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The Eurozone: an Optimal Currency Area?

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**Throughout this work, several mentions of Mr. de Larosière are made. These references comprise information and perspectives gained from my interview with him. Any references to his publications (i.e., not information from said interview) are duly noted.*

Contents

Abstract

This paper seeks to lay out several key arguments, after a thorough examination of economic data and political evidence, focused around the idea that, while it might have been designed as such, the Eurozone is not currently operating as an optimal currency area. Care is taken to explain the criteria for an optimal currency area, and the Eurozone's status in regards to each of these applicable criteria.

The paper then moves on to examine some key comparisons that can be made between Europe and the United States, particularly as it relates to the United States as a model for Europe, and also examines some key steps that policymakers could take to move Europe closer to fulfilling the criteria for being an optimal currency area. It concludes with broader questions about the European and global implications of these policymakers' decisions in response to the Eurozone crisis and the effects that these decisions will have on the political and economic landscape in Europe and the Eurozone in the short run and the long run.

Introduction and Background

What is the Eurozone?

On May 9, 1950, French Foreign Minister Robert Schuman proposed the first building blocks of what would later become one of the greatest experiments in political, economic, and social integration of the twenty-first century and beyond: the European Union. With the creation of the European Coal and Steel Community (ECSC) in the Treaty of Paris, signed in 1951, the countries of Western Europe, which had fought for centuries and were now ravaged by two World Wars, finally linked their heavy industries of coal and steel production to prevent any nation from single-handedly building weaponry essential for any future conflict. What would follow in the next sixty years would be nothing short of remarkable. The small Coal and Steel Community would expand, enlarge, and evolve into a single market, breaking down economic, political, and cultural barriers between countries and growing to encompass most of the European continent. With a European Union-wide gross domestic product (GDP) of €12.629 trillion ($17.578 trillion) in 2011 (Eurostat),[1] it is the single-largest economic entity by GDP in the world, with the Eurozone accounting for over seventy-five percent, or €9.4 trillion, of GDP. Indeed, the process of political and economic integration, particularly within the Eurozone, has led to some of the fastest integration ever seen during the course of the first decade of the twenty-first century.

In 1993, the Maastricht Treaty went into effect, paving the way for the introduction of the euro in 1999 and the circulation of euro notes and coin in 2002. The Maastricht Treaty also

[1] http://epp.eurostat.ec.europa.eu/tgm/refreshTableAction.do;jsessionid=9ea7d07d30e73d0a597a20144996a195cbbbf8bb2cd7.e34OaN8PchaTby0Lc3aNchuMbNuRe0?tab=table&plugin=1&pcode=tec00001&language=en

established key convergence criteria for member states of the newly-proposed currency zone, which would hypothetically maintain some semblance of similarity and congruence between member states' economies, so as hopefully to prevent the type of regional shocks or disparate conditions that could make such a monetary union unworkable. The Stability and Growth Pact was specifically designed to guarantee such convergence and to ensure price stability and fiscal responsibility amongst members. For nearly a decade after the introduction of the euro, the countries of the Eurozone enjoyed the same low interest rates, stable growth, and relative interstate political harmony. Yet following the global financial crisis in 2007-08, European markets became susceptible to fears of sovereign debt defaults, interest rates skyrocketed, and large banks and countries alike teetered on the brink of fiscal collapse.

So what went wrong? Why is the Eurozone now in a state of malaise, with sovereign debt crises, out-of-control interest rates, shrinking economies, and a seeming inability to find either an economic or political solution to such problems? How did the greatest experiment in international economic and political cooperation begin to show signs of duress and potential collapse within such a short period of time after enjoying such rapid integration, growth, and preferential treatment from world markets? The answer is not an easy one, and rather than treat the issues facing the Eurozone as Euro-wide issues, one must examine specific countries and their economic and political ills on a case-by-case basis in order to get a full picture of the current situation.

The Eurozone as an OCA

Sharing a common currency was seen, by the architects of the Maastricht Treaty, as another step on the road toward fuller economic integration and the single market. With the two important stages in the introduction of a common currency, the euro (€), in 1999 and 2002, the nations of the Eurozone moved the closest yet to economic integration, tying their exchange rates together and agreeing to denominate all debts in euros. It was the largest economic integration of a currency area that the world had seen since the unification of the United States into a monetary union under the dollar over two centuries earlier.

Yet simply sharing a common currency does not translate into economic symmetry and integration, nor does it portend unlimited and infinite economic and political harmony. It is important, in an analysis of monetary union in Europe, to turn to the pioneering work of Nobel Prize-winning Canadian economist Robert Mundell, who first described in the 1960s what is today known as the theory of optimal currency areas (OCA). In his work, "A Theory of Optimum Currency Areas" (Mundell), Mundell asserted that there is a balance required in making the determination as to whether or not to share a currency, based upon the costs and benefits involved with the decision and the effects of a monetary union. And while many of the economic constructs and institutions of the 1960s have evolved or changed today (most notably the end of the Bretton-Woods system of pegged exchange rates), Mundell's work still carries important implications for any currency shared between more than one country, including the euro.

What, then, is an optimal currency area? In its simplest form, as Mundell describes it, an optimal currency area is a region, or area, where the benefits of sharing a common currency outweigh the costs; an area where a single currency would create the greatest economic efficiency, or benefit. Such a region need not be supranational; in fact, much of Mundell's original essay on optimal currency areas focused on the idea of intra-national or sub-national regions as optimal currency areas.[2] Only after the idea of European integration took hold in the second half of the twentieth century was Mundell's theory practically applied to an international entity, that is, the Eurozone.

What are the benefits of sharing a common currency? According to Mundell and other prominent economists, one of the most obvious benefits is lowered transaction costs; that is, the cost of making an economic exchange. In terms of the Eurozone, this primarily refers to the costs incurred when doing business or conducting an economic transaction, with a different country with a different currency. The complexity of over a dozen currencies in such a relatively small geographic area (such as Europe) in which to conduct business would presumably lead to many headaches and inconveniences over the need to exchange currencies at varying exchange rates, particularly after the collapse of the Bretton Woods system in the 1970s and the advent of floating exchange rates.

There are other benefits to an optimal currency area, however. One of the most important is increased capital mobility, or the flexibility with which investors, whether

[2] There are four generally-accepted criteria for an optimal currency area: labor mobility across the region, capital mobility and relative price and wage flexibility, some sort of risk-sharing system across the region (which could, in many cases, comprise fiscal transfers), and relative similarity of business cycles across the region. For further detail, refer to "A Theory of Optimum Currency Areas" (Mundell, A Theory of Optimum Currency Areas).

individuals or businesses, can move capital throughout an area. This became particularly important in the latter half of the twentieth century, with an increased focus on foreign direct investment (FDI) both into and originating from Europe. In addition to capital mobility, labor mobility is also a key benefit for an optimal currency area. In an optimal currency area, labor, like capital, should be mostly mobile; that is, workers should be free and able to move from one part of the region to another depending on where employment is most available. It is important to note the potential difficulty for Europe here, with its dense mix of national cultures and languages in a relatively small geographic area, especially compared to other large economic actors worldwide (e.g. United States, China, etc.). This is a very important consideration.

What, then, are the costs to sharing a common currency? There are many, and possibly others yet to be discovered or understood; however, the most obvious comes in the form of a loss by each participant (whether a nation, province, etc.) in an optimal currency area of some, if not all, of their autonomy over fiscal and monetary policy, and with it, the loss of interventional tools that could be used to stabilize the economy in the event of a regional shock. When a regional shock strikes one region of a currency area, such as a drop in demand for a region-specific commodity, and unemployment rises in that region, all else remaining equal in other regions of the currency area, what are policymakers, or the central banking authority to do? Increasing the money supply would stem unemployment in the affected region, but would cause inflation in other regions, where no comparable economic shock was felt. Thus, Mundell asserts, the pace of inflation would be "set by the willingness of central authorities to allow unemployment in deficit regions," that is to say, in the region

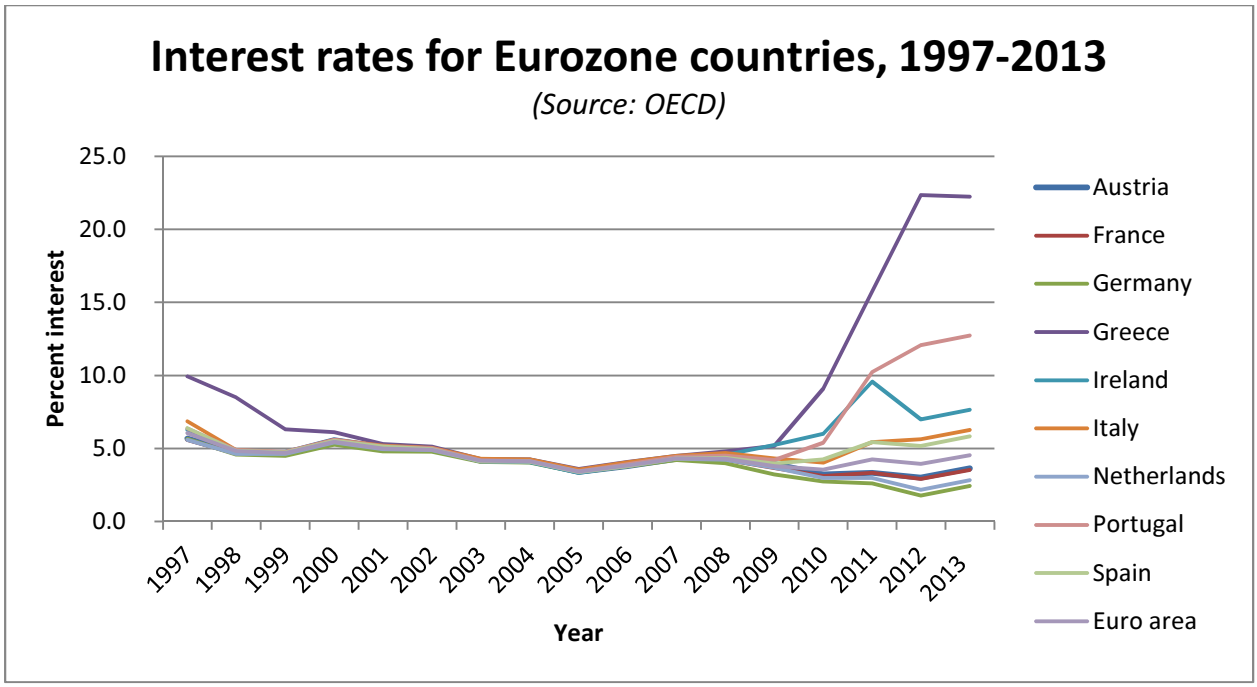
asymmetrically experiencing an economic shock. Therefore, joining together two or more political entities or geographic areas or sub-regions ties the hands of fiscal and monetary policymakers in no uncertain terms, at least to some extent. Further treatment regarding this important aspect of optimal currency area theory in the context of Europe will be given later in this paper. It suffices to note here, however, that while the Eurozone was seen by many, including Mundell, as the ideal candidate area for testing optimal currency area theory in the years leading up to the global financial crisis of 2007-08, there is now considerable doubt as to whether or not the Eurozone sustains – or is even capable of sustaining – the criteria necessary to be labeled as an optimal currency area, as evidenced by the substantial economic divergence among member states.

Did anyone see this coming?

Some of the doubt as to whether or not Europe would fulfill the criteria for being an optimal currency area was expressed hypothetically in the 1980s and 1990s, even before concrete plans were in place to create a monetary union in Europe, by economists such as Barry Eichengreen and Martin Feldstein.[3] Indeed, Europe was seen by many economists as an ideal candidate area to test Mundell's optimal currency area theory, but others saw too many factors (in the form of different and divergent states) in the economic realities of the states to make real, functional monetary union workable in Europe. However, most of these concerns dealt with skepticism over the theory of optimal currency areas in general; that is, they warned of

[3] See "Is Europe an Optimal Currency Area?" (Eichengreen) and "EMU and International Conflict" (Feldstein) for a closer read on some of the primary concerns as to why Europe would not form an optimal currency area. In the case of Eichengreen, much doubt was cast on Europe's progress towards becoming an OCA in the model of the United States; Feldstein warns explicitly of the lack of autonomy over individual national economic policies, stating that such factors could lead to potential international conflict.

political disunity stemming from economic chaos if the proper political structures were not in place. As Jacques de Larosière, former Managing Director of the International Monetary Fund and former Governor of the Banque de France, points out, the markets were blind to whether or not Europe was indeed an optimal currency area. There was, essentially, a prevailing assumption that a shared currency meant shared risk (and thus the assumption of "bailouts" in some form, should they be necessary). Nowhere is this false assumption more evident than in an examination of the interest rates of some key Eurozone countries. Because of the belief in shared risk, interest rates for Eurozone countries, from Germany to Greece, tracked along an almost identical path during the period from 2000-2009. Only in 2009, according to de Larosière and evidenced by the interest rates shown here, did the markets "wake up" and realize that Greek bonds, and later the bonds of other countries on the periphery, were not as safe as many of the other Eurozone members' bonds, largely as a result of the economic divergences amongst the members of the Eurozone.



(Data from the Organization for Economic Cooperation and Development. See Appendix B for further detail and rates by country and year.)

When the markets "woke up" to the reality of divergence between the health of various Eurozone members' economies in 2009 and 2010, interest rates diverged and rose rapidly for those countries considered most at risk.

The United States as an OCA?

For a crisis of such scale, and for an economic and political entity of such size, is there any example or comparative study for which Europe can look for reference or history? Indeed there is. Many economists, notably Barry Eichengreen[4] and Hugh Rockoff,[5] have written about the United States as a currency area, and of the obstacles and challenges that the United States has faced along the way to becoming an optimal currency area. While the United States' path to becoming an optimal currency area could be considered unique because of certain factor

[4] "Is Europe an Optimal Currency Area?" (Eichengreen) discusses some of the key differences between the United States and Europe in regards to progress towards becoming an OCA

[5] "How Long Did It Take the United States to Become an Optimal Currency Area?" (Rockoff)

endowments and inherent advantages described by both Rockoff and Eichengreen, there are certainly lessons and examples to be learned from the nearly seventy-plus year history of the United States as it became an optimal currency area, from the introduction of the greenback during the Civil War to the implementation of large-scale federal fiscal transfers and increased labor mobility in the New Deal and post-World War II. Further analysis of the United States as a potential model for the Eurozone will be given later in this paper.

Focus

What, then, is the optimal currency area arrangement for Europe, and for the Eurozone, that balances the current fiscal and monetary needs and realities of the European states, given the past history of currency unions and the current economic crisis and its political effects?

Global Implications and Perspective

The Eurozone crisis is not limited to Europe, however; there are some important aspects of the topic of the single currency that must be recognized and explored. Perhaps most important is that the crisis of the Eurozone is a crisis with global implications. The effects of the crisis, whether positive or negative, are felt by markets across the globe and have important worldwide economic consequences. World markets have followed political and economic developments in the Eurozone with great attention and detail, responding disproportionately at times to such developments. The market reactions to the crisis demonstrate a high level of concern about the crisis; for example, the reactions of world markets following the decisions of June 29, 2012, and also following the German Constitutional Court's ruling of September 12, 2012, which found the European Stability Mechanism (ESM) to be constitutional, effectively

paving the way for joint euro funds to be used to buy sovereign debt directly from troubled governments (Smith, European Stocks Rally After German Ruling).[6] The resolution and effects of this crisis no longer stop at the edge of the European Continent.

However, there is an important distinction to be made between defining the crisis as a global crisis, and defining it as a crisis with global implications. According to Jacques de Larosière, while European policymakers must keep the global effects of their decisions in mind, the crisis is a European one, with European causes and factors: "The Eurozone crisis is a product of the policies pursued by European policymakers. They know that the effects of their proposed solutions will be felt outside of Europe. But they must come up with those solutions on their own; in effect, the problems of Europe must be solved by Europe."

More importantly, as de Larosière and others have noted, the crisis of the Euro requires both a short-term "fix" and a longer-term, more structurally-based solution. While many policymakers have declined to endorse specific targeted proposals in the way of spending cuts, revenue increases, and the like, there is widespread agreement, according to de Larosière, that the underlying structural problems facing the single market will not, and cannot, be solved only with a temporary "fix" that could be used to stem the crisis in the immediate future. Simply agreeing on the European Stability Mechanism or on the next bailout of Greek or Spanish banks will not solve the Eurozone's crisis in the long term, even if such steps do calm world markets and lead to lower interest rates in the short run.

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[6] For more on market reactions to these decisions, see "World Markets Cheer EU Deal" (Smith) http://money.cnn.com/2012/06/29/investing/world-markets/index.htm
"European Stocks Rally After German Ruling" (Smith) http://money.cnn.com/2012/09/12/investing/world-markets-germany/index.html

What, then, are the long-term structural problems facing the single market? Or, perhaps it is more accurate to reword the question as: what are the long-term structural issues facing member nations in the Eurozone that have led to so much difficulty in weathering the current crisis? Did the expansion of the Eurozone as a currency area occur too quickly? What comparisons can be drawn with the United States and its emergence as an optimal currency area? What lessons can be learned? These are all important questions with which European policymakers will undoubtedly wrestle, informed by the history of the European Union and the single market thus far.

It is important also to recognize, as is stated in the works of Michael Bordo, Lars Jonung, Hugh Rockoff, Jacques de Larosière, and others, that no level of political union can force economic integration by fiat, and most importantly, that a shared currency does *not*, in and of itself, beget economic convergence. Indeed, much of the Eurozone's economic integration thus far has largely consisted of a sort of "de jure" integration into a single currency area, lacking the broad, sweeping policy tools to create and foster macroeconomic convergence amongst member states. That is to say, political structures and institutions such the Euro, the European Central Bank, and even the Schengen Area have been created to oversee an economically integrated Europe, but little has been done to foster actual economic convergence. It will only be when economic convergence is achieved that the Eurozone will attain a "de facto" sense of real integration, whether through natural market convergence, or more likely, through government intervention in the economy. Such intervention can take many forms; however, it will only be when stability and real integration are achieved that other economic issues become less of a threat.

It will be very difficult for economic considerations to override the entrenched political institutions of the European Union and the single currency. To do so would be to undermine much of the economic and political integration of the past sixty years. But the manner in which policymakers and statesmen approach the solutions to the current problem will have far-reaching effects and consequences – not just on the economic and financial state of the Eurozone, but on governance of the Union, Continent-wide social and cultural flows and exchanges, and the global economy.

Literature Review

Although much has been written about the Eurozone as a monetary union, and certainly much more has been written in recent times in regards to the sovereign debt crisis, much of this literature fails to examine whether or not the Eurozone can meet the criteria for being an optimal currency area. Furthermore, while Europe (or subsets of various country arrangements within Europe) has been at times used as an example of a possible currency area candidate in OCA literature, there is little material on the practical reality of Europe and the Eurozone as an optimal currency area in light of the current crisis affecting the Eurozone. Indeed, in examining source material and past work done on the topic, it became apparent that much of the writing about the Eurozone, or a theoretical currency union in Europe, as an OCA was done in the 1980s and 1990s *before* Maastricht, and before the Eurozone had actually taken shape. Thus, much of the hypothetical conjectures and predictions regarding the feasibility of such a monetary arrangement (or lack thereof) are just that, with no real-world experience to back them up. While current approaches to the crisis examine many of the proposed solutions, both short-term and long-term, and several touch on the key underlying issues affecting the Eurozone and each of its member countries, little has been made of the divergences *between* these countries, and whether or not these divergences are reconcilable, or can be overcome, in any long-term agreement for successful integration into and sustaining of a monetary, fiscal, and/or banking union. This will be the primary focus of this paper; to assess the divergences between euro member countries that have led to this crisis and determine how and to what extent they are divergent. Only in doing so can we determine what needs to be done to establish convergence for the economies of the Eurozone. It should be noted that the works

referenced here comprise only a small portion of the available literature on the Eurozone, as a complete and thorough assessment of a more substantial sampling of the available literature would occupy this entire thesis.

Economic Approaches

As explained earlier, the theory of optimal currency areas originated in 1961 with the pioneering work of economist Robert Mundell, who argued in a groundbreaking essay, entitled "A Theory of Optimum Currency Areas," that certain benefits to a shared currency can outweigh the inevitable costs. On the flip side, however, he is quick to caution that the reverse is also possible: that the costs or disadvantages of sharing a currency – whether between regions, countries, or continents – can easily outweigh the benefits. Now, according to Mundell[7] and others, many are beginning to doubt whether the benefits of a pan-European currency union will outweigh the costs in the long term.

