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## SPECIAL ISSUE ON BRITAIN AND CANADA AND THEIR LARGE NEIGHBORING MONETARY UNIONS, PART I

***Guest Editor: Amy Verdun***

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# PREFACE FROM THE NEW EDITORS OF *CURRENT POLITICS AND ECONOMICS OF EUROPE*

***Patrick M. Crowley and David Howarth***

With an ever growing list of titles, new journals today need justification. As editors of this venture, we have had several long discussions about exactly what a journal of 'European Political Economy' is supposed to be, considering there are other journals that cover European integration and political economy from both a political science and an economics perspective.

To introduce the journal, we would like the reader first to dwell on what constitutes the subject matter of political economy. The term itself is open to some interpretation dependent on academic domain. Note that it avoids both the discipline-based words "politics" and "economics", instead combining rather obliquely "political" and "economy". Political economy, of course, goes back a long way, predating the birth of modern economics, and has its origins in the writings of philosophers such as Adam Smith and David Hume. Moving forward in time we see political economy embracing a variety of different notions of what constitutes the overlap between both political science and economics. The label "political economy" today encompasses a variety of different approaches, from the modeling of political systems from an economics standpoint to the study of the dynamics of economic development through the prism of politics. Our interpretation of political economy does not conform to either of these distinct but extreme visions, but views the subject as a way of studying issues that pertain to both political science and economics.

This overlap between the two disciplines is our starting point for the *Journal of European Political Economy* (JEPE). It is in this sense that we hope to have found our niche among the plethora of academic journals. Thus unlike other

journals which study Europe, we aim to publish articles that incorporate elements of both politics and economics. In many respects our approach is an interdisciplinary one, in that we aim to publish articles that will receive an audience in both the political science and economics subject areas – and, hopefully, beyond. In the second issue of the journal we identify more closely the types of issues that we hope JEPE will address, so as to demarcate further the approach to be taken.

Although JEPE will be new, it does have a predecessor not entirely disconnected with the present endeavor. The journal *Current Politics and Economics of Europe* (CPEE) published articles on both the politics and economics of European integration, but without the focus we aim to give the new journal. We hope that those previously subscribing to CPEE will continue their subscriptions to this new journal and welcome our tighter and more focused approach to the study of Europe.

It is our aim that the reader will recognize in this first issue that falls under our editorship that we seek to embody the general aims of the new journal outlined above even in these last few issues of CPEE. By publishing articles by leading economists and political scientists alike on the topics of European and North American monetary union, we aim to shed some light on the intertwining of political and economic issues in the decision to adopt a single currency. With its focus extending beyond the European Union, we have embraced these two special issues (which should really be seen as one) as a manifestation of our ambition to attract analytically rich perspectives that help to shed new light on the study of European political economy.

The papers in the two special issues represent a sampling of the best papers given at a conference held in October 2003 and hosted by the European Studies Programme and the EU Centre of the University of Victoria, British Columbia. We would like to thank Amy Verdun, the Jean Monnet Professor of European Studies at the University of Victoria, who was the organizer of this excellent conference and – with the assistance of two graduate students Melissa Padfield and Patricia Young – is our first guest editor. We would also like to thank the authors, who unanimously agreed to submit these articles for review. The papers benefited from comments from the discussants at the conference, the editor, her graduate student assistants and each paper went out to two anonymous referees.

In closing, we look forward to reviewing and compiling some exciting new issues of the journal in the future, and invite prospective authors to submit their work to us for consideration.

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# 'GOD SAVE THE QUEEN': BRITAIN AND CANADA AND THEIR LARGE NEIGHBORING MONETARY UNIONS

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## INTRODUCTION

A traveler who has visited both Britain and Canada will no doubt have noted that both Britain and Canada share the same head of state on their banknotes and coins: Queen Elizabeth II. Of course, though the Queen is an important symbolic figure to the United Kingdom (UK), the Queen plays a less prominent role in the Canadian national identity. Yet one should not underestimate her importance. Besides this observation there are a number of more substantial similarities that these two countries share. They are both located next door to a neighboring monetary union that has a leading currency that has been adopted by other countries in an attempt to increase their economic prosperity. Britain is confronted with the European Union (EU) and its Economic and Monetary Union (EMU) or the 'eurozone' – an area of twelve EU Member States in which the euro is the single currency. Canada's neighbor to the south is the United States of America (US) that has the world's leading currency which has been adopted by other states in the region and beyond. One can differ in opinion over whether the US is a monetary union in the conventional sense, but there is no doubt that the US is a

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currency union, one of its many features as a federal state.[2] Furthermore, there have been talks about creating an actual North American Monetary Union (NAMU) which would expand the use of the dollar into Canada and Mexico. At a time in which the discussion revolves around the future of (smaller) national currencies, this special issue looks at the question of monetary integration for the cases of Britain and Canada. This special issue adopts a comparative, multi- and interdisciplinary perspective on these matters.

In the final years of the 1990s and into the infancy of the new millennium a discussion took place both in Canada and the United Kingdom on the usefulness of monetary unification and on the appropriate exchange rate policy to implement in response to economic uncertainty resulting from increased capital mobility and global economic instability. Concerns over instability have been exacerbated since the so-called 'Tequila crisis' (Mexican currency crisis of 1994), the South East Asian currency crisis of 1997-98, the several more minor crises associated with the European Monetary System (EMS) in 1992-94, and were fuelled further by the Argentinean and Turkish currency crises that occurred in the years following. Moreover, interest in monetary unification has been triggered further as a result of the successful introduction of the euro in financial markets in 1999 and its banknotes and coins in 2002. Indeed, in recent years many nations have engaged in this debate, leading to developments such as dollarization in Ecuador and the previous currency board in Argentina. Nations have begun to seek solutions which will deliver sustained domestic economic stability in a global environment which delivers continued economic flux. However for some, namely Canada and the UK for our purposes, the waters have been muddied by the presence of a large single economy or monetary union as their neighbor. The days of 'one nation, one money' (Helleiner, 1997) appear to be waning or at the very least subject to debate. The time is ripe to look at the future of national and international monetary orders.

From the perspective of theory both from an economic vantage point and a political one the debate over monetary order is an interesting one which provides fertile ground for the operationalization and creation of theory. Most remarkable is the revitalization of Robert Mundell's Optimum Currency Area (OCA) Theory. This theory had lost some credibility in the late 1980s and early 1990s as research showed that not even federal states such as Canada or the United States met the criteria of the OCA. But the late 1990s saw a resurgence of literature reflecting

[2] The British Treasury has provided a study that argues that the US is an example of a monetary union in which different states with different economic developments can actually prosper (HM Treasury, 2003).

(and revisiting) this theory. Beyond OCA though there is extensive opportunity for the application and enhancement of theories of integration, regionalism, governance and globalization. Monetary unification also raises practical implications; monetary policy has an effect on adjacent areas of policy-making and to the overall performance of the economy. The practical and theoretical significance of monetary union provided the impetus for the conference upon which these two special issues are based.[3]

At first glance it may seem odd to look at whether or not the UK should join the euro at the same time as considering whether there is reason for Canada to seek some kind of hard fix or currency union with the United States. The chances are that the UK might join the euro one day. Although they are currently largely opposed to joining EMU, when asked, most UK citizens believe that within ten years they will have joined the eurozone (News of the World/ICM poll 2001). This result will come as little surprise seen that EMU is part of the larger European integration process and that the introduction of the euro has been deemed a success by most people. The Canadian case, by contrast, has largely been an exercise in academic speculation about currency union in response to a number of factors. One of these was a perception that in the late 1990s and early 21st century the Canadian economy was on the decline relative to that of the US. A few years later, however, after the September 11, 2001 attacks, and in light of a rising Canadian dollar and a stronger economic recovery in that country, there does not seem to be any significant interest on the part of either Canada or the United States to consider changing the current currency arrangements.

On what ground then can one make this comparison and in what way is it of use to our understanding of monetary unions? First, the fact that Canada and the UK are both medium-sized economies provides a certain degree of similarity in the experiences they have of the global economic context. Furthermore, if they chose to join a monetary union, both would face broadly similar challenges with regard to issues of sovereignty and protection of political 'voice' in the monetary policy domain (although as we will argue below the specifics are different due to

[3] A conference was held at the University of Victoria on 17-18 October 2003 in which first versions of all articles in this special issue were presented. The editor wishes to acknowledge financial support from the European Commission and from the Social Sciences and Humanities Research Council of Canada (SSHRC). The support enabled the holding of the conference and provided the funds for Melissa Padfield and Patricia Young to provide (excellent) editorial assistance for this special issue. At a late stage it was decided to have two special issues of this journal rather than one long one. But for the ease of the reader we will refer to papers in these issues as being part of 'one issue'.

the nature of the monetary union they would join). They also face similar challenges if they stay outside a currency union or collaboration by virtue of their proximity to and reliance on a large neighboring economic entity. In addition, the most frequently suggested model for any North American Monetary Union (NAMU) is that of EMU, which necessarily makes the situations of the two more alike and increases the opportunities for the UK's situation to be instructive for Canada and vice versa. Finally, the comparison of the two not only increases the breadth of current scholarship – which at present deals with each only in isolation – but it also highlights the central themes of the monetary union debate.

In this special issue we will discuss these matters through an interdisciplinary perspective, mainly by looking at them through the lenses of economics and political science. The articles contained in this issue all attempt to acknowledge the interdisciplinary nature of the questions while also fleshing out the nuances that are explored in their respective domains. Given this interdisciplinary approach, even if the particularities of the context may change, the frameworks developed within these articles should have far reaching applicability and, we hope, will be relevant over time. We believe the collection of scholarly papers which follows is both timely and timeless and will inform those interested in monetary policy also in the years to come. It is clear to all authors that Britain has to deal with EMU in the near future, whereas no one expects Canada to opt for monetary integration with the US or the creation of an NAMU in the immediate future. We leave the door open as to whether that topic might attract more political salience as time goes by. In fact, we expect it may.

This introductory article offers a contextualization rather than a detailed summary of the articles that follow. After a short introduction, the first section gives a brief history of monetary collaboration and unification in Europe and North America until 1999. The second section explores the economic and political theoretical dimensions of the debate. The third section looks at the background to the debates in Europe and North America and discusses the developments since 1999. The fourth section offers our reflections on the topic and provides a brief description of the articles in this special issue. The fifth section concludes.

# 1. BRIEF HISTORY OF MONETARY UNIONS AND MONETARY COLLABORATION IN EUROPE AND NORTH AMERICA

## 1.1 Europe

When the euro was introduced into financial markets on January 1, 1999 as the realization of the third stage of EMU, it was the completion of a long and difficult process to monetary integration, one which had begun over forty years earlier. It has been argued that the origins of EMU date back to 1956 with the Spaak Report and the formation of the Common Market as part of the European Economic Community (EEC) in 1957. While some may find it a little exaggerated to trace EMU back to the Rome Treaties, it is worth stressing that it is part of the wider integration process which was founded at that time, and is therefore part of the broader economic and political integration process in Europe.

The real plans for EMU began with the Werner Report in 1970, subsequently adopted in 1971, which set out a three-staged plan for macroeconomic policy convergence and fixed exchange rates (with possibly a single currency). The plan was a direct response to the completion of the customs union in 1968 and the belief that a fixed exchange rate would: (a) best serve the nations of Europe after the collapse of the Bretton Woods system of fixed exchange rates; and (b) facilitate Europe's most central unified policy, the Common Agricultural Policy (CAP). The immediate result was the 'snake' – a system of fixed but adjustable exchange rates and additional plans for EMU. While the snake and macroeconomic coordination were successful for some countries they were not manageable in the long term and under the pressures of the 1973 OPEC oil crisis and the subsequent economic crisis, EMU plans ultimately collapsed.

The idea of further European monetary cooperation was once again resurrected in 1978 when French and German governments put a renewed exchange rate mechanism on the agenda. In 1979 the European Monetary System (EMS) came into being and with it the Exchange Rate Mechanism (ERM) which held national currency fluctuations to within ± 2.25 % of an announced central parity. By the mid-1980s, due to the strong performance of the deutschmark and the low inflation policies of the German central bank, the ERM had become more of a *de facto* peg to the deutschmark and German monetary policies than a proper 'European' system.

The impetus for change came in the mid-1980s as a result of EU Member States' concerns over competitiveness.[4] As such, pressure increased to complete the internal market which formed the backbone of the 1986 Single European Act. Once again the political and economic conditions seemed right to put EMU on the agenda. There was the desire for integration certainly, but also the push to rival the US economically. The 1989 Delors Report outlined the necessary institutional changes and European convergence needed to support EMU. As a result the Rome Treaties were changed and the Treaty on European Union (or Maastricht Treaty) stipulated the institutional, economic and political provisions (such as the creation of the European Central Bank (ECB)) that would lead to the creation of EMU. This treaty, combined with the 1997 Stability and Growth Pact, form the central architecture of EMU that exists today.

## 1.2 North America

No one would argue that the history of North American monetary collaboration approximates the European experience. However, it is similar insofar as it is a history of change in response to the pressures on and within nations and the region.[5]

Aside from a brief period during the American Civil War, Canadian exchange rate policy has been exacted independently, though heavily in reference to the United States and not the reverse. As such, the focus here is on the Canadian choices of monetary regime under these conditions. As Eric Helleiner points out in this issue, the Canadian monetary authorities have mostly preferred a floating exchange rate regime. Since the end of World War II there have been only thirteen years in which Canada followed a fixed exchange rate regime (1945-50 and 1962-70); both periods in conjunction with the so-called Bretton Woods system (of fixed exchange rates). In all other years the Canadian dollar (or

[4] Until November 1993 the EU member states should strictly speaking be referred to as 'European Community' or '(EC)' Member States. We will refer to them as EU Member States for the sake of simplicity.

[5] It should be mentioned at the outset that, while we acknowledge the central role of Mexico in North America, for the purpose of our argument we focus on Canada and the United States. This choice has partially to do with ensuring the manageability of the topic, but also because the long standing relationship between Canada and the US both economically and politically is not found to the same extent between Mexico and its Northern neighbors. Furthermore our comparison with the British case makes us more interested in finding parallels and differences between those two countries rather than with other members of the (potential) monetary union.

'loonie') has been allowed to float. Despite the preference to float, however, there has been discussion on more than one occasion about the pursuit of a more substantive monetary collaboration or monetary union.

In 1968 the Québec separatist party, the *Parti Québecois* under René Lévesque, looked into the potential for a monetary union between Québec and Canada following separation. This was once again looked into by a separatist party, *Bloc Québecois*, in reference to the US following the 1995 referendum. While both of these failed to yield any substantive results, it does suggest an interplay between the domestic political climate in Canada and the monetary policy debate.

Exogenous and endogenous political and economic pressures led to another discussion of monetary order in the late 1990s in Canada. From 1991 until 1999 the Canadian dollar saw a progressive and substantial fall against the American dollar, which had many worried about the effectiveness of the float. Moreover, various currency crises across the globe and in the Americas in the 1990s prompted an exploration of how best to achieve economic stability in Canada. These discussions took two routes; one focused on dollarization the other on monetary union with the US.

Dollarization refers to the adoption of US dollar as the national currency in a country outside the US. It has two forms, the first is a 'market dollarization' under which domestic business is carried out in American dollars, a trend which some perceived as occurring in Canada at the present time. The second form is 'policy dollarization', such as in Panama and Ecuador, where the US dollar is the currency in circulation. This form of monetary policy, unlike a currency board (e.g. as in Argentina), can be pursued unilaterally without the formal consent of the issuing country, the US. Policy dollarization alleviates the need for domestic manipulation of the money supply and avoids currency crises. The 'price paid' is the loss of *seigniorage* and the exchange rate as an instrument of economic policy. Yet the advantages are attractive to some, which is no doubt why both Canada and Mexico considered it.[6]

Monetary Union, by contrast, was debated mainly in academic circles. It was triggered by the successful introduction of the euro, the continued development of North American Free Trade Agreement (NAFTA) and the potential Free Trade Agreement of the Americas (FTAA). The latter developments, some have noted, provide greater prospects for monetary unification in the future.

[6] In Canada the matter was discussed in the House of Commons in 1999.

# 2. THEORIES OF ECONOMIC AND MONETARY UNION

## 2.1 Political Science Theories of EMU

All articles in this special issue, regardless of disciplinary orientation, point out that political considerations ultimately determine whether Canada or the UK move towards closer monetary collaboration or indeed unification. Students of European integration will be familiar to the concept of neofunctionalism and its principle of spillover (Haas 1958). In the case of monetary union, this concept illustrates the mechanism by which monetary integration might necessitate the progressive integration of other policy-making areas, such as fiscal policy and public spending. Some have argued that even areas such as social and labor policies will be affected (see for example Bolukbasi in this issue). In order to make a monetary union function, long term labor markets need to be flexible so as to respond to the needs of the enlarged market in which interest rates and exchange rates are no longer instruments that can deal with shocks. Increasing labor mobility and protecting social policies, while appeasing domestic political interests, poses challenges to national governments way beyond any intrinsic economic rationale for monetary union. Thus, looking at the principles of spillover in relation to monetary integration provides a useful insight into the analysis of the pros and cons of EMU.

Of equal importance are the theories that relate to the issue of power distribution. The purpose of many theories of integration, be they neoliberal institutionalism, multi-level governance or one of the many others, is to explain how decisions are made and how power is distributed. If for example Canada were to pursue some sort of monetary union with the United States it would imply the integration of their two monetary policy making institutions, the Bank of Canada and the Federal Reserve. The same reality would be true for the UK after joining the euro: the Bank of England would be a national branch like all others in the European System of Central Banks[7], and monetary policy would be conducted by the European Central Bank (a British national would have a seat on the governing board). We know the way in which the UK would be integrated into the eurozone cannot be the same for Canada in the North American case. Even if NAMU followed the EMU model it is unclear as to how power would be distributed. Most scholars assume the US would hold the most, if not all the

[7] The Bank of England is already a member of the ESCB but as long as it is outside the eurozone (stage 3 of EMU) does not have a say in ECB governance and policy-making.

power in any collaborative arrangement. It would be unthinkable that the model of NAMU would constitute a single vote for each of the three countries, Canada, Mexico and the United States. Analyses of power distribution would explain that such an institutional arrangement would not be attractive to the US (now or in the foreseeable future).

The literature on monetary integration also deals with questions of identity formation. The central role of money in the rise of the nation state and national identity has been discussed (see *inter alia* Gilbert and Helleiner 1998, Risse et al. 1999). There is usually a direct link between the formation of a collective identity and the presence of symbols such as a currency. Given this reality questions of what the effects would be on national identities in North American and in the UK is of significance when discussing whether monetary unification is likely to take place. In the UK the loss of the pound as a symbol of British identity plays an important role in the concerns over joining the eurozone (see Howarth this issue). Similarly, the role of the US dollar as symbol of US global power adversely affects the argument for the creation of a new North American currency which would replace it (see Cohen this issue). The point of raising this issue is to illustrate how the theorization on the symbolic function of money in the formation and maintenance of national collective identity is an element ignored by solely focusing on economic analysis, but is clearly a significant consideration for politicians.

Political economy theories, either those that look at the interface of politics and economics in the 'real world' or the more abstract theoretical approaches (see e.g. Jones/Verdun 2005) often engage with the issue of monetary union. With the increase in capital mobility there has been a progressive de-territorialization of money in the 'real world' (Cohen 1998), which has prompted states to respond with efforts to secure their economies through the formation and exploration of alternative currency options. The larger process of economic globalization also has a direct impact on the monetary orders within states. Speculative attacks resulting in currency crises like those in Asia and Latin America and the subsequent contagion effect of such problems has forced nations to reconsider how best to achieve stability under these conditions. As a result, discussions about monetary union and collaboration surface as a way to conceptualize a response to global economic insecurity. Some scholars, such as Barry Eichengreen, argue that the there has been as a 'hollowing-out' of policy options which forces nations to the two extremes of the fix or float spectrum (Eichengreen 1994). While this hypothesis is debatable, the persistence of these global conditions does trigger discussions of how best to achieve economic security and position the issue of

monetary collaboration, or indeed unification, at the heart of contemporary political economy.

Finally, in a broader sense monetary union relates closely to globalization or regionalism, and thus to the theories that explain those two phenomena. Any decision by a state to join a pre-existing monetary union or to develop a new one implies a change to the global order in terms of power, political practice and practical realities of global governance. Thus, it is important to understand how these unions and regional monetary groupings come into being so as to speculate what their impact and their pitfalls might be.

## 2.2 Economic Theories of EMU

The choice of joining a monetary union is in essence an exchange rate policy choice because monetary unions are virtually equivalent to a hard fixing of exchange rates between the participating countries. This choice of exchange rate policy has wide implications in the economy through a variety of mechanisms. This subsection will look at how these implications are dealt with in the economic literature on both sides of the Atlantic.

One of the mechanisms through which exchange rate policy affects the economy is its relationship to monetary and fiscal policy. A basic explanation of the economic relationship goes as follows: say the central bank of a country increases interest rates, for instance in order to keep inflation at bay. Currencies that offer high interest rates are sought-after in international financial markets, so the value of the respective currency will increase, changing the exchange rate. As early as 1968, Robert Mundell introduced the notion of the 'impossible trinity', also dubbed the 'unholy trinity' according to which monetary policy independence, capital mobility, and fixed exchange rates cannot coexist. Indeed, one of the main advantages of flexible exchange rates is that they allow the pursuit of an independent monetary policy. Monetary policy independence also means that governments could conceivably finance high fiscal deficits by printing money, an option which is denied to a member of the monetary union. Therefore, monetary unions can also be said to restrict fiscal policy choices.

### *2.2.1 Optimal Currency Areas (OCA) Theory*

OCA theory has recently become the economic benchmark for assessing the choice of exchange rate regime. According to the theory, introduced by Canadian Nobel-prize-winning economist Robert Mundell, a region should have a unique currency if its economies fulfill a broad range of conditions, such as that the

economies are affected symmetrically by external shocks and that there are few restrictions to the reallocation of labor in response to such shocks. If a region is indeed an OCA, there are considerable benefits flowing from monetary union (such as higher growth), which result from reductions in transactions costs, given the reduction in foreign exchange transactions and the transparency of pricing and ease of comparison. The number and relative importance of the specific requirements for monetary union to be an optimal choice remains, however, a subject of controversy among economists.

Most countries in the world fit some, but not all of the criteria for joining a monetary union with their neighbors. In these cases, OCA theory advises the adoption of an intermediate exchange rate regime, one that involves less than fully flexible exchange rates (i.e. some sort of peg), but not a hard fix like monetary union would imply. Intermediary options have however become discredited (although see Crowley and Rowley, 2002 for a political economy analysis for North America). These types of regimes have suffered from lack of credibility, due to political interference that have led to numerous changes in pegs, and consequently to speculative attacks as investors are uncertain about future levels of such pegs. Thus, economists and politicians alike have tended to lose their interest in intermediary regimes, in spite of their theoretical attractiveness. These days it seems that national governments have two extreme options to choose from: fully flexible exchange rates or a monetary union. Unfortunately, the dearth of choice does not make the decision any easier. If anything, it has intensified the debate. On the one hand, there are those who show that not even countries already sharing a common currency are ideal candidates for a monetary union (see Crowley, this issue), on the other, there are hard fix enthusiasts who will counter that monetary unions will not only result in more trade and subsequently higher economic growth, but will squeeze the rigidities out of prices and wages, forging more adaptable economies (see Grubel, this issue).

This last argument – which employs OCA theory to argue that increased labor market flexibility, more synchronous business cycles, more trade and less inflation will *follow* the establishment of a monetary union – has been labeled 'endogenous OCA' theory. Supporters of this strand of OCA theory believe that monetary union is a useful tool for making all these positive changes happen, while skeptics point out that the economy does not automatically adapt to a new situation and will probably pass through prolonged recession before resources are reallocated.

All of these arguments have developed in specific ways in the context of Canadian and European debates about monetary union, to which we shall now turn.

### *2.2.2 European Theoretical Debates*

In the European debate over the economic benefits of the euro, endogenous OCA theory figured prominently. EMU was considered a possible solution to Europe's unemployment problems because monetary unions are supposed to force labor markets to become more flexible. The experience to date does not entirely confirm this prediction (UK Treasury report on 'EMU and Labor market flexibility'). Endogenous OCA theory also argues that monetary unions may be a cure for inflation problems (see Willett, this issue), and keeping inflation low was an important reason for both the EMS and the subsequent EMU (Verdun, 1999). Critics point out that by the time EMU came about, Europe was hardly a continent in need of more monetary discipline (Dean, 2002). In fact, the European Central Bank has been accused of having a deflationary bias which could have adverse consequences on economic growth (see Rollo, 2002; Artis, this issue).

When looking at the economic studies commissioned by HM Treasury to verify the five economic tests for the adoption of the euro it becomes obvious that the British debate on monetary union, like the European debate, is also strongly connected to OCA theory (see Artis, this issue). The widespread finding of the Treasury studies is that the UK business cycle is asynchronous with that of most EU countries, though the difference between the two business cycles may have diminished somewhat lately. This suggests that the UK economy is subject to asymmetric shocks and can better fend against them with a national monetary policy; hence a national currency.

Other theoretical developments relevant to the British debate are the growing doubts about the efficacy of exchange rates as shock absorbers and the idea that monetary unions can be attractive to outsiders because of a superior monetary and fiscal policy framework that accompanies them. The first issue refers to the possibility that exchange rate changes are not reflective of true differences in the economic situation of the countries in question and are instead responses to exchange rate speculation in international financial markets. While exchange rate volatility appears to have increased somewhat it is an open question as to what extent it is the main factor influencing exchange rate levels. The second idea present in the British debate resonates with studies of the viability of the eurozone fiscal policy framework outlined in the Maastricht Treaty and the subsequent Stability and Growth Pact. Specifically, the economic rules that cap budget deficits at three percent of Gross Domestic Product (GDP) are considered by some economists to be conducive to recessions and higher unemployment (see Seccareccia and Lequain, this issue), as well as to a severe retrenchment of the welfare state (see literature reviewed by Bolukbasi, this issue). Even though there

is considerable debate on these issues, the policy framework of the eurozone does appear to hold more potential dangers than benefits for the UK.

### *2.2.3 North American Theoretical Debates*

If in the British debate monetary union's benefits are more prominent, in Canada it is the flexible exchange rate that is under severe scrutiny from those who advocate a monetary union with the US. The economic arguments about transaction costs savings under monetary unions are prominent in the Canadian debate. The importance of these savings is debatable, however, given they are estimated at only 0.25% of GDP (Laidler, this issue). According to OCA theory, lower transactions costs have trade-enhancing effects of members of monetary unions. However, the higher transactions costs associated with flexible exchange rates do not seem sufficient to have hampered Canada's trade with the US, as evidenced by the strong increase in such bilateral trade in recent years (Schembri, this issue). In general, the virtual agreement among economists about the positive effects of reduced transactions costs on the economy are met by widespread skepticism (sometimes by the very same economists), if translated into large efficiency gains.

The importance of independent monetary policy is also a significant argument in the Canadian debate used by economists on both sides of the argument. Such independence does not guarantee a successful monetary policy, as evidenced by the numerous policy mistakes of Canada in the past. The point of debate is whether such past mistakes are a good enough reason to abandon monetary policy by pursuing a hard fix with the US. This would eliminate the uncertainty stemming from the Bank of Canada's monetary policy decisions, but the uncertainty generated by US monetary policy would of course remain. Past mistakes suggest, however, that flexible exchange rates bring economic benefits only in conjunction with a sensible monetary policy based on a clear nominal target, such as inflation.

Among the main arguments in the pro-monetary union Canadian debate is the idea that flexible exchange rates delay gains in productivity when a low value of the currency prevails, as experienced by the Canadian dollar (Grubel, 2000, Courchene and Harris, 2000), as a low exchange rate obviates the need for productivity improvements. In this form, the argument states that a low exchange rate is equivalent to tariff protection for underperforming export sectors. Export prices are artificially low due to the low exchange rate, so important resource reallocations (e.g. between sectors of the economy or between capital and labor within an industry) are not forced to occur to ensure the most efficient allocation of resources. The above argument is basically the flipside of the 'con' camp's

observation that flexible exchange rates serve as a buffer in the face of macroeconomic shocks, allowing the economy some adjustment time to the new conditions. The issue then becomes one about the desirability of buffers, the skeptics believing that an economy can only recuperate from an exogenous shock in due time if forced to do so by the absence of a buffer mechanism. The proponents of flexible exchange rates, however, point out that such adjustment is inevitably long and painful in terms of unemployment and economic growth (because wages and prices are sticky), and thus the impacts on the economy should be softened as much as possible.

This leads to another issue often discussed in the Canadian debate: labor market flexibility. Even though absent from the political agenda in the Canadian-US case, flexible labor markets are considered in traditional OCA theory as a prerequisite for monetary union if business cycles are not synchronous. Flexible labor markets make economic adjustments to exogenous shocks a lot easier, but many of the rigidities in labor markets are due to regulations that can only be aligned if specific attempts at labor market integration are made. That is why some economists consider a common market as a necessary non-monetary step on the road to a possible monetary union (see Pereira this issue).

Finally, the issue of business cycle alignment (with the US) is also prominent in the Canadian debate. Canada's dependence on natural resource trade is taken by some economists to mean that changes in world commodity prices will affect this country differently than the US and thus will require flexible exchange rates to ease the inevitable economic adjustment. By contrast, the camp favoring a monetary union argues that an unexpected change in commodity prices under a hard fix would be an invaluable opportunity for Canada to rid itself of its dependence on natural resources, by allowing labor and capital to be naturally reallocated to other sectors of the economy.

## 2.3 Canada-UK Comparison

Looking at the economic debates on both sides of the Atlantic, it is remarkable that in spite of some local flavor, the same types of economic arguments both for and against monetary unions are made, despite somewhat different situations. This suggests that insights can be gained by reflecting on the particularities prevailing in both countries.

The question of the value of independent monetary policy versus the benefits of reduced transactions costs is high on the agenda in both debates. Monetary independence was considered already lost for European countries during the

EMS. Likewise, it has been argued that use of Canadian monetary policy independence is restricted as long as the Bank of Canada follows the strict precepts of inflation targeting. Some argue independence is actually lost. One could then argue that by joining a monetary union that focuses on the same inflation rate as the Bank would not be such a big step.[8] But in fact the issue of monetary independence is one about the ability to pursue monetary goals that are different from those of the neighbors, as exemplified by Canada's inflation targeting in contrast to US monetary policy.

Whether the best way to achieve a reduction of inflation is by fixing exchange rates (a view favored in the European case) or, on the contrary, by keeping exchange rates flexible (as in the Canadian case) may be impossible to solve by merely theorizing about it. However, both the Bank of England and the Bank of Canada seem to have been quite successful at reaching their respective inflation targets, suggesting, contrary to the European conventional view, that monetary union need not be a precondition for low inflation.

The idea that exchange rate fluctuations are due to speculation rather than to changes in economic fundamentals is also present in both debates. Advocates of monetary union argue that a currency that is close to a monetary union but stays outside it will be more likely to be used as a reserve currency and might actually rise in value, putting the neighboring leading currencies under pressure. Having reviewed the theoretical debates in political science and economics and on both sides of the Atlantic, let us now turn to the immediate debates on monetary union that took place in Canada and the UK in the period 1999-2004.

## 3. RECENT DEBATES

### 3.1. Debates in Europe on EMU (1999-2004)

The debates in Europe on EMU resurfaced with the onset of stage three of EMU on 1 January 1999. In May 1998 the European Council determined that eleven Member States were ready to join the third stage of EMU and thus adopt the euro in financial markets as of 1 January 1999. The eleven countries were Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain (when banknotes and coins started circulating on

[8] Note, however, that once Canada joins a monetary policy, the area in which the aggregate inflation would be measured is much larger and hence the inflation rate in Canada per se could actually fluctuate more.

