THE POLITICAL ECONOMY OF INTERNATIONAL MONETARY INTEGRATION IN THE POST-WORLD WAR II PERIOD

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ABSTRACT

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in the Post-World War II Period

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This dissertation answers the key question: Why do states or, rather, their governments decide to participate and stay in IMI arrangements? It does so by establishing the economic and political determinants of IMI formation and sustainability. Some of these determinants are well known to the literature but others are not. For instance, it takes into account the strategic nature of a national currency for a government when it comes to ensuring its survival if threatened by war and/or domestic conflict. Furthermore, it considers the fact that many of the economic and political variables that affect IMI are in turn influenced by states' political regimes and/or regional hegemony. The determinants of IMI represent a general theoretical framework that is applicable to all past, present, and future IMI cases. To validate this framework, the dissertation offers the first known econometric test of the formation of IMI arrangements, using a large binary time-series cross-section dataset covering the years 1960-2000. Predicted probabilities regarding the formation of IMI arrangements are then compared with the reality of IMI and non-IMI cases in order to explain discrepancies, thereby enhancing the theoretical argument and exposing the limits of the statistical model and data. Finally, an examination of the sustainability and failure of existing and past IMI cases, respectively, allows us to further validate the general applicability of the theoretical framework developed herein. With these efforts, the present study provides a much more complete and informed picture of international monetary integration in the post-World War II period.

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CHAPTER I

INTRODUCTION

I. PURPOSE OF THE STUDY

With the recent advent of European Monetary Union (EMU), the official dollarization of Ecuador (in 2000) and El Salvador (in 2001), and the increasing flow of capital, goods, and services around the world (i.e. globalization), international monetary integration (IMI) has gained salience as an economic policy issue not only among academics and policy analysts but also among policy-makers. For example, Mercosur leaders have pledged to seek a common currency, though without setting a timetable (*New York Times*, March 24, 2001). In New Zealand, monetary union with Australia was also put on the agenda (*The Economist*, October 14, 2000). In Canada, the House of Commons' Standing Committee on Foreign Affairs and International Trade published its (negative) recommendations regarding a North American Monetary Union in December 2002. In Africa, the 1991 Abuja Treaty establishing the African Economic Community (now the African Union) outlines the stages for a single currency and central bank for the whole continent by the end of the 2020s (see Masson and Milkiewiz 2003).

These events have led notable scholars of the world economy to predict that there will only be one currency, or a few currencies at the most, in the world in the foreseeable future. For example, in his Nobel lecture, Robert Mundell (2000) argued that "it is entirely possible that a new international monetary system will emerge in the twenty-first century" (338). He saw this new system as leading to a world currency (see also Mundell 2001). For his part, Kenneth Rogoff, former Economic Counsellor and Director of

Research at the International Monetary Fund (IMF), believes that "at some point later this century, there will be consolidation, ending perhaps in two or three core currencies, with a scattered periphery of floaters" (*The Economist*, August 3rd, 2002: 64).[1] He adds, however, that "getting there... is one of the major political and economic challenges of the next era of globalisation" (64).

These economic gurus and experts may tell us where the future lies. They may even tell us that it will not be easy to get there. However, they do not say anything about the necessary and sufficient conditions for getting there. None of the predictions for global monetary consolidation rests on a clearly-defined general theory of international monetary integration. The scholars do not answer the key question: Why do states or, rather, their governments decide to participate and stay in IMI arrangements? They may tell us why states should favor IMI but not whether they will. Therefore, it is hard to argue with their predictions.

This dissertation fills this void and helps lay the groundwork for a fruitful debate on the future of the international monetary system. It does so by combining economic factors with political ones, thereby recognizing the age-old challenge of organizing "monetary governance in a fashion that reconciles the market logic of efficiency and the political logic of authority" (Andrews et al. 2002, 3). Some of these factors are well established but many others are not. For example, no one seems to have discussed, in the context of IMI, the strategic nature of a national currency for a government (as a means of financing public expenditures) when it comes to ensuring its survival if threatened by

[1] Other, less prominent, experts who have made these predictions or arguments are Minton Beddoes (1999), Farrell and Lund (2000), and Hausmann (1999). For an earlier argument in favor of a common currency for all the industrial democracies, see Cooper (1984). For contrarian points of view about world monetary integration, see Cohen (1998) and Frankel (2003).

war and/or domestic conflict (what may be referred to as the "security of money"). Furthermore, IMI discussions have not taken into account the fact that many economic and political variables that affect IMI are in turn influenced by states' political regimes. The upshot is that we should expect (mature) democracies to be more likely to participate in IMI arrangements. When they do not, it is because someone else (i.e. a regional hegemon) is covering the costs of IMI and/or offering side payments for participating in the arrangement.

The present study develops a general theoretical framework applicable to all past, present, and future IMI cases. It also provides the first econometric test of the formation of IMI arrangements, using a large binary time-series cross-section dataset (141 countries) covering the years 1960-2000. Predicted probabilities regarding the formation of IMI arrangements are then compared with the reality of IMI and non-IMI cases in order to explain discrepancies, thereby enhancing the theoretical argument and exposing the limits of the statistical model and data. Finally, an examination of the sustainability and failure of existing and past IMI cases, respectively, allows us to further validate the general applicability of the theoretical framework developed herein. With these efforts, the present study provides a complete and informed picture of international monetary integration in the post-World War II period, which can then be used to analyze past and future IMI arrangements.

II. Defining International Monetary Integration

International monetary integration must be distinguished from national monetary integration. The former is the voluntary integration of monetary systems and currencies

between independent states while the latter refers to the (often involuntary) integration that accompanies the creation of a new state as a result of the political integration of many smaller states. For the purpose of this study, I will use the term monetary integration to mean international monetary integration.

IMI can be either unilateral or multilateral. Unilateral monetary integration is now commonly referred to as "dollarization." Technically, it is better understood as official currency substitution (not necessarily involving the U.S. dollar). It applies when a state unilaterally decides to adopt another country's currency as legal tender as a replacement (or substitution) for its domestic currency.[2] For example, Ecuador, El Salvador, and Panama have adopted the U.S. dollar as their domestic currency. For their part, Andorra, Monaco, San Marino, and the Vatican have adopted the euro as the legal-tender currency in their jurisdiction. Multilateral monetary integration is better known as monetary union (e.g., the euro zone of the European Monetary Union). The distinguishing feature here is that there is a voluntary agreement between two or more states to irrevocably fix the exchange rates between their currencies so that one country's money is perfectly exchangeable for that of another member country at a fixed price (see Bordo and Jonung 1997, 327).

This definition is similar to that adopted by Mattli (1999) in his study of regional economic integration (with a focus on trade rather than money). It is also in accord with the general definition of inter-state cooperation found in the international relations literature, whereby actors voluntarily adjust their behavior in keeping with the current or

[2] The terms "currency substitution" and "dollarization" will be used interchangeably throughout the text to mean official or formal currency substitution. Informal currency substitution occurs when private market actors decide voluntarily to use a foreign currency for domestic transactions.

anticipated preferences of others, through a process of policy coordination (see Milner 1992).

III. International Monetary Integration Today

Fifty of the 193 states in the world today have adopted a policy of international monetary integration; 33 of them are part of three monetary unions while 17 have unilaterally decided to adopt the currency of a foreign country (see Tables 1.1 and 1.2). These IMI cases represent approximately one-quarter of the world's estimated population, which is not insignificant. However, as we will see in Chapter 3, when pairs of countries are considered as each potentially forming an IMI arrangement, then IMI becomes a relatively rare event. For example, of the more than 10,000 pairs of countries in the world today, only 265 have an IMI arrangement between them.

As already mentioned, there is a theoretical, though indirect, relationship between regime type and IMI, which will be made clearer in the next chapter. This relationship is a positive one, whereby democracy should generally be associated with IMI. As we will see in Chapter 3, the statistical evidence regarding the relationship between democracy and IMI is more ambiguous. Nevertheless, we can casually observe that three-quarters of the 50 countries that take part in an IMI arrangement today were considered democracies in 2002 (see Table 1.3).[3]

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[3] In Table 1.3, all monetary integration countries with a score of 6 or more on the combined Polity measure in the Polity IV dataset (Marshall and Jaggers 2002) were classified as democracies. Others were classified as non-democracies. For those countries not included in the Polity IV dataset (i.e. with an asterisk), Freedom House (1999) data were used, even though they pertain to 2000. However, Country Reports on Human Rights Practices by the U.S. Department of State (http://www.state.gov/g/drl/rls/hrrpt/) and Annual Freedom in the World Country Scores produced by Freedom House (www.freedomhouse.org/ratings/index.htm) were consulted to make sure that the political situation had not changed significantly since 2000. The democracy classifications of those countries rated by both Polity IV and Freedom House were

Table 1.1
Multilateral International Monetary Integration Today

Monetary Union	Countries	Currency
West African Monetary Union (CFA Franc Zone)	• Benin • Burkina Faso • Guinea-Bissau • Ivory Coast • Mali • Niger • Senegal • Togo	CFA franc
Central African Monetary Area (CFA Franc Zone)	• Cameroon • Central African Republic • Chad • Congo, Rep. of • Equatorial Guinea • Gabon	CFA franc
East Caribbean Currency Union	• Antigua & Barbuda • Dominica • Grenada • St. Kitts & Nevis • St. Lucia • St. Vincent & the Grenadines	East Caribbean dollar
European Monetary Union	• Austria • Belgium • Finland • France • Germany • Greece • Ireland • Italy • Luxembourg • Netherlands • Portugal • Spain	euro
Total	33	3

also compared for accuracy. When they differed, Freedom in the World Country Scores were consulted to assess a country's level of political rights and civil liberties, two essential characteristics of democracies.

Table 1.2
Unilateral International Monetary Integration Today

Currency	Countries
U.S. dollar	• Ecuador • El Salvador • East Timor • Marshall Islands • Micronesia • Palau • Panama
euro	• Andorra • Holy See (Vatican City) • Monaco • San Marino
Australian dollar	• Kiribati • Nauru • Tuvalu
South African rand	• Lesotho • Namibia
Swiss franc	• Liechtenstein
Total	17

Table 1.3
International Monetary Integration and Democracy in 2002

Democracies	Non-democracies
• Andorra* • Austria • Belgium • Benin • Dominica* • Ecuador • El Salvador • East Timor • Finland • France • Germany • Greece • Grenada* • Ireland • Italy • Kiribati* • Lesotho • Liechtenstein* • Luxembourg* • Mali • Marshall Islands* • Micronesia* • Monaco* • Namibia • Nauru* • Netherlands • Palau* • Panama • Portugal • San Marino* • Senegal • Spain • St. Kitts & Nevis* • St. Lucia* • St. Vincent & the Grenadines* • Tuvalu*	• Antigua & Barbuda* • Burkina Faso • Cameroon • Central African Republic • Chad • Congo, Rep. of • Equatorial Guinea • Gabon • Guinea-Bissau • Holy See* • Ivory Coast • Niger • Togo
37	13

* Non Polity IV data (i.e. Freedom House and U.S. Department of State)
Sources: see note 3.

IV. The Current State of Scholarship on IMI

Why do states decide to participate and stay in IMI arrangements? In other words, why does a country *in general* decide to integrate its money with that of another (or others)? Unfortunately, existing theories or explanations related to monetary integration do not provide us with a ready-made answer. This is because existing approaches have tended to focus on specific aspects of the phenomenon, therefore providing only partial answers that sometimes contradict one another. They have also largely ignored the fact that the identity of the partner country is a key aspect of monetary integration. To sum up, there is no unifying or comprehensive theoretical framework currently available to explain the formation and the sustainability of IMI arrangements.

Helleiner (2002; 2003) argues that the leading force behind the drive towards global monetary integration or the move away from territorial currencies is the increasing flow of international goods, services, and capital (i.e. globalization). This is because IMI should reduce transaction costs associated with increasing cross-border trade and investment as exchange rate risk and conversion costs are eliminated while the comparability of prices is improved. However important these factors may be for IMI, they represent only a fraction of all the factors necessary and sufficient to explain IMI.

Another factor that is deemed important for IMI is business cycle synchronicity between the member states so that the common monetary policy is adequate in responding to symmetric shocks. Optimal currency area (OCA) theory, developed by Mundell (1961) and improved upon by others (see Chapter 2 for details), is generally associated with this factor. In theory, it focuses mainly on factors that compensate for the absence of business cycle synchronicity (e.g., production factor mobility, price and wage

flexibility, diversified economies). In practice, however, it is most often associated with shock symmetry, as demonstrated by Bayoumi and Eichengreen's (1994) classical study of potential OCAs in the world. However, their analysis, as well as OCA theory more generally, ignores other important IMI factors (see Chapter 2 for a detailed discussion). This may explain, in part, why OCA theory generally fails to explain IMI cases in the world.

Cohen (1998) argues that political factors must be given at least equal weight to economic factors in the analysis of governments' exchange rate policy decisions. He mentions three relevant political factors: currency symbolism, seigniorage, and macroeconomic policy insulation. Unfortunately, Cohen does not discuss their relative importance vis-à-vis economic variables; nor does he explain how they might interact. All he says is the following: "In brief: economics may matter, but politics matters more" (Cohen 1998, 84). His conclusion appears to be based mainly on the fact that economic theory is inconclusive or fails to fit reality.

In a more recent study, Cohen (2003) argues that proposed monetary unions (ASEAN, Belarus and Russia, Canada and the United States, the Caribbean, Mercosur, New Zealand and Australia, the Persian Gulf, and West Africa) are unlikely to see the light of day. He cites two reasons for his conclusion: in some cases, there is an unwilling partner (Australia, Russia, the U.S.) while in others there is not enough of a feeling of solidarity between the potential member states to sustain the required level of commitment. Although his notion of solidarity and the reasons why a partner may not be interested in IMI are not very well defined or explained, Cohen nevertheless points to an important aspect of monetary integration, namely that the "identity" of the partner

matters.[4] The fact that the economic and political costs and benefits associated with monetary integration are also often a function of the identity of the potential partner country has been neglected by scholars, including Cohen himself in his earlier work. Many of the costs and benefits of monetary integration for a given state vary depending on the economic and political characteristics of the partner country as well as the economic and political links with that country.

It seems reasonable to expect econometric studies of the determinants of the choice of exchange rate regimes to be useful in identifying the conditions for the creation of IMI arrangements. Unfortunately, they are not. First, they limit policy-makers' options to two broad categories of exchange rate regimes: fixed or floating (e.g., see Bernhard and Leblang 1999; Leblang 1999). They do not consider monetary integration as a separate category of fixed exchange rate regimes; they tend to include soft pegs in the fixed exchange rate regime category, even though they would be better classified in the flexible category. Second, these studies only consider one state's perspective. They do not even take into account the currency pegged to in the choice of regime. This is clearly not appropriate for analyzing international monetary integration.

Economists have recently expanded the earlier dichotomous choice between floating and fixed in order to take into account the various types of exchange rate regimes. However, their analyses have not been concerned with establishing the determinants of IMI. Instead, they have tried to determine which exchange rate regime performs best in terms of inflation, economic growth, and output volatility. Unfortunately, their empirical results remain inconclusive (see Chapter 2). Hence, they cannot really help us determine whether international monetary integration performs

[4] The term "identity" is not used here in an ideational way but rather in a material one.

better than other exchange rate regimes. If this were true, then we could possibly argue that rational governments would favor the adoption of the exchange rate regime that performs the best economically. Economic performance does not equate policy choice, however, as Cohen (1998) and Kirshner (2003) remind us.

The extensive study of the European Monetary Union (EMU) by scholars is also incapable of giving us the necessary and sufficient conditions for the creation and sustainability of IMI arrangements. This is because "monetary integration in Europe is overdetermined" (Andrews et al. 2002, 8). On the economic side, OCA theory cannot explain why EMU took place since only a few core countries around Germany were deemed suitable for monetary union (Bayoumi and Eichengreen 1997). On the political side, multifarious explanations for the creation of EMU range from preference convergence among member states to the need to tie Germany closer to Europe following its reunification in 1991. While Moravcsik (1998) is a case for the former argument, Andrews (1993) and Baun (1996) are examples of the latter. In between, there are people such as Grieco (1996) who argue that EMU evolved from the European Monetary System because its members wanted to regain influence over monetary policy—which was then conducted by Germany as long as other members fixed their currencies' exchange rates with the German mark. For his part, Eichengreen (1993) provides what amounts to a neofunctionalist explanation (based on the concept of functional spillover) by arguing that the single market made monetary integration necessary. Cameron (1995) and Martin (1994) make a similar argument but put the emphasis on the role played by transnational economic and political institutions and actors in fostering a greater sense of European community and facilitating negotiations. In the same vein, Verdun (1999) argues that EU

central bankers formed an epistemic community that made an agreement on the EMU's structure and process possible. Further along the spectrum of EMU explanations, Risse-Kappen et al. (1999) point to the role played by European identity in fostering the feeling of solidarity and community necessary for monetary union. Finally, McNamara (1998) says that ideas such as liberalization, low inflation, and central bank independence played a big part in bringing about EMU.

Unfortunately, none of the above-listed explanations has achieved any form of consensus to this date. This is probably why Sandholtz (1993) argues that we can only explain EMU by combining all of them together. Sadly for our purpose, he does not say how these various factors should be combined to explain and predict international monetary integration. This is the problem with political science explanations of the EMU. They are not generalizable to other cases of IMI. The only exception is Cohen (1998, 2001) but he suffers from Sandholtz's overdeterminacy when it comes to explaining the creation of a monetary union. His analysis of the factors necessary for the maintenance of a monetary union is more convincing (see Chapter 5).

To summarize, current scholarship on monetary integration is unable to provide us with the conditions for the creation and sustainability of IMI arrangements. At best, we have partial answers to the question. Current economic and political science literature tells us that many variables are important when it comes to the creation and maintenance of monetary integration. It can also tell us whether two or more countries would be economically better off by integrating their monies. However, it cannot tell us whether two or more countries are likely to form a monetary union. This is because current scholarship has not tried to systematically combine the various economic and political

factors accounting for IMI. Finally, by adopting single-country perspectives, current scholarship on monetary integration fails to consider the fact that economic and political costs and benefits are also a function of the identity of partner countries.

V. The Argument in Short

In the above section, we indicated that current scholarship on international monetary integration tends to look at many factors that can potentially affect the choice for IMI. However, no theory or approach combines these factors together logically and tries to test them together. Furthermore, there is usually no consideration of the fact that the identity of the potential IMI partner is important for a country's decision. In addition, existing political approaches, which deal mainly with the EMU, are not really generalizable to other cases of IMI. Finally, they ignore the strategic role that money can play for a government.

Economic theory provides us with the main costs and benefits associated with IMI. The main benefits arise from lower transaction costs associated with international trade and investment. This is due mainly to the elimination of exchange rate risk and the need to convert one currency into another. IMI also tends to lower inflation, which can be a benefit for countries having problems controlling price level changes. Economists also point out that the loss of monetary policy autonomy resulting from IMI is a cost to countries participating in an IMI arrangement because they lose a macroeconomic policy tool to steer the economy in a way that offsets (positive or negative) shocks. However, it is only a cost if shocks affect the economies of the IMI partners differently or asymmetrically.

In addition to the above economic factors, it is important to take into account the strategic role that money can potentially play for a government as a source of financing.[5] This is an element that has been overlooked by IMI scholars, probably because they have focused on developed countries where governments have less difficulty financing their expenditures by borrowing on domestic and international capital markets or through taxation. For many poor, developing countries, however, seigniorage is an important source of government financing. Moreover, there are circumstances where recourse to seigniorage may be necessary, such as when a government faces a challenge to its survival, either internally (e.g., a coup or rebellion) or externally (e.g., a war). In such cases, it may be the only way for a government to obtain funds rapidly. As a result of IMI, a government loses the ability to issue money at will since monetary policy is now controlled either jointly by the member states' monetary authorities or by the supranational monetary authority. Therefore, IMI costs more in the case of states that are likely to experience substantial domestic political instability or a military conflict.

This study also argues that democracies should generally be more favorable to IMI than non-democracies, as Table 1.3 suggests, unless a regional hegemon is present to lower the cost of IMI. According to the international relations and comparative politics literature, this is because democracy (in its mature form) exerts a positive effect on international trade, peace and domestic stability. The literature on hegemonic stability points out that regional hegemons can help both democracies and non-democracies participate in IMI arrangements. They can do so by providing security guarantees and assistance that lower the cost of IMI associated with the loss of control over the issuance

[5] Financing government expenditures through the issuance (printing) of money is known as seigniorage. When it is inflationary, this money issuance is called the inflation tax.

of money (as a means of dealing with potential threats such as war and domestic instability). Regional hegemons can also provide states with other benefits for participating in an IMI arrangement. Bilateral development aid is one such benefit; guaranteeing a fixed exchange rate between the monetary union's currency and that of the hegemon is another.

In brief, the more two or more states (1) trade with each other, (2) experience high inflation, (3) have synchronized economic cycles, (4) are peaceful and stable, (5) are democratic, and/or (6) offer security guarantees and assistance as well (7) as other benefits for participating in an IMI, the greater the probability that they will join or remain in an IMI arrangement. These are the seven hypotheses that are developed in Chapter 2 and validated in Chapters 3, 4, and 5.

VI. The Method & Plan of Study

The argument briefly presented in the previous section addresses the shortcomings of the current scholarship on international monetary integration by combining in a logical way the economic and political science literature dealing not only with IMI but also with the relationships between political regime type and many of the factors relevant to the IMI decision. Chapter 2 develops this argument in conjunction with a thorough review of the literature.

Chapter 3 provides an econometric test of the first five hypotheses described above and developed in Chapter 2. Unfortunately, data limitation prevents us from statistically testing Hypotheses 6 and 7 regarding the relationship between regional hegemony and IMI. This is why the analyses of actual cases of IMI in Chapters 4 and 5

are crucial for testing the theoretical argument. Chapter 3 develops a binary time-series cross-sectional statistical model that uses data for 141 countries covering the period from 1960 to 2000. Overall, the regression results support the first five hypotheses in terms of expected sign and statistical significance. However, in terms of substantive significance, we find that it is by combining the determinants of IMI (i.e. the hypotheses) that we can best explain participation (or non-participation) in an IMI arrangement. The statistical results are quite robust since we are able to test samples with (listwise deletion) and without missing data (multiple imputation). As the first econometric test of the decision to form IMI arrangements to be performed to date, the results are very encouraging. Hopefully, it will spur further work along the same lines, leading to refinements in both data and technique.

Chapter 4 has three functions. First, it validates Hypotheses 6 and 7 regarding regional hegemony with respect to IMI formation. Second, it assesses how well the statistical results from Chapter 3 fit real cases of IMI in the post-World War II period (CFA franc zone [CFA], East Caribbean Currency Union [ECCU], and European Monetary Union [EMU]). In other words, it assesses the extent to which the results are able to correctly predict initial IMI participation. For this purpose, it also considers non-IMI cases that are expected to form IMI arrangements according to their predicted probabilities (Canada and the United States, Switzerland and the EMU, Japan and Korea). Third, Chapter 4 examines the formation of unilateral IMI cases in order to validate that the argument and hypotheses developed in Chapter 2 also apply to them. This is because the dyadic econometric analysis in Chapter 3 is only applicable to multilateral IMI.

To perform its first two functions, Chapter 4 starts by computing the predicted probabilities that CFA, ECCU or EMU member states would have joined such IMI arrangements when they did. For this purpose, it uses the estimated coefficients obtained in Chapter 3 along with the specific data for the relevant countries that are found in the dataset used in Chapter 3 (although in some cases it uses estimates to fill in missing data). It then compares the predicted probabilities to the reality of IMI and non-IMI. It explains any discrepancy by examining the data for the specific case as well as the relevant economic and political literature that concerns the countries involved. The results of these analyses confirm the validity of the role that regional hegemons can play in fostering IMI. They also allow us to better assess the strengths and weaknesses of the statistical model and the data.

The central question of this study is why states or, rather, their governments decide to join as well as remain in IMI arrangements? Chapter 2 answers this question. Chapters 3 and 4 validate the answer but only with respect to the formation of IMI arrangements. Hence, Chapter 5's role is to validate the answer with respect to the sustainability of such arrangements once they are created. After all, there is no reason why the factors necessary and sufficient for the formation of IMI schemes should not be the same for their sustainability over time. However, some determinants are highly likely to remain the same or improve once a state has joined an IMI arrangement (e.g., trade, inflation, or economic cycle correlation). The factors that may change are the threat of military conflict, domestic political instability, and the role of the regional hegemon. Any increase in the threat of war or instability increases the likelihood that an IMI arrangement will fail. Similarly, the hegemon's reduced economic and military assistance

and guarantees increase this likelihood. To perform this validation of the theoretical argument with respect to the sustainability of IMI, we examine the CFA, the ECCU, and the EMU, which are the monetary unions that have been sustained until now. We also look at failed cases of IMI: the multilateral case of the East African Community and the unilateral case of Liberia. In both these instances, war and domestic instability caused IMI to fail.

In conclusion, this study fills the void left over by those scholars interested in the present and future shape of the international monetary system. It does so by providing and validating the necessary and sufficient conditions for getting to IMI as well as staying there. As such, it provides a *general, robust* argument for explaining the creation and sustainability of IMI arrangements. Its conclusions also suggest that Mundell and Rogoff may actually be correct in predicting world monetary consolidation in the foreseeable future as the planet continues to globalize economically and democratize politically.

CHAPTER II

TRANSACTION COSTS, THE SECURITY OF MONEY, AND THE DETERMINANTS OF IMI

I. INTRODUCTION

Economic and political science scholars working in a rationalist framework usually examine policy choices in terms of their costs and benefits for a government; the argument being that the policy option that maximizes the positive difference between benefits and costs should become the adopted policy. In the case of international monetary integration, the situation is no different. We expect governments to choose a policy of IMI when it maximizes the benefits of irrevocably fixing the exchange rate between two countries while minimizing the costs of giving up control over monetary policy and the issuance of money. Similarly, we expect a government to abandon such a policy when the net benefits become lower than alternative policy options (e.g., a national currency with flexible exchange rates). What are these expected benefits and costs and what are the specific factors that, consequently, should determine a government's decision to participate (or not) in an IMI arrangement? This question is the subject of this chapter, which provides the theoretical framework that drives the analyses in subsequent chapters.

One key benefit of IMI is that it reduces transaction costs for international trade and investment. For example, IMI makes international trade cheaper between member states by eliminating exchange rate risk. Another benefit is that it promotes investment by reducing the cost of capital as a result of more stable prices. The costs of IMI derive from the (political) security that control over monetary policy and the issuance of money

provides governments. Participating in an IMI arrangement reduces a government's ability to use its monopoly over money and monetary policy to ensure its survival. This is because IMI involves sharing or delegating control over monetary policy and money issuance. As a result, the costs of IMI for a government should be directly and positively related to its insecurity, which is a function of the threats of economic and political shocks that it faces. In return, the level of threats is influenced by states' positions in the international system as well as their political regimes.

This chapter develops a number of hypotheses dealing with the direct and indirect determinants of IMI participation, based on its benefits and costs. In order to do so, it is structured as follows. Section II reviews the benefits and costs of IMI and their direct determinants for a given state. Section III examines the indirect roles played by political regimes and regional hegemony in the IMI policy decision. The last section is the conclusion.

II. The Benefits and Costs of IMI and Its Determinants

As mentioned in the introduction to this chapter, the benefit of IMI participation is that it lowers transactions costs associated with trade and investment. This means that the level of international trade with potential member states and the (high) level of domestic inflation should be determinants of a government's decision to participate (or continue participating) in an IMI arrangement. In terms of costs, we indicated above that the security of money plays the key role in affecting the IMI decision. The more politically insecure a government feels, the greater the cost of participating in an IMI arrangement will be. A government that faces significant adverse economic and/or political shocks is

highly likely to want to retain control over monetary policy and the issuance of money. Therefore, economic cycle asymmetry relative to potential IMI partners, the threat of military conflict, and the presence of domestic political instability should be key determinants of the cost of IMI for a given government.

A. The Benefits of IMI: Lower Transaction Costs

1. International Trade

According to the standard economic argument, lower transaction costs associated with the movement of goods, services, and capital lead to greater commercial exchanges and investment. In turn, greater trade and investment lead to economic growth. Therefore, IMI should lead to higher economic growth because it lowers transaction costs in four ways. First, it eliminates the trading profit risk associated with exchange rate uncertainty. As a result of exchange rate certainty, risk-averse traders increase the size and volume of their transactions.[6] Second, monetary integration leads to a further reduction in transaction costs as fees for converting one currency into another are eliminated. Third, by enhancing economic agents' ability to compare prices across borders more easily, IMI also reduces information costs related to economic transactions. Finally, IMI may lead to

[6] Firms can hedge themselves against exchange rate volatility by buying and selling forward contracts. This way, they can eliminate exchange rate risk. However, hedging instruments are only available for a small number of currencies. Moreover, because there is a transaction cost to hedging (it is after all a form of insurance provided by banks), IMI is still beneficial in that it eliminates the need for hedging. As a result, it reduces the cost of conducting international commercial transactions. Klaassen (2004) indicates that the theoretical literature with respect to hedging is inconclusive. On the one hand, in accordance with Ethier (1973), he notes that the optimal export level is independent of exchange rate risk when forward exchange markets exist and the forward rate is exogenously determined. On the other hand, in accordance with Viaene and De Vries (1992), he points out that exchange rate risk can affect trade if the forward exchange rate is endogenous to today's volatility. This is why Klaassen (2004, 818) concludes that the true effect of exchange risk on trade is an empirical question. Regarding this latter question, Wei (1999) finds no evidence to support the validity of the argument that hedging increases trade. This suggests that hedging is only a lower-cost replacement for the transaction cost associated with exchange rate volatility.

an integrated banking and payment system, which lowers the cost of moving capital and paying for goods and services across borders.

Empirical studies of the relationship between international trade flows and exchange rate volatility reveal a mixed picture. In a survey of the empirical literature, Côté (1994) concludes that the effects of exchange rate volatility on the level of trade between countries are ambiguous. Although she finds a larger number of studies where volatility reduces trade, she points out that the measured effect is generally small, if not insignificant (see also McKenzie 1999). In his study of the European Union, Dell'Arriccia (1999) reaches the same conclusion. Panizza et al. (2003) also find that the empirical literature is not very conclusive, although they argue that on balance exchange rate volatility reduces trade flows. In a recent and extensive empirical analysis, Clark et al. (2004) also find that "if there is a negative impact of exchange rate volatility on trade, it is not likely to be quantitatively large and the effect is not robust"(2). Klaassen (2004) argues that this empirical ambiguity arises because export decisions are affected by the probability distribution of the exchange rate one year ahead and that this distribution tends to be constant over time. Thus, exchange rate risk is fairly constant over time and, as a result, can only play a minor part in explaining variations in export levels over time. Across countries, however, different probability distributions should lead to different export levels, other things being equal (see De Grauwe and Verfaille 1988).

Instead of studying the link between exchange rate volatility and trade, other economic studies have examined the direct relationship between exchange rate regime and economic growth. For example, Levy Yeyati and Sturzenegger (2001, 2003) find that the exchange rate regime has no significant impact on GDP growth in industrial

countries. For non-industrial countries, they find that pegs (hard and soft) are associated with lower growth and higher output volatility than floats. Bailliu et al. (2002) find similar results; however, they find that it is the existence of a strong monetary policy anchor rather than the type of exchange rate regime per se that is important for economic growth. This may explain why Ghosh et al. (2002) find that any effect between the exchange rate regime and growth does not operate through trade or investment. For their part, Rogoff et al. (2004) find that flexible exchange rate regimes appear to offer higher economic growth in developed countries that are not in a currency union, whereas fixed or relatively rigid regimes do not negatively affect the growth of countries at an early stage of economic development. Looking more specifically at the relationship between growth and common currencies, Edwards and Magendzo (2003a) find that there is no significant difference between the growth performance of dollarized countries and countries with a domestic currency (see also Edwards and Magendzo 2003b). But they find that countries in a monetary union with a common currency have higher, although more volatile, growth than countries with their own currency. However, they point out that the latter result is fully driven by the seven member states of the East Caribbean Currency Union.