One should note that in his original work on optimal currency areas in 1961, Mundell does not specifically outline a currency area as consisting of more than one country; rather, he refers to regions that can be either within or outside of a sovereign country. Indeed, he even points out that the very idea of optimal currency areas is (or was at the time of his writing in 1961), "purely academic, since it hardly appears within the realm of political feasibility that national currencies would ever be abandoned in favor of any other arrangement" (Mundell). It is important, when reviewing his work, to remember the world in which he wrote: the Bretton-

[7] Mundell, known as a proponent and sometimes as the "Godfather" of EMU, addressed many of these concerns in a speech given about his original 1961 treatise on December 5, 1997 at "A Conference on Optimal Currency Areas" at Tel Aviv University (Mundell, Speech: Optimum Currency Areas)

Woods system of pegged exchange rates was still in effect, the Maastricht Treaty was still over three decades away, and the world had not seen serious deregulation in trade barriers and international finance that was to come in the years preceding Maastricht. Additionally, in his original work, Mundell calls into question the adaptability of central banks to deal with regional shocks in a flexible exchange rate system. Mundell could not have predicted at the time that his pioneering theory would soon become a functioning model for the greatest step toward European integration since the formation of the European Economic Community (EEC); in fact, he even makes a point of cautioning against an overly aggressive expansion of a currency area. He warns in his 1961 paper that too disparate a group of countries in a currency area can actually cause economic hardship, but without a practical, real-world application for such a scenario at the time, he does not provide a concrete example in his first paper on the subject. His was not the only warning that would foreshadow potential troubles for a currency area such as the Eurozone.

Alesina and Barro, in their 2002 paper entitled "Optimal Currency Areas," examine the reality that the number of independent countries in the world is increasing, implying that the world is more likely to see more multi-country currency unions as a result. They undertake a fascinating examination of how trade and co-movements of outputs and prices would change in the presence of a currency union, and suggest that a country's decision to join such a union would be dependent on these two factors and the way in which joining the union affects them (Alesina and Barro). However, they do not discuss labor productivity and mobility, cultural adaptability, overall economic strength, or sector diversification in their analysis; these are all important aspects of the European situation that need attention.

Jacques de Larosière discusses some of the current problems facing the Eurozone as a single currency area in his Occasional Paper No. 84, published by the Group of 30 in July 2012. De Larosière is specific about much of what ails the single currency, describing the dichotomy that exists between the export-led and mostly industrial economies of Germany, the Netherlands, and Austria, and the import-heavy and FDI-dependent service-based economies of many of the countries on the periphery of the Eurozone, including Greece, Italy, Ireland, Portugal, and Spain (de Larosière).[8] Indeed, it is this type of dichotomy that renders a currency area susceptible to regional shocks and can result in imbalances in one region exacerbating poor macroeconomic conditions in another. As Mundell writes in his 1961 work, disparate economic conditions (such as dramatic differences in GDP per capita, labor mobility and/or productivity, etc.), varying levels of development, or differing sector diversification can all create conditions that render a currency area less than optimal and exposed to slight changes in financial or labor markets.

De Larosière stresses that the problems with the Eurozone, while originating as European issues, have now become global problems in need of a global long-term solution. This is a particularly refreshing perspective, especially given the point of view from which it is argued. De Larosière goes on to say that the situation raises serious implications for the rest of the industrialized globe from the Eurozone crisis as a sort of case study. As he states, massive national debt is not a problem specific to Europe, but rather to most of the developed world. He goes on further to identify fiscal overhangs and imbalances as large factors in the crisis,

[8] These countries are commonly referred to as the "PIIGS" countries after the acronym formed from their names.

which not only threaten Europe but the rest of the heavily-indebted industrialized world as well.

So then, does de Larosière see Europe as auguring the potential sovereign debt crises that could affect the rest of the developed world also? Is Europe perhaps the first domino to fall, triggered by the uneven impact of a common currency area?[9] While de Larosière touches briefly on the global implications of policymakers' *responses* to the current Eurozone crisis, it is vital also to examine the underlying *causes* of the current crisis, and identify other nations where similar trouble might be brewing as a result of those same factors. He is convinced that Europe will remain a dominant player in the global economy, but cautions that the short-term challenges facing policymakers in the European Union will dictate both the political and economic realities of the next few years.

De Larosière also pays particular attention to the political realities of policymakers' upcoming decisions regarding both short- and long-term fixes to the Eurozone crisis. The "ultimate question," according to his paper, is how the adjustment to compensate for economic and fiscal divergence amongst members of the Eurozone can be made viable and "politically acceptable in the long run." By focusing on the long run, de Larosière acknowledges that while short-term fixes and political repercussions can and will be messy (exemplified by the recent ousters of nearly a dozen incumbent European heads of government), long-term political solutions must be made acceptable to the general public. In saying this, de Larosière insinuates that some of these long-term solutions might touch upon long-standing attitudes of inhabitants

[9] In our interview, de Larosière mentioned that, while he sees Europe facing a unique situation, other developed economies would do well to learn from some of the challenges that Europe currently faces.

of certain European countries towards inhabitants of others; that is, attitudes that would make the general population disinclined to accept long-term policies that might dramatically and permanently alter the economic status quo or hierarchy in Europe. However, in his Occasional Paper No. 84, he does not examine specific scenarios among European countries, or the factors or arrangements that would render particular hypothetical long-term scenarios either acceptable or unacceptable.

De Larosière's exposition of the model of a European dichotomy of economies (i.e., export-led vs. import-led economies) exposes an interesting question: why was this dichotomy not dealt with by policymakers earlier, and why was it not seen by the markets before or during the creation and implementation of the Eurozone? The challenges facing the Eurozone as an optimal currency area were discussed at great length by economists and academics both before and after the implementation of the European Monetary Union. However, many of these discussions were more theoretical, and lacking in specific scenarios of where the problems of a too-divergent system of economies could fail. Indeed, as previously mentioned, multiple experts and economists wrote of the potential economic pitfalls facing the Eurozone back in the 1990s; however, the general consensus was that the forces of European political integration would prevail over any possible economic strain and hold the EMU together. The Eurozone, according to Jacques de Larosière and others, would theoretically move Europe farther than ever before from intra-European armed conflict, as it would be inconceivable for a country to declare war on a neighbor that shares its currency, with said economies so inextricably linked both economically and politically. Others, such as Harvard economist Martin Feldstein argued, on the other hand, that the economic stress to which such a large and economically disparate

area as the Eurozone could fall prey would actually make more likely the possibility of another armed intra-European conflict, or even conflict with other non-European states (Feldstein). This begs the question: in the formation of the Eurozone, was too much weight and credence placed on the *political* accomplishments of Maastricht and European integration, and not enough concern given to potential *economic* or fiscal issues that could be faced by a common European currency? The countries in the Eurozone have changed both economically and politically, and the macroeconomic data show that these dynamic and evolving economies do not necessarily fit into the Maastricht framework devised under the economic realities of the early 1990s, as has been acknowledged by numerous economists.

Political Approaches and an American Perspective

The interplay between political and economic drivers for integration into the Eurozone has been a subject of great study and debate in the late 1990s, early 2000s, and today. Robert Mundell himself wrote back in 1961 that because currencies themselves are "profound expressions of national sovereignty," any implementation of a common or shared currency between countries would have to be accompanied by huge and sweeping political changes (Mundell).

The discussion of sweeping political changes to affect economic change is taken up by Bordo & Jonung in their 1999 paper, "The Future of the EMU: What Does the History of Monetary Unions Tell Us?" They discuss many of the hazard areas facing the then-new European Monetary Union, and establish some of the key conditions for keeping such unions intact. However, they insist that political factors will be the "central determinants" of the

future of the EMU, and that any economic "shortcomings" will be overcome "so long as political unity prevails within EMU" (Bordo and Jonung). However, this begs several important questions. What happens when these political mechanisms become too cumbersome or slow to act, or have their hands tied by less-than-favorable economic conditions? Can political paralysis feed into economic conditions as a hazard factor? While Bordo and Jonung's treatment of institutional political factors is fairly comprehensive, there is little or no discussion of some of the more intrinsic economic elements and other political factors that have come to affect the Eurozone today, which since the writing of their paper has become essential to understanding the current crisis.

In a similar vein, and demonstrating the political power of currency-sharing agreements, Jacques de Larosière uses the example of German unification post-Cold War, and the French desire to neutralize the possibility of German dominance. The answer for the French, of course, came in the form of a shared currency, the Euro, between France and Germany; for as de Larosière states, "it is very difficult to attack another country that shares your own currency." Hugh Rockoff writes in his 2000 paper, "How Long Did It Take the United States to Become an Optimal Currency Area?", that political considerations can and have historically prevented other less-than-optimal currency areas from breaking up, and he singles out the United States as a currency area that at one point in its history (that is, before the Great Depression and the interstate fiscal transfers that accompanied it) was actually not a functioning optimal currency area, but instead, a currency area somewhat similar to the Eurozone of today, with various economic sectors dominating certain regions and regional Federal Reserve banks differing on how best to solve such problems (Rockoff). Of course, there is the counterexample of the

United States Civil War to prove that political considerations do not always uphold unity between areas with economic divergences and differences in sector diversification and specialization, such as those of the antebellum North and South.

The question, then, becomes this: will similar political considerations also hold in Europe? While there will probably be no war similar to the United States Civil War on the European Continent anytime soon, past history has dictated a European preference, at least thus far, for a model of weaker federalism and stronger national sovereignty. Do all of the considerations from the United States case apply in such a model? Other historical examples presented by Rockoff, along with those given by Bordo and Jonung, consist of entire nations, and the Eurozone is an association of nations – does this make a difference? And, do the speed, interconnectivity, and interdependence of today's international markets and global economy allow the time necessary for a less-than-optimal currency area to develop into one? If so, how quickly, and are the above differences likely to exacerbate such a transition even more, particularly in the case of Europe? These are all questions that will be addressed in greater detail later.

What should we make of the United States as a model of an optimal currency area for Europe to follow? Barry Eichengreen, in his 1991 paper entitled "Is Europe an Optimal Currency Area?" posits that North America, and the United States in particular, are both much further along towards meeting the criteria for an optimal currency area than the countries of the European Continent collectively are (Eichengreen). However, he does not specify how much further along in the process the United States is, nor does he spell out what must be done to

bring Europe up to speed. He bases his conclusions upon the idea that the United States has both greater labor mobility and a greater speed of labor market adjustment than Europe; however, according to much of my research, there are more factors that can determine a country's position in this regard. Eichengreen examines labor mobility in Europe, and while finding it to be higher than most international mobility between other nations, he still finds yet a higher level of labor mobility in the United States, presumably because of a common language and culture, among other factors.

Answer and Method

After examining a brief summary of the history of the European Union and the Eurozone, and what has led to the current situation, and also after assessing much of the previous work on the subject, this thesis will now lay out several key arguments. The first is that, regardless of its original design or the economic realities surrounding its birth, the Eurozone is not currently functioning as an optimal currency area. This does not disqualify the zone, however, from meeting such criteria in the future, and suggestions will be given as to how that might become a reality. Based on current macroeconomic conditions and differences between countries in the current Eurozone, then, an optimal currency area in present-day Europe would either be smaller and more homogenous than the current Eurozone, more closely integrated than the current Eurozone, or both. Insofar as homogeneity is concerned, various measures or types of homogeneity could be applicable, depending on the combination of states. Economic homogeneity and some level of macroeconomic convergence is clearly most important; however, one should not rule out increased political or cultural homogeneity as powerful forces that could also contribute to holding together an optimal currency area.

In discussing a more closely integrated Eurozone, this paper will examine processes that the Eurozone could follow and pursue to become more optimal over time, the membership of the current Eurozone remaining the same. As hinted at earlier, such a process has been undertaken successfully in the past by the United States, and is certainly not out of the realm of imagination. However, one must examine the realities of the economic and political strains that would accompany such a process, particularly in today's fast-paced and interconnected

global economy, and examine whether those costs are worth the benefits, particularly given other objectives for European integration. While it is likely that political considerations and realities will win out, as Bordo and Jonung posit in their paper, the path to reaching an optimal currency area in Europe is less clear.

What method, then, will this paper use to examine the current situation in the Eurozone? How will it assess the current issues with the common currency and the Eurozone, and what could be done to fix them? The answer lies in a careful review and comparison of various data. Analysis of several key metrics will allow us the opportunity to examine economic divergences amongst the member states of the Eurozone, from GDP per capita to labor productivity to inflation and interest rates. It is important to note that this paper will focus mostly on the *changes* in these metrics: the convergence or divergence between Eurozone countries indicated by the various changes in these metrics over time. Interest rate divergences, mediated by progress on short-term funding problems, will be analyzed as symptoms of the crisis, and used to corroborate evidence presented in other economic measurements.

This analysis will not be limited to a strictly quantitative examination of the Eurozone, however. Fiscal and monetary data and examples will be utilized in a more qualitative and comparative fashion to examine some of the effects of differing political and economic systems, and comparisons with the United States and its history in becoming an optimal currency area will also be utilized to demonstrate several key points.

Data and Arguments

Since Maastricht: How Did the Eurozone Get to Where It Is Today?

The Stability and Growth Pact (SGP), originally proposed by German Finance Minister Theo Waigel and fully realized in the late 1990s, was intended to keep European states from exerting excess inflationary pressures on the entire European economy, by maintaining fiscal discipline amongst the members of the Economic and Monetary Union (EMU). Its purpose was two-fold: to bring the economies of countries that would comprise the Eurozone into convergence before the adoption of the common currency, and to maintain compliance with the Pact's criteria post-implementation of the Eurozone. The criteria for convergence, as outlined in the Maastricht Treaty, are as follows:

1. That the 12-month average of yearly rates of inflation should not exceed, in any member country, the unweighted arithmetic average of the three lowest member states' rates of inflation, plus 1.5%;
2. That each member state's annual government budget deficit should not exceed 3% of the member state's gross domestic product (GDP) at the end of the previous fiscal year, and the government's gross debt-to-GDP ratio should not exceed 60% in any given year;
3. That the member state should join the exchange-rate mechanism (ERM) under the European Monetary System (EMS), and shall have managed to maintain its currency within a +/-15% range of a central, fixed rate of exchange;

4. That the long-term interest rate should not exceed, for any member country, the unweighted arithmetic average of the interest rates of the three member states with lowest inflation, plus 2%.

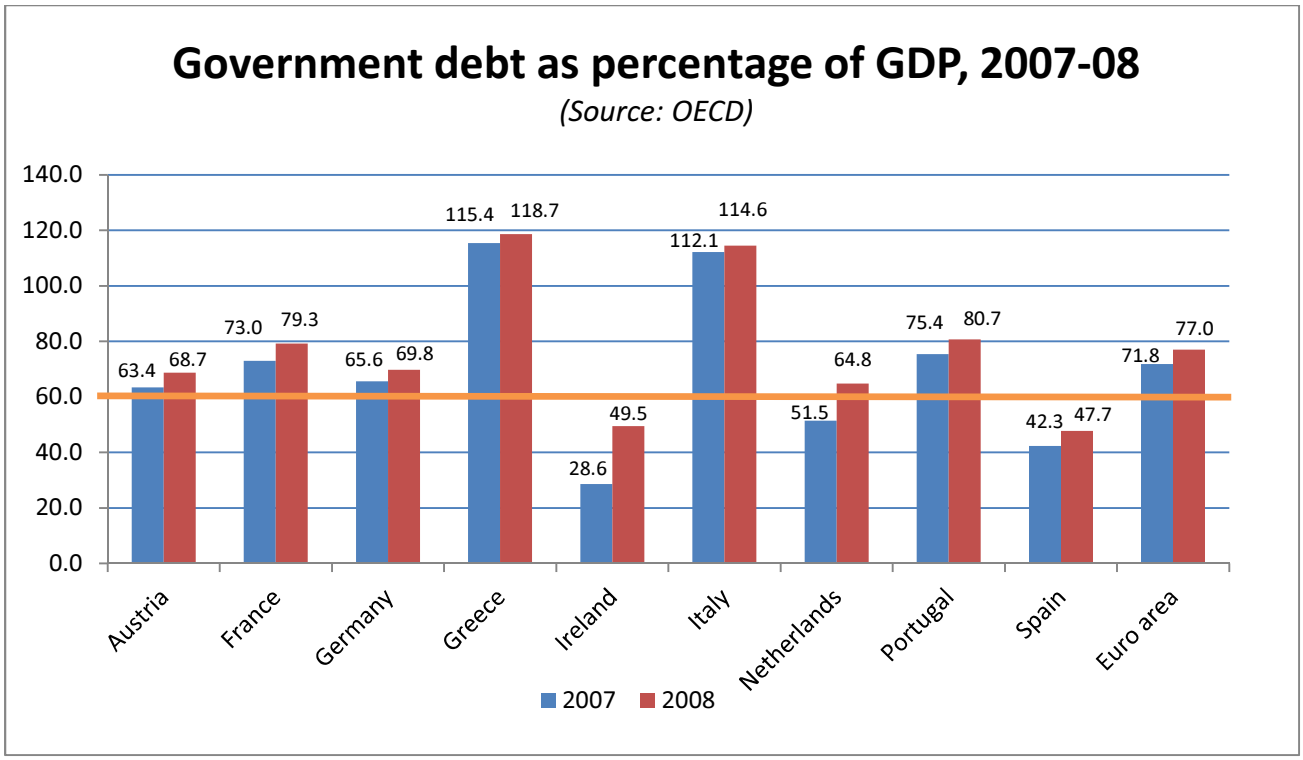
While there are exceptions to each of these general rules outlined in the Stability and Growth Pact for extreme circumstances or outliers in the data, the purpose of these criteria was to bring Eurozone member and candidate countries into closer economic convergence. Fines and other punitive measures were intended for those member states that violated the SGP. However, the absence of a clear system of enforcement, along with a lack of willingness to enforce the criteria through the use of punitive measures (particularly against large countries such as France and Germany when they violated the criteria in the early 2000s) led to a general breakdown and ineffectiveness of the Pact. Additionally, according to Jacques de Larosière, the relative looseness of the criteria allowed countries to utilize budgetary gimmicks and accounting procedures to mask government deficits in excess of 3% per year. Many have argued that the Pact did not go far enough, either on detail or enforcement, to prevent member states from abusing and/or failing to meet and maintain the convergence criteria. Further "uneven" enforcement of the Pact strained tensions in several European countries as well.[10]

Enter the global financial crisis in 2007 and 2008. While it is not the focus of this paper to examine the causes or events of the financial crisis, what is important to the current situation in the Eurozone is the manner in which European governments responded to it. While

[10] Punitive proceedings for violations of the Stability and Growth Pact were started against Portugal in 2002 and against Greece in 2005; however, these never resulted in fines for those states.

there were, and remain to this day, differing opinions on the techniques utilized by European governments in response to the crisis, many economists, including Jacques de Larosière, argue that an unprecedented level of fiscal stimulus, monetary expansion by central banks, and institutional bailouts of banks prevented the crisis from becoming much worse. Crucial to an understanding of the current crisis, however, is how the responses of various European governments differed, along with their respective effects.

We must first examine the preparedness and ability of European governments to sustain large fiscal stimuli; that is, how leveraged these governments already were at the outbreak of the financial crisis. Keeping in mind that the criteria set forth by the Stability and Growth Pact mandated a 60% debt-to-GDP ratio "ceiling" for sovereign debts, the debt-to-GDP ratios at the time of the outbreak of the financial crisis can be found in the following chart.



(Data from the Organization for Economic Cooperation and Development. See Appendix C for further detail on debt ratios by country and year.)

