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Abstract

Currency unions have been a recurring phenomenon in monetary history. The most basic definition of a currency union is when two or more sovereign nations share a common currency. Even though a currency union shares many characteristics with international monetary regimes based on fixed exchange rates (such as the Bretton Wood system), it is the most extreme case of a fixed exchange rate as it also implies sharing a common unit of account between the participating countries. While the economic rationale for currency unions focuses on gains in monetary efficiency from decreasing transaction costs, history shows that

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political reasons also played a key role. This chapter discusses the theoretical foundations of monetary unions (the so-called optimum currency area theory) and analyzes the most important historical cases of currency unification, both domestic (the USA, Germany) and international. Finally this chapters discusses the key lessons that can be drawn from the history of currency unions and their implications for the Economic and Monetary Union.

Keywords

Central banks · Fiscal systems · Monetary theory · Monetary policy · Optimum currency areas

Introduction

The most basic definition of a currency union is when two or more sovereign nations adopt a common currency. Even though a currency union shares many characteristics with international monetary regimes based on fixed exchange rates (such as the Bretton Wood system), a currency union is an extreme case as it also implies sharing a common unit of account between the participating countries. A currency union is also different from other extreme cases of fixed exchange rates such as *dollarization* or *currency boards* – monetary regimes usually adopted to eradicate high inflation from the domestic economy. *Dollarization* is when a nation decides to import the currency of another nation (historically, the US Dollar in most cases) and use it as legal tender instead of a domestic currency. A *currency board* is when a nation ties its domestic currency to an international high powered currency (as the USD) and guarantees a full reserve coverage of the domestic currency issued. That is that for each unit of national currency that is issued by the nation's monetary authority, it has to hold the same amount of the international high powered money (for instance USD) in its reserves. At difference from dollarization and currency boards. While *dollarization* and *currency boards* are based on a unilateral commitment by the government of the adopting nation, a currency union rests on the joint commitment of the governments of all participating nations.

The economic rationale behind currency unification has been worked out by the so-called optimum currency area (OCA) theory. This on one hand emphasizes the advantages of a currency union in terms of monetary efficiency (through decreasing transaction costs), on the other hand discusses its possible costs caused by the fact that governments had to give up a potentially important instrument – the nominal exchange rate – which could be used for macroeconomic stabilization. However, there exist also political reasons for pursuing currency unification. In fact, most national currencies are not only tied together by an economic rationale, such as the integration of the domestic market, but are based also on common fiscal systems.

In this chapter, I first discuss the basic tenets of the OCA theory. The second section focuses on historical cases of currency unifications, both national (the USA and Germany) and international (the Latin Monetary Union and the Scandinavian Monetary Union). Finally, the lessons from those historical experiences provide a

background for the analysis of the Economic and Monetary Union (EMU) adopted since 1999 by an increasing number of European countries.

Currency Unions in Theory

Optimum Currency Areas (OCA)

The theory of optimum currency areas (OCA) is the most widely used analytical framework to assess the benefits and costs of a currency union. In short, the theory states that the following criteria are necessary for a group of economies (regions or countries) to qualify for an OCA:

- (i) regions should be exposed to similar sources of economic disturbance (common shocks);
- (ii) the relative importance of these shocks across regions should be similar (symmetric shocks);
- (iii) regions should have similar responses to common shocks (common responses);
- and (iv) if regions are subject to region specific economic disturbances (idiosyncratic shocks), they need to be capable of quick adjustment. The basic idea is that regions satisfying (i)-(iv) will have similar business cycles, so a common monetary policy response would be optimal. (Kouparitsas 2001, p. 1)

The economic rationale for monetary unions draws on theories of exchange rate regimes. In the case of OCA, it emerged from discussions on the pros and cons of a floating versus a fixed exchange rate in the USA after World War II. Rockoff (2000, p. 4) suggests that Milton Friedman's *The Case for Flexible Exchange Rates* (1953) and Leland Yeager's *Exchange Rates Within a Common Market* (1959) were the seminal contribution that triggered the debate. Both Friedman and Yeager (among others) argued for floating exchange rates as they would allow a country to run an independent monetary policy to achieve stability in prices and employment. In their view, however, they allowed for exceptions as far as small open economies were concerned, since they were considered not large enough to profit from flexible exchange rates.

It was this debate that led Robert Mundell to formulate his *Theory of Optimum Currency Areas* (1961). What was new in Mundell's work was that, instead of assuming a national currency to represent a given currency area, he asked under what conditions would a single currency be economically most efficient. Of course, what is evaluated as economic efficiency depends on the objective of the currency and here Mundell emphasized not only transaction costs but also stabilization policy, i.e., the ability of a government to pursue full employment. In fact, if the focus was only on gains in monetary efficiency, Mundell pointed out, the logical conclusion would be that the entire world should share a common currency (Mundell 1961, p. 662). However, adding macroeconomic stabilization implied that, in order to qualify as an optimum currency area, regions or countries should be characterized by complete factor mobility. Thus, limited international factor mobility provides a rationale for national currencies. In the words of Mundell:

If the world can be divided into regions within each of which there is factor mobility and between which there is factor immobility, then each of these regions should have a separate currency which fluctuates relative to all other currencies. (Mundell 1961, p. 663)

This implies that national currencies (a currency area that perfectly overlaps with a nation's borders) could be theoretically justified only in case of perfect factor mobility within national economies. For factor immobility within a currency area would create a problem of imbalances:

The argument works best if each nation (and currency) has internal factor mobility and external factor immobility. But if labor and capital are insufficiently mobile within a country then flexibility of the external price of the national currency cannot be expected to perform the stabilization function attributed to it, and one could expect varying rates of unemployment or inflation in the different regions. (Mundell 1961, p. 664)

Taking over from Mundell, the OCA theory was further developed by McKinnon (1963), who focused on the relevance of trade openness (the ratio of tradable to nontradable goods) for the analysis. The next important step came with the work of Peter Kenen (1969) who argued for the importance of fiscal redistribution for an OCA. His main argument was that, as Mundell's factor mobility was in fact labor mobility, this would require homogenous labor forces and products, which implied that OCAs were likely to be quite small. By adding product diversification to the model, he highlighted the problem of asymmetric shocks. A symmetric shock is no problem for a currency area as it hits all parts of the economy equally and thus affects prices and wages to the same extent across the union. However, in a diversified economy that uses the same currency, a shock will affect different sectors with different amplitude and thus put different stress on prices and wages. An asymmetric shock could be absorbed only if labor could move across sectors with minimum costs. However, should this not be the case, fiscal transfers would be necessary to mitigate its effects. It should be noted that Mundell's goal was not to argue for currency unions, quite the contrary; in fact, based on his OCA model, he contended that a floating exchange rate would be a logical choice: *"This carries the argument for flexible exchange rates to its logical conclusion."* (Mundell 1961, p. 663).