Another strand of empirical research in economics looks at the relationship between common currencies and trade. Here, the results are more conclusive. Rose (2000) finds that trade between countries sharing the same currency is three times higher than trade between countries with distinct currencies. Alesina et al. (2002), Frankel and Rose (2002), and Glick and Rose (2002) also find evidence that currency unions lead to increased trade linkages between member states. Similarly, but using a different

econometric method, Tenreyro and Barro (2003) observe that a common currency enhances trade.[7]

So in theory one of the main benefits of IMI is the reduction in transaction costs related to cross-border trade in order to boost economic growth through increased trade. Existing econometric research finds that common currencies and monetary integration are positively related to international trade. It also finds that trade openness generally has a positive and independent effect on economic growth. However, the empirical literature is much less clear about the existence of a positive and direct relationship between IMI and economic growth.[8] There is also no strong evidence that exchange rate volatility affects international trade flows negatively. In conclusion, the jury is still out as to the extent to which IMI is beneficial for economic growth in terms of reducing the costs of transactions associated with international trade. Nevertheless, until we are faced with irrefutable evidence to the contrary, we will continue to assume that IMI is beneficial for economic performance. Therefore, we should expect that the higher the level of trade is between two potential IMI partners, the higher the likely benefits will be from IMI.

Hypothesis 1: If the level of trade between two countries increases, then the probability of an IMI arrangement taking place between them should also increase.

[7] More specifically, Levy Yeyati (2003) finds that a common currency has a greater impact on bilateral trade under dollarization than under monetary union.

[8] This represents an empirical puzzle. If common currencies are good for trade and trade openness is good for economic growth, then logically there should be a link between monetary integration and growth. However, if common currencies cause trade diversion as opposed to trade expansion, then the link between monetary integration and economic growth may be tenuous.

2. Inflation

Low inflation is good for economic growth because, by facilitating longer-term planning and contracting, it allows the cost of holding capital to decrease and, as a result, investment to increase. However, empirical research suggests that the negative relationship between growth and inflation occurs only at high rates, above 40-50% per year (Barro 1996; Bruno and Easterly 1996). High inflation is nefarious for growth, but it may be even more so if the economy is open to trade. Lane (1997) and Romer (1993) find a statistically robust and significant negative link between trade openness and inflation.[9] This means that states with open economies should consider IMI beneficial not only for transaction-cost savings related to trade but also to keep inflation low.

IMI can lead to low inflation by delegating monetary policy to either the partner country's monetary authority (usually the central bank) or to an independent supranational monetary authority. Under unilateral IMI (dollarization), monetary policy is delegated to the central bank of the partner country that provides the foreign currency replacing the national currency. Under multilateral monetary integration (monetary union), monetary policy can be delegated to a supranational central bank or the central bank of one of the member states, or it can simply be delegated to the national central banks, which then coordinate the common monetary policy themselves. In the latter case, the problem is such that keeping inflation low depends on the credibility of the governments' or the central banks' commitment to the common (i.e. coordinated) monetary policy and the maintenance of the fixed exchange rate. If the credibility is low,

[9] Scheve (2004) finds that the negative relationship between trade openness and inflation does not hold when considering individuals' aversion to inflation rather than inflation itself. But Scheve's finding assumes that individuals rationally understand how inflation affects exchange rates, which in turn affect terms of trade. Such an assumption is most probably not very realistic.

economic agents will adjust their expectations about inflation upwards and, as a result, prices will tend to increase more rapidly. Without the institutional constraints provided by a common currency and the delegation of monetary policy to an independent authority, it is difficult for a government to establish a reputation that its commitment to low inflation has any long-term value. For example, a government may abandon its long-term commitment to IMI in order to use monetary policy to boost economic growth in view of winning elections.[10] Therefore, inflation expectations and inflation itself are not likely to decrease rapidly if monetary integration does not provide adequate institutional constraints. This commitment problem is related to the cost of IMI associated with the loss of monetary policy autonomy (see the next sub-section for details).

The difficulty of governments to commit their monetary policies to the pursuit of low inflation requires that those policies be delegated to a monetary authority that is independent from government intervention and influence. Studies such as Alesina and Summers (1993), Cukierman (1992), and Grilli et al. (1991) find that central bank independence (CBI) is associated with low inflation.[11] Rogoff (1985) explains this relationship by indicating that central bankers are inherently conservative and, if given the proper independence, will pursue a monetary policy focused on keeping prices stable. Another well-known explanation is that governments prefer low inflation but are unable to deliver on it, owing to the time inconsistency problem (Kydland and Prescott 1977). For this reason, they delegate monetary policy to an independent central bank with a low-inflation objective (Barro and Gordon 1983). In such a case, governments give central

[10] There is also no guarantee that future governments will be committed to coordination and the fixed exchange rate. For discussions on tying the hands of future governments, see Milesi-Ferretti (1995) and Sun (2002).

[11] For a survey on central bank independence, see Eijffinger and de Haan (1996).

bankers the right incentives to achieve this objective (Persson and Tabellini 1993; Walsh 1995). This means that cases of dollarization where the partner country's central bank is independent should experience low inflation. A monetary union with an independent supranational central bank responsible for the issuance of a common currency should also experience low inflation. Finally, low inflation should occur in a monetary union with independent national central banks given the task to coordinate their monetary policies so as to keep prices stable and exchange rates fixed.

Empirical studies find that states that have adopted hard pegs, which include IMI, generally experience lower inflation than states with floating exchange rate regimes. Levy Yeyati and Sturzenegger (2001) find that hard pegs are associated with lower inflation than conventional pegs and floating regimes. However, once they control for a country's ability to maintain price stability (e.g., because of CBI), they find this negative link between inflation and pegs to be much weaker. For their part, Ghosh et al. (2002) find that pegging the exchange rate can improve inflation performance, with hard pegs obtaining the full inflationary benefits. However, as with Levy Yeyati and Sturzenegger (2001), they find that there is no statistically-significant difference in inflation across exchange rate regimes for countries with rates below 10 percent.[12] These results support the argument made by Bailliu et al. (2002) that it is the nominal anchor that matters for combating inflation, not the exchange rate regime per se. Finally, Edwards and Magendzo (2003a; 2003c) find that countries that have dollarized or are part of a monetary union (with a common currency) experience lower inflation than those with their own domestic currency.

[12] Frieden (2003) finds evidence that only hyperinflation increases the likelihood of fixing the exchange rate.

To summarize, IMI should be beneficial to states having difficulties keeping inflation under control. For this to be the case, however, it is important that the monetary authority(ies) responsible for the conduct of the common monetary policy be independent from political influence and intervention and be given a clear mandate and adequate incentives to pursue low inflation.

Hypothesis 2: If a state experiences high inflation (above 40% per annum), then it is more likely to want to participate in an IMI arrangement.

B. The Costs of IMI: Giving Up the Security of National Money

International monetary integration does not only have benefits, it also has costs. These are the loss of monetary policy autonomy as well as the loss of monopoly control over the issuance of money. Monetary policy autonomy is important for a government that wants to smooth economic output, especially when it comes to economic shocks affecting growth negatively. Having a monopoly over the issuance of money is important for a government that needs to finance expenditures rapidly through seigniorage, especially when there are no other means of financing available. Emergency situations such as war and domestic instability are often circumstances that require a government to raise revenues rapidly. Control over national money is therefore important for a government that faces threats to its survival as a result of significant economic and political shocks.

1. Giving Up Monetary Policy Independence

International monetary integration implies either the delegation of monetary policy to another country's central bank or a supranational central bank or the coordination of monetary policy with other member states' central banks, as already mentioned. As a result, governments are constrained in their ability to respond to shocks affecting the economy. For example, a government may wish to loosen its monetary policy (e.g., reduce interest rates) in order to stimulate a stagnating economy, but cannot do so if a foreign or supranational central bank is now responsible for conducting its monetary policy.

During the gold standard period, which took place between 1870 and 1914, ruling groups were generally concerned only with external economic stability. This means that they preferred to keep the exchange rate fixed to gold (or silver) in order to realize the benefits from international trade mentioned above. They were little concerned with compensating for negative shocks to the domestic economy through monetary policy.[13] This is because prices and wages were highly flexible while labor and capital were mobile (see O'Rourke and Williamson 1999). As a result, it was mainly workers who bore the brunt of the adjustments to shocks affecting the domestic economy negatively, through lower wages and emigration. In essence, the conditions for an optimal currency area were satisfied, as explained below. It was only with the gradual extension of the franchise to workers at the end of the 19th century and beginning of the 20th century that domestic stability became a policy objective for democratically-elected governments, as opposed to external stability (see Eichengreen 1996, chap. 1). This means that monetary

[13] Scammel (1985, 107) indicates that external stability refers to balance of payments stability while domestic stability means steady price level, full employment and some measure of economic growth.

policy became increasingly valued as a macroeconomic tool to maintain full employment as opposed to a tool to maintain fixed exchange rates. Workers were now politically able to refuse to pay the price of external stability. It is for this reason that the return to the gold standard during the interwar period failed miserably (Eichengreen 1992; Simmons 1994). Thus, history informs us that democratically-elected governments should be more responsive to the economic cost imposed on their populations as a result of delegating monetary policy to a foreign or supranational central bank.

Monetary integration implies fixed exchange rates, which limit an economy's adjustment to shocks. Levy Yeyati and Sturzenegger (2005), in keeping with Friedman (1953), note that flexible exchange rates provide an additional adjustment mechanism to real (as opposed to monetary or nominal) shocks and that these shocks tend to increase in importance as trade and capital flows grow (see also Broda 2001). However, the benefit of a flexible exchange rate as an adjustment mechanism decreases as a country and its chosen anchor satisfy the OCA criteria and/or experience similar real economic shocks. Moreover, exchange rates with other countries' currencies outside the integrated area remain flexible.

According to Mundell (1963) and Fleming (1962), it is impossible to pursue an effective (i.e. independent) monetary policy while maintaining fixed exchange rates when capital is highly mobile across borders.[14] To make such a policy possible, a state has to adopt flexible exchange rates or impose capital controls.[15] Since our interest lies with

[14] Cohen (1993) refers to this phenomenon as the "Unholy Trinity." Obstfeld et al. (2004) call it the monetary policy trilemma, whereby there is a tradeoff between exchange rate stability, monetary policy independence, and capital market openness.

[15] Clark (2002) points out that under the Mundell-Fleming framework fiscal policy is ineffective when capital is perfectly mobile and exchange rates are flexible. This would mean that the relative cost of monetary integration would be reduced since monetary integration would allow fiscal policy to become

fixed exchange rate regimes, capital controls to limit the flow of capital would be one way to reduce or eliminate the cost associated with the loss of monetary policy independence. (The degree of policy autonomy is commensurate with the effectiveness of the controls.) By definition, however, IMI entails the free flow of capital within the partner countries. Therefore, capital controls are not an option for reducing the cost of giving up control over the national monetary policy under IMI.

The loss of monetary policy autonomy due to IMI is not costly if the economies of the partner countries suffer economic shocks symmetrically, i.e. if shocks to one economy are similar in terms of timing, duration, and impact to those affecting the partner country(ies)'s economy(ies). In such a case, the monetary policy stance adopted by the partner country's central bank or the common supranational central bank to which monetary policy is delegated will be appropriate for all the member states' economies. Therefore, there is no need for an independent national monetary policy. The common monetary policy is adequate for all. So, when shocks are not specific (or asymmetric), the cost associated with the loss of monetary policy autonomy as a result of IMI is low, *ceteris paribus*.[16]

It is important to note that recent empirical research shows that greater economic and monetary integration lead to more synchronized shocks and economic cycles (Kose

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effective. However, Clark's argument forgets that under the Mundell-Fleming model, a government can make fiscal policy fully effective when exchange rates are flexible and capital perfectly mobile simply by easing monetary policy simultaneously, with the increase in government spending being monetized (i.e. financed through an increase in the money base).

[16] There are a number of empirical studies (Bernhard and Leblang 1999; Clark and Hallerberg 2000; Leblang 1999) that show that electoral incentives prompt (incumbent) governments to decide to preserve monetary policy autonomy in order to boost economic output before an election and increase the chances of re-election, in line with the political business cycle literature (see Alesina et al. 1997). However, Schamis and Way (2003) argue that incumbent governments are likely to adopt fixed exchange rate regimes before an election in order to reduce real interest rates and, as a result, expand the economy.

2004). For instance, Frankel and Rose (1997, 1998) argue that tighter international trade ties lead to greater symmetry in macroeconomic shocks and national business cycles. Looking at a much longer time horizon, Bordo and Helbling (2003) also find that globalization and regionalization contribute to the increasing synchronization of business cycles. If we combine these findings with the above-mentioned evidence that currency unions enhance trade flows between member states, then we can conclude that the cost of IMI resulting from the delegation of monetary policy should decrease over time (while the benefit from trade increases).[17]

Even if the IMI partners face nationally-differentiated economic shocks, the cost of monetary integration might still be low if they form an optimum currency area (OCA). The theory of OCA, originally introduced by Mundell (1961) and later extended by McKinnon (1963) and Kenen (1969), states the conditions under which the usefulness of a flexible exchange rate and an independent monetary policy as tools of macroeconomic adjustment to adverse (and asymmetric) shocks is minimal. In other words, in an OCA, the cost associated with the loss of monetary policy autonomy should be low. The first condition for an OCA is a high degree of factor (capital and labor) mobility within the area, because "shifts in demand facing one region [or country] relative to another [as a result of region- or country-specific shock] may lead to unemployment in the absence of flexibility of the nominal exchange rate" (Masson and Taylor 1993, 7). Therefore, mobile labor and capital in a region or country adversely affected by a shock can easily move to

[17] Kenen (1969) and Krugman (1993) argue, though only theoretically, that greater trade (or economic) integration should lead member states' economies to become more specialized over time, thus reducing the synchronicity of their economic cycles and shocks. Alesina et al. (2002, 9) explain this difference of opinion on the basis of inter- versus intra-industry trade. If two countries have intra-industry trade, then greater integration should lead to more economic convergence; however, if they have inter-industry trade, then economic integration will lead to more specialization and therefore less synchronicity of economic shocks as these shocks become country-specific. See Ozcan et al. (2001) for more details.

the countries or regions that are positively affected by the shock (or not affected at all). The second condition for an OCA is a high degree of product diversification. The more diversified an economy, the easier it is for it to absorb an adverse shock. Nonetheless, this implies that factors be mobile between sectors.[18] A third and final OCA condition is wage/price flexibility. In the case of an adverse shock to an economy, flexible wages and prices are able to adjust to changes in demand or supply, thereby avoiding unemployment or inflation. This condition can also act as a compensating condition for the lack of factor mobility. Although many authors characterize countries sharing symmetric economic structures—with business cycles and shocks that are synchronized—as forming an optimum currency area, it should be clear that this view is not accurate since the OCA conditions are useful precisely when shocks are asymmetric.

Although OCA theory offers a series of conditions that are expected to reduce the cost of IMI when economic cycles between potential partners are not synchronized, the practical implications of these conditions mean that the cost of IMI for governments may not be much reduced, if at all. This is because factor mobility and price flexibility can be limited in most countries. For example, Masson and Taylor (1993) note that "given the lags involved in the installation of plant and equipment, capital mobility is likely to be helpful mainly for narrowing persistent regional disparities rather than offsetting short-term shocks" (10). This means that capital may not be sufficiently mobile in reality to offset asymmetric shocks, unless those shocks are permanent.

[18] McKinnon (1963) reminds us that factor mobility can take two forms: across regions (geographic) and across industries (industrial). Thus, if economic integration leads to national economic specialization, as Krugman (1993) and Kenen (1969) argue, then the OCA condition on factor mobility would have to mean both geographic and industrial factor mobility.

A similar argument applies to labor mobility and price flexibility if one takes into account the distributional costs of such mobility. This is especially the case in democracies where governments are more responsive to people's grievances. OCA conditions might be good for economies *as a whole* that have integrated their currencies; however, they impose a cost on those *individuals* who provide the mobility and price flexibility. Workers do not like to see their wages cut, even if it means avoiding unemployment. Investors do not like to see the value of their assets drop, even if the consequences may be less dramatic than a reduction in wages (except for pensioners). Furthermore, there is a cost to labor mobility. Workers who relocate to another region or country in search of work must pay a social and economic price for their mobility. Houses and land must be sold, often at a loss. Families are split or uprooted. Consequently, most especially in a democratic context, the presence of OCA conditions cannot serve as an attenuating factor for the cost of IMI because voters who face the cost of labor mobility and/or wage flexibility will voice their displeasure with incumbent politicians. Welfare programs (unemployment insurance, retraining schemes, etc.) are the best examples of people's desires for state protection from the potential consequences of international economic integration, which Ruggie (1982) termed "embedded liberalism" (see also Garrett 1998). The upshot is that they limit labor mobility and wage flexibility. This is why Quinn and Woolley (2001) find that democracies produce less volatile growth in national income than non-democracies, especially when it comes to lowering the risk of an economic downturn. Therefore, the only factor that should matter for reducing the cost of IMI in the case of giving up monetary policy autonomy to

accommodate shocks to the economy is business cycle synchronicity (or symmetric economic shocks).[19]

Hypothesis 3: If two states face symmetric economic shocks (or synchronized economic cycles), then they are more likely to participate in a joint IMI arrangement.

2. Giving Up Control over Money Issuance

Giving up control over monetary policy as a result of IMI can be costly for a government when the national economy faces economic shocks that are not symmetric with those of its partner states. This is because monetary policy is a tool to regulate economic activity, mainly by affecting the cost of capital and, thus, investment. However, money can also be used to finance government expenditures, which can be very useful at times of major political shocks that threaten the survival of the government, if not the state altogether. This is why Glasner (1998) argues that historically, "a monopoly over money was vital to the security of the state" (21).

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[19] Econometric studies of the relationship between exchange rate regimes and the volatility of economic output are not conclusive. Levy Yeyati and Sturzenegger (2001) find that for developing countries fixed exchange rate regimes (hard pegs) produce lower output volatility than flexible regimes. However, in a later study, they find the opposite to be true (Levy Yeyati and Sturzenegger 2003). They also note that there is no statistically significant difference in output volatility across different exchange rate regimes in developed countries. Limiting their analysis to emerging countries, Rogoff et al. (2004) also find no significant difference in output volatility between various types of exchange rate regimes. Using a different measurement of exchange rate regimes (*de jure* regimes rather than *de facto*), Ghosh et al. (2002) conclude that fixed exchange rate regimes have more volatile economic output than floating ones, for both developed and developing countries. Looking more specifically at dollarized and non-dollarized economies, Edwards and Magendzo (2003c) find that the volatility of economic growth does not significantly differ across the two types of economies. However, in earlier studies, they found that volatility was higher in dollarized economies than in those with a domestic currency (Edwards and Magendzo 2003a,b). These mixed results suggest that countries might have adopted fixed exchange rate regimes despite the associated cost of having differentiated economic cycles and shocks. Why this would be so remains unclear as the empirical literature has not yet been able to shed light on the determinants of exchange rate regime choice (Juhn and Mauro 2002).

According to Ferguson (2001, Chap. 1), money is a key factor in winning wars. Therefore, governments must find whatever means they can to finance them. Seigniorage—defined as a government's ability to raise revenues through its right to create money—is one such means; taxes and borrowing are others. However, according to Fischer (1982), seigniorage is an important source of revenue for the government if its ability to raise taxes and borrow to pay its bills is limited (see also Click 1998). Seigniorage is also a much faster way to raise revenues than taxes and borrowing in the event of an emergency (Fischer 1982; Glasner 1998), which can take the form of an external threat such as war or an internal one such as rebellion.[20] Conventional taxes, when available, are much more difficult to adjust quickly.[21] This means that states facing higher threats of war and/or domestic political instability should want to retain their monopoly over the issuance of money. Thus, in such circumstances the cost of IMI should be greater.

Hypothesis 4: If a state faces a higher threat of war and/or domestic political instability, then the probability that it will join or remain in an IMI arrangement should be lower.

In other words, according to the above explanations, we expect trade with a potential IMI partner, high inflation, and economic cycle synchronicity with this same partner to be positively associated with IMI participation (either joining or remaining in an IMI arrangement). Conversely, we should see a negative relationship between the probability

[20] Econometric studies show that political instability leads to higher seigniorage (Cukierman et al. 1992; Aisen and Veiga 2005).

[21] Poterba and Rotemberg (1990) note that "Income tax schedules are often legislated several years in advance. This commitment is in part the result of time lags in the legislative process" (4).

of participating in an IMI arrangement and the degree of external and/or internal threats that a government faces.

III. Indirect Effects of Regime Type and Hegemony on IMI

Examining the literature on international relations (including international political economy), we can expect to see a positive, indirect relationship between democracy, (regional) hegemony, and IMI participation. This is because democracy and hegemony are likely, in many instances, to increase the benefits of IMI as well as decrease its costs through their direct causal links with IMI determinants.

A. Effects of Regime Type on the Determinants of IMI

Studies in the field of international relations suggest that there should be an indirect, positive link between democracy and IMI participation because of the existence of positive relationships between democracy and some determinants of IMI participation. First, democracies have freer trade, which is also good for peace and business cycle synchronicity. Second, the democratic peace literature generally finds that states with mature (i.e. not in transition) political regimes tend to be more peaceful and stable and that democracies are generally more peaceful than non-democracies. There is also a link between democracy and inflation; however, the sign of the relationship is equivocal.

1. Democracy and International Trade

In recent literature, it is argued that democracies have freer trade policies and thus experience higher trade flows. For example, Mansfield et al. (2000) argue and find that

democratic pairs, especially mature ones, have much more open trade between them (i.e. trade more with each other) than pairs composed of a democracy and an autocracy. However, they do not observe differences in trade openness between democratic and autocratic pairs. Their argument is based on the idea that trade policies must be approved by a majority in a popularly elected legislature in democracies, which constrains the policy choices available to a country's chief executive. In a subsequent article, they find that democracies are more likely to form preferential trade agreements than autocracies (Mansfield et al. 2002). They conclude that "democracies are more commercially cooperative than other countries" (481). In a related study, Milner (2005) finds that the process of democratization in developing countries is followed by a process of trade policy liberalization, which would partly explain the globalization movement that has been experienced since the 1970s. This is because entrenched interest groups supporting protectionist trade policies see their influence wane as democracy takes hold and leaders must, for their political survival, adjust their preferred trade policies to respond to the interests of a wider voting public (or selectorate, to use the language of the author).[22] According to López-Córdova and Meissner (2005), trade openness also has a positive impact on democracy, although the underlying causal mechanism for this remains ambiguous. Nevertheless, we can safely conclude from the above-mentioned studies that democracies should be associated with freer international trade. Thus, democracy should have a positive impact on IMI through the international trade channel.

Some authors have examined the choice of exchange rate regime in democracies and have found that states with more open trade tend to favor fixed exchange rate

[22] The logic here is that democratization empowers workers who tend to support freer trade. This is because the abundant factor of production in developing countries is usually labor and, according to the logic of the Heckscher-Ohlin and Stolper-Samuelson models, the abundant factor favors liberalized trade.

regimes, which implies that democratically-elected governments in states with more open economies should be more favorable to IMI. For example, Bernhard and Leblang (2002) find that fixed exchange rate regimes increase cabinet durability when economic openness is high. Frieden (1991) and Hefeker (1996) argue that this is because open economies have a large tradables (often export-oriented) sector that supports a fixed exchange rate regime. However, it is not clear whether societal preferences vis-à-vis exchange rate regime policy necessarily translate into government preferences and policies. Gowa (1988) points out that it is rare that you see societal groups lobby their government for specific exchange rate outcomes. In response, Bearce (2003) argues that political parties act as agents for societal groups in influencing monetary policy outcomes. However, contrary to Bearce (2003), Bernhard and Leblang (1999) find that partisanship does not matter in explaining the choice of exchange rate regime.[23] For his part, Leblang (1999) finds on examining developing countries that democratic countries are more likely to choose flexible exchange rate regimes than non-democratic countries. This latter result is contrary to the view that democracy should be associated with fixed exchange rates and, especially, IMI because it enjoys a positive relationship with international trade.

The inconclusiveness of all the above-mentioned studies on the choice of exchange rate regime may be because their authors do not take into account the fact that a fixed exchange rate regime is usually established with only one country. In the case of monetary policy autonomy, we have seen that it is important for reducing the volatility of economic output that economic cycles and shocks be synchronized between the partner

[23] Looking at other studies of partisan influence on exchange rate regime choice, Broz and Frieden (2001) find only mixed and sometimes perverse results.

countries. In the case of trade, it should not be the general level of trade openness that matters for the choice of exchange rate regime but trade with the exchange rate regime partner(s), i.e. the state whose currency one pegs to, adopts or shares. For example, if trade takes place with more than one country, sectors that trade mainly with other countries should not be as supportive of fixing the exchange rate with a particular country, especially if it means greater output volatility or under- or over-appreciation of the exchange rate with respect to other key currencies. Hence, the dyadic economic relationship with the monetary partner in terms of trade, investment, and economic cycles should be more appropriate than the monadic relationship with the rest of the world. This is the approach that we will opt for in the next chapter when conducting our econometric test.

2. Regime Type and Inflation

The relationship between regime type and inflation is equivocal. On the one hand, democracies are associated with higher inflation because elected officials use monetary policy and seigniorage to boost the economy and benefit the poorer masses rather than the richer, capital-owning elite ("populist" approach). On the other hand, democracy is associated with lower inflation because electoral competition prevents elites from capturing the state in order to derive private benefits from money creation ("grabbing hand" or "state-capture" approach). Desai et al. (2003) reconcile these two approaches by arguing that the level of income inequality influences the sign of the relationship between democracy and inflation. They find that when inequality is high, democracy leads to

higher inflation. Democracies with lower income inequalities, however, have lower inflation.

3. Regime Type and Armed Conflict and Domestic Instability

In a recent essay, Chernoff (2004) argues that democratic peace studies are one of the major areas in the international relations literature where there has been progress in the scientific sense. The main findings of this research program are that democracies are more peaceful than non-democracies and, more specifically, that democracies do not go to war with each other. There are many reasons (normative and institutional) for this state of affairs (see, *inter alia*, Bueno de Mesquita et al. 1999; Fearon 1994; Oneal and Russett 1997; Owen 1996; Russett 1993). However, the basic argument, derived from Immanuel Kant's perpetual peace insights, is that democracies are more peaceful because decision-makers are politically constrained by voters who do not like to bear the costs of war, especially if there is a high probability of losing. This constraint is much less binding or non-existent in authoritarian regimes where decision-makers have a high degree of institutional autonomy. According to Weitsman and Shambaugh (2002), people's general risk aversion is thus at the root of the democratic peace hypothesis. This fits in with Quinn and Woolley's (2001) argument presented earlier with regard to individuals' risk and loss aversions toward economic output. Thus, the democratic peace argument means that democracies should face a lower IMI cost than non-democracies.

Mansfield and Snyder (1995) add an important qualification to the relationship between democracy and peace. They argue and show that states where the political regime is in transition (most often from autocracy to democracy) are more aggressive and

prone to war than mature democracies and stable non-democracies (see also Mansfield and Snyder 2002). This is because transitional democracies (or autocracies) tend to experience volatile competition for power between new and old political elites as they try to mobilize the masses for support—through war and conflict, for example. This means that states with mature regimes (whether democratic or not) should face a lower IMI cost than states with regimes in transition, not only in terms of the threat of war but also in terms of domestic political instability.[24]

Overall, (mature) democracies should favor IMI because they tend to be more peaceful and stable, which means that it is less costly to give up control over the issuance if money. However, it is possible that mature autocracies might also be more favorable to IMI if they are stable and face low external threats.

Hypothesis 5: If two states are mature democracies, then the probability that they will join or remain in an IMI arrangement increases.

B. Effects of Regional Hegemony on the Determinants of IMI

In addition to domestic politics, it is possible for international politics to play a role in the decision of whether or not to opt for international monetary integration. In his study of regional economic integration, Mattli (1999) argues that a regional leader (or hegemon) plays an important role in ensuring other member states' commitment to integration. Mattli indicates that one of the means used by the regional leader to foster a sense of commitment among its partners is side payments. The regional leader offers these

[24] See Marks (1992) for an analysis of the conditions likely to underpin instability in regime transformations.

payments to its partners to compensate them for some of the costs that they may face as a result of integration and ensure their participation in the project.

This is a variant of hegemonic stability theory, whereby the world's hegemon (e.g., the United States) is necessary for the existence of a liberal international economic order (Krasner 1976). In its more benevolent version, the hegemon provides such an order by, for example, opening up its borders to trade and/or by offering security guarantees to threatened states, all in exchange for other states' participation in the order and the liberalization of their economies. The regional leader can also use more coercive methods to ensure other states' cooperation. It can impose economic sanctions such as tariffs and quotas or withhold economic assistance. It could also threaten the use of force. In short, there are many ways in which a regional leader or hegemon can influence other states to get them to participate in an international cooperative project.

Above, we mentioned two factors that should increase the cost of IMI: the threat of military conflict and domestic political instability. Following from Mattli (1999) and Krasner (1976), it is possible that a regional hegemon (whether a third country or the IMI partner itself) could reduce the cost of IMI associated with the probability of external and/or internal conflicts and the need to finance such conflicts. The regional hegemon could provide the necessary security guarantees that it would come to the defense of the country concerned if it were attacked (from the outside or the inside). Such a guarantee acts as a deterrent and, therefore, reduces the threat of being attacked, providing the guarantor has sufficient military might and its commitment is credible. As a result, it decreases the need to retain control over the issuance of money in order to be able to use seigniorage in the event of a conflict. The regional hegemon could also offer security

assistance in the form of military equipment and training or financing (grants and/or loans) to acquire such equipment and services. This security assistance would further reduce the reliance on seigniorage to cover defense spending. Outside security guarantees and assistance could cover not only inter-state conflicts but also intra-state conflict and instability. Such security guarantees and assistance from a regional hegemon could therefore reduce the cost of losing control over the issuance of the national money as a result of participating in an IMI arrangement.

Gilpin (1975, 102) argues that the United States, as the regional hegemon, promoted discrimination against American goods during the 1950s and 1960s in the interest of rebuilding the West European economy. This was in large part a result of the challenge posed by the Soviet Union, according to Gilpin. It is important to point out that the U.S. also provided West European states with security assistance and guarantees, which made it easier for them to focus on their economic development (including the creation of the European Economic Community). In the case of IMI, this suggests that a regional hegemon could offer additional benefits to states participating in an IMI arrangement, by offering them easier access to its vast market for example.

Hypothesis 6: If there is a regional hegemon offering security guarantees and assistance, then the probability that a recipient state will join or remain in an IMI arrangement increases.

Hypothesis 7: If there is a regional hegemon offering side payments such as trade benefits to a given state in exchange for the latter's participation in an IMI arrangement, then the probability that this state will join or remain in an IMI arrangement increases.

V. Conclusion

Using the economics and political science literature, we have derived seven hypotheses relating to the probability of participating (i.e. joining or remaining) in an IMI arrangement. These hypotheses are illustrated in the form of a path diagram in Figure 2.1.