1 January 2002 Greece had also joined the euro and hence the euro was introduced in twelve Member States). The skepticism of the mid-1990s died away and was replaced by a sense of euphoria that was felt in light of the fact that so many Member States had been able to meet the so-called 'Maastricht convergence criteria', which stipulated the entry conditions to EMU.

EMU in the first few years was subject to considerable speculation about whether it would be successful or not. Some US scholars commented that the euro could possibly lead to a catastrophe and could cause another war in Europe. A factor that led to further speculation about the success of the project was the fact that the euro depreciated 25-35 percent from its introduction value in the first years after having been launched in the financial markets. When the euro had been conceptualized it had been influenced by German monetary policy principles that had been based on keeping the currency stable and inflation rates low, which usually meant that the German deutschmark appreciated against other currencies. However with the euro depreciating (1999-2002) speculation emerged suggesting that the euro would not be as strong as the German deutschmark, and instead be a low value currency. In the fall of 2000 the European Central Bank (ECB) intervened in financial markets to boost the value of the euro that was hovering below the US$ 0.90 (having been introduced in 1999 at US$ 1.17). The ECB intervention was much criticized as it had not been the task of the ECB to support or undermine the value of the euro, instead its only task should have been to focus on price stability (low inflation).

The introduction of banknotes and coins on 1 January 2002 was deemed a major success overall. The logistics had been well-prepared and it seemed that no major hiccups occurred. Some have argued, however, that there has been a considerable increase in prices of some smaller consumer goods. But the official aggregate statistics do not indicate this phenomenon to have had a major impact (much to the dissatisfaction of consumers in Italy and Greece who claim that going out to dinner has doubled in price!) By spring 2002 the euro started to pick up and appreciated against the US dollar and other leading currencies, a trend which continues today (although at the time of writing the euro has now seemed to have returned to its introduction rate of US$1.17!). Exporters realized that the low euro had been good for business and were unhappy to see their competitive edge disappear. So ironically, although at first observers commented on the fact that the depreciating euro was a disaster, the appreciating euro was seen as a problem as well (for growth and the export sector).

Yet, even though there was much talk in the media of the importance of the exchange rate of the euro, the official view remained that it was of only marginal importance that the euro was high, low or otherwise fluctuating. The view was

that the lion's share of trade in the eurozone was among the eurozone countries which meant that the external exchange rate left most transactions unaffected.

Some further discussions emerged in these early years and into the new millennium about the relationship between having a single currency and budgetary deficits and public debts. The Treaty on European Union stipulates that Member States need to treat their macroeconomic policies as a matter of common concern, but also that excessive deficits could be punished. In light of the sluggish economic development in the period 2002-2003 a major debate emerged about the value of the Stability and Growth Pact and what its effect would be on economic growth. The consensus in 2004 was that the SGP should be kept intact but some alterations should be made (as eventually happened in spring 2005).

The most recent years have seen an increased attention on the question of relating monetary policy with rules on budgets and the question of how to improve economic growth in the EU. There are large divergences between a country such as Germany (economic growth and rate of inflation) on the one hand and those same indicators in Ireland on the other. These countries both have the same interest rate that is set by the ECB, but both would benefit from a lower respectively higher interest rate. In the period 2003-2004 the euro stabilized and remained relatively strong vis-à-vis the US dollar and other major currencies, became increasingly used in international trade and held as reserves by central banks throughout the world.

Not all Member States were keen to join the euro. The Danish population rejected the euro in a referendum in 2000. The Swedes did the same in 2003 and the United Kingdom has yet to hold a referendum on the matter. Those critical of joining EMU argue that there is no need to harmonize monetary policy and that the fixed exchange rate can be obtained without transferring monetary sovereignty. However, recent research indicates that most of the citizens who voted against joining EMU in a referendum were mostly voting in response to either their wider fears about European integration penetrating too much into the everyday policy-making of national governments or the fact that they were critical of their government more generally (seeing that the government was in favor of the euro, these citizens voted against just to be contrary).

## 3.2 Debates in Canada on NAMU (1999-2004)

The discussion in Canada on the value of creating a monetary union reappeared largely in response to the entry into stage three of EMU in the EU, with the prospect of the euro as legal tender in a dozen Member States. The

debates in Canada focused on the question of whether or not it would be beneficial for Canada to join a similar enterprise, which was labeled NAMU, with monetary policy shared among the three participating Member States (Canada, the US, Mexico). Realizing that the US was not going to share monetary sovereignty evenly with the two other nations, the question became whether it would be attractive to Canada to join a NAMU if it only had $1/20^{th}$ of the influence of the United States. Other options that were explored were whether it might be beneficial to Canada to have a fixed exchange rate with the United States rather than a float, as had been the case over the past decades. It was argued that times had changed due to the fact that the North American Free Trade Agreement (NAFTA) led to increased trade and ease of economic transactions in Canada. With as much as 85 percent of all Canadian trade being done with the US it was argued that benefits of fixed exchange rates might outweigh its costs.

However, the political cost to national sovereignty of joining an NAMU or fixing the exchange rate seemed unattractive to politicians and citizens which meant that the debates died down. It was probably not a trivial matter that the September 11, 2001 attacks occurred *before* the euro banknotes and coins had been introduced. In the aftermath of those terrorist attacks US policies became much more focused on military as opposed to economic objectives, and the US was less interested than before to share sovereignty over issues (such as monetary policy, or *seigniorage* in case of dollarization). Hence the Canadian government was discouraged to focus on such issues seeing that the US administration was so reluctant to collaborate on these matters with partners.

The issue of dollarization has become quite relevant in the wider Americas. The Argentinean case showed how a fixed exchange rate was no guarantee for irrevocably fixing the exchange rate. When the Argentinean government decided to float the peso it immediately depreciated. In the first forty-five business days since floatation in January 1999 the peso lost close to sixty percent of its value. The currency crisis consequently triggered a major economic crisis in that country.

Other Central and South American countries in the same period did not fare quite as badly, but a few did reflect on what would be the appropriate exchange rate policy for their country in light of fostering economic development, stability, and encouraging foreign direct investment (and avoiding major capital flight).

## 3.3 Comparing the Debates in Europe to North America

EMU in Europe offers a clear mix of politics and economics. It also features a broader legal framework that applies not only to monetary policies but also to related policies (budgetary and macroeconomic policies). EMU implies a sharing of sovereignty over monetary policy, in which all Member States have a voice, and an embedding of monetary policy in a broader set of polices. Yet Member States are still sovereign insofar as being able to determine how to obtain certain commonly agreed outcomes (and reflect on best practices). If the United Kingdom joins EMU a British national (likely a former Bank of England official) would have a voice in monetary policy decisions, have the right to decide how to obtain budgetary outcomes and other macroeconomic policy objectives, but would have to surrender the important formal sovereignty over monetary policy to the ECB. It would also have to accept that the policies on interest rates and thus the politically sensitive mortgage rate would be set in Frankfurt by the ECB. Finally, British citizens who are generally 'anti-European' would have to accept that further European integration would have penetrated British monetary affairs and would have to also accept the symbolism on the European currency that would be in circulation around in the UK (although remarkably the Queen's head would remain on the coins[9]). A majority of the British public would likely consider supporting the idea of joining EMU if a number of conditions are met: (1) the government makes the case that political and economic factors are in place to support moving to adopting the euro; (2) the public is not too upset with the Prime Minister or the cabinet (on other issues); (3) European integration in general is seen as a positive thing (there are no major quibbles over other European issues, or any other major negative publicity involving the EU).

NAMU in today's North America would be completely dominated by the United States. The economic power of the US is such that it would set monetary policies for the whole zone (it would not share sovereignty). Furthermore, the US would likely be disinclined to share any benefits of monetary union (*seigniorage*) with members of NAMU. So even if the economics suggest that fixed exchange rates or indeed a single currency would be beneficial for North America, the political circumstances are far from right; NAFTA ensures free trade but not much collaboration in other areas of policy-making. The result of this comparison is that

[9] Banknotes are all similar and have symbols on them representing European unity (bridges and other architectural buildings). Eurocoins, by contrast, have one side that is similar whereas the other has a national symbol on it that Member States were free to

one is able to speculate why there might be little interest in Canada today to join a NAMU with the US. Ironically, the fact that Canada is as dependent on the US for its main export market might actually work against the desire to have a monetary union in North America. The reason is that Canada feels it still needs to diversify so as not to be completely dependent on the US. For Canada (government and public opinion) to become interested in creating an NAMU three conditions would need to be met: (1) Canada would need to receive guarantees from the US that that country would share some sovereignty over monetary policy with Canada; (2) Canada would need to be less dependent on the US (so as not to be terrified by the idea of joining an NAMU with the US); and (3) the situation emerges such that the Canadian government can no longer benefit sufficiently from having an independent currency. If those conditions are met, Canada might reengage in the debate on whether or not it might be attractive to join NAMU.

## 4. REFLECTIONS ON THEORIES AND DEBATES AND CONTENTS OF THIS SPECIAL ISSUE

The first major insight to be obtained from the present debate is that monetary unions are political choices with significant distributional and economic impacts. These impacts are often hard to assess. Thus, we can reverse a favorite economist phrase about politics, and argue that monetary unions are too important to be left to economists. Yet, it is vital that politicians realize that monetary unions can make or break the economic fortunes of a country.

A second insight from the debate has to do with sequencing of integration, specifically the desirable level of economic and political integration prior to joining a monetary union. The arguments of endogenous OCA theory imply that if further integration of a region is the goal to be pursued, monetary union would be a important stepping stone. It would bring the different entities of that region economically closer together. Thus, a monetary union can be considered a tool for building political, or further economic integration of a region, rather than merely an end in itself.

With respect to the sequencing of integration in North America, there is a case for establishing a single or a common market between Canada and the US prior to engaging into a currency union. This progression would follow the example set by European countries that achieved a degree of economic integration

design as they see fit. Countries that still have a monarchy have typically chosen to display a picture of the ruling monarch.

commensurate with a common market well before engaging in monetary integration. NAFTA has substantially increased the levels of trade and Foreign Direct Investment (FDI) between Canada and the US, reducing the Canadian 'home-bias': the tendency to trade within national borders substantially more than across these borders. Yet it has not compelled Canada and the US to start negotiating elements of economic integration with more political implications, such as the common standards that would be needed for a single market. In fact, Canada and the US have appealed to the World Trade Organization (WTO) several times in order to find solutions to commercial conflicts. The free movement of people is also not an issue that is open to negotiation presently, although Canada's potential inclusion into American security concerns after September 11 might ease the movement of people across the Canadian-US border. This would indicate that more political integration is a necessary step in achieving further economic integration in North America. Thus, the question of what kind of integration should come first is not easy to answer; although in the Canadian case small steps towards both further political and economic integration appear more likely than large political and economic leaps such as a NAMU. The British choice over joining EMU appears in this light to be more about deciding whether further political integration with the European continent is desirable.

One last issue arising from the debate is that of credibility of rules. The move towards monetary union is based on the belief that hard rules are preferable to discretion in monetary and fiscal matters because they are more credible, allowing investors to make long-term choices without worrying about exchange rates fluctuations. Monetary unions qualify as hard rules (firm commitments) because they are more difficult to reverse than a government's commitment to fixed exchange rates. The supporting rules of EMU, embodied in the Maastricht Treaty and the Stability and Growth Pact, are also considered 'hard', due to the sanctions they include. However, once hard rules are in place, questions about not only who is favored by the rules, but also who can break the rules arise. The recent case of Germany and France breaking the rules of the Stability and Growth Pact without suffering due punishment could easily be replicated by the US in the event of NAMU. Just as monetary unions are embraced because of the lack credibility of maintaining 'merely' fixed exchange rates, so monetary unions could be considered non-credible fixes if the powerful countries within these unions bend the rules.

The special issue contains thirteen other major articles. Thomas Willett applies OCA theory to exchange rate policies and offers some theoretical insights in recent adoption of OCA theory. Michael Artis examines the British situation and the Treasury reports on the five economic tests from a predominantly

economic perspective.David Laidler reflects on the start of the debate on NAMU following the introduction of the euro in 1999 and what it means for Canada. Lawrence Schembri examines exchange rate policy in Canada and basically argues why Canada logically does not seek to fix the exchange rate to the US dollar. Herbert Grubel offers an opposite perspective making the case why Canada would benefit from NAMU.Patrick Crowley adopts a clustering methodology to examine the existence of OCAs in Europe and in North America.

The part two contains further seven major articles Eric Helleiner offers a political economy article and looks at the historical experience of Canada with exchange rate regimes and offers reflections on the British case from this perspective. David Howarth examines the British case from various political science theoretical perspectives. Benjamin J. Cohen makes the case why the US dollar is hegemonic and why its government is unlikely to hand over any control over monetary policy to its neighbors. Alvaro Pereira examines the dollarization issue in North America and discusses the differences between dollarization and a proper NAMU. Paul Bowles offers a comparison of Canada and Australia and reflects on how geography and relative size within that area make a difference on the choice for a specific exchange rate policy regime. The next article, by Seccareccia and Lequain, delves deeper into the lessons from EMU for a possible Canadian monetary union. Tolga Bolukbasi's article takes the argument a step further and considers how monetary union might influence the Canadian social model.

## 5. CONCLUSION

Britain and Canada face a world in which their choice of maintaining a floating exchange rate is challenged in light of the successful currency next door. These countries share numerous characteristics from which we can draw lessons. First, they each see having a national currency as crucial to their national identity. In the case of Canada, the currency is an important symbol of national identity seeing that so much of the economic exchange is with the US (85 percent of trade) and also the fact that there is so many similarities between Canada and the US (language and culture). The British pound is a symbol of British 'greatness' and its unique history and heritage. Second, both countries are unsure exactly how close they want to get to the large neighbor. Canada does not really strive for even closer integration as it is concerned that integration might come at the expense of national distinctiveness. The United Kingdom has a similar concern in that it sees the eurozone as representing a deepening integration process that the British

people are still wary of. Third, both countries are unsure what the exact economic costs would be if they stayed outside a monetary union (or indeed what the costs would be if they join). Both countries know that their economic relationship with the neighbor does not really depend on the existence of a single currency (or fixed exchange rates) although they are aware that a fix would likely have an effect on trade and economic and monetary relations more generally.

There are also numerous differences. First, the UK faces an EMU that is part of a broader European integration process in which the UK has a say. Canadians face a dominant partner unwilling to share sovereignty with any of its neighbors. The EU is more balanced in terms of numbers of small, medium-sized and large countries, whereas a NAMU would imply three countries coming together. Even if shared proportionally, the US would represent a much larger part of the whole. Second, joining EMU would mean for Britain a much smaller degree of further integration exactly because so much of the related integration has already occurred (single market, financial market integration, rules on budgetary deficits are in the treaty and so on). The Canadian decision to fix, to dollarize, or to join a NAMU would be a much larger step for Canada, for North America and for economic and political integration in the region (and as said, because the US will not want to pool its sovereignty with others, the US would fully dominate a would-be NAMU, if on offer). Third and finally, the geographical, economic and political situation in Britain and Canada is fundamentally different. Canada has an almost symbiotic relationship with the US and is almost lacking a real clear cultural basis to continue to stress its national difference from the US. Thus giving up monetary sovereignty and the important symbolic national currency could have a devastating effect on Canadian identity. The case of Britain is significantly different. For the foreseeable future, that country will remain a distinct culture that is different from its neighbors on the continent. It will not easily lose its identity by giving up its currency.

Britain and Canada both face a challenging future insofar as their currency regime is concerned. Though Britain faces the prospect of joining its neighboring monetary union in the next decade – whilst Canada does not – both countries face an international political economy in which minor currencies no longer automatically survive as important international trading currencies. Both countries will have to position themselves within this context. This issue aims at providing insights into how this positioning takes place by looking at the experiences and debates in these two countries, as well as the economics and politics of monetary union.

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# OPTIMUM CURRENCY AREA AND POLITICAL ECONOMY APPROACHES TO EXCHANGE RATE REGIMES: TOWARDS AN ANALYTICAL SYNTHESIS

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## INTRODUCTION

Should medium size countries such as Canada and the UK maintain their monetary independence or should they join the fashionable trend toward tying their monetary fates to larger currency areas? Unlike New Zealand, whose international exchange is widely diversified, it's clear that if Canada and the UK were to retire their dollar and pound respectively, Canada should choose the American dollar or some new North American monetary unit and the UK should choose the euro. Having a large monetary area next door makes that part of the debate easier to answer. The much harder question is whether the domestic currency should be abandoned in the first place. There is considerable dispute in both countries on this fundamental question, as there is in similarly placed countries such as Mexico and Sweden. The immediate seriousness of the debate is much stronger for the UK than for perhaps any other country at present (since

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Sweden recently voted against entry at this time) and the new EU entrants do not enjoy the opt out clauses of Sweden and the UK. In Canada, however, there has been a vocal minority of experts calling for monetary integration that has attracted considerable public attention.

A striking feature of these debates is how hard it is for non-experts to gain an understanding of the key issues on which such choices should be made. Media coverage, of course, focuses on sound bites, and in this arena exaggerated claims generally drive out reasoned analysis in a sort of Gresham's law process. Thus the public is frequently told (by different people of course) that either choice would be an economic and/or political disaster.

My goal in this paper is not so much to present a case for the right answer for Canada or the UK as to try to lay out the beginnings of a framework for analyzing both the normative economic issue of what countries should do and the positive political issue of what they are likely to do. A key theme is that the simple choices involving monetary integration involve a complex range of issues, some of which are still only dimly understood. Fortunately, however, we do have considerable analysis, both political and economic, on which we can draw.

For most serious international monetary economists, the starting point for the analysis of such currency issues is the optimum currency area (OCA) approach, pioneered by Robert Mundell (1961), Ronald McKinnon (1963) and Peter Kenen (1969). It highlights the crucial point that no one exchange rate is best for all countries. There are both costs and benefits to all exchange rate regimes and their ratios will vary systematically across countries based on factors identified in the OCA literature.[1]

While the development of the OCA approach has done much to raise the quality of the analysis of exchange rate regimes, it has made much less progress in reducing the amount and volume of the debate about exchange rate issues. A major reason for this is the number of different considerations that have been shown to be relevant for the determination of (economically) optimal exchange

[1] For recent discussions of OCA analysis see de Grauwe (1997), Krugman (1995), Masson and Taylor (1993), Tavlas (1993), (1994), Wihlborg and Willett (1999), and Willett (2003b). Of course, there have been many criticisms of specific aspects of OCA theory and in some cases these have escalated to criticisms of the whole framework. Perhaps the most common example of the later came from new classical economists who argued that traditional OCA analysis was based on outmoded Keynesian ideas. It is true that OCA theory was initially developed within a simple Keynesian framework, but most of its key insights continue to hold in all but he most extreme new classical versions of modern macroeconomic analysis.

rate regimes. These have risen well into double figures, and there is considerable disagreement about their relative importance and how to operationalize them.

Given the time required to master the full technical literature on OCA analysis, and the often inconclusive results of doing so, it is not surprising that a substantial proportion of the policy literature by economists takes just a few of the considerations from OCA analysis to emphasize. The problem is that authors often give the impression that these few are the only important considerations. Nor should we be surprised that by some mysterious process, economists who are strong advocates of fixed exchange rates tend to emphasize criteria on which fixed rates look good, while advocates of floating rates tend to focus on other criteria that support flexible rates. This tendency for advocacy pieces is not limited to full time popularizers. Sadly, examples can be found from some of our most distinguished economists.[2] Thus, it is not difficult for a policy maker to find economists to support almost any position on exchange rate policy they would like.

While one may debate whether or not exchange rate policy is too important to be left to the economists, there's little question that it seldom is. This helps explain the less than perfect success with which the normative theory of OCA predicts actual exchange rate policies. Indeed, Charles Goodhart (1995) has rightly pointed out that OCA theory has little explanatory power when it comes to the formation of currency unions. Here political considerations dominate. Despite the amount of rhetoric about economic considerations, the creation of the euro does little to contradict Goodhart's argument. OCA theory does have a good deal greater power to explain countries' choices with respect to the degree of exchange rate flexibility, but for the development of a satisfactory positive theory of the choice of exchange rate regimes additional considerations must be added.

## A BRIEF OVERVIEW OF A POLITICAL ECONOMY FRAMEWORK

The obvious place to look is in the political realm. It is virtually meaningless to talk simply about the relative importance of economic versus political considerations for policy relevance since the salience of economic effects is determined through the political process. Thus, a good theory of the political economy of the choice of exchange rate regimes should include the basic elements of the standard economy theory of OCA's and expand and modify these to take

[2] See Willett (2001a).

into account political objectives and recognition that economic policies are normally determined through a political process.

Traditional OCA theory focuses on aggregate economic efficiency. An obvious step to make the theory more politically relevant is to look at the distributional issues of who gains and who loses. Gainers and losers would then in turn be weighted by their influence in the political process. As we know from public choice theory, it is not just numbers that matter. Small well-organized groups are often much more influential than large groups with little organization, such as consumers, in large part because of free rider problems.

What motivates choices, however, is perceptions of gains and losses and for relevant analysis we must consider the possibility of systematic biases of perception. The new field of behavioral economics and finance is showing that systematic misperceptions are important for some areas of economics and finance.[3] The public choice concept of rational ignorance suggests that such biases may be even greater in the political sphere.[4] Thus, in looking at the political economy of currency choices, we need to take seriously issues of biases due to short time horizons and imperfect information flows. The conceptual schemes or mental models that actors adopt can also be of major importance. For example, a Keynesian who believes that discretionary domestic macroeconomic policy can have substantial effects on unemployment will be more concerned about adopting a fixed exchange rate than a new classical macro economist who believes that discretionary macro policy can do little good.

For the political economy of exchange rate regimes, time horizons and the operation of time asymmetries can also be quite important. A good deal of international macroeconomic literature has focused on the possible beneficial role that the discipline effects of fixed exchange rates can play in overcoming domestic time inconsistency problems. Less well understood is that pegged exchange rates can generate time inconsistency problems of their own. Because the benefits of pegging exchange rates are often heavily skewed toward the beginning, while many of the costs tend to be delayed, pegged rates will tend to have more favorable benefit-cost ratios in the short run that in the long run. Combined with short time horizons for political actors, these time asymmetries can help explain the popularity of adopting pegged rates regimes that fail in the longer run.[5]

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[3] For references and an application to international finance see Willett (2000a).

[4] This idea is that it does not pay to invest in acquiring information in areas where you are unlikely to be able to influence outcomes.

[5] See Willett (1998) and (2001b).

Finally, we need to include pure political considerations such as foreign policy and desires for political integration that have been so important in the formation of the Euro areas. It will be argued that the euro case is quite unusual. Normally the major non-economic political considerations will operate against, rather than in favor of, the formation of fixed rate areas.

Of course, a full integration of the OCA and political economy approaches lies outside the scope of any one paper (or even one lifetime), but there is a substantial literature on which we can draw to begin to sketch out some key elements of such an analytic synthesis.

We begin in section 3 with a brief review of some of the major considerations emphasized in the literature on OCA theory. We interpret this literature as implying that for most countries, it is economically optimal to have neither of the extremes of genuinely fixed or completely free floats in which exchange rate developments have no influence on domestic monetary policy.[6] Intermediate exchange rate regimes have been prone to considerable instability in a world of substantial capital mobility. Section 4 argues that this problem is due as much to political economy as to technical economic considerations. The role of time asymmetries in the effects of exchange rate changes and the resulting creation of time inconsistency problems where policy makers have short time horizons is emphasized.

Section 4 turns to a broader range of political considerations that are relevant to the choice of currency regimes. It stresses that just as there are a number of economic considerations relevant for OCA theory, there are also many different types of political considerations that may be relevant for the actual choice of currency regimes. Section 5 offers a brief application to the UK Treasury's five economic tests for euro entry. Section 6 concludes with an emphasis on the need to take uncertainty explicitly into account when choosing a currency regime.

[6] A free float is typically defined as having no official intervention in the foreign exchange market. Some use the term more loosely to include regimes where intervention is used to smooth fluctuations but not the trend of the exchange rate. Even under a completely free flat a government could use exchange rate movements as a partial guide for monetary policy. This could be accomplished by varying domestic open market operations in light of exchange market developments. More commonly, however, a country following such an intermediate approach would practice unsterilized intervention in the foreign exchange market. Where there is no sterilization, intervention to support a falling currency would automatically lead to a tightening of domestic monetary policy while intervention to hold down the currency would generate expansionary monetary policy. Thus sterilized intervention is much more likely to contribute to the buildup of disequilibrium than unsterilized intervention. See Willett (2003b).

## AN OVERVIEW OF THE BASIC ECONOMICS OF OCA THEORY

The basic idea of OCA theory is that there are both costs and benefits to any monetary regime. The benefits of a single currency include reduced transactions costs and the removal of uncertainty about the future relative values of different currencies. Individual currency areas should continue to be expanded as long as the marginal benefits exceed the costs, which are associated primarily with the loss of the exchange rate as a policy tool and the connected loss of the ability to follow an independent monetary policy. In general the expansion of a currency's domain will have diminishing marginal benefits and increasing marginal costs. Their intersection would delineate the boundary of an optimal currency area. Of course the early OCA theorists recognized that the globe was already divided up into nations so these were typically taken as the unit of analysis. The OCA question was thus typically posed as whether a country should maintain an independent currency or join with others in a broader currency area.

While the initial contribution by Mundell (1961) argued that the liquidity value of money was less, the smaller its domain and this was developed into a major focus of McKinnon's (1963) following contribution, the vase majority of OCA analysis has focused on the evaluation of the costs of given up an independent currency and how these vary based on structural characteristics and patterns of disturbances. The European Commission: "One Market, One Money" (1990) reflected a major effort to focus attention on the magnitude of possible benefits from currency union.[7]

A key focus of OCA analysis has been on alternative methods of adjusting to disequilibrium. When the domestic and international sectors of an economy become misaligned with one another, which should be adjusted to the other? Under fixed exchange rates the domestic sectors will be forced to adjust to the international sectors as under the classical gold standard mechanism. Under a pure floating rate system, it is the international sectors that must largely adjust to the domestic sectors. Which mode of accommodation is preferable will depend on the relative importance of the sectors and the relative costs and effectiveness of the adjustment mechanisms available.

Under ideal systems of fixed and flexible rates, there would be little difference. With highly flexible domestic economies, the cost of adjustment would be low and the issue will essentially come down to the relative importance

[7] The imbalance in technical analysis was due primarily to the dearth of costs versus benefits of attractive analytical approaches to dealing with the latter. See Krugman (1969).

of domestic versus external price stability. This would in turn normally depend on the relative size of the domestic versus external sectors. Thus the more open is the economy, i.e. the larger is the external sector relative to the internal sector, the greater would be the case for fixed exchange rates.

In such analysis it is openness with respect to prospective currency partner that is relevant. Thus while not emphasized until OCA analysis, the pattern of one's trade can be as important as the overall level of openness of an economy. For example, while New Zealand's overall level of openness to trade is relatively high, its pattern of trade is quite diversified so it does not have an obvious partner for a currency union. The Baltic States are all small, highly open economies but initial proposals for a Baltic currency area actually made little sense because they had little trade with one another. On this criteria while the UK does trade heavily with the euro economies, this represents a far lower percent of its overall trade than for Canada with respect to the United States.

Such multi-country analysis raises an issue of path dependence in the formation of currency areas. A pattern of trade could easily be such that it could make sense for a group of countries to collectively agree to form a currency area that would not have formed through independent decision making based on OCA criteria. While not the driving force for the creation of the euro, such prospective path dependence likely did play some role in the success of the negotiations for EMU.

To this point we have implicitly assumed that exchange rate adjustments are an effective mechanism for adjusting external imbalances. In fact, however, this will depend on the openness of the economy. For a tiny highly open economy such as, say Luxembourg, there is little pure internal sector and a change in the exchange rate would bring about little change in relative prices. Most domestic wages and prices would rise in step with a devaluation. In effect, the internal sector would be so heavily influenced by the external sector that there would be little effective independence between them.

For these purposes the external sector includes not only exports but also domestic sales of goods and services that are close substitutes. Thus, we again reach the conclusion that the higher the degree of openness, the greater is the case for fixed over flexible exchange rates. Recent literature has shown that international currency substitution and the denomination of debt and other contracts in foreign currency are additional important aspects of openness for this purpose.[8]

[8] While there is considerable use of the US dollar in Canada, there is little evidence that this is so high that it is a major source of exchange rate instability or that it undercuts

Where currency substitution is high, exchange rates are likely to be more volatile with the possibility of small shocks generating changes in exchange rates. Where there are substantial unhedged foreign currency positions, large exchange rate changes can in turn have large wealth effects. In such circumstances large currency depreciations can be a major cause of bankruptcies. This mechanism was a major cause of the severity of the Asian crisis. To date such considerations have been primarily relevant to developing rather than industrial countries.

Note that these effects are distinct from capital mobility per se. The latter is often mentioned as a criterion for OCA analysis, but the effects on the choice of optimal exchange rate regimes is not clear cut. Assuming that speculation is stabilizing, high capital mobility can make either regime work better on some criteria. It lessens effective monetary autonomy under both regimes but also helps spread out the effects of shocks. Whether the latter is desirable depends in large part on whether the shocks are domestic or foreign. In general high capital mobility reduces the differences between fixed versus flexible rates and does not generate a clear comparative advantage for one regime or the other.[9] It does, however, clearly make the operation of intermediate regimes more difficult. This holds especially for the narrow band, adjustable peg type of regime adopted at Bretton Woods.

On the openness score, both Britain and Canada fall in an intermediate category between tiny countries such as Estonia where a fixed rate seems clearly optimal and a giant like the US where some form of flexibility is clearly best. There is as yet little consensus among economists about boundary levels of openness. Countries much smaller and more open than Britain and Canada have had experiences with flexible rates that many economists have judged to be quite successful, but not all share this assessment. We see the scope for controversy highlighted by the papers on Canada in this volume. My own reading of the evidence is more in line with the generally positive analysis of the success of Canada's floating presented by Laidler and by Schembri than with the negative views of Grubel and of Harris, but collectively these papers give the reader a good basis for making their own judgments. What we can clearly say on the openness criteria is that both Britain and Canada are large enough to have viable independent currencies. Thus the decision to pursue monetary integration is one of choice, not necessity.

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the effectiveness of exchange rate adjustments. Currency substitution is even less of a problem for Britain.

[9] See Tower and Willett (1976).

Where internal adjustment is costly because of sticky wages and prices and low factor mobility, deflationary policies will generate recessions and high unemployment[10]. The openness criteria still applies, but the threshold of openness at which fixed rates should be preferred is raised. In effect exchange rate adjustments then provide a second best method of generating effective real wage and price flexibility and thus lower the costs of adjustment.[11] Again neither Britain nor Canada appears to have sufficient labor market flexibility to make the openness criteria irrelevant.

So far we have discussed the OCA criteria of labor market flexibility and openness that were stressed in the initial OCA contributions and the subsequent expansion of the concept of openness to include international currency and asset substitution. Much of the more recent literature has focused on the influence of patterns of shocks and efforts to measure these. As Masson and Taylor argue "The cost of monetary union for a given country involve the loss of exchange rate flexibility, which can be seen as an instrument to cushion 'shocks' to the economy" (1993: 381). As Bayoumi and Eichengreen put it "only if disturbances are asymmetrically distributed across countries or if speeds of adjustment are markedly different will distinctive national macroeconomic policies be needed and the constraints of monetary union be a hindrance" (1994: 1). As they go on to note "subsequent to Mundell, the [OCA] literature has followed Kenen in linking structural characteristics of economies, as in particular, the sectoral composition of production, to the characteristics of chocks" (1969: 4).