In short, the OCA theory highlights two important economic factors that are necessary for a smooth working of any currency area (including individual nations): (1) high factor (labor) mobility within the area and (2) fiscal transfers to even out the effects of asymmetric shocks (see also Krugman 2013, pp. 441–3). These features require also a high degree of political integration, which explains why in practice currency areas as a rule overlap with nations. In mainstream monetary theory, as in the OCA literature, money is viewed as an exogenous neutral item that serves the sole purpose of minimizing transaction costs. This is clearly illustrated by Mundell:

Mill, like Bagehot and others, was concerned with the costs of valuation and money-changing, not stabilization policy, and it is readily seen that these costs tend to increase with the number of currencies. Any given money qua numeraire or unit of account fulfills this function less adequately if the prices of foreign goods are expressed in terms of foreign

currency and must then be translated into domestic currency prices. Similarly, money in its role of medium of exchange is less useful if there are many currencies; although the costs of currency conversion are always present, they loom exceptionally large under inconvertibility or flexible exchange rates. (Mundell 1961, p. 662)

That currency (or money) is viewed as a neutral exogenous device implies that money should be created at the crossroad of the cost and benefits of trade in relation to transaction costs. This is a strong assumption which is not empirically supported. If currencies (money) were created from the need to minimize transaction costs in trade, the link between currencies and nations would not be as solid as it is in fact. Empirical studies suggest that even a deeply integrated economy, such as the USA today, would not meet the OCA criteria in the absence of interstate fiscal transfers operated by the federal government (see, for instance, Kouparitsas 2001; Rockoff 2000; Sala-i-Martin and Sachs 1991). However, this notion has led economists not to reject the OCA theory, but rather to conclude that it is the world which either has too many currencies, or too few.

Traditionally, each country had its own currency, and only one currency circulated in each country. Monetary unions were rare, and, therefore, the surge in the number of countries in the post-war period generated a large increase in the number of currencies circulating in the world. In 1947 there were 76 countries in the world, today there are 193, and, with few exceptions, each country has its own currency. Unless one believes that a country is, by definition, an "optimal currency area," either there were too few currencies in 1947 or there are too many today. In fact, the increasing integration of international markets implies that the optimal number of currencies would tend to decrease, rather than almost triple as it has. (Alesina and Barro 2000, p. 1)

Despite its inconsistencies, the OCA framework has been widely adopted in the literature on the Economic and Monetary Union (EMU), which in fact spawned an increased interest in the theory since the 1990s (see for instance Mongelli 2002, 2008). At the same time, this new stream of research often took the existence of national currencies as a starting point. An example is Frankel and Rose (1998), who used the OCA theory to test under what conditions countries would be more or less suitable for entering into a currency union. On the base of a panel of 20 countries over a time of 30 years, they showed that countries with more intense trade also tended to share business cycles – and thus were more able to form a currency union. Of course such closer links could also be generated by a higher degree of political integration.

Criticism of the OCA Theory: The Role of the State and the Importance of Long-Term Capital Flows

The OCA theory is widely accepted as the benchmark framework within which monetary unions such as the EMU should be studied. However, it is not exempt from criticism. In fact, some contend that its basic assumptions as to the nature of money and the process of money creation are seriously flawed. One important critique has

been formulated by Charles Goodhart (1998), who emphasizes the importance of the State and its fiscal power in order to understand the process of monetary creation. His main criticism is directed to the monetary theory that underpins the OCA approach, which he labels “M-theory.” Goodhart argues that its microeconomic foundations, such as rational, individual, and atomistic agents pursuing transaction cost minimization, fails to understand the origins and the function of money. He explains:

Much of the economic analysis of moving to EMU has been undertaken within the context of the Optimal Currency Area paradigm. This is the spatial/geographic counterpart of the currently dominating model of the nature and evolution of money, here termed M theory, whereby money is viewed as having developed from a private sector cost minimization process to facilitate trading. Here, I argue, first, that there is a second, cartalist, or C theory alternative, which is empirically more compelling. Second, I claim that this approach can predict observed relationships between sovereign countries and their currencies better than the OCA model. (Goodhart 1998, p. 407)

While economists generally subscribe to the M-theory (with the exception of post-Keynesians), the cartalist approach – which underlines the central role of the State (or alternative sovereign authorities) as issuer of the money – is very popular in disciplines that study monetary phenomena from a more empirical perspective, such as economic historians, historians, political scientists, and anthropologists. Goodhart (1998, p. 409) explains this polarization with the normative preference of mainstream economists for private market solutions, as opposed to the complexity of political factors. His main critique is that economic theories based only on optimizing rational agents fail to recognize the role of the State in providing the necessary requirements for well-functioning markets, such as the legal framework and enforcement mechanisms.

While it is, of course, the relationship between taxation and the demand for money that the C-form theory emphasizes, it should also be remembered that it is the maintenance of law and order; the form and enforcement of contracts, and the whole infrastructure of regulation within society; that allows the epiphenomena of (organized) (private sector) markets to occur at all. (Goodhart 1998, p. 418)

In a monetary system in which the pivotal role of the State is absent (as in the M-theory), there should be no link between sovereign States and currencies. Any State should be able to have any number of currencies and any currencies should circulate in any number of States. The fact that the OCA literature always starts out from the assumption of “one currency, one sovereign Government” shows its very limited explanatory power. It is thus ironic that economists tend to analyze currency unions, such as the EMU, in an OCA perspective (Goodhart 1998, p. 420).

While the historical record supports the C-theory by consistently illustrating the strong correlation between strong States and strong currencies (including successful currency reforms), as well as the fact that currencies tend to breakup as States collapse, the M-theory has nothing to say about the rise and fall of currencies. For it, once a currency has been established as a result of optimization and cost minimization, there can be only a stable equilibrium (Goodhart 1998, p. 414).

In short, the key premises of the OCA approach based on the M-theory miss out the complexity of organized society and political authority, and the link between political sovereignty, the fiscal system, and money creation that is a critical dimension for the analysis of currency unions. In fact, the OCA framework has been gradually expanded to include new factors – fiscal transfers among them, as mentioned earlier – in order to improve its explanatory power (see, for instance, Broz 2005; Dellas and Tavlas 2009). In any case, its supporters emphasize that the theory is less positive than normative; it does not aim to explain how a currency union actually works but to shed light on the necessary conditions for its functioning in a purely economic perspective. For Goodhart, however, the overwhelming historical evidence in support of the link between political sovereignty and money creation makes the cost-benefit analysis derived from the OCA-model an element of second-order importance compared to the overall political factors that are embedded in a currency (Goodhart 1998, p. 424). And the augmentation of the OCA theory with fiscal transfers is in itself an admission that currencies are not merely the result of agents' desire to minimize transaction costs. The fact that recent macroeconomic analysis connects the issue of money to domestic public debt (Reinhardt and Rogoff 2009) is a further step towards recognizing the key role of the State in the monetary process and the need to include it in the analysis of monetary unions.

Neglecting the link between currencies and capital flows unrelated to trade is a second serious weakness of the OCA approach and of the empirical research on currency unions based on it. This is somehow surprising, since most of capital flows in modern economies are not related to trade but to investments of all kinds, including sovereign debt. As a consequence, the external value of a currency is not set by spot market transactions in relation to trade (as they would be in accordance to the OCA model) but rather by the futures market. This reflects the complex interaction between many possible determinants such as expected economic growth, government debt, expected monetary and fiscal policies, or political risk – all variables that are missing in the OCA model. In a similar fashion, the OCA approach does not capture the tensions generated by long-term imbalances between surplus and deficit regions or countries. Historically, in the process of real convergence, catching-up developing countries have been net capital importers. While this might not be a problem as long as capital exporting countries are willing to lend, “sudden stops” in the access to foreign capital markets experienced by capital importing countries (Calvo 1998; Edwards 2004) may generate strong tensions within currency unions (Merler and Pisani-Ferry 2012). In this perspective, the problem is not an asymmetric shock but rather an asymmetric trend (Saint-Paul 2010). The example of the Gold Standard is illustrative. In that period, as they caught up with more advanced economies, Scandinavian countries recorded structural trade deficits for decades but managed to remain on a convergence path thanks to their continuous access to long-term international capital (Ögren 2009). In case of sudden stops, countries could go off gold (as Portugal did, by example). No such flexibility nor escape clause exists in currency unions such as the EMU (Ögren and Øksendal 2012).