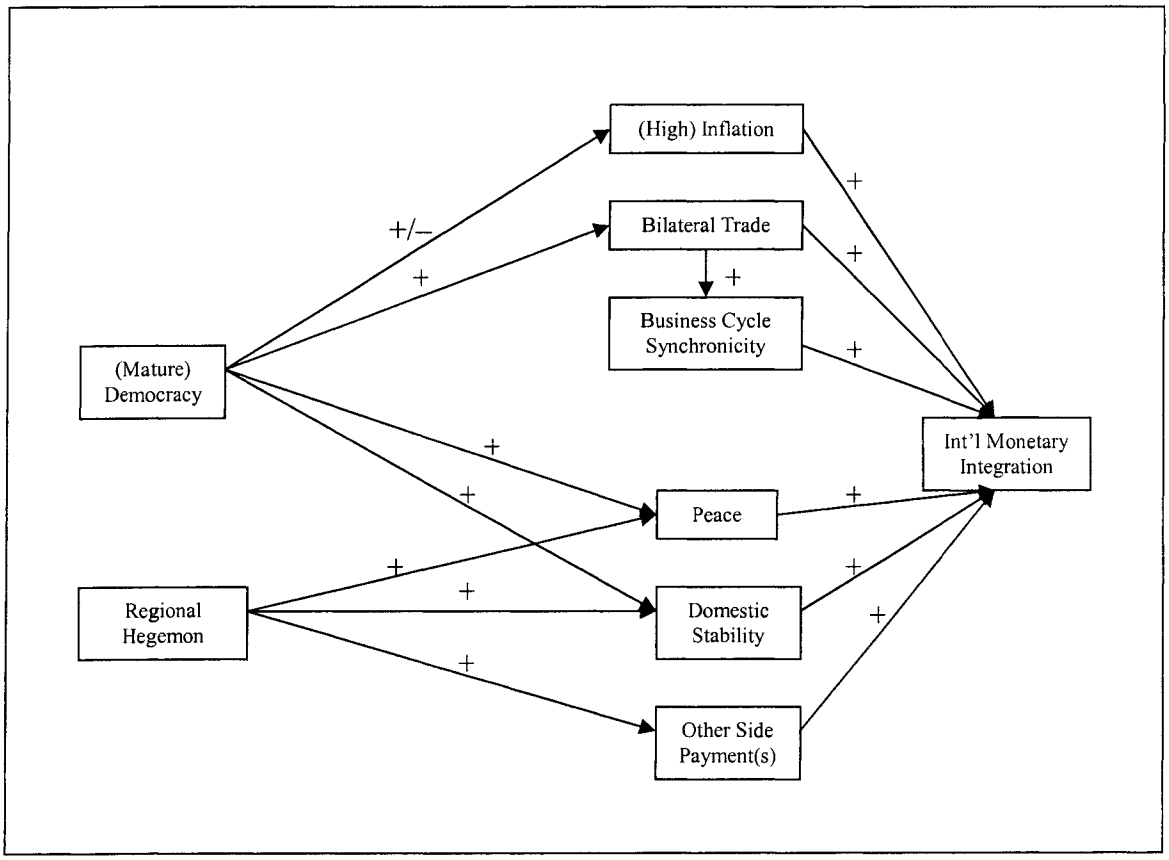
In terms of benefits,, countries that trade more with each other should be more interested in participating in an IMI arrangement together in order to reduce the transaction costs associated with trading in different currencies. States with high inflation should also be more favorable toward IMI since the delegation of monetary policy to an independent third party better at keeping prices stable would be beneficial to economic growth. In terms of costs, however, the loss of monetary policy autonomy associated with fixed exchange rates means that governments are no longer able to use monetary policy to compensate for (mainly negative) economic shocks. If shocks are symmetric between IMI partners, then this loss is not costly since the combined (coordinated or supranational) monetary policy should act in the same way as the national one would have when faced with a shock. Thus, synchronized economic cycles should reduce the cost of IMI associated with relinquishing control over monetary policy. The other cost of IMI is the loss of control over the issuance of money and the ability to use seigniorage to finance government expenditures. This control is especially important when a government faces an emergency in the form of an external threat such as a military conflict or an internal threat such as a rebellion or major strike. In such cases, a government needs to be able to raise revenues rapidly and seigniorage is often the most effective way to do so. Therefore, the cost (and probability) of IMI should increase or decrease depending on the degree to which a government faces external and/or internal

threats. Overall, we expect that states facing net benefits from IMI will join or remain in an IMI arrangement.

We also expect to see an indirect, positive relationship between (mature) democracy and IMI participation. This is because there is a direct, positive relationship between democracy and many hypothesized determinants of IMI. Mature democracies tend to have more open trade with each other. They are also more peaceful and stable. The presence of a regional hegemon can also be positively, though indirectly, linked to IMI participation. A hegemon can reduce the cost of IMI by providing security guarantees and assistance, thereby reducing the threat of military conflicts and domestic political instability as well as the need to rely on seigniorage to finance spending related to such threats. A regional hegemon is also able to increase the benefits from participating in an IMI arrangement by providing side payments for participation. For example, it can make it easier for states in a monetary union to access its markets.

This chapter has determined the key direct and indirect determinants of IMI. The following chapters empirically test the hypothesized relationships using both quantitative and qualitative data for the period 1960-2000.

Figure 2.1
The IMI Hypotheses



CHAPTER III

THE DETERMINANTS OF IMI FORMATION: THE ECONOMETRIC EVIDENCE

I. INTRODUCTION

In the previous chapter, we developed four hypotheses dealing with the direct determinants of international monetary integration. They indicate that we expect bilateral trade, high inflation, economic cycle synchronicity, peace and domestic political stability to have positive effects on the probability of IMI taking place between two (or more) states. We also presented three hypotheses regarding the indirect influence of two key explanatory factors in international relations on IMI: (mature) democracy and regional hegemony. These two variables affect the probability of an IMI arrangement taking place through their direct influence on the IMI determinants.

In this chapter, we econometrically test the first five hypotheses regarding the determinants of IMI. Unfortunately, we cannot test the indirect relationship between regional hegemony and IMI. This is because there is no adequate measure of the presence of a regional hegemon for IMI purposes. Therefore, the following chapters, among other things, will carefully examine the role played by regional hegemons in the case of IMI formation and sustainability, albeit in a qualitative rather than a quantitative way.

II. The Direct Determinants of IMI Formation

A. The Statistical Model & Data

To test Hypotheses 1-4 derived in Chapter 2 dealing with the direct determinants of IMI as well as Hypothesis 5 regarding the indirect impact of regime type, we estimate the following statistical model:

$$IMI_{ij} = \beta_0 + \beta_1\, TRADE_{ij} + \beta_2\, TRADE_{ji} + \beta_3\, INFLATION_i + \beta_4\, INFLATION_j + \beta_5\, CYCLE_{ij} + \beta_6\, MILEXP_i + \beta_7\, MILEXP_j + \beta_8\, INSTABILITY_i + \beta_9\, INSTABILITY_j + \beta_{10}\, DEMOCRACY_i + \beta_{11}\, DEMOCRACY_j + \gamma\, \mathbf{X}_{ij} + \epsilon_{ij}. \quad (1)$$

This model is an adaptation of the one used by Mansfield et al. (2002) in their study of the decision by pairs of countries to form a preferential trade agreement. Hence, the dependent variable (IMI_{ij}) is the log of the odds that a pair of states, i and j, will enter a multilateral IMI arrangement in year $t + 1$, where we observe 1 if this occurs and 0 otherwise. We also code i and j as entering an IMI if one of them joins an IMI in which the other is already a member. For methodological reasons, once a pair of states i and j has entered a multilateral IMI arrangement (i.e. IMI_{ij} has been coded 1), then no further observations of this instance of IMI are made (see Beck et al. 1998, 1272). This means that equation (1) tests only the formation of an IMI arrangement between i and j, even if the logic of IMI and hypotheses developed in the previous chapter also apply to the sustainability of (i.e. continued participation in) IMI arrangements. Chapter 5 examines the sustainability of IMI arrangements in detail so as to determine whether the IMI determinants are relevant to the continued participation (or not) of states in an IMI

arrangement. The IMI data used for the analysis in equation (1) were taken from the study conducted by Reinhart and Rogoff (2002; 2004).

This dyadic model is best suited to deal with multilateral IMI arrangements because it takes into account the fact that a monetary union is a bilateral affair, not a unilateral one. In other words, two (or more) countries have to agree voluntarily to participate in an IMI arrangement for it to happen. Equation (1) takes this bilateral decision into account by considering the IMI determinants for both countries *i* and *j*. Unilateral IMI or dollarization would be best dealt with using a monadic econometric model since the decision to adopt another country's currency concerns only one country. Thus, only the determinants of the dollarizing country are relevant in this case. Such a test is not conducted in this study because it is not feasible as there are little or no data available for most cases of unilateral IMI. Instead, Chapter 4 briefly discusses unilateral IMI cases qualitatively to show that a majority of dollarization cases satisfy the hypotheses derived in Chapter 2.

The data used in this analysis are for the years 1960-2000. They cover 141 countries (see the Appendix for the list), which are included in Reinhart's and Rogoff's (2002, 2004) study.

1. Description of the Variables Testing Hypotheses 1-5 from Chapter 2

$TRADE_{ij}$ ($TRADE_{ji}$) is the interaction between total trade (imports plus exports) between *i* and *j* divided by *i*'s (*j*'s) GDP in the year *t*. This variable is meant to test Hypothesis 1 from Chapter 2. Trade data are taken from the International Monetary Fund's (IMF)

Direction of Trade Statistics. GDP data are provided by the World Bank's World Development Indicators (WDI) online database.

$INFLATION_i$ ($INFLATION_j$) corresponds to the inflation rate of state i (j) in year t. Its value is 0 if the rate of inflation is below 40 percent at time t while its value is 1 if the rate is equal to or greater than 40 percent. This is because we hypothesized in Chapter 2 that only high rates of inflation have an effect on the IMI decision. As this factor is meant to test Hypothesis 2 from Chapter 2, we expect the sign of the regression coefficient to be positive. The inflation rate is measured as the annual percentage change in consumer prices. The inflation data are obtained primarily from the IMF's International Finance Statistics (IFS) but completed with the World Bank's WDI online database.

$CYCLE_{ij}$ represents the synchronicity of i's and j's economic cycles in year t. It is measured as the correlation (Pearson r) between i's and j's annual GDP growth rates for years t to *t-10* (or *t-less than 10* if not enough observations are available). According to Hypothesis 3 from Chapter 2, higher Pearson r coefficients should be associated with a higher probability of IMI. The data source for this measure is primarily the WDI online database; however, it is completed with the IFS database.[25]

$MILEXP_i$ ($MILEXP_j$) is state i's (j's) government military expenditures as a percentage of GDP in year t. It acts as a proxy for the degree of military threat (or the probability of war) that state i (j) faces at time t. The assumption is that governments that face greater threats of war will spend more on building up (or maintaining) their military

[25] Bayoumi and Eichengreen (1997) propose a second measure of economic cycle synchronicity. It is the standard deviation of the changes in the natural log of i's and j's relative GDPs in current U.S. dollars over a given period of time. In this case, lower standard deviations should be associated with higher probabilities of IMI arrangements occurring. We use this measure (for years t to *t-10* [or *t-less than 10* if not enough observations are available]) to check for the robustness of the regression results (described below) with respect to the impact of economic cycle synchronicity on IMI formation and found that the estimated coefficient has the expected sign and is highly statistically significant in all regression cases.

capabilities. However, those countries that receive security assistance and guarantees from a regional hegemon should spend less on their military for a given threat level, as argued in Chapter 2. This means that their governments should be less concerned with losing control over the issuance of the national currency. Therefore, higher military spending should be associated with a lower probability of IMI arrangements, as indicated by Hypothesis 4 from Chapter 2. The data sources for *MILEXP* are Taylor and Amm (1993) for the years 1960 to 1987 and the World Bank's WDI for the years 1988 to 2000.

$INSTABILITY_i$ ($INSTABILITY_j$) represents the degree of domestic political instability (or conflict) in i (j) in year t. It is measured by the "Weighted Conflict Index" variable provided by the Cross-National Time-Series Data Archive (Databanks International 2004), which is a weighted index of the following elements: assassinations (any politically motivated murder or attempted murder of a high-ranking government official or politician); general strikes (any strike of 1,000 or more industrial or service workers that involves more than one employer and is aimed at national government policies or authority); guerilla warfare (any armed activity, sabotage, or bombings carried out by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime); government crises (any rapidly developing situation that threatens to bring the downfall of the present regime—excluding situations of revolt aimed at such overthrow); purges (any systematic elimination by jailing or execution of political opposition within the ranks of the regime or the opposition); riots (any violent demonstration or clash of more than 100 citizens involving the use of physical force); revolutions (any illegal or forced change in the top government elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence

from the central government); and anti-government demonstrations (any peaceful public gathering of at least 100 people for the primary purpose of displaying or voicing their opposition to government policies or authority, excluding demonstrations of a distinctly anti-foreign nature). As per Hypothesis 4 from Chapter 2, the higher the index is, the lower the probability of IMI should be, given that a government should want to retain control over the issuance of money to appease domestic instability.

$DEMOCRACY_i$ ($DEMOCRACY_j$) is the political regime type of state i (j) in year t. It is from the POLITY IV dataset (Marshall and Jaggers 2002) where we use the Polity 2 variable. This variable ranges from -10 (high autocracy) to 10 (high democracy). It combines data on five factors: the competitiveness of the selection process for a state's chief executive; the openness of this process; the degree of institutional constraints limiting the chief executive's decision-making authority; the competitiveness of political participation; and the extent to which political participation is restricted. Because regime type is expected to have an indirect effect on IMI, the inclusion of *DEMOCRACY* in equation (1) acts as a control for the other four determinants directly affecting IMI. This is to make sure that these independent variables are not just picking up the effect of regime type on IMI and, therefore, have no independent effect on the IMI decision. If their estimated coefficients are the expected sign as well as statistically significant, then this will corroborate Hypotheses 1-4. At the same time, it would corroborate Hypothesis 5 since this hypothesis deals with the indirect effect of regime type on IMI, not its direct effect. Nevertheless, we should also expect a positive, direct effect between regime type and IMI.

2. Description of the Control Variables

Now that we have described the variables in the statistical model that are used to test Hypotheses 1 to 5, we need to describe $\mathbf{X}_{ij}$, which is a vector of control variables which the literature on economic and monetary integration mentions but does not theorize very well. These variables are exchange rate volatility (between *i*'s and *j*'s currencies); GDP growth; financial development; exchange rate depreciation (of *i* and *j*); and the elapsed time since the last military dispute (between *i* and *j*). These variables are ancillary to the theoretical argument developed in Chapter 2. Furthermore, they have ambiguous theoretical relationships with IMI. Finally, they are only applicable to a country's initial participation in an IMI arrangement, not its sustainability.

The degree of exchange rate volatility between *i*'s and *j's* currencies in year *t* ($XRATEVOL_{ij}$) is measured as the average of the monthly percentage changes in the nominal exchange rate for the previous two years (*t-2* to *t*). In Chapter 2, we mentioned that one of the benefits of IMI was to eliminate exchange rate uncertainty. As a result, countries whose exchange rate experiences high volatility should favor the creation of an IMI. On the other hand, if one partner country is solely responsible for the exchange rate volatility, then the other partner may not be interested in forming an IMI. Therefore, the expected sign of the relationship between exchange rate volatility and IMI is ambiguous. Exchange rate data are primarily from Reinhart and Rogoff (2002) and use monthly parallel (as opposed to official) exchange rates.[26] Parallel exchange rates better reflect the real exchange value of a national currency. For countries where exchange rate data were not available from the Reinhart and Rogoff (2002) dataset, annual official exchange rate

[26] Available on Reinhart's website: http://www.puaf.umd.edu/papers/reinhart.htm.

data from the IFS database are used as a complement. The reasoning here is that official exchange rates are better than missing data.

GDP growth of states *i* and *j* ($GROWTH_i$ and $GROWTH_j$) in year *t* could be important for the timing of the IMI decision. In his study of regional economic integration, Mattli (1999) argues that states experiencing slow or negative growth would be more prone to join free trade agreements, common markets or economic unions. The logic is that governments stay in power if the economy performs well (Lewis-Beck and Stegmaier 2000); therefore, governments in a poorly-performing economy have a strong incentive to adopt economic integration policies such as IMI that will help reverse this poor performance in order to ensure their reelection. This means that we should expect a negative relationship between economic growth and IMI participation. On the other hand, one could argue that a government facing an economic downturn will wish to retain control over its monetary policy in order to stimulate economic growth by reducing interest rates. In such a case, we should expect a positive relationship between economic growth and IMI formation. Therefore, the expected sign of the relationship becomes an empirical question, which will be determined by the regression results. The source of the data is the WDI online database supplemented by the IFS database.

The degree of financial development (or depth) of states *i* and *j* ($FINDEV_i$ and $FINDEV_j$) in year *t* is another control variable because a government may be less concerned with giving up its monopoly over the issuance of money if it has other means of financing its expenditures. The best alternative to seigniorage for financing government expenditures aimed at dealing with external and internal threats is borrowing from the domestic and international capital markets. *FINDEV* gives us a good proxy for a

government's borrowing capacity, especially from the domestic private sector. It is a better measure than government debt (both foreign and private) as a percentage of GDP since the latter indicates the ability of a country's past governments to borrow from foreigners but it says nothing about future financing. In fact, a heavily-indebted country would have little means of borrowing more and, thus, should be less interested in IMI. Alternatively, a country with a low government debt could be interpreted as having a lot of borrowing leverage; however, it could also be interpreted as having little. For this reason, financial development is an adequate proxy measure of a government's ability to finance major threats to its survival through borrowing rather than seigniorage. Thus, higher levels of *FINDEV* may be associated with higher probabilities of IMI. Financial development is measured as M3 (broad money or liquid liabilities) divided by GDP in year *t*. M3 generally refers to the sum of currency (banknotes and coins) in circulation, deposits at the central bank, overnight (usually bank) deposits that can be converted into currency or used for cashless payments, deposits with a maturity of up to two years or redeemable at a maximum period of notice of three months, as well as liquid marketable instruments such as shares/units in money market funds or commercial paper held by residents. The main source of data for this variable is the World Bank's WDI, which is supplemented with the IMF's IFS in some cases.

Exchange rate depreciation and time since the last military conflict are variables that control for the influence of the symbolic value of a national currency on a government's decision to participate in an IMI arrangement. Since the second half of the 19th century, national currencies have become symbols of national identity. Helleiner (2003) notes that paper or fiat money was nationalized and extended in part to foster a

greater sense of identification with the state (e.g., as a result of the political unification of Germany, Italy, and Switzerland). To the extent that a national currency has become a valued symbol of national identity, people and, therefore, governments should be reluctant to replace it with a foreign or supranational one.

Helleiner (2003) points out that the relationship between national currencies and national identities is conditional: "if the former were not managed in a trustworthy and relatively stable fashion, they were unlikely to foster the latter" (115). He notes further that in countries that have experienced high levels of inflation or currency instability, "the national currency becomes a liability rather than a source of national pride and unity" (240). In their study of public opinion in Europe, Banducci et al. (2003) find that popular support for a European single currency is inversely related to the extent to which the national currency of respondents has depreciated over the years. Leblond (2003) also finds some evidence that such a relationship exists for Canada and Sweden, whereby popular support for participating in a monetary union with the United States and the euro-zone, respectively, increases when the Canadian dollar and Swedish krona have depreciated significantly against the U.S. dollar and the euro, respectively. Therefore, we should include a control for exchange rate depreciation in our statistical model in equation (1). As a result, $XRATEDEP_i$ ($XRATEDEP_j$) represents the natural log of the accumulated depreciation of state i's (j's) national currency at time t, which is measured as the index of i's or j's exchange rate with the U.S. dollar in year t divided by the exchange rate in U.S. dollars in 1973, the year when the Bretton Woods system of fixed exchange rates effectively ended. The more i's or j's currency depreciates vis-à-vis the American dollar, the larger the index becomes. The exchange rate data are from Reinhart

and Rogoff (2002) and are supplemented with official exchange rate data from the IFS database.

Müller-Peters (1998) makes a distinction between national identity and national pride. She defines the latter as "the positive bond to specific national achievements and symbols" (702) such as the strength of the national currency. National identity refers to a special form of collective or social identity, where the nation constitutes the collective identity. According to Kosterman and Feshbach (1989), it can be divided into two independent dimensions: nationalism and patriotism. Patriotism is a positive emotional attachment to one's own country that does not involve devaluing or discriminating against other countries, unlike nationalism where one's own people see themselves as being better than people from other countries. Therefore, according to Müller-Peters (1998), only nationalism should affect the cost of switching to a foreign or supranational currency because of the loss of "an essential symbol of national demarcation" (705).[27] The stronger the nationalism, the more negative the attitudes will be towards abandoning the national currency. Since there is no widespread measure of a state's degree of nationalism, we use $LASTDISPUTE_{ij}$ as a proxy measure for state i's (j's) nationalism vis-à-vis j (i) at time t. It measures the number of years that has elapsed since states i and j have been in a militarized dispute with each other until year t.[28] It only considers conflicts with high hostility levels (use of force [rating of 4] and war [rating of 5]) from

[27] Müller-Peters (1998) also points out that there can be such a thing as supranational patriotism in addition to national patriotism and that it favors the adoption of a supranational currency. Work by Deutsch et al. (1957) suggests that common identity, or "we-feeling" grows with interaction. The more people interact in terms of commerce, communications, etc., the more likely they are to develop mutual sympathy and loyalties. Thus, countries that trade more with each other should have a greater sense of shared identity.

[28] We attribute the value 199 to pairs of countries that have never experienced any dispute. This value is intended to be high enough that it should be theoretically equivalent to the absence of any nationalist sentiments between two countries.

the Correlates of War 2 Project's Militarized Interstate Dispute Data, version 3.02 (Ghosn and Palmer 2003). The hypothesis here is that more recent conflicts would create more national resentment between *i* and *j* than more distant conflicts, thereby making it difficult for the pair to agree to form an IMI. It is a crude measure of nationalism and is limited here to the bilateral relationship with the potential partner country. It does not measure a country's general level of nationalism, which is very hard to measure in comparative terms. And the few comparative surveys that exist on the topic cover only a small number of countries, which is not useful for the present study.

Now that we have defined the statistical model in equation (1) and the data supporting it, we can proceed with obtaining and analyzing the statistical results that will allow us to test Hypotheses 1-5 developed in Chapter 2 regarding the formation of (or initial participation in) IMI arrangements between two countries.

B. The Statistical Results

1. Testing Equation (1)

The above-mentioned data are pooled across time and country-pairs to estimate the model in equation (1) using a logistic regression. In accordance with Beck et al. (1998), we account for any temporal dependence in the data by including a natural cubic spline function with three knots of the number of years that have elapsed (as of year $t+1$) since *i* and *j* last formed an IMI (see Tucker 1999 for details on implementing this method). Finally, the statistical significance tests that are reported are based on Huber (robust) standard errors.

Tables 3.1 and 3.2 contain the statistical results associated with the model and data outlined in the previous section. Table 3.1 presents results for samples that include only dyads from the list of 141 countries for which complete data on the variables in equation (1) are available for at least part of the period covered. This means that observations where there is missing information on at least one variable are deleted from the regression analyses (listwise deletion of missing data). Table 3.2 presents statistical results for larger samples where missing data are imputed in order to avoid deleting observations. King et al. (2001) argue that listwise deletion of observations causes not only a loss of valuable information (efficiency loss) but also selection bias in many cases (which then biases regression parameter estimators). For this reason, they have developed an algorithm and software that imputes (i.e. fills in) data where they are missing. This "multiple imputation" method "involves imputing m values for each missing item and creating m completed data sets. Across these completed data sets, the observed values are the same, but the missing values are filled in with different imputations to reflect uncertainty levels" (King et al. 2001, 53). In the present case, we have set $m = 5$, which is the recommended default. In effect, the algorithm uses information from the observed data to predict the missing data (i.e. create predictions for the distribution of each of the missing values). The software used to implement this algorithm is called Amelia (Honaker et al. 2003).

IMI arrangements are rare events, as mentioned in Chapter 1. King and Zeng (2001) argue that using logistic regression to estimate the probability of rare events can produce biased results. In fact, it can underestimate the probability of rare events. Consequently, they have developed a method and software (relogit) that corrects for these

biases (Tomz et al. 1999). Therefore, in Table 3.1 we (re)estimate the statistical model using their method and compare these results with the original logistic (logit) results. The results are generally similar in terms of statistical significance, though much less so with respect to estimates of regression coefficients. In Table 3.2, we were unable to estimate equation (1) using the relogit method because it is incompatible with the Clarify software (Tomz et al. 2003) used to obtain the regression results from the five datasets generated by the multiple imputation procedure.

The statistical results in column (1) of Table 3.1 are those for the four independent variables of interest, which are directly related to Hypotheses 1-4 in the previous chapter. Those in column (2) control for regime type while column (3) results are for the full model in equation (1), i.e. including all the other control variables ($\mathbf{X}_{ij}$). Examining column (1), we observe that both logit and relogit versions give similar results in terms of estimated coefficients and their statistical significance. The only difference is with respect to the estimated coefficients for the constant and the splines. We also note that all variables, except inflation, are statistically significant at the 90 percent (or higher) confidence level and that they are of the expected sign. Thus, higher trade between *i* and *j* is associated with a greater likelihood that an IMI arrangement will take place between *i* and *j*. More synchronized economic cycles between *i* and *j* are also related to a greater likelihood of IMI between states *i* and *j*. Finally, the threat of war as measured by military expenditures and domestic instability are negatively associated with IMI formation. Only inflation seems to have no significant effect on IMI; even the sign of the relationship is ambiguous as it varies between *i* and *j*.

The results in column (2) of Table 3.1 are very similar to those in column (1) even if we control for *i*'s and *j*'s regime types. The main differences are that the estimated coefficients are generally larger (except for bilateral trade) and that the estimated coefficients for domestic instability are no longer statistically significant, even at the 90 percent confidence level. On the other hand, the coefficients for inflation are now the same sign, in line with expectations, and in the case of $INFLATION_j$ they are statistically significant at a confidence level of 90 percent or better. As for the regime type results, they follow expectations in terms of the sign of the coefficients for both logit and relogit versions; however, the statistical significance of the estimated coefficients is equal to or above the 90 percent confidence threshold only in the logit version. Therefore, we can conclude from these results that the effect of trade, inflation, peace and domestic stability on IMI is not spurious.

Column (3) of Table 3.1 keeps the same variables as column (2) but adds the control variables described for $\mathbf{X}_{ij}$. The results are generally in line with those in column (2), except for inflation, trade, and domestic instability. In the case of inflation, the estimated coefficients are highly statistically significant with the expected sign. Conversely, the results for bilateral trade and domestic instability are a little more ambiguous. In the first case, only one of the two trade variables is statistically significant at the 90 percent confidence level or better in the logit version. In the second case, the estimated coefficients for domestic instability are statistically insignificant in the logit version but not in the relogit one while the sign of the relationship differs between the two instability variables for states *i* and *j*. With respect to the control variables, we observe unambiguous regression results with respect to the sign of the relationship and its

statistical significance for exchange rate volatility, economic growth, and time since the last military dispute. For exchange rate volatility, the results support the argument that more volatility leads to a lower likelihood of IMI formation. For economic growth, the estimated coefficients support the argument that a government will only agree to abandon control over monetary policy when the economy is performing well. Finally, we expected a positive sign between time since last dispute but get a negative one, which means that the less time that has elapsed since the last military conflict, the more that IMI formation is likely. One way to explain this unexpected result is by referring to Mitrany's (1966 [1943]) argument that says that greater economic integration is good for peace. More concretely, countries that have a high degree of economic exchanges between them are less likely to go to war because the cost of war in terms of lost economic output would be too large. There is substantial empirical literature supporting this idea, especially with regard to international trade promoting peace between states (e.g., Gartzke et al. 2001; Mansfield 1994; Oneal and Russett 1997, 1999; Russett and Oneal 2001), although some find no such link (Barbieri 2002; Beck et al. 1998).[29] So, in light of the results obtained, we could argue that states *i* and *j* are more likely to participate in an IMI arrangement together if they have been in a hostile military dispute with each other more recently, as a way to lower the chances of such events repeating themselves in the future.

We pointed out above, based on the work by King et al. (2001), that imputing data instead of deleting observations with missing data in the regression analysis is more appropriate in most cases since it is more efficient (less information lost) and less likely to bias the results. The statistical results associated with multiple imputations—which

[29] McDonald (2004) argues that it is free trade rather than trade alone that reduces military conflict between states.

more than doubles the number of observations—are found in Table 3.2. In this table, we present five different statistical results. Columns (1) to (3) correspond to columns (1) to (3) in Table 3.1, while columns (4) and (5) are similar to columns (2) and (3) but control for regime type with dummy variables for whether *i* and *j* are two mature democracies or two mature autocracies.[30] $DEMOCREG_{ij}$ equals 1 if states *i* and *j* are two mature democracies and 0 otherwise, while $AUTOCREG_{ij}$ equals 1 if states *i* and *j* are both mature autocracies and 0 otherwise. Both variables include only countries with regime types that score either greater than or equal to 6 or lower than or equal to -6 on the Polity 2 variable of the POLITY IV dataset (described above).[31]

The results in Table 3.2 are generally similar to those found in Table 3.1. One exception is that the estimated coefficients for $TRADE_{ji}$ are no longer statistically significant at the 90 percent confidence level or better while those for $TRADE_{ij}$ are. Another difference is that the estimated coefficients for inflation and domestic instability now have the expected sign and highly statistically significant at the 99 percent confidence level. The results for financial development and exchange rate depreciation are also no longer ambiguous now. In both cases, the estimated coefficients are negative and statistically significant (in columns [3] and [5]) at the 95 percent confidence level or better. In the case of financial development, the negative relationship with IMI is counterintuitive because the existence of an alternative means of financing government expenditures should have made abandoning control over the issuance of money less costly since it should have made seigniorage less important. However, the regression

[30] The results do not include a dummy variable for pairs combining an autocracy with a democracy because there is no such pair that participates in an IMI arrangement in the dataset.

[31] This is how Mansfield et al. (2002) perform their analysis of the influence of regime type on preferential trade agreements.

results suggest that deeper financial markets do not represent an alternative to seigniorage in the case of war or domestic instability. The results for accumulated exchange rate depreciation are similarly puzzling. The expectation is that depreciation should be associated with IMI. The fact that the estimated coefficients are negative suggests the possibility that a highly-depreciated currency sends a signal to the potential partner that a country is unable to manage its currency properly and, therefore, does not represent a reliable partner for a monetary union. This is the same argument that supports the statistical results for exchange rate volatility. Another difference between the results in Table 3.2 and those in Table 3.1 is the fact that the estimated coefficients for economic growth are no longer statistically significant (at the 90 percent confidence level or better, except for one case), although they are still positive.

Finally, a noteworthy discrepancy between Table 3.2 and Table 3.1 concerns the results for regime type. While the estimated coefficients for *DEMOCRACY* in Table 3.1 were positive, they are now negative in columns (2) and (3) of Table 3.2, although statistically significant at the usual confidence levels. The results in columns (4) and (5) of Table 3.2 explain this discrepancy. The estimated coefficients for both $DEMOCREG_{ij}$ and $AUTOCREG_{ij}$ are positive. This means that pairs of (mature) democracies as well as pairs of (mature) autocracies are likely to participate in an IMI arrangement. To the extent that the samples in Table 3.2 include many IMI cases made up of pairs of autocracies while the much smaller ones in Table 3.1 do not, then the estimated coefficients for *DEMOCRACY* would be positive in Table 3.1 and negative in Table 3.2. This is in fact what happens since CFA and ECCU pairs—which contained (and still contain) many autocracies (see Table 1.3 in Chapter 1)—are not included in the samples

in Table 3.1 while they are in those of Table 3.2. The samples used in Table 3.1 include IMI country-pairs that are mainly from the EMU.

Overall, the results in Table 3.2 increase the robustness of the test of equation (1), in support of the results in Table 3.1.[32] They also increase our confidence that Hypotheses 1 to 4 derived in Chapter 2 are valid, even if we control for regime type and a host of other relevant variables. Hence, the political economy argument regarding IMI (at least in terms of its formation) is justified not only theoretically but also empirically. Only Hypothesis 5 appears to require some amendments since the results in Table 3.2 show that pairs of autocracies are in fact more likely than pairs of democracies (the former's estimated coefficients are larger than that the latter's) to participate in an IMI arrangement. However, we need to remember that Hypothesis 5 makes a theoretical claim only with respect to the indirect link between regime type and IMI (through the independent variables related to Hypotheses 1-4). It says nothing about any potential direct relationship between regime type and IMI. We can also question the extent to which our inability to control for regional hegemony may bias the results for the effect of regime type on IMI in Table 3.2. It is possible that the positive relationship between $AUTOCREG_{ij}$ could turn negative once we control for the presence of a regional hegemon, which as we show in the next chapter is an important factor in explaining the formation of the CFA and ECCU while it is not in the case of the EMU.

[32] The only concern is the absence of statistical significance for $TRADE_{ji}$ in Table 3.2. Although it casts some doubt on the robustness of bilateral trade as a key determinant of IMI formation, the fact that the estimated coefficient for $TRADE_{ij}$ is highly statistically significant and that both *TRADE* regressors in Table 3.1 are statistically significant at the usual confidence levels provides reasonably strong evidence that Hypothesis 1 in Chapter 2 obtains.