The analysis of patterns of shocks and subsequent covariations in national price, output, and consumption levels, often using quite sophisticated econometric techniques, has become a major industry. This has been encouraged both by statistical technology and recognition that, as Masson and Taylor put it "It is clear that there Is no single over riding criterion [for OCA's]…Increasingly analytical attentions has therefore turned to analysis of shocks affecting economies since shock absorption combines the net influence of several of the traditional criteria" (1994: 35). While certainly contributing a great deal to our knowledge there are also some major problems with the literature in this area. The biggest problem is that it is not always clear just how the effects of shocks relate to the traditional criteria, but that researchers often do not always stress this sufficiently. Thus the results of statistical exercises that should be viewed as contributing to our

[10] In his initial contribution to OCA analysis Mundell (1960) took the Keynesian assumption of sticky wages and focused on the role of factor mobility.

[11] Conversely, new classical macro economists who assume highly flexible economics see much lower threshold levels of openness.

knowledge of a subset of criteria are sometimes offered or interpreted as offering a more complete answer. For example, some economists have agreed that there is a strong case for a common currency in Asia because on some measures of patterns of shocks these countries score as well as pre EMU Europe.[12] This overlooks the many criteria on which many Asian countries score quite low, as well as assuming that Europe is a good benchmark.

Furthermore, the various major ways in which patterns of shocks are relevant for the choice of exchange rate regimes are often not made clear. At least three ways have been stressed in the literature. One is the cost of balance of payments adjustment. A second is the ability to use discretionary monetary policy for short and medium term macroeconomic stabilization and a third, stressed especially heavily in the theoretical literature, is effects as automatic stabilizers. These criteria will sometimes conflict with and other times reinforce one another just as the objectives of price and output stabilization can conflict or be complements depending upon the shock in question. Added to all this is the question of how reliable as guides to the future are past patterns of shocks. None of these concerns argues that we should pay no attention to the studies in this area, but they do suggest that careful attention needs to be given to the design and interpretation of such work.

Formal analysis of the effects of shocks generally assumes either that speculation is efficiently stabilizing or, as in the traditional Mundell-Fleming analysis, that it is effectively absent through the assumption of static expectations. Without at least some stabilizing speculation, however, freely floating rates would likely be highly volatile. It is well known that trade elasticities tend to rather low in the short run and that the resulting J curve effects would make flexible rates unstable in the short run in the absence of speculative smoothing. Thus a reasonable degree of financial market development is an essential prerequisite for a free float. Its absence would call for managed flexibility rather than fixed rates. To shift the case to favoring fixed rates what is needed is not just the absence of stabilizing speculation but the existence of actively destabilizing speculation that cannot be effectively offset through official management.

Critics of flexible rates often argue that they will be unstable and generate additional disequilibrium that would not occur under fixed rates. Likewise they assume that a country will be able to credibly fix against a stable country or groups of countries. Advocates of flexible rates tend to make opposite assumptions, stressing the role of flexible rates in helping to insulate countries

[12] See, for example Kwack, Lee, and Ahn (2003). For more detailed critiques of examples of such analyses see Willett and Maskay (2003).

from the effects of disturbances abroad. Critics of Britain's flexible rate such as Buiter (2000) argue that a large part of the movements in the pound have been due to destabilizing speculation. As Artis discusses in this volume, the HM Treasury's recent report pays considerable attention to challenging this view.

Similarly in Canada, critics of Canada's floating rate such as Grubel and Harris argue that much of the decline of the Canadian dollar has been due to unjustified speculation while the Bank of Canada and academic economists favorable to flexible rates such as David Laidler argue that most of the decline was due to fundamentals. This issue prompted heated debate at the conference on which this volume is based. The technical research on this issue makes it clear that neither of the extreme views of fully efficient speculation at all times nor of persistent wildly destabilizing speculation are supported by the evidence, but this leaves a wide gray area within which analysts may reasonably disagree.

In the case of Canada, it seems highly unlikely that all of the decline of the Canadian dollar over the past decade was due to destabilizing speculation. If even half of the decline were due to fundamentals, then this would have required an enormous amount of adjustment to have been carried out domestically. It is difficult to believe that the required deflation could have been managed without substantial unemployment and lost growth. It has proven difficult, however, to get advocates for fixed exchange rates for Canada to take this counter factual scenario seriously. While the advocates of fixed exchange rates for Canada include some distinguished economists who have made important contributions to the analysis of exchange rate issues, on this topic they have generally acted more like debaters than open-minded researchers.

There is also much debate about the extent to which patterns of disturbances are exogenous or endogenous to the choice of exchange rate regimes. For example, while it has been traditionally argued that countries with substantial differences in inflation rates make poor candidates for a common currency, advocates of fixed rates often argue that countries with high inflation rates should see this as a golden opportunity to use fixed exchange rates to import discipline from the low inflation country. Sometimes authors even list the seemingly contradictory conditions of high inflation (need for discipline) and stable relative prices with the anchor as criteria in the some papers.[13] The key making these two criteria consistent, of course, is that fixing the exchange rate be capable of bringing inflation down to the anchor country's level.[14]

[13] See Gale and Vines (2002).

[14] Actually the requirement is even stronger than this since a price level differential will have accumulated during the process of disinflation.

Exchange rate based stabilization or the use of the exchange rate as a nominal anchor may favorably influence expectation and establish credibility more quickly. The development of emphasis on problems of time inconsistency in the macroeconomic literature established in a rational expectations framework an analog to Keynesian type analysis of the incentives for political business cycles and stimulated a search for "commitment technologies" to help overcome resulting inflationary basis. Exchange rate pegging became the instrument of choice for many economists and officials. The successful disinflations of the members of the European Monetary System in the late 1970s and early 1980s were widely cited as examples of the benefits of such exchange rate discipline by European and IMF officials, despite subsequent research that questioned whether the EMS countries did in fact disinflate at lower cost than the industrial countries with flexible exchange rates.[15] For the developing countries, experience shows that this sometimes works and that more often it does not, but there are enough examples on each side to keep the debate going.[16]

Advocates of fixed rates also often argue that because labor market rigidities are more costly under fixed rates, their adoption will for greater labor market flexibility. Both of these types of strategies, which go under the label of endogenous OCA theory, in effect commit the economy to a game of chicken. For Argentina, the balance worked well in the short run, but not in the longer-run.[17] This is likely not an atypical experience. Fortunately, the euro zone didn't start from such a situation of large initial disequilibrium, but the process to date of increasing labor market flexibility to deal with emerging imbalances has not been promising. Howarth notes in his contribution to this volume that perceptions that the euro countries have made little progress on this score have reinforced views in Britain that the British economy is doing better than the euro economies and has contributed to the predominantly negative attitude of the British public toward joining the euro. (Elite opinion in Britain is much more positive.)

Another method of offsetting or reducing the need for undesirable adjustments is through fiscal transfer. Thus starting with Peter Kenen a number of economists have stressed that high levels of fiscal integration across countries can contribute importantly to the smooth operation of common currencies. On the other hand, highly divergent fiscal policies can be a major source of pressure on currency areas. There has been considerable debate over the degree to which the adoption of fixed exchange rates will automatically discipline fiscal policies. The

[15] See Westbrook and Willett (1999).
[16] See Edwards (2003), Martin, Westbrook, and Willett (1999), and Willett (1998).
[17] See Willett (2002).

evidence from Italy and Argentina suggests that rather than providing discipline, fixed rates may in the short run make it easier to finance budget deficits and hence reduce discipline.[18] Recent OCA analysis has also emphasized the political cost of fixed rates in allowing inflation taxes, i.e. seigniorage, to be set independently. This has replaced the initial Keynesian Phillips curve arguments for why countries might prefer different rates of inflation. From the standpoint of optimal policy, this should make little to industrial countries whose economically optimal rates of inflation are low.[19] Politically optimal rates may be much higher, however, and with weak governments inflation is often a residual method of finance.[20]

This again illustrates the importance of the political assumptions underlying economic analysis. While there is still a long way to go, recent OCA analysis by economists has been paying greatly increased attention to political considerations. While such political attention has often involved highly questionable ad hoc assumptions, there is also a healthy trend toward more systematic political economy analysis. Many economists involving in international monetary economics now recognize that some of the most important requirements for a currency area to function well are political. Where there is a substantial political desire for a currency area, not all of the OCA criteria need to be met for the currency regime to be workable. The less the criteria are met, however, the greater will be the economic costs. As was sadly illustrated by the recent case of Argentina, if a number of important economic criteria are not met, the costs can be considerable. Argentina scored high on the currency substitution and need for discipline criteria, but it was a relatively closed economy with only a small proportion of its trade with its anchor country, the United States. Its labor markets were fairly rigid. While the adoption of Argentina's fixed rate system does appear to have contributed to an increase in flexibility, it did so by far less than enough to avoid high unemployment when adverse shocks occurred. Furthermore, while the fixed rate was quite successful in imposing monetary discipline, this was not duplicated with fiscal policy. Thus Argentina stands as a vivid example of the costs of not taking seriously the importance of all of the major OCA criteria reviewed above.[21]

Indeed the number of these criteria suggest that relatively hew countries are likely to meet the criteria for either extreme of fully fixed or completely free floating to be optimal. The implications of this are explored in the next sections.

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[18] See Willett (2000a) and (2001b).
[19] See Banaian, McClure, and Willett (1994).
[20] See Willett and Banaian (1996).
[21] See Willett (2002).

## THE PROBLEM OF UNSTABLE INTERMEDIATE REGIMES

The review in the preceding section indicated that there are a number of important OCA. Many, if not most, countries will not fit well all of the criteria for making fixed rate optimal. The same can be said with respect to pure float, however. For most countries, the relative weights given to external versus internal considerations in setting domestic macroeconomic policy should be neither zero nor one hundred percent. In other words, most countries should have intermediate exchange rate regimes, or as I have put it elsewhere, "Fear of floating needn't imply fixed exchange rates" (Willett 2003b). This conclusion, however, is in sharp conflict with the bi-polar view of exchange rate regimes that has gained great popularity in recent years as a result of the rash of international currency crises. There is general agreement among international monetary experts about the validity of the weaker forms of the unstable middle hypothesis. In a world of substantial capital mobility, the traditional narrow band adjustable peg regime of the Bretton Woods variety is clearly inherently unstable. It is less clear, however, that therefore to avoid currency crises one must go all the way to one corner solution or the other, i.e. fully fixed or freely floating exchange rates. The track record of managed floats and crawling band regimes does not yield to easy interpretation. Some have worked well and others badly.

The reasons why some have worked well and others poorly seems likely to have at least as much to do with political economy considerations as with purely economic reasons. In short, while OCA analysis suggests that most countries should adopt some form of intermediate regimes, experience shows that such regimes have a tendency toward instability.

My recent research suggests that there are powerful political economy incentives for governments to operate intermediate regimes with insufficient flexibility to avoid the buildup of disequilibrium that leads to currency crisis.[22] Consequently in the design of intermediate regimes, careful attention needs to be given to political economy as well as technical economic considerations.

One important implication of my research is that rather than viewing crawling band regimes as a source of domestic discipline, as has been done in a lot of the literature advocating exchange rate based stabilization, regimes of limited exchange rate flexibility may be subject to the same types of time asymmetry pressures that generate incentives for political business cycles.[23] Thus to help

[22] See Willett (2004).
[23] See Willett (1998) and (2001b).

avoid crises there is a strong case for insulating both exchange rate and monetary policy makers from short-run political pressures.

This potential instability of intermediate regimes was a major factor in promoting the creation of the euro. While the exchange rate mechanism of the European Monetary System was designed to be considerably more flexible than the narrow band adjustable peg adopted at Bretton Woods, over time it developed similar rigidities. This in turn, was a major contributing factor to the currency crises of the early 1990s. The failure of this intermediate option generated a move toward greater flexibility in the short run, but acceleration toward monetary union over the longer run. On the other hand, the collapse of Mexico's crawling band regime at the end of 1994 resulted in a move toward greater flexibility that has been sustained, albeit not without considerable debate.[24]

Some regimes of crawling bands have worked well (Chile, Poland and Hungary provide examples), but the overall record is far from stellar. In general, managed flexibility appears to provide a more stable alternative, although the Asian crisis shows that many regimes officially listed as managed floats have considerable de facto rigidity.[25] Britain and Canada have both suffered periods of poor discretionary exchange rate management. Examples are Britain's shadowing of the DM under Chancellor Lawson and Canada's disruptive end to its floating regime of the 1950s. Over all, however, intervention has generally been light and management sensible in both countries. Thus the danger of political manipulation leading to currency crisis looks low well below average for both countries.

## THE POLITICS OF CURRENCY UNIONS

The natural transition from OCA to political economy considerations is to focus on distributional effects. Since fixed rates give more primacy to the international sectors and flexible rates to the internal sectors, we would expect distribution considerations to generally reinforce the conclusions of the OCA efficiency analysis that the relative size of the internal and external sectors will be an important factor in the choice of exchange rate regimes.[26] On both grounds, we

[24] See Auerbach and Flores (2003).

[25] See Willett et al (2003).

[26] Such distributional considerations have been especially emphasized by Jeffrey Frieden. See for example, Frieden and Stein (2001). As a reviewer noted, the economic gainers and losers from a currency union due not translate perfectly into the international and domestic sectors. While for analytic tractability our theoretical models usually make a sharp distinction between traded and nontraded goods, in reality there is a continuum

would expect to find currency boards to be adopted primarily by small open economies and this is indeed generally the case. Argentina was an important exception, but this was not an experiment that ended well.

The politics of the formation of the euro zone were much more complicated than for unilateral adoption of currency boards, but even in the euro case the leading economy advocates of EMU were the large multinational businesses and financial institutions that stood to gain particularly from a fixed rate system, while workers, owners, and managers of smaller, more domestically oriented firms have tended to be skeptical.[27] Of course, as we know from the political economy of trade policy,[28] we cannot always predict political outcomes just from counting the number of gainers and losers. Rational ignorance and free rider problems explain why small groups are often much more politically influenced than large but poorly informed and organized groups.

Given the relatively modest levels of international economic cooperation that one generally observes, we would expect that both governments and the public have a bias in favor of preserving national autonomy. Thus, we would expect a bias against fixed exchange rates. Running counter to this could be informational and analytical biases that would lead to under-appreciation of the implied constraints that fixed exchange rates would place on domestic policy. This appears to be the case even among many of the relatively well-informed advocates of fixed exchange rates among multinational corporations. There is likely a bias toward a better understanding of the direct gains from fixed rates in making international business easier than of the indirect constraints that this will imply for national macroeconomic policies. Of course as these constraints become visible in practice, as in the case of the recent German recession, greater recognition should result. There is little question that perceptions that their economies are doing better than the major euro economies substantially increased opposition in Britain and Sweden to joining the euro zone.

Because of the likely relatively low levels of relevant information and high uncertainty about the most relevant analytic models, we would expect nationalists to exaggerate the costs of giving up the home currency while those associated with multinational institutions would tend to exaggerate the benefits.[29] This has indeed typically been the case. What was unusual in the case of the creation of the

of degrees of trade versus non tradeness. Furthermore, even firms that have no direct international connections can be influenced by the behavior of firms that do.

[27] See for example, Eichengreen and Frieden (1994), Hefeker (1997), and the papers by Helleiner and Howarth in this volume.

[28] See the analysis and references in Kaempfer, Tower, and Willett (2003)..

[29] As Helleiner discusses, this latter effect has been muted in Canada.

euro was the success of political leaders in linking monetary union to the broader objectives of the European Union.[30] A small euro area may well have made sense on OCA grounds, but few experts in OCA analysis believe that the broad euro area that has emerged has much to do with OCA criteria.[31] (Both large and small countries entered and both large and small stayed out; there is little correlation between OCA criteria and the composition of the ins and outs.)

Several types of groups have been especially active in generating discussions of currency unions. One group consists of political leaders who seek to gain credit for farsighted statesman like actions and/or the benefits of a quick fix. In both Latin America and Asia there have been calls for regional monetary integration to avoid the effects of currency fluctuations and to provide a stronger basis for regional integration. For a long time to come, however, such talk is likely to remain just talk. For most of the regions, the political pre-conditions for monetary union more closely approximate the Europe of a century ago than the Europe of the post war period.

More relevant for non-European regions is that many of the benefits of adopting fixed exchange rates tend to show up more quickly, than the costs. Favorable effects on confidence and inflationary expectations tend to occur quickly while the costs of recessions due to the development of overvalued currencies tend to not begin for several years. Such considerations are likely to weigh particularly heavily in cases of high inflation and domestic political instability. This helps explain the adoption of currency boards by both Argentina and Ecuador. Such conditions clearly do not apply to the countries that are the focus for this conference, Canada and the United Kingdom. However, some advocates of fixed rates for Canada have attempted to argue that flexible rates have been the cause of unsatisfactory rates of productivity growth.[32] While a good bit less potent than the economic distress of Argentina and Ecuador, this quick fix argument for fixed rates has enjoyed some currency in Canada.

It is an interesting question whether such time asymmetry considerations were important for the development of the EMS and the euro. Economists have frequently ascribed the desire to generate credibility to the formation of the EMS, but this was a rationale that was developed primarily after the EMS was already in operation. The initial focus was more on limiting the size of exchange-rate fluctuations.

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[30] See, for example, Pauly (forthcoming) and Willett (2000b).

[31] See, for example, De Grauwe (1997).

[32] For examples of the debate in Canada, see the contributions in this volume and in Salvatore, Dean, and Willett (2003).

A reviewer rightly suggested that my statements about time asymmetries in an initial draft seemed too sweeping. Noting the importance of whether countries peg at the 'right' rate and adopt appropriate policies; the reviewer pointed out that some EMS participants found membership a struggle at first and doubted whether many EU states, with the possible exception of Italy, were allocated to the EMU by thoughts of quick fixes and early benefits. With respect to the EMU I believe that these doubts are well taken. With Europe the most relevant time asymmetries were political not economic. The primary motivations for EMU in the first place were political and desire to be in the inner club was a major motivation for some countries. Furthermore, the Maastricht entry requirements nullified much of the time asymmetry of unilateral fixes from a disequilibrium position by requiring substantial adjustment for most countries before entry.

A second group of advocates for currency union or dollarization are academics who can attract public (and sometimes also academic) attention by promulgating highly imbalanced treatments of the costs and benefits of adopting fixed exchange rates. I have analyzed several examples of such highly misleading policy advocacy pieces in my recent paper on “Truth in Advertising and the Great Dollarization Scam” (2001a). A third group is multinational enterprises that stand to gain particularly from the adoption of fixed exchange rates. Not surprisingly we find that in Europe large multinational corporations have been much stronger supporters of monetary union than small, domestically oriented firms.[33] An interested point noted by Helleiner is that while this argument does fit well with the lobbying of the city in London, it fits much less well for Canada. For example, most of the major banks in Canada favor maintaining a flexible rate, understanding that this is necessary to preserve domestic monetary autonomy. A second reason is fear that under a currency union they would face more competition from US banks.

With respect to the potential entrants into the euro zone itself, we would have a fourth class of advocates who see euro membership primarily in terms of broader political objectives. Consider, for example, the fear that EU member states that do not adopt the euro will have less political influence in Europe and will be thought of as second-class citizens. This is likely to be a much more important consideration to the political leaders who will see themselves exerting the increased leverage and avoiding stigma than there are for the public at large. Thus it is not surprising that European political leaders have tended to be stronger supporters for the euro than their publics. The median voter model does have a good deal of explanatory power, but not for the initial decisions on membership in

[33] Again see the papers by Helleiner and Howarth in this volume.

the euro zone; these were driven by elite opinion. For many of the latter entrants referenda were mandated, and in these cases the incidence of entry has been much lowered.[34]

We still have much to learn about the range of domestic and international political considerations that may influence national decisions on currency policies and how their relative influence varies in different situations. It is interesting that the three papers in the Salvatore, Dean, and Willett (2003) volume on dollarization that focus on political economy aspects of dollarization in Latin America all take different approaches. Jürgen Schuldt of the Universidad del Pacifico in Lima, Peru sees dollarization as inevitable and bases his argument heavily on his perception of how the United States sees this in its economic and political interests. Jerry Cohen offers a quite different interpretation of US interests. His analysis puts heavy emphasis on international power relationships, reflecting the realist paradigm in international relations theory. On the other hand, Nancy Auerbach and Aldo Flores-Quiroga in their analysis of Mexico place greater emphasis on the roles of domestic politics and the role of interest groups. The wide range of types of political considerations that can influence the choice of currency regimes is nicely illustrated by the papers by Helleiner and Howarth in this volume. Their careful analyses clearly demonstrate that we should be as wary of accepting political economy arguments that rest on a single factor or point of view as we should be of economic arguments for the desirability of a particular exchange rate regime based on only one or two considerations. Furthermore, as with the economic effects of exchange rate regimes, the weight of various political economy influences can vary substantially from one country to another.

## THE UK'S FIVE TESTS

Chancellor Brown has promised the British government's decision on membership in the euro would be based on purely economic considerations. If true, this would make the UK unique among the countries that have considered

[34] For the new EU entrants, eventual adoption of the euro is required so that this factor is less relevant. Most of the new accession countries have small open economies that make them strong candidates for adopting the euro on OCA grounds. (Poland is the major exception). Thus, for most accession countries the key issues involve the transition path for entry. Sadly, some in the EU establishment have failed to learn the lessons of the danger of narrow band pegs in a world of substantial capital mobility and are pushing for an exact replica of the old Maastricht entry requirements for the accession countries. Hopefully, this can be headed off by more sensible voices.

joining the euro zone. As is discussed in the papers by Artis and by Howarth in this volume, few political commentators buy the Chancellor's assertion. Clearly influencing the Labor government's position are differences between the Prime Minister and Chancellor and concerns that a referenda on joining the euro not be lost. This does not mean, however, that the Treasury's studies are all a sham. As Artis notes, their technical quality is quite high and they have provided a great deal of useful information. As is illustrated by the number of criteria that OCA theory has developed, there are no objective statistical exercises that can give definitive answers.

The Treasury's five tests are of two types. One involves convergence of the UK and euro zone economies. It asks, if you want to go in, is this a good time? Its focus mirrors the convergence criteria of the Maastricht treaty. The much more important question, however, is whether the UK should go in at all. One can easily have cyclical convergence today and divergence tomorrow. Thus the Treasury quite wisely demands a second test: is there sufficient flexibility in the economy if problems emerge? The recent disaster in Argentina demonstrated that its economy did not have the flexibility to make a fixed exchange rate work well; and strains are already beginning to show in several continental euro-participants, notably Germany.

It is important not to take Germany, or others of the less flexible current euro-economies, as the standard. Many of the initial entrants went in with their fingers crossed, hoping membership might make it easier to push through the reforms their own countries needed to make their economies more flexible. Unfortunately this has happened only to a limited degree.[35] Where rigidities exist, it is usually not because of stupidity, but because special-interest groups are protected by them. The economics of creating more flexibility is simple. The politics of it is daunting.

The importance of this point has been missed by some enthusiasts for endogenous OCA theory, who argue that one shouldn't worry about the preconditions of fixed exchange rates to work well since the adoption of fixed rates will force desirable changes. It is certainly correct that the adoption of fixed rates may induce changes in trade patterns, the degree of openness, and flexibility of the economy, and in general, we would expect these changes to be in the direction of better meeting OCA criteria. However, the political influence of

[35] See, for example, the UK Treasury's report on "EMU and Labour Market Flexibility" (2003). More progress appears to have been made in the smaller than in the larger euro economies.

entrenched interests suggests that expected changes should be much less than would be implied by models of economic optimization.

Chancellor Brown's three other tests are: Would joining create better conditions for firms investing in Britain? Would the competitive position of the UK financial services industry be improved? (This is clearly a special interest consideration, but one that has long been influential.) And, most important: would joining EMU promote higher growth, stability, and a lasting increase in jobs?

This last test really subsumes the answers to the other four. It is the answer that's tricky, resting on a large body of often-conflicting evidence and dicey forecasts. Neither Britain nor Canada is so huge or so tiny that fixed or flexible exchange rates are obviously the best choice. Whether the HM Treasury's conclusions are on the firmest grounds is the emphasis on things that need to be done to make a fixed rate regime work better for the UK. By and large, these are measures that would also be desirable even if flexible rates were maintained.

## CONCLUDING REMARKS I: A RECOMMENDED SEVEN STEP PROGRAM FOR POLITICAL ECONOMOY ANALYSIS

This paper has argued that OCA theory presents a valuable framework for analyzing the normative economic issues involved in currency choice, and that it is, likewise, a useful starting point for the development of a broader framework to analyze the positive political economy of currency choices.

We have seen that in contrast to many popular or advocacy pieces, numerous considerations are relevant to both OCA and political economy analysis. Single factor theories typically offer strong conclusions, but at the cost that they are often seriously deficient. A moment's reflection should make this obvious. OCA analysis subsumes most of the controversies about domestic macroeconomic policy with a number of international complications added. And then there's the politics. Here political considerations come in two forms. One is that economic policy decisions are made through the political process. The second is that non economic, i.e. political, objectives can be important.

I have suggested in this paper a framework for synthesizing such considerations. It is based on the assumption that all policy decisions are ultimately political, but that economic factors often play an important role. Thus we can start with the pure economists' focus on effects on aggregate economic efficiency. For the issue at hand, such analysis is provided by OCA theory. Concerns with political salience mean that we cannot stop here, however. How the resulting gains and losses are distributed may be as or more important than the net

aggregates. Furthermore, we must recognize that actions are based on perceptions. Especially where widely distributed many effects may be little noticed while others may be wrongly interpreted. Thus it is important to look at both the pattern of information and the mental models used by actors. Where costs and benefits have different time dimensions, both issues of asymmetries of awareness and of time rates of discount become important.

Once people have formed perceptions of their economic interests, there still may be tremendous differences in whether and how politically effectively they act on these perceived interests. Here both institutional structures and the types of free rider problems emphasized in public choice analysis are important. Political aggregation mechanisms may vary substantially not only from country to country but also from issue to issue. Thus, for example, economic interest groups are likely to be much more important for trade than for monetary issues and for the latter whether decisions are made by the government or an independent central bank can be quite important, as is the actual degree of independence of the central bank.

Even after all of these considerations we must recognize that non economic objectives can also be important. Indeed for issues of monetary union they are quite often paramount. What non economic issues are important will vary from country to country and need to subject to all of levels or types of analysis just discussed for economic considerations. Just as economic treatments of currency issues have often suffered from an excessively narrow focus, so frequently have discussions of the politics of economic policy discussions. Seldom will just one political objective or group be relevant. In general, the political side of good political economy analysis will need to be as nuanced as the economic side.

To summarize, the framework proposed here has the following key elements:

1. Start with OCA analysis.
2. Add distributional considerations and time asymmetries.
3. Recognize the possibilities of limited information and differences in mental models in influencing actors' perceptions of their interests.
4. Then consider how groups and individuals are weighted in the political process, giving attention to collective action problems and the role of institutional arrangements.
5. Add consideration of salient non economic, i.e. political, objectives.
6. Repeat the types of analysis in 3 and 4.
7. Weigh the relative importance of the economic and non economic objectives.

This recommended seven step program is certainly not the only way to go about attempting to synthesize economic and political economy considerations and may well not prove to be the best, but I believe that it offers the prospect for fruitful analysis.

## CONCLUDING REMARKS II: CHOICE UNDER UNCERTAINTY

One way of describing our current state of economic knowledge relative to the currency choices of countries like Britain and Canada is that there is considerable uncertainty about how monetary union would work for them. Any sound policy analysis should explicitly take this uncertainty into account and pay attention to what is known about the potential costs of type I versus type II errors, i.e., of choosing a fixed rate when a flexible one would have been better and vice versa.

This suggests that for both Britain and Canada, their decisions should be biased toward the continuation of the status quo. We cannot be sure that the adoption of fixed exchange rates or monetary unit would not, on balance, improve the economic performance of either country. However, despite the charges of some critics, the experiences of neither currency under flexible rates have been particularly bad relative to their larger monetary neighbors.[36] Indeed, Chancellor Brown has argued that Britain's economic performance has been far superior to that of its euro neighbors. On the other hand, the potential for the adoption of fixed exchange rates to generate high domestic economic costs is considerable. The contributors to our volume differ greatly about how much of the decline in the Canadian relative to US dollar over the past decade was due to economic foundation versus destabilizing capital flow. For the sake of argument suppose we give equal weight to both views and conclude that one half of the decline was due to fundamentals. This implies that, had Canada adopted a fixed exchange rate with the US dollar, nominal income in Canada would have had to fall substantially. It seems highly unrealistic to believe that in the short run most of this decline would have been achieved by falling prices rather than rising unemployment. Hence risk aversion under uncertainty would suggest a bias toward some form of flexible rates with the weight to be given to external developments in setting domestic monetary policy being the key issue on which economic debate should focus.

[36] I don't find convincing the arguments of a few Canadian economists that flexible rates have imposed a tremendous cost on Canada in terms of reduced productivity.

It is certainly possible that the adoption of fixed exchange rates or a common currency will create incentives for the development of more effective domestic adjustment mechanisms. However, there is good reason to question the strength of these incentives relative to the political economy pressures to maintain the status quo. We do not yet have a lot of directly relevant experience on this issue to analyze, but the current euro experiment will vastly increase our data points.

Thus most countries considering the adoption of a hard fix for their currencies would be best served by a wait and see attitude. For Britain and Canada this economic conclusion is unlikely to be offset by political considerations in the near future. Typically considerations of national sovereignty will generate a political predisposition against forming monetary unions. The European project created an important counter to this effect and was in my judgment the single most important factor leading to European monetary union. While there has been much political talk of monetary unions in other regions, I doubt that the political forces which generated the euro are likely to be duplicated elsewhere within the next few decades.[37]

As an issue of positive political economy I find it difficult to disagree with the comments of an anonymous reviewer who argued that "neither is likely to enter the respective monetary union that happens to be an offer unless a majority of voters can be persuaded that there will be large benefits from closer political union with their neighbors."

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# ECONOMIC THEORY AS A DECISION TOOL: OCA THEORY THE UK AND THE EURO

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## INTRODUCTION

This paper is in the nature of a review of the documentation produced by Her Majesty's Treasury to support its recommendation that the economic case for the UK joining the euro has not yet been met. This documentation consists of a long and detailed report (HM Treasury 2003) and a set of eighteen supporting studies: released in June 2003, they can be accessed from the Treasury's website at www.hm-treasury.gov.uk. It can be said straightaway that these are no ordinary government department documents (some are papers written by academic economists), and they have a striking range and quality. Indeed, what is exciting about the Treasury's work is that it represents a best practice example of the use of economics in a high priority policy area. Economics of course offers a traditional tool for assessing the kind of question with which the Treasury was faced, in the form of "optimal currency area theory", a subset of economic theory for which the foundations were laid by the Canadian economist, Robert Mundell, in 1961. This approach has been embellished, adapted, and given econometric expression by numerous analysts in the interim. Despite the fact that some of the

[1] Acknowledgements: the author is grateful to Amy Verdun, Melissa Padfield, Patricia Young and Bob Hancke for helpful comments on an earlier version of this paper. Seminar participants in the University of Victoria conference on "Britain and Canada and their large neighboring monetary unions", and others participating in the PAGE and PEWG seminar series at the European University Institute and the XIV Biennial Conference of the AESSEC in Naples also provided useful comments and criticisms. Thanks are also due to an anonymous referee of this journal.

more recent suggested adaptations amount to a rejection of the original analysis, the "Optimal Currency Area" (OCA) label has had remarkable staying power and is still the description under which the relevant analysis is to be found.