Reasons for Establishing Currency Unions

If we look at the establishment of monetary unions empirically, there are several historical cases that provide insight into the possible reasons for forming currency unions. The degree of political integration seems to be a common factor for successful experiments of monetary integration, as well as a common reason for pursuing this objective. Some monetary unions were part of nation building; as a consequence, they are no longer viewed as experiments of monetary unions today. This is a mistake as monetary unification in some cases preceded complete political integration. Bordo and Jonung (1999, p. 6) argue that a distinction can be made between “national” and “multinational” currency unions. In a “national” union, currency unification is a step towards uniting political and monetary sovereignty, such as was the case for Germany, Italy, Switzerland, and the USA. In the “multinational” case, the currency union consists of several independent nations that use the same currency without a common monetary authority. Historical examples of such currency unions are the Latin Monetary Union (LMU) and the Scandinavian Currency Union (SCU). Bordo and Jonung (1999, p. 7) also claim that “multinational” unions will not be able to survive in the long run without such political unification and that the future of the EMU will depend on its ability to “closely resemble a national monetary union.” Again this underlines the problem of evaluating a monetary union from a theory based only on minimizing transaction costs in relation to trade.

In his analysis of the Latin Monetary Union, Flandreau (2000) stresses that the economic rationale for forming the union was more important than it had been hitherto recognized. But this economic rationale was also more complex than just striving to minimize transaction costs in relation to trade. At least equally important were foreign debt issues and the ties linking capital exporters and importers. Usually foreign debt is not denominated in the debtor’s currency (unless it is a big economy with an internationally trusted currency as in the case of the US), which means that for the debtor a falling exchange rate increases the debt and the cost to service the debt. For the creditor country, this may increase the risk of debt default. Thus there are economic incentives for debtor as well as creditor countries to share a common unit of account and form a currency union.

In mainstream economics, however, the main economic rationale for currency unification is strongly related to trade costs. The standard approach to test for the effect of currency unions on trade is the so-called “gravity model.” This is a variant of Newton’s theory of gravity that assumed that the force in-between two objects is a function of their masses and the square of their distance. In economics, “gravity models” have been used since the 1960s to understand bilateral trade and migrations (Smith 2002). By adding control variables to the original variables of mass (GDP as a measure of the economy’s size) and distance, such as borders, shared language, common or different political systems or a common currency, the gravity model contributes to explain observed patterns of bilateral trade or factor flows.

The “gravity model” has been widely used to assess the impact of the EMU on trade with mixed results. The seminal paper of this extensive literature was Rose

(2000a), whose opening sentence was: “*What is the effect of a common currency on international trade? Answer: Large.*” Rose used a dataset of bilateral trade flows for 186 countries in the period 1970–1990. His gravity model augmented with a currency union (or common currency) dummy found a strong positive effect on international trade. Similar results were obtained in companion papers that used an expanded dataset (Rose 2000b; Rose and Engel 2002; Glick and Rose 2002).

Rose’s findings stirred a lively debate. His critics raised concerns that his results could be a consequence of the choice of econometric techniques than an actual fact, i.e., that the result was not robust in statistical sense. By instance, Torsten Persson (2001, p. 434) argued:

The impact of a common currency on trade can be grossly mismeasured if countries that belong to currency unions are systematically different from those that do not, and if the relationship between trade and its observable determinants are complex. I argue that such complications are plausible and likely to distort the empirical result Using techniques designed to be robust in this situation, I find that the effects of common currency on international trade are considerably less dramatic and much less precisely estimated.

This debate continued in the following years (see, for instance, Nitsch 2002; Pakko and Wall 2001; Rose 2001a, b; Smith 2002). It should be noted that Rose initially was careful about drawing any conclusions from his research in the specific case of the EMU (Rose 2000a, 2001). Still the implicit argument was that national currencies were, as predicted by the OCA-theory, impeding international trade and that currency unions would boost trade by removing these frictions. This line of reasoning was visible in the title of Rose and Wincoop (2001): “National Money as a Barrier to International Trade: The Real Case for Currency Union.”

More recent research is much less sanguine about the trade effects of currency unions, EMU included. By instance, results of Glick and Rose’s (2015a, b) “Currency Unions and Trade: A Post-EMU Mea Culpa” were rather gloomy about the EMU’s effect on trade. More importantly, results were found to be very sensitive to different econometric methodologies, so that “no substantive reliable and robust effect of currency union on trade” could be found. The published version (Glick and Rose 2016) was more optimistic as EMU was found to have boosted exports by 50%, and the results seemed less sensitive to empirical methods and more reliable.

Yet questions about whether currency unions significantly foster trade or to what extent a gravity approach is the optimal tool to pursue this issue remain open. However, it is out of question that currency unions do remove the transaction costs that stem from having to deal with different currencies, as well as exchange rate risk. Historically, it has been observed that in regions with large trade relationships with regions of another country, agents are more inclined to adopt the same currency simply because it is more practical and less risky (Flandreau 1996).

Flandreau also ran a gravity test for the Latin Monetary Union (LMU) and the Scandinavian Currency Union (SCU), and found no direct effects on trade in both cases (Flandreau 2000, pp. 29–31). It should be noted that certain features in the design of the LMU may have introduced frictions on cross-country coin circulation and thereby to some extent hamper the union’s effect on trade (Timini 2018). Also,

as explained above, the inclusion of capital flows not related to trade confirmed the existence of other economic rationales for the establishment of the LMU. Nontrade-related capital flows are not captured by traditional gravity models, in spite of their utmost relevance for modern economies. By instance, the historical case of the SCU shows that the inclusion of banknotes and drawings of central bank bills (beyond coins) fostered immediately financial market integration (Øksendal 2007).

To sum up, this extensive empirical literature suggests a number of critical issues. First, the creation of currency unions can be motivated by, and affect, not only trade-related financial flows but also other equally (or more) important capital flows related directly to the international capital market. Second, the effects of currency unions may also depend critically on how unions are designed. This implies that trade gravity models augmented with simple membership dummies might not be adequate to capture the complex effects of monetary integration.

Third, political reasons might be important for the success (or failure) of monetary integration. The importance of the currency union for political integration can be seen in the historical case of the USA. At the same time, political integration was essential for the success of the US currency union (see, for instance, Grubb 2006; Michener and Wright 2006; Rockoff 2000; Rousseau 2006; Sylla 2006). Political ambitions can, however, be challenged by the economic reality, as we can appreciate in the present case of the EMU. The next section provides an overview of historical cases of currency unions to understand this complex interplay of economics and politics.

“National” Currency Unions

The USA

The USA offers a challenging view on currency unions as it is in fact the world's most successful currency. It can of course be debated to what extent the USA really is a currency union, but at the outset, the USA certainly faced many of the problems that the EMU (and other currency unions) are facing today (see for instance Eichengreen 1992). It is thus worth to include a lengthier discussion on the US monetary union here.

First of all, despite the high level of political integration of the US states, the development of the US currency union was a long process that went through several stages. This, if anything, points to the fact that monetary unification is a far more complex process than usually acknowledged. The breakup of the monetary union during the American civil war also shows that monetary unions are by no means irreversible. At large, as will be seen in this section, currency unions have historically been closely linked to political integration (and disintegration).

