned unions lack the degree of financial market development and integration that exists in Europe. This may make financial markets more volatile, less capable of providing good market signals, less flexible to respond to financial shocks, less able to raise capital for productive purposes, and make transmission of monetary policy impulses less effective.
- Planned unions are all expected to need substantial financial market development in order to benefit from the potential advantages of integration within an currency union and to have financial markets serve as a source of flexibility and stability.
- The institutional settings in the planned unions may be substantially different from that in Europe. In Europe, an overarching social and political framework is provided by the European Community and its institutions, which few other regions match.²⁶ The planned unions start with greater divergence in policy institutions, and less independence and analytical and policy strength of those institutions. Thus, policy responses to shocks may involve greater challenges than experienced in Europe.
- Finally, however, globalization of real and financial markets has resulted in a situation where demand or price shocks affect more intensively a broader range of countries, and thus the planned unions may face more symmetric shocks than might have been typical in the past.²⁷

²⁶ The Andean Community, however, was designed to have institutions similar to those in Europe.

²⁷ Srejber (ibid) has noted this trend. "The assumption presupposes that what is to be stabilised is mainly driven by factors that can be affected by national policy instruments. Is this really the case? A recent cross-country

Statistical signals of convergence and divergence

If a union is set up under loose convergence conditions, the probabilities are greater that imbalances and economic problems can occur that can disrupt the union or individual member countries. In recognition of this, planned unions need to set up a statistical system from the beginning to collect information on whether economies are converging or diverging and on problems that may result. Accurate and timely information that the economies are diverging or problems are developing allows remedial action to be taken. Specific indicators need to be monitored and compared between countries and for the union as a whole.²⁸ With some embarrassment, these could be called “Divergence indicators”.²⁹

A number of the tests call for comparisons between countries or constructing statistical measures of convergence or divergence. Good quality statistics are needed for each member country in order to carry out such comparative analysis.

Assessment of convergence indicators

Although high convergence may not already have been achieved when the planned unions are established, convergence criteria still should be put in place and the performance of the union and the participating countries should be regularly monitored. As with the EMU, the criteria would likely include inflation, debt, and fiscal performance, but additional criteria can be developed specific to each union’s situation.

- To monitor performance, the criteria can be assessed both in terms of their absolute levels and relative to performance in other union countries. For example, three countries might achieved the fiscal deficit criterion, one country may have a deficit 2 percent too high, and two have deficits 4 percent too high. The arithmetic mean of the country observations (weighted by the size of the economy) can provide information whether the union goal as a whole is being approached.
- The dispersion of the criteria should also be examined and whether the countries are converging or diverging over time. A time series of the standard deviations of the criteria can provide indications of whether the economies are moving closer together or diverging.
- Following EMU practice, the planned unions should regularly monitor the convergence criteria/indicators and should prepare formal reports on the state of convergence. In recognition of the greater potential for divergence starting with loose convergence, the union should also report on divergence trends and their apparent causes.

study suggests that determinants of inflation have become less “country-centric” and increasingly “globecentric.” Of course, national stabilization policy still plays an important role, but global factors are becoming increasingly important. At the same time, business cycles in the G7 countries seem to have become increasingly synchronised, thereby narrowing the difference between domestic and global determinants of inflation.”

²⁸ Countries within the Euro area are subject to regular review of their adherence to the union convergence criteria. Sanctions can be applied for failure to meet the fiscal criteria. Regular, formal reviews are made. Thus, review for evidence in divergence in unions formed under loose convergence conditions is little different in spirit from what is already done in the Euro area.

²⁹ That is, the opposite of “convergence indicators”. “Convergence criteria” are used as tests for countries’ suitability to join the Euro area, but once within the union the same tests are still applied and formally assessed. However, because they are no longer criteria for membership, they are “convergence indicators”.

Price signals

Overall price movements in countries may be one of the indicators of convergence or divergence that can be easiest to track. Both absolute and relative measures can be tracked.