*It should be clear – and is strikingly so in this case – that economics cannot provide the only decision tool where public policy actions are concerned. Indeed, some would say that the conclusion of the analysis we are concerned with was predetermined by an exceptionally simple, if not brutal, political calculation. The Treasury could not produce a report saying that the economic case had been made because this would have triggered a referendum on joining the euro and such a referendum would have been lost, an unacceptable political outcome. Therefore, it did not produce such a report.*

The quality of the analysis in question, if nothing else, would forbid us from giving up at this point. We can agree perhaps that the negative conclusion was "overdetermined" – by the referendum issue and by the "facts of the matter". But in fact, as we shall see, the Treasury's report, whilst negative for the moment, contains suggestions for changing arrangements in such a way as to make it more likely that the next review will be positive.

In what follows we will first explain the proximate political factors in detail, and then proceed to examine how the Treasury used optimal currency area theory to arrive at its conclusions. Thus in Section 1 below we examine the policy background to the Treasury's work; this includes a discussion of the "five tests" which were to form the immediate focus of its activity. In Section 2 we refer briefly to the state of public and business opinion. In Section 3 we examine the structure of optimal currency area theory, paying particular attention to a number of recent developments. In Section 4 we examine the way in which the Treasury organized its analysis and the reasons it gives for claiming that the "five tests" had not all been fully met when it reported. Some observers think the UK may now have adopted the "Canada solution" of a permanent float against a large neighboring monetary union. This prompts in Section 5 a brief counterfactual on what the Treasury might have said about a proposal (if there were one) for North American Monetary Union. Section 6 offers some conclusions.

## 1. THE POLITICAL BACKGROUND

Public opinion in Britain, as discussed below, has long been skeptical of the merits of joining the eurozone. Against that background it came as an important new initiative when the new Labor Government in 1997 committed the UK to the

principle of joining the single currency.[2] This was done on the basis of four key points. These were summarized by the Chancellor of the Exchequer as:

- first, a successful single currency within a single European market would in principle be of benefit to Europe and to the UK: in terms of trade, transparency of costs and currency stability;
- second, the constitutional issue is a factor in the UK's decision but it is not an overriding one, so long as membership is in the national interest, the case is clear and unambiguous and there is popular consent;
- third, the basis for the decision as to whether there is a clear and unambiguous economic case for membership is the Treasury's comprehensive and rigorous assessment of the five economic tests; and,
- fourth, whenever the decision to enter is taken by the British government, it should be put to a referendum of the British people

This statement indicates that the government would put the case to a referendum in the event that the Treasury's assessment of the economic case were favorable, and that that was to take the form of the "five tests". Whilst there was an initial (negative) assessment in 1997 (HM Treasury, 1997), it was only in June 2003 that a more thorough analysis was released on the basis of the Chancellor's promise that "the assessment will be the most robust, rigorous and comprehensive work the Treasury has ever done".

Here are the five tests:

- Are business cycles and economic structures compatible so that we and others could live comfortably with euro interest rates on a permanent basis?
- If problems emerge is there sufficient flexibility to deal with them?
- Would joining EMU create better conditions for firms making long-term decisions to invest in Britain?
- What impact would entry into EMU have on the competitive position of the UK's financial services industry, particularly the City's wholesale markets?
- In summary, will joining EMU promote higher growth, stability and a lasting increase in jobs?

[2] Mullen and Birkett (2003), writing before the release of the Treasury's assessment, provide a more comprehensive account of the political background than is feasible to present here.

It is the first two and perhaps the last of these tests that correspond most closely to the concerns that traditionally motivate OCA theory, as we shall see. The fourth question is a "special interest" question that does not make a very dignified entry in a list of issues supposed to reflect the interests of the country as a whole, though it may have the merit of "realism" in that City opinion had been a strong voice in an earlier wave of euroskeptic opinion. Going further back in history readers will doubtless recollect a long tradition of financial sector interests in the UK prevailing over those of manufacturing industry[3]. The third question, which reflects in particular concerns about the possible deflection of FDI from the UK in the event of a decision not to join the eurozone is not one that admits of an independent answer – as the Treasury's assessment in fact concludes, positive answers to the "OCA" questions suggest a positive answer to this one also.

Thus the situation is that the UK government, despite having made generally approving statements about the eurozone and the prospects for the UK in joining it, nonetheless has argued that the economic arguments need to be satisfied before it will call a referendum on the issue. It is clear that it would be advocating a "Yes" vote in such a referendum and, as already stated, equally clear that it would not be likely to call a referendum that would be likely to be lost.

Although in this paper I hope to convey that the Treasury provided a high level of analysis of the issue, it has to be admitted that no economic appraisal can be open-and-shut; besides the well-known propensity of economists to hold differing opinions, there are many points at which trade-offs appear, and guesses about the future are called for which are inevitably disputable. For these reasons, the prospect of producing a "clear and unambiguous" economic case for membership must appear to be in some permanent doubt. The fact that qualifying words and phrases like these appear in the call for the assessment suggests that politicians, in case of necessity, have reserved for themselves a means to tilt the conclusion in the direction desired.

Meanwhile the balance of British public opinion remains firmly opposed, as briefly discussed below.

[3] Cf. Churchill's famous remark, in a letter to Niemeyer at the Treasury after the UK's return to gold in 1925: "I would rather see Finance less proud and Industry more content" (the letter, dated the 22 February 1926, is quoted in Moggridge (1972)).

## 2. THE BALANCE OF PUBLIC OPINION

There are many opinion polls taken on the issue of joining the eurozone. Table 1 is an extract from a series conducted by ICM for the Guardian and News of the World newspapers. It is very clear that in answer to the Question "If there were a referendum on joining the European single currency (the euro)?", the public has never mustered even a one-third fraction of support. The "do not knows" are sometimes (but not recently) quite numerous and have given ground for the hope among pro-euro supporters that a sustained government campaign could increase the pro-fraction to a majority – but there is clearly a long way to go. An interesting reflection on this is given by the figures reported in the lower part of the table. These figures (unfortunately results are not available for a more recent period) show that, at least in 2000 and 2001, many people (and in December 2001, *most*) expected the UK to be a member of the eurozone in 10 years' time, even whilst there was a current balance of opinion against and a referendum was promised. (There can be many speculations about the reasons for this apparent violation of the transitivity of rational expectations: I leave these as "an exercise for the interested reader"). It might have been thought that, whatever the state of public opinion, business opinion would nonetheless provide a bedrock of favorable sentiment. Even this is not obvious however. The most detailed survey of business opinion in existence seems to be that which was made available in 1999, where just 49% of respondent firms (weighted by employment) expressed themselves in favor of joining the euro. As I have reported elsewhere (Artis, 2000), among professional (academic) economists a majority (64%) can be found in favor of euro membership (this was in a poll conducted by the Economist in April 1999, and might not still be valid); the majority was bigger (67%) among those economists declaring themselves as "macroeconomists". Interestingly, "Monetary" economists (monetarists?) were found to be 2 to 1 against euro membership in this poll.

The general state of opinion in the UK on this issue, therefore, remains quite skeptical.

**Table 1. Some opinion poll evidence on public opinion towards the euro (ICM polls for the Guardian and the News of the World)**

Responses to the Question: If there were to be a referendum, would you vote to join the European Single Currency (the euro) or would you vote not to join?

| Month | Year | Vote to join, % | Vote not join, % | Undecided, % |
|---|---|---|---|---|
| June | 1999 | 27 | 61 | 13 |
| December | 1999 | 24 | 61 | 15 |
| June | 2000 | 23 | 58 | 19 |
| December | 2000 | 24 | 64 | 12 |
| June | 2001 | 25 | 61 | 15 |
| December | 2001 | 31 | 58 | 11 |
| June | 2001 | 25 | 58 | 17 |
| December | 2002 | 26 | 58 | 16 |
| June | 2003 | 21 | 62 | 16 |
| December | 2003 | 22 | 67 | 11 |

Responses to the Question: Leaving aside how you would vote, in 10 years' time which of the following do you think is the most likely?

| | | Britain included, % | Britain excluded, % | Euro will have failed, % | Do not know % |
|---|---|---|---|---|---|
| July | 1999 | 36 | 26 | 20 | 10 |
| June | 2000 | 40 | 25 | 24 | 11 |
| May | 2001 | 39 | 21 | 31 | 9 |
| December | 2001 | 62 | 14 | 19 | 5 |

## 3. OPTIMAL CURRENCY AREA THEORY

The structure of optimal currency area theory is relatively easy to motivate. A currency is the more useful the wider its acceptability: from this point of view the world is the natural optimal currency area. But, having a single currency entails having a single monetary policy and while different areas of the world experience different shocks, so there is value in having an independent monetary policy as this policy can be used to help stabilize the local economy. Moreover, with different currencies, the exchange rates themselves – aside from responding to the

promptings of differential monetary policies - can be assumed to fluctuate in such a way as to absorb shocks. This is, more or less, a statement of the original Mundellian (Mundell 1961) vision of an optimal currency area. The additional point to make is that Mundell saw geographical labor mobility as a means of absorbing region- or country-specific shocks: this criterion has been supplanted in current analysis by a more general emphasis on the desirability of internal labor market flexibility.

A useful restatement of this framework in cost-benefit terms was suggested by Krugman in 1990.[4] Krugman's restatement is shown in Figure 1. The Figure describes the position for a country contemplating joining a monetary union with a group of others. Costs and benefits (we might imagine them to be expressed in ratio to Gross Domestic Product (GDP)) are plotted along the upright axis. Along the horizontal axis is plotted the value of the country's trade with these potential monetary union partners (this could be expressed as the sum of imports from and exports to the potential partner countries again scaled by GDP, as in conventional measures of openness). As indicated, the usefulness of a money increases with its area of acceptability, so here we would expect benefits to rise with trade, a shown by the upward slope of the BB schedule.

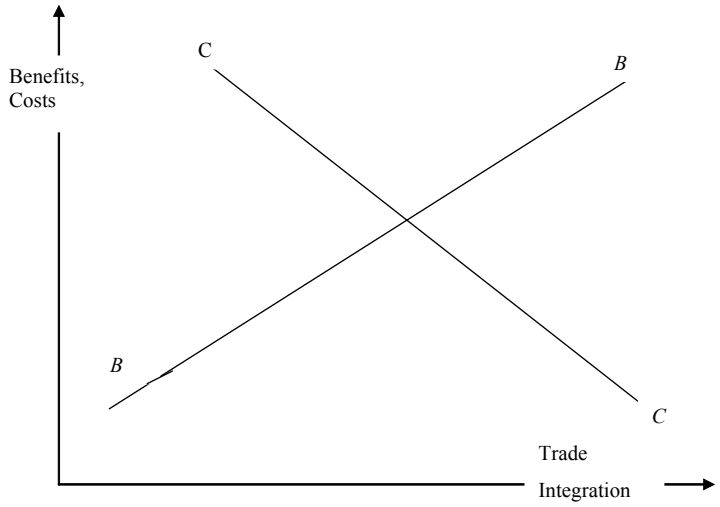


Figure 1. Joining a monetary union as a cost-benefit decision

[4] A sound overall appreciation of OCA theory with reference to its European application can be found in Eijffinger and De Haan (2002).

The cost of joining the monetary union is the loss of the value of being able to employ an independent monetary policy to cope with idiosyncratic shocks – nor will the exchange rate be there to absorb such shocks. The CC schedule would therefore be displaced more to the right the greater the propensity of the country to experience such idiosyncratic shocks and more to the left in the contrary case. The CC schedule may also slope down from left to right if McKinnon's (McKinnon 1963) speculation is right. McKinnon reasoned that the more trade a country is doing with its potential partners, the less effective would an exchange rate change against those partners be. This might seem counterintuitive, but McKinnon's argument is that if most of the wage basket is composed of imported or exportable goods, a nominal exchange rate devaluation will be more likely to lead to a matching rise in wages and prices, nullifying its effect.

The message of the diagram is simple: if the country's trade with its potential partners takes it to the right of the point of intersection between the BB schedule and its CC schedule, then benefits exceed costs and the country should join the monetary union. In the contrary case, it should not – at least on economic grounds, it should not.

Two important points can immediately be made using this diagram. First, as the BB schedule here refers only to *economic* benefits, it is always possible to hypothesize political benefits (e.g. of sovereignty) that should also be taken into account; the "sovereignty" benefit of independence, for example, could be expressed by lowering the benefit curve, so that a decision to join the monetary union would *ipso facto* become less likely. It follows that the tendency of some economists to view the poor predictive power of the OCA analysis as a defect may be misplaced. The general view that there are more monies in the world than seems optimal may simply reflect the value of "sovereignty" arguments – and the often overriding nature of political arguments. But this does not in itself invalidate the usefulness of optimal currency area theory: it can always be used to demonstrate the economic cost of a political decision, or its implied benefit. Second, it is notable that small countries tend to trade more (relative to GDP say) than large countries – on this count they should therefore be more favorable to monetary union arrangements - and it is indeed a "stylized fact" that smaller countries seem to prefer monetary unions, or qualitatively similar exchange rate arrangements.

When it comes to empirical applications of traditional optimal currency area theory and particularly in the case of the UK and the euro (on which, for example, see Artis 2000), the principal interest has been in tying down the position of the CC schedule. The UK, as any member of the European Union (and only EU members are eligible for participation in the EMU), conducts a large share of its

trade with its prospective partners and there has been rather little need to discuss the BB curve in empirical terms. Thus a good deal of the empirical work has been devoted to the identification of business cycles in the UK and the EU countries, and in trying to identify the shocks that drive these cycles. Not infrequently in the past the verdict of investigations of this kind has been somewhat negative, reflecting the fact that the UK cycle has appeared to be asynchronous with the business cycle in most EU countries. Whilst a reinvestigation of this issue necessarily remained at the forefront of the Treasury's assessment of the five tests, that assessment had also to recognize a number of new developments in optimal currency area theory.

## New Developments

There have been a number of new developments in OCA theory that have led, on the whole, to a more favorable view of the likely outcome of the cost-benefit calculus. Not surprisingly, they have been driven in part by the interest aroused by the EMU experiment. They can be appreciated within the confines of the diagram, and below I distinguish four such developments.

First, there has been growing doubt about the efficacy of the exchange rate as a shock-absorber: if these doubts are verified, the costs of abandoning a separate currency should be seen to be reduced. In the diagram, the CC schedule moves to the left. This doubt – in distinction to the earlier faith in flexible exchange rates displayed by both monetarists (e.g., Friedman 1953) and Keynesians (e.g. Meade 1955) has been reinforced by the evidence of "contagion" in foreign exchange rate crises and is exemplified in the decline in interest in macro-stories about exchange rate determination and the increased interest in microstructure accounts (e.g., see Lyons 1993). Still, it was always possible to maintain that the behavior of the *sterling* exchange rate was normally a rational outcome of speculation on the fundamentals (even the 1992 crash could be seen as a rational judgment by the market, at least given the Bundesbank's behavior).[5] But skepticism about the good behavior of the sterling exchange rate was reinforced by the strong appreciation in the rate from 1997 onward – an appreciation which was regarded as unwanted by the Bank of England's Monetary Policy Committee. It led directly to Willem Buiter (Buiter 2000) declaring, "I view exchange rate flexibility as a source of shocks and instability as well as (or even rather than) a mechanism for responding

[5] The 1976 sterling crisis, on the other hand, did exemplify the foreign exchange market's capacity for self-induced crisis, not dependent on the fundamentals.

effectively to fundamental shocks arising elsewhere". Cobham (2002), meanwhile, provided a narrative account that supported the idea that the sterling exchange rate had deviated from its fundamental equilibrium value over a period of time.

Second, there has been growing interest in the idea that the OCA criteria may be "endogenous", specifically that they may be easier to satisfy *ex post* than *ex ante*. The mechanism suggested is that joining a monetary union increases trade and that increased trade conduces to a decline in the incidence of idiosyncratic shocks. In addition to moving further to the right on the horizontal axis of the diagram (as trade increases), a country which joined a monetary union would, on this argument, also find that its CC schedule moved to the left. This line of argument had been fuelled by a study by Frankel and Rose (1997) that uncovered a positive relationship between the amount of bilateral trade and the synchronization of trade between pairs of countries, and then by a series of studies initiated by Rose (2000) that appeared to demonstrate a strong positive effect of monetary unions on trade.

Third, a line of argument has been developed to suggest that monetary union, by removing exchange rate risk, stimulates the financial integration of the area, which in turn facilitates risk sharing. More specifically, financial integration is seen as encouraging consumption risk-sharing. Thus, even if the pattern of shocks to output remains, access to a union-wide capital market should afford agents the possibility of holding their savings in the form of claims on output in diverse parts of the union, thus diversifying the risk to consumption.[6] Since the object of stabilization is to assist the smoothing of consumption, this reduces the premium on stabilization policy, again moving the CC schedule to the left in the diagram. Intriguingly, Mundell himself can be found to have adumbrated this point as long ago as 1973, so that it has become fashionable to distinguish "Mundell(1)" from "Mundell(2)". But the credit for raising and pursuing this idea goes to (the late) Oved Yosha and his colleagues (e.g., Asdrubali, Sorenson and Yosha, 1996). Curiously, perhaps, this effect was not predicted or even looked for in the optimistic scenarios painted by the European Commission in its early assessments of EMU.

A fourth development has been the recognition that countries may wish to join (or, indeed, leave) a monetary union if that union offers a superior (inferior) policy framework. This argument can perhaps be seen, in terms of the diagram, as shifting the BB curve (upwards in the favorable case, downwards in the other

[6] This might even give rise to a feedback whereby *output* becomes more specialized, and hence more prone to asymmetric shocks.

case). In a limited form this idea has been in circulation for some time (Tavlas 1993 mentions it in his 1993 review of optimal currency area theory) and in this limited form it has been incorporated into formal OCA analytics (Alesina and Barro 2002). The "limited form" referred to here is the policy commitment technology afforded by central bank independence. In its more recent articulation, however, a more embracing type of framework is seen to be at stake, one that involves fiscal as well as monetary policy. The argument is that a good policy framework provides transparency of policy to agents, assuring them that the objectives of policy are sensible ones and providing a means of monitoring that policy easily. In the best case this puts the markets "on side" with the policy-makers, leading to smoother and more effective policy.

How did the Treasury address the traditional and newer arguments of OCA theory as applied to the particular case of the UK and the eurozone? This is what is reviewed in the next section.

## 4. HOW THE TREASURY DID THE JOB

The eighteen "EMU studies" provide the supporting evidence to which the Treasury's assessment makes ample reference and substantial use. These studies are in some cases authored by an academic, or written by the Treasury with consultancy assistance from an academic. Some of the studies are backward-looking in the sense that they review, rerun and update previous academic work. Others take on the task of building and estimating a model to suit the purpose or use an existing model. One of the studies publishes the opinions of academics, elicited by the Treasury as a response to a request to update and reflect upon earlier work by the original author. The list of studies by title (Box 1) indicates the range of the enquiry. The first study listed – the five tests framework – sets out the logic of the enquiry. But we are only interested in the subset that reflects OCA issues (interestingly, perhaps, the single test that the Treasury declared to be satisfied is the "special interest" one pertaining to the City, which we regard in any case as outside our scope).

With this item and the FDI item excluded, the main headings under which the Treasury pursued its enquiry can be labeled as: convergence and the monetary transmission mechanism; the role of the exchange rate in macroeconomic adjustment; trade; and the policy frameworks issue.

*Convergence.* As regards convergence, the first task was to take stock of the existing evidence. This meant reviewing and updating the literature dealing with the stochastic behavior of the British economy and the UK's business cycle

experience relative to that of her principal possible partners. Here the UK "idiosyncrasy" – the fact that her business cycle experience seemed to be out of step with that of her continental counterparts, despite a not dissimilar orientation of trade, seemed much less evident than in the past. Some confirmation of this could be had from a statistical exercise in which the UK economy was counterfactually brought into the eurozone in 1999. At that time the gap between short term interest rates in the UK and in the eurozone was relatively wide and the simulation, not surprisingly, shows the UK experiencing higher output growth and inflation during its hypothetical membership than was the case outside. The interest rate shock involved in joining the eurozone would not have been nearly so large in 2002-2003. The apprehension that existed at one time (see Artis and Zhang 1999 for example) that countries in the eurozone would converge more rapidly than those outside, is currently in doubt.[7] Recent experience suggests that globalization may be proceeding faster than Europeanization (see e.g., Artis 2003 and Bovi 2003). The evidence collected by the Treasury reflects this and adds a further point: business cycles, both in the UK and elsewhere, have generally declined in amplitude. This means that, even to the extent that synchronization is less than perfect, the distances between countries at different points in their cycles is not large. In turn this suggests that the potential "ill fit" of any "one size fits all" monetary policy would not be so large as would have previously been the case.

## The Monetary Transmission Mechanism

One way of thinking about the stochastic behavior of the economy, its business cycle and the effects of policy, is to think of initiating shocks, followed by their propagation through the economy. Business cycle theory today hews to this model almost completely. It implies that the length and amplitude of the business cycle depends critically on the structure of financial, goods and labor markets as well as upon policy. It follows that differences between countries in their observed business cycle behavior may be due to differences in the propagation mechanism just as much as to any differences in initiating shocks. Here the Treasury notes that responses to nominal interest rate changes (the "monetary transmission mechanism") differ between the eurozone and the UK economies. It is perhaps instructive to treat these differences as giving rise to an asymmetric shock in the presence of a change in the common interest rate. Indeed, it seems obvious at first sight that a common monetary policy in the presence of

[7] Inklaar and De Haan (2001) had already queried the soundness of this apprehension.

asymmetric transmission mechanisms will be a source of problems for a central monetary authority. The Treasury's assessment makes a great deal of this point, with specific reference to differences in the way in which housing finance is provided in the UK and the eurozone economies. But it is entirely arguable that this emphasis is not well-placed. Many of those features that make for differences between monetary transmission mechanisms are features that make for exactly similar differences in the propagation mechanism attaching to any originating shock. For example, rigidities in labor markets are likely to make for greater persistence in the face of a shock; and, similarly, they will make the response to a monetary shock a long-drawn out affair. These are two faces of the same coin. It follows that since the European Central Bank can only deal with common shocks (asymmetric ones must be left to individual country fiscal and other policies to deal with), differences between countries in monetary transmission mechanisms should not merely be tolerated but even welcomed as offsets to the differences that prevail in the propagation mechanisms attaching to shocks.[8] At any rate, differences in monetary transmission mechanisms may well be exaggerated as a source of difficulty.

*The role of the exchange rate*. The Treasury study rightly takes very seriously the allegation that the exchange rate is destabilizing, and suggests quite strongly the opposite view. In particular, the simulation adverted to earlier, of an EMU entry in 1999, is taken to show that the high exchange rate in fact experienced was an adjustment "in the right direction" to offset an expansionary shock. Departures from the exchange rate's equilibrium level do not necessarily imply that it is not a good stabilizer – on the contrary, if the exchange rate is to be seen as a stabilizer, it will need to depart from its equilibrium value as circumstances demand. This is a good point and it is backed up by a sophisticated Structural Vector Autoregression (SVAR) analysis which aims to clarify dissenting academic views and in fact suggests that the exchange rate has not been destabilizing – even if it has not necessarily been a good stabilizer. These points are made at a level of sophistication somewhat beyond the level at which the opposing claims have often been made though they remain disputable. In particular the Treasury's preferred model analyzes the behavior of the real, rather than the nominal exchange rate. Yet it is the latter that which might be expected to respond to monetary policy and in this respect it is the more relevant variable to investigate.

[8] Adão et al. (1999) provide a tightly specified model in which differences in monetary transmission mechanisms *exactly* offset differences in propagation mechanisms. In such a setting differences between countries in their monetary transmission mechanisms should cause no concern at all.

**Box 1. The 18 EMU Studies**

- The five tests framework
- Analysis of European and UK business cycles and shocks
- Estimates of equilibrium exchange rates for sterling against the euro
- Housing, consumption and EMU
- EMU and the monetary transmission mechanism
- Modeling the transition to EMU
- Modeling shocks and adjustment mechanisms in EMU
- EMU and labor market flexibility
- The exchange rate and macroeconomic adjustment
- EMU and the cost of capital
- EMU and business sectors
- The location of financial activity and the euro
- EMU and trade
- Prices and EMU
- The United States as a monetary union
- Policy frameworks in the UK and EMU
- Submissions on EMU from leading academics
- Fiscal stabilization and EMU – a discussion paper

*Trade*. Following the original study by Rose of the effects of monetary union on trade, there has been a plethora of similar studies. Rose's initial (Rose, 2000) estimates of a huge effect of monetary union on trade (300%!) have been reduced to more modest proportions in many of the subsequent studies, including those by Rose himself. The basic problem can be seen as the absence of any clear theory combined with the absence of any clearly relevant historical example. The "theory guide" suggested by volatility studies would say that monetary union is simply reducing exchange rate volatility to zero; no existing volatility studies would supply a large figure for the effect of such a reduction in volatility. Rose's work turned on the use of large panel data sets, where monetary union status appears as a dummy variable. On examination, many of the monetary unions identified in Rose's statistical studies proved to involve small and often poor countries. The most "representative" case available for the UK is perhaps that of Ireland's withdrawal from its monetary union with the UK when it joined the ERM. An influential study of this case (Walsh and Thom 2001) concluded that this withdrawal made no difference to the extent of Ireland's trade with the UK. On

the other hand, in the short sample of evidence available to us from the eurozone's own experience in this respect, some trade creation appears clearly detectable. The Treasury study, reasonably, suggests a small, but positive, effect, but this too is disputable. The large effects uncovered by Rose can be argued to be the product of "more than" a common currency (factors like a common framework of commercial law, common shopping hours and transport regulation and a host of others may be important). But then EMU, too, is designed to promote more than a common currency.

*Policy frameworks.* The Treasury's study might have been harsher in this respect. It is true that, like the UK itself, the eurozone has a policy framework in which in principle fiscal and monetary policy have well-defined roles and limits. Yet it is clear that in practice the eurozone framework is wanting. Witness the problems with the Stability and Growth Pact and the widespread allegation that ECB policy has been too cautious and slow in coping with the common deflationary shock in Europe since 2000, thus exacerbating the pressure on the fiscal side (see Artis and Allsopp 2003). Whilst the Treasury takes much comfort in the fact that a framework exists in the eurozone, this is hardly enough.

## 5. THE CANADA SOLUTION?

The Treasury's overall negative assessment of the "five tests" is not the end of the matter, but it has suggested to many people that the UK may in effect have opted for the "Canada solution" (cf. Artis 2000) – that is, to float alongside a large monetary union as Canada does. Would reasoning the same way the Treasury does produce the same answer for Canada? Of course, Canada does not have an immediate monetary union option in front of it, but only quasi-monetary union options such as adopting a currency board using the US dollar or (US-) "dollarizing" both of which are obviously inferior.[9] But, if it did decide to consider seriously giving up the Canadian dollar, a Treasury style answer would, whilst obviously recognizing the trade benefits of monetary union and the high degree of sympathy in the experience of shocks, find two sources for caution. The first would pertain to the performance of the exchange rate as a shock absorber. Here the Bank of Canada (see Schembri 2001) has argued (producing econometric evidence in its favor) that the Canadian dollar reacts appropriately to shocks

[9] Buiter (1999), in an otherwise sympathetic appraisal of Canada's MU alternative, rules out these quasi-MU options. They are inferior in that they provide no role for Canadian

which impinge more strongly on natural resource outputs in which Canada is relatively more strongly endowed, whilst the Canadian dollar/US dollar exchange rate is generally not volatile by global standards. Then, when it comes to policy frameworks, Canada can claim to be one of the earliest and most successful of inflation targeters, whilst having at the same time a fiscal framework with clear objectives and responsible fiscal policies; in both respects, the comparison with the US is a favorable one. And of course, the political background would inevitably again be a prominent force in any final assessment.

## 6. CONCLUSIONS

There is hardly room here to do full justice to the Treasury's deployment of OCA considerations; in particular we have not dealt at much length with the modeling that the Treasury undertakes. To do so would require the deployment of technical arguments that would detract from the main point of the paper. One point that should be strongly emphasized is that the study recommends a number of *positive* steps, which, if taken, seem likely to bring the prospect of a favorable verdict in the future somewhat closer. This is in harmony with the idea that the government's policy should be seen as Mullen and Birkitt (2003) have claimed, as one of "prepare and persuade" rather than of "wait and see". Among these positive steps, it was recommended that the Bank of England be instructed to focus on the harmonized index of consumer prices (HICP), which will bring it in line with ECB practice, whilst changes to housing market finance are to be encouraged. It is true that in some other respects the suggestion is that the eurozone should bring its practices into harmony with those of the UK; broadly, this is true of the "policy frameworks" for example. But here for once, British preaching seems almost reasonable!

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# CANADA'S MONETARY CHOICES IN NORTH AMERICA AND THEIR DUBIOUS PARALLELS WITH BRITAIN'S IN EUROPE

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## BASIC ISSUES

The launch of the euro as a virtual currency in 1999 followed hard on the heels of the Asian and Russian financial crises of 1997-98, events which had precipitated a sharp decline in the value of the Canadian dollar vis-à-vis its United States (US) counterpart. The Canadian currency's decline prompted the revival in Canada of a long-standing debate about the desirability of maintaining a flexible exchange rate regime. On this occasion, however, a new element entered the discussion, because some of the current regime's critics, notably Herbert Grubel (1999) and Thomas Courchene and Richard Harris (1999) made a connection to events in Europe. They suggested not that Canada should merely adopt a traditional pegged exchange rate, but rather should replace its domestic currency

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altogether by adopting a common North American currency, either a brand new one to be called the *Amero* as Grubel proposed, or the already existing US dollar.

The ensuing debate has taken many twists and turns, but one theme has frequently recurred as it has evolved: namely, that there are important lessons for Canada to be learned from Europe, and that there are important analogies between the monetary choices that Canada faces in North America and those which Britain must make as it decides whether or not to replace the Pound Sterling with the euro. In this paper I shall explore Canada's choices in the light of those facing Britain and I shall argue that the parallels between the two cases are less complete than is often supposed. Furthermore, I shall conclude that, whatever choice is ultimately made by Britain, the case for Canada's giving up its present monetary order is extremely weak.

This is not to deny that there are elements in common between the two cases. Canada and Britain both have the option of abandoning a well-established domestic currency for that of a larger neighbor, and for both the choice in question hinges on a similar spectrum of inter-related economic and political considerations. At the mainly economic extreme of that spectrum, the cost reductions in trans-border transactions that a common currency would yield play off against the loss in flexibility in the face of shocks to the economy that giving up a separate currency with a flexible exchange rate is claimed to confer; and at the mainly political extreme, questions about national sovereignty and the democratic accountability of policy makers attract attention.