Table 3.1: Logistic Regression Results for Equation (1)

Variables	LISTWISE DELETION OF MISSING DATA					
	(1)		(2)		(3)	
	Logit	Relogit	Logit	Relogit	Logit	Relogit
Constant	-15.866	3896298	-42.065	3.446	-3.739	$1.02x10^{7}$
	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
$TRADE_{ij}$	6.897***	7.105***	4.236**	4.267**	1.978	4.094*
	(3.50)	(3.61)	(1.97)	(1.99)	(0.82)	(1.71)
$TRADE_{ji}$	10.360***	8.451***	12.330***	12.546***	5.346**	5.606**
	(8.63)	(7.04)	(6.06)	(6.17)	(1.98)	(2.08)
$INFLATION_i$	-0.545	-0.251	0.376	0.803	4.425***	4.639***
	(-0.56)	(-0.26)	(0.36)	(0.77)	(4.28)	(4.48)
$INFLATION_j$	0.493	0.526	1.439*	1.553**	3.569***	3.191***
	(0.68)	(0.72)	(1.83)	(1.97)	(2.96)	(2.64)
$CYCLE_{ij}$	3.746***	3.799***	5.043***	4.924***	4.956***	6.301***
	(6.33)	(6.42)	(7.14)	(6.98)	(6.52)	(8.30)
$MILEXP_i$	-0.521**	-0.514***	-0.644***	-0.613***	-0.553**	-0.600**
	(-4.12)	(-4.06)	(-3.01)	(-2.87)	(-2.30)	(-2.50)
$MILEXP_j$	-0.657***	-0.743***	-0.799***	-0.762***	-0.867***	-1.241***
	(-4.19)	(-4.74)	(-3.51)	(-3.34)	(-3.53)	(-5.05)
$INSTABILITY_i$	$-6.07x10^{-5}$*	$-4.56x10^{-5}$	$-4.14x10^{-5}$	$-2.61x10^{-5}$	$6.21x10^{-6}$	$7.79x10^{-5}$**
	(-1.75)	(-1.32)	(-0.98)	(-0.62)	(0.18)	(2.28)
$INSTABILITY_j$	$-2.11x10^{-4}$**	$-1.92x10^{-4}$*	$-1.59x10^{-4}$	$-1.40x10^{-4}$	$-1.80x10^{-4}$	$-3.28x10^{-4}$**
	(-2.03)	(-1.85)	(-1.32)	(-1.16)	(-1.19)	(-2.18)
$DEMOCRACY_i$			0.155**	0.133	0.091	0.059
			(1.91)	(1.63)	(1.47)	(0.96)
$DEMOCRACY_j$			0.339*	0.281	0.320**	0.447***
			(1.79)	(1.49)	(2.13)	(2.98)
$XRATEVOL_{ij}$					-0.955**	-1.524***
					(-2.23)	(-3.57)
$GROWTH_i$					0.082***	0.054**
					(3.73)	(2.45)
$GROWTH_j$					0.128***	0.125***
					(9.40)	(9.14)
$FINDEV_i$					0.001	0.006
					(0.12)	(1.32)
$FINDEV_j$					-0.003	-0.002
					(-0.84)	(-0.50)
$XRATEDEP_i$					-0.857*	-0.901*
					(-1.67)	(-1.76)
$XRATEDEP_j$					-0.024	0.176***
					(-0.54)	(-4.02)
$LASTDISPUTE_{ij}$					-0.008**	-0.011***
					(-2.12)	(-2.85)
DURATIONYRS	-16.370***	-556619.2***	-16.562***	-16.562***	-28.340***	$-1.45x10^{6}$
	(-4.28)	(n/a)	(-4.74)	(-4.74)	(-7.11)	(n/a)
SPLINE_1	-0.229***	-3435.956***	-0.253***	-0.211***	-0.378***	-8950.7
	(-4.50)	(n/a)	(-5.31)	(-4.42)	(-7.08)	(n/a)
SPLINE_2	0.140***	1374.398***	0.158***	0.126***	0.226***	3580.3
	(4.66)	(n/a)	(5.58)	(4.48)	(7.15)	(n/a)
SPLINE_3	-0.032***	-0.012**	-0.037***	-0.028***	-0.049***	0.006
	(-5.30)	(-1.96)	(-6.52)	(-5.02)	(-7.56)	(0.98)
χ^2	421.28***	n/a	439.68***	n/a	485.43***	n/a
Log Likelihood	-274.87	n/a	-196.01	n/a	-170.58	n/a
Pseudo R^2	0.4339	n/a	0.5287	n/a	0.5873	n/a
N	104,928	104,928	102,229	102,229	96,922	96,922

Note: These coefficients are estimated using logistic regression (logit and relogit), after including a natural cubic spline function with three knots. Figures in parentheses are z-statistics computed using robust (Huber-White) standard errors. ***$p \leq 0.001$. **$p \leq 0.05$. *$p \leq 0.1$.

Table 3.2: Logistic Regression Results for Equation (1)

Variables	AMELIA				
		$DEMOCRACY_i$ /$DEMOCRACY_j$		$DEMOCREG_{ij}$ /$AUTOCREG_{ij}$	
	(1)	(2)	(3)	(4)	(5)
Constant	-3.829***	-3.819***	-0.384	-4.291***	-1.061*
	(-21.20)	(-21.03)	(-0.73)	(-22.18)	(1.95)
$TRADE_{ij}$	2.441***	2.493***	2.596***	2.576***	2.633**
	(3.68)	(3.88)	(3.12)	(3.77)	(2.72)
$TRADE_{ji}$	0.0305	0.331	0.488	0.340	0.546
	(1.06)	(1.22)	(1.37)	(1.23)	(1.40)
$INFLATION_i$	0.810***	0.663***	0.907***	0.669**	0.948***
	(3.53)	(2.80)	(3.66)	(2.85)	(3.66)
$INFLATION_j$	1.091***	1.012***	1.195***	1.002***	1.180***
	(5.27)	(4.73)	(4.95)	(4.64)	(4.86)
$CYCLE_{ij}$	0.773***	0.839***	0.826***	0.816***	0.796***
	(3.36)	(3.68)	(3.62)	(3.66)	(3.54)
$MILEXP_i$	-0.068***	-0.074***	-0.077***	-0.077**	-0.078***
	(-3.58)	(-4.03)	(-3.96)	(-4.20)	(-3.93)
$MILEXP_j$	-0.054**	-0.575***	-0.058**	-0.059**	-0.059**
	(-2.66)	(-2.89)	(-2.75)	(-2.68)	(-2.58)
$INSTABILITY_i$	-1.37×10^{-4}***	-1.38×10^{-4}***	-1.40×10^{-5}***	-1.25×10^{-4}***	-1.24×10^{-4}***
	(-5.13)	(-4.97)	(-4.72)	(-4.59)	(-4.17)
$INSTABILITY_j$	-1.48×10^{-4}***	-1.51×10^{-4}***	-1.56×10^{-4}***	-1.49×10^{-4}***	-1.56×10^{-4}***
	(-6.71)	(-6.56)	(-6.39)	(-6.46)	(-6.24)
$DEMOCRACY_i$ ($DEMOCREG_{ij}$)		-0.041***	-0.039***	0.731***	0.862***
		(3.80)	(-3.38)	(3.64)	(4.00)
$DEMOCRACY_j$ ($AUTOCREG_{ij}$)		-0.028**	-0.020	1.564***	1.426***
		(-2.39)	(-1.64)	(8.03)	(7.06)
$XRATEVOL_{ij}$			-0.089***		-0.084***
			(-3.57)		(-3.07)
$GROWTH_i$			0.016		0.020*
			(1.46)		(1.73)
$GROWTH_j$			0.012		0.017
			(0.98)		(1.28)
$FINDEV_i$			-0.004*		-0.006**
			(-1.68)		(-2.39)
$FINDEV_j$			-0.006**		-0.007**
			(-2.01)		(-2.38)
$XRATEDEP_i$			-0.226***		-0.229***
			(-3.93)		(-3.84)
$XRATEDEP_j$			-0.103**		-0.100**
			(-2.20)		(-2.10)
$LASTDISPUTE_{ij}$			-0.010***		-0.008***
			(-5.78)		(-4.84)
DURATIONYRS	-1.874***	-1.814***	-1.703***	-1.808***	-1.691***
	(-13.79)	(-13.58)	(-12.79)	(-13.46)	(12.72)
SPLINE_1	-0.026***	-0.025***	-0.023***	-0.024***	-0.023***
	(-12.52)	(-12.18)	(-11.46)	(-11.92)	(-11.26)
SPLINE_2	0.019***	0.018***	0.017***	0.018***	0.016***
	(12.19)	(11.84)	(11.07)	(11.54)	(10.813)
SPLINE_3	-0.007***	-0.007***	-0.384***	-0.007***	-0.006***
	(-10.49)	(-10.26)	(-9.54)	(-9.96)	(-9.25)
χ^2	n/a	n/a	n/a	n/a	n/a
Log Likelihood	n/a	n/a	n/a	n/a	n/a
Pseudo R^2	n/a	n/a	n/a	n/a	n/a
N	267,426	267,426	266,673	267,426	266,673

Note: These coefficients are estimated using logistic regression (logit), after including a natural cubic spline function with three knots. Figures in parentheses are z-statistics computed using robust (Huber-White) standard errors. ***$p \leq 0.001$. **$p \leq 0.05$. *$p \leq 0.1$.

2. Dealing with the IJ Problem in Equation (1)

The regression results in Tables 3.1 and 3.2 show that for the following variables in equation (1) the estimated coefficients differ, sometimes significantly, from state *i* to state *j*: *TRADE*, *INFLATION*, *MILEXP*, *INSTABILITY*, *DEMOCRACY*, *GROWTH*, *FINDEV*, *XRATEDEP*. In principle, the coefficients should be the same since there is no theoretical reason a priori why one country should have one set of estimated coefficients while the partner has another set for the same determinant or control.[33] Furthermore, different estimated coefficients for *i* and *j* make it impossible to use the regression results to estimate (i.e. predict) the likelihood that a pair of countries will form an IMI arrangement because the estimated probability will vary depending on which country is assigned as *i* and which country is assigned as *j*.

To solve this conceptual problem, there is an easy mathematical solution that allows the estimated coefficient to be the same for both *i* and *j*. In terms of equation (1), it means simply that $\beta_1 = \beta_2$, $\beta_3 = \beta_4$, $\beta_6 = \beta_7$, $\beta_8 = \beta_9$, and $\beta_{10} = \beta_{11}$.[34] The same needs to be done for the control variables *GROWTH*, *FINDEV*, and *XRATEDEP*. As a result, we can rewrite equation (1) as follows:

$$IMI_{ij} = \beta_0 + \beta_1 (TRADE_{ij} + TRADE_{ji}) + \beta_2 (INFLATION_i + INFLATION_j) + \beta_3 CYCLE_{ij}$$
$$+ \beta_4 (MILEXP_i + MILEXP_j) + \beta_5 (INSTABILITY_i + INSTABILITY_j) \qquad (2)$$
$$+ \beta_6 (DEMOCRACY_i + DEMOCRACY_j) + \gamma \mathbf{X}_{ij} + \epsilon_{ij}.$$

[33] The country-pairs in the dataset used to derive the regression results in Tables 3.1 and 3.2 are determined by alphabetical order.

[34] I would like to thank Nicholas Rowe for pointing out this easy solution.

The regression results for equation (2) are found in Tables 3.3 and 3.4. Like Table 3.1, Table 3.3 presents the regression results where observations are deleted if they have any missing data while Table 3.4 presents results for the multiple imputation of missing data. As it should be expected, the results in Tables 3.3 and 3.4 are very similar to those obtained in Tables 3.1 and 3.2. Overall, they confirm the conclusion that Hypotheses 1 to 4 from Chapter 2 obtain, even when controlling for other factors that influence the IMI decision.

So far, we have only discussed the signs and statistical significance of the estimated coefficients. We have not examined the substantive significance of those coefficients, however. That is, we have not assessed the extent to which the estimated coefficients affect the probability that two countries will participate in an IMI arrangement. To perform this analysis, we will use the regression results found in column (5) of Table 3.4 because they are the least biased, the most efficient, and the most theoretically appropriate for testing Hypotheses 1 to 5 from Chapter 2 as well as determining (predicting) the probability that a pair of countries will form an IMI arrangement.

Table 3.3:
Logistic Regression Results for Equation (2)

Variables	LISTWISE DELETION OF MISSING DATA					
	(1)		(2)		(3)	
	Logit	Relogit	Logit	Relogit	Logit	Relogit
Constant	-15.082	4054718	-40.390	4.644	-32.535	12.524
	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)	(n/a)
TRADE	8.022***	7.604***	6.040***	6.009***	2.292	2.343
	(6.21)	(5.89)	(3.40)	(3.38)	(1.05)	(1.07)
INFLATION	-0.088	-0.074	0.830**	0.946***	3.117***	3.120***
	(-0.18)	(-0.15)	(2.57)	(2.92)	(7.83)	(7.84)
$CYCLE_{ij}$	3.647***	3.755***	4.798***	4.703***	4.705***	4.547***
	(6.24)	(6.43)	(7.17)	(7.03)	(6.59)	(6.36)
MILEXP	-0.604***	-0.654***	-0.755***	-0.739***	-0.738***	-0.718***
	(-6.48)	(-7.01)	(-5.34)	(-5.23)	(-5.16)	(-5.02)
INSTABILITY	$-1.07\text{x}10^{-4}$***	$-8.76\text{x}10^{-5}$**	$-7.54\text{x}10^{-5}$	$-6.64\text{x}10^{-5}$	$-5.37\text{x}10^{-5}$	$-4.06\text{x}10^{-5}$
	(-2.72)	(-2.24)	(-1.47)	(-1.29)	(-0.93)	(-0.70)
DEMOCRACY			0.219**	0.201**	0.172***	0.156**
			(2.25)	(2.07)	(2.71)	(2.46)
$XRATEVOL_{ij}$					-0.845**	-0.896**
					(-2.09)	(-1.98)
GROWTH					0.089****	0.089***
					(9.81)	(9.83)
FINDEV					0.001	0.002
					(0.55)	(0.82)
XRATEDEP					-0.188**	-0.146*
					(-2.25)	(-1.74)
$LASTDISPUTE_{ij}$					-0.009***	-0.009***
					(-2.70)	(-2.68)
DURATIONYRS	-16.532***	-579249.5***	-16.914***	-16.914***	-22.523***	-22.523***
	(-4.27)	(n/a)	(-4.29)	(-4.29)	(-4.78)	(-4.78)
SPLINE_1	-0.230***	-3575.64***	-0.256***	-0.214***	-0.328***	-0.285***
	(-4.49)	(n/a)	(-4.89)	(-4.09)	(-5.27)	(-4.58)
SPLINE_2	0.140***	1430.27***	0.159***	0.128***	0.201***	0.170***
	(4.64)	(n/a)	(5.16)	(4.16)	(5.51)	(4.64)
SPLINE_3	-0.032***	-0.010*	-0.037***	-0.028***	-0.045***	-0.037***
	(-5.27)	(-1.70)	(-6.09)	(-4.71)	(-6.32)	(-5.13)
χ^2	414.97***	n/a	429.79***	n/a	465.38***	n/a
Log Likelihood	-278.03	n/a	-200.96	n/a	-180.60	n/a
Pseudo R^2	0.4274	n/a	0.5168	n/a	0.5630	n/a
N	104,928	104,928	102,229	102,229	96,922	96,922

Note: These coefficients are estimated using logistic regression (logit and relogit), after including a natural cubic spline function with three knots. Figures in parentheses are z-statistics computed using robust (Huber-White) standard errors. ***$p \leq 0.001$. **$p \leq 0.05$. *$p \leq 0.1$.

Table 3.4
Logistic Regression Results for Equation (2)

Variables	AMELIA				
	(1)	(2)	(3)	(4)	(5)
Constant	-3.818***	-3.812***	-0.405	-4.270***	-1.031*
	(-21.30)	(-21.14)	(-0.76)	(-22.27)	(-1.89)
TRADE	0.382**	0.400**	0.560**	0.413**	0.640***
	(2.00)	(2.17)	(2.48)	(2.18)	(2.60)
INFLATION	0.956***	0.844***	1.062***	0.857***	1.081***
	(6.27)	(5.51)	(6.49)	(5.52)	(6.44)
$CYCLE_{ij}$	0.771***	0.833***	0.826***	0.816***	0.801***
	(3.33)	(3.62)	(3.58)	(3.64)	(3.56)
MILEXP	-0.061***	-0.065***	-0.066***	-0.067***	-0.067***
	(-3.96)	(-4.36)	(-4.27)	(-4.26)	(-4.16)
INSTABILITY	$-1.43\text{x}10^{-4}$***	$-1.45\text{x}10^{-4}$***	$-1.47\text{x}10^{-4}$***	$-1.39\text{x}10^{-4}$***	$-1.41\text{x}10^{-4}$***
	(-8.55)	(-8.29)	(-7.99)	(-7.97)	(-7.58)
DEMOCRACY		-0.034***	-0.028***		
		(-4.37)	(-3.41)		
$DEMOCREG_{ij}$				0.738***	0.882***
				(3.70)	(4.14)
$AUTOCREG_{ij}$				1.543***	1.381***
				(7.95)	(6.93)
$XRATEVOL_{ij}$			-0.088***		-0.082***
			(-3.53)		(-3.05)
GROWTH			0.015*		0.019**
			(1.96)		(2.32)
FINDEV			-0.005**		-0.006***
			(-2.56)		(-3.20)
XRATEDEP			-0.158***		-0.158***
			(-4.30)		(-4.23)
$LASTDISPUTE_{ij}$			-0.010***		-0.009***
			(-5.91)		(-5.09)
DURATIONYRS	-1.872***	-1.810***	-1.700***	-1.807***	-1.693***
	(-13.78)	(-13.58)	(-12.78)	(-13.45)	(12.74)
SPLINE_1	-0.026***	-0.025***	-0.023***	-0.024***	-0.023***
	(-12.50)	(-12.16)	(-11.43)	(-11.90)	(-11.27)
SPLINE_2	0.018***	0.018***	0.017***	0.017***	0.016***
	(12.16)	(11.81)	(11.01)	(11.51)	(10.80)
SPLINE_3	-0.007***	-0.007***	-0.006***	-0.007***	-0.006***
	(-10.45)	(-10.21)	(-9.45)	(-9.92)	(-9.22)
χ^2	n/a	n/a	n/a	n/a	n/a
Log Likelihood	n/a	n/a	n/a	n/a	n/a
Pseudo R^2	n/a	n/a	n/a	n/a	n/a
N	267,426	267,426	266,673	267,426	266,673

Note: These coefficients are estimated using logistic regression (logit), after including a natural cubic spline function with three knots. Figures in parentheses are z-statistics computed using robust (Huber-White) standard errors. ***$p \leq 0.001$. **$p \leq 0.05$. *$p \leq 0.1$.

3. Substantive Significance of Estimated Coefficients

In Table 3.5, we can observe that, individually, the estimated coefficients for the key explanatory variables (i.e. those testing Hypotheses 1-4) and those of the control

variables are not substantively significant.[35] This is because substantial changes in each of the variables have little effect on the probability of states *i* and *j* forming an IMI arrangement, when all other variables are valued at their mean. For example, if states *i* and *j* see their bilateral trade increase from 0 to 75 percent of GDP each, the probability that they will form an IMI arrangement increases by only 0.006 percentage points, which is insignificant. Similarly, if both states *i* and *j* see their inflation rates increase above 40 percent, the probability that they will participate in an IMI arrangement together goes up by only 0.019 percentage points. In the case of economic cycle synchronization, if states *i* and *j* move from no synchronization to perfect synchronization, the probability that they will form an IMI arrangement increases by 0.004 percentage points. For all remaining variables in Table 3.5, a significant change in value for both states *i* and *j* has little effect on the probability that the countries will participate in an IMI arrangement together. Thus, we can reasonably conclude that, individually, the estimated coefficients obtained in column (5) of Table 3.4 for the key as well as the control variables are not substantively significant. This would confirm the view that IMI is a relatively rare event. However, if individual changes in the determinants of IMI formation do not have a significant effect on the probability of IMI, then it is nevertheless possible that collectively they do.

[35] The results in Table 3.4 (and Table 3.5) are obtained using the software Clarify (Tomz et al. 2003). For the justification behind the use of this software, see King et al. (2000).

Table 3.5
First Difference Effects on the Probability of IMI Formation

Variables	Δ in Variable	ΔPr(IMI_{ij} = 1) (percentage points)	95% Confidence Interval (percentage points)
$TRADE_i$ or $TRADE_j$	0% to 50%	0.001	2.6×10^{-6} – 0.003
$TRADE_i$ or $TRADE_j$	0% to 75%	0.002	4.0×10^{-6} – 0.005
$TRADE_i$ and $TRADE_j$	0% to 50%	0.003	5.4×10^{-6} – 0.008
$TRADE_i$ and $TRADE_j$	0% to 75%	0.006	8.5×10^{-6} – 0.016
$INFLATION_i$ or $INFLATION_j$	< 40% to >= 40%	0.005	0.002 – 0.008
$INFLATION_i$ and $INFLATION_j$	< 40% to >= 40%	0.019	0.008 – 0.035
$CYCLE_{ij}$	0 to 1	0.004	0.002 – 0.008
$MILEXP_i$ or $MILEXP_j$	0% to 10%	-0.003	-0.005 – -0.001
$MILEXP_i$ and $MILEXP_j$	0% to 10%	-0.004	-0.007 – -0.002
$INSTABILITY_i$ or $INSTABILITY_j$	0 to 25,000	-0.008	-0.011 – -0.005
$INSTABILITY_i$ and $INSTABILITY_j$	0 to 25,000	-0.008	-0.012 – -0.005
$GROWTH_i$ or $GROWTH_j$	2% to 6%	2.4×10^{-4}	3.4×10^{-5} – 4.6×10^{-4}
$GROWTH_i$ and $GROWTH_j$	2% to 6%	5.2×10^{-4}	6.8×10^{-5} – 1.1×10^{-3}
$XRATEVOL_{ij}$	0 to max	-0.004	-0.006 – -0.002
$FINDEV_i$ or $FINDEV_j$	0% to 100%	-0.003	-0.006 – -0.0009
$FINDEV_i$ and $FINDEV_j$	0% to 100%	-0.004	-0.009 – -0.002
$XRATEDEP_i$ or $XRATEDEP_j$	0 to max	-0.023	-0.048 – -0.008
$LASTDISPUTE_{ij}$	199 to 0 years	0.016	0.006 – 0.034

Note: All other variables are evaluated at their mean.

In Table 3.6, we present the probability of an IMI arrangement between states *i* and *j* with various scenarios, whereby we change a number of variables simultaneously. In case #1, where all the variables from column (5) in Table 3.4 are evaluated at their mean, the expected probability of states *i* and *j* participating in an IMI arrangement together is 0.003 percent (with a narrow confidence interval of 0.002 to 0.005 percent). This result makes sense if we consider that with such values states *i* and *j* do not trade much with each other, that their inflation rates are below 40 percent, that their economies are not synchronized, that they spend over 4 percent of their respective GDPs on the military, which suggests a moderate level of external threat, and finally that they face a moderate degree of domestic instability.

Table 3.6
Probability of IMI Formation: Different Scenarios

Case	Variable	Value	Description	Pr($IMI_{ij} = 1$)	95% Confidence Interval
1	*TRADE*	1.11%	mean	0.003%	0.002% – 0.005%
	INFLATION	0.302	mean		
	$CYCLE_{ij}$	0.054	mean		
	MILEXP	8.4%	mean		
	INSTABILITY	6218	mean		
	DEMOCREG	0.169	mean		
	AUTOCREG	0.142	mean		
	$XRATEVOL_{ij}$	2.28	mean		
	GROWTH	7.4%	mean		
	FINDEV	88.7%	mean		
	XRATEDEP	11.7	mean		
	$LASTDISPUTE_{ij}$	194.3 years	mean		
	DURATIONYRS	17.1 years	mean		
	SPLINE_1	-4074.8	mean		
	SPLINE_2	-5684.9	mean		
	SPLINE_3	-3829.1	mean		
2	Same as case #1, except:			0.006%	0.003% – 0.01%
	DEMOCREG	1	two democracies		
	AUTOCREG	0			
3	Same as case #1, except:			0.01%	0.006% – 0.015%
	DEMOCREG	0	two autocracies		
	AUTOCREG	1			
4	*TRADE*	100%	50% of GDP for *i* & *j* each	3.6%	1.1% – 9.1%
	INFLATION	2	>= 40% for both *i* and *j*		
	$CYCLE_{ij}$	1	perfect synchronization		
	MILEXP	0	no external threat for *i* & *j*		
	INSTABILITY	0	no instability for *i* and *j*		
	DEMOCREG	1	two democracies		
	AUTOCREG	0	no autocracies		
	$XRATEVOL_{ij}$	1	low volatility		
	GROWTH	10%	5% for *i* & *j* each		
	FINDEV	88.7%	mean		
	XRATEDEP	2	0 acc. dep. for both *i* & *j*		
	$LASTDISPUTE_{ij}$	194.3 years	mean		
	DURATIONYRS	17.1 years	mean		
	SPLINE_1	-4074.8	mean		
	SPLINE_2	-5684.9	mean		
	SPLINE_3	-3829.1	mean		
5	Same as case #4, except:			16.1%	4.9% – 35.3%
	$LASTDISPUTE_{ij}$	1 year	very recent dispute		
6	Same as case #4, except:			34.2%	16.2% – 57.4%
	DURATIONYRS	1 year	minimum		
	SPLINE_1	-0.8462	minimum		
	SPLINE_2	-0.6154	minimum		
	SPLINE_3	-0.3333	minimum		
7	Same as case #6, except:			71.3%	48.2% – 88.5%
	$LASTDISPUTE_{ij}$	1 year	very recent dispute		

In case #2, we observe that the predicted probability of IMI between two mature democracies, when all other variables are evaluated at their mean, is only 0.006 percent

with a confidence interval of 0.003 to 0.01 percent. When I and j are two mature autocracies, this probability increases to 0.01 percent with a confidence interval between 0.006 and 0.015 percent (case #3). Case #4 modifies case #2 in that the determinants—both key and some control variables—of IMI between states *i* and *j* are now significantly more favorable to IMI formation as per Hypotheses 1-5 in Chapter 2. As a result, the expected probability of IMI between states *i* and *j* increases from 0.006 percent to 3.6 percent (with a 95 percent confidence interval of 1.1 to 9.1 percent), which is an appreciable increase. Nevertheless, the predicted probability remains low. Again, this suggests that IMI is a rare event. However, if we decrease the number of years that have elapsed since the last major military conflict between *i* and *j* from the mean of 194 to 1, then the expected probability of IMI between *i* and *j* increases to 16.1 percent (see case #5). This level is still relatively low. If we consider the confidence interval, though, it is possible that the actual mean probability could be as high as 35 percent, which is not inconsequential.[36] Interestingly, if case #6 modifies case #4 so that the number of years without IMI between *i* and *j* decreases from the mean (including those of the splines) to one year, then expected probability increases to 34.2 percent from 3.6 percent.[37] In this case, there is a possibility that the actual probability of IMI between *i* and *j* may be as high as 57 percent. Finally, if we modify case #6 by reducing the time since the last military conflict between *i* and *j* to one year, then the expected probability that the

[36] The actual meaning here is that if repeated confidence intervals could be constructed, then 95 percent of them would contain an actual mean probability of 35 percent.

[37] When examining the impact of a change in the number of years that have passed without states *i* and *j* taking part in an IMI arrangement together, one needs to consider not only the variable *DURATIONYRS* but also the splines (*SPLINE_1*, *SPLINE_2*, and *SPLINE_3*) because in Beck et al.'s (1998) the splines change together with *DURATIONYRS*. Otherwise, if one considers only changes in *DURATIONYRS*, then one obtains large variations in the probability of IMI between states *i* and *j*.

countries will form an IMI arrangement increases more than twofold to 71.3% with a 95 percent confidence interval of 48.2 to 88.5 percent.

According to the preceding analysis, the countries that have the greatest likelihood of participating in an IMI arrangement are those that not only trade a lot with each other, have high inflation, have synchronized economic cycles, and face no or little external and internal threats but also have stable currencies, experience rapid economic growth, have only recently been in a significant military conflict, and have not been in existence for long (so that little time has passed without them taking part in an IMI arrangement). In the next chapter, we conduct a similar exercise in order to determine the predicted probability that those states that became members of a monetary union between 1960 and 2000 would have in fact done so when they did. This means that *i* becomes an actual country while *j* becomes the weighted average of those countries already or expected to be members of the monetary union (e.g., the CFA franc zone, the ECCU or the EMU). This allows us to assess the extent to which the results obtained in column (5) of Table 3.4 are a good fit with reality. And if they are not, then we can determine whether there were other factors involved, such as additional benefits offered by a regional leader for states to participate in an IMI arrangement (see Hypothesis 7 in Chapter 2).

To conclude this section, we can confidently say that the econometric evidence provided above supports Hypotheses 1 to 4 developed in Chapter 2. The estimated regression coefficients of the variables that measure these hypotheses are statistically significant while having the expected sign in terms of the relationship with IMI formation, even if

we control for other factors that might affect a state's decision to participate in an IMI arrangement. With respect to the substantive significance of those coefficients, the results indicate that Hypotheses 1 to 4 from Chapter 2 need to be considered collectively not independently from one another. Indirectly, these results also support Hypothesis 5. The results in Tables 3.2 and 3.4 (columns 4 and 5) are also in line with Hypothesis 5, although the latter does not address the direct relationship between regime type and IMI. Moreover, it is important to note that pairs of mature autocracies are also positively associated with IMI empirically, to a greater extent than pairs of mature democracies. However, our inability to control for regional hegemony bias these results since many IMI cases in the samples used in Tables 3.2 and 3.4 combine two mature autocracies, which is not the case in Tables 3.1 and 3.3.

III. Conclusion

The aim of this chapter was to econometrically test Hypotheses 1 to 5—which are developed in Chapter 2—with a dataset covering a large number of countries (141) and years (1960 to 2000). The statistical results confirm the validity of Hypotheses 1 to 5.

Bilateral trade, high inflation, economic synchronicity, and external and internal threats to a government's survival are all statistically related to IMI formation, the first three in a positive way and the last two in a negative one. Pairs of mature democracies (and mature autocracies) are also positively and statistically associated with initial participation in an IMI arrangement. On their own, however, each of these determinants have little impact on the probability of IMI. The regression results suggest that it is the right combination of determinants that can significantly affect the probability of an IMI

arrangement taking place. This confirms the observation that IMI is a rare event since it is seldom the case that all the IMI determinants combine appropriately to cause the formation of an IMI arrangement.

In the next chapter, we examine cases where IMI arrangements have actually been created between 1960 and 2000 in order to further validate the hypotheses in Chapter 2. Specifically, we estimate the predicted probabilities, using the regression results obtained in column (5) of Table 3.4 above, that the states in existing monetary unions would have joined these unions when they did. This allows us to assess the predictive ability of our statistical model. Furthermore, we take a close look at existing (mainly qualitative) studies of these monetary unions in order to assess the role played by regional hegemons in the creation of IMIs between 1960 and 2000. This permits us to validate Hypotheses 6 and 7, which we were unable to do in the present chapter because of the lack of adequate data on regional hegemony. In addition, the next chapter considers cases for which there has been talk of IMI, such as North America. Finally, it takes a close look at unilateral IMI arrangements, which are not within the scope of the present chapter—owing to a lack of data—but are nevertheless part of the theoretical analysis in Chapter 2. This examination further validates the hypotheses developed in Chapter 2.