- Inflation rates rise above a specified cap. The union could set a maximum tolerable level of inflation, such as 6 or 10 percent. Remedial actions may be needed for individual economies that exceed the caps; if numerous countries exceed the cap, it could indicate a union-wide problem.
- Deflation. A decline in general price levels in any country could be a danger sign. A decline in prices increases the real burden of outstanding debt liabilities and can depress economic activity. A deflationary bias in multiple countries would be a serious structural problem for a union.
- Spread between inflation rates. The standard deviation can be used to measure the dispersion between inflation rates. Increased integration between the member countries is likely to result in a reduction in the standard deviation over time. However, widening of the spread can indicate that the real exchange rates of the economies are diverging and affecting the competitiveness of the economies.

Government borrowing

Fiscal stances of union member countries may differ considerably. Because of use of a common currency and open capital markets within a union, a country that borrows heavily to cover a deficit will potentially draw in funds from other member countries. This could divert funding from productive investments to the detriment of the union as a whole.

- High overall government borrowing involving many union members indicates structural problems for the union that could constrict investment in private sectors and possibly damage the long-term health of the union.
- A wide dispersion of government deficits could indicate that certain economies were drawing in investment capital to the possible detriment on other union members.
- Government borrowing rates should equalize in a union based on market perceptions of the soundness of the common currency if markets judged that each union member was following prudent and sustainable fiscal policies, and if national financial markets were stable.³⁰

Debt measures

Convergence criteria can also focus on the ratio of government (or total public sector) debt to GDP. Debt ratios can provide information on the long-term sustainability of fiscal positions, and stable or declining ratios are considered desirable.

Over time, the size and rate of growth of the government debt ratio is a function of the size of the fiscal deficit. In the Euro area, the 60 percent debt ratio is considered compatible with the

³⁰ Following the creation of the EMU, the spread between government borrowing rates fell to very low levels based on confidence about the fiscal condition of EMU member countries (who must record a fiscal deficit of 3 percent of GDP or less). However, the spreads grew large when the financial crisis struck and stimulus and rescue costs put the fiscal situations of some countries in serious peril. Thus, large or widening government borrowing spreads indicate potential trouble for the union.

3 percent deficit ratio. High deficits can cause potentially unsustainable growth in the debt ratios, and thus the deficit and debt ratios must be monitored together.³¹

The ratio of total international debt to GDP also could be selected as a criterion to help assess the sustainability of the union's external position.

Other indicators

In addition to reviewing the union's regular convergence indicators, various other measures that could be monitored are listed below.

Real exchange rates

In concept, within a currency union increased competition and cross-border trade in both components and finished products should result in some convergence in price inflation between members, and thus in greater similarity in external competitiveness. Competitiveness of each country in a union is a function both of the union exchange rate and the prices in each country. A country with higher inflation relative to other union members will become externally less competitive as its real exchange rate rises.

Terms of trade shifts

Union member countries may have large differences in their external trade patterns, both in terms of origins and destinations of trade and also in trade composition. Changes in exchange rates and prices in different types of traded goods can affect the external positions of each member country individually. Substantial differences can create situations where the common monetary and exchange policies are inappropriate for some member countries. The statistical indicator is an index of changes in the terms of trade based on the ratio of export prices to import prices, each adjusted for exchange rate changes to get measures of delivered prices.

Terms of trade shifts can also affect competitiveness and current account positions between union members. The indicator is the ratio of export to import prices on trade with other union members only. Large shifts in the intra-union terms of trade can create political conflicts between members because gains of one member come at a cost to other members.

This case is also interesting because within the union there could be mechanisms for fiscal or other adjustments to offset sharp differences in the terms of trade between members. A classic example would be if one member country exports oil to the other members, and thus directly gains or loses relative to other members depending on the oil price. Future unions may or may not have mechanisms to compensate in such situations.