Even so, the pros and cons of the two cases play out very differently. Certain of their technical economic elements point in the same direction but their broader political economy is fundamentally different, as I shall show in what follows. Specifically, I shall stress that, should it adopt the euro, Britain would become an equal partner in a monetary system that forms part of a supra-national political organisation of which it is already a full member, but that monetary union in North America, would see the government of Canada yielding important policy powers to the Federal Reserve System, an agency of the United States government, which is now, and would remain, accountable solely to the people of the United States through the Congress. These differences, I shall argue, are of crucial importance to understanding why the European case yields no decisive lessons for North America

## Some Economic Fundamentals

From the point of view of economic fundamentals, there is a strong case to be made that the right number of monies is one. What we call "the market" is a collection of institutions that establish property rights in goods and services, both currently available and promised for the future, and facilitate their exchange. For many purposes economists find it helpful to analyse market exchanges "as if" they take place on a multilateral basis and costlessly, at prices which guarantee the continuous equality of supply and demand for all items, but this is no more than a useful (often very useful) fiction. Trade is, typically, a series of bilateral acts, each involving the exchange of some specific item against one that is commonly acceptable, to which we usually attach the label "money". It also takes place at prices set by market participants in terms of that means of exchange, which then becomes the economy's unit of account. To the extent that trade involves the exchange of currently available goods and services for claims to goods and services in the future, money usually functions as a standard of deferred payment too.[2]

In these roles, the use by all market participants of a commonly acceptable item reduces the cost of doing business. As far as actual transactions are concerned, if everyone stands ready to offer and accept the same single money, then partners for trade in any specific item are easier to find, and, if all prices are stated in terms of that single money, the structure of prices becomes more immediately transparent, computation costs are reduced, and so is the scope for making errors. To take a market that is using a single money, and then to add a second, or a third, and so on, is simply to increase the number transactions and computations that need to be made to support a given volume of trade in goods and services, and hence to make their execution gratuitously more costly.

It is from considerations such as these, often summarized under the label *network externalities,* that the well known slogan "one market - one money"

[2] Modern textbook expositions also stress money's function as a store of value. I here deliberately hark back to a pre-Keynesian way of thinking about money that emphasises its role in what Jevons (1875) called "the mechanism of exchange". Theories of money that treat it solely as an asset, such as the "over-lapping generations" model, are, from this standpoint, inherently defective. Nevertheless, as Benjamin Cohen has pointed out to me, in a store of value role, a single money may be inferior to many because of the extra degree of portfolio diversification that the latter arrangement permits. It is important not to overstate this factor, however, because, as an anonymous referee has pointed out, currency diversification is to an important degree a hedge against exchange rate risks that the creation of a single currency would eliminate.

derives its intellectual force, and they also pose a problem for monetary historians who need to explain how it is that the world we live in departs so far from this single money ideal. Two concepts that run through the academic discussion of these matters require our attention here: first, once established in circulation, any money is then supported by a *mutual trust* in the prospect that it will continue to be acceptable among the agents that use it; and second, particularly in the modern world, the effects of such trust are re-enforced by *legal restrictions* imposed by governments and the courts on what does and does not serve to discharge debts, not least tax-debts, and, closely related, on the way in which agents, particularly business enterprises, keep and report their accounts.[3] The extent to which legal restrictions have been responsible in and of themselves for the creation and maintenance of separate national currencies, as opposed to codifying arrangements based on trust that had already emerged among the inhabitants of particular regions, is much debated, but this debate does not matter for the issue at hand. What is important here is that both the Canadian dollar and the pound sterling are maintained in circulation by the network externalities that trust creates, and that these are supported by local legal restrictions too.

This conclusion enables us to dispose at the outset of this paper of an argument that is certainly sometimes heard in Canada, though I am not aware of its having figured in British debates; namely, that, as economies become more open and trading becomes more internationalised, minor currencies (such as the Canadian dollar) will simply disappear from use as individual agents come to recognise the transactions costs that can be saved by their adopting a more widely accepted and acceptable alternative.[4] It is true that there are examples of economies that have spontaneously adopted a foreign currency for domestic use, experienced *market dollarization*, as the commonly used phrase would have it. Market dollarization, however, has never occurred as the outcome of competition between a large and a small currency *when the latter has been well managed.* It has invariable been the consequence of instability in the minor currency's domestic purchasing power brought about by high and unstable inflation, and what is surprising is how infrequent and incomplete market dollarization has been, even under such extreme circumstances.

[3] Modern models of money that stress trust owe a great deal to Carl Menger (1892), while those that stress legal restrictions hark back to the Chartalism of Georg Friedrich Knapp (1921).

[4] An extreme version of this view informs the analysis of Dr. Sherry Cooper (2001), and Richard Harris (2001) has also flirted with it.

In this context, it is interesting to note that anecdotal evidence of the onset of voluntary dollarization in Canada in the face of the Canadian dollar's sharp depreciation against its US counterpart in the late 1990s was sometimes cited to support the case for having the Canadian government move quickly to abandon its currency while conditions remained relatively favorable. This evidence, however, turns out to have been anecdotal indeed, and grossly exaggerated by those who cited it, as recent research by the Bank of Canada has demonstrated.[5]

At the same time, however, though network externalities seem to be decisive in helping to keep an already existing national currency in place, provided it remains stable, they are not all-powerful. Those who feared that a lack of trust on the part of the general public in the new and untried euro might undermine its viability upon its launch in 1999 were proved wrong. The euro's success has clearly established that network externalities can be overcome by a carefully designed change in the legal restrictions that impinge upon the monetary system, albeit particularly, one suspects, if that change is designed to preserve continuity with certain key features of the monetary system that went before it. It was surely, that is to say, a wise decision to make the European Central Bank (ECB) look as much like the Bundesbank as was decently possible.

The moral of all this for the monetary choices that currently face Canada and Britain is straightforward. There is no point in waiting for the Canadian dollar and the pound sterling to vanish of their own accords. Short of the implementation of domestic policies calculated to create hyper-inflation, that is not going to happen. Yet, there is no reason to believe that there are any insurmountable obstacles, rooted in the nature of the monetary system, to the adoption by Canada of the US dollar, or by Britain of the euro. Both currencies are already highly credible and well known to agents in the countries in question. Even so, choosing the time at which to join a larger monetary system, not to mention setting the exchange rate at which to convert the currency, does pose serious technical difficulties. East Germany's premature adoption of the deutschmark at a grossly overvalued parity shows all too clearly how easy it is to make serious mistakes in managing these transitional matters. But transitional issues are just that, they can be resolved, and they should not weigh heavily, if at all, in the underlying choice.

[5] See for example Murray and Powell (2002).

## Choosing a Monetary Order

The choices that face Canada and Britain need to be formulated properly if they are to be analysed usefully. I will let those who know more about the British debate speak for themselves on this matter, but in Canada the issue at stake is all too often stated dangerously narrowly, as involving the potential replacement of a flexible exchange rate regime with the limiting case of a fixed exchange rate on the US dollar, namely the adoption of that currency as Canada's own. Much more than the exchange rate regime is at stake in such a choice however. It is properly posed as lying between alternative *monetary orders*.[6]

By the phrase monetary order, I mean an arrangement that involves four sets of characteristics, namely: A goal or array of goals for monetary policy; an institutional and policy making framework which supports the achievement of those goals; the beliefs of the public at large about the capacity of the framework actually to achieve the goals in question; and the political mechanisms through which the public is able both to influence the choice of goals, and to hold accountable for their performance those charged with the task of achieving them.

At present Canada and Britain possess national monetary orders that differ in many details, but are remarkably similar in broad outline. In each country, the goal of monetary policy is to achieve low and stable inflation. The central banks of both countries are, that is to say, formal inflation targeters. Each country has also conferred upon its central bank the necessary technical powers to implement monetary policy; each one also has in place a fiscal regime that puts no undue pressure on the central bank to monetise government debt; and crucially, each one has in place a flexible exchange rate regime, which enables conflicts between the goal of monetary policy and anything that might be happening either to price level behavior abroad, or that might affect the country's real exchange rate, to be absorbed by a movement in the nominal price of the domestic currency in terms of its foreign counterpart. Furthermore, because these arrangements are compatible with gearing monetary policy to the pursuit of low inflation, and because both central banks have by and large been successful in achieving it, that low inflation goal enjoys considerable credibility among the public at large.

When it comes to the political component of their monetary orders, however, some differences arise between the two countries. In Britain, the goal of policy, the inflation target, is set solely by the Chancellor of the Exchequer, who is accountable to Parliament for that choice, and through Parliament to the electorate. In Canada, the target is set jointly by the Minister of Finance and the

[6] The following few paragraphs draw heavily on Laidler (1999) and (2005).

Governor of the Bank of Canada, and their discussions of this matter are subject to the local *dual responsibility* doctrine. Hence, though ultimate responsibility for the choice of the target lies with the Minister as it does in Britain, the Bank of Canada plays an active role in setting it, and a Governor who found himself in disagreement with the Minister over this matter would have the option of making that disagreement public, thus triggering a precise (and also public) written directive to follow the Minister's orders, an event which would be most likely followed by the Governor's resignation.

Both the Bank of England and the Bank of Canada are independent when it comes to the day by day conduct of monetary policy. Even so, in Britain, policy choices are made by a Monetary Policy Committee to which the Chancellor makes direct appointments, whereas in Canada they are made by an informal Governing Council of the Bank only two of whose members hold positions that are subject even to Cabinet ratification. This suggests that political oversight of the technical competence with which policy is executed might be a little more detailed and exacting in Britain, though the activities of both Banks are subject to scrutiny by Parliamentary committees and each has its own elaborate set of communications strategies to ensure that the electorate at large is kept well informed about monetary policy.

Over the last decade or so, The Canadian and British economies alike have performed well under their current monetary orders, which seem to be both coherent and compatible with the liberal political orders of which they form a part. This is true both by international standards, but particularly when the basis of comparison is these two countries' own earlier experience. These considerations have important implications for the way in which the pros and cons of monetary union are discussed in both cases.

To begin with, it is clear that, in each country, exchange rate flexibility is nowadays viewed as mainly a permissive device that enables a particular monetary policy goal to be pursued. Each of them became an inflation targeter in the early 1990s, having adopted flexible exchange rates much earlier, at the beginning of the 1970s. In the 1970s and '80s, furthermore, each of them sometimes pursued goals that were inappropriate for monetary policy, such as high real growth, or mutually inconsistent, such as unsustainably low unemployment along with low inflation, or goals that were sometimes simply unclear.[7] Advocates of a supra-national monetary union (at least in Canada)

[7] And in the case of Britain, exchange rate flexibility itself was actually given up for a while when Sterling joined the European system of pegged exchange rates that

sometimes cite this earlier experience as counting against the current monetary order, essentially branding it as guilty by association with earlier experience. Such a line of argument is clearly inappropriate. The monetary orders prevailing in Canada and Britain changed in the early 1990s, and should be judged on the basis of experience only since then, and both are entitled to have an "if it ain't broke do not fix it" defense mounted on their behalf as far as their economic outcomes are concerned.[8]

To insist on looking at the overall monetary order, rather than international monetary arrangements *per se*, also forces us to pay attention to the political implications of the changes that are being suggested. It is a commonplace these days that monetary policy is the single most powerful component of macroeconomic policy more generally considered, and it is also a commonplace that, in a liberal democracy, policy makers should be answerable for their actions to the electorate that is affected by them. This is not to argue for having day-to-day monetary policy made by a free vote of back benchers, or even by the Cabinet: we know enough about the incentives inherent in electoral politics to mount a strong case that monetary policy should be insulated from short-term pressures and treated similarly to the administration of justice, or the management of the news departments of public broadcasters. It is, however, to argue that arrangements which ensure the accountability of those who make monetary policy to those who are affected by it, are important factors by which any monetary order should be judged.

## PREDOMINANTLY ECONOMIC ASPECTS OF THE TWO DEBATES

Evidently, there must be a strong political element to any debate about alternative monetary orders, and one that is, in the last analysis, difficult, if not impossible, to separate entirely from economic questions. Even so, one cannot discuss everything at once, and it is helpful to divide the issues at stake between

preceded the creation of European monetary union. It was the failure of this experiment that immediately receded Britain's adoption of inflation targeting.

[8] This is not to suggest that the ability to pursue stable inflation targets is the only benefit that a flexible exchange rate regime bestows. It is widely agreed that, in the presence of nominal wage and price stickiness, such an arrangement also makes domestic adjustment in the face of shocks to the equilibrium value of the real exchange rate somewhat smoother. This matter is discussed further below.

those that are predominantly economic in nature from those that are more political, and we begin here with the former.

## Transactions Costs, Trade and Output Growth

The strongest economic argument in favor of any monetary union has already been alluded to above: namely, that it leads to fewer costs in international transactions. These begin with the costs of buying and selling foreign exchange when goods, services and assets are traded across national borders, and in the Canada-US case seem to amount to somewhere in the region of a quarter of one percent of gross domestic product.[9] These costs, it might be noted, stem from the simple existence of a separate Canadian dollar, and would still be incurred under a fixed exchange rate regime of any degree of "hardness", including a currency board, and their existence and magnitude constitutes one of many arguments against settling for any such intermediate regime on anything but a transitional basis.

In the case of a separate currency whose exchange rate is also flexible, however, to these must be added the costs of hedging against future currency movements. Anyone engaged in regular cross border transactions in which the passage of time is important will want to undertake hedging transactions, but I am unaware of any estimates of their costs, or of those incurred when less formal longer-term hedging takes place, as, for example when a Canadian exporter finds it prudent to undertake long-term borrowing abroad in order to finance the expansion of production facilities in Canada, or when a firm sacrifices economies of scale in order to diversify its production facilities across the boundaries of the currency areas in which it buys inputs and sells output. All of these costs, whose significance I do not wish to downplay, are manifestations of the simple point already made that, in one market, other things equal, the use of a single money enables economic activity to be carried on at a lower cost than the use of more than one money.

The potential economic gains from monetary integration do not stop with lower transactions costs, of course. Those costs inhibit trade, and their removal

[9] This estimate is drawn from Robson and Laidler (2002). It is small (about half the size) relative to estimates of the savings to be realised by the introduction of the euro, presumably because North American monetary integration would eliminate one currency, not nine. In this context it is worth noting that the creation of the euro has presumably already created substantial cost-savings for British firms dealing with Europe.

therefore encourages it. This observation, which ought to be uncontroversial, has formed the starting point of an important body of empirical work dealing with currency unions, to which the most visible contributor has been Andrew Rose, writing with a number of co-authors, most notably Jeffrey Frankel.[10] The essential message of this work is that, just as currency unification encourages trade, so does trade create higher income levels, and it appears to show that, on average, the income gains in question are large. Indeed, extrapolating from Rose's results, it has been suggested that the creation of a Canada-US currency union might lead to as much as a thirty percent rise in Canadian living standards over a ten year period. Qualitatively similar claims have also been made about the benefits for Britain of adopting the euro, though, quantitatively speaking, on a rather more modest level.[11]

There are, however, reasons to find such estimates unconvincing. There are two links in the causative chain at work postulated to be at work here, one between currency unification and trade, and another between trade and output. The importance of the first of these is by and large uncontroversial, and in the case of Europe, a recent study by Micco, Stein and Ordonez (2003) suggests that it has been of some quantitative significance over the period 1992-2002, which encompasses the run up to, and ultimate adoption of, the euro.[12]

The second link, that running from trade to the economy's real performance in general, and its rate of growth in particular, is more problematic in the current context. No one would deny that, when heavily protected, even essentially autarchic, economies have opened up to trade, spectacular gains to living standards have followed. The example of the Asian "tigers" is well known. But there are good reasons to believe that here, as in many other places in economic life, diminishing returns are eventually to be expected. Canada and Britain are already extremely open to trade, and if the transactions costs associated with maintaining separate currencies are indeed preventing its further expansion, that must be in areas where the potential gains are small, for the simple reason that the transactions costs inhibiting their exploitation are also small.

Only if there are significant external economies of scale in the sectors affected, whose exploitation cannot be ensured by the pursuit of private profit would this not be the case, and this seems unlikely in the light of the available

[10] See in particular Frankel and Rose (2000, 2001).

[11] See House of Commons (UK) (2003) for a discussion of a range of estimates and the arguments for taking a cautious view of them in the UK case.

evidence. The NAFTA and its predecessor agreement have now been in place for more than a decade and have generated a dramatic increase in Canada-US trade, particularly in manufacturing. A recent study by Trefler (2002) estimates that the NAFTA has been responsible for productivity gains in the order of 6 percent. in this sector, though it also reveals significantly greater improvements in the sub-sectors most affected by the agreement. Improvements in economic performance of this magnitude have certainly been well worth having, but it is hard to believe that further gains of four or five times their size, such as naive extrapolation from Frankel and Rose's work indicate are available, are in fact there for the taking. Scepticism here is only strengthened by the fact that Trefler finds little evidence of economies of scale having been responsible for the gains realised under the NAFTA. In any event, Europe is now in the process of generating as close as economics usually gets to a controlled experiment on the economic benefits of monetary integration, because three countries that were members of the EU at the time of the euro's launch have yet to (and may never) adopt the euro. Though it is early days as yet, and the increases in trade documented by Micco, Stein and Ordonez (2003) notwithstanding, it is hard, even after four years, to discern any marked divergence in real output growth between the "euro ins" and the original "euro outs".[13]

All in all then, though it would be ridiculous to deny that economic benefits would arise for both Britain and Canada from the lower transactions costs associated with monetary integration and misleading not to point out explicitly that estimates of the direct element of those costs associated with the foreign exchange market *per se* put a rock bottom lower bound on them, it would also pay to be cautious about their overall magnitude. No doubt the economic gains from monetary integration are big enough to matter on an "other things equal" basis, but other things are not always equal, and there are potentially offsetting losses that must also be taken into consideration.

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[12] I am indebted to an anonymous referee for drawing my attention to this paper, which, having been published after the first draft of this essay was written, is probably given less attention here than it merits.

[13] A recent time series study of the Irish economy by Thom and Walsh (2002) finds essentially no effects on output growth associated with the break-up of the Anglo-Irish monetary union. Note also that the start of the recent Irish "economic miracle" antedates the launch of the euro and seems to be associated with Ireland's membership in the EU as well as with the adoption of an investment-friendly tax regime. Similar considerations will arise in future as economists try to disentangle the effects of EU membership in general from those of the adoption of the euro in particular on the economic performance of those eastern European and Mediterranean economies that have recently joined the EU.

## The Question of "Flexibility"

Just as fundamental as the proposition that the right number of monies is one, is the observation that there would be no point in international trade, or inter-regional trade within a country for that matter, if all areas produced and consumed a similar bundle of goods and services. The productivity of trade derives precisely from the fact that there are differences among these, particularly, perhaps, among production bundles.

It is in this context that issues having to do with the extra flexibility conferred upon a country by a flexible exchange rate arise. They do so because the so-called "law of one price", which says that - making due allowance for transportation costs and taxation differences - the same good cannot trade at a different price in two parts of the same market, does *not* also say that, where different regions produce different bundles of goods, the relative prices of these bundles will not vary over time.[14] On the contrary, as tastes and technology, not to mention the state of the business cycle, change, so will those relative prices, and so, therefore must the real incomes in terms of consumption goods of the people who produce them.

Within a monetary union, and on the assumptions (made at this point for the sake of simplicity) that the consumption bundle is more or less standard across regions and dominated by goods that are easily traded, these real income changes must be brought about to an important extent by variations in money wages. If the latter are flexible, all well and good, but if there is any stickiness to them, particularly downward stickiness, then, in areas where incomes must fall, these changes will be accompanied by increases in unemployment which, though transitional, will not necessarily be either small or short-lived. If, however, the monetary union is also a fiscal union, the tax-transfer system will work automatically to mitigate these effects, and if labor mobility is relatively easy within it, so will movements of workers away from depressed and towards buoyant regions. These conditions, roughly speaking, characterise monetary unions whose borders are co-terminus with those of a nation-state, but more often than not, fiscal transfers and labor mobility stop at the national boundary.

How important all this might be for any country considering entry to a supra-national monetary union depends, of course, upon the extent to which it is likely

[14] It is important to discuss these limitations to the implications of the law of one price in the context of the Canadian debate because certain important contributors to it, notably Courchene and Harris (1999), have treated any deviations from purchasing power

to be hit by shocks, particularly adverse shocks, that are specific to the mix of traded goods that it produces. It is by now reasonably well understood that Canada's status as a major producer and exporter of primary commodities, coupled with that of the United States as a significant importer thereof, makes Canada particularly vulnerable to such problems.[15] It is also understood that a nominal exchange rate adjustment is one way of dealing with them, not of course as a permanent fix that avoids real income adjustments, but as a means of bringing those adjustments about without putting more transitional downward pressures on money wages than they can comfortable bear. In the Canadian case, an adverse shock to commodity prices must reduce real wages in the sector that produces them, but also in other sectors of the economy if they are to absorb the resources released from commodity production. It must do this in any circumstance, but under a flexible exchange rate, part of the adjustment can, and so it seems does, occur by way of a currency depreciation.[16]

## The Role of Labor Market Integration

The economic significance of the flexibility that Canada would sacrifice by joining a North American Monetary union, or Britain by adopting the euro for that matter, is a legitimate matter for debate, not least because this will vary depending upon what other measures, if any, are simultaneously put in place. The root of the problem under discussion lies after all, not with the monetary order, but with a lack of labor market flexibility. Perhaps it should be treated as a labor market problem in the first place, and perhaps indeed it would be so treated in the absence of the buffer provided by a flexible exchange rate.

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parity as "misalignments" that provide evidence of a malfunctioning foreign exchange market.

[15] Qualitatively similar, though quantitatively less important, considerations seem to arise in Britain from differences between its output mix and that of the major European economies.

[16] Chen and Rogoff (2002) document the influence of commodity prices on the Australian, Canadian and New Zealand exchange rates. Note that, since early 2003, the well known Bank of Canada equation (Amano and Van Norden 1995), which has performed well since the early 1990s in predicting the real Canadian-US dollar exchange rate as a function energy prices, non-energy commodity prices, and the short term interest differential between the two countries, has been seriously under-predicting this variable. It is too early as yet to say whether this is a temporary aberration, a signal that some newly important fundamental variable is missing from it, or evidence that the foreign exchange market is itself prone to generate exchange rate misalignments for non-fundamental reasons.

Though this argument deserves respectful attention, it also needs to be treated with care. One benefit that was supposed to flow from the adoption of the euro by such economies as France and Germany was the imposition upon them of the discipline needed to bring extra flexibility to their labor markets. Now, after four years, we can see that this is beginning to happen, but no one would deny that much still remains to be done. Though argument by analogy with French and German experience suggests that accession to a monetary union might encourage greater flexibility in the Canadian labor market, and in the British market too, to the extent that there are still problems there, it also suggests that it would be unwise to expect too much too quickly in this regard.

In Europe, we know that the euro is part of a drive towards the eventual creation of a single market in goods, services, labor and capital, but the case for North American Monetary Union has not usually been stated in such terms, or at least not yet. Nevertheless, arguments for moving the NAFTA in the direction of a fully fledged Customs Union, and for creating greater labor mobility within North America, along with harmonised immigration and refugee policies, are now beginning to be heard in Canada, and the removal of restrictions on the free movement of labor across the Canada-US border would surely remove an important element of the case for exchange rate flexibility.[17]

One reason why exchange rate flexibility is important for Canada is that shocks emanating from commodity price fluctuations must be absorbed within the domestic labor market, because there are significant legal barriers to international labor mobility in North America. Though linguistic and cultural barriers to labor mobility also exist in North America, they seem, to casual observation at least, to be much less significant there than they are in Europe, where the legal barriers to international labor mobility are smaller. The removal of legal barriers to North American labor market integration would thus remove an important drawback to North American monetary integration, and there seems to exist no similar opportunity in the case of Britain and the euro. There are two ways of stating the implications of this conclusion for the Canadian debate. The first is to note that advocates of North American monetary integration would probably be wise to argue for North American labor market integration as well. The second is to suggest that those who are skeptical about the desirability of a more general move towards North American economic integration should probably be wary of supporting monetary union as a stand alone goal, for the simple reason that the

[17] A wide range of possibilities for further Canada-U.S economic integration exists. Some of them are discussed in the C.D. Howe Institute's recent *Border Papers* series. See in particular Wendy Dobson (2002) and Danielle Goldfarb (2003)

disappearance of exchange rate flexibility would create a situation in which pressures towards labor market integration would significantly increase.

## Currency Depreciation as a Factor in the Canadian Debate

Canada and the UK are currently operating under broadly similar monetary orders, and from a purely domestic perspective, outcomes in both countries have been satisfactory. There has been, however, at least until recently, one salient difference between them. In the 1990s, under inflation targeting Sterling has been a strong currency internationally, while the Canadian dollar has depreciated, particularly against the US dollar. In the absence of this latter phenomenon, it is doubtful that there would now be so much Canadian interest in North American monetary integration, and certainly it has figured strongly in its proponents' case.

The first thing to be noted here is that the Canadian dollar's nominal depreciation began not in 1991, but in 1976, and that some commentators are inclined to view the currency's performance over this period as evidence of a fundamental and long-standing economic malaise.[18] Here, their presentation of the facts is open to question. To begin with, the Canadian dollar's nominal depreciation between the mid-1970s and later 1980s is easily accounted for by the fact that, over those years, the Canadian inflation rate was systematically higher than that of the US. After its recent rise against the US dollar, moreover, which, at the time of writing, is beginning to look like more than a temporary aberration, the currency is back at levels that are actually a little above the lows that it touched in the mid-1980s. It may well turn out, then, that experience which until recently could be presented as stemming from a serious long-term problem with the exchange rate that had gotten worse in the 1990s, is better interpreted as an inflation-induced depreciation that came to an end in the mid-1980s, only to be followed by a short-lived and unsustainable appreciation that peaked in 1992, after which the currency took another decade to find its mid-1980s level again.

But whatever the appearances will turn out to be in the future, by the end of the 1990s, the Canadian dollar's weakness was being blamed for a variety of factors affecting the real economy, and these matters played a major role in the case that began to be made at that time for North American Monetary Union. Managerial laziness induced by a weak currency was said to be inhibiting productivity growth, and undisciplined politicians were said to be putting off hard

[18] This seems to be the view, among others, of Courchene and Harris (1999) Cooper (2001) and Grubel (1999)

decisions because the exchange rate was enabling them to hide the consequences of their procrastination from the electorate. Neither argument, however, was particularly convincing.[19]

There is no doubt that, relative to the US, Canada has, overall, experienced a shortfall in its productivity performance since the early 1990s, but it is now well known that the aggregate statistics hide the vital detail that significant differences here have been concentrated almost solely in the "high-tech" sector, which is also a good deal smaller in Canada than in the US. The exchange rate is a significant variable right across the economy, and it is simply implausible to attribute so narrowly focussed an effect to its behavior. As to the resolve of Canadian politicians during the 1990s, the NAFTA was negotiated and kept in place, inflation was brought down and kept down, the federal government's finances were put in order, and those of some provinces too, a highly unpopular reform of indirect taxation was begun, and a significant reform of the Employment Insurance was also undertaken. Though there has certainly been back-sliding on some of these fronts, by international standards, or by those that they themselves set in the 1970s and 1980s, Canadian politicians do not have to apologise for any overall lack of discipline in the 1990s.

One element in the critics' commentary on the effects of exchange rate depreciation nevertheless needs to be taken seriously: the dollar's decline did make imported investment goods more expensive, this did inhibit capital accumulation, and this probably did hold back the growth of productivity in Canada, particularly labor productivity.[20] The fundamental force at work here was, of course, the real exchange rate depreciation that underlay the dollar's nominal decline, and how much significance one attaches to it in making the case for the desirability of monetary integration depends upon the factors to which the nominal and real exchange rate depreciations in question are attributed. Those who believe that movements in the nominal exchange rate are largely the consequence of fundamentals that would force the real exchange rate to adjust through movements in domestic wages and prices in the absence of exchange rate flexibility regard this argument as irrelevant to the monetary integration debate, since these forces would be at work under any monetary regime. Those who believe that the workings of the foreign exchange market itself can lead to serious and persistent misalignments of the real exchange rate, on the other hand, regard it

[19] Grubel (1999) in particular made a great deal of these matters. Courchene and Harris (1999) were careful to refer to the potential effects of the exchange rate regime on business decision-making as a "conjecture".

[20] Harris (2000) includes a well argued account of this hypothesis.

as highly pertinent. This is not the place to try to settle this issue. Suffice it to say: first that disagreement about it is a major factor dividing those who are skeptical about the likely productivity enhancing effects on Canada of a common North American currency from their opponents; and second that it is at heart an empirical issue on which the evidence is by no means all in.[21]

## PREDOMINANTLY POLITICAL AND INSTITUTIONAL QUESTIONS

The economic factors discussed so far in this paper do not seem to me to be decisive, one way or another, to Canada's choice of future monetary arrangements.[22] On the one hand, inflation targeting has worked well since the early 1990s, and there has been nothing about its performance to make a compelling case for giving it up. On the other hand, there are some striking examples of monetary unions among diverse economic regions that have also worked well for a long time - the United States or indeed Canada itself - so the advantages of joining such an arrangement cannot be dismissed out of hand either. For Canada, the balance between costs and benefits of North American monetary integration discussed so far is a fine one, particularly from a long-term perspective, about which reasonable people can disagree.

The choice in question should, in any event, be posed as one between monetary orders, and there is a great deal more to a monetary union than the use of a common currency, which is the characteristic on which the discussion has focussed so far. Any monetary order also involves, among other things, a regulatory and supervisory framework for the banking system and the rest of the financial sector, a set of institutional arrangements within which monetary policy is conducted on a day to day basis, not to mention the political mechanisms through which the goals of monetary policy are chosen, the relationship between fiscal and monetary policy is managed, and the accountability of policy makers to the public at large is defined and enforced. When these factors are brought into

[21] Laidler (2005), which was completed in late 2002, argued that the good performance of the Bank of Canada equation (see above) in the 1990s put the burden of proof on squarely on those who denied the importance of economic fundamentals. Since the beginning of 2003, the question has become more open.

[22] I will leave it to those who are better versed in its details to assess the significance of these factors for the parallel British case.

the picture, it becomes apparent that the nature of the choices facing Britain and Canada are very different.

## The European Union, the Euro and Britain's Choice

The development of the European Union has been driven from the outset by memories of the two devastating wars that were fought on continental European soil in the first half of the twentieth century. Though its earliest stages were dominated by the creation of economic ties among its members - the Coal and Steel Community, and after the signing of the Treaty of Rome, a Common Agricultural Policy - European integration has been at heart a political project from the outset, and the Union's institutions are those of an embryonic federal (or confederal) state, albeit not one for which one can find any obvious prototype in previous history. Europe has a well developed bureaucracy in the shape of the Commission, the electorates of member states are indirectly represented through the Council, and those electorates also send members to a European Parliament, albeit one of very limited authority. There is a European Court to which national courts and legislatures are subservient in a range of areas, while in certain areas, notably agriculture, international trade, and regional development, policy is made on a European rather than a national level.

There is also a common currency for those who want to adopt it, and with it comes a common monetary policy, set by a European Central Bank (ECB), and implemented through a European System of Central Banks. The ECB derives its political legitimacy from the Maastricht Treaty, which, while giving it an unusually high degree of independence (the choice of inflation targets for Europe is a matter for the Bank, not for politicians), also requires its Governor to account for his actions on a regular basis to the European Parliament. At the same time, problems associated with the all-important interface between fiscal and monetary policy are dealt with, at least in principle, by a so-called "Stability and Growth Pact" which seeks to limit the ability of member governments to run deficits, and provides for penalties for those who violate them.[23]

The significance of all this for the question at hand is that Britain faces an extremely clear-cut choice in deciding whether or not to adopt the euro as its

[23] The reader's attention is drawn to the qualifier "in principle" here. The experience of the last two or three years, where three important members of the euro system have violated the Pact's deficit limits without penalty, suggests that the institutions surrounding the political management of the fiscal-monetary policy interface within that system urgently need serious attention. See also below.

currency, because the euro is underpinned by an already well defined and fully functioning monetary order. Moreover, the European Union is a going concern, both economically and politically, and, the currency question aside, Britain is already fully committed to it and represented within its decision making bodies on exactly the same terms as any other member nation.