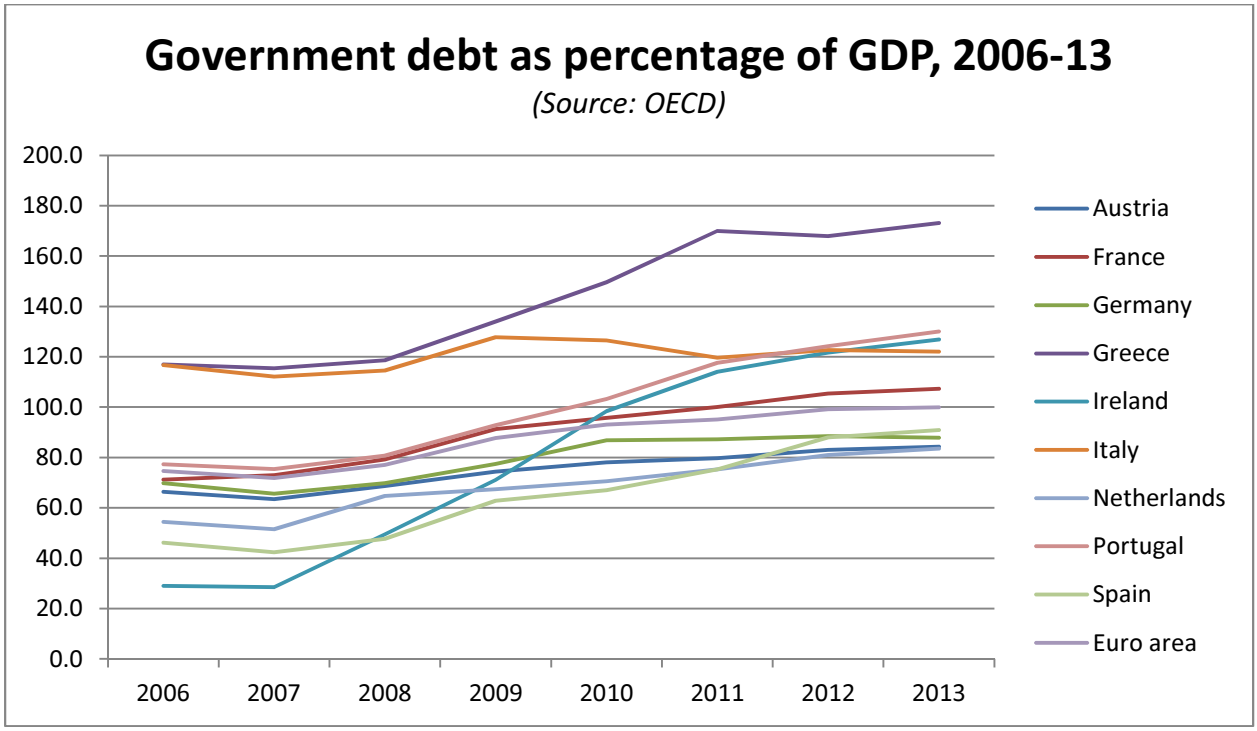
Note that with the exception of Ireland, the Netherlands, and Spain, all of the countries shown above were *already* in violation of the original Stability and Growth Pact by 2007, having allowed their debt-to-GDP ratio to grow in excess of 60%. Those countries shown that were not already in violation would later see their debt-to-GDP ratio balloon to above 60% within a very short period of time, as we can see from the next figure.

It is important to understand, using the chart above as a reference point, that various countries in the Eurozone were in differing positions with regard to their national debt and fiscal overhangs when the financial crisis hit. Germany and France, both with relatively strong credit ratings compared later to Greece, Italy and Portugal, were in a position, along with the other "export-oriented" countries of Austria and the Netherlands, to sustain largely unprecedented fiscal stimulus to soften the blow of the financial crisis. Greece and Italy, on the

other hand, were already bearing public debts in excess of 90%, the generally-agreed threshold at which debt hampers economic growth. These nations were not as fit to undertake massive fiscal stimulus as Germany and others were.

What should we make of Ireland and Spain's relatively low public debts shown here? One must keep in mind that the crises in these countries were caused by private debt bubbles, which burst shortly after the global financial crisis hit. Also, the construction booms and private credit expansion in these countries had led to large public revenues, and thus, these countries had been able, at least in part, to keep their national debt in check.

What happened as these governments began to respond to the financial crisis with increased fiscal stimulus? We can see the growth of government debt year-over-year below.



(Data from the Organization for Economic Cooperation and Development. See Appendix C for further detail on debt ratios by country and year.)

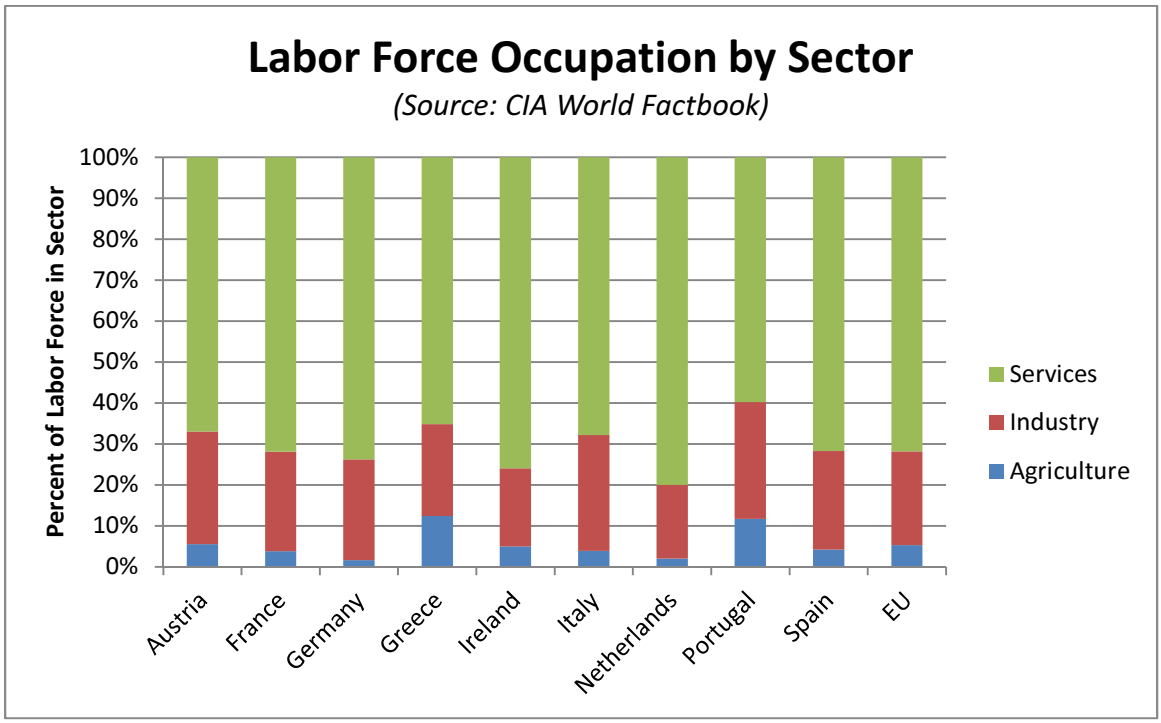
So, then, how would this massive public debt be financed? A variety of lenders were utilized, including private and central banks of various European nations. When the financial crisis of 2007-08 hit the Eurozone, many of these same countries, which had already incurred substantial debt positions (as a percentage of GDP), went further into debt to provide for increased fiscal stimulus, following the model of Germany, which increased public spending to ease the effects of the financial crisis on their economy. However, not all of the nations of the Eurozone had the financial stewardship of Germany over their public finances, and most were more deeply indebted. When it finally became apparent in the summer of 2010 that Greece had an unsustainable public debt, the markets reacted and Greek interest rates went through the roof (see Appendix B for more detail), soon to be followed by those of the other countries on the periphery with similar near-unsustainable public finances. The chickens of the massive economic divergences between these countries had come home to roost.

Monetary Union or Amalgamation of States?

Before examining the key data and metrics, it is important to take a step back and examine some of the key differences between the countries that comprise the Eurozone. Critical to this examination is the composition of the economies of these states, as well as key differences in political structures, institutions, and attitudes at each national level.

One of the key criteria for evaluating whether or not a group of regions, or countries, comprises an optimal currency area is whether or not they have similar business cycles; that is, whether or not they move relatively in sync and experience similar shocks and growth rates. This concurrence would be expected to entail relative similarity in the composition of the

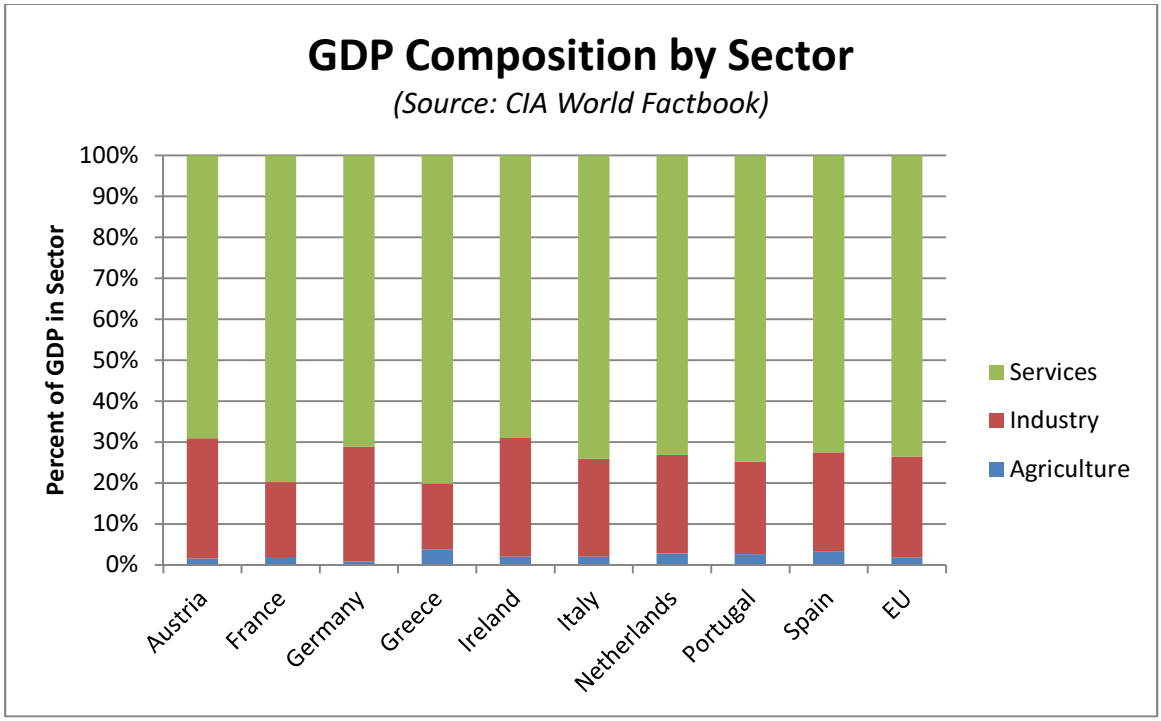
economies of the states in question, insofar as diversification of industries and sectors is concerned. It can be argued, based on the following data, that the sector diversification of several members of the Eurozone shown below is not homogeneous enough to result in similar business cycles. Indeed, as they are commonly grouped, and as has been mentioned earlier in this paper, on one hand are the industrial and export-oriented countries of Germany, the Netherlands, and Austria; on the other, the import-led, service-based economies of Greece, Italy, and the other countries on the periphery of the Continent. The divergence amongst percentages of the labor force employed in each sector, as shown below, would seem to indicate broad economic divergence amongst these states.



(Data from the CIA World Factbook.[11] *See Appendix D for further detail on percentages of labor force by sector.)*[12]

[11] https://www.cia.gov/library/publications/the-world-factbook/fields/2048.html#gm (Central Intelligence Agency)
[12] It should be noted that the European Union, and not the Eurozone, is used for reference in this chart. Only data for the entire European Union were available.

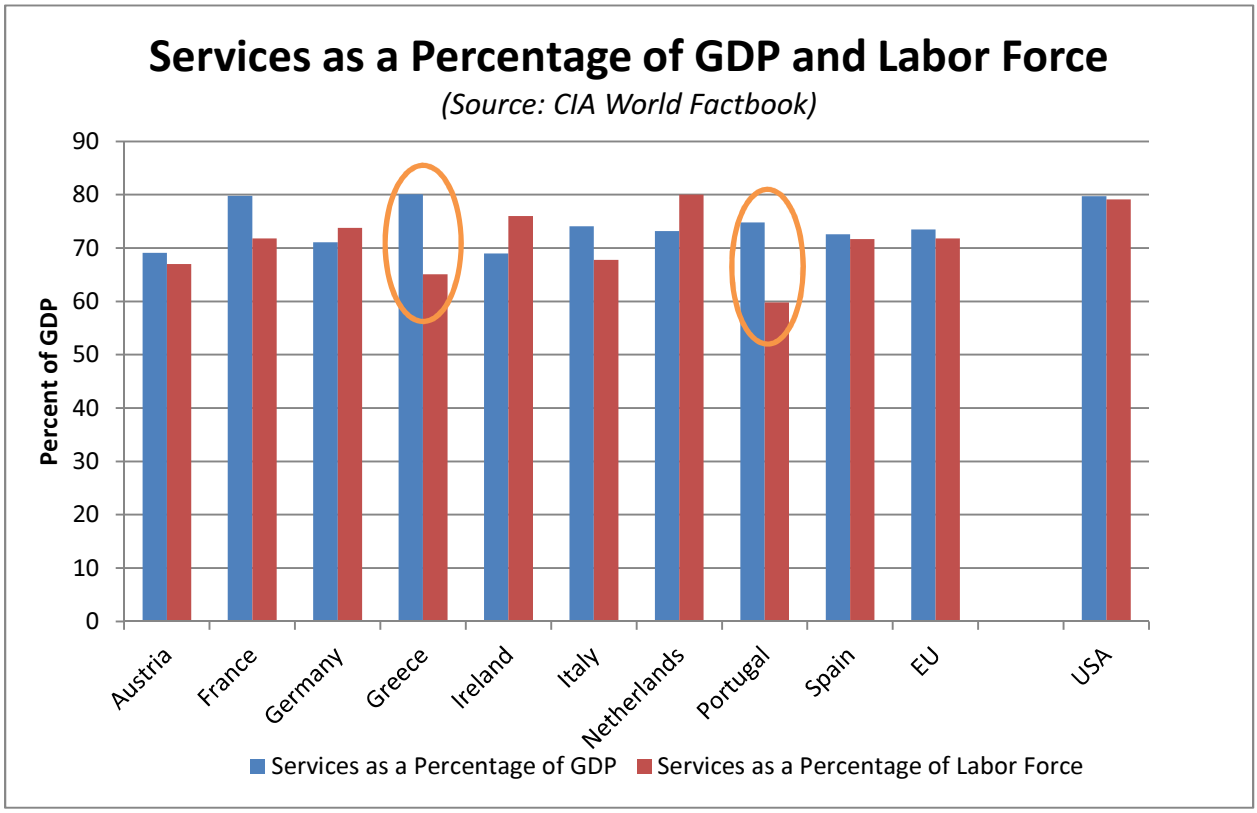
We can also examine differences in the composition of the GDP of each of the same countries, although these differences are not as pronounced as the preceding ones.



(Data from the CIA World Factbook. See Appendix D for further detail on percentages of GDP in each sector.)

One should note that while agriculture comprises a statistically significant percentage of the labor force in some of the countries above, it nonetheless represents a rather small portion of each country's GDP. The charts above and below also indicate some significant differences between the allocation of GDP to certain sectors of the economies of these states as compared to the allocation of labor force to these same sectors, most particularly in Greece and Portugal. While some difference in this regard would be normal for non-traded goods, it is productivity differences that cause cost differences, and these cost differences in turn cause market value differences, leading to differences in allocation of GDP to certain sectors of the economies of Greece and Portugal in particular. The chart below highlights some of these differences; note in

particular the gap between GDP and labor force percentages in the service sector[13] in the cases of Greece and Portugal.



(Data from the CIA World Factbook. N.B. This chart includes data on both the European Union[14] and the United States to use as reference point for the other data. See Appendix D for further detail on percentages of GDP and labor force comprising each sector.)

So, then, if these differences exist, do they suggest differences in labor productivity between various sectors of each nation's economy? For example, is the labor force in Greece's service sector more productive than those in its industrial and agricultural sectors, compared to

[13] The service sector was chosen for use in this graphic and for inclusion in the body of the text because it is the sector with the largest differences between percentage of GDP and percentage of the labor force involved in that sector. Similar complementary differences can be found in a comparison of the GDP vs. labor force involved in the non-service sectors of the economy (industry and agriculture); however, as some of these differences are spread over those two sectors, the author has chosen to use the service sector to illustrate this theoretical exercise. The large differences for Greece and Portugal displayed in the graphic above are largely the result of opposite divergences in the agricultural sector; see Appendix D for more information.

[14] As in the previous example, data for the European Union was used as data for the Eurozone was not available.

the same labor forces in equivalent sectors of another Eurozone country? Regardless of the answer to this question, which would be beyond the scope of this paper, the divergences between countries with regard to economic sector diversification and composition, coupled with the differences between the percentage of GDP vs. labor force comprising each sector (and the absence of any similarity or convergent trend among all the countries of the Eurozone in this regard), could indicate either that there is a general, overall divergence between Eurozone economies in productivity and efficiency. An alternative explanation for the differences in numbers and percentages above is that these divergences are the result of Eurozone economies that are not experiencing in the same business cycles; that is to say that the composition of these national economies by industry and by sector is so different that figures and data pertaining to the efficiency of certain parts of the work force would be different across these countries as well. Either way, both explanations would indicate, either alone or in combination with each other, large-scale divergences of significance between the countries of the Eurozone in regards to composition of their economies. Such large-scale divergences would make it more difficult for countries to share similar business cycles, and this undermines some key criteria for an optimal currency area: relatively similar economies and shared (or relatively similar) business cycles.

Political Differences and Cultural Barriers

Varying political attitudes between states are also relevant to our analysis of key differences between the members of the Eurozone. While many national and cultural stereotypes do exist between each nation on the Continent, there are real perceptions and

attitudes (at times, antipathy) towards other member states or heads of governments. One need not look further than the slightly-less-than-warm reception of German Chancellor Angela Merkel in November 2012 in Portugal by demonstrators, or the assault on one of her diplomats by an angry crowd of protestors earlier in the year in Greece, as examples of high passions enflamed by the crisis (Evans-Pritchard). The recent success of anti-austerity candidates and parties in elections in both Italy and France have also sent a strong shock wave and have been widely interpreted as a message against German demands for harsh fiscal discipline.

To a certain extent, these differing political attitudes and perceptions have revealed themselves in the wide-ranging negotiations to achieve short-term fixes and agree to structural changes and reforms within the Eurozone. The decisions of June 29, 2012 were fraught with German reluctance to agree to certain forms of assistance to deal with the crisis, and this reluctance was due at least in part to perceptions that the countries of the periphery (the so-called "PIIGS" countries) are irresponsible with their fiscal policies and do not engage in the same type of strict fiscal discipline as practiced by Germany. Whether or not these perceptions are grounded in fact is another story, and the reader can make his or her own deductions here based on the relative strength of both the German and peripheral economies as they currently stand.

Some of these differences in political attitudes, however, are also historic, dating back to the last two-plus centuries of war and conflict in Europe. As Martin Feldstein notes in his paper "EMU and International Conflict," France in particular sees the European Union as a tool with which to stem potential German hegemony over the Continent and insure French

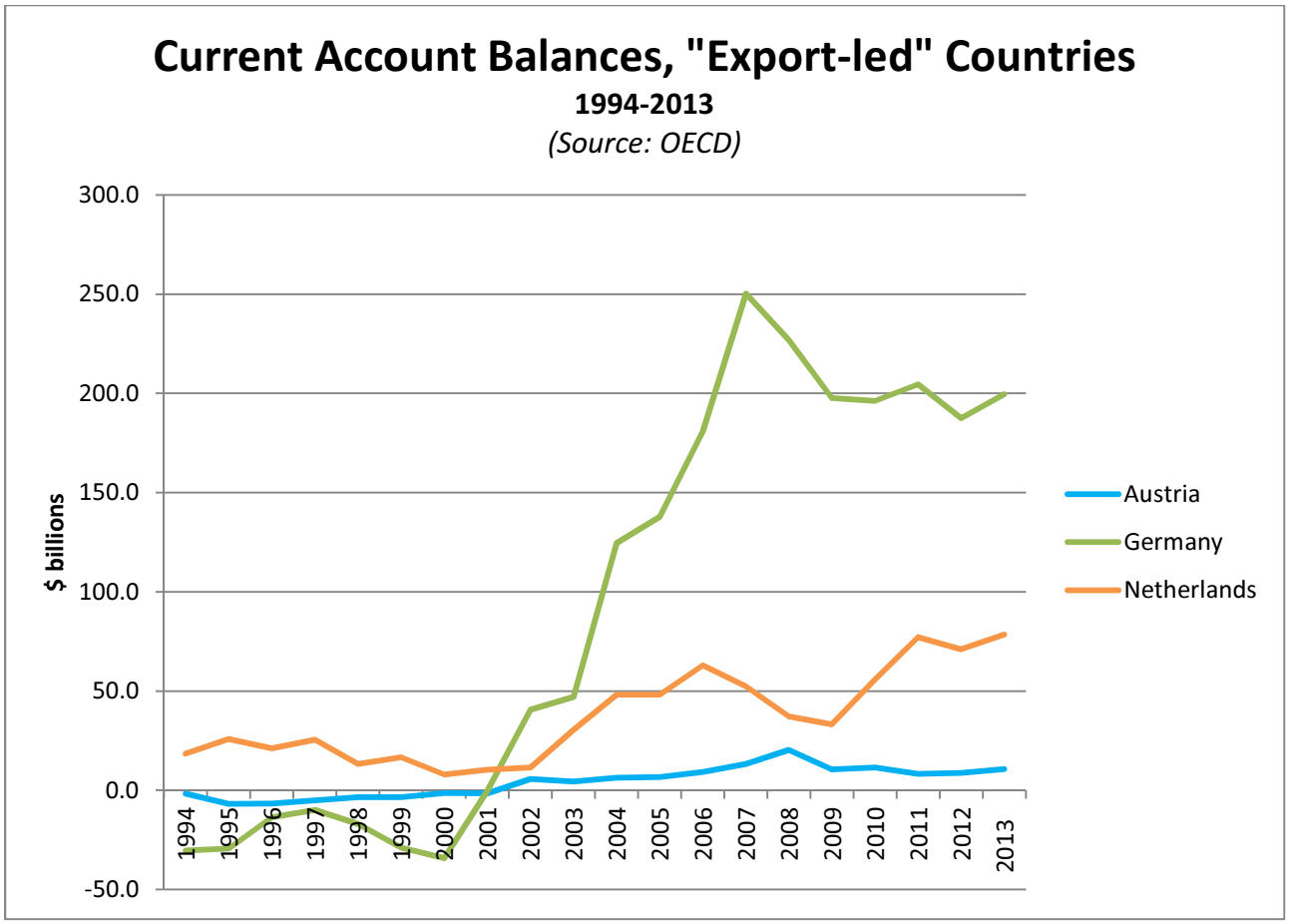
influence as well; this concern is grounded in the past wars and political conflicts between the French and German states. British reluctance to join the Eurozone can be seen as an extension of Britain's historical hesitance to involve itself too deeply with the affairs of the Continent; being an island nation has permitted it in the past to stay out of many conflicts on the Continent. While Britain also enjoys (and has enjoyed, historically) its own rather advanced and sophisticated financial system and capital markets, with the current process of integration in the European Union and the Eurozone, those countries which are unwilling to participate will end up the losers economically, creating for themselves a type of economic isolation, or a certain "autarky" (Feldstein). It can be contended, however, that Britain's separate currency has prevented it too from being dragged down into the Eurozone crisis and assisted in maintaining some semblance of economic stability and order in Europe.