The literature on the US monetary union discusses different stages, all related to the changing historical circumstances: the adoption of a common unit of account and a common currency in relation to the independence; the adoption of a common legal tender currency pegged to the unit of account after the Civil War; a common

payment system for clearing and interbank transactions with the establishment of the Federal Reserve in 1913; and finally in the 1930s – in relation to the Great Depression – the implementation of institutional changes that enhanced fiscal transfers between surplus and deficits regions (see, for instance, Michener and Wright 2006, p. 19; Rockoff 2000; Weiman 2006, p. 13).

Starting with the independence, an important point is that it was by no means given that monetary issuance in the USA should be centralized. Prior to the independence and the creation of the US Dollar (USD), each colonial government issued their own currency in the form of credit notes. These currencies were usually denominated after British model and issued with a floating exchange rate as the notes were backed by the colonies' future tax revenues. To what extent the colonial currencies were successful or not, or more precisely whether the decision to tie the USD to a bimetallic standard was a key for its success, are matters of debate (Grubb 2006; Sylla 2006). But the consensus is that the colonial system guaranteed a stable monetary value as long as there was no extraordinary pressure on the monetary system, such as war finance.

The first attempt to issue a common US currency was the so-called Continental currency that was issued by the Continental Congress during the American Revolution (1760–1791). The Continental currency can be regarded as a failure as it was overissued and quickly fell in value until it became more or less worthless in 1780. The reason for this was, however, that the Continental currency was issued as a source of funds for the war of independence (during the American Revolutionary War 1775–1783). Moreover, the Continental Congress had no autonomous fiscal capacity at the time as the power to tax belonged to individual States. The latter in turn simultaneously issued their own currencies to fund their expenses during the war.

The Continental currency and the State currencies were formally based on a fixed exchange rate during the war. Each note was redeemable at a fixed value into Spanish Dollars or their equal value in gold or silver. To what extent the promise to redeem the notes in silver or gold was credible is hard to tell, but in practice it quickly became impossible (Sylla 2006, pp. 76–79). It is even possible that this experience served to underpin the need for a stable common currency, as stated by Rousseau.

At that time unbacked issues of fiat money that helped to finance the American victory in the Revolutionary War gave way to an inflationary spiral, debt depreciation and a scarcity of real money balances. The need to unify the nation's currency and to restore the public's confidence in it weighed heavily in the minds of the forefathers as they drafted a constitution that forbade emissions of paper money by individual states in favour of committing to a securely backed transactions asset. (Rousseau 2006, p. 97)

The first experience of a common US currency was thus not a success. It pointed to the fact that fixing its value in terms of specie (or any other currency) failed to discipline its issuance, especially in times of war. Yet a common currency, the USD, was established in 1792 and became one of the cornerstones of the US financial and economic success.

According to Michener and Wright, the American monetary union was originally not designed to deliver a uniform medium of exchange – as is the case in the modern meaning of a currency union. Instead, the objective was to instigate a common unit of account that also served as a standard of deferred payment. Part of the reason for this was that during colonial times agents expressed monetary values in their own colonies' unit of account regardless of what was de facto used in the transaction (Michener and Wright 2006, pp. 20, 24). Thus the main issue was to ensure that the unit of account for contracts and transactions had a uniform meaning. In order to achieve this result, it was necessary to define the unit of account as a standard of weights, i.e., a standardized metallic coin. The constitution in article 1, section 8 stated that (among other things) the federal government ought: "*To Coin Money, regulate the Value thereof, and of foreign Coin, and fix the Standard of Weights and Measures; . . .*". As to the States, article 1, section 10 stated (among other things) that: "*No State shall. . . coin money; emit Bills of Credit; make any Thing but gold and silver Coin a Tender in Payment of Debts; . . .*" (Michener and Wright, pp. 34–35).

To settle a uniform standard of account was even more important as the most important part of the money supply was not composed of legal tender cash, such as specie or specie coins, but consisted of bills of exchange and bank money (notes and deposits). As such these were privately issued, not recognized as legal tender but still possible to redeem for specie at the issuing banks (Michener and Wright 2006, p. 38).

The USD was thus adopted at a fixed exchange rate based on a bimetallic standard where the gold-to-silver parity was set at 15-to-1. The individual States gave up on their right to issue money; the question is why they were willing to do so. With the Constitution and the USD, the federal governments took over the existing stock of debt accumulated by individual states during the Revolutionary War, as well as the fiscal burden of servicing it. According to Sylla (2006, p. 85), this made individual States less inclined to issue money, raise taxes or compete for the tax base with the Federal government, now entrusted with the power to tax.

A fundamental aspect of any currency system is its relation with the fiscal system. So the fact that the Federal State enjoyed exclusive rights to tax imports and shared the tax base with the individual States further strengthened the monetary union. Scholars agree that the loss of income suffered by individual States was offset by the relief on their debt burden and the possibility to charter banks. In addition, the individual States did not need to fund their defense and gained access to a common market with one single unit of account (Grubb 2006; Rousseau 2006; Sylla 2006).

It should also be noted that after independence, the USA also established a kind of central bank with the creation of the First Bank of the Unites States (in Philadelphia), chartered for 20 years by the US Congress in 1791. Today, the presence of central banks is seen as pivotal for any monetary system, but this was not the case in the late eighteenth century. Political resistance towards too strong federal power at the expense of the autonomy of the states made opponents criticize the charter of the

Bank from its outset. At the time of the renewal of its charter in 1811, opponents managed to block it and the bank had to close. In 1816, the Second Bank of the USA was chartered (also in Philadelphia) for another 20 years and it took over the role of the prior First Bank – but as its predecessor it was denied renewed charter in 1836 and closed in 1841.

Of course a currency union, as any political economy project, also affects the basic political and economic structure in terms of winners and losers. Even more so perhaps in the case of the US, as the monetary union was part of the entire political project of the US Constitution. Echoing the view of Charles Beard, an influential American historian, in his *Economic Interpretation of the Constitution of the United States* (published in 1913), Weiman (2006, p. 12) emphasizes how “*the shifting balance of monetary power between the states and national governments . . . pitted the interests of farm households on the periphery of the burgeoning American market system, who were often in debt or at least short of specie, against those of creditors and merchants at its core.*”

With the Civil War (1861–1865), the US monetary union was shattered. California (which politically stayed within the Union) kept the old system whereas both the North States and the South created their own respective unit of accounts and media of exchange. The pressing needs for war finance meant that both the North and the South issued large amounts of non-backed credit bills, which made the old monetary system de facto untenable. After the war, the federal government reintroduced a bimetallic standard, a common unit of account and a standard of deferred payment, thus returning to the old monetary union. As the economy became more monetized and the use of dollar-denominated US coins and uniform dollar-denominated notes of national banks became widespread, the union developed toward a more uniform system of transaction media – a trend that ultimately led in the twentieth century to the emergence of the modern US system based on a uniform medium of exchange denominated in dollars (Michener and Wright 2006, p. 40).

In a way the establishment of the FED, with its mandate to issue the currency (notes and coins) of the USA and to manage the monetary system, can be seen as the moment when the US monetary union became a modern monetary union (Sylla 2006, pp. 72–73).