Should the Bank of England become a member of the European System of Central Banks, its Governor would become a member of the ECB's Governing Council, and the British government would obtain a full say in the deliberations of ECOFIN, the committee that discusses and oversees the conduct and co-ordination of macroeconomic policy in the eurozone. More generally the interests of the British public would be taken into account, to exactly the same extent as those of the population of any other member nation, in monetary policy decisions, and that public would have exactly the same ability to hold the European Central Bank accountable for its decisions as any other within the system. Furthermore, the European Economic and Monetary Union (EMU) was designed on the assumption that Britain would eventually become a member, and, always presuming that it fulfils the well defined criteria for accession, there would be no question but that Britain would receive the full co-operation of its European partners in managing the transition.

Now, to be sure, there are legitimate concerns about the differences between the European monetary order and the one currently in place in Britain: both are based on inflation targets, but in Europe, these are set by central bankers, not elected politicians, and at a perhaps significantly lower level too.[24] Monetary policy decisions are, furthermore, taken with much more transparency in Britain than in Europe; the interaction between fiscal and monetary policy in Britain is managed continuously and at the discretion of politicians, but in Europe, it is subject to constraints embedded in a pact that might well turn out in practice to be too rigid to be enforceable; to name but three of them.[25] But with the worrying

[24] In Britain, the target rate for inflation is 2 percent, but the regime allows for deviations in both directions from this norm. In Europe the ECB aims for an inflation rate clearly below, but close to, 2 percent., and zero seems to mark an informal lower bound on what is regarded as tolerable.

[25] Issing et al. (2001) provide an accessible and comprehensive survey of the workings of the new European monetary system. To say that this system is well defined is not to say that it is necessarily satisfactory in every respect from a British point of view. There is for example concern in Britain that the ECB has too much goal independence, and it has been suggested that responsibility for setting inflation targets should be transferred to ECOFIN, a committee of the Council made up of the finance and economics ministers of member states. The Growth and Stability Pact has also been

exception of the Stability and Growth Pact, which large countries seem to be finding easier to circumvent than small ones, the rules of the game are the same for all who use the euro.

Like that recently made by Sweden, Britain's choice hinges, as Jonung (2002) has put it, on the relative amount of trust that the British electorate are willing to invest in the alternative monetary orders on offer. For Britain to adopt the euro as its currency would involve a surrender of national sovereignty in monetary policy, but, subject to the serious *caveats* just mentioned, which presumably influenced the outcome of Sweden's choice, a degree of fundamental accountability on the part of monetary policy makers to the British electorate would be preserved, albeit in a form likely to reduce the responsiveness of policy to their wishes. And in this matter, they would be treated in exactly the same way as the electorates of any other country using the euro.

## The United States, the United States Dollar and Canada's Choice

The choice between monetary orders that Canada faces is very different, because, although it is known what is currently in place, it is not clear what form of North American monetary integration is available as an alternative. Critics of the current order seem to have difficulty in agreeing among themselves what alternative would be both desirable and feasible.

For example, Grubel's (1999) proposal for the establishment of a North American Monetary Union, complete with a new currency, the *Amero*, and a new supra-national central bank, is explicitly modelled on the European system, and has many attractions from a Canadian point of view.[26] It suffers, however, from the important defect that it has attracted no significant support in the United States, and, as Benjamin Cohen has argued at this conference, for good reasons of national self interest. Grubel's scheme is a non-starter in current circumstances, and for that reason I shall not discuss its merits further in this paper.

Another possibility sometimes canvassed is Canadian participation in an expanded Federal Reserve System, but it is not clear what form such participation could take. Full participation would involve Canadian representation on the System's Board of Governors, whose members, among their other duties, form a

criticised for imposing too much rigidity on fiscal policy. See House of Commons (2003).

[26] This is not to say that Grubel's proposal would be preferable to the current monetary order, but only that, among proposals for North American monetary integration, it is the most attractive.

permanent majority on the Federal Open Market Committee that takes policy decisions. But the System is an agency that is independent *within*, not *of*, the Government of the United States, its Governors are presidential appointees subject to congressional approval, and the Chairman of the Board of Governors, also a presidential appointee, is required to report regularly on monetary issues to the Congress. It seems unlikely, to say the least, that Congress would amend the Federal Reserve Act so as to permit the President of the US, let alone the Canadian government, to appoint one or more Canadian Governors to the Board, or to grant to the Canadian parliament any say in the appointment of the Chairman or any power to hold him accountable for the conduct of policy.

It would be just as hard to reconstitute the Bank of Canada as a district bank of the system whose President might then have the same rights as others on the FOMC – i.e. membership that rotates between non-voting and voting status over time. Without willingness on the part of the US government to permit large deviations from current arrangements, such a change would require: first, that the Bank of Canada, currently a crown corporation, be privatized, with its stock to be held by Canadian chartered banks who would then have the responsibility of appointing its President (in consultation with the Federal Reserve Board); and second, that the Bank be given significant regulatory power over those same chartered banks, in the matter of mergers among other things. Since the Canadian system is dominated by only six large banks that are already objects of almost permanent suspicion among the electorate, it is quite inconceivable that such changes could be implemented in the foreseeable future by any Canadian government.

The only option for North American monetary integration that is actually feasible under current circumstances is thus the unilateral adoption by Canada of the US dollar as its domestic currency, as certain other countries have done, some quite recently. It is, moreover, possible to say something about the pros and cons of such an arrangement, because there already exists a clear record of the United States attitude towards such measures. This occurs in statements made by then Deputy Secretary of the Treasure Laurence Summers in response to monetary developments in Latin America (Summers 1999a and b), but it uses quite general language, nor has any element of it been repudiated since.[27]

[27] The remarks in question were immediately prompted by the possibility of Argentina dollarizing, but simultaneously seeking access to the Federal Reserve discount window for its banking system. The wording differs between the two statements in inessential ways.

> "While there are many issues, possibilities and approaches, as these are considered it would not, in our judgement, be appropriate for United States authorities to adjust their bank supervisory responsibilities, access to the Federal Reserve discount window, or the procedures or orientation of US monetary policy in light of another country's decision to dollarize its monetary system. Any country contemplating dollarization will have to weigh carefully these considerations and many others. It will surely be appropriate and welcome that its representatives do so in consultation with the United States authorities so that we can jointly think through the implications for both of our economies." (1999a, final page, un-numbered)

Applied to Canada, this statement suggests that the United States would like to be consulted if dollarization is contemplated, and would not necessarily oppose or obstruct such a step. But crucially, it also says that the United States authorities would not be willing to make any changes in either the style or substance of their domestic monetary order in order to accommodate Canadian interests. It is, then, instructive to consider some of the salient features of a dollarized Canadian monetary order designed to observe such constraints.[28]

To establish such an order, Canada would have to purchase US currency to replace the existing stock of Canadian notes and coin in circulation. In round numbers the amount involved here would have been about C$45 billion at the beginning of 2004, or about US$30 billion at an exchange rate of C$1.30 per US$. These funds would have to be raised by a combination of selling existing Canadian holdings of interest earning US dollar reserves and by borrowing, and the interest costs implicit in this change would eat up around half of the savings in foreign exchange market transactions costs that dollarization is expected to realize. The current Canadian regulatory and supervisory framework would presumably remain in place, and so, therefore would the many incongruities between it and the United States regime. Thus, the integration of the North American monetary system beyond the adoption of a common currency would be inhibited, and the cost savings inherent in the creation of an integrated financial system would not be fully realised, at least immediately.

The efficiency of the Canadian financial system would nevertheless be impaired under unilateral dollarization. At the outset, the Bank of Canada's ability to create domestically acceptable money in unlimited amounts in times of emergency would be given up with the abandonment of the domestic currency, along with the capacity that this gives the Bank to act as the ultimate guarantor of

[28] The following few paragraphs draw heavily on Robson and Laidler (2002) where their arguments are developed in more detail.

the stability of the Clearing and Settlement system in particular and of the financial system more generally. Substitute arrangements would be available of course: the Bank of Canada could begin to hold reserves of liquid US dollar assets against its own liabilities, and it might arrange lines of credit too, probably with the Federal Reserve system itself, but also with large US banks; and financial institutions in Canada's private sector would do the same.

But such a system would not provide quite as much stability as the one currently in place, and it would be more costly to operate into the bargain. Under the system that would prevail immediately after dollarization, Canadian based banks would see an immediate deterioration in their efficiency and competitiveness in the North American market place. There would be an incentive for them to find ways to access the now more comprehensive and secure central banking services of the Federal Reserve system on the same terms as their American competitors, and this would be done either by the banks re-establishing themselves as US based institutions, or being taken over by existing US banks. In either case, this would leave local branches or subsidiaries to service those among their Canadian clients who for one reason or another could not conveniently take their own business to the US. Under such circumstances, Canadian clearing and settlement transactions would likely shift to US systems. Ultimately, such key Canadian institutions as the domestic clearing and settlement system and the Bank of Canada itself might become redundant.[29]

There is also the matter of monetary policy itself. It is often suggested that dollarization of the Canadian economy would lead to Canada importing the inflation rate ruling in the United States, but that is only true in a very broad sense. Rather, in the absence of variations in a nominal exchange rate, the Canadian price level would have to make whatever moves were needed to bring about any adjustments in the Canada - US real exchange rate that shifts in market fundamentals dictated, and these moves would not be trivial. For example, Robson and Laidler (2003) estimate that between 1998 and 2002, given the US inflation rate then prevailing of between 1 and 2 percent, *deflation* at an annual rate of about 2 percent would have been required to bring about the adjustment in real Canadian-US exchange rates that in fact occurred over this period, largely as a consequence of movements in world commodity prices.

The extent to which Canada's vulnerability to such fluctuations could be reduced by measures designed to promote North American labor market integration has already been discussed, but at this point, it is worth noting explicitly that even such a development would not be sufficient to make the price

[29] I am grateful to an anonymous referee for helpful comments on this issue.

level consequences of unilateral dollarization on Canada's part similar to those that would arise for Britain from adopting the euro. With Britain inside the European monetary system, the performance of the British economy would become a matter of concern to the European Central Bank and would be weighed in its policy decisions, for which the Bank would be accountable through the European Parliament to, among others, the British public. Under unilateral dollarization on Canada's part, monetary policy would be made by a Federal Reserve system concerned solely with the performance of the US economy, and accountable only to the US electorate, and the performance of the Canadian economy would be irrelevant to its decisions.

These drawbacks to unilateral dollarization explain why it has been resorted to only by countries whose own domestic monetary orders have already collapsed, and imply that it is an extremely unattractive option for a country such as Canada that has a well established and credible monetary order in place, not to mention an efficient and well functioning financial system.[30] Any North American monetary order that Canada could conceivably find attractive would, that is to say, have to be a negotiated one, and the preceding discussion enables us to construct a shopping list of what might be sought in such negotiations: help with meeting the interest costs of acquiring US currency; an extension of the US regulatory framework that would permit integration of financial systems beyond the mere adoption of the US dollar; access to US lender of last resort facilities for Canadian based banks; and some consideration of the behavior of the Canadian economy when US monetary policy decisions are taken. With the exception of the first of these, however, this list coincides exactly with the measures that Secretary Summers explicitly ruled out in 1999.[31] Of course, he spoke on behalf of an earlier administration, but it is worth noting that, although the current administration's Ambassador to Canada, Mr. Paul Cellucci has often expressed support for closer economic integration in North America, he has never, to the best of my knowledge, mentioned monetary arrangements in this context, and he

[30] In this context it is worth stressing that Canada has a well developed bond market where local firms can borrow long-term in local currency. This feature is not always present even in reasonably advanced economies, for example Spain, Portugal or Greece before their adoption of the euro, and can pose a serious obstacle to their smooth functioning under a completely flexible exchange rate.

[31] A report of the Joint Economic Committee of the US Congress dealing with Latin America (United States 1999) suggested that such aid could be extended to dollarizing countries. However, I suspect that a gift of around US$30 billion to Canada would be a hard sell in the current political climate.

has also explicitly denied any interest on the part of the United States in the creation of supra-national institutions of the European type in any area.[32]

## CONCLUSION

To sum up: the monetary arrangements currently in place in Canada and Britain are reasonably alike, and are working well, but the alternatives on offer to the two countries are strikingly dissimilar. The monetary integration of Britain into Europe would involve it in becoming an equal partner in a supra-national monetary order, designed as a component of a broader supra-national political order of which it is already a member, and which is configured (imperfectly no doubt) to treat all of its members on an equal basis, and to ensure all of them a voice in its current functioning and future evolution. Were Britain to make this choice, it would surrender national sovereignty in monetary affairs, but it would preserve some accountability of monetary policy makers to its electorate, albeit less than that electorate is currently used to.

By contrast the only form that North American monetary integration might realistically take at present would be unilateral dollarization on Canada's part. In choosing such an option, Canada would not only undermine the efficiency of its own financial system but would, in effect, grant hegemony over the most important single component of its domestic macroeconomic policy to the government of the United States. To the best of my knowledge, the United States have neither the ambition to establish such hegemony, nor any interest in having it thrust upon them. In the much longer run, some scheme resembling Grubel's *Amero* proposal might become feasible, but the European example suggests that it would have to be implemented as a component of an altogether broader movement towards economic and political integration that is currently on no-one's political agenda. The absence of such an agenda in North America, and its prominence in Europe, is the all important factor that currently differentiates Canada's monetary choices from Britain's, and provides a compelling reason for concluding that there are many more pressing matters to which Canada's scarce political energy could be devoted than further debate about North American monetary integration.

[32] See for example the important interview with Mr. Cellucci reported in Fife and Toulin (2001).

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# EXCHANGE RATE POLICY IN CANADA: LESSONS FROM THE PAST, IMPLICATIONS FOR THE FUTURE

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## INTRODUCTION

In Canada and the United Kingdom, the choice of an exchange rate and monetary policy regime has been a subject of ongoing study and debate, especially since the advent of Economic and Monetary Union (EMU) in Europe and the introduction of the euro in 1999. The focus of attention in both countries is between two alternatives: the current regime of a flexible exchange rate and inflation targeting versus the adoption of the currency of its major trading partner, the United States (US) dollar and the euro, respectively. These debates have both economic as well as political dimensions. The purpose of this paper, however, is to concentrate primarily on the economic, rather than the political arguments concerning Canada's choice between the status quo and the adoption of the US dollar by looking to the past for lessons that may help inform future decisions.

Although the Canadian and United Kingdom (UK) scenarios may appear similar on the surface – smaller countries joining a larger currency bloc – they are, in fact, fundamentally different for a variety of reasons, both political and economic. These differences are worth noting at the outset of the paper because

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the comparison brings into relief some important issues, and thus, helps focus the analysis on the key questions from a Canadian perspective. The first distinction is that the United Kingdom has a standing invitation to become a fully fledged member of a monetary union, EMU. Canada has no such offer to join a North American monetary union and one is not likely to be forthcoming anytime soon.[2] The US government has indicated that it has no desire to cede any of its sovereignty over domestic monetary policy to foreign governments or have their monetary policy subject to foreign political influence.[3] Thus, if Canada were to decide to have a common currency with the United States, its only choice would be to adopt the US dollar unilaterally. As a result, Canada would have no input into the formulation of North American monetary policy.[4]

The second and perhaps most important difference is that the UK is a member of the European Union, which is not only a common market area, with almost complete de jure mobility of goods, services, capital and labor, but is evolving, albeit in fits and starts, in the direction of becoming an economic and political union. Because North America does not have a common labor market, economic adjustment in Canada to exogenous asymmetric shocks, which affect the Canadian and US economies differently, cannot take place via cross-border labor movements, but through the adjustment of relative wages, which may disrupt

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[2] In the unlikely event Canada were to join a monetary union with the United States, its influence on monetary policy would be small because its economy is approximately one tenth that of the United States. In contrast, the economic and political significance of the United Kingdom is comparable to that of the other major countries already in the EMU (e.g. Germany, France and Italy). Thus, if the United Kingdom were to adopt the euro and join the EMU, its impact on monetary policy would be larger.

[3] An attempt by the late Florida Senator Connie Mack to pass a bill that would encourage countries in Latin America to dollarize was opposed by the Federal Reserve and defeated at the Congressional committee stage. The main concern was that countries that received US support to dollarize might apply political pressure to influence the direction of US monetary policy.

[4] Grubel (1999) proposed a North American version of the EMU, with the amero as the common currency. Courchene and Harris (1999) argued for a fixed exchange rate between Canada and the United States as one possible alternative to the current regime. Neither has gained widespread support. Although a North American monetary union may be the best alternative to the status quo, it has little political support at this time. A fixed exchange rate (or currency board) is unlikely to produce a net economic benefit to Canada because it effectively surrenders control of domestic monetary policy, yet does not eliminate the transactions costs associated with having a separate national currency. Moreover, fixed exchange rate regimes are often subject to speculative attack as was Europe's exchange rate mechanism in the early 1990s. See Osakwe and Schembri (1998) for more details.

domestic labor markets.[5] Furthermore, although the European Union is primarily an economic union, steps toward greater political integration, including the establishment of the European Parliament and Commission, have already taken place and are likely to continue. Therefore, the choice facing the United Kingdom about the adoption of the euro is also a choice about further economic and political integration with Europe over the longer term. In Canada, there are proposals to enhance the North American Free Trade Agreement (NAFTA) either by eliminating many of the seemingly small, but nonetheless irritating, regulatory barriers to trade or by adopting a customs union with common rules of origin, but there is little discussion of increasing labor mobility, and even less, concerning political integration. Unilateral adoption of the US dollar (or becoming a weak member of a monetary union), would represent a loss of political sovereignty because Canada would surrender control of domestic monetary policy. Hence, unlike the United Kingdom, Canada's choice of a common currency does not involve trading off the loss of domestic political sovereignty for more political influence within the monetary union. Instead, Canada's decision involves trading off the loss of political sovereignty over domestic monetary policy against only the possible net economic benefit. Therefore, for Canada to adopt the US dollar, the net economic benefit would have to exceed the loss in political sovereignty. The remainder of the paper focuses on evaluating the economic benefits and costs of unilateral dollarization for Canada.

Before considering the economic benefits and costs of alternative exchange rate regimes, it is important to emphasize that exchange rate policy and monetary policy are inextricably linked.[6] Any form of hard currency peg (a fixed exchange rate, a currency board or a common currency) in an environment of relatively free capital mobility implies the effective or literal surrender of domestic control over monetary policy. Although a flexible exchange rate allows domestic control over monetary policy to be maintained, it poses few constraints as to how that control is to be exercised. In particular, experience has taught us, that with a flexible exchange rate, monetary policy must have a credible nominal target, most often an explicit inflation or money supply target, in order to maintain low and stable inflation.

Retaining domestic control over monetary policy is an important economic benefit of a flexible exchange rate, but only if that control is used wisely to

[5] At the moment, labor mobility in the EMU is relatively low (Puhani, 1999 and Baldwin and Wyplosz, 2003). Nonetheless, most observers expect it to increase over time as labor markets become flexible and barriers to mobility are reduced.

achieve domestic nominal targets that are materially different from those of a potential currency partner. The other main economic benefit of a flexible exchange rate is that it can play the role of a macroeconomic shock absorber in the face of asymmetric shocks, when there are rigidities in nominal wages and prices that preclude them from adjusting rapidly to a shift in demand or supply. In the case of Canada, for example, which is a major commodity producer and exporter, and has strong trade links to the United States, the economic impact of a movement in world commodity prices or a swing in US export demand would normally be offset, in part, by an adjustment in the exchange rate (which is driven by a rise or fall in the demand for Canadian produced goods and services) and this adjustment would serve to stabilize domestic relative prices and Canadian employment and output. An excellent example of such an occurrence was the sharp 25% decline in world non-energy commodity prices as a result of the East Asian financial crisis in 1997-98; the Canadian dollar depreciated by 15% and the Canadian economy was able to maintain a high level of economic growth of 3-4% per annum over the entire period.[7]

A flexible exchange rate can entail two types of real costs: the first is related to the possibility the exchange rate may deviate persistently from its equilibrium value and thus produce a misallocation of economic resources and the second type encompasses the transactions costs resulting from having a separate national currency and a flexible exchange rate that fluctuates, thus creating uncertainty about its future value. The probability of a persistent exchange rate misalignment is, in general, negatively related to the stability of macroeconomic environment; that is, if monetary and fiscal policies are appropriately managed and exogenous shocks are not abnormally high, then the likelihood of the market mispricing a flexible exchange rate is low. The transactions costs of a separate national currency and a flexible rate include conversion and hedging costs as well as costs due to segmented financial markets, incomparable prices and higher risk premia and these costs will hinder cross-border trade in goods, services and assets. These transactions costs are not well known, but are normally thought to be small, less than 0.25% of Gross Domestic Product (GDP).[8]

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[6] Laidler (1999) makes this point by arguing that the debate should be over the *monetary rule*.

[7] One of the arguments made against the United Kingdom adopting the euro is that, like Canada, the United Kingdom has a different economic structure than its euro trading partners (especially oil production) and therefore likely to be subject to asymmetric shocks. A flexible exchange rate would enhance adjustment to such shocks.

[8] Recent empirical work by McCallum (1995) and Helliwell (1998) on the effects of national borders on trade indicates that intraprovincial trade is much denser than

Canada has had a flexible exchange rate for 47 of the last 60 years, which represents the longest experience of the any country since World War II. Overall, the flexible exchange rate has effectively facilitated the adjustment of the Canadian economy to several major commodity price and US fiscal policy shocks (stemming from the Korean, Vietnam, and Iraq wars and other episodes of military spending cum tax cuts), and thus, the flexible rate has served to insulate the Canadian economy from the sometimes volatile US economy to the south. The efficacy of the flexible exchange rate was greatest during periods in which domestic monetary policy was reasonably well managed. Over the same postwar period, international trade in goods, services and assets between the two countries has grown rapidly. Since 1991, the flexible rate has allowed the Bank of Canada to pursue explicit inflation targets which have produced low and stable inflation and at the same time reduced output volatility. In summary, Canada's long experience with a flexible rate has provided useful lessons and, for the most part, they are still relevant decisions concerning Canada's choice of exchange rate and monetary policy regime in the immediate future because differences between the structures of Canadian and US economies and difference in the goals of monetary and fiscal polices remain.

The next section of the paper provides a conceptual overview of the key arguments for and against the status quo exchange rate cum monetary policy regime in Canada vis-à-vis unilateral adoption of the US dollar. The core of the paper will review the postwar Canadian experience with different exchange rate and monetary policy regimes to draw the key lessons. The penultimate section will be a discussion of the implications of these lessons for the future. The final section provides some concluding remarks, primarily concerning potentially fruitful areas of future research.

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Canada-US trade; this observation is either due to border trade costs, biased domestic preferences in favor of domestic goods and services, or domestic business and social networks that reduce information problems and facilitate trade. Some observers have argued that border trade costs may include the friction caused by the separate Canadian currency and the flexible exchange rate. Frankel and Rose (2002) find that a currency union with the United States could boost bilateral trade and GDP in Canada by thirty-five percent over twenty years by reducing or eliminating these transactions costs. Although these results and their interpretations are controversial, they raise the question of whether the cost to Canada of having a separate currency is possibly larger than is normally believed. See Helliwell and Schembri (2005) for a further discussion.

## CONCEPTUAL OVERVIEW: WHAT ARE THE KEY ECONOMIC ISSUES?

There are three economic issues that are central to the debate on Canada's choice between the status quo regime of explicit inflation targeting and a flexible exchange rate, and unilateral adoption of the US dollar (or entrance into some weak form of monetary union with the US dollar as the common currency).[9] The first two issues speak in favor of retaining the status quo, whereas the third favors a common currency. [10]

1. *Monetary Policy Independence:* A flexible exchange rate allows Canada to have an independent and discretionary monetary policy (i.e., an inflation target) that is different from that of the United States.
2. *Macroeconomic Stabilization:* A flexible exchange rate facilitates adjustment to exogenous real shocks, which most often take the form of shifts in the demand for Canadian-produced goods and services, and thus serves to stabilize domestic economic activity.
3. *Microeconomic Transactions Costs:* Separate national currencies and a flexible exchange rate create conversion, hedging and other costs to cross-border transactions in goods, services and assets between domestic and foreign residents.

### Monetary Policy Independence

To have monetary policy independence, a country must have a separate national currency and must be able to adjust its money supply to attain domestic objectives.[11] If capital is mobile (i.e. few, if any, capital or exchange controls),

[9] Please note that this section does not provide an in-depth analysis of the theory of optimum currency areas initiated by Mundell (1961). For an accessible introduction to Mundell's work and subsequent contributions consult Krugman and Obstfeld (2004). Artis (2002) applies the theory to the United Kingdom and also discusses the situation in Canada.

[10] There are other issues the go against the unilateral adoption of the US dollar such as losing the lender of last resort facility provided by the Bank of Canada to Canadian commercial banks and the Bank of Canada's role in backstopping the Canadian payments and clearing system. See Buiter (1999) for more details.

[11] A separate national currency also implies that the government earns seigniorage revenue from the state monopoly on the issue of fiat money. If Canada were to adopt

monetary policy independence can only be attained with a flexible exchange rate.[12] In a world in which most central banks are committed to achieving low and stable inflation, the gain from having domestic control over monetary policy may not seem that large. Nonetheless, the fact that Canada has had explicit inflation targets since February, 1991 and the United States has not adopted them reflects differences in their beliefs about the objectives and conduct of monetary policy.[13] A common currency cannot easily paper over these differences. Moreover, an independent monetary policy still leaves some room for useful discretionary action by the domestic monetary authorities in situations in which the cyclical positions of the two economies are not the same. A good example would be the scenario in which the US economy is growing more rapidly than the Canadian economy because of a US fiscal expansion (this example will sound very familiar when we review Canada's history with exchange rate policy in the next section). The appropriate monetary response in the United States would be to allow interest rates to rise, but, with a common currency, Canada's interest rates would also increase despite the fact that the Canadian economy may not be close to full employment. In contrast, under a floating rate, the Canadian dollar would depreciate in response to the higher US interest rates boosting economic activity in Canada. The crucial consideration for Canada is that a common currency means a common US-based monetary policy.

## Macroeconomic Stabilization

In the face of external and domestic shocks to the demand or supply of domestically produced goods and services (e.g. a reduction in government spending or an increase in the world demand for wheat), the real exchange rate, which represents the aggregate relative price of Canadian produced goods and services, will adjust to stabilize the domestic economy by eliminating excess demand or supply. For example, a reduction in government spending represents a

unilaterally the US dollar, approximately $2 billion in annual seigniorage revenue would be lost, Robson and Laidler (2002).

[12] This statement is consistent with the concept of the "impossible trinity": monetary policy independence, capital mobility (i.e., no capital or exchange controls) and a fixed exchange rate. Only two components of the trinity can be achieved at any moment in time. This idea is often attributed to Mundell (1968), although he does not use this expression to describe the concept.

[13] Alan Greenspan (2001, 2004) does not favor explicit inflation targets for the United States; he feels the precision of inflation targets may be misleading and not helpful in maintaining macroeconomic stability.

fall in the demand for domestically produced (typically nontraded) goods. Consequently, some amount of domestic productive resources, primarily labor, would become unemployed and would have to be re-allocated to other sectors in the economy (i.e. the traded goods sector) to restore full employment. This re-allocation would only occur if the relative price of nontraded to traded goods were to fall, which would imply a real depreciation; that is, Canadian goods and services would need to become relatively less expensive on world markets in order to increase demand and return the economy to equilibrium. If Canada were to adopt a common currency with the United States, this real depreciation could only take place if domestic prices and wages were to fall or to grow more slowly than US prices and wages. In practice, prices and especially wages are sticky downwards because there are costs of price adjustment as well as labor market rigidities. Thus, this adjustment process could be painful if there were a large negative shock to the demand for Canadian produced goods and would only occur if there is significant unemployment and slack demand in the economy. One need only look at the economic strife in Argentina in the late 1990s and early 2000s to grasp how difficult this adjustment process could be; Argentina had a currency board fixed exchange rate regime that eventually collapsed under the weight of civil unrest created by unemployment approaching twenty percent.[14] In contrast, under a flexible exchange rate, the exchange rate would have depreciated in response to the decline in demand, thus obviating the need for thousands of costly individual price and wage adjustments throughout the economy.[15] Indeed, the Argentine economy has since recovered somewhat because the currency board was replaced by a flexible exchange rate regime which has depreciated to help restore equilibrium. Therefore, the critical point is that the real exchange rate will always adjust in response to a shock to the demand for Canadian goods and services, regardless of the nominal exchange rate regime. The choice of the nominal regime matters because real exchange rate adjustment is, in general, easier under a flexible exchange rate.[16]

[14] The current predicament of Germany in the euro area is another case in point. Germany needs a real depreciation to kick start her economy, but in a common currency area, the burden of adjustment is placed on its work force. Because of Germany's rigid labor markets, it could take many years of almost double-digit unemployment rates to achieve the necessary adjustment in relative wages.

[15] Friedman (1953) used the example of daylight savings time to contrast adjustment under a fixed versus a flexible exchange rate; that is, it would be possible for each individual to adjust his/her own clock to take advantage of the increased daylight hours, but it is much more efficient for everyone to do it in a unified and coordinated manner.

[16] An excellent recent example of adjustment to the effect of differential demand pressures on the real exchange rate via changes in relative inflation rates under a common

**Figure 1**
**Canadian External Trade in Goods and Services: Total and Bilateral (1948-2002)**
(Percent of GDP)


1. September 1950: Canadian dollar floated. 2. May 1962: Canadian dollar fixed.
3. May 1970: Canadian dollar floated.

Source: Statistics Canada, Canada's Balance of International Payment (Historical Statistics).

It is important to note that rapid real exchange rate adjustment in response to an exogenous shock is more important for the Canadian economy because important structural differences between the Canadian and US economies persist, despite the fact that the Canadian and US economies are highly integrated.[17] Thus, the two economies are subject to different shocks and their business cycles are not completely synchronized (Murray, 2000). Figure 1 shows that the level of

currency is Ireland in the euro area. Ireland's inflation rate has been significantly higher than that of the core euro-area countries because relatively high demand for Irish output necessitates a real exchange rate appreciation and this can only take place through higher inflation. Hence, the adoption of a common currency has implied that Ireland no longer has any significant control over its domestic rate of inflation.

[17] Krugman (1993) would argue that free trade between Canada and United States is likely to exacerbate these structural differences in their economies because increased trade would promote further specialization in the products in which the two countries have a comparative advantage and thus would raise the probability of asymmetric shocks.

bilateral trade between Canada and the United States has been growing dramatically in recent years and now exceeds sixty percent of Canadian GDP. Exports represent a third of GDP and eighty-five percent of exports are bound to the United States; thus, variations in US import demand due to cyclical movements in the US economy or to other shocks will have a large impact on the Canadian economy. A flexible exchange rate will adjust in response to these movements and in so doing will buffer the impact on the Canadian economy. Furthermore, the basket of goods and services that Canada produces and exports is different from that of the United States. Canada is much more dependent on the production and export of natural resource based products (See Table 1).[18] Thus, a change in the world prices of these commodities will typically have differential or asymmetric impacts on the two economies.[19] Bilateral real exchange rate adjustment is often needed and this can be most easily obtained under a flexible exchange rate regime.[20]

## Microeconomic Transactions Costs

The major benefit of a common currency would be to reduce transactions costs (with respect to the US dollar, though not for other currencies) and these costs could be defined quite broadly. They would include currency conversion and hedging costs, and costs associated with exposures to currency risk. Robson and Laidler (2002) estimate these transaction cost savings to be roughly 0.26% of GDP.[21] A common currency could potentially reduce costs further by generating greater price transparency and increased international competition as price

[18] The structure of the UK economy (as shown in Table 1) seems to fall between that of the Canada and the United States; thus, it may also be subject to asymmetric shocks vis-à-vis the euro area, which would require real exchange rate adjustment.