Industrial and trade concentration or dispersion

The more diversified an economy, the more likely that it will be affected by shocks affecting other union member economies – that is, diversification makes idiosyncratic shocks less likely. Equally important, more diversified economies have greater flexibility to adjust to

³¹ The Euro area criterion is that the government debt should be under 60 percent of GDP or should be declining. However, numerous countries have failed to reduce the size of their deficit ratios, and in some cases caused the debt burden to move in the wrong direction. In 2007, seven of the fifteen Euro area countries had debt ratios over 60 percent. See European Central Bank *Ten Years of the Stability and Growth Pact* Monthly Bulletin. October 2008. pp. 53–65.

shocks and to buffer shifts in demand. Two opposite effects on industrial concentration have been hypothesized following entry into a union – first, unions will cause greater *inter*industry specialization because firms exploit their comparative advantages within larger markets, which reduces trade diversification, but the second possibility is that increased *intra*industry specialization results as suppliers link up with industrial customers throughout the union, which will increase trade diversification.

- Signals as to whether trade concentration is increasing or decreasing within the union include whether trade in finished goods is increasing for just a few countries or whether trade in components is increasing for a broad range of countries? Alternatively, industrial censuses and production surveys can provide information. Both of these sources of information involve sophisticated frameworks that may not be available in some unions.

Unemployment differences

Large differences in unemployment are a serious threat to currency union. It could indicate that some countries are not benefiting from the common monetary and exchange policies,³² or there could be structural rigidities or problems affecting specific countries.

Real and financial market price signals

A currency union should result in a high degree of real and financial integration, price discovery, and competition. Residents of the union will have greater ability to make cross border purchases, borrow and deposit, and invest in other union member countries. All these should result in price convergence. A lack of convergence is likely to indicate the presence of continuing barriers to cross-border activity and a lack of integration that lessens the potential benefits of the union.

Gathering information on price differences is not easy, given the range of products and markets involved. This work would probably be done as part of regular cost of living surveys, benchmark price censuses, or work on the International Comparison Project. This work may benefit from creating a central union price statistics office and taking surveys using a standard list of products in all countries.

Asset price convergence

One expected result of forming a currency union is that increased cross-border investment in real estate and other financial assets will raise assets prices in the recipient countries. Prices may rise toward levels elsewhere in the union. In the EMU this clearly occurred in Spain, Ireland, and for several new EU countries in Eastern Europe. Such convergence in prices is desirable up to a point, but if it results from too rapid inflows in short-term capital, over building, and rapid build-ups of credit to businesses and consumers, it may prove unsustainable and become a source of instability. In contrast, capital flows out of other union countries may result in relatively stagnant construction activity and slow growth in assets prices.

³² For example, within the GCC, Saudi Arabia has a large, young, underemployed population that could benefit from an exchange rate that promotes industrial exports, but the union exchange rate might be driven higher by high petroleum export income.

- Thus, sharp differences in asset price movements, and concomitant differences in investment flows, construction activity, etc. could be signs of trouble for the union, but more moderate increases should be considered desirable.

Statistical infrastructure

If countries choose to form a union with loose convergence, they are embarking on an uncharted strategy. The formation of the union may create conditions that support convergence among the countries (or some of the countries), or the divergent conditions could make policy development difficult and create problems. The creation of the union will result in monetary and exchange rate policy influences from outside the individual member countries penetrating deeply into each of them. The possibility exists that one or more of the countries may be adversely affected, and effects may spillover into other countries.

The economic rationales for strict European-type convergence have been worked out and are well known, and it can probably be concluded that the higher the degree of convergence, the better the odds of success for the union. Arguably, unions should not be attempted unless tight convergence exists between potential union members. The situation in the proposed unions is thus more precarious than what was experienced in Europe. If countries choose to implement a union based on loose convergence strategies in hope of later convergence, they are taking risks. However, the degrees of required convergence or acceptable nonconvergence are basically political decisions. A union could choose to create itself with loose convergence as a means to address serious economic problems of poverty and weak markets, to foster cooperative solutions, to limit monetary and exchange rate instability, to gain international financial strength, or to gain economies of scale in economic activity, etc. The risks may be great, but the rewards may be greater.