CHAPTER IV

THE FORMATION OF IMI ARRANGEMENTS BETWEEN 1960 AND 2000

I. INTRODUCTION

In the previous chapters, we developed and tested hypotheses that explain and determine the formation of international monetary integration arrangements. As we will see in the next chapter, these explanations and determinants are also useful for understanding the sustainability of IMI schemes. In this chapter, we examine the formation of actual multilateral as well as unilateral IMI arrangements in the post-World War II period. We also consider the absence of IMI between states that seem to satisfy most of the IMI determinants. As a result, we achieve three objectives. First, we assess how well the econometric results obtained in Chapter 3 fit by computing the predicted probabilities that states that are (or were) members of post-World War II monetary unions (CFA, ECCU, and EMU) would have done so when they joined these IMI arrangements. Second, we add empirical meat to the theoretical bone developed in Chapter 2 by analyzing cases of unilateral IMI, most often small states dependent on a larger partner for their survival in terms of economy and security. It is important to recall that the econometric model in Chapter 3 is not well suited for testing the formation of unilateral IMI arrangements since it is dyadic rather than monadic. Moreover, the data are insufficient for econometric testing of unilateral IMI formation. This analysis also allows us to validate Hypotheses 6 and 7 on regional hegemony from Chapter 2. Finally, it is important to look at the absence of IMI where we might have expected to find it (e.g., between Canada and the United States or Switzerland and the EMU). We do so by

calculating predicted probabilities for such bilateral relationships using the econometric results in Chapter 2 and then try to explain why there is no IMI when the probabilities indicate that there are good grounds to expect such arrangements. This chapter therefore provides further validation of the theoretical argument developed in Chapter 2 as well as specifying the limits of the econometric results obtained in Chapter 3.

II. Cases of IMI Formation

In Chapter 1, we saw that there are three multilateral IMI arrangements in existence today: the CFA, the ECCU, and the EMU. These three schemes were all created in the post-World War II period, the first two following the member states' independence from colonial powers. There was another monetary union that was created in the mid-1960s: the East African Community (EAC). However, it did not last long. The following chapter discussed its demise. Because we have an (almost) complete set of data for the CFA, the ECCU, and the EMU, and more has been written about them, we will study them more extensively below. The EAC's formation will be discussed more briefly, giving a more impressionistic analysis of its creation since less data and information are available.

Chapter 1 also provides a list of 17 unilateral IMI arrangements still in existence today. Some are related to the U.S. dollar, others to the euro, the Australian dollar, or the South African rand. Only one has adopted the Swiss franc. Almost all these case are very small (not to say tiny) states that are extremely dependent on the partner state for their well-being in terms of security and economy. Because of their size, very little data are available about these states. Therefore, we will focus our attention on two recent cases of

unilateral IMI: Ecuador and El Salvador. These two cases provide confirmation that the statistical model in Chapter 3 is not well suited for analyzing unilateral IMI.

A. Multilateral Cases of IMI

1. CFA Franc Zone in Western and Central Africa

Before independence in 1960, most African countries under French control belonged either to the *Fédération de l'Afrique occidentale française* (French Western African Federation)[38] or the *Fédération de l'Afrique équatoriale française* (French Central African Federation).[39] These two federations formed a customs union and shared a single currency, the CFA franc, which was pegged to the French franc.[40] Upon independence, a series of multilateral economic and monetary institutions were created, modeled on the former federations. On the monetary front, Western African states created the Central Bank of West African States (*Banque centrale des États de l'Afrique de l'Ouest* [BCEAO]) and the West African Monetary Union (WAMU) (*Union monétaire ouest africaine*).[41] For their part, the Central African states and Cameroon formed the Central Bank of Central African States and Cameroon (*Banque centrale des États de l'Afrique équatoriale et du Cameroun [BCEAEC]*). The BCEAEC members did not see the need to create an official monetary union because they formed a *de facto* monetary union

[38] The members of the federation were: Côte d'Ivoire (Ivory Coast), Dahomey (Benin), Guinea, Burkina Faso, Mauritania, Niger, Senegal, Mali, and Togo.

[39] Member countries were: Republic of Congo, Gabon, Central African Republic and Chad.

[40] Madagascar was also part of the CFA franc zone. However, it possessed its own currency and central bank. It quit the zone in 1973.

[41] Guinea and Mali decided not to participate in this monetary union and issued their own currency. However, Mali reintegrated the CFA franc zone in 1968 but maintained its own separate central bank and currency until 1984, when it joined the WAMU.

following the cooperation agreements signed with France in 1960 (Parmentier and Tenconi 1996, 22). Nonetheless, their monetary union is commonly referred to as the Central African Monetary Area (CAMA). On the economic front, wishing to maintain the free movement of goods and capital, two customs unions were created: the Customs Union of West African States (*Union douanière des États de l'Afrique de l'Ouest*) and the Customs Union of Central African States (*Union douanière des États de l'Afrique Centrale*).[42]

In Table 4.1, we observe that the predicted probabilities that member states would participate in the CFA in 1960 are low: 3.92 percent on average. These low probabilities are due to two main factors (see Table 4.2). First, the transaction-cost benefits of IMI are very small. The level of bilateral trade with other CFA member states in 1960 was very low: 0.09 percent of GDP on average. This means that intra-CFA trade was only 1.27 percent of GDP for each member state on average. Inflation was also not a factor since it was relatively low at the time (less than 40 percent). Second, on the cost side, the degree of business cycle synchronicity between the CFA member states was also very low, owing to their different industrial structures and low bilateral trade levels. For example, the correlation coefficient of GDP growth between each member state and the other CFA member states was 0.09 on average for the 1960-65 period.

On a more positive note, the rate of economic growth was relatively high, with an average rate of 6.13 percent (see Table 4.2). This absence of negative economic shocks made it easier to forgo control over monetary policy. Furthermore, and more importantly, the levels of external and internal threats were generally low in 1960 (see Table 4.2). As the measure of external threat, military expenditures were 0.77 percent of GDP on

[42] Cameroon also took part in the new customs union.

average, with no individual member state spending more than 2 percent.[43] With respect to internal threats, domestic instability was 816 on average, with the majority of member states experiencing no instability in 1960.[44] Therefore, the need for CFA member states to have control over seigniorage was very low, which greatly reduced the cost of joining the CFA in 1960. It is important to note that France, as the former colonial master, guaranteed the security and stability of the CFA member states through the *Accords de coopération*.[45] This had the effect of reducing the threat levels faced by CFA member states, which in turn reduced the amount spent on military expenditures. This is in accordance with Hypothesis 6 in Chapter 2, which argues that a regional hegemon can (indirectly) lower the cost of IMI by providing security assistance and guarantees.

France gave and promised CFA member states not only security assistance and guarantees but also bilateral development aid, in accordance with Hypothesis 7 in Chapter 2. According to Stasavage (2003b), France provided the bulk of foreign economic aid to CFA member states in the 1960s. The level of total foreign economic aid received by each CFA member state was low in 1960: 0.013 percent of GDP on average. However, it quickly increased after 1960. For example, the average for each CFA member state was 6.1 percent of GDP in 1964. Another benefit offered by France for joining (i.e. remaining in) the CFA was the fact that the French Treasury guaranteed the fixed exchange rate between the CFA franc and the French franc (see Chapter 5 for

[43] As a point of comparison, the average military spending was 2.74 percent of GDP in 1960 according to the dataset used in Chapter 3.

[44] As a point of comparison, the average domestic political instability was 4,039 in 1960 according to the dataset used in Chapter 3.

[45] The reason why France provided the CFA member states with economic and military aid was that an influential group of French politicians and bureaucrats, whose careers and, sometimes, economic interests depended on strong Franco-African relations, wanted to ensure the political stability of friendly CFA governments (Stasavage 2003a, 2003b).

details). Given that bilateral commercial exchanges between the CFA member states and France averaged 16.5 percent of GDP in the early years of independence, this was clearly an important advantage to participating in the CFA.

Table 4.1
Predicted Probabilities of Participating in the CFA in 1961[46]

Member State	Mean Predicted Probability	95% Confidence Interval
Benin	0.96%	0.63% – 1.47%
Burkina Faso	4.82%	3.02% – 7.81%
Cameroon	2.04%	1.23% – 3.35%
Central African Republic	5.67%	3.57% – 9.14%
Chad	4.10%	2.53% – 6.67%
Congo, Rep. of	1.10%	0.74% – 1.62%
Côte d'Ivoire	5.90%	3.73% – 9.53%
Gabon	6.34%	4.00% – 9.91%
Niger	3.53%	2.14% – 5.82%
Senegal	1.49%	0.98% – 2.28%
Togo	7.20%	4.55% – 11.51%

Note: The statistical model and results used to compute these predicted probabilities are from column (5) in Table 3.4. The mean predicted probabilities and their confidence interval were obtained using the Clarify software (Tomz et al. 2003).

Source: see Chapter 3

The role played by France in the case of the CFA (see Cooper 2002; Guillaume and Stasavage 2002) and the fact that its member states were for the most part autocracies in the early 1960s (averaging -5.45 on the Polity 2 scale in 1960) suggest that regional hegemony (Hypotheses 6 and 7) and democracy (Hypothesis 5) might be substitutes. This

[46] These predicted probabilities were obtained by calculating a CFA average for each variable that entered into the statistical equation; however, this average was weighted by a member state's bilateral trade with other CFA countries. Thus, the CFA value for every variable varies for each member state. This means that the predicted probabilities take into account the relative importance of each bilateral relationship.

would explain why autocratic regimes are also positively and significantly (statistically) related to IMI in Chapter 3 (Tables 3.2 and 3.4).

Table 4.2
IMI Determinants of CFA Member States in 1960

1960	TRADE (CFA)	CYCLE[1] (CFA)	HIGH INFLATION	MILEXP	INSTABILITY	GROWTH[2]	FINDEV	REGIME TYPE
Benin	4.20%	0.05	No	1.53%	2550	3.14%	0.18%	2
Burkina Faso	0.00%	-0.04	No	1.03%	0	4.04%	0.26%	-7
Cameroon	0.38%	-0.31	No	1.48%	4275	1.18%	9.88%	-6
Central African Republic	0.00%	0.19	No	0.64%	0	4.95%	10.14%	-7
Chad	0.15%	-0.19	No	0.57%	0	1.40%	6.97%	-9
Congo, Rep. of	0.00%	0.11	No	1.83%	1075	8.35%	23.87%	4
Côte d'Ivoire	0.00%	0.08	No	0.41%	0	9.93%	3.30%	-9
Gabon	0.90%	0.14	No	0.26%	0	14.77%	15.57%	-7
Niger	0.20%	-0.36	No	0.22%	1075	4.55%	0.08%	-7
Senegal	0.23%	0.15	No	0.32%	0	2.99%	0.54%	-1
Togo	7.96%	0.19	No	0.13%	0	12.17%	0.37%	-6

[1] Covers the 1960-1965 period [2] Data for 1961

Source: see Chapter 3

To sum up, predicted probabilities for the CFA member states in 1960 (when the CFA was set up) are low because the direct benefits from the monetary union were small at the time, even though the costs were not high either. CFA member states did not trade much with each other then nor did they experience high inflation. The benefits came from the fact that participating in the CFA would ensure that the member states would continue maintaining a fixed exchange rate between the CFA franc and the French franc, something that the econometric results in Chapter 3 do not capture. Thus, it appears that

the CFA case of multilateral IMI strongly supports Hypotheses 4, 6 and 7 from Chapter 2. In the case of Hypothesis 7, it serves to compensate for the fact that Hypotheses 1 to 3 do not obtain.

2. The East African Community

Before independence in the early 1960s, Kenya, Tanganyika (Tanzania), and Uganda shared the same currency, the East African shilling, as part of the East African Currency Board (EACB), which was linked to the British pound sterling. After independence, the three East African states aimed to transform the EACB into a common central bank, independent from British influence.[47] This transformation was part of an attempt to unite the three states into a federation. However, both attempts failed and in June 1965 all three countries announced that they would end the East African currency union by introducing their own currencies and creating their own national central banks, which occurred a year later. Nevertheless, the three East African states still wished to maintain close economic links with each other. This is why they created the East African Community (EAC) in 1967. To accompany the EAC's common market, Kenya, Tanzania, and Uganda decided to form a new monetary union, whereby national currencies would remain but monetary policies would be coordinated between the national central banks.

While they were negotiating the creation of a new East African federal state, Tanzania and Uganda, being the relatively poorer partners in the EAC, tried to obtain larger financial subsidies from Kenya as part of the planned political federation (e.g.,

[47] Tanganyika gained its independence from the U.K. in December 1961 and later (in April 1964) merged with the islands of Zanzibar and Pemba to become Tanzania in October 1964. Uganda became independent in October 1962. A little more than a year later (December 1963), it was Kenya's turn to obtain its independence from the U.K.

through a regional development bank). Already, Kenya funded a disproportionate share of East Africa's common administrative services (e.g., post, telephone, rail, etc.) since it collected higher tax revenues than the other two states relative to the size of its population. Some of Kenya's tax revenues were also being redistributed to its two partners though the Distributable Pool created in 1961 (see Hazlewood 1967, 85). In addition, Tanzania and Uganda wanted to establish a system of managed trade and development as part of the East African federation project.[48] This was seen as the way to favor their economic development and reverse inequalities with Kenya in terms of industrialization.[49] In exchange for restrictions on intra-regional trade, Kenya demanded the maintenance of the common currency managed by a common central bank with a strict focus on price stability (Hazlewood 1975, 67). In the end, when the East African federation looked like it would not happen in the immediate future, Tanzania decided to adopt its own currency and central bank so that it could pursue its own economic development plans.[50] As a result, in June 1965 all three countries announced that they would introduce separate national currencies and central banks.[51]

In 1967, the three East African states reached an agreement on the creation of the EAC, which included a monetary union with national currencies exchanged at par and without any restrictions on their convertibility across the whole Community. The EAC was the result of the Philip Commission, set up in late 1965 following the failure to set up

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[48] Tanzania and, to a certain extent, Uganda were increasingly pursuing a socialist development strategy based on self-reliance, contrary to Kenya (see Yadi 1979, 194-6).

[49] Yadi (1979) notes that: "Quant à l'Ouganda et le Tanganyika, ce qu'ils recherchaient, c'étaient moins cette opération de redistribution purement financière, qu'un accroissement de leurs activités économiques et en particulier un développement de leurs industries manufacturières" (180).

[50] See Nye (1965, Chap. 6) for a discussion on the failure to federate East Africa.

[51] For details on the dissolution of the common currency and EACB, see Hazlewood (1967, 101-112).

an East African federation. Its goal was to review the common market and common services. Although the EAC treaty articles on monetary union appear to be a reversal of the decision to create separate currencies and central banks in the first half of 1965, they were in fact only formalizing an agreement reached upon the dissolution of the currency union (Hazlewood 1975, 65). The parity and free convertibility were considered essential for the proper functioning of the common administrative services.

Table 4.3a
Bilateral IMI Factors of EAC Member States in 1966

1966	**Trade$_1$**†	**Trade$_2$**†	**Exchange Rate Volatility**
Kenya-Tanzania	3.48%	n/a	0
Kenya-Uganda	4.72%	4.17%	0
Tanzania-Uganda	n/a	0.11%	0

† 1968
Source: see Chapter 3

Table 4.3b
Unilateral IMI Factors of EAC Member States in 1966

1966	**High Inflation**	**Military Expenditures**	**Domestic Political Instability***	**Financial Development**	**Regime Type**
Kenya	No	2.27%	575	22.66%	0
Tanzania	No	n/a	0	n/a	-7
Uganda	No	1.99%	0	15.28%	0

* 1967
Source: see Chapter 3

The maintenance of the common services, mainly funded by Kenya, appears to be the key benefit justifying the EAC monetary union. This becomes even clearer when one

examines Tables 4.3a and 4.3b, where we can see that inflation was not out of control and trade between the EAC member states was not very significant. On the other hand, we can see from the tables that the costs of IMI were not great either. The EAC member states did not face a high risk of war, as military expenditures were low, nor were they internally unstable. The only cost was the absence of economic cycle synchronicity.[52] However, because there was no delegation of monetary policy to a supranational central bank or that of another country, only coordination with the other two national central banks, each member state retained the ability to easily cut off its ties to monetary union partners. This institutional weakness of the IMI arrangement might also have tempered the cost of giving up monetary policy autonomy. Thus, the benefits from IMI were not great, nor were the costs, but neither was the commitment. We can conclude that the EAC supports Hypotheses 4 and 7.

3. East Caribbean Currency Union

Although the (independent) member states of the ECCU obtained their independence from the U.K. over a period of ten years,[53] the monetary union in its current form did not materialize until 1983, with the establishment of the East Caribbean Central Bank

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[52] There are no data available on economic cycle correlation for that time period. The only evidence available that synchronicity was low is the fact that standard deviation of the relative changes in GDP for Kenya and Uganda (see footnote 25 for details) stood at 0.174 for 1966. This is higher than the average for the whole sample from the non-imputed dataset used in Chapter 3: 0.123.

[53] Grenada was the first to obtain its independence in February 1974. St. Kitts & Nevis was the last to do so, in September 1983. In between, Dominica, St. Lucia, St. Vincent & the Grenadines, and Antigua & Barbuda gained their respective independence in November 1978, February 1979, October 1979, and November 1981.

(ECCB), which replaced the East Caribbean Currency Authority set up in 1965.[54] This institutional change did not affect the common currency, the East Caribbean dollar. It remained at the fixed parity of EC$2.70 per U.S. dollar, which had been agreed to in July 1976 when the member states decided to peg the E.C. dollar to the U.S. dollar instead of the British pound.

Table 4.4
Predicted Probabilities of Participating in the ECCU in 1983[55]

Member State	Mean Predicted Probability	95% Confidence Interval
Antigua & Barbuda	1.64%	0.99% – 2.55%
Dominica	1.56%	0.92% – 2.42%
Grenada	0.34%	0.18% – 0.58%
St. Kitts & Nevis	1.59%	0.95% – 2.54%
St. Lucia	2.94%	1.68% – 4.67%
St. Vincent & the Grenadines	2.02%	1.21% – 3.16%

Note: The statistical model and results used to compute these predicted probabilities are from column (5) in Table 3.4. The mean predicted probabilities and their confidence interval were obtained using the Clarify software (Tomz et al. 2003).

Source: see Chapter 3

In Table 4.4, we can see that the mean predicted probabilities of ECCU member states joining together to form an IMI arrangement in 1983 were low. The main reason is twofold and readily observable from Table 4.5. First, ECCU member states did not trade much with each other. Second, economic cycles were generally not in sync. In addition,

[54] The ECCU is composed of Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts & Nevis, St. Lucia, and St. Vincent & the Grenadines. Only Anguilla and Montserrat remain British dependencies.

[55] These predicted probabilities were obtained by calculating an ECCU average for each variable that entered into the statistical equation; however, this average was weighted by a member state's bilateral trade with other ECCU countries. Thus, the ECCU value for every variable varies for each member state. This means that the predicted probabilities take into account the relative importance of each bilateral relationship.

inflation was low. These factors limited the transaction-cost benefits that could arise from participating in the ECCU, while making the cost of forgoing monetary policy autonomy high. On the other hand, the cost associated with control over seigniorage was also low as the level of external and internal threats was low. Like France with the CFA, the United States played a key role in guaranteeing the security and stability of the East Caribbean countries, which were far more threatened by potential insurgency or domestic political instability than inter-state war (Phillips 1990).

Table 4.5
IMI Determinants of ECCU Member States in 1982

1982	TRADE (ECCU)	CYCLE (ECCU)	HIGH INFLATION	MILEXP	INSTABILITY	GROWTH	FINDEV	REGIME TYPE*
Antigua & Barbuda	3.64%	0.17	No	n/a	0	0.17%	51.35%	6 to 8
Dominica	10.87%	0.38	No	n/a	3775	4.13%	49.48%	6 to 8
Grenada	2.30%	-0.71	No	n/a	0	4.93%	57.02%	-6 to -10
St. Kitts & Nevis	3.87%	0.24	No	n/a	0	-1.58%	80.91%	6 to 8
St. Lucia	6.34%	0.75	No	n/a	0	-10.82%	55.36%	6 to 8
St. Vincent & the Grenadines	9.33%	0.39	No	n/a	0	4.80%	58.56%	6 to 8

*Estimated from Freedom House's measure of political rights
Source: see Chapter 3

The reason for this involvement in the region by the United States (and, to a lesser extent, Great Britain and Canada) was the fear that the Caribbean countries could fall into the hands of leaders friendly to the Soviet Union. The U.S. wanted to make sure that there would not be any Soviet outpost in the Caribbean other than Cuba. The objective was to create a "shield of democracy." The Grenadian Revolution, threats of coups in Antigua and Dominica, and a rebellion in St. Vincent, all in 1979, raised alarm bells in

Washington (Phillips 1990). Until the U.S. got involved, Barbados generally sent troops to defuse hostilities and maintain the stability of its neighbors, since it was the only state with a significant military force. With financial and technical support from the United States and its allies, the East Caribbean Regional Security System (RSS) was put together in the early 1980s around Barbadian leadership. The RSS's main responsibility was ensuring that its members remained politically stable, and Table 4.5 shows that it was successful. While the RSS was in charge of internal security, the United States took on the responsibility of ensuring the region's external security (Phillips 1990). The importance of the U.S. for the security and stability of the ECCU member states is best exemplified by the invasion of Grenada in October 1983, following a coup.[56] The presence and support of the U.S. (and its allies) in the region explain why the cost, in terms of control over seigniorage, of taking part in the ECCU was low.

Another "outside" benefit of IMI for its member states was that, like France with the CFA, the ECCU ensured a fixed exchange rate between the E.C. and U.S dollars. Given that the United States was the ECCU member states' largest trading partner (28 percent of their GDP on average), there were clear benefits to participating in an IMI scheme that greatly reduced exchange rate risk with one's main trading partner. As Van Beek et al. (2000) point out: "[i]n practice the principle objective of the ECCB's monetary policy, and the primary benefit of the monetary union, has been sustaining [the] credibility of the fixed exchange rate regime" (4).

In other words, as in the case of CFA member states and their regional hegemon (France), the United States is the key determinant behind participation in the ECCU, both

[56] According to Phillips (1990), U.S. troops found secret documents indicating that "the Soviet Union, backed by Cuban personnel, was intent on using Grenada as a military base for extending its repression throughout the region like falling dominoes" (81).

in terms of benefits and costs. This provides further evidence in support of Hypothesis 6 and, to a lesser extent, 7 (since the U.S. did not offer direct benefits for participating in the ECCU). Unfortunately, for reasons explained in the previous chapter, the predicted probabilities do not take this important determinant into account, which is probably why they are so low.

4. The European Monetary Union

The EMU is the fourth and last monetary union to have been created in the post-World War II period. It was agreed to by twelve European Union (EU) member states at Maastricht in 1991.[57] The Treaty on European Union (TEU) was ratified by all twelve member states by the end of 1993. However, the actual monetary union did not come into effect until January 1, 1999, when the single currency, the euro, was introduced in eleven EU member states.

In January 1987, the U.S. dollar's rapid depreciation led to high volumes of speculative capital movements. This required currency realignments against the German mark (DM) in the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) of fixed but flexible exchange rates in the EU. The U.S. dollar's depreciation meant that large amounts of capital flowed into Germany, putting pressure on the DM to appreciate vis-à-vis most currencies in the ERM unless interest rates were raised significantly. Because ERM members were unwilling to raise interest rates, a depreciation of these weaker currencies ensued. As a result, the Council of Economics and Finance Ministers (ECOFIN), following pressure from the French government, asked

[57] The United Kingdom negotiated an opt-out from the EMU. Denmark did so a year later when its population failed to support the Maastricht Treaty in a referendum. This allowed its government to win a second referendum and make ratification possible.

the Monetary Committee and the Committee of Central Bank Governors (CCBG) to examine ways in which the ERM could be strengthened. This led to the Basle-Nyborg Agreement of September 1987.[58] However, it seems that for some member states this agreement was not enough to achieve symmetry of adjustment between EMS members (see Andrews 1993).

In January 1988, France and Italy each presented a memorandum to ECOFIN that criticized the asymmetry of the ERM and called for the rapid creation of a new system to remedy this situation, which was deemed detrimental to their nation's interests and those of Europe (Gros and Thygesen 1992, 312). In response to these memoranda, Germany's Foreign Ministry produced a memorandum calling for a European currency area and a European central bank. In addition, it proposed that a group of independent experts be set up at the Hanover European Council in June 1988 to clarify the principles for the development of a European monetary union.[59] In April 1989, the (Delors) Committee for the Study of Economic and Monetary Union submitted its report to ECOFIN.[60] Meeting in Madrid in June 1989, the European Council accepted the recommendations of the Delors Committee and agreed to convene an Intergovernmental Conference (IGC) on EMU to revise the Treaty of Rome accordingly.

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[58] In principle, this reform of the ERM reduced its asymmetry, which had developed since 1983, by distributing the burden of intervention and adjustment a little more equally between strong currency countries (Germany and the Netherlands) and weaker ones (e.g., France and Italy) (for details, see Gros and Thygesen 1992, 94-96, 99).

[59] This committee was chaired by Commission President, Jacques Delors, and was made up of the twelve governors of the Community's national central banks acting in a personal capacity, one additional member from the Commission, and three independent experts.

[60] For details on the report, see Gros and Thygesen (1992) and Kenen (1995).

The IGC began in 1990. After much bargaining, the "final compromise was essentially based on a French timetable and German conditions" (Tsoukalis 1993, 217).[61] Germany, followed by Luxembourg, the Netherlands, and the U.K., wanted monetary union to begin only once convergence had taken place between the member states. France, leading the remainder of the member states, favored a quick transition to monetary union, arguing that it would only make convergence easier. The transition to EMU began in January 1994, with the introduction of strict conditions (on inflation, interest rates, fiscal deficits and public debt) for convergence that had to be met by the member states in order to qualify for EMU, scheduled for January 1, 1997 at the earliest and January 1, 1999 at the latest. The TEU adopted the grand majority of the Delors Committee's institutional recommendations, at Germany's insistence in the face of the Bundesbank's hard line position. The United Kingdom and Denmark, following the latter's popular rejection of the TEU in a first referendum in June 1992, were granted opt-outs from the EMU. In January 1995, Austria, Finland, and Sweden joined the EU. By the same token, they agreed to join the EMU once they met the so-called "convergence criteria." However, Austria and Finland were the only ones to become founding member states of the EMU on January 1, 1999, five years after the TEU came into force.[62] The other founding member states were Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain. Greece joined the EMU in January 2001. Sweden still does not qualify as a result of a technicality, which is due to the fact

[61] For details on the IGC negotiations, see Dyson and Featherstone (1999) and Moravcsik (1998, Chap. 6).

[62] See Leblond (2004) for an account of those five years.

that it does not want to join for the time being.[63] A referendum on this issue held in September 2001 reinforced this situation.

Table 4.6 gives the predicted probabilities that each EU member state would join the EMU in 1999, with either 15 (the EU) or 11 member states (the euro-zone). The numbers are very low, akin to those found for the ECCU member states and below those of the CFA. This is surprising when one examines the values of the IMI determinants in Tables 4.7a and 4.7b. We can observe that EMU member states had a much higher degree of economic integration than those of the CFA and ECCU. They have significant trade with the rest of the EU/EMU as well as good economic cycle synchronicity (see Table 4.7a). Finally, like their CFA and ECCU counterparts, they face low levels of external and internal threats (see Table 4.7b). It is true that EU member states have higher levels of financial development than the CFA and ECCU member states, which would reduce the predicted probabilities. However, they also tend to have had more recent major military conflicts between them than CFA and ECCU member states, which had never been in a conflict with another member state upon the formation of their respective monetary unions. This would play in favor of EU member states' predicted probabilities. It is also worth mentioning that all EU member states are highly democratic states, which is in line with Hypothesis 5 in Chapter 2 and would further reinforce the idea that the predicted probabilities should be higher than those observed in Table 4.6.

[63] The Swedish government refuses to join the ERM II, which was created to manage the exchange rates between the euro and the currencies of those EU countries outside the EMU. Before countries can join the EMU, they must have been in the ERM II for at least two years.

Table 4.6
Predicted Probabilities of Participating in the EMU in 1999 (%)[64]
(Based on Estimated Coefficients in Column (5) in Table 3.4)

Member State	EMU-11 (95% Confidence Interval)	EMU-15 (95% Confidence Interval)
Austria	0.94% (0.55% – 1.51%)	1.04% (0.63% – 1.59%)
Belgium	1.95% (1.10% – 3.26%)	2.09% (1.14% – 3.62%)
Denmark	1.37% (0.92% – 2.04%)	2.00% (1.32% – 3.00%)
Finland	1.42% (0.97% – 2.06%)	1.95% (1.27% – 2.87%)
France	0.94% (0.54% – 1.53%)	2.00% (1.04% – 3.65%)
Germany	2.00% (1.16% – 3.33%)	2.50% (1.48% – 4.21%)
Greece	0.97% (0.66% – 1.39%)	1.10% (0.75% – 1.59%)
Ireland	1.41% (0.90% – 2.11%)	1.84% (1.13% – 2.89%)
Italy	1.25% (0.79% – 2.11%)	1.56% (1.02% – 2.38%)
Netherlands	1.93% (1.13% – 3.09%)	2.18% (1.30% – 3.50%)
Portugal	2.13% (1.34% – 3.27%)	1.95% (1.27% – 2.90%)
Spain	2.78% (1.64% – 4.60%)	2.84% (1.73% – 4.60%)
Sweden	2.04% (1.34% – 3.01%)	2.27% (1.43% – 3.38%)
United Kingdom	1.33% (0.84% – 2.07%)	1.47% (0.94% – 2.29%)

Note 1: There are no predicted probabilities for Luxembourg because of missing data
Source: see Chapter 3

The paradoxical nature of Table 4.6 when compared to Tables 4.7a and 4.7b takes on a different perspective when we look at Table 4.8. The latter table also presents the predicted probabilities that EU member states would join the EMU (with 15 or 11 members) in 1999. However, it uses different estimated coefficients to do so. It relies on the regression results for column (3)-logit in Table 3.3 rather than those from column (5)

[64] These predicted probabilities were obtained by calculating an EMU average for each variable that entered into the statistical equation; however, this average was weighted by a member state's bilateral trade with other EU/EMU countries. This explains why the EMU value for every variable varies for each member state. The predicted probabilities therefore take into account the relative importance of each bilateral relationship. The mean predicted probabilities and their confidence intervals were obtained with the Clarify software (see Tomz et al. 2003).

in Table 3.4. In this case, the predicted probabilities are much more in line with reality. For example, the two states that opted-out of EMU, Denmark and the U.K., also have the third and second lowest predicted probabilities, respectively, while Greece, which was not deemed ready to join in 1999, has the lowest. The predicted probabilities for Austria, Belgium, the Netherlands, Portugal, and Spain are much more consistent with the fact that they were among the founding EMU member states. For the remaining EMU member states, the predicted probabilities are more ambiguous.

With a mean predicted probability of 2.56 percent (EMU-11), it seems surprising that Finland adopted the euro right from the beginning. After all, Finland is a small EU member state whose trade with the EMU-11 as a percentage of GDP is relatively low and whose economic cycle is much less synchronized with the euro-zone than those of its counterparts (see Table 4.7a). On the other hand, when Finland qualified for the EMU in 1998, it was experiencing an economic boom relating to its growing information technology sector, which brought its economic cycle more in line with that of its EMU partners as it became less dependent on its natural resources sector (Mayes and Suvanto 2002). This more recent phenomenon is not fully reflected in the business cycle correlation data found in Table 4.7a. Finland's economic cycle correlation figure for 1998 covers the period since 1988, which includes the fall of the Soviet Union that caused Finland to experience a severe recession. Finland's economic revival and entry into the EU has led it to converge much more with the EU economy, which would only be enhanced by joining the EMU.

Table 4.7a
Bilateral IMI Factors of EMU Member States in 1998

1998	$Trade_{EMU-11}$ (%)	$Trade_{EMU-15}$ (%)	$Cyclecorr_{EMU-11}$	$Cyclecorr_{EMU-15}$
Austria	36.45	39.94	0.78	0.49
Belgium	80.30	98.81	0.80	0.70
Denmark	23.70	34.60	0.16	0.31
Finland	18.95	32.48	0.31	0.49
France	21.28	26.43	0.82	0.70
Germany	18.03	25.89	0.80	0.54
Greece	16.54	19.74	0.63	0.56
Ireland	38.37	73.32	0.41	0.47
Italy	16.94	21.57	0.81	0.70
Netherlands	47.93	62.04	0.76	0.64
Portugal	37.17	43.91	0.80	0.68
Spain	23.81	28.52	0.85	0.74
Sweden	27.35	38.20	0.60	0.62
United Kingdom	19.70	21.61	0.08	0.12

Source: see Chapter 3

According to Table 4.8, Ireland also had a relatively low mean predicted probability of joining the EMU-11 in 1999 with a value of 13.34 percent—although the confidence interval is fairly wide. The fact that the synchronicity of Ireland's economic cycle with the other EMU-11 member states is only 0.40 is one explanation for the lower-than-expected probability. If Ireland had counted on the United Kingdom eventually joining the EMU, then it made even more sense for Ireland to join the EMU. In this case, the mean predicted probability increases to 27.26 percent (see Table 4.8) because the U.K. is Ireland's single most important trading partner.