[19] Because Canada often faces asymmetric or idiosyncratic shocks due to its unique production structure – a balanced mix of natural resources, secondary manufacturing, and services – it may not be a good candidate for membership in an optimal currency area as defined by Mundell (1961). Using the methodology of Bayoumi and Eichengreen (1994), Murray, Schembri, and St-Amant (2003) empirically document that Canada and the United States are subject to significant asymmetric shocks.

[20] The significance of commodity price shocks is captured by an exchange rate equation that was developed at the Bank (Amano and van Norden, 1993 and 1995). This equation is based on a long-term statistical relationship that has been found to hold between the real bilateral exchange rate and real commodity prices.

[21] Macklem et al. (2001) found that transactions costs would have to be about four times higher than current estimates to offset the macro-stability benefits of Canada's flexible exchange rate.

discrimination and market segmentation between Canada and the United States would be made more difficult with all prices expressed in the same currency. Reduced conversion and hedging costs and greater price transparency should generate increased trade and investment flows and more efficient international allocation of resources. The economic literature is, however, ambiguous, both in theory and with respect to the evidence, on the effect of exchange rate volatility on international trade and investment. Some researchers find it deleterious, others not. [22]

**Table 1: Distribution of Output and Exports by Type of Goods / Services: Canada, the United States and United Kingdom (2001) (Percent of GDP)**

| | Canada | | United States | | United Kingdom | |
|---|---|---|---|---|---|---|
| | Share of output | Share of exports | Share of output | Share of exports | Share of output | Share of exports |
| Energy commodities | 5 | 14 | 4 | 1 | 4 | 8 |
| Other commodities | 5 | 20 | 4 | 12 | 5 | 8 |
| Chemicals | 2 | 6 | 2 | 11 | 2 | 14 |
| Machinery | 5 | 38 | 3 | 51 | 3 | 48 |
| Other manufacturing | 6 | 15 | 5 | 19 | 6 | 21 |
| Services | 77 | 7 | 82 | 5 | 80 | 1 |

Source: Statistics Canada and OECD Foreign Trade by Commodities.

A common currency might also reduce any potential barriers that may prevent currency and financial markets in North America from becoming more closely integrated and perhaps more specialized. Under a common currency, some Canadian financial markets could disappear, while the remaining markets would likely become more specialized, for example, in shares for smaller Canadian firms. Consequently, a common currency could bring some additional benefits in terms of deeper and more liquid capital markets and more opportunities for risk sharing.

[22] The literature is surveyed by Côté (1994) and Lafrance and Tessier (2001).

**Table 2: Variability of Nominal Exchange Rates for OECD Countries 1995 – 2003 (Standard deviation in percent of monthly exchange rates[a])**

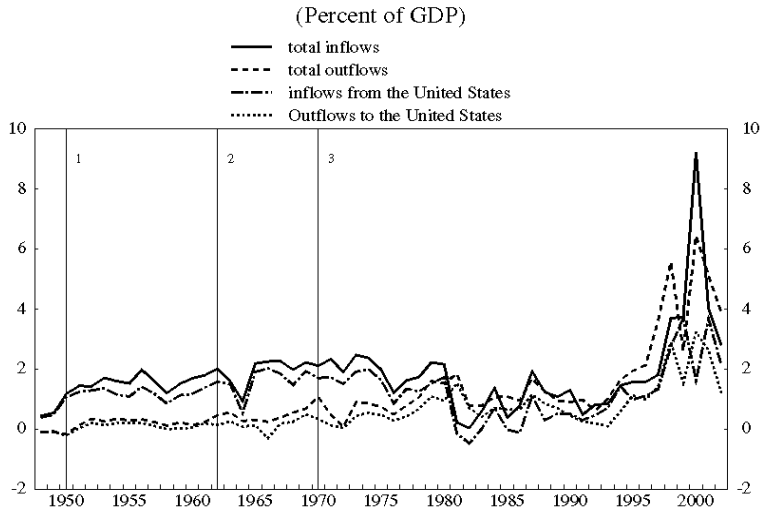
| Country | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 95-03 |
|---|---|---|---|---|---|---|---|---|---|---|
| Canada | 1.67 | 0.74 | 1.55 | 3.39 | 1.25 | 1.92 | 1.70 | 1.31 | 5.41 | 5.52 |
| Euro | - | - | - | - | 3.70 | 5.53 | 2.72 | 5.86 | 3.60 | 9.63 |
| Belgium | 3.24 | 1.91 | 3.26 | 3.80 | 3.70 | 5.53 | 2.72 | - | - | 15.23 |
| Denmark | 3.43 | 1.61 | 3.55 | 3.89 | 3.70 | 5.57 | 2.68 | 5.90 | 3.60 | 13.84 |
| France | 2.78 | 1.33 | 3.49 | 3.78 | 3.70 | 5.53 | 2.72 | - | - | 14.30 |
| Germany | 3.16 | 1.86 | 3.59 | 3.81 | 3.70 | 5.53 | 2.72 | - | - | 15.16 |
| Italy | 2.30 | 1.56 | 3.32 | 3.64 | 3.70 | 5.53 | 2.72 | - | - | 12.58 |
| Japan | 7.83 | 2.63 | 3.73 | 6.69 | 6.15 | 1.78 | 2.59 | 4.37 | 3.30 | 10.12 |
| Netherlands | 3.21 | 1.90 | 3.69 | 3.78 | 3.70 | 5.53 | 2.72 | - | - | 15.36 |
| Norway | 2.49 | 0.92 | 4.68 | 1.11 | 1.77 | 4.98 | 1.92 | 8.51 | 2.63 | 12.39 |
| Sweden | 4.07 | 1.31 | 3.01 | 1.58 | 2.58 | 6.10 | 3.91 | 5.94 | 4.19 | 14.22 |
| Switzerland | 4.08 | 3.37 | 2.20 | 4.23 | 3.70 | 3.53 | 3.15 | 6.05 | 1.89 | 12.20 |
| UK | 1.25 | 3.17 | 1.67 | 1.18 | 1.36 | 4.58 | 1.42 | 4.26 | 2.23 | 5.22 |
| Ireland | 1.61 | 2.06 | 3.54 | 3.50 | 3.70 | 5.52 | 2.72 | - | - | 13.93 |
| Austria | 3.20 | 1.88 | 3.62 | 3.80 | 3.70 | 5.52 | 2.72 | - | - | 15.17 |
| Australia | 1.76 | 2.33 | 5.36 | 4.61 | 1.51 | 6.84 | 2.88 | 3.33 | 6.52 | 14.40 |
| Finland | 3.61 | 2.10 | 3.86 | 3.70 | 3.70 | 5.52 | 2.72 | - | - | 15.16 |
| Spain | 3.13 | 1.78 | 3.65 | 3.71 | 3.70 | 5.52 | 2.72 | - | - | 15.00 |
| New Zealand | 1.86 | 2.00 | 5.60 | 5.28 | 2.60 | 8.64 | 2.57 | 6.41 | 4.19 | 17.79 |
| Portugal | 2.45 | 1.29 | 4.13 | 3.70 | 3.70 | 5.53 | 2.72 | - | - | 14.90 |

Source: Bank of Canada database

Moreover, since 1995, when Canada's difficult fiscal situation was finally addressed and put on a sustainable footing, the Canadian dollar and the UK pound (another inflation targeter) have had the most stable exchange rates (on an effective basis) in the OECD (See Table 2). Indeed, many emerging market countries, such as Chile and Mexico, have experienced pegged exchange rate regimes that all collapsed due to inconsistent macroeconomic policies, which created output instability and severely impaired long-term macroeconomic performance; almost all have now adopted a flexible exchange rate and inflation targeting. These observations imply that exchange rate stability often has less to do with the exchange rate regime itself and more with the stability of underlying macroeconomic policies. Finally, it is worth noting that despite many other

impediments, the volume of trade in goods and assets between Canada and the United States has grown steadily and almost exponentially in 1990s. (See Figures 1 and 2.) Although it is possible that these volumes would have increased by more had the two countries shared a common currency, it is not obvious that it would have been significantly greater, given the other impediments.

**Figure 2**
**Canadian Foreign Direct Investment Flows: Total and Bilateral (1948-2002)**




1. September 1950: Canadian dollar floated. 2. May 1962: Canadian dollar fixed.
3. May 1970: Canadian dollar floated.
Source: Statistics Canada, International Financial Statistics.

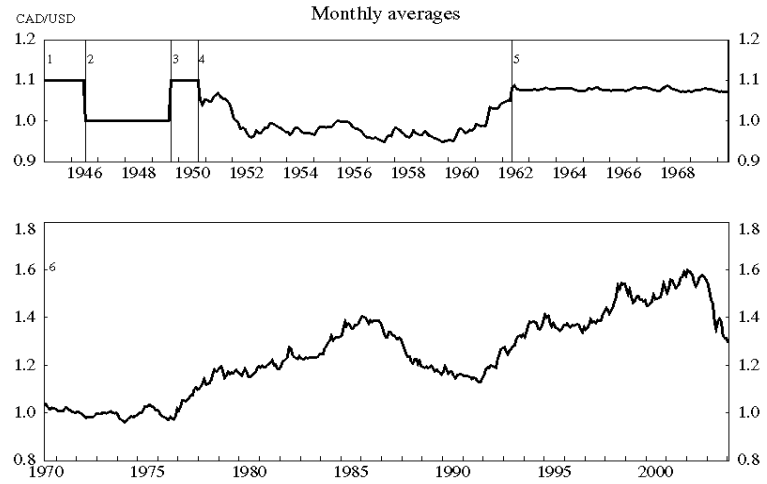
In the next section, Canada's experience with different exchange rate regimes over the postwar period is analyzed further to draw additional insights on the performance of these regimes with respect to the criteria of monetary policy independence, macroeconomic stabilization, and microeconomic costs.

## POSTWAR HISTORY OF EXCHANGE RATE POLICY IN CANADA: WHAT LESSONS CAN BE DRAWN?

Canada has perhaps had the most interesting set of experiences with exchange rate policy of any major industrialized country in the postwar period (See Figure

3). Since 1945, it has had thirteen years of fixed exchange rate regimes (1945-50 and 1962-70), and almost forty-five years of floating (1950-62 and 1970 to the present).[23] Thus, Canada provides a good case study on the choice of exchange rate regimes and monetary polices, as many useful observations can be made.

**Figure 3**
**Canadian Nominal Exchange Rate, January 1945 - January 2004**




1. September 1939: Canadian dollar fixed. 2. July 1946: Canadian dollar revalued.
3. September 1949: Canadian dollar devalued. 4. September 1950: Canadian dollar floated.
5. May 1962: Canadian dollar fixed. 6. May 1970: Canadian dollar floated.

Source: Bank of Canada, Statistics Canada.

## The Immediate Postwar Period: 1945-1962

During World War II, Canada had a fixed rate (US $0.91 per CDN$ or CDN $1.10 per US $) and imposed exchange controls to maintain it. With the end of the war and some relaxation of exchange controls, capital rapidly began to flow into Canada and reserves increased several fold. In July of 1946 the CDN dollar was revalued to parity with the US dollar to ease the inflationary pressures resulting

[23] Powell (1999) provides an insightful analysis of the history of the Canadian dollar.

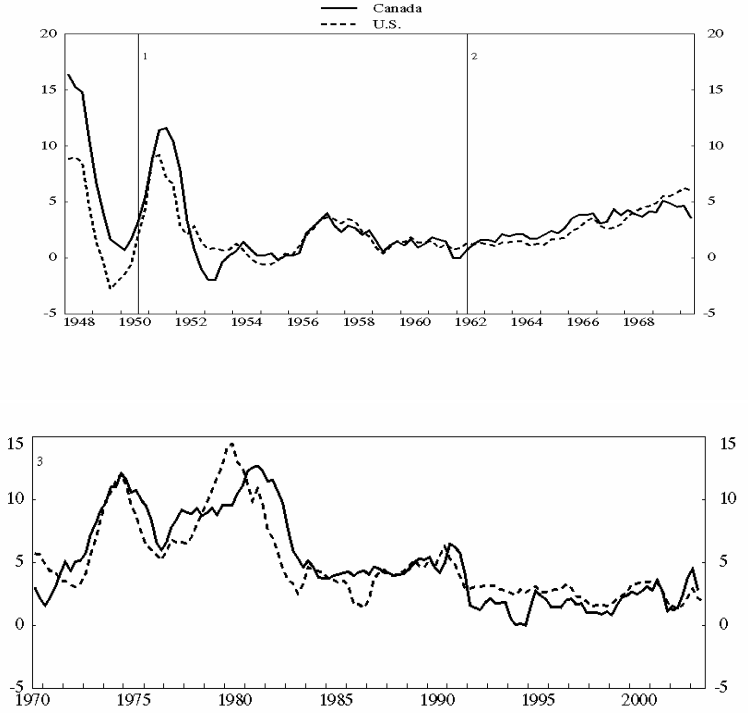
from these capital inflows. The new peg, however, did not last long, as imports from the United States increased sharply and although exports to the United Kingdom rose, they were largely financed by Canadian loans. Consequently, reserves were falling, and when the pound was devalued in 1949, the Canadian authorities followed suit by returning the dollar to its pre-1946 level. Once again, this new level was short-lived as economic conditions improved: Canadian exports to Europe rose, financed by Marshall Plan lending; commodity prices started rising, partly spurred on by the start of the Korean War in June 1950, and Foreign Direct Investment (FDI) flows into Canada's resource industries increased markedly. As reserves went up, speculative pressure began to mount on the expectation that the dollar would be revalued as it had been in 1946. The Canadian authorities knew they had to react to stem the inflationary pressure resulting from the huge increase in capital inflows, but they were reluctant to repeat the earlier mistake and commit to an exchange rate peg that might soon prove unsustainable.

Faced with this dilemma, the Canadian authorities decided in October 1950 to leave the Bretton Woods par value system and allow the Canadian dollar to float.[24] The Canadian dollar immediately floated upwards and approached parity with the US dollar by the end of 1952. Inflation in Canada exceeded that in the United States in 1951 and 1952, primarily because of the rapid accumulation of reserves in the 1950 and the concomitant increase in the money supply, but the Canadian inflation rate then fell below the US rate and remained below or approximately equal to it for most of the 1950s.[25] (See Figure 4.) This experience is instructive because it illustrates an important and recurring set of circumstances in Canadian exchange rate policy; namely that Canada's real exchange rate must adjust in the face of sharp movements in the world price of commodities because Canada is more dependent on the production and export of natural resource products than the United States.

[24] The IMF was not pleased by the decision of one of its founding members to leave the Bretton Woods system, but they accepted it, partly on the promise by Canadian officials that it would only be a temporary measure – it lasted almost twelve years.

[25] Murray, Schembri and St-Amant (2003) compare the experience of Canada and Mexico in the early 1950s. Both countries experienced a rapid build-up of reserves, but while Canada decided to float, Mexico chose to remain on the pegged rate. As a consequence, Mexican inflation rates were significantly higher than Canadian rates in the first half of the 1950s.

**Figure 4**
**Canadian and U.S. CPI Inflation Rate**
Quarterly (1948-2002), year-over-year




1. September 1950: Canadian dollar floated. 2. May 1962: Canadian dollar fixed
3. May 1970: Canadian dollar floated.

Source: Bank of Canada, Statistics Canada.

The subsequent twelve year experience is viewed as the first successful experiment with floating by an industrialized country in the postwar period.[26] The Canadian experiment was successful in the sense that floating rate was relatively stable around parity with the US dollar for almost the entire period, but more importantly, it allowed the Bank of Canada to conduct an independent monetary

[26] Milton Friedman in his famous 1953 article "The Case for Floating Exchange Rates" argued that floating exchange rates provided two key benefits – insulation from external shocks and monetary independence – and he cited the Canadian situation in the late 1940s as one highly amenable to floating.

policy.[27] Unfortunately, the Bank of Canada did not fully grasp the implications of operating monetary policy with a flexible rate and high degree of capital mobility, and as a consequence, policy mistakes were made.[28] In particular, recent research by Bordo and Schembri (2003) has found that the exchange rate over this period was sensitive to the short-term interest rate differential between Canada and the United States. As a result, during recessionary periods in 1953-54, 1957-58 and 1960-61 in the United States and Canada, the Bank of Canada was slow to follow the interest rate reductions of the US Federal Reserve and stimulate the economy. Consequently, an interest rate gap in Canada's favor would arise that would tend to prevent the exchange rate from depreciating to help the Canadian economy adjust to lower demand for Canadian exports from the United States. From 1950-53, the Bank of Canada seemed to react slowly because, in the absence of a short-term money market, it relied on other more traditional monetary instruments, such as moral suasion and altering reserve requirements, which were often not very effective. Towards the end of the floating rate period, from 1958-1961, James Coyne was Governor of the Bank of Canada and he was not willing to reduce interest rates in the face of rising unemployment. Coyne felt that the rise in unemployment was largely structural and he was more concerned with inflation and the government's attempts to stimulate the economy by deficit spending. He also spoke in favor of higher savings rate to reduce Canada's dependence on foreign investment; he seems to have believed that higher interests rates would induce Canadians to save, but, in fact, it simply served to attract more foreign investment and keep the dollar strong.[29] Eventually, the Diefenbaker Government lost patience with Coyne and he was forced to resign.

After Coyne's departure, Government officials including the Minister of Finance, Donald Fleming, declared their desire to see a depreciation of the Canadian dollar. This intention was realized in an abrupt shift by the Bank of Canada to expansionary monetary policy and official sales of Canadian dollars. This policy change quickly was reflected in a decline in the Canadian dollar from a premium to a discount of three cents on the US dollar (see Figure 3). Renewed

[27] Over the whole period, the dollar fluctuated in a range of 13¢ US from a low of US $ 0.93 in early 1950 to a peak of US $1.06 in August 1957. If we focus on the period 1952-60, the range was much smaller, only 6¢ US, from US $1.00 in early 1952 to US $1.06 in August 1957.

[28] Indeed, Canada's mistakes with monetary and fiscal policy under a flexible rate proved to be the inspiration for Robert Mundell's contribution to the Mundell-Fleming model (Mundell, 1968).

[29] Foreign direct investment inflows into Canada from the United States increased steadily from 1955 to 1960. See Figure 2.

borrowing and official intervention in September 1961 led to a further drop in the Canadian dollar to a five cents discount. This was followed several months later in April 1962 by a speculative attack on the dollar. To stem the free fall, the government announced a devalued pegged rate at US $0.925. Speculation continued unchanged, however, and it took a fiscal austerity program and an International Monetary Fund (IMF)/US/UK rescue of slightly more than US $1 billion in June 1962 to restore stability at a pegged rate.

Two important lessons can be drawn from this period: one, simple pegged exchange rates are difficult to sustain in the face of changing economic circumstances, partly because the prospect of a re-pegging of the exchange rate will engender self-fulfilling speculation that is difficult to resist, and two, the flexible exchange regime worked well in stabilizing the domestic economy to exogenous shocks (e.g., the US inflationary pressures stemming from the Korean War expansion), but only when supported by well-managed monetary and fiscal policies.

## The Fixed Rate Period: 1962-70 – Vietnam War Expansion and US Capital Controls

Although Canada's return to the Bretton Woods par value system was viewed by some as the prodigal son coming home, the fixed rate period 1962-70, was not without its problems. The US economy grew throughout the period fuelled, in part, by the government military spending on the Vietnam War. As a result of the prolonged expansion in aggregate demand, the United States faced mounting balance of payments difficulties with deficits on the current account and deficits on the private capital account as US capital moved offshore attracted by higher foreign interest rates. Foreign governments and central banks were becoming less willing to add to their reserves to cover the US balance of payments deficits because US dollar assets paid a low rate of return and they also feared an inevitable US devaluation. To address its balance of payments problem, the US government adopted a series of capital control measures to reduce capital outflows, starting with the Interest Equalization Tax. Canada was one of the targets of these policies because Canada was a large recipient of US capital. Canada, at the time, was running a large current account deficit at the prevailing fixed exchange rate and had higher interest rates in order to attract capital inflows from the US to maintain reserve levels and the pegged rate. After intense negotiations, Canada was sometimes able to obtain exemptions from these

measures, often with the proviso that Canada not increase its reserve holdings of US dollars. [30]

Furthermore, inflationary pressures began to mount in the United States in the latter half of the 1960s and were transmitted to Canada via the fixed exchange rate. The Bank of Canada was unable to tighten monetary policy sufficiently to control inflation in Canada for fear of attracting too much US capital and putting pressure on the exchange rate to appreciate. Similar problems were occurring in Japan and Germany. No country wanted to revalue for fear of losing trade competitiveness and the United States was reluctant to devalue the US dollar by raising the price of gold. (The situation then is strikingly similar to the one now with East Asia piling up US dollar reserves and showing no willingness to revalue.) In June 1970, Canada, however, was the first to act by once again abandoning the Bretton Woods system in favor of a flexible rate under circumstances that were almost identical to those when the decision to float was made twenty years earlier. Repeated attempts to salvage the Bretton Woods system foundered because the disequilibria in terms of real exchange rates and current account imbalances were too large to be resolved through negotiated adjustments to the exchange rate pegs. As a result, in 1973 most of the major industrialized countries adopted floating rates as well.

From a global perspective, the critical lesson from this period is that fixed exchange rates are difficult to sustain when there are large shocks such as the US Vietnam War expansion and the shifts in the structure of world trade with Japan and Germany playing much larger roles. Such movements require real exchange rate adjustment, which is difficult to obtain under fixed exchange rates. From a Canadian perspective, the fixed exchange rate with the United States was not easy to preserve. Indeed, the maintenance of the fixed exchange rate along with free cross-border capital flows demanded the constant attention of Canadian monetary and political authorities.

## Returning to the Float: 1970-1979 – Commodity Price Booms and Stagflation

Most countries that leave a fixed exchange rate system for a flexible rate usually do so from a position of weakness, often during a currency crisis in which

[30] Muirhead (1999) provides a detailed analysis of the interventions undertaken by the Canadian authorities to obtain exemptions for Canada from US controls on its capital inflows during the fixed exchange rate period.

the peg can no longer be maintained. Canada in 1950 and again in 1970 were stark counterexamples to the currency crises of the 1990s. In both 1950 and again in 1970, the fixed exchange rate was under upward pressure from inflationary expansions originating in the United States. In 1950, the inflationary pressures were fuelled by the Korean War, which started in June of 1950, and in 1970, by the Vietnam War, which had been ongoing for some time. Commodity prices were moving upward in both periods and attracted direct investment inflows. In both cases, the Canadian dollar appreciated after floating, thereby moderating demand pressures. As a consequence, inflation rates in Canada were lower than they would have had the fixed rate been maintained.

The largest shock that Canada faced during this period was the commodity price boom of 1972-74, which included a tripling of the world price of oil. The Canadian dollar appreciated by more than five percent in response to the shock. Eventually, as commodity prices retreated from historic highs, the Canadian dollar, depreciated and output growth was maintained. As in the last half of the 1950s, the conduct of monetary policy by the Bank of Canada in the first half of the 1970s was incorrect, but the error in the latter period was in the opposite direction – monetary policy was too easy, rather than too tight. Canadian officials over-reacted to the commodity-price induced appreciation of the Canadian dollar by rapidly expanding the money supply. Looking at this situation with the benefit of hindsight, it seems that these officials wanted to demonstrate they had indeed learned some of the lessons from the earlier period and the insights from the Mundell-Fleming model. The monetary expansion stimulated the economy, but eventually led to much higher inflation. This inflation coupled with the economic dislocation of the oil price shocks of 1974 and 1979 produced stagflation. The easy monetary policy also was responsible for the sharp depreciation of the Canadian dollar from parity with the US dollar in 1976 to a twenty percent discount by 1980.

In an attempt to address the rapidly accelerating inflation problem in the mid-1970s, the government imposed wage and price controls and the Bank of Canada adopted targets for money supply growth. Neither worked: the money supply targets failed to have any impact on the inflation rate because they were too gradual and the money supply data was less informative because of rapid technological change in retail banking (i.e. the development of new deposit instruments). Shortly after announcing that money supply targets would no longer be used as a basis for monetary policy, the Governor of Bank of Canada, Gerald Bouey, explained in testimony in Parliament that the Bank of Canada had not

abandoned money supply targets, but that money supply targets had abandoned the Bank.[31]

Looking back, it is obvious that given the magnitude of the shocks, in particular, the two oil price shocks, that a fixed rate would have been almost impossible to sustain. The flexible exchange rate regime, however, gave the authorities the additional degree of freedom they needed to pursue what turned out to be highly inflationary monetary policies. Critics of floating rates often point to this period as one in which the flexible rate regime performed poorly, but the underlying problem was not the regime itself but the failure of the authorities to use wisely the monetary independence gained from the floating rate.

## The Search for a Nominal Anchor: 1979-1991 – The Volcker-Reagan Era

Over the 1979-91 period, Canada experienced two major shocks: the first, which occurred in the first half of the 1980s, was the Reagan fiscal expansion in conjunction with the Volcker tightening of US monetary policy; the second was the sharp fall in the price of oil in 1986, followed by a strong recovery in commodity prices in 1988-89. The Reagan-Volcker shock had the effect of sharply raising real and nominal interest rates in the United States. In Canada, domestic interest rates also increased as a similar disinflationary monetary policy was adopted. Nevertheless, the exchange rate depreciated from Cdn$1.15 at the beginning of 1980 to a low of Cdn$1.45 in 1985. While Canada experienced a recession in 1981-82 due to higher interest rates and reduced US demand, it eventually recovered with a healthy expansion, fuelled in part by the depreciated real exchange rate.

After peaking in 1980, the prices of oil and other commodities declined until 1986; the Canadian commodity price index fell by 37%, while the price of oil fell by 68% over this period. Non-energy commodity prices fell more sharply at the beginning of the period, whereas the price of oil declined more dramatically towards the end.[32] After 1986, non-energy commodity prices experienced a stronger recovery than oil prices. As noted earlier, the Canadian dollar has a close positive relationship with non-energy prices and this generally held over the

[31] Canada, House of Commons (1983).

[32] Bank of Canada economists Amano and van Norden (1993, 1995) found that the Canadian real exchange rate is more responsive to non-energy commodity price movements than to energy commodity price movements. The basic rationale is that Canada is not a large net exporter of energy products.

1980s, as the currency depreciated sharply to Cdn$1.44 per US dollar in 1986 and then appreciated to Cdn$1.15 in 1989. By adjusting in this manner, the Canadian dollar served to stabilize the economy over the 1980s, depreciating when the economy was weak early in the period and then appreciating as the economy strengthened towards the end of the decade.

Although monetary policy was relatively successful in returning inflation from just over ten percent to less than five percent by the end of the decade, the Bank of Canada had difficulty explaining its policy after money supply targets ended. There was a growing recognition that the exchange rate should be left to adjust to external shocks and that domestic monetary policy should aim for a domestic nominal target in order to anchor domestic inflation expectations. Many other countries were on flexible exchange rates at that time and their central banks were wrestling with the same issue. New Zealand was the first off the mark with formal inflation targets in 1990 and Canada followed within a year.

Like the 1970s, the 1980s showed that large shocks require sizable adjustments in the real exchange rate that cannot be accommodated under a fixed exchange regime. In addition, like the 1970s, the 1980s demonstrated that operating a flexible exchange rate regime in the absence of an effective nominal anchor for monetary policy may lead to relatively high and unstable inflation. Fortunately, by the end of the 1980s that lesson was learned and an effective nominal anchor, inflation targeting, was found.

## Inflation Targeting: 1991- Present

During the 1990s, the Canadian economy was buffeted by a series of mostly negative shocks, which had the effect of causing the Canadian dollar to depreciate from almost US$ 0.90 to US$ 0.63 by the end of the decade. Immediately after the adoption of inflation targets, the US and Canada went into recession in 1991-92, inflation in Canada fell below the target band and the dollar started depreciating in response to the lower US demand for Canadian exports. The first half of the 1990s also represented a period of significant dislocation in the Canadian economy, due to several factors including the Canada-US Tree Trade Agreement (FTA) of 1989 and NAFTA in 1994, the sharp reduction in government expenditures at the federal and provincial level to cope with rising fiscal deficits and the disinflationary monetary policy of the Bank of Canada. The combined impact of all these effects was weak demand for Canadian produced goods and services. Thus, it is not surprising that the Canadian dollar depreciated as much as it did -- this exactly what the textbook would predict – and in so doing the exchange rate

facilitated the restructuring of the Canadian economy and supported aggregate demand by making Canadian goods relatively inexpensive.

The final major exogenous shock to affect Canada was the fall in commodity prices during the East Asian crisis of 1997-98. From 1993 to 1996, commodity and oil prices increased moderately, but then plummeted by twenty-five percent until the end of 1998, due primarily to the fall in demand by the afflicted East Asian countries. Canada was able to continue to grow strongly despite the magnitude of the negative shock because the dollar depreciated from US $0.75 to US $0.63 and thereby mitigated the impact of the shock on aggregate demand. The resource-dependent regions in Canada were hard hit by the commodity price decline; the damage, however, would have been far worse had the Canadian dollar not been allowed to adjust. Indeed, had Canada had a common currency during this period, the necessary adjustment would have much more unemployment to force wages to decline in these sectors roughly in proportion to the decline in commodity prices.

In the rest of the world, there were a series of exchange rate crises beginning in 1992-93 with several countries, including the United Kingdom and Italy, being forced to leave the European Monetary System, which was a pegged exchange rate system with narrow fluctuating bands, the Mexican/Latin American currency crisis of 1994-95, the East Asian crisis of 1997, and the Russian, Brazilian and Argentine crises of 1998-2001. In each case, countries were forced by speculative pressure to abandon pegged exchange rates regimes because the prevailing peg was not consistent with underlying macroeconomic fundamentals, most often the current stance and future path of monetary and fiscal policies.

As a result of these experiences with pegged exchange rate regimes, many countries have adopted exchange rates at either end of the spectrum: credibly fixed or freely floating (i.e. there has been a "hollowing out" of exchange rate regimes). This is essentially the same choice facing Canada: either to remain with the status quo – a flexible exchange rate and inflation targeting – which has worked reasonably well for Canada in the 1990s or to adopt a common currency with the United States.

## Key Lessons

The key lessons to be learned form the series of postwar experiences with different exchange rate and monetary policy regimes in Canada are:

1. For a flexible exchange rate to work properly to stabilize the domestic economy in the face of shocks to aggregate demand, monetary policy must have a clear nominal target. (e.g., the inflation targeting period).
2. A flexible exchange rate will allow the operation of an independent monetary policy, but it does not guarantee a sensible domestic monetary policy (e.g. the second half of the 1950s and the first half of the 1970s). If many of the shocks hitting the economy are due to a misguided domestic monetary policy then a fixed exchange rate or a common currency may be a better option.
3. Commodity price and US fiscal policy shocks were significant shocks throughout the period. Resource-based products have been an important component of the Canadian economy and thus these commodity prices shocks have asymmetric effects on the two economies. During periods of sensible monetary policies, the flexible exchange rate adjusted to buffer the impact of these shocks on the Canadian economy.
4. Bilateral trade and investment flows between Canada and United States have increased greatly in recent years, under a flexible exchange rate. Thus, this evidence suggests that the transactions costs associated with a flexible rate may not be very large.