Given the uncertainties in loose convergence situations and greater possibilities of diverse reactions to policies, there is extra need to monitor the performance of individual countries. That is, the convergence criteria and other indicators (divergence indicators) need to be monitored closely.

Thus, unions begun under loose convergence conditions have particularly strong reasons for statistical monitoring of conditions for the union and the individual countries. This places great burdens on statistical systems in order to provide timely and unbiased information that can guide union and national authorities.

Hopefully, the planned unions will experience convergence once their union is created, but if divergence is observed there may be a basis for various actions – pressuring individual countries to respond in ways that cause them to converge toward the union targets, adjusting union policies, creating fiscal compensatory schemes, or potentially adjusting the structure of the union. But all such actions rest on high quality and timely statistical information.

Statistics thus play a critical role. It will be very important to have accurate and comparable statistics on a timely basis to unveil the *unionification* process. Is endogenous convergence occurring, are certain countries or sectors falling behind, are problems developing from nonconvergence, are policy actions supporting convergence? Do union authorities have the information needed to carry out policy oversight of relatively diverse economies? Are policies supporting convergence or divergence?

Thus, statistical programs must be strong and the infrastructure must be in place well before a proposed union is formally established. The statistical systems will provide the indicators of whether the union is progressing in the right direction. There is a strong rationale for very early development of statistical systems in the union-building process. Conversely, it could be dangerous if buy-in to a planned union occurs before sufficient development of comprehensive union statistical systems that can produce the comparable and timely

information needed to support the union-building process. The lead times to achieve the needed levels of statistical support may be substantial, all the more so given the limited resources available to national and union authorities and to the international statistical community.

The statistical systems

As noted above, a range of statistical indicators will be needed. The core indicators are likely to be those adopted for the EU. The definitions are likely to be similar, although critical values in the planned unions may be somewhat different from those in the EU. In a looser union, additional key data are likely to be needed, as discussed above, so that a picture commensurate with the conditions and aspirations of the members of the union, can be fully established.

The members of the EU manage a high degree of periodicity and timeliness for their statistics – enabling rapid policy responses, and a degree of certainty among policymakers that they have a good understanding of current economic conditions. At this time of financial turmoil, when economic conditions are changing rapidly, and there is wide uncertainty about the management of the economy and of the financial sector in particular, the availability of accurate, timely, and reliable economic data becomes critical.

Following the Mexican crisis of 1994, and the subsequent Asian crises, the IMF launched a number of data initiatives as part of its new emphasis on designing, implementing, and monitoring observance of a range of standards and codes. In 1996 the SDDS was launched – this prescribes levels of timeliness, coverage, and periodicity for a wide range of macroeconomic indicators, including those covered in the EU convergence criteria. This standard was intended for countries that borrow in international capital markets, or that intend to do so. The following year the GDDS was introduced intended for all other countries. Countries participating in the GDDS commit to using the system as a framework for the development of their statistical systems. It includes recommended levels of timeliness, coverage, and periodicity for a range of macroeconomic and sociodemographic data, and requires that participants post appropriate metadata (descriptions of data) as well as development plans on their websites. Recently, it has been agreed that the GDDS should be revised so that its data coverage comes into line with that of the SDDS, and also that countries participating in the GDDS should now start also disseminating data. The aim is to make it easier for countries to graduate from the GDDS to the SDDS.

As of July 2009, there are 64 SDDS subscribers, and 94 participants in the GDDS, comprising in total around 85 percent of the IMF membership. Interestingly, nearly all members of the EU are SDDS subscribers. With the expected subscription of Cyprus and Malta in the coming months, EU SDDS membership will be complete. It is noteworthy that all of the “old” EU members and several of the transition economy members were “founding” members of the SDDS when SDDS monitoring began in 2000. Also, two members – Bulgaria and Romania – are amongst the seven countries that originally participated in the GDDS but have since graduated to SDDS subscription. (The remainder of the graduates are in Central and Eastern Europe or in Central Asia).