Table 4.7b
Unilateral IMI Factors of EMU Member States in 1998

1998	High Inflation	Military Expenditures	Domestic Political Instability	GDP Growth	Exchange Rate Depreciation (index)	Financial Development	Regime Type
Austria	No	0.9%	0	3.52%	65.4	116.50%	10
Belgium	No	1.5%	0	2.25%	95.6	128.00%	10
Denmark	No	1.7%	0	2.47%	113.3	59.59%	10
Finland	No	1.5%	0	5.33%	144.0	47.94%	10
France	No	2.8%	7,500	3.40%	159.6	64.55%	9
Germany	No	2.5%	2,500	1.96%	68.0	77.60%	10
Greece	No	4.8%	0	3.36%	982.4	64.98%	10
Ireland	No	0.8%	0	8.61%	174.2	100.00%	10
Italy	No	2.0%	600	1.79%	275.9	83.78%	10
Netherlands	No	1.7%	0	4.35%	66.7	109.00%	10
Portugal	No	2.2%	0	4.55%	750.0	71.02%	10
Spain	No	1.3%	0	4.34%	265.1	89.55%	10
Sweden	No	2.1%	0	3.58%	181.3	41.80%	10
United Kingdom	No	2.6%	0	2.99%	145.5	91.13%	10

Source: see Chapter 3

The predicted probabilities of France, Germany, and Italy are penalized because they have large domestic markets, which reduce the relative importance of intra-EMU trade as a percent of GDP (see Table 4.7a). France's and Italy's probabilities also suffer relative to Germany because they have less weight in intra-EU trade,[65] while Germany is penalized by its lower business cycle synchronicity. Greater military expenditures and domestic political instability also penalize France (see Table 4.7b).

[65] EMU-11's trade with Germany represents an average of 11.6 percent of GDP while it is 6.1 and 3.7 percent of GDP respectively for trade with France and Italy.

So how do we explain the fact that Table 4.8 shows predicted probabilities that are more consistent with reality than Table 4.6 does? The obvious answer is that the estimated coefficients for the regression results in column (3)-logit in Table 3.3 are different from those in column (5) in Table 3.4, whereby the former are more favorable to EMU member states' predicted probabilities than the latter. The reason for this is that the dataset used to obtain the results in Table 3.3 excludes most of the CFA member states and all of the ECCU member states because of missing data. Therefore, the EMU member states drive most of the results. This highlights the problem with listwise deletion of observations with missing data. With multiple imputation of missing data, the sample used to obtain the results in Table 3.4 includes all CFA and ECCU member states. Consequently, we could conclude that the results in column (3)-logit Table 3.3 are biased and, as a result, that the predicted probabilities in Table 4.8 are inaccurate. However, we saw above that regional hegemony played a crucial role in the formation of the CFA and the ECCU. This important determinant is not taken into account in the statistical models used to obtain the regression results in Chapter 3, because of data limitations. Hence, the estimated coefficients in Table 3.4 are probably also biased (downward), which would explain the low predicted probabilities obtained for the CFA and ECCU. This omitted variable bias is much less problematic for the estimated coefficients in Table 3.3 because CFA and ECCU member states are absent from the regression analyses, and regional hegemony is not a factor in explaining the EMU. This is why the predicted probabilities obtained for the EMU member states in Table 4.8 are more in line with reality than those found in Table 4.6.[66]

[66] It is interesting to note that the predicted probabilities for CFA and ECCU member states are much lower than in Tables 4.1 and 4.4 when calculated with the results from column (3)-logit in Table 3.3.

Table 4.8
Predicted Probabilities of Participating in the EMU in 1999 (%)[67]
(Based on Estimated Coefficients in Column (3)-logit in Table 3.3)

Member State	EMU-11 (95% Confidence Interval)	EMU-15 (95% Confidence Interval)
Austria	24.65% (7.09% – 51.49%)	9.73% (1.90% – 26.35%)
Belgium	48.07% (4.36% – 93.91%)	45.03% (15.97% – 96.46%)
Denmark	1.22% (0.35% – 3.14%)	3.18% (0.77% – 8.48%)
Finland	2.56% (1.06% – 5.09%)	6.71% (1.84% – 15.28%)
France	9.52% (3.28% – 20.68%)	11.31% (3.88% – 25.02%)
Germany	17.84% (7.80% – 32.50%)	8.74% (2.72% – 20.45%)
Greece	0.65% (0.10% – 2.15%)	0.56% (0.08% – 1.96%)
Ireland	13.34% (3.11% – 33.09%)	27.26% (1.52% – 78.67%)
Italy	9.02% (4.46% – 15.99%)	7.44% (3.33% – 13.78%)
Netherlands	28.34% (6.20% – 63.66%)	25.47% (2.62% – 70.08%)
Portugal	21.36% (6.21% – 45.46%)	13.70% (2.60% – 35.41%)
Spain	34.73% (18.46% – 53.05%)	25.69% (11.49% – 45.23%)
Sweden	7.24% (2.68% – 14.90%)	9.08% (2.03% – 22.91%)
United Kingdom	0.42% (0.08% – 1.31%)	0.53% (0.10% – 1.59%)

Note 1: There are no predicted probabilities for Luxembourg because of missing data
Source: see Chapter 3

To summarize, the estimated coefficients obtained in column (3)-logit in Table 3.3 are probably the right ones to use to calculate predicted probabilities in cases where a regional hegemon is not present to influence the IMI decision. If such a hegemon is present, then the coefficients in column (5) in Table 3.4 will provide better predicted probabilities than those in column (3)-logit in Table 3.3. However, they will still be biased downward because the econometric model does not include a variable for regional hegemony. What the results in column (5) of Table 3.4 are good for, if not for predicted

[67] See note 64.

probabilities, is establishing the robustness of the statistical significance and sign of the IMI determinants for which we have good measures. Thus, it provides strong empirical support for Hypotheses 1 to 4 from Chapter 2.

If the general story behind the EMU is relatively high benefits from the reduction in transaction costs on intra-European trade and low costs associated with the loss of control over monetary policy and the issuance of money, how does it square with existing explanations of the EMU's creation? Except for Eichengreen (1993)—who argues that the EMU was put into place because exchange rate volatility would increase the cost of completing the single market—most EMU explanations focus mainly, if not solely, on French and German preferences and bargaining. This is because the Franco-German pair is Europe's economic core. Without it, the EMU would simply not happen. One accepted point of view is that France (and Italy) wanted the EMU because it could no longer accept having its own monetary policy subordinated to that of Germany's, which was the case as long as the franc remained within the ERM (Moravcsik 1998). Within the ECB, France would now have the same voting power as Germany. Moreover, French business was strongly supportive of the EMU because it would further reduce exchange rate fluctuations as well as lowering the cost of capital (Moravcsik 1998).

The contention has more to do with German preferences for the EMU. One common argument is that in exchange for giving its de facto monetary leadership, (West) Germany asked France to support its reunification with East Germany (Baun 1996; Chang 2003; Pryce 1994). Other EU member states supported this bargain because there was a common belief that a unified Germany needed to be tied more closely to Europe and the EMU was the best way to achieve this objective (Andrews 1993). Moravcsik

(1998) does not think that reunification forced Germany to accept France's wishes for the EMU. He argues that Germany's national preferences were determined before reunification in 1990 and that they were not altered afterwards. Germany supported the EMU mainly in order to reduce, if not eliminate, exchange rate volatility in the EU. The link between the EMU and German reunification was pure rhetoric for the public and other EU leaders, according to Moravcsik.

Moravcsik's (1998) account of French and German EMU preferences seems the most plausible in terms of temporal logic and his research on the subject is the most extensive conducted so far. Fear of exchange rate volatility (to avoid hurting trade) by the Germans is in line with Hypothesis 1 in Chapter 2. Similarly, it fits Eichengreen's (1993) argument regarding the cost of completing the internal market. The French position is harder to reconcile with our political economy explanation since it does not provide an argument for IMI to help a state (re)gain influence over its monetary policy. However, it is not incompatible with our approach since the French clearly wanted to maintain the exchange rate with Germany and other EU member states fixed, most probably to keep transaction costs related to trade low. Moreover, they were not concerned about losing monetary policy autonomy, which they had given up when they adopted their *franc fort* policy in 1984.

By adding the other factors included in our political economy model (e.g., the low costs of IMI because of low external and internal threats), we have a much more complete picture of the preferences of not only France and Germany but also the other EU member states.[68] Thus, scholars such as Moravcsik (1998) and Sandholtz (1993) might provide a richer context around which the EMU was negotiated; however, their

[68] The exception is Luxembourg, for which we have little available data.

explanations remain highly contextual with no attempt to generalize to other cases of IMI and non-IMI. Their explanations also fail to show which factors are more salient. As such, they highlight the weakness of existing political science theorizing on international monetary integration, as discussed in Chapter 1. Our political economy approach, while compatible with the most detailed analysis of the EMU negotiations, is able to overcome these weaknesses.

To conclude this section, we can say that the model developed in Chapter 2 is able to account for all four cases of IMI in the post-World War II period. In the case of the CFA, the framework is able to take into account both the role that the French Treasury played in guaranteeing the convertibility of the CFA franc and the importance of trade with France for CFA member states. It is the statistical framework in Chapter 3 that is unable to take those regional hegemony factors into account, unfortunately. However, it is able to consider the hegemon's role in providing security and economic aid and guarantees, as France did (and continues to do) for the CFA. The story is similar in the case of the ECCU, where the United States played and continues to play an important role in the region's security and economy. As for the EAC, in spite of limited data, our approach supports the argument that economic links, peace, and stability were key elements in the monetary union's formation. Finally, the EMU is the case that is best explained by the approach in Chapter 2 (Hypotheses 1 to 5) and, to a certain extent, the statistical results. Having examined in closer detail the formation of multilateral IMI cases, it is now important to look at cases of unilateral IMI in order to see if there is also a good fit with the argument presented in Chapter 2.

B. Unilateral Cases of IMI

Cases of unilateral IMI usually involve small states that are highly dependent on a much larger country. This dependence is often in terms of both economy and security. Because of their size, these states do not have the means to defend themselves and, therefore, must rely on a larger partner for security guarantees and assistance. Economically, they also tend to be dependent on access to the partner's much larger and more diversified markets, for both imports and exports. In some cases, they also receive considerable amounts of economic aid from their larger partner because their economies are underdeveloped. Therefore, for these states, the cost of IMI is low while the benefits are high. For the larger partner, there are few benefits from IMI but there are also no costs, as they retain full control over the (common) currency and monetary policy.

For example, the Marshall Islands, the Federated States of Micronesia (Micronesia), and Palau use the U.S. dollar as their currency.[69] These very small islands in the Pacific (populations of 57,000, 107,500 and 20,000 respectively) were administered by the United States (under U.N. trusteeship) before their independence in 1986 (Marshall Islands and Micronesia) and 1994 (Palau). During that period, the dollar was their official currency. Upon independence, they decided to keep the dollar as their national currency. This decision is explained by the fact that under the Compacts of Free Association signed in 1986 and 1994, the United States remains responsible for the defense and security of the three countries. It also provides them with regular economic aid as part of the compact agreements.[70] Moreover, the citizens of the three island-countries have access to U.S. federal programs. Economic assistance represents about 80,

[69] This paragraph is based on Economist Intelligence Unit (2003a).

[70] The Marshall Islands are also used for non-nuclear missile testing.

70, and 60 percent of current government expenditures, respectively. Imports, mainly of food and manufactured goods, account for 60, 45, and 80 percent of GDP, respectively, and come mainly from the United States. Exports (mostly from fishing) are very small, around 7-8 percent of GDP. Subsistence farming and fishing and government services are the main economic activities in the Marshall Islands and Micronesia while tourism is the main source of income in Palau.[71] Thus, in these cases the benefits from IMI are high given that imports from the U.S. represent such a large share of the economy. Moreover, the costs of IMI are low when one considers the amount of economic assistance and security guarantees received by the governments. This provides further empirical support for the validity of Hypotheses 6 and 7 in Chapter 2.

In Chapter 1, we indicated that there are currently 17 countries that have unilaterally adopted another country's currency as their legal tender. These unilateral IMIs can be grouped according to the adopted currency: the U.S. dollar, the euro, the Australian dollar, the South African rand, and the Swiss franc. Unfortunately, due to their size, economic and political data are very often unavailable. At best, we can provide a more qualitative analysis like the one given above for the Marshall Islands, Micronesia, and Palau. For the most part, their situations are little different from those of the three small Pacific island-countries relying on the U.S. dollar: they are all dependent on their much larger monetary partner for their economic and political security. Only in a few cases do we have a complete set of data that enables us to perform a more detailed analysis to test the validity of the hypotheses in Chapter 2. Ecuador and El Salvador are among these cases.

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[71] Palau is one the world's top scuba-diving destinations.

Ecuador dollarized its economy in 2000 while El Salvador did so in 2001. Looking at Table 4.9, we can see that the costs and benefits of unilateral IMI are ambiguous. First, Ecuador's and El Salvador's bilateral trade levels with the United States are relatively high since the U.S. is their largest trading partner. Second, Ecuador experienced high inflation, which makes IMI more beneficial. El Salvador, however, did not have problems with inflation when it dollarized. Second, business cycles are not synchronized between the two Latin American economies and that of the United States, which increases the cost of abandoning monetary policy autonomy. Third, it appears that both countries face low levels of external threats since they spend relatively little on the military as a percentage of GDP.[72] With respect to the level of internal threat, Ecuador experienced some degree of domestic instability while El Salvador did not. Fourth, the negative economic growth experienced by Ecuador could have played against IMI if its government wanted to use monetary policy to steer the economy back to growth. However, the facts that inflation was at 52 percent and that the severe recession caused domestic instability could have favored IMI rather the opposite. For El Salvador, the high rate of economic growth might have actually played in favor of IMI since there was less need to retain monetary policy autonomy at the time. In brief, the data in Table 4.9 are ambiguous in terms of the net costs or benefits of IMI for Ecuador and El Salvador, which makes it difficult to make educated (qualitative) predictions as to whether the two Latin American countries would have dollarized in 2000/2001. Our inability to obtain econometric results for unilateral IMI only adds to this difficulty, since these results (i.e.

[72] Ecuador signed a final peace agreement with Peru over their 1995 border war in October 1999 (Fischer 2001).

estimated coefficients) would provide guidance regarding what to expect from the control variables in terms of their relationship with IMI.

Ecuador's decision to dollarize its economy in January 2000 follows from out-of-control inflation, which rose to 52.2 percent in 1999 and reached a high of 96.1 percent in 2000. This forced Ecuador's currency, the sucre, to devalue by 116 and 112 percent against the U.S. dollar in 1999 and 2000 respectively, after the exchange-rate band with the dollar was abandoned in 1998. As a result, the economy shrank by 6.3 percent in 1999. This decline added to the sense of urgency. Given that private foreign investors were no longer willing to finance the government's activities and that an agreement with the IMF was stalling (for details, see Fischer 2001), the Mahuad government decided to adopt the extreme measure of unilateral monetary integration (dollarization) in order to bring inflation under control. In spite of the overthrow of President Mahuad by a civilian-military coup two weeks later as a result of popular discontent with the crisis and the dollarization plan, the decision to replace the sucre with the dollar was maintained and, consequently, the economy started recovering. Although the IMF did not believe that Ecuador was fit for dollarization because of its troubled financial sector and fiscal situation, it nevertheless provided a twelve-month standby credit of $304 million in April 2000, in exchange for an agreed program of reforms. This triggered additional funding of $600 million from other multilateral lenders. It also helped Ecuador obtain a successful debt rearrangement with private creditors, which led to substantial debt reduction and cash flow relief (Fischer 2001).

Table 4.9
IMI Factors for Dollarization in Ecuador and El Salvador, 1999

1999	**Ecuador**	**El Salvador**
Bilateral Trade	U.S.: 21.6%	U.S.: 18.3%
GDP Growth	-6.3%	3.45%
Business Cycle Correlation	-0.033	-0.045
High Inflation	Yes (52.2%)	No (0.5%)
Exchange Rate Depreciation (index)	44,790	298
Exchange Rate Volatility (with the U.S. dollar)	2.23%	0
Military Expenditures	2.1%	0.8%
Instability	4,912	0
Financial Development	23.0%	5.5%

Source: see Chapter 3

Contrary to Ecuador, El Salvador's decision to establish the dollar as its new national currency in January 2001 was not the result of inflation and an economic crisis (see Table 4.9). Rather, it was made in order to renew high levels of economic growth, which had been slowly declining since the mid-1990s.[73] The argument was that dollarization would bring about lower interest rates, which in turn would stimulate investment (especially from foreigners) and the economy. Although the colón had been pegged to the dollar since 1994, dollarization was expected to reduce interest rates because of the greater credibility it provided against the risk of devaluation.

These explanations suggest that the approach developed in Chapter 2 can better accommodate the Ecuadorian dollarization story than the El Salvadorian one. This is because Ecuador dollarized its economy with its largest trading partner to tame runaway

[73] Following the end of its civil war in 1992, El Salvador experienced rates of growth of more than six percent until the economy began to grow less rapidly in 1996.

inflation and return to the path of economic growth. When the decision is to lower interest rates by sending a clear signal that inflation will remain low in the future, as was the case with El Salvador's dollarization, our argument is still applicable since here it is the government's lack of credibility in maintaining low inflation in the future that causes interest rates to be high, which is an important transaction cost for the economy. The logical reasoning is therefore the same in both cases but the former is based on current inflation while the latter is based on inflation expectations.

III. Cases of Non-IMI Formation

One of the advantages with the econometric test in Chapter 3 is that it takes into account cases where IMI does not occur. For example, it allows us to predict and explain why Denmark, Sweden, and the United Kingdom are not part of the EMU. Cohen (2003) has examined the absence of IMI in certain parts of the world. Although his analysis is qualitative and does not attempt to be exhaustive, he concludes that the absence of monetary unions in certain parts of the world where we might expect them is explained by either the unwillingness of the major partner in a potential IMI scheme to participate (e.g., Canada-United States, Australia-New Zealand, and Belarus-Russia) or insufficient solidarity between the potential partners (e.g., ASEAN, Mercosur, CARICOM, ECOWAS, and Gulf Cooperation Council). Cohen defines solidarity as "a broad constellation of related ties and commitments" (278). Although his definition demands further clarification, he would appear to refer to some kind of psychological dimension when he mentions the need for a "common project of integration" to support monetary integration (279). On the other hand, his analysis of the cases considers monetary

integration projects not only in terms of some ill-defined political finality but also in terms of economic and infrastructure linkages as well as similarity in economic structure and development (e.g., for economic cycle synchronicity).

The explanation developed in Chapter 2 and statistically modeled and tested in Chapter 3 incorporates Cohen's two explanations for the presence or absence of an IMI arrangement between two countries. First, it considers the relevant factors affecting the IMI decision for *both* partners in the dyad. Second, our model takes into account the softer notion of "community" by considering the importance of trade linkages, business cycle synchronicity, and nationalism (although this factor is only crudely measured in Chapter 3). Consequently, our model and data should produce low predicted probabilities for the non-IMI cases considered by Cohen.

Except for the Canada-U.S. relationship and that of Switzerland and the EMU, the predicted probabilities indeed support the absence of IMI arrangements in parts of the world other than those considered in the previous section. For example, if we look at some of the relationships analyzed by Cohen (2003), we find that the predicted probability of an IMI scheme occurring between Australia and New Zealand is 6.91 percent for 2000. For the Belarus-Russia pair, the predicted probability is zero, which is the same as for the Argentina-Brazil pair, Mercosur's core relationship.[74] From the dataset described in Chapter 3, we can identify the relationships that have high mean predicted probabilities (using the estimated coefficients from column [3]-logit in Table 3.3) for 1999 (i.e. for an IMI arrangement in 2000): Canada-U.S., Switzerland-EMU-11, and Japan-Korea (see Table 4.10). However, in all three cases there has been no IMI arrangement and none is in the works.

[74] These mean predicted probabilities rely on estimated coefficients from column (3)-logit in Table 3.3.

Table 4.10
IMI Factors for Non-IMI Cases in 2000[75]

1999 Data	**Canada**	**U.S.**	**Switzerland**	**EMU-11**	**Japan**	**Korea**
Predicted Probability (with estimated coefficients from column (3)- logit in Table 3.3 using Clarify)	79.76% (43.73% – 97.10%)		41.81% (14.53% – 73.96%)		39.98% (14.34% – 68.02%)	
Bilateral Trade	56.0%	4.0%	39.6%	1.5%	0.9%	8.9%
High Inflation	0	0	0	0	0	0
Business Cycle Correlation	0.90	0.90	0.60	0.60	0.57	0.57
Military Expenditures	1.3%	3.0%	1.1%	1.8%	1.0%	2.8%
Instability	0	2,500	0	552.4	0	0
Exchange Rate Volatility	0.52	0.52	0.05	0.05	0.44	0.44
GDP Growth	5.5%	4.1%	1.6%	2.6%	0.7%	10.9%
Financial Development	74.8%	62.0%	184.3	82.7	193.1%	85.7%
Exchange Rate Depreciation (index)	148.6	100	48.5	110.0	41.9	268.6
Time since the Last Dispute	2	2	140	138	0	0
Regime Type	10	10	10	10	10	8

Source: see Chapter 3

If we begin with the Japan-Korea case and look at Table 4.10, the relatively high predicted probability seems to arise as a result of the low cost that a potential IMI arrangement between the two countries would incur rather than high benefits, since the importance of the bilateral trading relationship is relatively low for both countries, especially Japan. One factor that pushes the predicted probability upward is time since the last dispute. Given that the coefficient is negative in Chapter 3, the fact that there was a dispute in 1999 increases the possibility of an IMI arrangement. According to our theoretical explanation in Chapter 2, this makes little sense, unless one of the goals of an

[75] In the case of the predicted probability for the Switzerland-EMU-11 pair, it was obtained the same way as in Table 4.8., with the EMU-11 averages weighted.

IMI scheme is to reduce disputes in the future. However, no such discussions have taken place between Japan and Korea. Moreover, the dispute involved the seizure by Japanese forces of a Korean fishing boat found fishing in waters claimed as an exclusive economic zone for China and Japan. The boat was released four days later without any casualties.[76] Interestingly, if we ignore this relatively minor incident, then the dataset discussed in Chapter 3 tells us that there have not been any disputes before 1999. This would give Japan and Korea a value of 199 on the "last dispute" factor, which would bring down their predicted probability of forming an IMI arrangement to about 9.73 percent. This is obviously counterintuitive. In addition, the last dispute data fails to take into account the fact that Korea was under Japanese colonial rule between 1910 and 1945. This period of Japanese dominance of the Korean peninsula has fueled a great deal of resentment in Koreans toward Japan, while the Japanese tend to consider Koreans as being inferior to them. The people of both countries are said to have a strong sense of nationalist pride, especially toward each other. This would explain the absence of any discussion to form a monetary union between the two countries, in addition to limited economic benefits (even if the costs are low). What this case confirms is that our measure of nationalism in Chapter 3 is quite poor. Unfortunately, to our knowledge, there is no better one with a wide coverage of the world as well as time.

The absence of IMI between Switzerland and the EMU-11 is more puzzling than for Japan and Korea when one examines bilateral trade levels in Table 4.10. Trade between Switzerland and the EMU-11 is much more important. This explains in part the high predicted probability. Low IMI costs are the other reasons. However, here again

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[76] See dispute #4127 in Dispute Narratives – MID 3.0 Dataset, Correlates of War 2 Project, http://cow2.la.psu.edu/ (accessed June 24, 2005).

there is no IMI. Switzerland is not part of the EMU. It is not even part of the EU since the Swiss voted against their country's participation in the European Economic Area in December 1992. Christin and Trechsel (2002) argue that attachment to Switzerland's political institutions (federalism, neutrality, and direct democracy) defines the Swiss national identity and that fear of losing or weakening these institutions, especially neutrality, explains in large part why a majority of Swiss people oppose joining the EU. Again our crude measure of nationalism does not allow us to capture the importance of political institutions for the Swiss. Therefore, our high predicted probability for the possibility of Switzerland joining the EMU is not incorrect given the factors listed in table 4.10. It just fails to take into account the particularities of Swiss national identity, just as it does for the relationships between Japan and Korea and, as we will see next, between Canada and the United States.

The last case of the absence of an IMI arrangement where predicted probabilities suggest there should be one is the case of Canada and the United States, the world's most important trading relationship. Looking at Table 4.10, we can see why we should expect a monetary union between Canada and the U.S.: the potential benefits are significant while the costs are low.[77] In the case of the U.S., the cost of IMI is probably higher than for Canada because it is much more likely to be involved in a war, since it is the world's sole superpower. The recent wars in Iraq and Afghanistan and their post-war reconstruction efforts are only the latest examples. Canada's involvement in such

[77] The "last dispute" value of 2 instead of 199 is a result of a fishing dispute in May 1997 when Canadian coast guards seized four U.S. fishing boats in the Pacific Northwest. The American boats were accused of overfishing salmon. The boats were released after their captains paid a fine. This situation is very similar to that between Japan and Korea, which we discussed earlier. It highlights the weakness of our measure of nationalism. In this case, ignoring such minor disputes would reduce the mean predicted probability of an IMI arrangement between Canada and the United States to 46.1 percent (95% C.I. of 9.5% – 87.9%), just like it did in the Japan-Korea case. See dispute #4183 in Dispute Narratives – MID 3.0 Dataset, Correlates of War 2 Project, http://cow2.la.psu.edu/ (accessed June 24, 2005).

conflicts is usually much more limited, even when size is taken into account. Hence, the United States faces a higher cost of abandoning control over its monetary policy and the issuance of the dollar because of the much higher risk of being involved in a major military conflict (as military expenditures of 3 percent [and now more] of GDP indicate). On the other hand, the U.S. dollar is the world's reserve currency while the U.S. is the world's top capital market. Therefore, it is easy and cheap for the U.S. government to finance its expenditures, as its ever-growing current account deficit shows. So how do we explain the fact that there is no monetary union between Canada and the United States and that both governments have clearly indicated their lack of interest?

Much like the previous cases of non-IMI formation, nationalism provides the answer (Leblond 2003). Although a large portion of Canadians is favorable toward the creation of a common "North American" currency, especially when the Canadian dollar has depreciated significantly against the U.S. dollar, a majority of Canadians is against adopting the U.S. dollar as its legal tender (i.e. dollarization). This is because Canadians generally tend to define their identity in a negative way: i.e. as not being American. However, they have no problem defining themselves as North Americans. For their part, a large majority of Americans are opposed to giving up their dollar as it is a symbol of their economic and political leadership and power in the world. Thus, on the basis of both countries' special national identities, neither a monetary union nor dollarization is possible between Canada and the United States at this point in time, even if other factors suggest that it would be beneficial for them to have an IMI arrangement. Again, the fact that we have only a crude (not to say poor) measure of nationalism seems to explain why there is a discrepancy between reality and the predicted probabilities in this case.

IV. Conclusion

The analysis in this chapter generally supports the argument presented in Chapter 2 and the results obtained in Chapter 3. Trade and business cycle synchronicity are important for the IMI decision. So are peace and stability. Nevertheless, the analysis presented above has indicated that there are some limits or weaknesses in the statistical model and data presented in Chapter 3. It has also confirmed the importance of a regional leader or hegemon for IMI, particularly where stability and security are concerned.

The political economy argument presented in Chapter 2 (Hypotheses 6 and 7) clearly considers the crucial role that a hegemon or regional leader can play in lowering the cost of IMI when it comes to economic and security assistance and guarantees as well as increasing the benefits in terms of fixing the exchange rate between the monetary union's currency and that of the hegemon's and/or providing development aid. The CFA and ECCU cases provide good empirical support for these hypotheses.

Unfortunately, the econometric model and results in Chapter 3 only take into account the hegemon's role in reducing the level of external and internal threats, through the measures *MILEXP* and *INSTABILITY*. However, they do not measure the other benefits that a regional hegemon can offer member states to an IMI arrangement, such as development aid and fixed exchange rate guarantees. These omitted variables probably bias the regression results in Tables 3.2 and 3.4 because the samples used contain observations for the CFA and ECCU member states. This is not the case for the results in Tables 3.1 and 3.3 because the CFA and ECCU observations have been deleted from the sample, owing to missing data on certain variables for these member states. This is why the predicted probabilities for the EMU member states are very low in Table 4.6 while

they are more realistic in Table 4.8. The conclusion is thus that the estimated coefficients in column (3)-logit of Table 3.3 are better for calculating predicted probabilities in IMI cases where a hegemon is not present. However, this does not mean that the coefficients in column (5) of Table 3.4 are better suited to calculate predicted probabilities for cases with a regional hegemon involved. This is because they fail to measure some important benefits of an IMI arrangement that hegemons provide member states. Thus, the estimated coefficients in column (5) of Table 3.4 serve mainly as a robustness check for the sign and statistical significance of the IMI determinants.

In analyzing cases of unilateral IMI, the present chapter concludes that the political economy framework developed in Chapter 2 is adequate in explaining the IMI decision. Most cases of dollarization involve very small states that are highly dependent on their monetary partner for their well-being, both in economic and security terms. In a few other cases, like Ecuador and El Salvador, the decision to dollarize is based on a desire to reduce inflation and the cost of capital while the costs of doing so are low. As we will see with Liberia in the next chapter, when the cost of unilateral IMI increases significantly as a result of domestic political instability (civil war in that case), the government abandons IMI.

The last factor that the analysis in the present chapter brings out is the role played by nationalism or national identity in the IMI decision and the fact that we do not have reliable and comparative data for a large number of countries. This conclusion was made clear by the cases of non-IMI discussed above: Japan-Korea, Switzerland-EMU-11, and Canada-United States. In these three cases, the predicted probabilities are high enough for us to expect them to form monetary unions—especially in the cases of Canada and the

U.S. and Switzerland and the EMU-11. However, IMI has not come about and is not in the works. The reason appears to be that nationalistic sentiments are so strong that they prevent the formation of IMI arrangements. In the case of the Koreans, they resent the Japanese because the latter ruled their country for 35 years. In the case of the Japanese, they tend to consider Koreans as inferior. In the case of Switzerland, fear of losing key institutional representations of national identity such as the country's neutrality precludes participation in the EU, even though the EU would be more than happy to have Switzerland on board as the multifarious agreements between the two polities suggest. In the North American case, Canadians, who define themselves as not being Americans, would accept a monetary union with the U.S. if it meant that a new North American currency was created. However, this would be unacceptable to Americans, who oppose giving up their dollar since it is a symbol of the United States' economic and political pre-eminence in the world. It is important to note that the measure of nationalism used in Chapter 3 (time since last dispute) is a crude and poor proxy, which causes the estimated regression coefficients to be negative while our theoretical expectation indicates that they should be positive. This means that in the Japan-Korea and Canada-U.S. cases, recent minor disputes ended up increasing the predicted probabilities that these pairs of countries would form monetary unions while it should in theory have been the opposite and in practice have little or no effect. Unfortunately, a better measure does not exist for such a large sample of countries over such a long period of time.

In spite of these weaknesses or limits, the analyses in this chapter provide additional support for the 7 hypotheses developed in Chapter 2. They also point out

where empirical work on international monetary integration should focus its energies in the future: better measures and data collection on regional hegemony and nationalism.

It is important to remember that we have so far only considered the formation of IMI arrangements. However, the argument in Chapter 2 clearly indicates that it also applies to the sustainability of such arrangements. There is no reason why the factors that determine whether a country originally participates in an IMI scheme should not be the same as those that determine whether a member state continues (or not) to participate after the arrangement has been formed. The same logic should apply in both cases. This is what the next chapter validates.