Cultural differences between European countries serve as a major roadblock to Europe as an optimal currency area, along with the political attitudes between countries. Because of these cultural differences, which include language, work customs, length of the workweek, differences in punctuality, family life and its relation to professional life, different forms and institutions of government, and many others, labor mobility between countries is unsurprisingly lower in Europe and the Eurozone than it is in an optimal currency area such as the United States. While there is very little data to corroborate this claim, and per Barry Eichengreen, "direct evidence on the extent of interregional labor mobility is hard to obtain," (Eichengreen), he points out in his 1991 paper one particular systematic comparison published by the Organization for Economic Cooperation and Development (OECD) in 1986, that, while dated, concludes that labor mobility within the United States was two to three times higher than labor

mobility in Europe (OECD, 1986). While this gap has probably shrunk due to increased economic integration with the advent of the Eurozone, considerations of cultural differences and unwillingness to cede national sovereignty, whether on a personal or state level, would seem to indicate that labor mobility in the Eurozone is still lagging behind that of the United States, and probably behind that which is necessary to meet the criteria for an optimal currency area in regards to labor flexibility.

Current Account Divergence amongst Eurozone Countries

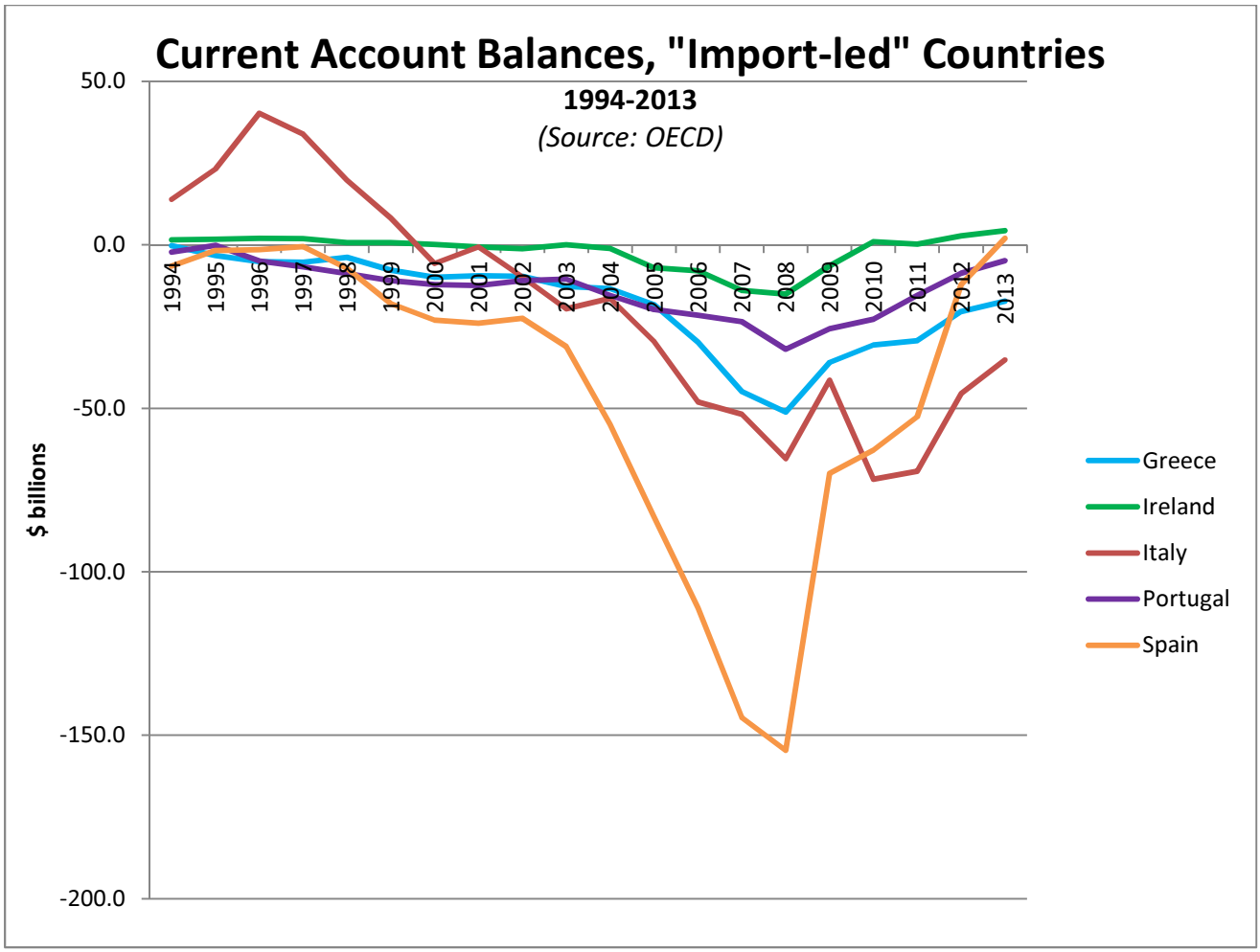
As one examines the key macroeconomic indicators and statistics related to divergence in the Eurozone, it is important to examine the divergence amongst countries' current account balances. One of the most important indicators of whether or not a country is living within its means is its balance of trade, which comprises a large, crucial component of a country's current account, or the surplus or deficit of trade in goods and services exported from and imported into a country each year. In assessing the divergence amongst Eurozone countries, one finds that the more industrial, export-leading "core" countries of the Eurozone, particularly Germany, but also including the Netherlands, Austria, and France, have on the whole improved their current account positions substantially (and dramatically in the case of Germany) over the lifespan of the Eurozone thus far. France appears to deviate from the trend set by the other core countries in regards to its current account, however: its relatively modest deficit of its current account would seem to indicate a lack of competitiveness, which could and should be ameliorated, according to Jacques de Larosière.



(Data from the Organization for Economic Cooperation and Development. See Appendix E for further detail on current account data by country and by year.)[15]

Whereas the current account positions of these countries improved over the period leading from Maastricht (and the implementation of the Eurozone in 1999-2002) until recently, during the beginning of the sovereign debt crisis, the current account positions of some of the Eurozone's peripheral members, such as Greece, Ireland, Italy, Portugal, and Spain, have fallen, as is evidenced in the chart below.

[15] France is excluded from this chart, as its data in regards to the current account balance classifies it as an outlier amongst the "export-led" countries in this category. See Appendix E for more information.



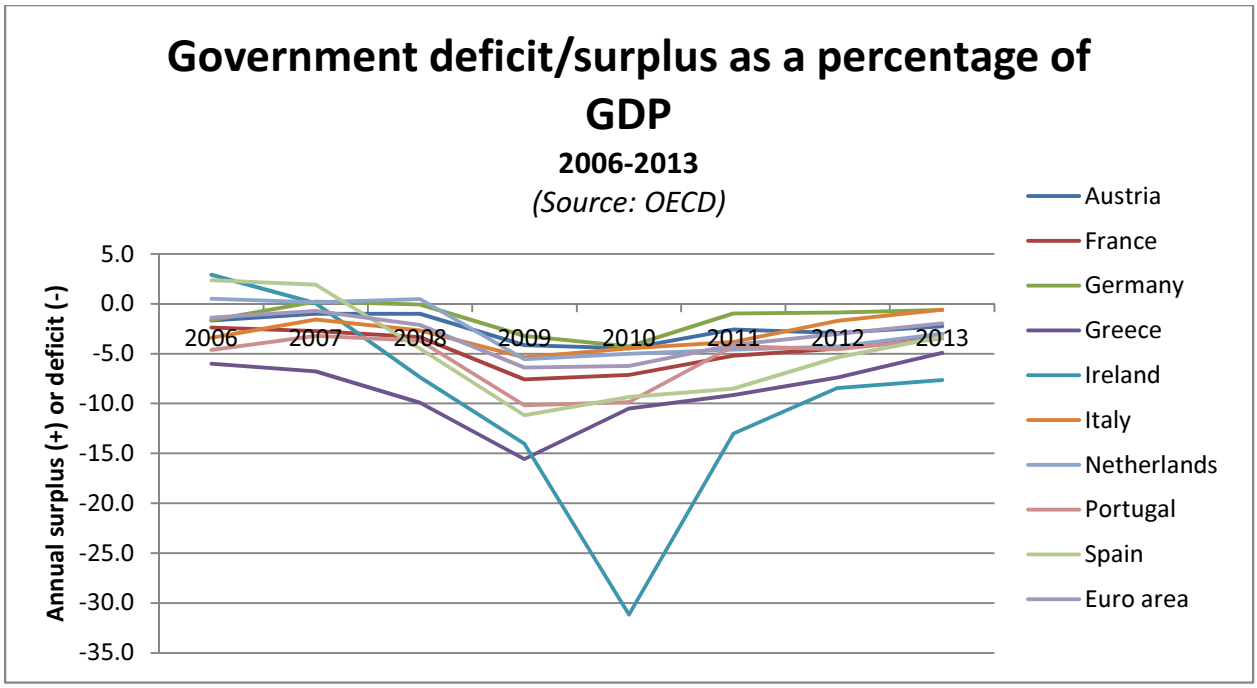
(Data from the Organization for Economic Cooperation and Development. See Appendix E for further detail on current account data by country and by year.)

Note that with the exception of Italy, all of these countries' current account positions began to improve around 2008-2009, at the time that the sovereign debt crisis hit.[16] The deficits during the 1999-2008 period, however, viewed together with the current account surplus exhibited by the export-leading "core" countries above, would seem to indicate a net outflow of exports from the core countries and a net inflow of imports into the countries of the periphery. These goods and services had to be paid for, however, as, countries around the periphery amassed a

[16] It is worth mentioning that this improvement in the current account positions of indicated countries (that is to say, moving towards surplus) was more a result of a fall in spending on imports due to the global recession rather than an increase in exports from these countries.

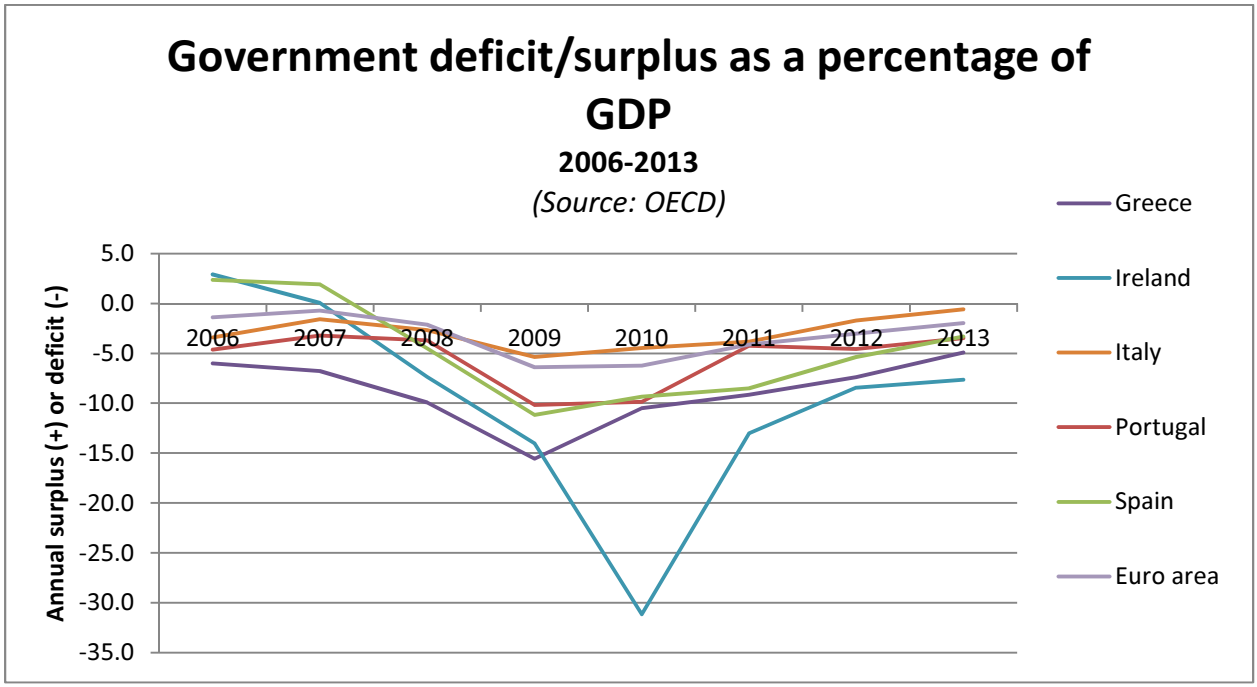
large quantity of both public and private debt over the same period. Such a divergence of import versus export levels demonstrates that the economies of the core, “export-led” countries were not in sync with those on the periphery, and calls into question the homogeneity of the Eurozone from the perspective of an optimal currency area. Indeed, Germany itself moved from having one of the largest current account deficits in 1994, shortly after its reunification, to having the largest current account surplus in the mid- to late-2000s. This monumental shift in the current account positions of Germany versus some of the other countries in the Eurozone, would seem to indicate substantial divergence among these countries’ overall macroeconomic positions.

The countries of the Eurozone, as has previously been mentioned, had begun for several years to amass large public debts (enabling the current account to run a deficit every year in certain countries), and this pattern of annual budget deficits only increased with the increased public spending to provide for fiscal stimulus in reaction to the 2007-08 global financial crisis. For clearer demonstration of this point, and of the yearly deficits that began to underlay the massive government debts described earlier in this paper, refer to the graph below.

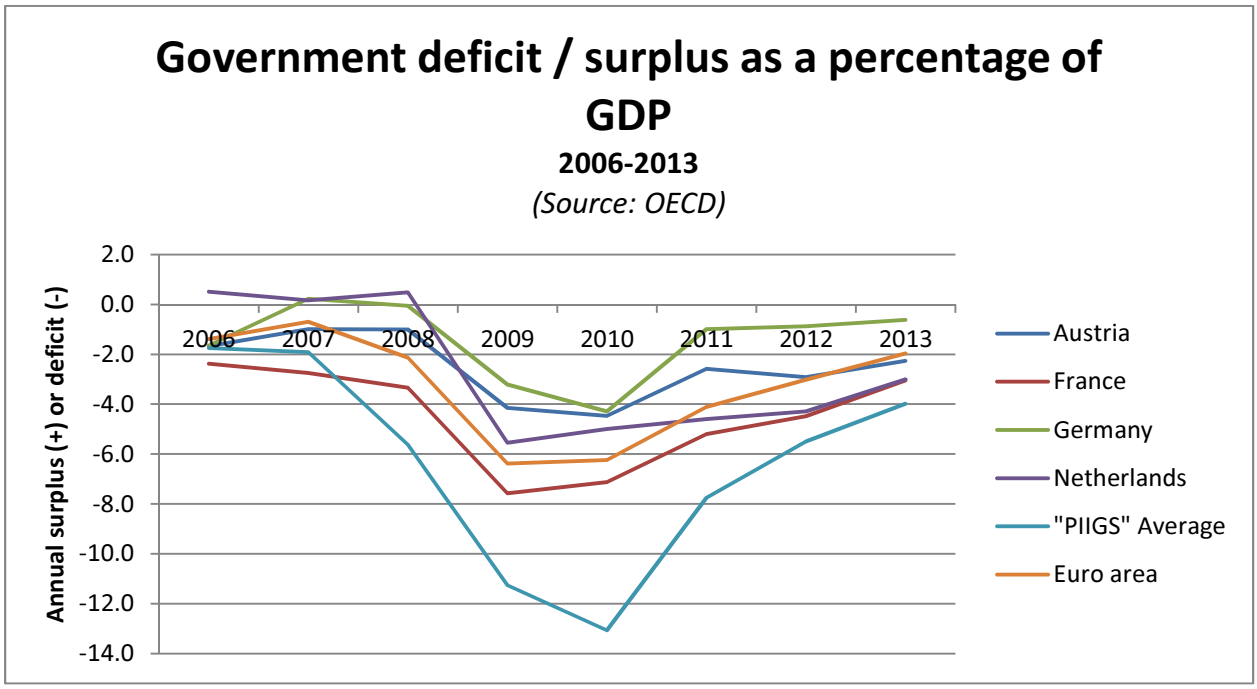


(Data from the Organization for Economic Cooperation and Development. See Appendix F for further detail on surplus/deficit data by country and by year.)

A closer look separately at the yearly deficits of countries of the periphery and the "core" countries affords a more accurate and startling analysis.



(Data from the Organization for Economic Cooperation and Development. See Appendix F for further detail on surplus/deficit data by country and by year.)



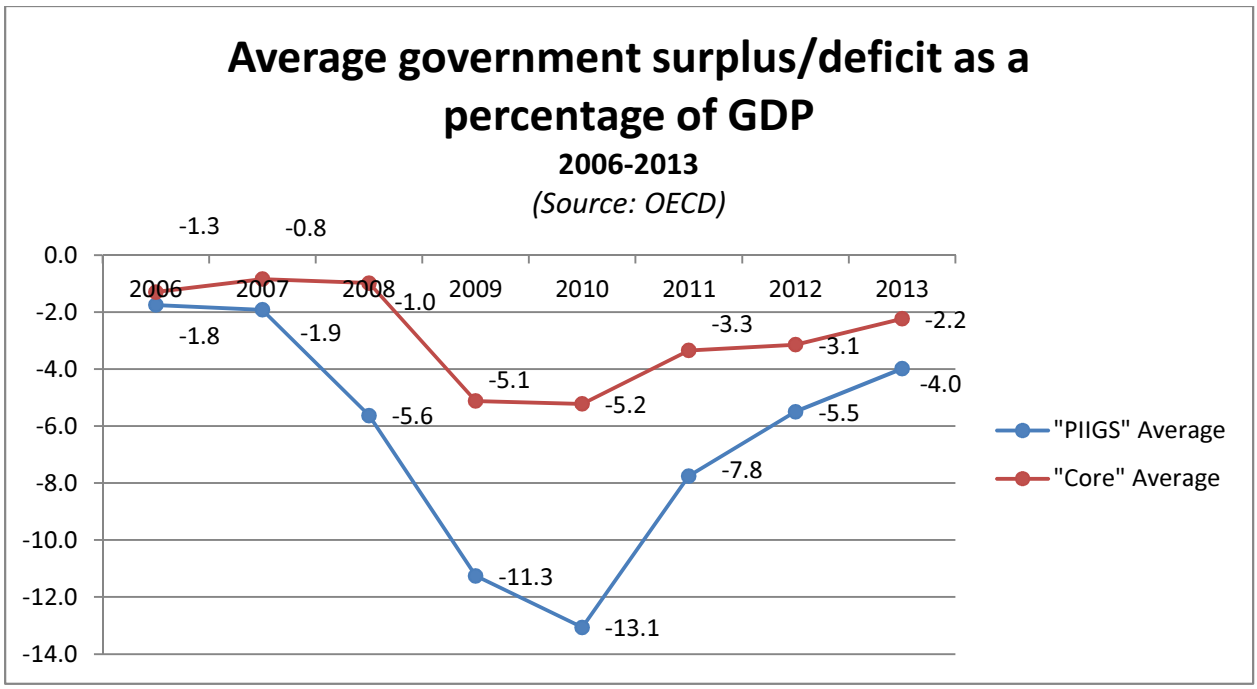
(Data from the Organization for Economic Cooperation and Development. N.B. The "PIIGS" Average comprises an unweighted arithmetic mean of the annual surplus/deficit-to-GDP ratio of the countries of Portugal, Italy, Ireland, Greece, and Spain, and is included here solely for reference. See Appendix F for further detail on surplus/deficit data by country and by year.)