Although not primarily intended as a tool for currency unions, there are two elements to the SDDS that make it particularly useful as an instrument for members, or aspiring members, of a currency union: first, it ensures that data provided for policymakers has appropriate levels of timeliness, periodicity, and coverage, and second that it is apparent to markets and to the countries’ population that policies are based on these data – i.e., data dissemination adds to the credibility of the union.

In contrast, at this point only one country in Sub-Saharan Africa (South Africa) is a subscriber to the SDDS; none of the members of the GCC are. Almost all, however, participate in the

GDDS. Immediate SDDS subscription is precluded in many of these countries through lack of capacity, but for some the issue is more than of residual nervousness about some of the data that they would have to disseminate: in particular, the reserve template, which is a mandatory element of the SDDS, requires detailed disclosure of a country's reserves, which still causes concern in a number of countries.³³

Many countries in the various planned currency unions have benefited from extensive technical assistance within the framework of the GDDS, and significant improvements in their data can be observed. The so-called "DFID project" of assistance within the GDDS framework to Anglophone African countries is the largest single donor financed technical assistance project operated by the Fund.³⁴ The TA project is modular, with countries able to choose from a menu as to which elements of their statistical system they wish to prioritize for assistance. One module of this assistance involves helping countries prepare for subscription to the SDDS.

Eventual membership of currency union member countries may be a reasonable aspiration over the medium term that provides a suitable framework for enhancing capacity. In a currency union dominated by one major economy, it may be particularly important that that economy subscribes to the SDDS, or otherwise provides similar levels of disclosure. The IMF is working with several countries of sub-Saharan Africa to help them graduate from the GDDS to SDDS – these include Botswana, Mauritius, Tanzania, and Uganda – and encourages others to head down this path. Over time therefore, one hopes that Sub-Saharan African countries, as well as those in other areas where a currency union is planned, such as the GCC area, may progressively subscribe to the SDDS, thus further underpinning the statistical bases needed to establish and manage these unions.

Finally, it may be worth mentioning that currency unions themselves should assess the quality of their members' statistics, or seek outsiders to provide such an assessment. For example, Eurostat conducts an annual peer review of the statistics of EU member countries (and Switzerland). The IMF conducts the so-called "Data Module of the Report on Standards and Codes" (data ROSCs) on member countries, including those in currency unions, at their request, and has also conducted a data ROSC for one currency area – the East Caribbean Currency Union. Eighteen EU members have had IMF Data ROSCs (a few have had several).³⁵ Within southern Africa, for instance, Botswana, Mozambique, Namibia, and South Africa have had Data ROSCs – although not always recently. Consideration of a Data ROSC may be useful for a planned currency union.

Conclusions

To conclude, planned currency unions may have weaker convergence criteria than those of the EU. Nevertheless, or indeed because of this, the criteria need to be carefully specified and monitored, and polices need to take account of divergences from the criteria. The EU criteria on inflation, fiscal deficits, and debt are likely to be among such criteria, although others listed in this paper may be brought to bear as well. All this requires the development

³³ An important concern of any currency union is the amount of international reserves effectively available for union balance of payments or currency intervention purposes. For future unions, a framework will be needed that can generate information paralleling that in the international reserves template.

³⁴ The success of the second phase of this project is presently being evaluated, with indications that further expansion of the project may be in train.

³⁵ Given resource constraints, and the Eurostat peer reviews, the IMF is at the moment not actively soliciting further data ROSCs with EU members.

of statistical capacity – which may take a long time and require extensive technical assistance. The IMF's GDDS and, in time, the SDDS, may well provide useful frameworks for the statistical development necessary to underpin these planned currency unions.