Another important lesson of the US case points to the need for fiscal integration (see, for instance, Rockoff 2000; Sala-i-Martin and Sachs 1991). Rockoff showed that this stage of the US monetary union was achieved during the Great Depression. Against the background of frequent region-specific shocks, the institutions adopted in the 1930s – “a system of inter-regional fiscal transfers and some form of deposit insurance, or regionally sensitive lender-of-last-resort facilities” – prevented the unfolding of banking crises and the ensuing monetary contraction, thus limiting the scope for political battles over the reform of the overall monetary system (Rockoff 2000, pp. 36–37). The lesson that “multinational” projects of currency unions should draw from the US experience is clear: in the absence of a system of fiscal transfers, they will have small chances of surviving in the long run (Capie 1998; Bordo and Jonung 1999).

Germany

Three countries that resemble the US experience – a currency union as part of a scheme aiming at a larger political union – are Germany, Italy, and Switzerland.

The process of monetary unification of the hundred of German independent states that existed at the beginnings of the nineteenth century roughly lasted between 1834 and 1871. As the interest in the German historical experience was revived by the launching of the EMU in the 1990s, some contended that the political integration of Germany forestalled its economic integration. This was not the case, however; on the contrary in the German case economic integration preceded political unification (Capie 1998, p. 82; Holtfrerich 1993, p. 518). The movement towards monetary unification began with the establishment of a common free trade area, the so-called *Zollverein* (custom union) in 1834. It was followed by the Munich Coin Treaty in 1837 and the Dresden Coinage Convention in 1838, after which the states had to choose between the Thaler or the Gulden as their monetary unit. In relation to this, a “union coin” (*Vereinsmünz*) was minted, which equaled in value 2 Thalers and 3.5 Gulden. In practice, this meant the establishment of common unit of accounts and a fixed exchange rate between all the states in the customs union. With the Vienna Coinage Treaty in 1857, coinage was standardized and paper money was made convertible into specie at a fixed rate. However, it was only after the formation of the German Reich in 1871, in the aftermath of the Franco Prussian war, followed by the act of 1873 and the establishment of the Reichsbank (the German central bank) in 1876 that a common currency in terms of a common medium of exchange was adopted. It should be noted, however, that the fiscal system was badly designed as the central government lacked the power to tax and obtained limited funding from individual states, thus making it incapable of reacting to crises (Capie 1998, pp. 82–83).

“Multinational” Currency Unions

The Quest for Intranational Currency Unions in Nineteenth Century Europe

The idea of a common currency at transnational level became widely accepted in the second half of the nineteenth century. A common currency was seen then as an answer to the problem of large transaction costs stemming from the need to operate with several currencies in the context of a globalizing economy. Historically, the problem was related to the notion that money represented goods and was therefore a measure of their value. The challenge was to understand the relationship between different currencies subject to continuous changes in value. With the consolidation of nation states and global economic integration, the idea of moving from national currencies to supranational currencies was logically based on the quest to lower these transaction costs. Perhaps more important in practice was the fact that governments also had to fight the problem of deviations between coins’ face value and their

metallic contents – a situation in which efficient arbitrage could trigger massive exports of coins, thus leading to circulation shortages.

The first modern proposals to create a common currency for Western Europe and the USA were advanced in various international statistical conferences that took place in the 1850s (London 1851, Brussels 1853 and Paris 1855). The focus was on currency as a measure that, like others, needed to be harmonized by the adoption of a common unit of account. To achieve this objective, however, it was also necessary to harmonize the content of the coins, i.e., to adopt a common money for circulation. Otherwise the pressing problem of monetary arbitrage and shrinking circulation of coins would not be solved. In the 1855 Paris meeting, delegates from all countries signed a declaration in support of conformity of coinage. This recommendation was renewed at the statistical conferences in Vienna 1859 and in Berlin 1863. In the latter, the delegates prompted governments to study the basis for a common monetary system. Consensus in Western Europe and the USA on the desirability of a common monetary system was rising. The British proposal to use the Pound Sterling as reference, but also to adopt the French metric system, was adjourned by the US Congress, not because the idea of a common currency system was criticized but because the proposal included the continuation of the bimetallic standard in the USA and continental Europe. At the time, falling gold prices made silver coins disappear from circulation and an increasing number of countries, including the USA, opted for a pure gold standard (Russell 1898, pp. 18–22).

The Latin Monetary Union

It was in this context that the Latin Monetary Union (LMU) was formed in 1865. It aimed to harmonize the coins of Belgium, France, Italy, and Switzerland. They were all neighboring countries and important trading partners to France, but they all had coins with different silver contents. The LMU was expanded to include the Papal State in 1866 and Greece and Romania in 1867. It should be noted that even before the formal decision to adopt a currency union, many neighboring countries had already adopted the French 10 Franc gold coin as legal tender (Piedmont in 1816, Belgium in 1832, Switzerland in 1850, and Italy in 1862), so that the switch into a formal currency union with France was not farfetched.

The LMU was however a looser arrangement than what we may think of as a currency union today. First, it only concerned full bodied gold and silver coins that were holding the same value and metallic content in all countries. Second, national banks of issue were all private institutions, and private agents were not obliged to accept foreign coins. As far as common overarching rules, these were limited to the standard of minted coins and a limit on over issuance of token coins in silver (bronze, copper coins, or notes were not included in the LMU) (Einaudi 2000, p. 287).

Meanwhile, the discussions on an international currency for most of Europe and the USA continued in the famous meetings in Paris in 1865 and 1867. At the meeting during the International exhibition in Paris 1865, the outspoken aim was again to establish a universal monetary system for the USA and Europe through a universal

coinage. To reach an agreement on a common currency, two issues had to be addressed: (1) How to divide the denominations of coins, i.e., between the main unit of account and its fractions. (2) How to choose a monetary standard and a universal coin with a common metallic content (value). On the first issue, the French pushed for the metric system which already had been adopted by many countries as a result of the meetings in the 1850s.

However, the debate focused mainly on the choice of the monetary standard. Britain was on a gold standard since 1819 whereas France and the other countries in the LMU were on a bimetallic standard. Prussia and the Scandinavian countries were on a silver standard. As gold findings in the USA had made gold cheaper relative to silver, silver coins were disappearing from circulation, and most countries viewed the gold standard as the feasible alternative. The problem was how to harmonize the switch from silver to gold on an international scale.

This would also affect the decision about which “main coin” should be used as the standard of such an international currency union. Here the choice was between the British gold sovereign and the French 10 Franc gold coin. Whereas the British sovereign was the main coin of the world’s most important reserve currency and was used throughout the British Empire, the French 10 Franc coin was the preferred coin on the European continent. However close a universal coinage might have been at that time, the project was shattered by the Franco-Prussian war of 1870–1871.

Some regard the LMU as a failure, since it failed to prevent some member countries (such as Italy) from “free riding” on others. The “free riders” budgets and government debts were “not kept in control” and they “imposed costs” on other LMU members by issuing small denomination coins and notes far from their face value. Hence the argument is that the LMU broke down because the “free riding problem” converted it into a “noncredible” monetary arrangement (Bae and Bailey 2011). There may be a grain of truth in this assessment, but controlling the fiscal behavior of member sovereign nations was never part of the system. In fact, the LMU was built on the same assumptions that the OCA theory would emphasize one century later, that is, to adopt a common currency to reduce transaction costs and promote trade. The LMU was, as pointed out by Marc Flandreau, a truly liberal project, based on voluntary participation and with no specific mechanism to constrain the behavior of member countries. In its original design, its rules were few and simple: governments should limit the issue of debased silver coins and share information to monitor compliance (Einaudi 2001). As the insufficiency of these rules became clear very soon, additional rules were negotiated, such as the “liquidation clause” introduced in the Treaty’s revision of 1885 – a reform that, in the view of contemporary observers (Willis 1901, p. 236) led to a de facto abrogation of the Union and its substitution with a “new monetary league.” However, the liberal design was preserved and it represented “one of the most important stumbling blocks” of the Union, which dissuaded the French government from pursuing its further extension (Flandreau 2000, p. 42).