To create a clearer picture, see below the averages of the annual government budget surpluses and deficits of the countries of the periphery (the "PIIGS" countries[17]) versus the "core" countries in the Eurozone.[18] Note that during the years 2007-2012, the unweighted average of the deficits run by the countries of the periphery is over *twice* that of the "core" countries in the Eurozone. Such a difference clearly indicates macroeconomic divergence, and will undoubtedly have detrimental effects on the efforts of a state's government to keep its

[17] "PIIGS" is an acronym of common usage including the countries of the periphery; that is, Portugal, Italy, Ireland, Greece, and Spain. It is found several times throughout this paper and is utilized for the sake of convenience and clarity. The author does not intend its use to be taken as derogatory.

[18] For purposes of this paper, "core" countries includes the more export-led countries of Germany, Austria, the Netherlands, and France.

economy in sync with those of the rest of the currency area. Although most states are now shrinking their yearly budget deficits, the debt accumulated over several years of such large deficits now threatens the solvency and future growth of these governments and their economies, respectively.



(Data from the Organization for Economic Cooperation and Development. Averages consist of the unweighted arithmetic mean of the surpluses/deficits of the five "PIIGS" countries of Portugal, Italy, Ireland, Greece, and Spain, and of the four "core" countries of Germany, Austria, the Netherlands, and France, which are used throughout this paper. See Appendix F for further detail on surplus/deficit data by country and by year.)

GDP Growth Divergences

It is also important to note changes in gross domestic product (GDP) during the period discussed thus far. As GDP is viewed both as an indicator of a country's standard of living and as a measure of the goods and services produced by a country, examining changes in GDP per

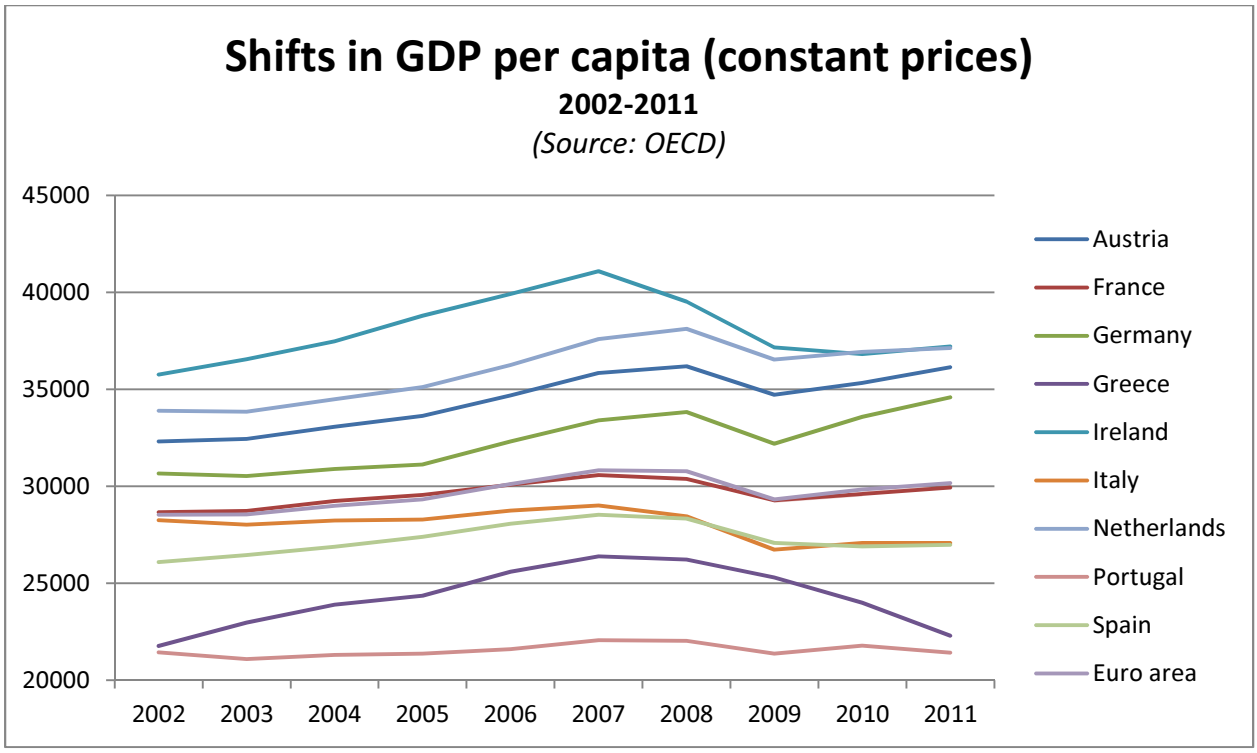
capita for the member states of the Eurozone permits an analysis of growth patterns or divergences in these metrics. Indeed, a look at growth or decline in GDP per capita, assuming constant prices,[19] demonstrates tangible and significant divergences in growth amongst Euro member states; in the case of the difference between Germany and Italy, this gap is nearly 17 percentage points over the 2002-2011 period.

Change in GDP per capita, 2002-2011			
Country	**2002**	**2011**	**% Change**
Austria	32306.477	36131.136	11.84%
France	28668.214	29938.053	4.43%
Germany	30658.694	34580.83	12.79%
Greece	21757.745	22287.413	2.43%
Ireland	35758.035	37210.02	4.06%
Italy	28253.97	27081.473	-4.15%
Netherlands	33894.122	37119.365	9.52%
Portugal	21438.681	21414.419	-0.11%
Spain	26095.389	26981.212	3.39%
Euro area	28523.301	30166.827	5.76%

**Prices given in USD, assuming constant prices. Source: OECD*

In examining the changes in GDP per capita over the 2002-11 (once again assuming constant prices to minimize the effects of differing rates of inflation on our data), we see a broad variety of movement, both growth and shrinkage, throughout the ten year period:

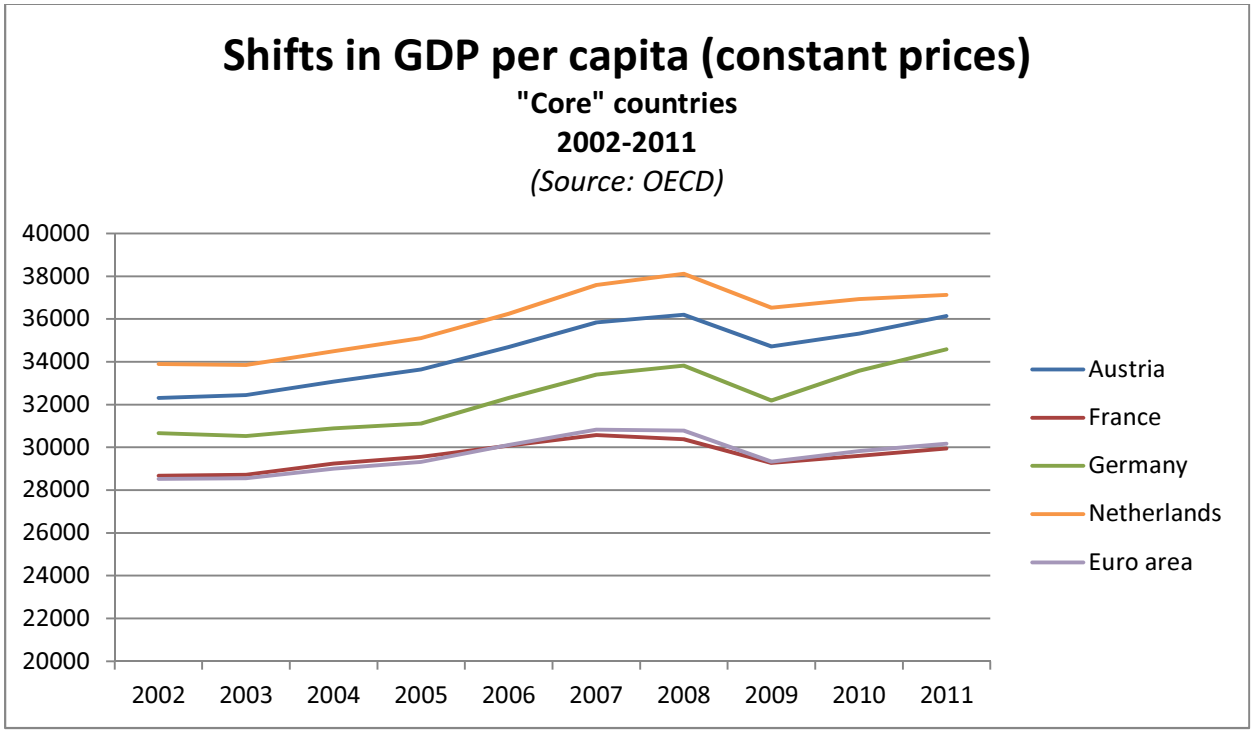
[19] For the purposes of this paper, the author has chosen to use GDP per capita assuming constant prices, given the differing levels of inflation in some Eurozone countries during the 2002-11 period and the potential for them to skew the results. Utilizing constant prices paints a more accurate picture of real GDP growth and/or decline.

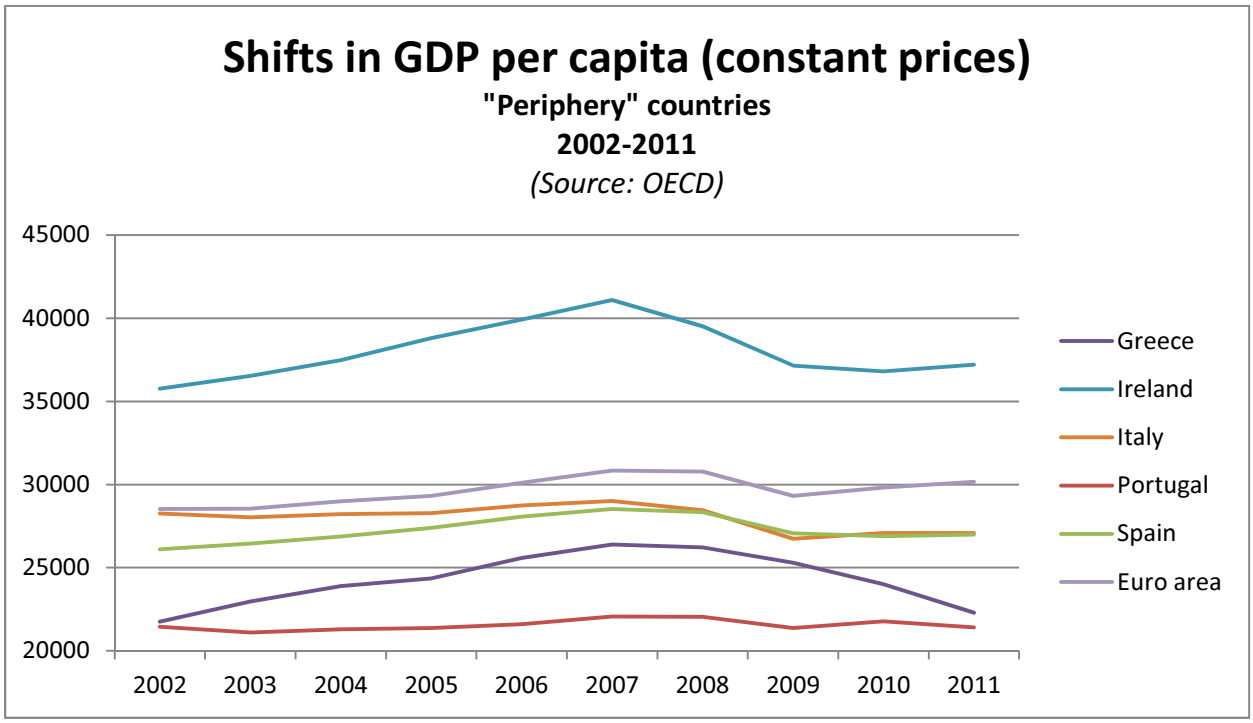


(Data from the Organization for Economic Cooperation and Development. See Appendix G for further detail on GDP per capita by country and year.)

In order to more closely examine the trends of the "core" countries versus those on the periphery, here are two separate charts demonstrating the growth or decline of each country's GDP per capita. Notice the growth in all of the "core" countries, as well as the Eurozone as a whole, contrasted with the stagnant or low growth in most of the countries on the periphery. It is also significant that the "core" countries seem to have only experienced one year of decline in GDP per capita, between 2008-09, whereas most of the countries of the periphery experienced a decline in GDP per capita beginning in 2007 and continuing either until 2009 or 2010, depending on the country. None of these countries has yet recovered fully to the GDP per capita levels that they enjoyed before 2007, in contrast to Austria and Germany, which have both recovered and now boast higher GDP per capita than they did before 2008. The consequences and effects of the financial crisis of 2007-08, then, appear to have taken a

heavier toll on the economies of the periphery, hampering their economic output as reflected by their earlier and more severe loss of GDP per capita.





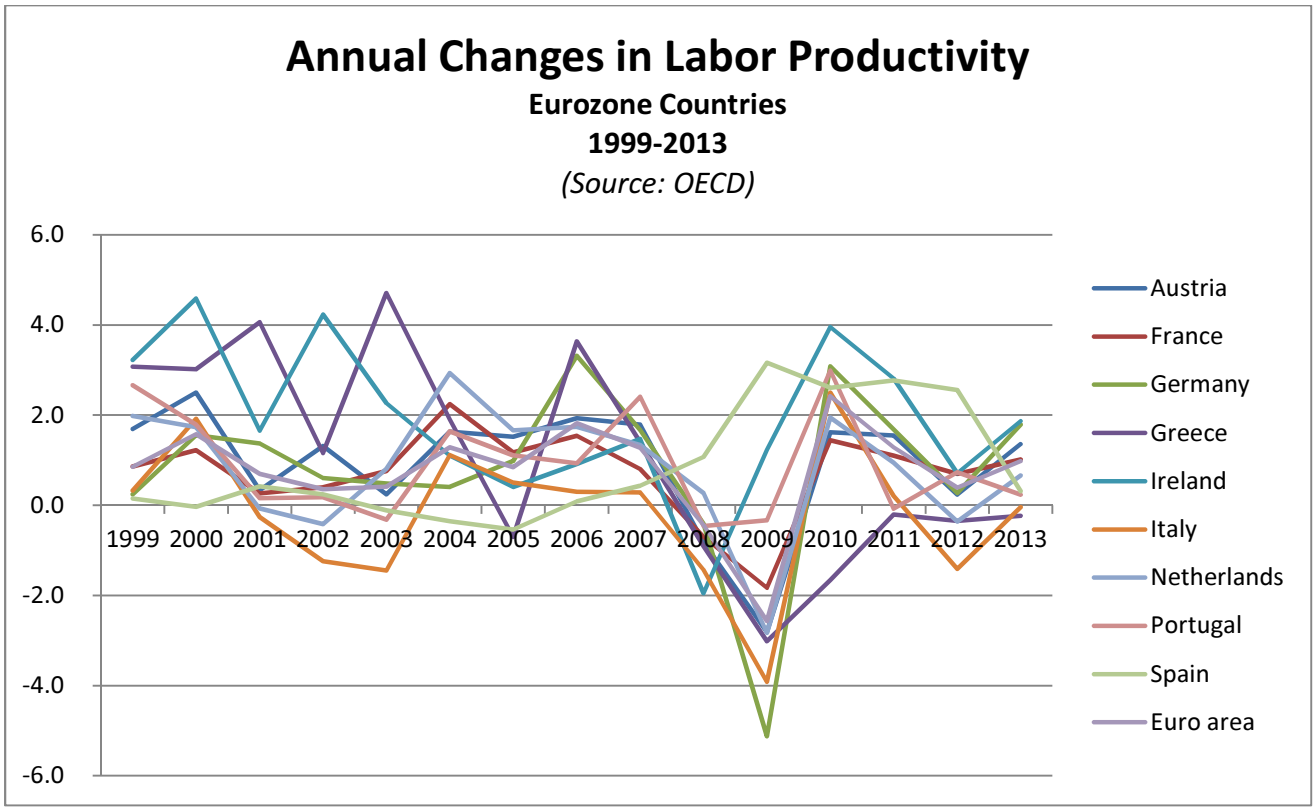
It is important here, after an examination of both current accounts and GDP growth (per capita) in the member states of the Eurozone, to bring up a point emphasized by Marina von Neumann Whitman in her essay on place prosperity and optimum policy areas (Whitman). She states, as can be observed in the case of these countries, that the growth process is not always trade neutral; that is to say that the output and input elasticities of supply and demand can create either an export-biased or import-biased growth. In these scenarios, the current account changes as export bias leads to a surplus (as was enjoyed by Germany and many of the "core" countries in the early 2000s) or as import bias leads to a deficit (as was borne by many of the countries on the periphery at the same time, as evidenced by the current account data presented earlier in this paper). Even with uniform rates of inflation (which the Eurozone certainly did not enjoy, as will be demonstrated next), it is extremely difficult to maintain external balance amongst the states involved in such a scenario (Whitman).

Divergences in Labor Productivity

Divergences in labor productivity among the member states of the Eurozone indicate yet another aspect of economic non-convergence. It would seem, according to Jacques de Larosière and others, that countries sharing a common currency should maintain a similar level of labor productivity; for if they do not, then there is no action that a central bank or other monetary authority can undertake to alleviate these differences. Compare this to a case where a country that possessed slightly lower labor productivity would allow its currency to depreciate in order to compensate for the difference, according to Mundell's original model in his 1961 paper (Mundell). De Larosière points out in particular the slight difference in labor productivity

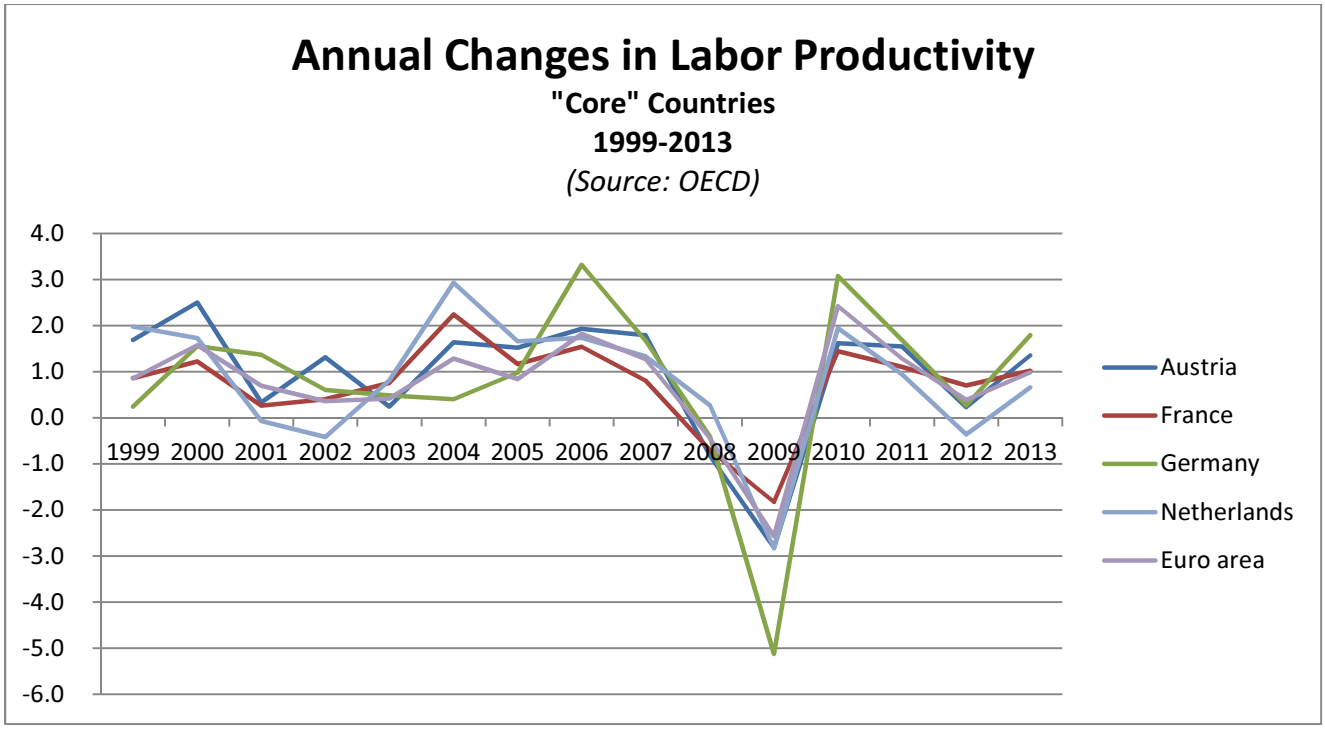
between France and Germany (that France lags Germany ever-so-slightly in labor productivity) and the resultant current account imbalances between the two as an example of France's need for structural reforms to regain competitiveness and a better external balance.