CHAPTER V

THE SUSTAINABILITY OF IMI ARRANGEMENTS BETWEEN 1960 AND 2000

I. INTRODUCTION

Now that we have established the relevant factors behind the formation of international monetary integration arrangements, it is important to examine the issue of their sustainability. Otherwise, our understanding of the political economy of IMI would be incomplete. In Chapter 4, we looked at the formation of three cases of multilateral IMI arrangements that have survived until now: the CFA, the ECCU, and the EMU. However, there are some IMI cases, both multilateral and unilateral, that have faltered after a time. The cases we examine in this chapter are the East African Community in the early 1970s and Liberia in the 1980s. In these two cases of failure, war (external or internal) caused the end of the IMI arrangements.

In Chapter 2, we argue that the benefits from IMI come from a reduction in transaction costs related to international trade and inflation. We also indicate that the costs of joining an IMI arrangement arise as a result of the need for an autonomous monetary policy to absorb (mainly negative) economic shocks as well as the need to finance government expenditures with seigniorage, which requires control over the issuance of money. In the first case, a government can loosen (tighten) monetary policy if the economy slows down (picks up) in order to keep economic growth and employment stable. In the second case, a government can use seigniorage to quickly and cheaply finance expenditures related to war or domestic instability. Therefore, a government

whose economy is not in sync with that of its potential IMI partner(s) and/or which faces a high probability of being at war or of internal strife will be unlikely to join an IMI arrangement.

We also indicated in Chapter 2 that there is empirical evidence that a common currency increases international trade between IMI partners and that higher trade leads to greater business cycle synchronicity. As a result, IMI solidifies its own base once it is set in motion. This is the case for all the factors affecting the IMI decision. For example, inflation should no longer be an issue after IMI participation. For a control variable such as financial development, it should improve since one of the potential benefits of IMI is financial integration between the member states. Although the sign of the estimated coefficient for this variable was negative in the regression results in Chapter 3, we should expect IMI to be positively associated with financial depth. There is no logical reason why more financial development, which is also generally associated with economic growth, should lead to the demise of an IMI arrangement. What this all means is that that the only factors that may change and, therefore, affect the sustainability of an IMI arrangement are war/peace and domestic in/stability.

In the following sections, we will examine cases of both maintained and failed IMI sustainability in order to determine whether the political economy model developed in Chapter 2 also applies once an IMI arrangement has been formed. However, before performing these analyses, we discuss some of the arguments advanced in the literature about the factors that contribute to the sustainability of IMI arrangements and examine how they fit with our framework.

II. The Political Economy of IMI Sustainability and the Literature

It is possible for countries to join an IMI scheme even if the synchronicity of their business cycle is not yet fully in line with that of their partner(s). This may be because the transaction cost gains associated with bilateral trade and/or lower inflation arising from irrevocably fixed exchange rates are so high that they overcome the loss of monetary policy autonomy to deal with asymmetric shocks to the economy. In such a case, the expectation is that monetary integration will lead to more synchronicity over time. This means that a government will have a strong incentive to break free from the IMI agreement in the early days if its economy experiences a serious slowdown not shared by its IMI partners. This issue is related to the time-inconsistency problem mentioned in Chapter 2 with regards to the need to delegate monetary policy to a credible central bank or monetary authority.

To mitigate this incentive for an IMI member state to regain control, even if temporarily, over the national monetary policy, there are three possible options. First, a hegemon, regional leader, or partner-country can lend (or give) funds to the member state so that it may increase public spending to stimulate its stagnating economy through an expansionary fiscal policy. Second, the member state whose incentive is to break free from the IMI agreement can increase public spending to stimulate its economy by borrowing from capital markets (domestically and internationally). However, this can only be done if the state possesses a sufficient level of economic and financial development. Finally, the institutional design of the IMI scheme can be such that it increases the cost of exit from it. Such a design usually involves an independent supranational central bank (or money authority) with total control over the issuance of a

common currency. Exit from the IMI arrangement in this case is more costly because a member state would have to recreate its own currency and central bank in order to regain full control over monetary policy. In a situation where the common monetary policy is coordinated by national central banks and the national currencies remain in circulation but are fully interchangeable with each other, the cost of exit from the IMI agreement is very low. In such a case, a member state only needs to stop coordinating its monetary policy with that of its IMI partner(s), which is easy since it retains full control over its monetary policy and the issuance of its currency. Thus, the logic of monetary policy delegation to an independent and credible central bank applies as well in the case of IMI arrangements (see Chapter 2 for details).

Strong IMI institutions will only be able to deal with temporary and relatively benign incentives to break away from an IMI scheme (e.g., owing to asymmetric business cycles). In the case where the survival of the state and/or its government is at stake, due to war or domestic instability, such monetary institutions will not make the cost of exit high enough. This is why institutions are said to be weak in this case and a (willing) hegemon or regional leader is necessary and sufficient to ensure the sustainability of an IMI arrangement when a member state needs to resort to seigniorage to help ensure its survival.

In an examination similar to the one performed in this chapter, but without a theoretical framework, Cohen (2001) concludes that a locally dominant state (a "hegemon") and a broad ("sufficient") network of institutional linkages are the factors that matter most for the sustainability of a monetary union. The hegemon uses its influence to keep the union together while institutional linkages provide a feeling of

solidarity (or "community") to the member states. This solidarity makes it harder for the member states to abandon the monetary union since this would mean the end of their membership in the community. As for the institutional design of a monetary union (e.g., whether or not there is an independent supranational monetary authority), Cohen argues that it (he refers to it as the "organizational factors") is important in terms of influencing the potential cost of exit but not determinant in affecting sustainability.

In his study of regional integration, Mattli (1999) also argues that a hegemon (which he calls a "regional leader") is a "strong" commitment mechanism whereas supranational institutions are a "weak" mechanism. He says that supranational institutions are important "in order to improve compliance with the rules of cooperation" (54). However, the regional leader is the crucial commitment mechanism because (1) it serves as the focal point for the coordination of rules, regulations, and policies and (2) it eases distributional concerns between members that may arise over time by providing side-payments. Kindleberger (1973) makes a similar argument regarding the importance of a hegemon for the maintenance of a liberal international economic order that is based on economic openness and financial and monetary stability.

It is clear in the above-mentioned studies of monetary and regional integration that a hegemon or regional leader is the main factor behind the sustainability of an integration scheme. Institutional mechanisms are generally seen as weak and not sufficient to ensure sustainability. If there is no threat of war or domestic instability facing member states, then the sustainability of an IMI arrangement is not in question unless institutional mechanisms are weak and economic cycles are not synchronized. Nor is it in danger if a regional hegemon provides sufficient guarantees and assistance to keep

threats at bay. However, an IMI scheme would not be sustained if war or domestic instability arises and there is no regional hegemon or if the hegemon withdraws its security guarantees and aid when there are external and/or internal threats.

III. Sustained IMI Arrangements

Up to this day, there are three multilateral IMI arrangements that have been sustained since their creation: the CFA, ECCU, and EMU. In the first two cases, a regional hegemon has played an important role in keeping the IMI agreement alive. In the last two cases, strong monetary institutions have also played important roles in raising the cost of exit in light of temporary and relatively benign incentives to adopt a more autonomous monetary policy.

A. The Sustainability of the CFA

In Chapter 4, we saw that the African CFA franc zone continued to exist after decolonization even if the level of trade and economic integration between the member states was low. It did so because France, as the old colonial master, offered economic and security compensations to the former colonies that decided to remain within the CFA. This support significantly lowered the cost of IMI. This situation has not changed to this day and explains why the CFA is still alive. In addition, France has also compensated for the weakness of the CFA's monetary institutions, which has allowed many member states to act as if they still possessed some degree of monetary policy autonomy.

Stasavage and Guillaume (2002) argue that, in general, the cost of reneging on a monetary commitment, whether domestic or international, is higher when a government

risks losing the benefits associated with parallel agreements. In the case of the CFA, the authors show that all the CFA member states received economic and security assistance from France through the *Accords de coopération*. These close security and economic ties between France and the CFA member states lasted throughout the Cold War and remain in place, in some form or another, today (Martin 1995; Gregory 2000). The reason for France's continued involvement in its former African colonies is based purely on national self-interest: natural resources, export markets for its manufactured goods, promotion of the *francophonie* (or French-speaking world), and maintenance of its status as a power to be reckoned with in the international system (Martin 1995, Stasavage 2003a).

In terms of security, "[t]hese arrangements have allowed France to maintain hegemony and regional stability by force if necessary, a power France has not hesitated to exercise" (Gregory 2000, 437). According to Gregory (2000, 437), French military interventions in the CFA member states between 1960 and 1994 include those in Senegal (1962), Gabon (1964 and 1990), Chad (1968-1972, 1978, 1983, and 1986), Central African Republic (1979), Togo (1986), and Benin (1991). Since 2000, French troops have also been involved in Côte d'Ivoire, to protect French civilians and prevent the country from degenerating into an all-out civil war. In 1995, France had military agreements with all 13 CFA member states. It also had permanent standing troops (*missions de présence)* in five of these states: Cameroon, Gabon, Côte d'Ivoire, Central African Republic, and Senegal (Gregory 2000, 438). Furthermore, France set up a *Force d'action rapide* (44,500 troops) in 1993. This rapid reaction force is capable of intervening at short notice anywhere in Africa from bases located in France (Martin 1995, 13). The importance of the French military for the CFA member states was not limited to its presence or

intervention in case of crisis: the armies of CFA member states were "functionally dependent on France" since they were equipped and trained by the French military (Gregory 2000, 438).

> French leaders tend to link the concepts of security and development by arguing that their military assistance has contributed to the stability, and hence the economic benefit, of all concerned. In fact, their objective in creating African national armies at the time of independence was to ensure that these would work closely with French units and effectively serve as branches of the French army overseas (Martin 1995, 13).

According to Martin (1995, 11), French official development assistance (ODA) to sub-Saharan Africa represented 70 and 80 percent of all ODA to the region in 1985 and 1990, respectively. As per Table 5.1, France's ODA to CFA member states averaged 3.52 percent of the member states' annual GDP over the period 1960-2000. In some cases, it reached 6 percent of GDP. And these expenditures exclude all military assistance. Although there has been a process of multilateralization of the aid to the region in recent years (Martin 1995), France still maintains its dominant role. As we will see below, France paid all arrears owed to the IMF and World Bank by CFA member states during the economic crisis of the early 1990s, which led to CFA franc's devaluation in 1994.

In addition to providing economic and military assistance to the CFA member states, France has also played an important role in supporting the CFA's weak monetary structure. In effect, it has kept the cost low of not having an autonomous monetary policy to deal with asymmetric shocks to the economy. As mentioned in Chapter 4, the CFA franc zone consists of two monetary unions: the Western African Monetary Union (WAMU) and the Central African Currency Area (CAMA). Each union has a central bank that issues its own CFA franc, which is legal tender only within its own region.

However, the two CFA francs are interchangeable at a rate of one to one. As Cohen (2001) indicates, "the two are equivalently defined and have always been jointly managed under the aegis of the French Ministry of Finance as integral parts of a single monetary union" (187).

Table 5.1
French Overseas Development Aid as a % of CFA Member State GDP
(Average for 1960-2000)

CFA Member State	%
Benin	2.24
Burkina Faso	3.28
Cameroon	1.74
Central African Republic	5.76
Chad	3.69
Republic of Congo	5.38
Côte d'Ivoire	2.38
Equatorial Guinea	6.19
Gabon	2.24
Guinea-Bissau	2.54
Mali	3.57
Niger	3.29
Senegal	4.04
Togo	2.96
Average	*3.52*

Source: OECD

The WAMU's and the CAMA's central banks were formally established in 1962. The two banks are responsible for the issuance of the CFA franc and the conduct of monetary policy in their respective area. In combination with the creation of these institutions, bilateral accords were undertaken between France and the African countries stipulating that rules and regulations in monetary matters were to be harmonized with French regulations. Each country also had to open an "operations account" with the

French Treasury to settle foreign currency receipts and payments, which meant that the CFA's foreign exchange reserves were held exclusively in French francs.[78] In addition, France took part in the governance and management of the central banks. It held one third of the seats at the WAMU's central bank and half of the seats at the CAMA's. Most of the department heads of the two central banks were French, including the Managing Director. The headquarters of the two central banks were located in Paris, with branches in the member states' capitals. In return for these measures, France guaranteed the CFA franc's automatic convertibility with the French franc and, consequently, with other currencies.[79] Convertibility was ensured through unlimited overdrafts on their operations account in case of deficit. In the words of Nana-Sinkam (1978), member "[c]ountries were thus let off from the day-to-day cares of financing and adjusting their deficits" (79). This is why Parmentier and Tenconi (1996, 41) argue that it was easier for the African countries to agree to limit their newly-obtained sovereignty with respect to monetary matters.

The Banks' original statutes were not explicit about their objectives and made no reference to price stability; however, they limited the amount of credit that could be extended to member states' governments. In the words of Bhatia (1985), "[they] appeared to have rather more concern with maintaining the liquidity of the bank[s]" (7). They were authorized to make only short-term advances to the treasuries of the member states, with

[78] In practice, the central banks held all the foreign exchange reserves of the member states. As a result, there were only two effective operations accounts at the French Treasury.

[79] This meant that the French Treasury would exchange any amount of CFA francs at the fixed parity with the French franc.

a maximum of 10 percent of the previous year's fiscal revenues.[80] In exchange, the banks could not refuse to extend credit to the governments' treasuries so long as the statutory ceiling had not been exceeded (Bhatia 1985, 9).[81] Thus, the central banks played a very restricted role in providing financing to member states' governments in the first period of the CFA's life (see Robson 1967, 47). For example, between 1963 and 1973 the WAMU's member states' governments used on average 22.3 percent of the BCEAO's credit available to them (Bhatia 1985, 24). On the other hand, there was little need for the central banks to extend credit to the member states to finance budget deficits since France continued to offer a significant degree of development financing to the member states, as long as they accepted a strict policy of monetary management (see Robson 1967, 51).

Even though the initial arrangement functioned relatively well for about a decade, member-states' leaders began demanding that their monetary institutions become more "African" at the beginning of the 1970s. They felt that the central banks' limits on budget deficit financing and their general conservative monetary management restricted their economic development, which they believed should be driven by state spending (van de Walle 1991, 390).[82] Consequently, France and the CFA member states agreed to modify the institutional structure of the CFA's monetary management and governance in 1972-1973. Central bank headquarters were moved to Dakar (WAMU) and Yaoundé (CAMA). Bank personnel and management began to be "Africanized" and the governance of the

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[80] The WAMU,s central bank's maximum was changed to 15 percent in December 1968, mainly because Benin and Niger were experiencing severe fiscal difficulties (Bhatia 1985, 24).

[81] It is worth mentioning that the statutory limits of the WAMU's central bank did not apply to state enterprises, which were governed by private sector statutory policies (Bhatia 1985, 25). Nevertheless, it did not have an important impact on the WAMU's monetary management, at least not until the second half of the 1980s.

[82] CFA member states also resented France's lack of consideration towards them (e.g., France devalued the French franc in August 1969 without consulting or warning its CFA partners) (van de Walle 1991, 390).

banks fell under the ultimate authority of heads of state (WAMU) or finance ministers (CAMA). The ceiling for extending credit to member states' governments was increased to 20 percent of the previous year's revenues and preferential interest rates could now be offered for certain types of credit (e.g., small and medium-sized national enterprises, housing construction, and seasonal credit). The central banks could also impose certain minimum lending ratios on commercial banks to make sure that they would extend financing to national enterprises (Bhatia 1985, 29). With greater control over the CFA's central banks now, the member states were in a position to influence the common monetary policy to favor economic development rather than price stability. Nevertheless, the French Treasury maintained its convertibility guarantee, giving the CFA member states what amounted to a blank check to fund their activities.

This system worked well economically until the mid-1980s. Before then, the WAMU's operating account deficit was financed from the CAMA's surplus, which was partly a result of high oil prices. Therefore, the French Treasury did not have to intervene to maintain the convertibility of the CFA franc. Furthermore, the CFA member states benefited from France's competitive devaluations of the French franc against world currencies, which took place regularly in the late 1970s and early 1980s. The CFA economies began to falter when the French government adopted its "*franc fort*" policy in 1984. This policy consisted of keeping the franc pegged to the German mark in order to gain monetary credibility with financial markets and thereby stop the flow of capital out of France as controls were being eroded (see Goodman and Pauly 1993). As a result, the competitiveness of the CFA's economies started to suffer.

At the same time, the U.S. dollar began its long-awaited depreciation, following the Plaza Agreement in September 1985. Between 1985 and 1993, the CFA franc appreciated nominally against the U.S. dollar by 4.15 percent per year on average, totaling a 37 percent appreciation for the period. The international competitiveness of the CFA member states' (commodity) products, often priced in U.S. dollars, was now further undermined. As a result, the CFA's terms of trade dropped by 35 percent between 1985 and 1993 (Parmentier and Tenconi 1996, 157). This competitiveness problem was further compounded by the fact that many of the CFA's neighbors, such as Gambia, Ghana, Nigeria, and Zaire (now Congo), decided to float their currencies around that time (van de Walle 1991, 393). The massive devaluations that ensued turned these neighbors into fierce competitors with the CFA countries in primary commodity markets. Finally, the CFA's competitiveness and terms of trade problems were made even more serious because world market prices for many of the primary commodities they exported suffered a sharp decline.

As a result of years of state-led economic development and corruption, most of the member states, especially the largest ones such as Côte d'Ivoire and Cameroon, were ill-equipped to deal with such external shocks to their economies. The situation in the CFA was already shaky before the external shocks of the mid-1980s. There was a general problem of fiscal indiscipline (Parmentier and Tenconi 1996; Stasavage 1997). The member states, especially the larger ones, were able to use their influence over the CFA central banks to finance their deficits once foreign investors were no longer willing to provide financing. Although some states managed to breach the 20 percent limit on direct borrowing from the BCEAO and BEAC, the main source of financing for CFA

governments came from commercial and development banks, which were for the most part under government control (Parmentier and Tenconi 1996; Stasavage 1997). In fact, this was an indirect way of obtaining financing from the central banks since these banks financed themselves at the central banks.[83] This type of financing was not taken into account in the governments' credit limit of 20 percent of the previous year's revenues. CFA governments also financed their excessive spending by accumulating arrears with, first, domestic suppliers and creditors and, eventually, with the IMF and World Bank.

In light of this economic crisis in the CFA, the French government came to the rescue. Its goal was to ensure that the CFA member states would remain politically stable. The French government therefore quadrupled its non-project aid to CFA governments between 1986 and 1989 (Stasavage 1997, 152). According to Hugon (1999, 99), half of the financial aid provided by France during that period was to cover the CFA governments' operating expenditures. Moreover, the French Treasury provided additional financing to the CFA member states' governments through the operations account between 1987 and 1989. Van de Walle (1991, 393) reports that an estimated 20 billion French francs was provided by France to support the CFA franc's parity. This is because both the WAMU's and the CAMA's operations accounts were now in deficit. In a recent study, Yehoue (2005) finds that foreign aid from France smoothed 44 and 63 percent of shocks to GDP of WAMU and CAMA member states, respectively.

Although the French Treasury raised serious concerns about the situation in the CFA, it was prevented from taking action by French political leaders and administrators, who considered short-term political stability in the CFA member states to be more

[83] Vallée (1989, 7) refers to this political meddling in credit management as "*les dévergondages du crédit*" (the licentious use of credit).

important than fiscal stabilization (Stasavage 1997). This unsustainable situation led to the CFA franc's devaluation by 50 percent in January 1994.[84] CFA economies were therefore able to recover their international competitiveness. This was accompanied by IMF and World Bank programs, backed by France, to support macro- and microeconomic reforms.

Table 5.2
French Overseas Development Aid as a % of CFA Member State GDP
(Average 1994-2000)

CFA Member State	%
Benin	2.17
Burkina Faso	3.67
Cameroon	2.39
Central African Republic	4.18
Chad	3.57
Republic of Congo	6.88
Côte d'Ivoire	3.44
Equatorial Guinea	2.73
Gabon	2.22
Guinea-Bissau	2.67
Mali	3.37
Niger	4.49
Senegal	4.64
Togo	2.82
Average	*3.52*

Source: OECD

With CFA economies recovering, France was happy to let multilateral institutions such as the IMF and the World Bank provide the CFA with the required economic and technical assistance. Many saw this as a "normalization" of the relations between France and its former colonies. It even became known as the "Abidjan doctrine" (Hugon 1999,

[84] According to Devarajan (1997), prior to the 1994 devaluation of the CFA franc, the real exchange rate of the CFA member states was about 30 percent overvalued on average.

101). However, looking at the level of bilateral aid from France to the CFA member states in Table 5.2, we note that on average during the post-devaluation period (i.e. 1994-2000) it did not change as a percentage of CFA member states' GDP from the overall 1960-2000 period. Therefore, France continued its support of the CFA member states even after the devaluation and the supposed multilateralization of its relationship with its former African colonies.

Looking at the CFA's experience since 1960, we conclude that France, as the regional hegemon, has been the key factor behind the monetary union's sustainability until today. France played its role at three levels. First, it provided the CFA member states with overseas development assistance that helped finance government expenditures. Second, France provided military assistance and guarantees to the CFA member states. In fact, it ensured their external security and internal stability through aid and intervention. Finally, it maintained the convertibility of the CFA franc by financing the deficits of the operating accounts that the WAMU and CAMA held with the French Treasury. This allowed CFA governments to use the monetary union's central banks to fund their extensive budget deficits.

B. The Sustainability of the EMU

In January 1999, the euro was introduced and the EMU finally took flight with eleven EU member states on board.[85] More than six years later, the euro is still with us and the EMU is generally viewed as a success story. Inflation has been low and economic growth has been positive, even though it has slowed down since reaching a ten-year high in 2000. A twelfth member (Greece) was added in January 2001. The only problem is fiscal policy:

[85] Euro bank notes and coins were introduced in January 2002.

France and Germany have recently challenged their obligations under the Stability and Growth Pact (SGP) by refusing to bring their budget deficits below the three percent limit. Nevertheless, the sustainability of the EMU as an IMI arrangement is not at risk. Even the recent rejection of the EU's proposed constitution by the French and the Dutch in successive referenda has not endangered the EMU, although it did lead to a depreciation of the euro vis-à-vis other major currencies (see discussion in Chapter 6).

The reasons behind this sustainability are threefold. First, EMU member states do not face any threat of war at this time. Second, they are politically stable. These two factors imply that the EMU member states have not faced any significant incentives to exit the monetary union. Finally, the EMU possesses a set of supranational monetary institutions that are very strong while their economies are generally fairly synchronized. It is, therefore, more difficult (costly) for EMU member states to revert back to a national monetary policy in the (not so likely) event that they face negative asymmetric economic shocks. In any case, it is clear that the regional leader, namely Germany, has not played any role in sustaining the EMU since its inception in January 1999.

In the introduction to this chapter, we argued that unless the institutional design of an IMI arrangement was weak and economic shocks were experienced asymmetrically, the only two factors that could get a government to renege on its commitment to monetary integration were (the threat of) war and/or domestic political instability. It is only if a government needs to resort to seigniorage to finance these additional expenditures that it will attempt to exit the IMI agreement in order to recover full control over the issuance of money. In the case of the EMU, domestic political instability and the threat of military conflict have been low since the euro was introduced at the beginning

of 1999. In Table 5.3, we can observe that on average for the period 1999-2003 (the latest year for which data are available) military spending as a percentage of GDP (a proxy measure for the threat of war) was 1.7 while domestic instability (as measured by the weighted conflict index computed by Banks' Cross-National Time-Series Archive) was 1236. If we compare these figures with the averages for the entire dataset used in Chapter 3, we see that they are well below those found in the dataset. For military spending, the average for the dataset is 4.2 percent of GDP while the average for domestic instability is 2,813. Thus, the level of external and internal challenges faced by EMU member states has been low.

With respect to military expenditures, only Greece spends an amount above the dataset average. This is because of its on-going animosity with Turkey, especially regarding abandoned islands in the Aegean Sea. France was the second largest military spender during the 1999-2003 period. The reason is that it has a significant military presence in sub-Saharan Africa, as we saw above when we discussed the sustainability of the CFA franc zone. In addition, France has a number of overseas territories scattered around the world that require protection. However, this military spending by Greece and France is easily financed without resorting to seigniorage. Moreover, it relates to situations that existed before the countries agreed to join the EMU.

Table 5.3
Military Expenditures and Domestic Instability in the EMU
(Average for 1999-2003)

EMU Member State	Military Expenditure (as a % of GDP)	Domestic Instability (weighted conflict index)
Austria	0.80	2,722
Belgium	1.35	120
Finland	1.22	0
France	2.58	1990
Germany	1.49	500
Greece†	4.47	209
Ireland	0.70	1,500
Italy	2.01	1,757
Luxembourg	0.78	0
Netherlands	1.64	800
Portugal	2.11	0
Spain	1.22	5,227
Average	1.70	1,236

† 2000-2003
Sources: World Development Indicators online, World Bank; Banks' Cross-National Time-Series Data Archive

The EMU's average value of domestic instability for the period 1999-2003 is the equivalent of half a peaceful anti-government demonstration per year or less than three general strikes per year.[86] If it were not for the instability related to the Basque separatist movement in Spain (assassinations, guerilla warfare and revolution), the frequent general strikes and anti-government demonstrations in France, and the upheavals created by the rise to prominence of Jörg Haider's right-wing party in Austria in 2000, the EMU average for the period in question would be even lower. In most cases, instability is

[86] The weighted conflict index is made up of the following weights: assassinations (300), general strikes (537), guerrilla warfare (575), government crises (600), purges (1075), riots (1275), revolutions (1850), and anti-government demonstrations (2500).

caused by anti-government demonstrations, general strikes, and government crises, which are events that EMU member states can easily afford to deal with without resorting to seigniorage. And in the case of Spain, the Basque separatist movement was already at work when Spain decided to participate in the EMU, so nothing has changed that would cause the Spanish government to change its mind about participating in the EMU.

War and instability are not issues threatening the sustainability of the EMU, nor is the institutional design of the EMU. The statutory independence of the European Central Bank (ECB) and the European System of Central Banks gives the institutions total control over the EMU's monetary policy and the issuance of the euro. This means that a member state would need to withdraw completely from the EMU and reestablish a national monetary system with a national currency in order to have an autonomous national monetary policy, which is a high price to pay for trying to offset a temporary economic slowdown (which are often shared by its partners).

Although economic growth in many EMU member states has stagnated since 2001, the pressures to reflate their economies have not been sufficiently strong to justify politically recreating a national monetary system with a national currency. In fact, those pressures have been exerted over the SGP, which aims to limit "excessive" budget deficits (i.e. above 3 percent of GDP) by government so as not to destabilize the euro. The justification by governments such as those of France and Germany has been that they need to expand their fiscal policies beyond the SGP's limit in order to stimulate their stagnating economies precisely because they cannot use monetary policy, which is now run by the ECB for the entire euro-zone. The EMU governments eventually agreed to relax the SGP rules in order to ensure that the political pressure put on the SGP by

member states' rising unemployment would not spill over to the ECB and the Union's monetary policy institutions. As a result, euro-zone governments have clearly demonstrated that they remain strongly committed to sustaining the EMU.
Thus, the EMU's sustainability so far is a result of peace, relatively high domestic political stability, and strong supranational monetary institutions.

C. The Sustainability of the ECCU

The story behind the East Caribbean Currency Union's sustainability since its inception is similar to that of the EMU, except that the United States, as the regional hegemon, plays an important supporting role. For ECCU member states, war and domestic political instability since 1983, when the ECCU was created, have not been major issues. Moreover, the ECCU's strong supranational institutional design makes it more difficult for a member state to renege on its IMI commitment in order to deal with short term economic fluctuations.

Unfortunately, data on military expenditures for the ECCU member states are not available. Therefore, we cannot measure the extent to which these countries have faced security threats since the ECCU fully came into being. But as mentioned in Chapter 4, the level of threat is very low. The United States is mainly responsible for external security in the region while the East Caribbean Regional Security System (RSS), led by Barbados but financially and technically supported by the U.S., is mainly responsible for ensuring the internal stability of East Caribbean states. Nevertheless, the RSS works closely with the U.S. military (operations, training, joint exercises, etc.). In the mid-1980s, U.S. concerns had more to do with defending the islands against the threat of communism and

preventing the Soviet Union from expanding its influence in the region. Today, drug trafficking and terrorism are the major U.S. concerns. Thus, the United States, as the regional hegemon, plays an important role in ensuring the security of the ECCU member states, which helps maintain the cost of monetary integration low.

Domestic political stability has also contributed to keeping the cost of IMI low for the ECCU member states, thereby ensuring the sustainability of the monetary union until now. In Table 5.4, we can see that ECCU member states have been havens of stability. General strikes and peaceful anti-government demonstrations are for the very large part responsible for the instability.

Table 5.4
Domestic Political Instability in the ECCU
(Average 1984-2000)

ECCU Member State	Domestic Instability (weighted conflict index)
Antigua & Barbuda	1,048
Dominica	369
Grenada	182
St. Kitts & Nevis	776
St. Lucia	n/a
St. Vincent & Grenadines	329
Average	*541*

Source: see Chapter 3

Like the EMU, the East Caribbean Central Bank (ECCB) possesses strong monetary institutions, which have contributed to the monetary union's sustainability. The ECCB has a high degree of independence from member state government interference in the conduct of the common monetary policy.[87] It has the sole right to issue the common currency, the East Caribbean dollar. It also administers the common reserve pool, which

[87] The description of the ECCU's institutional design is based on van Beek et al. (2001).

consists of the foreign exchange remitted by the member states. Moreover, the ECCB must ensure that the common reserve pool accounts for at least 60 percent of its demand liabilities (currency in circulation and private sector bank deposits at the ECCB). In practice, this foreign exchange backing ratio has been above 80 percent.[88] This puts a limit on the amount of credit that the ECCB may extend to member state governments. In effect, domestic assets cannot represent more than 40 percent of the Bank's demand liabilities. The ECCB also has total discretion over the extension of credit to member state governments. In addition, the ECCU's Articles of Agreement impose specific limits on the type and amount of credit that the ECCB may extend. Finally, the governance structure of the ECCB also gives it a high degree of independence from political interference from member state governments. The Board of Directors of the ECCB is responsible for the general operations of the Bank. Its members, including the Governor and Deputy Governor, are appointed for five-year terms by the Monetary Council. With such a supranational institutional design in place, ECCU member states cannot influence the Union's monetary policy in their favor nor can they temporarily exit the agreement to cater to short-term economic fluctuations. The ECCU's institutional structure has therefore contributed to its sustainability until now.

To sum up, the ECCU's sustainability has been the result of peace, stability, and strong monetary institutions, very much like that of the EMU. The only difference in this case is that the United States, as the regional hegemon, is ultimately responsible for the ECCU's security and stability, thereby greatly reducing the cost of IMI to the islands.

[88] Van Beek et al. (2001, 56) refer to this situation as a "quasi-currency board" arrangement.

IV. Failed IMI Arrangements

In the previous section, we showed that IMI arrangements are sustainable if they are supported by a regional hegemon in case they face war and/or domestic political instability (or a reasonable threat of such situations) and have no real means of rapidly financing the fight against these challenges other than through seigniorage. This was and still is the case in the CFA franc zone and was the case in the early years of the ECCU. Otherwise, peace and domestic political stability are prerequisites for IMI sustainability, as has been the case in the EMU since its inception and the ECCU for nearly two decades. We also found that strong supranational monetary institutions are important for sustaining an IMI arrangement, in order to prevent short-term asymmetries in business cycles from undermining the monetary agreement, as in the ECCU and, to a much lesser extent, the EMU. Otherwise, a regional leader or hegemon is necessary to finance the extra government spending aimed at stimulating the economy. This has been the case in the CFA with France supporting the member states financially through bilateral aid amounting to 3.5 percent of member states' GDP on average. The political economy model of IMI developed in Chapter 2 also explains why IMI arrangements are sustained over time.

In this section, we examine how the model can be useful in explaining failed IMI schemes such as those in the East African Community and Liberia. In these two cases, war and instability were the key factors in the IMI arrangements' demise.

A. IMI Failure in the East African Community

As mentioned in Chapter 4, the EAC was created in 1967 and included a common market and a monetary union. The latter did not involve the creation of a common currency or a supranational central bank. Each member state remained responsible for the issuance of its own money. However, each currency could be exchanged at par and without controls for all current account transactions. Exchange controls could be legally imposed on capital account transactions if deemed necessary for economic development purposes. The governors of the three national central banks were to meet at least four times a year to coordinate their monetary policies.