When assessing historical monetary arrangements, some tend to assume that there is a “one size fits all” solution to monetary problems – that is, there exists one monetary system that invariably provides the optimal outcome under different

economic and political conditions. By doing so, they fail to acknowledge that any monetary regime is – to quote Barry Eichengreen’s assessment of the Gold Standard – “a socially constructed institution whose viability hinge on the context in which it operate” (Eichengreen 2008, p. 29).

In spite of its structural difficulties and declining relevance (mainly due to a diminishing role of gold and silver coins in member countries’ monetary base), the LMU was a resilient institution. It survived the Franco-Italian trade war of the 1880s and a Greek default, allowed some degree of flexibility in exchange rate management of weak currency countries, and lasted until the outbreak of WWI in 1914 (although it survived *de jure* until 1927), which is longer than many other monetary regimes.

The Scandinavian Currency Union

The Scandinavian Monetary Union was also an offspring of the international monetary meetings in the 1850s and 1860s. The Scandinavian countries were on a silver standard and experienced the same problem of arbitrage and coins going out of circulation in relation to their internal exchange rates, as some coins were valued more in silver than others. The solution, in line with the idea of an international monetary standard, was to harmonize the unit of accounts as well as the specie content of coins in the Scandinavian countries. Representatives of the Scandinavian countries regularly attended the international conferences, and the idea of participating in an international monetary system was generally accepted.

When the possibility of an international monetary union evaporated, the Scandinavian countries quickly followed Germany, who had adopted *de jure* the gold standard in 1873. In the same year, Denmark and Sweden formed the Scandinavian Currency Union (SCU), switched to gold, adopted a common unit of account (*Krone* (DKK) and *Krona* (SEK)), and minted full bodied coins with the same metallic content and the status of legal tender in both countries. Norway joined the union in 1875. As was the case with the LMU, the union initially dealt only with coinage and coin circulation, and the three national banks of issue continued to be independent. However, the scope of the union was expanded in 1885 with the adoption of a common clearing system that allowed national banks to draw drafts on each other to settle international balances. As mentioned above, this step was fundamental for the full integration of the Scandinavian financial markets (Øksendal 2007). In 1901, the union was extended to include also the circulation of central bank notes.

Just like the LMU, the SCU ended in practice with the outbreak of WWI and the suspension of the Gold Standard, although *de jure* it lasted until 1924. Also in the case of the SCU, there has been some discussions about “free riding” within the union in relation to over issuance of bank notes and token coins. But the union did work well until WWI, surviving the breakup of the political union in 1905 that had been forced upon Norway by Sweden. After WWI, when notes no longer were redeemable for gold, small token coins continued to pose a problem as they were subject to different valuations in the different countries but could be exchanged at

par in accordance with the rules of the union. This problem was eventually solved by the complete dismantling of the union in 1924. Clearly, the union helped to increase economic and political integration, not least because governors of each national bank started to meet regularly (Talia 2004).

As seen above, the rationale for establishing the SCU was both economic and political. From the late eighteenth century, the idea of Nordic unity started to circulate in small intellectual circles. The movement gained momentum during the nineteenth century and from the 1860s “Scandinavianism” (*Skandinavismen*) became very influential with increased cooperation and exchanges in different areas between the three countries. In fact this movement has been seen as a factor that contributed to the establishment of the SCU.

The Economic and Monetary Union (EMU) and the Lessons from History

As it is well known, the macroeconomic and institutional conditions that countries had to meet in order to participate in the Economic and Monetary Union (EMU) were the subject of harsh negotiations and were officially formulated in the Maastricht Treaty signed in February 1992 (James 2012, pp. 265–323). One of the key aspects of the Treaty was the so-called “no bail out” clause, under which member states should not be liable for, nor assume, the commitments or debts of any other. The logic behind the inclusion of this clause in a currency union was based on fears of “free riding” and the risk of moral hazard: knowing beforehand that they could be rescued by the rest of member countries, governments would have less incentives to abide by the rules and act prudently. This in turn would seriously question the credibility of the EMU. Thus, the clause was intended as a firewall against the risk of debt mutualization and its potential spillovers over the credibility of the entire project. Accordingly, the so-called “convergence criteria” were designed so that they would clearly signal a commitment of participating governments to the principles of noninflationary policies and “sound” finance.

The five criteria were: (1) price stability (inflation should not exceed by more than 1.5% that of the three best performing countries), (2) sound public finances (the government budget should not exceed 3% of GDP), (3) sustainable public finances (the government debt should not exceed 60% of GDP), (4) durability of convergence (the long-term interest rate should not exceed by more than 2 percentage points that of the three best performing countries), and (5) exchange rate stability (participation in the narrow band of the exchange rate mechanism (ERM I) of the European Monetary System for at least 2 years with no strong deviations from central rate and no devaluation; for countries joining the EMU at a later stage, the same criterion applies with respect to a peg to the Euro under ERM II) (European Commission 2018).

Interest in past examples of monetary unions was revived in the run-up to the EMU, and even more so after the emergence of the Euro Area crisis in 2008. Today, it is widely accepted that the largest problems in the design of the EMU is the lack of

fiscal integration, the absence of a mechanism to support deficit countries, and the fact that the European Central Bank lacks a clear mandate to act as lender of last resort in times of crisis. In some way, the design of the EMU eliminated the stabilizers that existed at national level (see De Grauwe 2012, 2013; De Grauwe and Ji 2015; Krugman 2013). It is thus reasonable to ask to what extent the policy makers behind the EMU project had learnt anything from history.

Looking at the final result, perhaps the only lesson drawn from past currency unions such as the LMU and the SCU was that a single currency could not be managed effectively by multiple independent central banks. The option of fiscal transfers (in the form of “solidarity funds”) from surplus to deficit countries, as well as the possibility for the ECB to act as a lender of last resort, were considered during preparatory works but were not implemented in the end.

The road to Maastricht had been long (see for instance Eichengreen 1993). In the 1960s, the main idea behind plans for monetary integration was that it was the necessary complement of the common market. Without monetary integration it would have been too easy to enhance exports at the expense of other participants by manipulating the exchange rate. This in turn would question the legitimacy of the whole project of European economic integration. Another recurrent economic argument was the benefits of creating a European reserve currency to compete with, or to complement, the dominant international currencies of the time – i.e., gold, the US dollar, and the British pound (European Commission 1962, pp. 87–88).

On the contrary, the crises of the 1970s raised awareness of potential problems. The Keynesian paradigm was still guiding the economic thinking and the legacy of the Bretton Wood system – which had been built from the ashes of the policy failures of the interwar period – was fresh memory. New ideas emerged, such as an Exchange Stabilization Fund as well as a more influential role for the European Monetary Cooperation Fund to deal with imbalances within the union (see European Commission 1966). The idea that a devolution not only of monetary but also fiscal prerogatives by national governments in favor of the EEC institutions also gained momentum (European Commission 1975). As we know, this idea was abandoned in the plans of the 1980s in favor of an approach in which each country was supposed to pursue convergence criteria to defend its fixed exchange rate with respect to the common currency (European Commission 1989, 1990).