How large, then, are the differences in labor productivity between Eurozone member states? The graphics below provide a point of reference. Note the wide divergences between the "periphery" countries, as was already exemplified by their varying experiences with the sovereign debt crisis, versus the relatively uniform patterns of shifts in labor productivity experienced by the "core" countries.



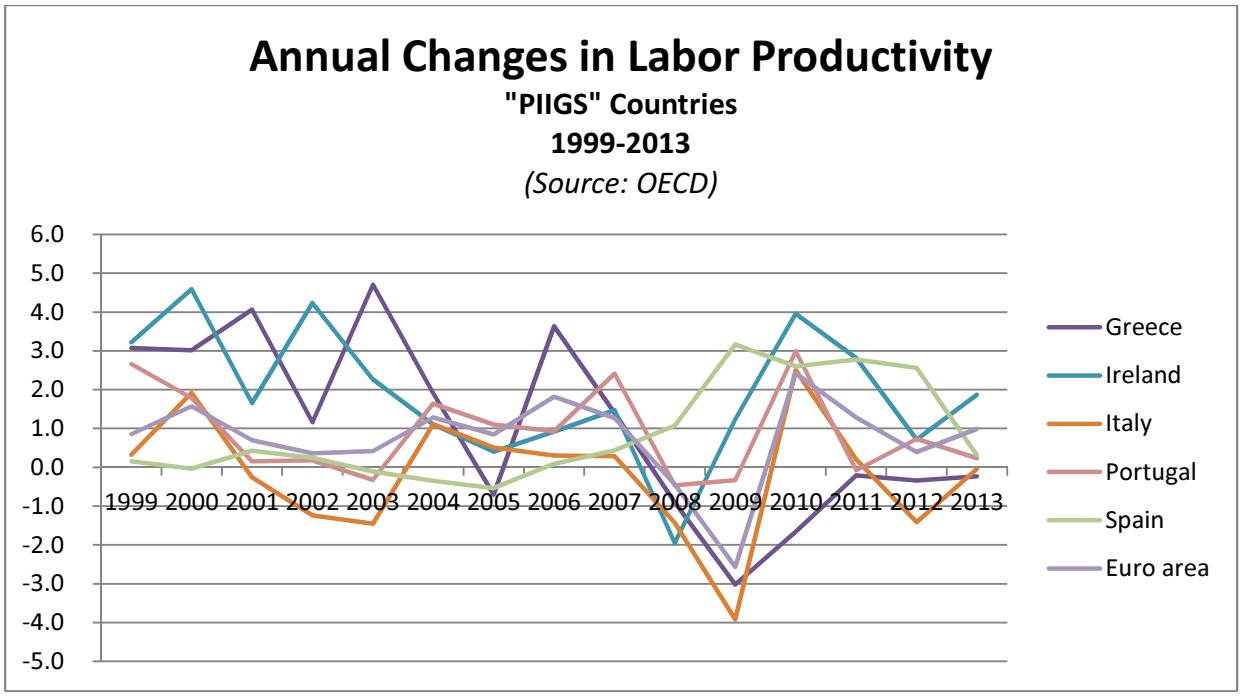
(Data from the Organization for Economic Cooperation and Development. See Appendix H for more detail by country and year.)

And for a clearer set of data, from which one can examine similarities and differences in labor productivity changes:



(Data from the Organization for Economic Cooperation and Development. See Appendix H for more detail by country and year.)

Note that the countries of the periphery, shown below, display much less homogeneity in the changes of their labor productivity compared to the "core" countries shown above:



(Data from the Organization for Economic Cooperation and Development. See Appendix H for more detail by country and year.)

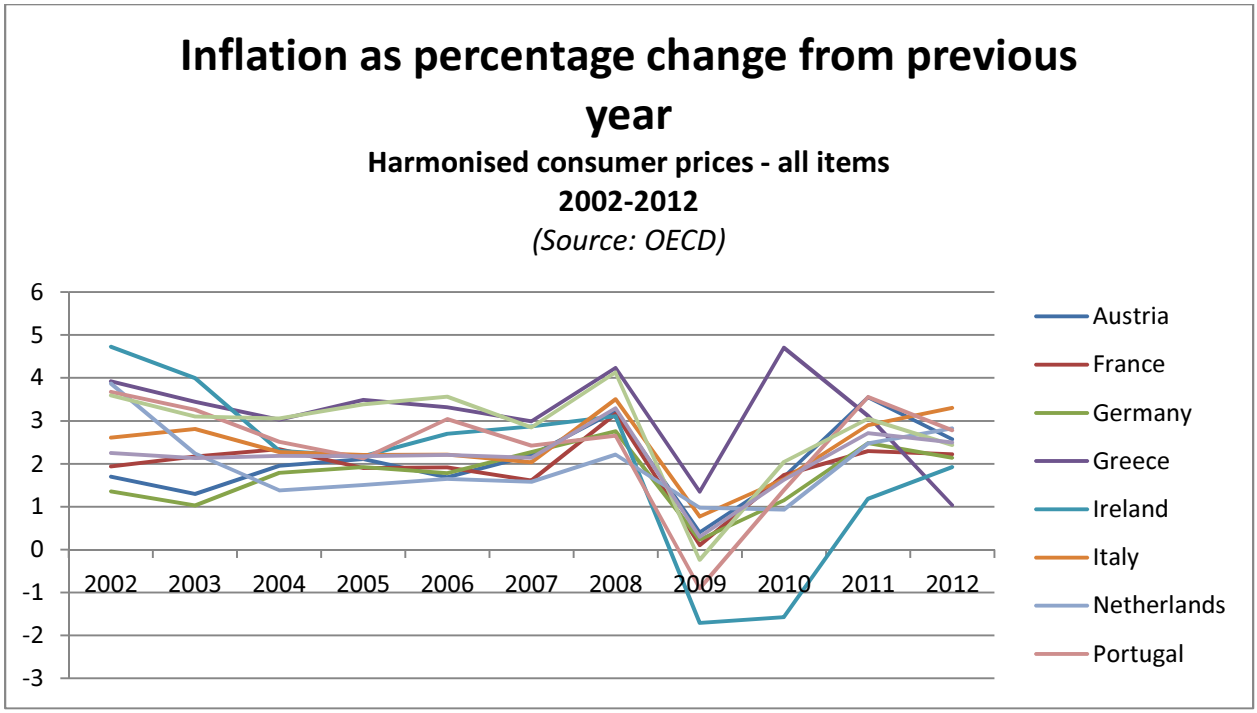
It is also useful, in a simple analysis of the data from the Organization for Economic Cooperation and Development, to look at the overall changes in labor productivity for each of the countries from the period spanning 2006-2013, and also for the period spanning 1999-2013. Key divergences exist in each set of data, to the tune of over 14 percentage points (between Ireland and Italy) and 35 percentage points (also between Ireland and Italy), respectively.

This once again begs the question: how can macroeconomic convergence, and the criteria of wage flexibility and labor mobility, be achieved amongst countries which exhibit such divergences in changes in labor productivity? If wages were truly flexible and labor truly mobile across the entire Eurozone (or a situation as close to true flexibility and mobility as possible

were reached[20]), then would not the changes in labor productivity be equal, or at least closer to equal, for all countries shown here?

Inflation

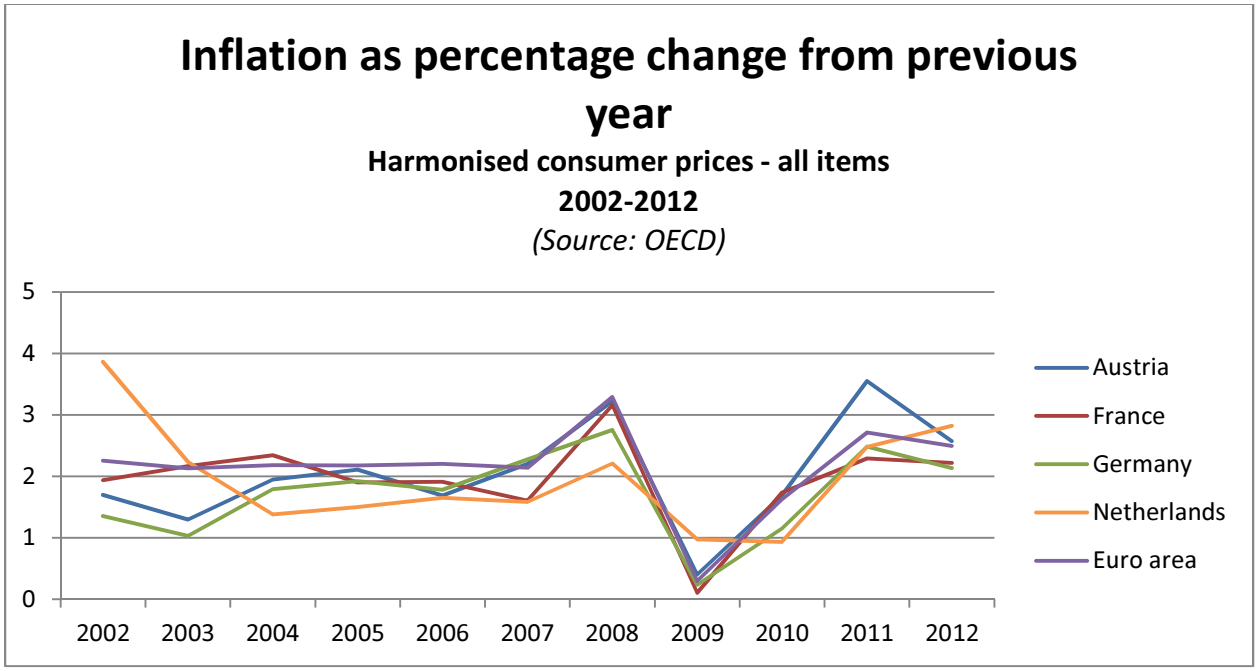
Another metric can be utilized to demonstrate that the economies of the Eurozone are not achieving the convergence required to form an optimal currency area will be rates of inflation. Theoretically, one would assume that across a currency area of some level of homogeneity, or an optimal currency area, the degree of inflation year-to-year would be relatively homogeneous between member states. However, an analysis of the following sets of data demonstrates otherwise for the Eurozone:



(Data from the Organization for Economic Cooperation and Development. See Appendix I for more detail by country and year.)

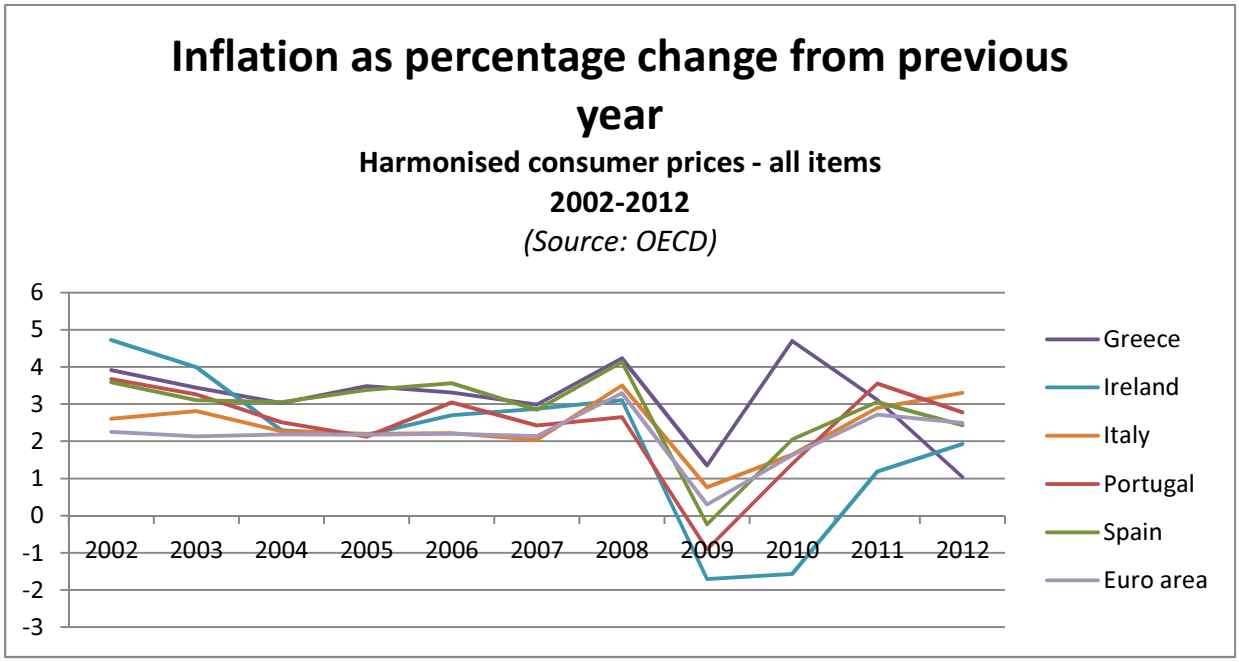
[20] The author acknowledges that total wage flexibility and absolute labor mobility are not humanly possible.

Note the wide band of inflation statistics in the above graph; the divergence between inflation rates of the "core" countries is not as great:



(Data from the Organization for Economic Cooperation and Development. See Appendix I for more detail by country and year.)

One can see more divergence, however, amongst the countries of the periphery:



(Data from the Organization for Economic Cooperation and Development. See Appendix I for more detail by country and year.)

Divergence in Unemployment Rates

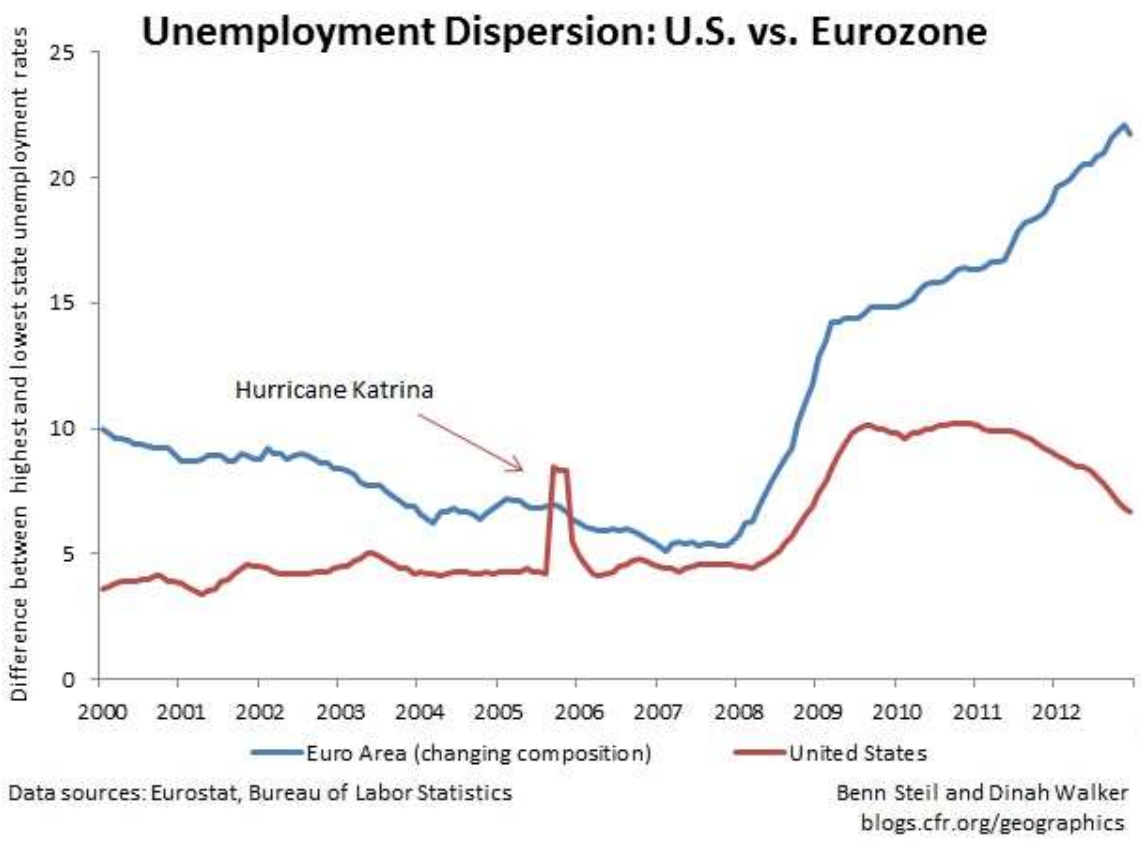
There is a final key indicator that displays the macroeconomic divergence among member states of the Eurozone: divergences in the unemployment rates of these countries, or unemployment dispersion. Changes in unemployment rates can be indicative of economic shocks, and can accompany changes in the business cycle, in addition to the relationship between unemployment and inflation. Widespread divergence in the unemployment rates of countries sharing a common currency would seem to also indicate a lack of macroeconomic convergence as well.

In an article for the Council on Foreign Relations, Benn Steil and Dinah Walker examine trends in divergence of unemployment rates between the United States and the countries of the Eurozone. They compare the unemployment dispersion in the United States (that is, the range between the highest and lowest unemployment rates by state) with the unemployment dispersion between countries in the Eurozone (Steil and Walker). The chart found in their article is particularly telling, and presents graphic evidence of the differences between the United States and the Eurozone in regards to progress made towards convergence and optimization of a currency area.

Note that during the period between 2000-2008, unemployment dispersion in the United States maintained a relatively constant level of just under 5%, whereas that of the

Eurozone was much more pronounced over that same period. While it is important to note that it appears that the countries of the Eurozone were making progress on bringing their unemployment rates into convergence with one another over this period (dropping from a 10% difference in 2000 to just over 5% in 2008, the differences among the highest and lowest unemployment rates skyrocketed after the global financial crisis of 2007-08, and climbed further throughout the Eurozone sovereign debt crisis. While the unemployment dispersion also increased in the United States following the global financial crisis of 2007-08, it has since recovered to near pre-2009 levels.

(It should be noted that the 2005 spike in U.S. unemployment dispersion is due to the effects of Hurricane Katrina.)



These differences between the United States and the Eurozone may be indicative of a behavior of the Eurozone to act and function at least somewhat like an optimal currency area during periods of relative economic stability, but a general inability to weather economic shocks as an OCA. This may be partially a result, in this particular case, of a lack of coordination among policymakers of the Eurozone during the recent financial crisis of 2007-08 and the sovereign debt crises, and a relative inability to enact effective, centralized measures along the lines of those pursued by the federal government of the United States in response to these economic shocks and crises. Such a difference indicates that in order for the Eurozone to become an OCA, structural and institutional changes will need to be made to give policymakers better coordinating abilities and a centralized response to such shocks (in addition to changes designed to bring the member states of the Eurozone into closer macroeconomic convergence).

On a Case-by-Case Basis: What Caused the Crisis?

What, then, allowed this pattern of economic divergence and the dichotomy of export-led versus import-driven economies to continue for so many years under the euro? In order to get a satisfactory answer, it is necessary to examine several of the countries of the Eurozone individually, as each country's issues and underlying causes of their sovereign debt crisis are slightly different. As there was no single template for each crisis, neither is there a "one-size-fits-all" solution to be found.

Greece

Greece, viewed by many as the initial flashpoint for the sovereign debt crisis in the Eurozone, had actually enjoyed one of the fastest rates of growth in the Eurozone throughout

the early and mid 2000s, after having adopted the euro in 2001. However, this growth came at the expense of a large structural deficit in the country's public finances, and two of its most important sectors, shipping and tourism, were highly sensitive to changes in the business cycle. When the global financial crisis struck in 2007-08, these two sectors were particularly badly hit, and Greek government spending increased in an attempt to compensate for the economic losses. The Greek government was already in debt to the tune of 115% of the country's GDP, as can be seen from the earlier chart on government debt as a percentage of GDP, and very quickly found itself running out of money with which to cover its expenses, the most notable of which were Greece's high public sector wages and pension commitments.