During the first three years of the EAC, the monetary union functioned relatively smoothly. Things began to go awry in May 1970 when Uganda introduced exchange controls against its two partners, effectively banning the import and export of the Ugandan schilling. This policy was adopted to stop the outflow of capital that resulted from a presidential announcement on a nationalization policy for Uganda (Hazlewood 1975, 138). The military coup that replaced President Obote by General Amin in January 1971 only exacerbated pressures for capital to flow out of Uganda. As a result, capital controls remained in place. The refusal by President Nyerere to recognize Amin's leadership, owing to his close friendship with Obote,[89] prompted Tanzania to retaliate with its own ban on the import and export of its currency to Uganda and Kenya in March 1971. To prevent a speculative attack on its own currency, Kenya followed suit a few days later.

[89] Nyerere gave refuge to Obote in Tanzania.

The imposition of capital controls by all three EAC member states effectively marked the end of their monetary union. Although the three currencies remained officially pegged to each other, the exchange rates in parallel markets fluctuated widely.[90] Between 1967 and 1971, the average monthly exchange rate volatility in parallel markets between EAC currencies was 0.36 percent; between 1971 and 1977, the average volatility was 3.33 percent (see Table 5.5). The weak nature of the EAC's monetary institutions explains why it was so easy for the member states to revert back to an autonomous national monetary policy. There was no common currency or independent supranational authority to control it. The EAC's monetary union was based on the coordination of monetary policies by national central banks. If this coordination stopped, then the monetary union did too. Nominal exchange rates remained pegged to each other (and the U.S. dollar) only because capital controls had been imposed to prevent capital flight.

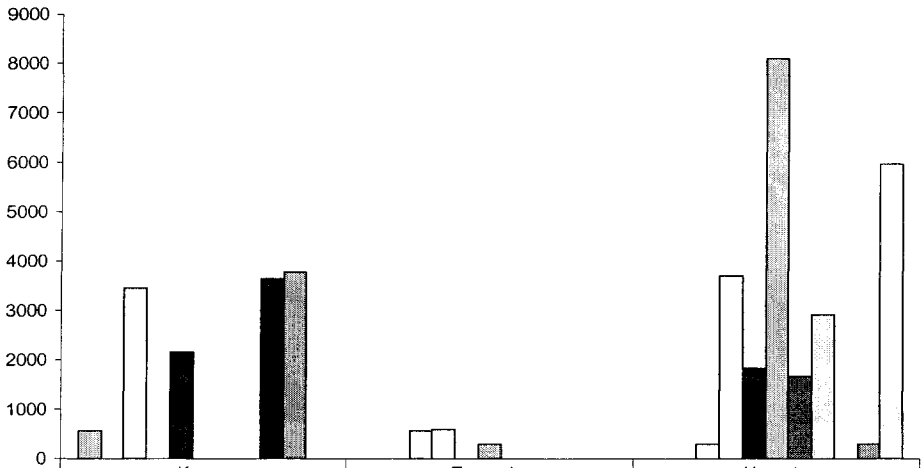
Table 5.5
Exchange Rate Volatility in the EAC (Parallel Markets)

Member State Pairs	1967-1971	1971-1977
Kenya – Tanzania	0.24%	2.21%
Kenya – Uganda	0.54%	4.10%
Tanzania – Uganda	0.31%	3.68%
Average	**0.36%**	**3.33%**

Source: see Chapter 3

[90] Until 1971, the three East African currencies were pegged to the British pound. Afterwards, they were officially pegged to the U.S. dollar.

Figure 5.1
Domestic Political Instability in the EAC, 1967-1977



	Kenya	Tanzania	Uganda
1967	575	0	0
1968	0	0	0
1969	3450	575	300
1970	0	600	3700
1971	2150	0	1850
1972	0	300	8100
1973	0	0	1675
1974	0	0	2925
1975	3650	0	0
1976	3775	0	300
1977	0	0	5975

Source: see Chapter 3

The instability created by General Amin's coup in Uganda and the ensuing animosity between Uganda and its EAC partners made it impossible for the EAC's monetary union to recover. It officially ended in 1977 when the EAC itself was disbanded. In Figure 5.1, we can observe that Kenya and Tanzania were generally stable while Uganda experienced much more instability between 1967 and 1977.

Kenya was most unstable in 1969, when it experienced civil unrest related to the assassination of government minister Tom Mboya. This led to the banning of the KPU (Kenya People's Union), the opposition party, and the arrest of its leader, Jaramogi

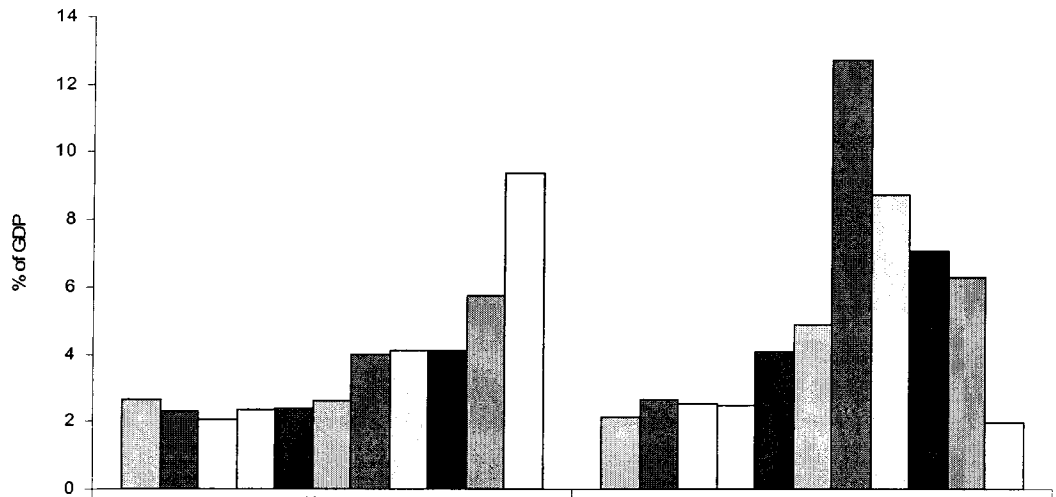
Oginga Odinga. Hence, Kenya's president, Jomo Kenyatta, consolidated his power as the party he led, KANU (Kenya African National Union), became the country's sole political party. Afterwards, Kenya generally returned to stability. Exceptions were related to Kenyatta further consolidating his leadership. Kenya's instability in 1969 did not cause it to exit the EAC's monetary union because Kenyatta was able to consolidate his power rapidly.

General Amin's coup in Uganda in 1971 sounded the EAC monetary union's death knell. First, it created a great deal of instability in Uganda, both before and after the coup as Amin consolidated his power (see Figure 5.1). More important, though, it led to a military build-up in the region (see Figure 5.2).[91] There were also frequent military disputes involving high levels of hostility between Uganda and its EAC partners. For example, Tanzania supported Obote's attempt to reclaim power in Uganda in 1972. This friction culminated in the war between Tanzania and Uganda in 1978-79, leading to Amin's removal and the eventual return of Obote. Given its military expenditures and instability, it was not possible for Uganda to continue participating in the EAC monetary union. Although there are no data available regarding seigniorage, the money supply, or inflation in Uganda for the 1967-1977 period, the dataset used in Chapter 3 tells us that the Ugandan schilling depreciated by about 150 percent over the same period relative to the U.S. dollar. This is probably a result of seigniorage and the inflation that accompanied it. As for relations between Tanzania and Kenya, they also deteriorated since Kenya originally supported Amin over Obote, even forcing the latter to leave Nairobi upon his demise by Amin. However, these poor relations did not lead to any

[91] No data on military expenditures over GDP are available for Tanzania during the period between 1967 and 1977.

military hostilities. In any case, the instability created by Amin in Uganda was enough for each country to want to maintain total control over its monetary policy and national currency.

Figure 5.2
Military Expenditures in the EAC, 1967-1977



	Kenya	Uganda
1967	2.67	2.14
1968	2.32	2.65
1969	2.04	2.54
1970	2.36	2.49
1971	2.4	4.07
1972	2.6	4.87
1973	3.99	12.7
1974	4.12	8.74
1975	4.11	7.08
1976	5.75	6.28
1977	9.36	1.97

Source: see Chapter 3

To summarize, the EAC's monetary union between Kenya, Tanzania and Uganda failed as a result of domestic political instability and the threat of military conflict between Uganda and its EAC partners. In contrast to the CFA franc zone, with France underwriting member states' development, stability and security, EAC member states

could not count on the their former colonial master, the United Kingdom. The U.K. had expressly sought their independence as a way of becoming less involved in the region. Britain had no intention of playing the role that France played in the CFA. Finally, the weakness of the EAC's monetary institutions made it easy for each member state to recover full control over its monetary policy and national currency.

B. IMI Failure in Liberia

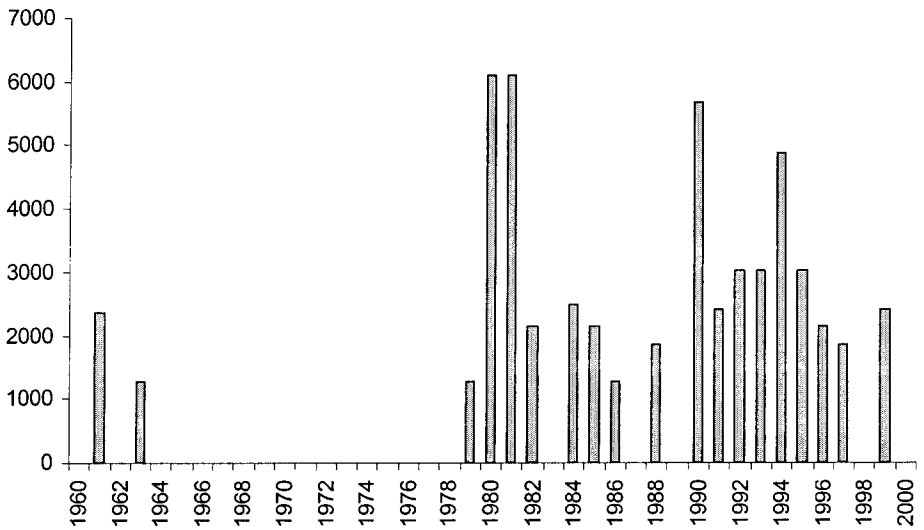
Liberia's use of the U.S. dollar as legal tender dates back to its creation in the 19th century by freed American slaves with U.S. backing.[92] Until 1944, when it ceased to be the country's legal tender, the British pound circulated alongside the dollar. Between 1944 and 1988, the dollar was the only currency in circulation, except for a limited number of coins (Reinhart and Rogoff 2002, 80).

Following a coup in 1980 that put an end to 130 years of American settlers' domination of the political scene and relative stability, Liberia fell into a dark period of political infighting that eventually led to a bloody civil war in 1990 (see Figure 5.3). The war ended in 1997 but erupted again in 2002 and went on until the summer of 2003 when President Charles Taylor went into exile in Nigeria. The political instability brought about immediate economic decline. Between 1980 and 1995, the Liberian economy declined without interruption at an average rate of 12.8 percent annually. This led Liberia to default on its debt in 1984, after four years of rescheduling. The instability and the human rights abuses by the Liberian government of Samuel Doe led bilateral donors, of which the U.S. was the largest, to significantly reduce the amount of aid given to Liberia.

[92] From 1821 onwards, freed slaves were resettled along the Liberian coast. The Republic of Liberia was officially created in 1847.

The World Bank also suspended any new operations with Liberia in early 1988. The reduction in foreign aid flows combined with large outflows of capital led to a serious deterioration of the balance of payments. According to the Economist Intelligence Unit (2003b), foreign reserves fell to the equivalent of one day of imports in 1987 and 1988. This forced the creation of parallel currency markets and the end of the dollar as the sole legal tender currency circulating in Liberia in 1988 (Reinhart and Rogoff 2002, 80).[93]

Figure 5.3
Domestic Political Instability in Liberia



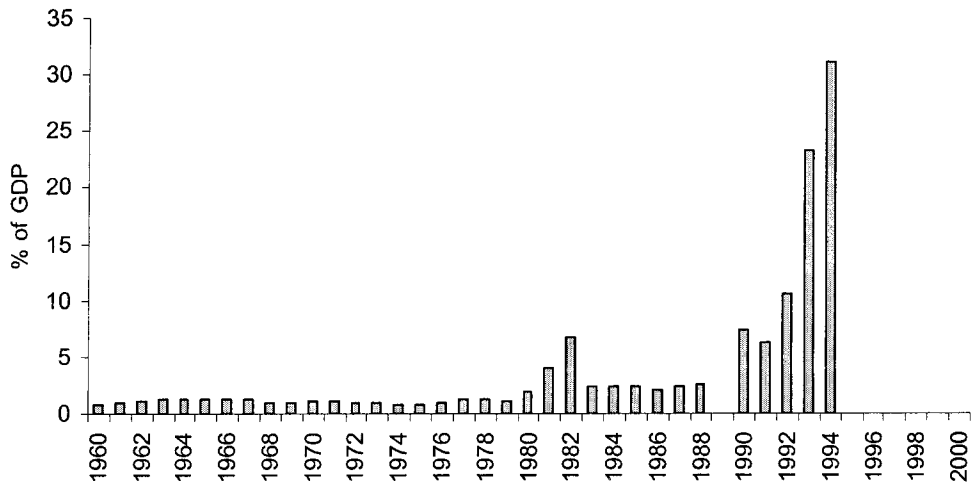
Source: see Chapter 3

With the ongoing instability created by the civil war, the rapidly declining economy, and the large increases in military spending that ensued (see Figure 5.4), it was impossible for the Liberian government to reinstate the unilateral IMI arrangement it had had with the U.S. dollar. This was in spite of a sharp increase in foreign aid in 1990;

[93] JJ Roberts notes were printed between 1988 and 1992 while Liberty notes were introduced in 1992 (Reinhart & Rogoff 2002, 80).

however, this aid was mainly for food and medical supplies (Economist Intelligence Unit 1996, 81). Until 1997, Liberian bank notes were officially pegged to the U.S. dollar. Nevertheless, the exchange rate continued to depreciate in parallel markets as a result of the incessant increase in the Liberian money supply.[94] When the official exchange rate was eventually devalued in 1997, it was so by 3,925 percent (Reinhart & Rogoff 2002, 80). In brief, instability in Liberia made it impossible to sustain dollarization.

Figure 5.4
Military Expenditures in Liberia, 1960-2000



Note: Data for 1989 and 1995-2000 are not available.

Source: see Chapter 3

V. Conclusion

The EAC and Liberian examples demonstrate that domestic political instability and the threat of inter-state military conflict significantly increase the cost of participating in an

[94] Between 1989 and 1994, the Liberian money supply (M2) increased 2.6 times (Economist Intelligence Unit 1996, 77).

IMI arrangement, to the point where they overcome the long-term benefits. This is because high levels of domestic instability and/or military conflict threaten the survival of the government in power, if not the state itself. In such a case, a government's discount rate of future benefits arising from an IMI arrangement becomes so low that the net present value of those benefits tends to zero. Therefore, a government has no incentive to remain in an IMI arrangement if it puts its survival and that of the state it leads at risk. Unless it has other means of financing the additional expenditures stemming from the instability and the threat of war (e.g., through a regional hegemon), a government will abandon its participation in an IMI arrangement in order to be able to resort to seigniorage to finance its spending.

In the case of the CFA and the ECCU, there are regional hegemons (France and the United States, respectively) that provide security and economic aid and guarantees to prevent a government from having to abandon an IMI arrangement in order to rely on seigniorage to finance expenditures related to fighting domestic political instability and military conflicts. In the case of the EAC and Liberia, the potential regional hegemons (the United Kingdom and the United States) chose not to provide the necessary security and financial support. (The reasons for a hegemon's decision to provide sufficient security and economic aid and guarantees are beyond the scope of this study.) In the case of the EMU, the sustainability of the IMI arrangement has been assured by peace and relative domestic political stability.

Although instability and military conflict have the potential to derail an IMI arrangement and a hegemon has the power to prevent such a situation, strong supranational monetary institutions also play an important, albeit weaker, role in

preventing member states from using the national monetary policy to compensate for short-run (negative) economic fluctuations. The EMU is a good case in point since problems related to poor economic growth in many member states have been dealt with at the SGP level rather than the ECB. In cases where no such institutions are present and economic cycles are not synchronized, a hegemon becomes necessary to ensure the sustainability of the IMI arrangement throughout periods of asymmetric business cycles between the member states. This has been the case in the CFA franc zone with France underwriting the convertibility of the CFA franc through the funding of deficits in the operating accounts. In the EAC, the United Kingdom did not play such a role. Therefore, it was easy for the member states to impose capital controls and renege on their monetary union commitment almost immediately after it was agreed to, even before the instability began in the region with Amin's coup in Uganda.

To conclude, the cases of IMI sustainability presented in this chapter support the argument that the security of money is an important element of the political economy of international monetary integration.

CHAPTER VI

CONCLUSION

I. FINDINGS

In Chapter 2, we derive seven hypotheses regarding the political economy of international monetary integration. The first hypothesis states that higher trade between two countries increases the likelihood that they will participate in an IMI arrangement. The second hypothesis proposes that states that experience high inflation (above 40 percent per year) are also more likely to participate in an IMI arrangement. The third hypothesis argues that two states that face symmetric economic shocks (or have synchronized economic cycles) are more likely to participate in an IMI arrangement together than states that do not. Hypothesis 4 states that higher levels of external and/or internal threats to the survival of a government reduce the probability that the state it leads will participate in an IMI scheme. These four hypotheses concern the direct determinants of IMI participation. The other three hypotheses are about indirect factors, which affect IMI through the direct determinants. Hypothesis 5 argues that if two states are mature democracies, then the probability that they join or remain in an IMI arrangement increases. Hypotheses 6 and 7 are about the influence of regional hegemony on IMI. In the first case, the proposal is that if there is a regional hegemon that provides security guarantees and assistance, then the probability that a recipient state will join or remain in an IMI arrangement increases. In the second case, the proposal is that if there is a regional hegemon that offers side payments such as development aid or trade benefits to

a given state in exchange for the latter's participation in an IMI arrangement, then the likelihood that this state will join or remain in an IMI arrangement increases.

In the empirical chapters that follow Chapter 2, we test the validity of these seven hypotheses. Chapter 3 tests Hypotheses 1 to 5 econometrically but only with respect to the formation of IMI arrangements. Using a dyadic dataset that covers 141 countries over the period 1960-2000, it finds that they generally obtain. This provides the strongest empirical support for the political economy of IMI argument developed in Chapter 2. However, it should be noted that these results only apply to multilateral IMI arrangements since the dyadic nature of the statistical model is not appropriate for testing unilateral IMI participation, which requires a monadic model. Such a model is not feasible at this point in time as a result of a lack of available data for unilateral IMI cases. Chapter 3 also finds a positive and statistically significant relationship between mature autocracies and IMI. In fact, this relationship is about twice as significant as that between mature democracies and IMI, which is also positive and statistically significant. The explanation for this unexpected result is that CFA member states were autocracies when they took part in the CFA in 1960. But as Chapter 4 makes clear, France's regional hegemony played the key role in providing the necessary incentives for its former colonies to participate in this IMI arrangement. This means that to obtain non-biased estimated coefficients for the determinants of IMI, we would need to control for regional hegemony, which is not possible at this point in time because no such measure exists. Finally, we found in Chapter 3, though using only one set of regression results (column [5] in Table 3.4), that individually the direct determinants of IMI have little substantive impact on the probability of IMI formation. In fact, it is the combination of determinants

that is expected to affect the likelihood of IMI formation. However, in light of the discussion in Chapter 4, evaluating the substantive significance of the estimated coefficients obtained in column (3)-logit in Table 3.3 might lead to somewhat different results. Nonetheless, the difference between the coefficients is generally not so great that it would invalidate the important conclusion that it is in combination that the determinants of IMI work. This supports the consideration that IMI is a rare event, especially if one considers dyads over time rather than simply the number of countries in the world that participate in an IMI arrangement, as the tables in the introduction show.

In Chapter 4, we put the econometric results obtained in Chapter 3 to a reality check by computing the predicted probabilities that states that are members of post-World War II monetary unions would have joined these IMI arrangements when they did. Discrepancies between reality and the predicted probabilities are then explained in order to identify additional factors that are not taken into account in the statistical model in Chapter 3 or other weaknesses or limits of the econometric results. The obvious explanatory factor that the monetary union cases in Chapter 4 help pinpoint is the role played by regional hegemons, which we could not test in Chapter 3 because of a lack of data. In Chapter 4, the cases of the CFA and the ECCU demonstrate the key role played by a regional hegemon in lowering the cost of IMI participation by providing security assistance and guarantees (Hypothesis 6) as well as increasing the benefits from trade by guaranteeing the fixed exchange rate between the monetary union's currency and that of the hegemon (Hypothesis 7). The provision of development aid by the regional hegemon is also an important factor in increasing the benefits of participating in an IMI arrangement. The analysis of the EMU case in Chapter 4 indicates that the inability of the

statistical model in Chapter 3 to take Hypothesis 7 into account (i.e. control for regional hegemony) potentially biases the estimated coefficients obtained in Table 3.4 (and 3.2). However, it is likely that the coefficients are less biased in Table 3.3 (and Table 3.1) because the CFA and ECCU member states—whose participation in these two monetary unions is so dependent on the regional hegemon—are not part of the regression analyses in Table 3.3 while they are in Table 3.4, as a result of listwise-deletion of missing data in the first case and multiple imputation of missing data in the second. Therefore, we conclude that the estimated coefficients in column (3)-logit of Table 3.3 are more appropriate to compute the predicted probabilities of IMI cases that do not involve a regional hegemon than those in column (5) of Table 3.4.

Chapter 4 also validates that the arguments developed in Chapter 2 apply as well to cases of unilateral IMI, which were not part of the econometric test in Chapter 3. In most such cases, we are dealing with small states that are heavily dependent on larger states (i.e. regional hegemons) for their economic and political survival. In these cases, the net benefits of adopting the hegemons's currency unilaterally are high. Finally, Chapter 4 examines cases where the predicted probabilities for IMI formation are high but no such arrangements exist in reality. It explains this discrepancy by pointing to the role of nationalism in preventing IMI from taking hold. Although our econometric test in Chapter 3 tries to take this factor into account (as a control variable), we conclude, based on the qualitative evidence, that our "last dispute" measure (the best that we could find) is a crude and poor proxy for it. Nevertheless, the analysis in Chapter 4 provides further empirical support for our hypotheses in Chapter 2. It also helps clarify the limits of the

econometric analysis in Chapter 3, without necessarily invalidating its results and contribution to the present endeavor.

After testing our hypotheses and understanding the strengths and weaknesses of our analysis of the formation of IMI arrangements, we make sure that the political economy model or framework developed in the present study also applies to the sustainability of IMI schemes. In theory, there is no reason why this should not be the case since the factors that affect the initial choice for IMI should continue to influence it afterwards. In Chapter 5, we find this to be the case. We argue that economic factors tend to stay stable or improve once IMI has occurred: i.e. the benefits associated with international trade increase while the costs arising from asymmetric shocks decrease. Thus, the factors that are likely to change for the worst and affect the sustainability of IMI are the threat of military conflict, domestic political instability, and foreign economic and security aid and guarantees by a regional hegemon. Any increase in the threat of war or instability increases the likelihood that an IMI arrangement will fail. Similarly, decreases in foreign economic and military assistance from a regional hegemon increase this likelihood.

II. Contributions to the Academic Literature

In the introduction, we argue that current scholarship on IMI is incomplete and fragmented and that it is therefore impossible to have a complete and accurate theoretical explanation of the choice for or against IMI or of the sustainability of such arrangements (see also Chapter 2). The poor quality of IMI theorizing also limits the quality and comparability of empirical analyses of IMI cases, which so far have been mostly focused

on the EMU. The political economy explanation developed and tested in the present study remedies these weaknesses in the literature. However, it does so by building upon the existing economic and political science literature. Consequently, the present study is the first, to our knowledge, to develop a consistent and complete explanation of the formation and sustainability of IMI arrangements that is general in nature and, therefore, can be applied to any case of IMI or non-IMI in the past, present, or future (see below).

Another major contribution that the present study makes to the literature in both economics and international political economy (IPE) is the econometric test regarding the formation of IMI arrangements. Only economists have performed econometric analyses of business cycle synchronicity to determine the existence of optimal currency areas. However, such analyses are limited to only one of the relevant factors affecting the IMI decision. An econometric test like the one that the present study performs has never been done before, to the best of our knowledge. Moreover, the test is as complete as can be in terms of size (141 countries out of 193) and time (1960-2000) while considering problems of missing data inherent to the size of such a dataset. It also used the most recent econometric technology available to compensate for some of the limits imposed by the data and, consequently, obtain the highest level of robustness for the regression results.

The present study also points to a much neglected factor in the literature on IMI: the strategic role that money plays in financing government expenditures (what we refer to as the "security of money"). Scholars tend to forget that seigniorage is an important means of financing such spending in developing (and sometimes developed) countries that either have limited access to capital markets or need to raise financing so rapidly that

borrowing is not adequate. As a result, it gives added importance to controlling the issuance of money. Combining this insight with the fact that governments can face such important shocks as war and instability is another major contribution that the present study makes to the literature.

Finally, the present study contributes to the growing body of literature studying the effect of political regime type on IPE phenomena. As such, it establishes that regime type matters for IMI, although it is not clear how it does so directly.

III. Contributions to Public Policy Debates

In the wake of the French "non" and Dutch "nee" to the EU constitutional treaty in May 2005, there have been debates about the future of the EMU and the euro. That the euro should depreciate against world currencies following the two referendum results was not the issue. The question was what this meant for the sustainability of the EMU. Hans Eichel, the German finance minister, and Otmar Issing, the ECB's chief economist, even made public statements about the absence of any basis for the break-up of the EMU in order to calm financial markets (see *Financial Times*, June 3 and June 4/5, 2005). Although they claimed that there were no grounds for market speculation about the failure of the EMU, they could not indicate what those grounds were nor could market speculators. This is probably because they have not read the present study. If they had read Chapter 5, they would have understood that war and domestic political instability put the sustainability of an IMI arrangement at risk. Only if capital markets or foreign countries provide the necessary funds for governments to deal with such challenges without resorting to seigniorage or a regional hegemon intervening militarily to end the

war or the instability, is this risk kept minimal or eliminated. Therefore, the EMU is not about fail, unless the EU's current political crisis resulting from the non-ratification of the constitutional treaty degenerates into bitter and violent acrimony, reminiscent of past European conflicts—an unlikely scenario at the moment.

The above example clearly demonstrates the applicability of the framework or argument developed and tested in the present study to important and real policy situations. If financial market speculators believe, for whatever reasons, that the EMU is likely to fail, then they will sell the euro in favor of other currencies such as the U.S. dollar. A rapid and uncontrolled depreciation of the euro would have significant effects not only on the European but also the world economy. It could even turn into a self-fulfilling prophecy since the only way for EU governments to stop the euro's fall would be eliminate it. On the other hand, if speculators base their expectations on the conclusions of the present study, then they are likely to find that the EMU will most probably not fail and, as a result, the euro will not depreciate in a tailspin manner. This seems to be the route they have followed, though without knowledge of this study.

Another contribution to public policy debates that the present study can make is with respect to the entry of future members in the euro-zone. In Chapter 4, we show that the predicted probabilities and underlying data support the decision by Denmark, Sweden, and the United Kingdom to stay outside the EMU. The same analysis can be performed to determine more accurately the probabilities that new EU member states from central and southern Europe will join the euro-zone. Such an analysis can be useful for investors possessing or looking to acquire assets from these countries. High probabilities would increase the confidence in the currency and macroeconomic policy.

In return, this would have the effect of reducing interest rates in these EU member states. This is important for investors trying to set a price on sovereign and corporate bonds and equities. It is also important for companies trying to establish their true cost of capital. Finally, those governments facing lower interest rates would pay less interest on their public debt, which means that they could spend more on other policy areas or simply decide to reduce taxes in order to make their economies more competitive. In a way, high predicted probabilities could end up becoming self-fulfilling prophecies if interest rates decrease and, as a result, allow governments to reduce their fiscal deficits and public debt sufficiently to meet the Maastricht criteria. This is what happened in 1996 once financial markets became convinced that the EMU would take place on January 1, 1999 (see Leblond 2004).

The present study even provides an explanation in support of the prediction made by the likes of Mundell and Rogoff that the world economy will most likely experience further monetary consolidation in the foreseeable future. Using the political economy model developed herein, we can see that if current trends toward more democratization, more economic integration and development, and more peace and domestic political stability are maintained, then the world should experience more IMI in the future. However, our analysis in Chapter 4 also points to a mitigating factor: nationalism. The examples of Switzerland and the EMU, Canada and the United States, and Japan and Korea are cases that should on all other accounts be favorable to IMI but they are not because of strong nationalistic feelings, which we have difficulty measuring properly for our econometric analyses.

Nationalism is surely an area of research that requires more attention, especially if we are to make it a variable that can be properly compared across countries while being easily and accurately measured.

In conclusion, the present study is an important step forward in the study of international monetary integration, both for theory and policy. We can only hope that it will form the basis for future studies on the topic, which should lead to further refinements in terms of theory, technique, and data that will increase our understanding and predictive ability with regard to IMI.

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APPENDIX

List of Selected Countries for the Econometric Analysis

1	Albania	47	Ghana
2	Algeria	48	Greece
3	Antigua Barbuda	49	Grenada
4	Argentina	50	Guatemala
5	Armenia	51	Guinea
6	Australia	52	Guinea-Bissau
7	Austria	53	Guyana
8	Azerbaijan	54	Haiti
9	Belarus	55	Honduras
10	Belgium	56	Hungary
11	Benin	57	Iceland
12	Bolivia	58	India
13	Bosnia and Herzegovina	59	Indonesia
14	Botswana	60	Iran, Islamic Rep
15	Brazil	61	Iraq
16	Bulgaria	62	Ireland
17	Burkina Faso	63	Israel
18	Burundi	64	Italy
19	Cameroon	65	Jamaica
20	Canada	66	Japan
21	Central African Republic	67	Jordan
22	Chad	68	Kazakhstan
23	Chile	69	Kenya
24	China, Hong Kong	70	Korea
25	China, People's Rep	71	Kuwait
26	Colombia	72	Kyrgyzstan
27	Congo, Democratic Rep	73	Laos
28	Congo, Republic of	74	Latvia
29	Costa Rica	75	Lebanon
30	Cote d'Ivoire	76	Lesotho
31	Croatia	77	Liberia
32	Cyprus	78	Libya
33	Czech Republic	79	Lithuania
34	Denmark	80	Luxembourg
35	Dominica	81	Macedonia
36	Dominican Republic	82	Madagascar
37	Ecuador	83	Malawi
38	Egypt	84	Malaysia
39	El Salvador	85	Mali
40	Equatorial Guinea	86	Malta
41	Estonia	87	Marshall Islands
42	Finland	88	Mauritania
43	France	89	Mauritius
44	Gabon	90	Mexico
45	Gambia, The	91	Micronesia
46	Germany	92	Moldova

93 Morocco
94 Myanmar
95 Nepal
96 Netherlands
97 New Zealand
98 Nicaragua
99 Niger
100 Nigeria
101 Norway
102 Pakistan
103 Panama
104 Paraguay
105 Peru
106 Philippines
107 Poland
108 Portugal
109 Romania
110 Russia
111 Saudi Arabia
112 Senegal
113 Singapore
114 Slovak Republic
115 Slovenia
116 South Africa
117 Spain
118 Sri Lanka
119 St. Kitts & Nevis
120 St. Lucia
121 St. Vincent & Grenadines
122 Suriname
123 Swaziland
124 Sweden
125 Switzerland
126 Syrian Arab Rep
127 Tajikistan
128 Tanzania
129 Thailand
130 Togo
131 Tunisia
132 Turkey
133 Turkmenistan
134 Uganda
135 Ukraine
136 United Kingdom
137 Uruguay
138 Venezuela
139 Zambia
140 Zimbabwe
141 United States