There are several reasons for this choice in the design of the EMU, but arguably the two most important factors were political resistance and a change in the paradigm of economic theory. Political resistance against the EMU was (and is) based on the fear of losing influence – which would be the case if fiscal authority was transferred from national governments to the EU. Add to that the above-mentioned fear of “free riding,” which means that surplus countries would have to transfer resources to deficit countries. By eliminating institutions that could be deployed as emergency funds by deficit countries (such as an Exchange Stabilization Fund), the idea of a currency union became more attractive for surplus countries.

The idea that the economic discipline of each country independently would be sufficient to uphold the EMU also started to gain support in economic theories from the late 1970s. Or more precisely that adhering to the EMU would impose an

external constraint on participating countries that would discipline their policy. This idea is evident in the so-called Optica Reports (Basevi et al. 1976, 1977; see also Thygesen 1978) published in 1976 and 1977. The theoretical background was the so-called “monetary approach to the balance of payments” and the idea that “purchasing power parity” holds. Money was again seen as only a nominal item not related to the real economy. In this new approach, joining a currency union was simply to commit to a common inflation rate. As long as a government wanted to adhere to the common currency, it had to use monetary policy to fight inflation in order to maintain a fixed exchange rate. The “credibility” of this commitment to the peg was crucial to make a currency union work without inducing market forces from putting pressure on the currency. This “credibility” in turn was based on clear and transparent rules that the participating nations adhered to. The fact that countries subject themselves to a fixed exchange rate, in this case a common currency, thus meant that they were forced to discipline their economic policy to align their inflation rate to the one of the other countries or opt out. Thus the “credibility” of the EMU was reached by the fact that each country accepted to “tie their hands” (Giavazzi and Pagano 1988).

As discussed in the previous sections, however, many economists and economic historians were not convinced that surrendering monetary prerogative would be enough to make the EMU work (Bordo and Jonung 1999; Capie 1998; Goodhart 1998). A quote from the seminal paper by Forrest Capie summarizes these concerns:

The monetary criteria are not problematic. In a world where inflation has been the devil and has been attacked remorselessly almost to the point of temporary defeat there is less to worry about. Most countries in and outside of Europe have low inflation rates. It is the fiscal criteria that pose, and are likely to continue to pose, problems. (Capie 1998, p. 80)

It is also well known that in reality, fiscal convergence criteria have been repeatedly violated by most members of the EMU with relative impunity. By example, already in 2002, France and Germany, the two biggest economies in the EMU, violated the second criteria of “sound public finances.”

However, history suggests that the making of a successful and enduring currency union is a long process. The economic and political cost of leaving a currency union as the EMU should also not be underestimated (Eichengreen 2007). If there is enough political will to sustain the EMU, it will survive. Thus, the political circumstances are of more importance for the EMU than the economic circumstances, even if it is much easier to manage a currency union during expansionary cycles than in recessions. It is in times of crisis that this political will is tested. Again, the lesson that Europe can draw from US history is clear:

It is far from clear... that the United States was an optimal currency area. This pattern held until the 1930s when institutional changes, such as increased federal fiscal transfers (which pumped high-powered money into regions that were losing reserves) and bank deposit insurance, addressed the problem of regional banking shocks. Political considerations, of course, ruled out separate regional currencies in the United States. (Rockoff 2000)

Concluding Remarks

History suggest that currency unions and political (fiscal) integration go hand in hand. It is possible to form currency unions that are less politically integrated, but such unions are more resembling fixed exchange rate systems managed by independent central banks. The EMU today is in some ways a hybrid since monetary policy is centralized in the hands of an independent central bank (ECB), but there is a very limited degree of fiscal integration and each country is supposed to fend for itself in the struggle to remain in the Union.

It should be noted that more or less all “national” currencies work as politically integrated currency unions supplemented by fiscal transfers from surplus to deficit regions. These can be found both in centralized and federal polities, and are especially necessary during crises that affect asymmetrically different economic sectors and regions in a country. The same rule applies for the sustainability of a “multinational” currency union.

References

- Alesina A, Barro RJ (2000) Currency unions. NBER working paper no 7927. <https://www.nber.org/papers/w7927>
- Bae K-H, Bailey W (2011) The Latin monetary union: some evidence on Europe’s failed common currency. *Rev Dev Finance* 1:131–149
- Basevi G. et al (1976) The Optica Report 1975. Doc. II/909/75 final. Directorate General for Economic and Financial Affairs [online]. Brussels: European Commission, 16.01.1976 [accessed 29 May 2012]. Available on: http://ec.europa.eu/economy_finance/emu_history/documentation/chapter8/19760116en61opticareport1975.pdf
- Basevi G. et al (1977) Inflation and Exchange Rates: Evidence and Policy Guidelines for the European Community. Optica Report 1976. II/855/76, 10 February 1977. [EU Commission – Working Document]
- Bordo MD, Jonung L (1999) The future of the EMU: what does the history of monetary unions tell us. NBER working paper no 7365. <https://www.nber.org/papers/w7365>
- Broz T (2005) The theory of optimum currency areas: a literature review. *Privredna kretanja i ekonomska politika* 104:53–78
- Calvo G (1998) Capital flows and capital market crises: the simple economics of sudden stops. *J Appl Econ* 1(1):35–54
- Capie F (1998) Monetary unions in historical perspective: what future for the euro in the international financial system. *Open Econ Rev* 9:447–465
- De Grauwe P (2012) The governance of a fragile Eurozone. *Aust Econ Rev* 45:255–268
- De Grauwe P (2013) Design failures in the eurozone. Can they be fixed? European Commission Economic papers 491. http://ec.europa.eu/economy_finance/publications/economic_paper/2013/ecp491_en.htm
- De Grauwe P, Ji Y (2015) Correcting for the Eurozone design failures: the role of the ECB. *J Eur Integr* 37:739–754
- Dellas H, Tavlas GS (2009) An optimum-currency-area odyssey. *J Int Money Financ* 28:1117–1137
- Edwards S (2004) Thirty years of current account imbalances, current account reversals, and sudden stops. *IMF Staff Pap* 51(suppl. 1):1–49
- Eichengreen B (1992) One Money for Europe? Lessons from the US Currency Union *Economic Policy, Europe* 1992, 5(10):117–187
- Eichengreen B (1993) European monetary unification. *J Econ Lit* 31:1321–1357