When the Greek government realized in April 2010 that it would not be able to cover its expenses for the remainder of the year, it requested a €45 billion loan from the International Monetary Fund (IMF), leading to a downgrade by several credit ratings agencies and fears in international markets. A further request for €110 billion, to finance Greek government expenses for three years, came in May 2010, and along with it came plans for austerity measures to rein in the country's out-of-control public spending. Further loans and structured austerity plans elicited riots, protests, and tensions between the government and Greece's citizenry, with widespread vilification by protestors of other European nations, the IMF, and others. As interest rates on Greek bonds soared, owing to plummeting investor confidence, so too did Greece's borrowing costs, and the need for additional bailout funds became apparent. An additional €130 billion loan from the Troika (EU, ECB, and IMF) was agreed to later in February 2011, in exchange for a rigorous austerity regime. While Greece is finally on the path to becoming once again financially solvent, the road ahead remains perilous, and additional

assistance may still be necessary. Greece's government deficit for 2013 is under 5% and shrinking – a manageable number – but its public debt will remain high for the foreseeable future, stunting economic growth, and with it, any potential ability to pay it off more quickly.

Ireland

In Ireland, the causes of the debt crisis were different than in Greece. High public spending was not the problem; rather, Ireland's government enjoyed surpluses for the years leading up to the global financial crisis in 2007-08. A massive construction and property boom, financed through private credit (with bank deposit insurance from the government) led to higher public receipts and increased public spending during the middle part of the first decade of the new century. According to Jacques de Larosière, it was only when access to private credit dried up during the global financial crisis that this construction boom faltered. With massive defaults by property owners and a drop of 47% in housing values,[21] Ireland's major banks lost tens of billions of euros in deposits, and the central bank moved to insure these deposits. When major bank withdrawals accelerated, in conjunction with the huge drop in public receipts as a result of the bursting of the construction bubble, the Irish government quickly found itself in a liquidity crisis, and unable to sustain its budget. One need only refer to the year-to-year government deficit charts in this paper to understand how dramatically and how quickly this crisis unfolded. Ireland's deficit spending, in its attempt to stem the effects of its construction bubble bursting, was quickly recognized by the markets as unsustainable, although its case is not as severe as Greece's.

[21] https://www.cia.gov/library/publications/the-world-factbook/geos/ei.html

Italy

Italy occupies a unique position in the drama unfolding in the Eurozone crisis. It is the third-largest economy in the Eurozone, and as such, has been watched carefully by investors for signs of financial turmoil. However, according to Professor Lucia Tajoli of the Politecnico di Milano, the Eurozone crisis has not so much caused or inflamed economic strains in Italy as much as it has simply exposed already-existing economic and political issues. Professor Tajoli emphasizes that Italian banks have not been subjected to the contagion that has affected their Spanish and Irish counterparts, largely owing to their overall more-conservative practices and sound financial systems. While Italian government debt remains high at over 120% of GDP, it was over 115% even prior to the global financial crisis of 2007-08 and the start of European sovereign debt contagion. Italy is also on track to have a government surplus this upcoming year, and its deficits have not exceeded 5% of GDP throughout the crisis; this indicates that Italy's net balanced position will keep it solvent for now. Professor Tajoli notes that Italian banks have never been as profitable as their foreign counterparts because they have not taken on as risky assets, and have therefore passed stress tests quite easily (Tajoli).[22] She also points out the large private Italian wealth levels, and Italy's standing as the Eurozone's third-largest economy, which, along with lower bond yields, have assured and assuaged the fears of many investors.

One of the largest causes of uncertainty regarding Italy's financial positions remains its national politics. As recent elections in February 2013 have shown, Italian elections can be

[22] It should be noted that while helping Italy to avoid similar crises to those in the other countries of the periphery, the more conservative nature of Italian banks makes it much more difficult to easily obtain capital for new initiatives, which could hamper new growth.

unpredictable and heavily influenced by public reactions to the Eurozone crisis and the austerity program championed by the technocratic government of Mario Monti. Indeed, the Monti government was originally ushered in by a dramatic and sweeping hand-off of power from former Prime Minister Silvio Berlusconi in a bid to restore international confidence in Italian bonds. While the reforms enacted by the Monti government will have a negative effect on short-term growth because of the austerity measures they include, the fiscal consolidation, bureaucratic consolidation, and labor pension reform policies put into place will begin to have effects in the near term and should result in modest but positive effect on long-term growth (Tajoli).

Portugal

The case of Portugal was similar to that of Greece: overspending in the public sector and a fragile but over-bureaucratized financial system within the government. Portugal's economy was teetering along before the global financial crisis, and following the US credit crisis and the contagion and disruption of markets caused by the Greek credit downgrades earlier in 2010, Portugal's finances were quickly moving out of control. Credit ratings agencies cut Portugal's sovereign debt rating in the summer of 2010, and by early 2011, the country was petitioning the Troika for €78 billion in bailout funds in order to stabilize government finances. It should be noted that structural reforms were quickly enacted, with considerably less public opposition and protest than in Greece (where the government excess affected more than just overpaid bureaucrats), and it appears, as shown in the graphs and charts earlier in this paper, that

Portugal is on track to begin to move to government surpluses and chip away at its national debt within the next few years.[23]

Spain

Spain found itself in a similar position to that of Ireland before the global financial crisis. In fact, Ireland and Spain account for the two lowest pre-2007-08 debt-to-GDP ratios of all of the countries discussed in this paper, even Germany. Like Ireland, Spain experienced a housing bubble in the early- to mid-2000s, and this bubble accounted for high public receipts, and thus much lower debt, than many of Spain's Eurozone counterparts. When the housing bubble burst, Spanish banks found themselves in a position similar to those in Ireland, and the Spanish government commenced a program to bail out the most vulnerable banks. This enormous government spending program drew into question the solvency of the Spanish government, and although Spain passed an amendment to its constitution to require balanced government budgets by 2020, along with other fiscal restraint measures, Spain's debt was still downgraded, and the country sought Troika assistance in early 2012. Spain was and remains a particular concern for investors, as its size accounts for more than Ireland, Portugal, and Greece combined (it is the fourth-largest economy in the Eurozone), and the failure or default of a government of such size would have catastrophic rippling effects on the entire Eurozone.

In examining the accounts of each of the five "PIIGS" countries and their individual experiences with the Eurozone crisis, it is apparent that no country among them is exactly the same. While there may be some similarities, this is still indicative of widespread divergence

[23] It should also be noted that Portugal's national debt is currently around 130% of GDP, considerably less than that of Greece.

amongst the economies of the periphery. If these economies are going through such divergent cycles of experience amongst themselves (and not to mention the divergences between these countries of the periphery and the "core"), then how can one argue that the countries of the Eurozone are convergent from a macroeconomic perspective, and thus, currently comprise an optimal currency area?

How to Solve the Problems of Divergence?

Is the Eurozone worth saving? That is, should the countries of the Eurozone work to achieve some semblance of economic convergence in order to maintain the Euro as a functioning currency? For many economists, and residents of the Eurozone, the answer is a resounding yes. The costs of a breakup are simply too high, both economically and politically. Furthermore, a breakup of the Eurozone would indicate larger problems for the European Union as a whole, and would undoubtedly be a setback to the economic and political integration towards which the countries of the Union have worked over the past several decades. How, then, can the Eurozone be fixed and the divergences brought to light in the sovereign debt crisis be addressed? As mentioned earlier, an optimal currency area in present-day Europe would either be smaller and more homogenous than the current Eurozone, more closely integrated than the current Eurozone, or both. So what can be done to meet either of these criteria?

One of the most obvious, but also one of the most controversial, ideas as to how to fix the imbalances and divergences within the Eurozone remains the implementation of a system of federal fiscal transfers similar to those in the United States. This is a solution that could be

applied either in the Eurozone at its current size, or in a smaller group. These transfers would eliminate a myriad of issues presented in this paper, primarily issues related to imbalances in fiscal expenditures by governments, issues of labor productivity differences, and current account deficits and surpluses, and would thus move the Eurozone closer to convergence and optimal currency area status. The current budget of the European Union makes up roughly one percent of Europe's GDP, as compared to that of the United States federal government, which comprises roughly twenty percent of the United States' GDP. Quite simply put, neither the mechanisms nor the scale currently exist in Europe to achieve such fiscal transfers, and implementation of such a system would take years, probably with widespread vociferous opposition from certain parties.

One of the other interesting ideas, as presented by several economists, is the idea of breaking the Eurozone up into various "core" versus "periphery" communities, along criteria designed to place each current member state into the "community" or currency area that best allowed them to meet certain convergence criteria. This concept, however, would presumably be met with widespread opposition and controversy as to which communities certain economies would be placed into (particularly Italy); furthermore, many would view it as a step backwards, undermining the progress of European economic integration over the past three decades. Additionally, the political implications for such a split would be enormous, with the potential to seriously undermine further integration of the European Union. One must also assess whether or not the political will exists in Europe, or in each set of countries, to move towards an OCA over the long term, and to weather the conditions that it will bring in both the short term and long term.

The United States as an OCA

In examining various potential developments and outcomes as they relate to Europe and the Eurozone's status as a potential optimal currency area, it is useful to reference several other examples of the formation of optimal currency areas throughout history. While many of these OCAs consisted of regions or city-states within countries, few are as developed or as salient as the United States. The United States' experience is uniquely relevant as a point of reference for many of the issues currently faced by Europe with respect to macroeconomic integration and the need for convergence. In particular, many of the political, economic, social, and cultural differences that existed in the United States are similar to some of the economic, cultural, and political barriers that stand in the way of full European integration. While there are many other examples of optimal currency areas, or currency unions that may or may not have been optimal, the United States provides the most applicable model for the Eurozone, particularly given the history of federalism in the United States. Its varied and once-divergent economic regions have since moved into closer convergence, with the assistance of federal fiscal transfers, the breakdown of cultural and regional barriers, and increased labor mobility, to create a United States that now stands as the pre-eminent example of an optimal currency area.

What, then, is the history of the United States as it relates to a federal fiscal and/or monetary policy, and what lessons can be learned from it? Are there ways in which policymakers can apply economic experiences with the United States as an optimal currency area to the Eurozone, and if so, what are their limitations? In what ways might a European version of such policy implementation be different, due both to cultural and political

differences, but also due to the placement of the Eurozone and the Euro crisis in a different period in history?

In examining these questions, it can be useful to first take a look at the evolution of the United States as a monetary union. The monetary integration of the States into a single currency was not without difficulty; even though monetary union was seen from the outset as a prerequisite to political union between the States. Under the Articles of Confederation, each state had the prerogative to print its own money, as the colonies had under British rule (in addition to the widespread use of the British pound and Spanish peso). To prevent squabbling and quarrelling amongst the states, adoption of some form of common currency was regarded as essential (Rockoff).

Rapid deflation and economic divergence after the American Revolutionary War produced various economic demands from different regions of the United States, in a manner not dissimilar to what is being experienced in Europe today. Farmers in the western States, many of whom were heavily affected by the deflation because of heavy debt burdens, cried for tax relief, while states in the Northeast, which had smaller debt burdens, were reluctant to agree to debt-relief measures for farmers in the West and South. The issuance of legal-tender paper money was implemented by several states, such as Rhode Island, and these states insisted that the paper money be accepted as legal tender. However, this had the potential to cause tensions between the states, as each state could print as much paper money as it wanted, at whatever nominal value or exchange rate deemed desirable. Maintaining state currencies at par could have resolved some of this tension, but would not have solved the

potential issue of states' currencies circulating beyond their borders. Therefore, a monetary union (with central oversight) would be necessary before the states could come together under a political union with the new Constitution (Rockoff).

Even after the establishment of a monetary union, with the federal government acquiring authority over a national currency, the first 150 years or so of this new monetary union brought repeated regional disputes and infighting. According to various economists who have studied and written about the United States as an optimal currency area, such disputes often led to exacerbated economic disturbances, and even sometimes perceptions of regional favoritism at both national and regional levels, as policymakers sought to calm regional economic storms and balance the demands of economically-divergent areas of the United States, particularly during an economic downturn.

What is economically beneficial for one region is not always beneficial for another, and this has been true for the United States as much as any other country or area. As we can deduce from Mundell's theory of optimal currency areas, when two economically divergent areas are bound together by the same currency or unit of monetary exchange, and there is an economic disruption or disturbance in one of the two regions, policymakers have a decision to make. They can alleviate the disruption with monetary tools, which would theoretically lead to increased hardship or other undesirable (e.g. inflationary) effects on the other region, or they can to allow the disrupted region to continue to suffer out of fear of disrupting the economically stable region. While it is rare to see policymakers make an explicit decision one way or the other (as they generally seek a balance between the two), there have been frequent

policy debates and tussles in the United States over how exactly to alleviate such regional shocks, and how to apply policies that would alleviate stress in economically-shocked regions while still protecting the economic activity of stable areas. As a further extension of this idea, policymakers would inevitably face the most blowback from states when such "adverse" monetary policies affected regions that were already experiencing real shocks or recession (Rockoff), and we see an example of this in Europe, as certain nations were more severely affected by actions of the European Central Bank following the global financial crisis of 2007-08.

An example from US monetary history of such shocks comes in the form of the Crisis of 1857. While the capital markets of the North and South were at least somewhat integrated before the Civil War (Bodenhorn and Rockoff), the economic system of the South was based upon cotton and other large cash crops while the North was more industrial, and distrust between the two regions was high due to political tensions over slavery and other hot-button issues of the time. The Crisis of 1857 started in the North over the failure of a New York insurance company, and quickly spread throughout the rest of the country as it affected the railroad industry. Since the years prior to the Crisis had been prosperous, many businesses and individuals had taken out large lines of credit, and were hit hard when the crisis came, with real market prices dropping in response. This drop in real prices affected the Southern economy, which was largely commodity based, and was viewed by the South as a crisis caused by the moneyed and industrialist-capitalist interests of the North.

The exact origins and development of the Crisis are not our focus; rather, the effects of the crisis. President Buchanan himself deemed paper money and its circulation to be the cause.

The South actually ended up suffering little, and the Northeast and Midwest were most severely hit. However, tensions between the South and North flared up as a result of the downturn, with many in the South in particular arguing that it would be better off as an independent country, free to pursue its own monetary policy. Similar cases can be seen in Europe today, with many in certain countries of the Eurozone (e.g. Germany) arguing that they would be better served to leave the zone and the problems associated with being in a currency union with Greece, Spain, and the other countries of the periphery.

The Process of Becoming an OCA: Civil War to New Deal

The United States was disrupted politically, socially, and economically by the Civil War and the subsequent Reconstruction, and much of the work that had been done to integrate financial markets throughout the country before the war had to start again from scratch. The process of becoming an optimal currency area during this roughly 70-year long period was pushed largely by three main factors: increased labor and capital mobility, a breakdown in regional and cultural barriers, and the implementation of large-scale federal fiscal transfers between the states.

With the end of slavery and the readjustment of the Southern economy to the new realities of hundreds of thousands of free African-Americans, many of these former slaves began to migrate North in search of employment, leading to one of the largest waves of migration and first major breakdowns in regional barriers to labor mobility between the North and South. Similarly, the regional barriers and cultural differences between North and South, while still predominant, were beginning to weaken with the advent of improved transportation

and communication between the states, heralded by the standardization of railroad gauges after the war and improved infrastructure as a result of the Reconstruction. With the nation-unifying events of World War I and World War II, as well as with the advent of air-conditioning and the industrial capabilities now afforded to the South by this technology, the United States became more homogenous than ever before, and regional loyalties and differences shrank to the lowest level since the Revolutionary War.

It was not until the implementation of large-scale federal fiscal transfers during the New Deal, however, that the United States truly became an optimal currency area. These transfers acted as the final step to render the United States an optimal currency area, and served to alleviate regional differences in productivity and per capita income, problems of labor mobility, and regional economic shocks with increased government spending, worker welfare programs, infrastructure development, and the like.

The question, then, is this: Issues of regional economic divergence, similar to those faced by the United States historically, exist in the European Union today. While the Eurozone crisis has occurred in a different time and under far different conditions than those of the United States' formation into an optimal currency area, are there applicable lessons for Europe in the example of the United States? Could the Eurozone grow into an optimal currency area in a similar fashion to that of the United States?

Some Steps toward Becoming an OCA and Their Considerations

Federal Fiscal Transfers

Since federal fiscal transfers have already been discussed partially in this paper, not much time will be spent on them here; however, there are a few key points to be made regarding the feasibility of such transfers and their scope.

Perhaps most important is the point that a system of federal fiscal transfers would seem to be the only way to counterbalance the systemic differences in labor productivity and per capita income found in today's Eurozone, as well as one of the most effective ways to combat the effects of other macroeconomic divergences. In looking to the experience of the United States, one can see that increased social spending in certain states compensates for various divergences, whether higher unemployment, regional shocks or recession due to the economic composition of that state, higher inflation, or other divergences.

However, implementing this system took considerable time in the case of the United States, and would be impossible to implement quickly in Europe. Growing federal spending and a pan-European budget to twenty percent of GDP would take years; expanding the European Union budget even to a level where it would begin to have an effect by means of federal fiscal transfers would take several years at very least, and probably a decade or more. In addition, such a move would dramatically alter spending at the national level for nearly every government in Europe, and such restructuring of national budgets in relation to the EU budget, if executed, would probably prove irreversible owing to the presumed economic consequences for any country seeking to shift it.

Another important consideration is the political backlash that policymakers might encounter from their respective countries in an attempt to implement such a fiscal transfer program. While such a program would doubtless take years to bring to fruition, backlash from constituents and national differences in culture and stereotypes would fuel resentment from donor countries (read: Germany). Such a backlash would probably force policymakers to slow the implementation of such a program further.

Increased Capital and Labor Mobility

Large steps have been taken in the past few decades to improve both capital mobility and labor mobility across Europe. However, there still remains progress to be made, in regards to labor mobility in particular, before the Eurozone can approach OCA status. A large proportion of the "mobile" workforce in Europe is composed of non-European immigrants, who have not assimilated culturally or linguistically with their country of residence. These immigrants hardly qualify the rest of the Eurozone for labor mobility, and as has been mentioned previously in this paper, the large variety of national cultures and languages that exist in the relatively small geographic area of the European Union and the Eurozone further complicate this problem of labor immobility. While the United States can be looked to as an example of a monetary union that overcame issues related to labor mobility (e.g., the relative immobility of Southerners, particularly African Americans, up until World War II) through a combination of increased and improved transportation, improved technologies, and a decrease in regional "loyalties" and cultural differences between regions due to the nation-unifying events of World Wars I and II, Europe faces the additional obstacles of various language

barriers. In addition, while the federal government of the United States was not as strong and powerful historically as it has been since the New Deal, the Eurozone and European Union have never experienced a strong federal system working and developing alongside the political structures and systems of the individual states in the federation. These roadblocks threaten to render European integration and optimization of the Eurozone more difficult.

Steps are being taken, however, to increase the degree of labor mobility and reduce cultural barriers within the Eurozone and the European Union as a whole. A particularly interesting example is the Erasmus Program, which is a foreign-exchange program for university students that permits them to study in another EU country, and thus obtain valuable international and cultural exposure, without the expense of going outside of the EU for schooling. Many have pointed to programs like Erasmus and credited them with building a budding class of policymakers for the future who will possess a more European identity, with exposure to other parts of the Union; furthermore, the Erasmus program is seen by employers as particularly attractive and valuable for job prospects across borders. These highly educated and highly mobile students will undoubtedly bring increased labor mobility and greater international cultural understanding to Europe.

In addition, it should be noted that it took the United States over 70 years from the Civil War until the New Deal to transform itself into an optimal currency area. In today's fast-paced global economy, certainly neither Europe nor any other region can afford itself 70 years to become an optimal currency area. This begs the question: with seemingly more obstacles and

roadblocks to becoming an OCA than the United States faced, can the current Eurozone really undergo the process of optimization in less time?

Macroeconomic Convergence in Euro Countries

Achieving macroeconomic convergence amongst member states in the Eurozone will be imperative to insure that a similar crisis and divergences do not manifest themselves in the future. However, there are multiple varied approaches and opinions as to which combination of policies can help effect the changes necessary to make this convergence a reality.