- Eichengreen B (2007) The breakup of the euro area. NBER working paper no 13393. <https://www.nber.org/papers/w13393>
- Eichengreen B (2008) Globalizing capital. A history of the international monetary system. Princeton University Press, Princeton
- Einaudi LL (2000) From the franc to the 'Europe': the attempted transformation of the Latin monetary union into a European monetary union, 1865–1873. *Econ Hist Rev* 53:284–308
- Einaudi L (2001) Money and politics: European monetary unification and the international gold standard (1865–1873). Oxford University Press, New York
- European Commission (1962) Mémorandum de la Commission sur le programme d'action de la Communauté pendant la deuxième étape. Bruxelles: Service des publications des Communautés européennes, p 107. http://www.cvce.eu/obj/memorandum_de_la_commission_24_octobre_1962-fr-4bf24e3a-80ca-4886-b8dd-1a4d0a92d411.html
- European Commission (1966) The development of a European capital market. Report of a group of experts appointed by the EEC Commission, Brussels
- European Commission (1975) Report of the study group, "Economic and monetary union 1980" 8 March 1975 European Commission, Brussels http://www.cvce.eu/obj/the_marjolin_report_brussels_march_1975-en-93d25b61-6148-453d-9fa7-9e220e874dc5.html
- European Commission (1989) Report on economic and monetary union in the European Community. Presented April 17, 1989 (commonly called the Delors Plan or Report) By Committee for the Study of Economic and Monetary Union, Brussels
- European Commission (1990) One market, one money. An evaluation of the potential benefits and costs of forming an economic and monetary union. *Eur Econ* 44, Oct 1999, Brussels
- European Commission (2018) Convergence criteria for joining. Homepage https://ec.europa.eu/info/business-economy-euro/euro-area/enlargement-euro-area/convergence-criteria-joining_en
- Flandreau M (1996) The French crime of 1873: an essay on the emergence of the international gold standard, 1870–1880. *J Econ Hist* 56:862–897
- Flandreau M (2000) The economics and politics of monetary unions: a reassessment of the Latin monetary union, 1865–71. *Financ Hist Rev* 7:25–43
- Frankel JA, Rose AK (1998) The endogeneity of the optimum currency area. *Econ J* 108:1009–1025
- Giavazzi F, Pagano M (1988) The advantage of tying one's hands: EMS discipline and central bank credibility. *Eur Econ Rev* 32(5):1055–1075
- Giavazzi F, Pagano M (1988) The advantage of tying one's hands: EMS discipline and Central Bank credibility. *European Economic Review* 32(5):1055–1075
- Glick R, Rose AK (2001) Does a currency union affect trade? The time-series evidence. CEPR discussion paper no 2891
- Glick R, Rose AK (2002) Does a currency union affect trade? The time-series evidence. *Eur Econ Rev* 46:1125–1151
- Glick R, Rose AK (2015a) Currency unions and trade: a post-EMU Mea Culpa. CEPR discussion paper no 10615. https://cepr.org/active/publications/discussion_papers/dp.php?dpno=10615
- Glick R, Rose AK (2015b) Currency unions and trade: a post-EMU Mea Culpa. NBER working paper no 21535. <https://www.nber.org/papers/w21535>
- Glick R, Rose AK (2016) Currency unions and trade: a post-EMU reassessment. *Eur Econ Rev* 87:78–91
- Goodhart CAE (1998) The two concepts of money: implications for the analysis of optimal currency areas. *Eur J Polit Econ* 14:407–432
- Grubb F (2006) The US constitution and monetary powers: an analysis of the 1787 constitutional convention and the constitutional transformation of the US monetary system. *Financ Hist Rev* 13:43–71
- Holtfrerich C-L (1993) Did monetary unification precede or follow political unification of Germany in the 19th century? *Eur Econ Rev* 37:518–524
- James H (2012) Making the European monetary union. Harvard University Press, Cambridge

- Kenen P (1969) The theory of optimum currency areas: an eclectic view. In: Mundell R, Swoboda A (eds) *Monetary Problems of the International Economy*, pp 41–60. The University of Chicago Press, Chicago
- Kouparitsas MA (2001) Is the United States an optimum currency area? An empirical analysis of regional business cycles. Federal Reserve Bank of Chicago WP No 2001-22. <https://fraser.stlouisfed.org/title/5285/item/533613>
- Krugman P (2013) Revenge of the optimum currency area. *NBER Macroecon Annu* 27(1):439–448
- McKinnon RI (1963) Optimum currency areas. *Am Econ Rev* 53(4):717–725
- Merler S, Pisani-Ferry J (2012) Sudden stops in the euro area. *Rev Econ Inst* 3(3):1–23
- Michener R, Wright RE (2006) Development of the US monetary union. *Financ Hist Rev* 13(1):19–41
- Mongelli FP (2002) ‘New’ views on the optimum currency area theory: what is EMU telling us? ECB working paper no 138. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp138.pdf>
- Mongelli FP (2008) European economic and monetary integration, and the optimum currency area theory. European Commission Economic papers 302. http://ec.europa.eu/economy_finance/publications/pages/publication_summary12083_en.htm
- Mundell RA (1961) A theory of optimum currency areas. *Am Econ Rev* 51:657–665
- Nitsch V (2002) Honey, I shrunk the currency union effect on trade. *World Econ* 25:457–474
- Ögren A (2009) Financial revolution and economic modernisation in Sweden. *Financ Hist Rev* 16(1):47–71
- Ögren A, Øksendal LF (2012) The euro and the gold: what are the lessons? In: Ögren A, Øksendal L-F (eds) *The gold standard peripheries – monetary policy, adjustment and flexibility in a global setting*. Palgrave Macmillan, London
- Øksendal LF (2007) The impact of the Scandinavian monetary union on financial market integration. *Financ Hist Rev* 14:125–148
- Pakko MR, Wall HJ (2001) Reconsidering the Trade-Creating Effects of a Currency Union. Federal Reserve bank of St. Louis Review, Sep.-Oct., pp 37–45
- Persson T (2001) Currency unions and trade: how large is the treatment effect? *Econ Policy* 16(33):433–448
- Reinhardt C, Rogoff K (2009) *This time is different: eight centuries of financial folly*. Princeton University Press, Princeton
- Rockoff H (2000) How long did it take the United States to become an optimal currency area? NBER historical paper no 124. <https://www.nber.org/papers/h0124>
- Rose AK (2000a) One money, one market: estimating the effect of common currencies on trade. *Econ Policy* 15:7–33
- Rose AK (2000b) Does a currency union boost international trade? *Calif Manag Rev* 42:52–62
- Rose AK (2001a) Honey, the currency union effect on trade hasn’t blown up. *World Econ* 25:475–479
- Rose AK (2001b) Currency unions and trade: the effect is large. *Econ Policy* 16:449–461
- Rose A, Engel C (2002) Currency unions and international integration. *J Money Credit Bank* 34(4):1067–1089
- Rose AK, van Wincoop E (2001) National money as a barrier to international trade: the real case for currency union. *Am Econ Rev* 91:386–395
- Rousseau PL (2006) A common currency: early US monetary policy and the transition to the dollar. *Financ Hist Rev* 13(1):97–122
- Russell HB (1898) *International monetary conferences. Their purposes, character and results with a study of the conditions of currency and finance in Europe and America during intervening periods, and in their relations to international action*. Harper & Brothers Publishers, New York/London
- Saint-Paul G (2010) Is the euro a failure? <http://www.voxeu.org/index.php?q=node/4999>
- Sala-i-Martin X, Sachs J (1991) Fiscal federalism and optimum currency areas: evidence for Europe from the United States. NBER working paper no 3855. <https://www.nber.org/papers/w3855>

- Smith C (2002) Currency unions and gravity models revisited. Reserve Bank of New Zealand discussion paper no 2002/07. <https://www.rbnz.govt.nz/research-and-publications/discussion-papers/2002/dp2002-07>
- Sylla R (2006) The transition to a monetary union in the United States, 1787–1795. *Financ Hist Rev* 13(1):73–95
- Talia K (2004) The Scandinavian currency union 1873–1924: studies in monetary integration and disintegration, Dissertation, Stockholm School of Economics
- Thygesen N (1978) Inflation and exchange rates: Evidence and policy guidelines for the European community. *J Int Econ Rev* 8(2):301–317
- Timini J (2018) Currency unions and heterogeneous trade effects: the case of the Latin Monetary Union. *Eur Rev Econ Hist* 22:322–348
- Weiman D (2006) Introduction to the special issue on the formation of an American monetary union. *Financ Hist Rev* 13(1):11–17
- Willis H (1901) History of the Latin monetary union. Economic Studies of the University of Chicago, Chicago