First and foremost to achieving convergence, and economic stability in member countries of the Eurozone, is addressing the crushing government debt currently being sustained by many Eurozone member governments. In fact, these debts are arguably the biggest threat to economic convergence as they have caused both short term and long term crises for member governments and world markets. The trade-off between austerity and growth is one that has sparked tremendous debate amongst policymakers throughout the Eurozone, and this debate represents a “Catch 22” scenario, according to Jacques de Larosière. While it is unsustainable to continue deficit spending to improve the economic situations in the countries currently experiencing these troubles, strict austerity measures and harsh budget cuts would also endanger future growth and could cause further recessions or economic downturns that could in turn hamper the ability of these governments to bring their national debts under control. The austerity-versus-growth debate has also been a key flashpoint in recent elections in Eurozone member states, with over half a dozen incumbent heads of government losing their

bids for re-election owing to their varying positions and populist sentiment surrounding the issue.

One of the key elements in any long term solutions to the Eurozone crisis must be an established and enforceable set of convergence criteria similar to those outlined in the Stability and Growth Pact. Although several similar plans have already been proposed, time will tell if enforcement will work, and only with solid enforcement of all member states' violations will these convergence criteria be followed. Policymakers proposing recent steps towards the supranational approval of budgets will have to tread carefully, however, as some of these measures could potentially be construed as impositions on national sovereignty by the European Union as a whole.

Banking Union in the Eurozone

While it is still a developing and ever-changing topic, the concept of and push for a banking union within the Eurozone is one that must also be addressed. A banking union, or a set of uniform guidelines and regulations for banks within the Eurozone, is considered by most heads of European governments and their regulatory commissions to be of high necessity in order to re-establish long-term stability and restore confidence in the financial sector in Europe, which has been so badly rocked by the sovereign debt crises affecting various Eurozone governments. Key policymakers, such as Christine Lagarde of the International Monetary Fund and Mario Draghi of the European Central Bank, have listed banking reform, and a banking union, as a top priority for 2013, and a necessity to avoid the same financial issues as in the 2007-08 global financial crisis, that then led to many of the sovereign debt issues in Eurozone

countries. As Lagarde stated, "…implementing a banking union with powers to supervise all banks in the euro zone should be the currency bloc's top priority…" (Flynn and Thomas).

What, then, are the main reasons that the Eurozone, and the Euro crisis, necessitates such a banking union? There are three major aims that have been stated in the attempt to establish a banking union, and most of the progress towards these goals has been achieved since June 29, 2012, when the leaders of Eurozone countries reached a breakthrough deal to allow the direct capitalization of banks in Euro countries from a single supervisory mechanism, the European Central Bank. The first aim of a banking union is to establish uniform and common rules and regulations for deposit insurance in the 6,000-plus banks across the Eurozone, in an effort to standardize the safety and guarantee on investors' savings.

The next aim for a banking union would be to establish uniform standards for supervision, and to have a single supervisory body overseeing all of the banks of the Eurozone. Much of the sovereign debt crises in the Eurozone have been caused at least in part by sovereigns bailing out national or private banks when they themselves could not afford to do so, and a greater emphasis on shared practices and oversight will help to mitigate such risks and prevent contagion in the future. Establishing a standardized set of supervisory procedures will eliminate discrepancies that encourage speculation or allow for questionable accounting and loan practices among banks, which can lead to further crisis and panic.

There remains much debate as to exactly how the banking union will be supervised. It currently appears that the European Central Bank will assume the role of monitoring the Eurozone's banks as the single central supervisory mechanism, although Germany in particular

has shown strong opposition to the idea of the ECB taking such a role. The idea of direct capitalization, in and of itself, however, eases many of the headaches related to sovereigns bailing out national banks, and then European-wide mechanisms having to bail out the sovereigns; as the statement of June 29, 2012 states: “it is imperative to break the vicious circle between banks and sovereigns” (Voigt).

Finally, and perhaps most importantly, is the aim to create a set of “living wills” for major banks across the Eurozone; that is, contingency plans should such large banks become unstable or unable to manage an existential crisis adequately. Such living wills would effectively detail crisis reaction and management plans, usually including an ordered plan for the break-up and liquidation of some or all parts of banks in case of extreme stress or crisis in financial markets that cause a bank to become unstable. These living wills and contingency plans outlined therein would be an effective buffer against the type of contagion that essentially paralyzed financial markets during the global financial crisis in 2008.

Why are these changes and reforms important? With technology increasing the speed of financial markets’ reactions, banks are now more subject to volatility and movement in the financial world than ever before. Additionally, with the integration of the Eurozone into a common market with a common currency, capital is now more mobile than ever before, and with the prevalence and ease of access to banks anywhere in the world (including through the internet), increased supervision and uniform regulations are necessary to prevent a recurrence of the global financial crisis and the speed with which global markets plummeted in reaction to it, leading to questions about the liquidity and stability of banks large and small worldwide.

Banking reform and the final parameters of a banking union are far from decided, however. As it is a constantly-evolving topic and set of reforms, and largely because of German hesitance to agree to sweeping reforms in the banking sector (particularly German wariness of the European Central Bank), there are many details still to be worked out before any long-term agreement is reached and real guidelines governing a banking union within the Eurozone are established.

A Counter-Argument to Downsizing

So, then, why not split the current Eurozone into several parts, or force individual countries out of the currency area, effectively downsizing the Eurozone? This possibility has been discussed by various economists and policymakers, particularly as it relates to the case of Greece, and for a brief period of time in 2012, was considered a real possibility. However, as has already been indicated in this paper, the economic and political strain that could result from such a downsizing of the Eurozone could potentially be calamitous and cause another crisis similar to that which originated with the global financial crisis of 2007-08. Such a downsizing would undermine past and current efforts at European integration as well.

Conclusion and Broader Implications

In the final analysis, it is left to policymakers to make critical decisions regarding the Eurozone. Having demonstrated that the Eurozone is not currently functioning as an optimal currency area, and having laid out several steps that could be taken or conditions that could be met in order to move toward optimization, this paper brings us to several important questions. What are the costs and benefits involved with each of the strategies presented thus far in the debate over how best to handle the Eurozone crisis and underlying systemic problems of economic convergence in Europe? Should long-term political goals and long-term economic benefits be placed ahead of short-term economic benefits, or avoidance of a similar crisis? Do Europe's leaders have the political will to tackle the long-term underlying issues that plague the common currency and the Eurozone, even at risk to their own political fortunes? Do the residents and citizens of Eurozone member states have the stomach for short-term economic pain for the sake of long-term economic gain? Does an appetite, or even willingness, exist amongst Eurozone member states to tolerate an increase in Euro-wide federal fiscal transfers and other steps that might appear unseemly or unfair to the residents of some countries?

These are all questions and topics on which dozens more pages could be written, and that are unfortunately out of the scope of this paper. However, having laid out the arguments, data, and evidence as to why the Eurozone is not currently functioning as an optimal currency area, and understanding the reasons and causes behind the systemic divergences that plague its member states, one can hopefully begin to assess what steps policymakers can and should take in order to achieve an optimal currency area for the Euro from an economic perspective,

as well as from a political perspective. Policymakers in the Eurozone must address these short-term and long-term issues in order to advance long-term economic stability on the Continent and throughout world markets as well. The political ramifications of whichever path(s) they choose could move Europe closer together in integration, or stall and/or potentially reverse the progress made on the European project thus far.

Ultimately, the Euro is a currency worth saving, and its contributions to the project of European integration have been and will continue to be immense and profound. It will be up to policymakers to determine the most pragmatic and feasible compromise between the political and economic realities of today and tomorrow as they seek a path forward for the common currency, for the Eurozone, and for the European Union.

APPENDICES

APPENDIX A

List of Commonly-Used Acronyms

EC European Commission
ECB European Central Bank
ECSC European Coal and Steel Community
EEC European Economic Community
EFSF European Financial Stability Fund
EMS European Monetary System
EMU Economic and Monetary Union; European Monetary Union
ERM Exchange-Rate Mechanism
ESM European Stability Mechanism
EU European Union
FDI Foreign Direct Investment
GDP Gross Domestic Product
HICP Harmonised Index of Consumer Prices
IMF International Monetary Fund
OCA Optimal Currency Area; Optimum Currency Area
OECD Organization for Economic Cooperation and Development
PIIGS Portugal, Italy, Ireland, Greece, and Spain
SGP Stability and Growth Pact
USD United States Dollars

APPENDIX B

Long-term interest rates for Eurozone countries, per cent per year
Source: OECD

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	5.7	4.7	4.7	5.6	5.1	5.0	4.2	4.2	3.4	3.8	4.3	4.4	3.9	3.2	3.3	3.0	3.6
France	5.6	4.6	4.6	5.4	4.9	4.9	4.1	4.1	3.4	3.8	4.3	4.2	3.6	3.1	3.3	2.9	3.5
Germany	5.7	4.6	4.5	5.3	4.8	4.8	4.1	4.0	3.4	3.8	4.2	4.0	3.2	2.7	2.6	1.8	2.4
Greece	9.9	8.5	6.3	6.1	5.3	5.1	4.3	4.3	3.6	4.1	4.5	4.8	5.2	9.1	15.7	22.4	22.2
Ireland	6.3	4.7	4.8	5.5	5.0	5.0	4.1	4.1	3.3	3.8	4.3	4.6	5.2	6.0	9.6	7.0	7.6
Italy	6.9	4.9	4.7	5.6	5.2	5.0	4.3	4.3	3.6	4.0	4.5	4.7	4.3	4.0	5.4	5.6	6.3
Netherlands	5.6	4.6	4.6	5.4	5.0	4.9	4.1	4.1	3.4	3.8	4.3	4.2	3.7	3.0	3.0	2.2	2.8
Portugal	6.4	4.9	4.8	5.6	5.2	5.0	4.2	4.1	3.4	3.9	4.4	4.5	4.2	5.4	10.2	12.1	12.7
Spain	6.4	4.8	4.7	5.5	5.1	5.0	4.1	4.1	3.4	3.8	4.3	4.4	4.0	4.2	5.4	5.2	5.8
Euro area	6.0	4.8	4.7	5.4	5.0	4.9	4.2	4.1	3.4	3.8	4.3	4.3	3.8	3.6	4.3	3.9	4.5

APPENDIX C

Government debt levels as a percentage of GDP
Source: OECD

	2006	2007	2008	2009	2010	2011	2012	2013
Austria	66.4	63.4	68.7	74.4	78.1	79.7	83.0	84.4
France	71.2	73.0	79.3	91.2	95.8	100.1	105.5	107.3
Germany	69.8	65.6	69.8	77.4	86.8	87.2	88.5	87.8
Greece	117.0	115.4	118.7	134.0	149.6	170.0	168.0	173.1
Ireland	29.0	28.6	49.5	71.1	98.4	114.1	121.6	126.9
Italy	116.7	112.1	114.6	127.7	126.5	119.7	122.7	122.1
Netherlands	54.5	51.5	64.8	67.5	70.6	75.2	81.0	83.6
Portugal	77.3	75.4	80.7	92.9	103.2	117.6	124.3	130.1
Spain	46.2	42.3	47.7	62.9	67.1	75.3	87.9	90.9
Euro area	74.7	71.8	77.0	87.8	93.1	95.1	99.1	99.9

APPENDIX D

GDP Composition and Labor Force Occupation by Sector
Source: CIA World Factbook

	GDP Composition by Sector			Labor Force Occupation by Sector		
	Agriculture	Industry	Services	Agriculture	Industry	Services
Austria	1.5	29.4	69.1	5.5	27.5	67
France	1.9	18.3	79.8	3.8	24.3	71.8
Germany	0.8	28.1	71.1	1.6	24.6	73.8
Greece	3.8	16	80.1	12.4	22.4	65.1
Ireland	2	29	69	5	19	76
Italy	2	23.9	74.1	3.9	28.3	67.8
Netherlands	2.8	24.1	73.2	2	18	80
Portugal	2.6	22.6	74.8	11.7	28.5	59.8
Spain	3.3	24.2	72.6	4.2	24	71.7
EU	1.8	24.6	73.5	5.3	22.9	71.8
USA	1.2	19.1	79.7	0.7	20.3	79.1

Note: The figures for the United States are included solely for the purpose of comparison.

APPENDIX E

Current account balances, in $ bn USD, 1994-2013. Source: OECD

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	-1.7	-6.9	-6.7	-5.1	-3.5	-3.6	-1.4	-1.6	5.6	4.3	6.4	6.6	9.2	13.2	20.3	10.4	11.4	8.2	8.8	10.6
France	8.2	11.0	20.8	37.2	38.9	46.0	19.3	23.6	17.4	14.3	10.5	-10.4	-12.9	-25.9	-50.0	-39.4	-45.2	-59.6	-51.0	-46.2
Germany	-30.3	-29.4	-13.7	-10.0	-17.0	-29.0	-34.3	-0.3	40.6	47.1	124.6	137.9	180.9	250.2	226.9	197.7	196.2	204.6	187.5	199.5
Greece	-0.2	-3.2	-5.1	-5.3	-3.8	-7.7	-9.9	-9.5	-9.7	-12.8	-13.3	-18.3	-29.8	-44.9	-51.2	-36.0	-30.6	-29.3	-20.4	-17.2
Ireland	1.5	1.7	2.0	1.9	0.7	0.6	0.1	-0.7	-1.2	0.0	-1.1	-7.0	-7.9	-14.0	-15.1	-6.5	1.0	0.2	2.7	4.3
Italy	13.9	23.2	40.2	33.8	19.8	8.1	-5.7	-0.6	-9.8	-19.6	-16.4	-29.5	-48.1	-51.8	-65.4	-41.4	-71.7	-69.2	-45.5	-35.3
Netherlands	18.4	25.8	21.2	25.5	13.3	16.6	7.9	10.3	11.4	30.5	48.1	48.2	63.0	52.4	37.2	33.3	55.7	77.2	71.1	78.5
Portugal	-2.2	-0.2	-4.9	-6.8	-8.8	-11.0	-12.2	-12.4	-10.9	-10.5	-15.5	-19.8	-21.5	-23.5	-31.9	-25.6	-22.8	-15.4	-8.7	-4.9
Spain	-6.5	-1.7	-1.5	-0.6	-7.2	-17.9	-23.0	-24.0	-22.5	-31.1	-54.9	-83.1	-111.1	-144.6	-154.6	-69.9	-62.8	-52.6	-12.2	2.0
Euro area	17.1	44.3	71.3	90.5	51.6	21.6	-39.4	3.0	44.1	42.3	110.9	39.2	35.4	24.1	-93.3	21.1	43.3	62.5	130.7	193.9

APPENDIX F

Government surplus/deficit as a percentage of GDP, 2006-2013

Source: OECD

	2006	2007	2008	2009	2010	2011	2012	2013
Austria	-1.7	-1.0	-1.0	-4.2	-4.5	-2.6	-2.9	-2.3
France	-2.4	-2.7	-3.3	-7.6	-7.1	-5.2	-4.5	-3.0
Germany	-1.7	0.2	-0.1	-3.2	-4.3	-1.0	-0.9	-0.6
Greece	-6.0	-6.8	-9.9	-15.6	-10.5	-9.2	-7.4	-4.9
Ireland	2.9	0.1	-7.3	-14.0	-31.2	-13.0	-8.4	-7.6
Italy	-3.4	-1.6	-2.7	-5.4	-4.5	-3.8	-1.7	-0.6
Netherlands	0.5	0.2	0.5	-5.5	-5.0	-4.6	-4.3	-3.0
Portugal	-4.6	-3.2	-3.7	-10.2	-9.8	-4.2	-4.6	-3.5
Spain	2.4	1.9	-4.5	-11.2	-9.3	-8.5	-5.4	-3.3
Euro area	-1.4	-0.7	-2.1	-6.4	-6.2	-4.1	-3.0	-2.0

APPENDIX G

Change in GDP per capita, 2002-2011

Source: OECD

Change in GDP per capita, 2002-2011			
Country	**2002**	**2011**	**% Change**
Austria	32306.477	36131.136	11.84%
France	28668.214	29938.053	4.43%
Germany	30658.694	34580.83	12.79%
Greece	21757.745	22287.413	2.43%
Ireland	35758.035	37210.02	4.06%
Italy	28253.97	27081.473	-4.15%
Netherlands	33894.122	37119.365	9.52%
Portugal	21438.681	21414.419	-0.11%
Spain	26095.389	26981.212	3.39%
Euro area	28523.301	30166.827	5.76%

Time	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Country										
Austria	32306.48	32441.23	33072.75	33636.82	34691.25	35833.84	36193.31	34713.93	35321.56	36131.14
France	28668.21	28724.19	29241.49	29554.47	30075.7	30575.91	30383.61	29270.93	29597.8	29938.05
Germany	30658.69	30529.52	30891.12	31116.58	32306.28	33404.16	33824.79	32186.62	33573.24	34580.83
Greece	21757.75	22975.76	23896.43	24348.48	25586.7	26386.6	26226.23	25300.75	23997.2	22287.41
Ireland	35758.04	36541.7	37476.38	38794.73	39921.05	41088.96	39520.51	37154.34	36806.42	37210.02
Italy	28253.97	28021.52	28226.88	28279.89	28737.72	29007.9	28453.55	26729.15	27082.53	27081.47
Netherlands	33894.12	33849.36	34493.88	35111.42	36249.55	37584.99	38118.63	36530.19	36932.61	37119.37
Portugal	21438.68	21095.49	21300.42	21368.96	21606.92	22067.98	22036.86	21375.69	21779.83	21414.42
Spain	26095.39	26459.3	26881.9	27392.01	28075.13	28530.49	28330.45	27070.01	26899.47	26981.21
Euro area	28523.3	28552.22	28996.35	29313.99	30107.7	30829.83	30779.27	29326.04	29825.5	30166.83

APPENDIX H

Changes in labor productivity from previous period, percent, 1999-2013

Source: OECD

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	1.7	2.5	0.3	1.3	0.2	1.6	1.5	1.9	1.8	-0.8	-2.8	1.6	1.5	0.2	1.4
France	0.9	1.2	0.3	0.4	0.8	2.2	1.2	1.5	0.8	-0.7	-1.8	1.4	1.1	0.7	1.0
Germany	0.2	1.6	1.4	0.6	0.5	0.4	1.0	3.3	1.7	-0.4	-5.1	3.1	1.7	0.3	1.8
Greece	3.1	3.0	4.1	1.2	4.7	1.9	-0.7	3.6	1.4	-0.9	-3.0	-1.7	-0.2	-0.3	-0.2
Ireland	3.2	4.6	1.7	4.2	2.3	1.1	0.4	0.9	1.5	-1.9	1.2	4.0	2.8	0.7	1.9
Italy	0.3	1.9	-0.3	-1.2	-1.4	1.1	0.5	0.3	0.3	-1.4	-3.9	2.5	0.2	-1.4	0.0
Netherlands	2.0	1.7	-0.1	-0.4	0.8	2.9	1.7	1.7	1.3	0.3	-2.8	1.9	0.9	-0.4	0.7
Portugal	2.7	1.8	0.2	0.2	-0.3	1.6	1.1	0.9	2.4	-0.5	-0.3	3.0	-0.1	0.7	0.2
Spain	0.2	0.0	0.4	0.2	-0.1	-0.4	-0.5	0.1	0.4	1.1	3.2	2.6	2.8	2.6	0.3
Euro area	0.9	1.6	0.7	0.4	0.4	1.3	0.8	1.8	1.3	-0.4	-2.6	2.4	1.3	0.4	1.0

APPENDIX I

Inflation change from previous year, percent, 2002-12

Using harmonized index of consumer prices (HICP)

Source: OECD

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	1.6998	1.2961	1.9501	2.1077	1.6858	2.202	3.2243	0.4032	1.6921	3.5515	2.5723
France	1.9378	2.1691	2.3421	1.8996	1.9125	1.6068	3.1587	0.103	1.7355	2.2935	2.2203
Germany	1.3547	1.0308	1.7899	1.9198	1.7836	2.2764	2.7542	0.2338	1.1505	2.4823	2.1372
Greece	3.9176	3.44	3.0271	3.4849	3.3134	2.9885	4.2325	1.3488	4.7005	3.1186	1.0369
Ireland	4.7249	3.9953	2.2999	2.18	2.7002	2.8727	3.108	-1.706	-1.572	1.1861	1.9225
Italy	2.6098	2.8121	2.2735	2.2059	2.2167	2.0382	3.4995	0.7642	1.6395	2.9019	3.3035
Netherlands	3.8664	2.2365	1.3798	1.5022	1.6508	1.583	2.2105	0.9743	0.9297	2.4769	2.8223
Portugal	3.678	3.2583	2.5091	2.1268	3.0433	2.4229	2.6514	-0.903	1.3894	3.5568	2.7774
Spain	3.589	3.1022	3.0532	3.3823	3.5625	2.8437	4.1296	-0.238	2.0426	3.0521	2.436
Euro area	2.2543	2.1309	2.1813	2.1781	2.2034	2.1412	3.2921	0.2952	1.6236	2.7161	2.4959

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