## IMPLICATIONS FOR THE FUTURE

The current policy regime of inflation targeting and a flexible exchange rate has served Canada well since 1991. There is little evidence that the exchange rate has been excessively volatile or that it has hindered trade or investment flows. The flexible exchange rate has adjusted appropriately to large exogenous shocks, thereby helping to accommodate the necessary real exchange rate movement to stabilize the real economy. In addition, it has allowed the Bank of Canada to achieve lower and more stable inflation rates than the United States over this period.[33]

At this time, the arguments in favor of the unilateral adoption of the US dollar or entry into some form of weak monetary union are not strong. Are they likely to change? Not in the immediate future. Given Canada's substantial comparative

[33] One need only look to Mexico whose postwar exchange regimes were almost the opposite of Canada's. Every one of Mexico's fixed rate regimes collapsed leaving the country in economic crisis. Mexico learned the same lessons as Canada, but the hard way. Mexico now operates virtually the same exchange rate and monetary policy as Canada: a flexible exchange rate and inflation targeting.

advantage in natural resource products, their production and export will remain significant for Canada for the foreseeable future. Trade and investment flows between the two countries seem to be hindered more by regulatory barriers than by the cost of dealing with different currencies. Also, the United States may not adopt a policy of inflation targeting. Thus, it is not clear why Canada should abandon a monetary policy that seems to be working so well for one whose potential benefits, if any, are as ambiguous as the policy itself.

## CONCLUDING REMARKS

Much of the current interest in common currencies in Canada and the United Kingdom derives from the widely heralded introduction of the euro in 1999. The experience with the euro so far indicates that significant economic benefits to EMU members have not yet materialized. Indeed, the citizens of Sweden, Denmark, and the United Kingdom are unwilling to adopt the euro, and for good reason. Apart from the savings in conversion and hedging costs, the economic gains to the member countries from the adoption of the euro are hard to discern. The euro area has had extremely weak growth since its inception, despite an almost 20-30% depreciation relative to the US dollar during the first three years. The latest estimates from the UK Treasury (Piscatelli 2003) have put the increase in trade among euro members at less than 5% and this figure is not uncontroversial.[34] There has been some integration of financial markets, but unemployment rates within the eurozone remain high and little progress has been made in removing labor market rigidities.

Especially in light of the euro area's recent experience and Canada's experience in the 1990s, the economic case for the unilateral adoption of the US dollar is almost non-existent. Looking forward, the United States could adopt inflation targets similar to Canada's and could invite Canada to join a monetary union. Although both events are unlikely to occur, they would make the common currency option more attractive; Canada would not be abandoning a well grounded and transparent monetary policy for one of opaque discretion, and Canada would recover its seigniorage, have access to a lender of last resort and have some, albeit small, input into North American monetary policy. Nonetheless, neither of these changes may be enough. Canada will still be subject to commodity prices shocks and other asymmetric shocks that require real exchange

[34] See Gomes et al. (2004) for a recent survey of the evidence of the impact of the euro on intra-eurozone trade.

rate adjustment. Buiter (1999: 285) comes to a similar conclusion but goes on to remark "because of the absence of any democratic institutions spanning both Canada and the United States, the political arguments against any form of monetary union are overwhelming. Without North American Political Union, the transfer of national sovereignty to a supranational central bank would lack political legitimacy". Therefore, in the absence of a political agenda similar to that of Europe's, the only other reason for Canada to consider seriously the adoption of the US dollar would be strong and overwhelming evidence that a common currency would greatly reduce transactions costs and lead to closer and mutually beneficial real and financial integration between the two countries. Examining this issue should be the priority of future research.

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# CANADA'S EXERCISE OF NATIONAL MONETARY SOVEREIGNTY: BENEFICIAL OR HARMFUL?

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Fixed exchange rates rightly have a bad reputation, in spite of the fact that they bring substantial economic and financial benefits to countries that use them. The main reason for this bad reputation is that virtually all fixed rate regimes have failed, sooner or later, due to economic mismanagement, domestic political upheavals or unexpected shocks originating domestically or in the rest of the world. Almost all the failures involved economic turmoil and reduced economic growth by more than the fixed exchange rate had raised it. For this reason and after the Tequila and Asian currency crises of the 1990s many economists, including those at the International Monetary Fund (IMF), have changed their long-held views and now recommend the adoption of floating exchange rates for virtually all countries, developed and developing.

Other economists accept the diagnosis of the ills affecting fixed rates but instead of recommending a return to floating rates, urge countries to adopt a hard currency fix, which means that they surrender their central banks' monetary

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sovereignty and thus the right to set interest rates. Such policies can bring countries substantial economic benefits from lower transactions costs, interest rates and the elimination of exchange rate uncertainty while there would be none or only small losses through the surrender of national monetary sovereignty. The very nature of the hard fix assures that bad monetary policies, political upheavals, economic shocks and speculation cannot force changes in the exchange rate and impose the accompanying costs.

It is only of secondary importance whether such a hard currency fix is accomplished through a formal monetary union, an informal commitment to exchange market intervention or some form of more or less rigid currency board arrangement. All three arrangements have successful precedents. The first gave rise to the euro. The second was in place during the 1980s when Austria and the Netherlands let Germany's interest rates prevail in their countries. The third exists in a number of countries that have more or less classic currency boards, as is described in Hanke (2002).

The main purpose of this paper is to evaluate the merit of the arguments made by opponents to the hard fix and thus focus on the alleged cost of giving up national monetary sovereignty.[2] I will not consider the economic benefits from fixed rates. They are well analyzed and documented in Harris (2003), who adds to the standard literature on lower transactions costs the positive effects on economic growth that come from lower costs of imported capital goods and Grubel (1999) and (2000), who emphasizes the benefits of lower interest rates and points to other sources of economic gains from a hard fix of the Canadian to the US dollar.

My analysis leads to the conclusion that surrendering Canada's national monetary sovereignty would not result in significant losses and may even improve economic prosperity. The main reason for this conclusion is that the exercise of national monetary sovereignty by the Bank of Canada during three recent episodes has caused wide fluctuations in the Canada/US exchange rate. These fluctuations have resulted in serious disturbances to the large amount of trade and capital flows between the two countries. These disturbances resulted in greater economic cost to the Canadian economy than would have arisen if US interest rates had prevailed in Canada and the exchange rate had remained unchanged.

The first part of the paper considers the postwar history of monetary theory and policy, which tends to be forgotten in current debates over the benefits derived from the exercise of national monetary sovereignty. I will show that honest policy mistakes have been made regularly because of incomplete or

[2] Such arguments are developed in Murray (2000), Laidler and Aba (2002) and many papers written by Barry Eichengreen with a number of different co-authors.

inaccurate data and forecasts of economic performance. Mistakes were also made because widely accepted theories often turned out to have been based on false premises. Such mistakes in policy appear to be inevitable, however hard policy makers try to avoid them in Canada and the United States.

The main part of the paper considers three episodes during which Canadian monetary policy has been destabilizing, mainly because the fluctuations in exchange rate induced by the monetary policy had a negative effect on Canada's trade and capital flows with the United States.

## GENERAL PROBLEMS OF MONETARY POLICY

The usefulness of monetary policy as an instrument for dealing with random shocks and business cycles has a checkered history. During the years following the Second World War, the traditional theory about the role of money in the economy, which is best summarized by the quantity of money equation, was replaced by the new Keynesian paradigm. The new conventional wisdom was that the tragedy of the Great Depression had been caused by fundamental flaws in market economies like the unavoidable downward rigidity of nominal wages and prices, the lack of interest sensitivity of firms' investment decisions and many others. This paradigm brought forth such wonderfully memorable metaphors surrounding the concept of the "liquidity trap" like "one can lead a horse to water but one cannot force it to drink" and "one cannot push on a string", which made vivid the notion that low interest rates cannot stimulate a stagnant economy.

At the same time, the basic Keynesian theory was enriched by the concept of the Phillips curve. It argued that higher inflation could be used deliberately to lower unemployment along a stable trade-off function. Well researched and measured empirically for many countries, this trade-off resulted in the proposition that monetary policy was to be used to push up inflation and permanently lower unemployment. It was firmly believed that the gains in output and welfare due to this policy were very large, especially if the losses of real income by persons holding fixed income assets could be compensated appropriately.

The expansionary monetary and fiscal policies based on the application of the Phillips curve concept resulted in balance of payments deficits for the United States and a loss of confidence in the country's ability to meet its obligations to redeem foreign official holders of dollars in gold. As a result, the system of fixed exchange rates administered under the aegis of the International Monetary Fund was abandoned in 1971-72. Flexible exchange rates allowed the United States and

other major countries to pursue expansionary monetary and fiscal polices without the restraint of fixed rates.

The results of these policies are well known. Inflation soared. Unemployment did not fall as expected but rose instead. This phenomenon gave rise to the term stagflation. The world's natural resources, especially petroleum, were depleted by the extra-ordinary boom in demand and enabled OPEC to exercise its control over oil prices and supplies. The economics profession responded with a fundamental attack on Keynesian theories and concept of the Phillips curve trade-off.

Milton Friedman at the University of Chicago resurrected the traditional theories of the role of money in the economy. Friedman and Edmund Phelps demolished the Phillips curve concept and Robert Lucas developed rational expectations theory that seriously undermined the Keynesian belief in the ability of government to influence real economic activity through monetary and fiscal policies. The new paradigm was that monetary policy should be used only to provide a stable financial environment within which the decisions of investors and consumers were optimized and business cycles would be limited in size and duration by the naturally stabilizing fluctuations in interest rates.

But once this important role of monetary policy had been reestablished theoretically, important problems showed up in the implementation of the policy. Should central banks target the money supply, interest rates or inflation? What money supply: M1, M2 or any of its variants? What interest rates: very short, intermediate or long rates? What inflation rate: zero or a range of rates like Canada's 1 to 3 percent? Should the target for the next period be set with or without regard to recent history? How long should the period be over which inflation rates are averaged? How much do we know about the lags between bank-induced changes in interest rates and their effects on the real economy?

Monetary policy theory and practices continued to evolve even after their important traditional roles had been restored. Milton Friedman argued that nominal market interest rates were not a good indicator of monetary conditions since it was not possible to identify the premium on real interest rates that markets demanded to compensate them for inflationary expectations. His recommendation therefore was for central banks to target the money supply rather than interest rates.

The adoption of this policy by several important countries resulted in very large fluctuations in short term interest rates. The problems caused by these

fluctuations soon caused central banks to return to interest rate targeting.[3] On the other hand, at the end of 2003 the Bank of Japan announced that it would return to targeting the money base because its focus on interest rates had failed to produce the desired expansion of the money supply and borrowing.

In 2003 several other aspects of Canadian monetary policy theory and its implementation were under scrutiny or were recently revised. During the 1980s the Bank of Canada had argued in favor of a zero inflation target but in the early 1990s, it opted for a range of one and two percent within which actual inflation was considered to be acceptable. A few years later, this range was widened by the adoption of a higher upper limit at 3 percent, not on the basis of economic principles but because of the exercise of political influence by the government. There remain disagreements between academics like David Laidler and the Bank's economists over the longer run inflationary impact of increases in certain monetary aggregates.

Presently, the Bank of Canada disregards past rates of inflation in setting targets for the present and future. As a result, an unacceptably high inflation rate in one period has no influence on the setting of the target for the present and next periods, as long as the future target is within the prescribed range. This practice can lead to average rates of inflation harmful to the economy and the well being of persons on fixed incomes. For this reason the Bank of Canada has initiated a debate over the merit of setting inflation targets that take into account past rates. Of course, in practice such a policy would have to settle the question of the length of the past period over which rates should be averaged.

The preceding analysis only scratches the surface of an important and complicated history of monetary theory and policy that spanned the years since the end of the Second World War. Nevertheless, it should suffice in showing that problems in the design and implementation of monetary policy will always be with us. These problems are not due to failures of theoretical economists and policy makers to do their best and to work with personal integrity and passion. They exercise the best judgment they are capable of and make the best use of the existing information. However, these theorists and especially the policy makers are victims of uncertainty and an ever-evolving economic, technical and political environment. If economists were able to build perfect models and predict the outcome of government policies, communism would have worked.

[3] In an interview during 2003 Friedman admitted that in retrospect his recommendation for the targeting of the money supply had been one of the most important mistakes he had made during his life as an economist.

The main point of my analysis is that those who argue in favor of national monetary sovereignty almost always ignore these difficulties and implicitly pretend that the current state of knowledge allows central banks to make welfare-improving policies. This practice creates an undesirable and unjustified bias in favor of flexible exchange rates and national monetary sovereignty.

While a large country like the United States has no choice but to act in the face of the problems associated with monetary theory and policy, small countries like Canada have such a choice. Canada can simply accept US policies and thus avoid making mistakes that impinge on the important bilateral economic relationships between the two countries. Economic performance in Canada would be enhanced correspondingly, even if US policy itself is not flawless.

## AN EVALUATION OF RECENT MONETARY POLICY EPISODES

In the remainder of my study I will take a critical look at the exercise of monetary sovereignty by the Bank of Canada in recent years and examine whether it has benefited or harmed the people of Canada. I do so obviously with hindsight and with some knowledge not available to policy makers at the time they adopted their policies. And, of course, my own analysis is likely to be flawed and subject to revision as even more new theoretical insights and empirical information become available, especially with respect to the most recent monetary policy stance still in place when this paper was written in 2004.

To set the stage and provide a longer run historic perspective, Figure 1 shows the Canada/US dollar exchange rate from 1951 to the present. From this graph it is clear that during the postwar years the exchange rate has fluctuated widely and has been on a distinct downward trend.

Figure 2 shows the Consumer Price Index (CPI) inflation rates in the two countries. The inflation rates were highly correlated during periods when the exchange rate was fixed officially between (between 1963 and 1971) and when it was allowed to float thereafter. For the entire period the correlation coefficient for the annual changes is 0.88. Lagging the Canadian behind the US rates and vice versa did not increase the size of the correlation coefficient.

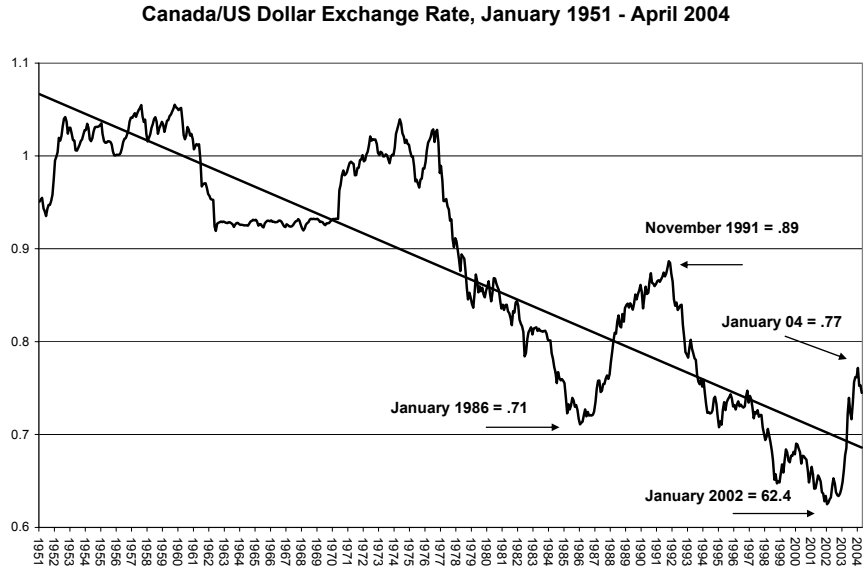


Figure 1

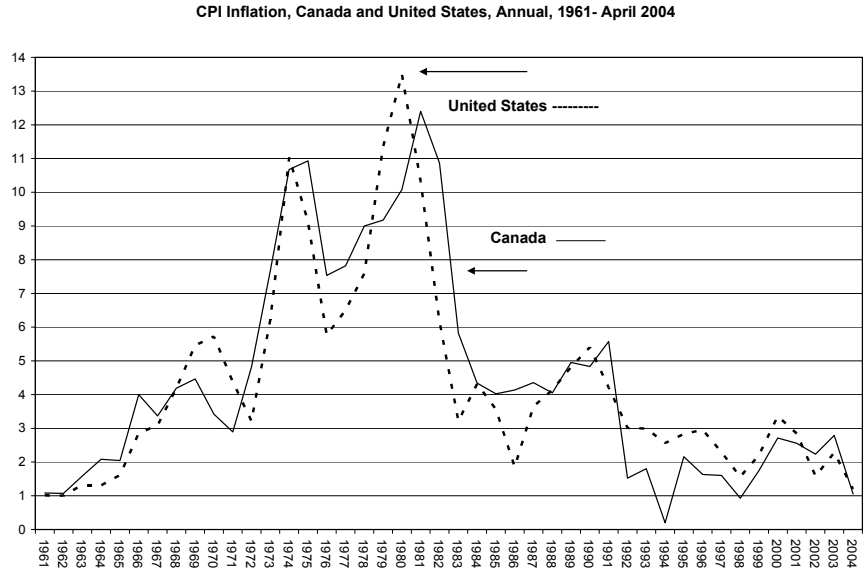


Figure 2

The cumulative rate of inflation during the period was nearly identical in the two countries. Over the 42 years shown in the figure, the consumer price levels rose by a factor of 6.43 times in Canada and 6.08 times in the United States.[4] This means that divergent price levels, which represent the traditional explanation for changes in exchange rates, cannot explain the observed decline in the Canadian dollar during the period under study.[5]

Figure 1 shows five dates, which mark three sub-periods during which the exchange rate was on prolonged and pronounced upward or downward trends. These sub-periods will be the focus of the following analysis with the emphasis on the role played by monetary policy in the determination of the observed fluctuations.

The first period runs from January 1986 until November 1991, when the Canadian dollar increased from 71 cents to 89 cents. The second sub-period from November 1991 to January 2002 saw the currency fall steadily from the high of 89 cents to 62.4 cents. The third encompasses the most recent rise from 62 to 74 cents that started in January of 2002.

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[4] The difference of .35 percent in the cumulative price level increases in the two countries is insufficient to explain the observed currency depreciation of about 40 percent. According to purchasing power parity theory, a depreciation of one currency against another by 40 percent is consistent only with a 40 percent greater rise in the price level in the depreciating country.

[5] The Bank of Canada argues that the downward trend of the Canadian against the US dollar has been due to the secular decline in world commodity prices. This conclusion is derived from the results of sophisticated econometric studies. Several questions arise about the validity of these studies. They use the exchange rate of the last period as a key variable to explain today's rate to obtain statistically significant results. Yet, a simple plot of commodity prices against the exchange rate shows many periods during which the two lines move in opposite directions for many quarters.

More important for the basic analysis of hard currency fixes, the observed simultaneous downward trend of commodity prices and the exchange rate does not do justice to the counter-factual analysis of what would have been the result if commodity prices had fallen but the exchange rate had been fixed. The experience of the State of Washington provides insights into such a counter-factual analysis. During several recent decades this US state has had an economy that much resembled Canada's. Its main industries were forestry, mining and fishing. But it did not enjoy the benefit of a flexible exchange rate against its most important trading partners, the other US states. As a result, when commodity prices fell, its workers and employers had to adjust to the new reality and the traditional industries became smaller. Labor and capital set free by this process helped to attract high-tech industries like Microsoft, Boeing and others. This adjustment process has been delayed in Canada by the implicit protection offered to the declining industries through the falling exchange rate and the dynamics of exchange rate fluctuating around this trend.

Figure 3 shows data beginning in 1985, when the first sub-period chosen for analysis begins. The graph shows the Canadian Bank Rate, the US Federal Funds rates and the difference between the two over the same period 1985 to the present. The rates shown in Figure 3 are the main indicators of the monetary policy stance adopted by the two countries' central banks. The differences between the Canadian and US rates reflect the extent to which the Bank of Canada has exercised its monetary sovereignty by setting rates different from those in the United States.

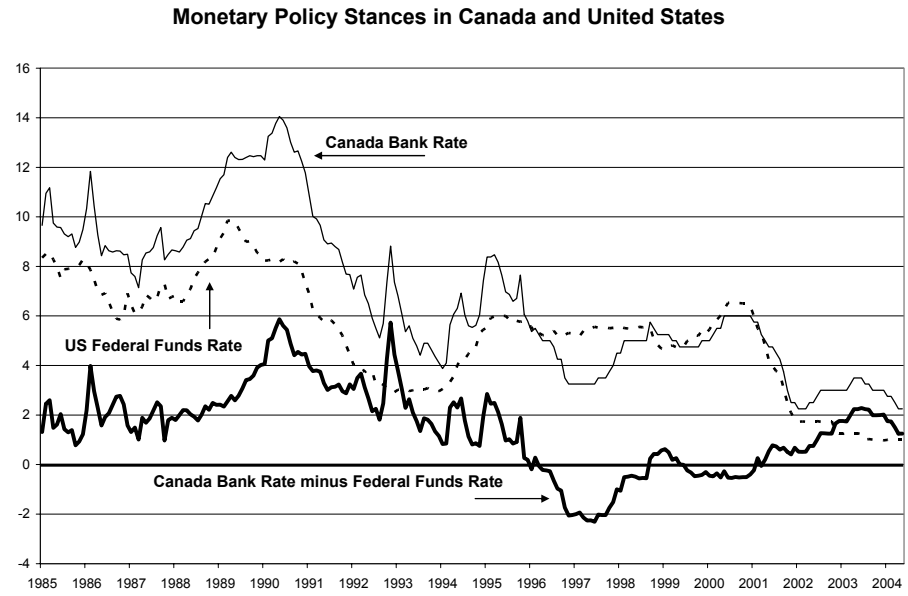


Figure 3

A casual inspection of the lines in Figure 3 suggests that the movements in the interest rates set by the two countries' central banks are highly correlated. In fact, the correlation coefficient on the monthly averages shown is .823 and increases slightly to .828 with a one-month lag in the Canadian rate. Longer lags and lagging the US behind the Canadian rate decrease the measured correlation.

This high correlation suggests that in fact Canada's monetary policy closely followed that of the United States since the relative size of the two countries' economies make it unlikely that Canada had any influence on US policies. But since the correlation is not perfect, there were some times when Canada exercised

its monetary sovereignty and adopted an interest rate different from that in the United States. The mean and difference between the two rates was 1.44 (the median was 1.62), while the variance was 3.05. The largest gaps were –2.31 in 1997 and +5.87 in 1990.

A final graph helpful for the following analysis is found in Figure 4. It plots the Canada/US exchange rate and the difference between the Canada Bank Rate and the US Federal Funds Rate for the period from January 1985 to January 2003. The correlation coefficient for the monthly data is .67, which is statistically significant and basically supports the theory that Canadian interest rates that are higher relative to US interest rates, ceteris paribus, attract capital inflows and increase the value of the Canadian dollar. However, as is the case with all empirical evidence related to theoretical propositions, ceteris paribus conditions rarely remain unchanged and the simple correlation considered here is not perfect. However, the data in Figure 4 will help with the understanding of different episodes of Canada's exercise of national monetary sovereignty.

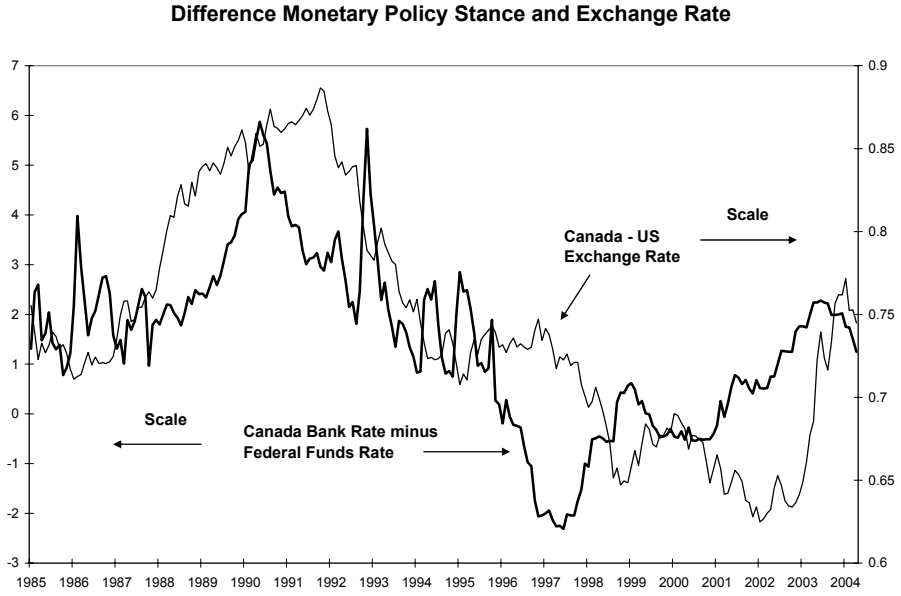


Figure 4

## The Attack on Inflation 1986 - 1991

As can be seen from Figure 2, in 1979 the CPI inflation rate in the United States reached a postwar peak of 13.5 percent. In the following year, the Canadian rate peaked at 12.5 percent. Paul Volcker, who in 1979 had become Chairman of the US Federal Reserve, immediately upon his appointment began a period of monetary tightening. He did so with the full support of President Ronald Reagan. These policies brought highly disruptive, record high rates of interest.[6] Three years later the US inflation rate had fallen to 3.2 percent and two years later, in 1985 it reached 1.9 percent. Canadian monetary policy under Governor Gerald Bouey followed an almost identical pattern with a lag of one year, except that the lowest rate during the 1980s in Canada was only 4 percent.

Unfortunately, in the middle of the 1980s inflation increased again in both countries, reaching 5.4 percent in the United States in 1989 and 5.6 percent in Canada in 1990. In the face of this renewed inflation, a widespread discussion among policy makers, academics and politicians resulted in a renewed attack on inflation. The difference was that this time the inflation target was set at zero percent and that the US initiative was headed by Alan Greenspan as the Chairman of the Federal Reserve and by John Crow as the Governor of the Bank of Canada.

The development of this attack on inflation is evident from Figure 3, which shows the US Federal Funds Rate and the Canadian Bank Rate. These rates reflect the monetary stance pursued by the two central banks. The higher the rate is, the tighter is monetary policy and the higher is the entire structure of interest rates like those on bonds and mortgages, which directly affect real spending in the economy. As can be seen, before monetary tightening started in January 1987, the two rates were on a downward trend and the difference was around its normal 2 percentage points. After that date, both rates increased sharply and until the middle of 1989, the gap continued to remain at its normal size.

However, early in 1989 the two interest rates began to diverge. Canada exercised its monetary sovereignty. The Bank of Canada continued to raise the Bank Rate for two years more than did the United States. At its maximum level, the gap between the two rates was 6 percentage points, 3 times the normal. In

[6] Many private individuals experienced personal bankruptcy as mortgage interest rates rose to over 20 percent because the rapidly rising real estate prices at the end of the 1970s based largely on negative real rates of interest – market rates minus expected inflation - had induced many to "flip" real estate, using small amounts of equity. This activity was highly profitable for a number of years. But when the high mortgage rates took hold, the market for houses collapsed. The mortgage costs on unsaleable houses quickly forced the owners to go bankrupt and often lose all of their equity.

effect, Canada's attack on inflation was much more vigorous and lasted longer than that of the United States.

This is not the place to review the justification offered by the central banks of both countries for following the strategies they pursued. For the purposes of the present analysis it is important to examine the results of Canada's exercise of its national monetary sovereignty by creating deliberately much higher interest rates for a much longer period than did the Americans.

First, the policy created a deeper and longer recession than existed in the United States partly because of the dampening effect of the high interest rates on spending. Second, the higher Canadian interest rates attracted capital inflows and caused the exchange rate to appreciate by 25 percent. This currency appreciation caused imports to rise and exports to fall, which in turn added to the depth of the recession.

Third, the recession and the high interest rates on government bonds caused the deficits of all levels of Canadian governments to be much higher than they would have been otherwise. A fiscal crisis developed as forecasts of future deficits envisioned a vicious circle of ever increasing debt, interest rates and unemployment.[7]

Figure 4 shows that the exchange rate had begun to appreciate early in 1989, before the persistent and large interest rate gap had begun to open up. The rate also continued to be high for two years after the gap had begun to narrow. These facts suggest that the rise in the exchange rate initially had origins other than the interest rate gap. Commodity prices had increases because of the global economic boom and general inflation and the uncertainty and increased military spending

[7] The fiscal turmoil of the period also had important political effects, which affected me personally. The federal election in 1993 saw the large gains in the Canadian parliament by the newly formed Reform Party, largely in the West. I was elected as a member of parliament for that party and served several years as the Minister of Finance in the shadow cabinet. The same 1993 election also saw the separatist party from Quebec gain many seats and political influence. The increase in the seats of these two parties occurred mainly at the expense of the Progressive Party that had governed Canada for nearly a decade and was reduced to two seats. The new parties did not have the confidence of Canadians outside of the West and Quebec. As a result, the Liberal Party won three elections and there was no party on the right that could challenge that party's hegemony. An historic perspective, not available when this paper was written, is needed to assess how well the Liberal Party has governed Canada during this period. Important for the present analysis is the view held by many that if the Bank of Canada had not pursued its excessively stringent monetary policy, the negative economic effects noted above could have been avoided and the political upheaval would not have taken place.

that preceded the First Gulf War in 1991. However, basic economic theory implies that the interest rate gap has added to and prolonged the increase in the interest rate.

In sum, the preceding analysis suggests strongly that Canada's exercise of its national monetary sovereignty in pursuit of an accelerated and decisive fight for zero inflation during the period 1988-91 resulted in significant economic and political costs. It is almost certain that these costs would have been much smaller if Canada's currency had been fixed to the US dollar, monetary conditions had been the same as those of the United States and the two countries had returned to price stability at the same pace.

## Lower Interest and Exchange Rates 1990 – 2002

The second episode of Canada's assertion of its monetary sovereignty under study began in the middle of 1990. Starting on that date, with a brief interruption in 1993[8], the excess of the Canadian over the US interest rates began to steadily decline. In 1996, the difference became negative and by the middle of 1997 the US rate was a little more than 2 points above the Canadian rate. As can be seen from Figure 3, the lowering of Canada's rate when the US rates remained unchanged caused the unusual excess of the US over the Canadian rate between 1996 and 1999.

The easier Canadian policy was prompted by the economy's poor performance. A tightening of fiscal policy decreased aggregate demand. But employment and economic performance were poor to a considerable degree also because of the prolonged and excessively tight policies of the years before 1993 discussed in the preceding section. In other words, the policy of great monetary ease in the last half of the 1990s in Canada was required because of the country's exercise of it national monetary sovereignty at the beginning of the decade, which above I had argued was to strong and too long.

As theory predicts, the period of easier Canadian monetary policy was accompanied by a depreciation of the currency that can readily be seen in Figure 2. The depreciation of the Canadian dollar peaked at 30 percent. This development brought record trade surpluses for Canada and undoubtedly strengthened the domestic economy and decreased unemployment. Theory predicts also that lower exchange rates cause the prices of imports and exports to

increase and result in overall inflation. Fortunately for Canada, this inflation did not materialize for reasons that are still not fully understood.

However, the falling exchange rate brought some other costs. Canadian dollars spent in the United States by travelers bought fewer goods and services and reduced their income and wealth correspondingly. Americans could and did buy Canadian assets with their appreciated currency, since Canadian asset prices, like the prices of tradables did not increase in response to higher Canadian dollar prices of their output in the way economic theory would have predicted largely because, as noted in the preceding paragraph, these output prices did not increase.

Tom Courchene and Rick Harris (1999) (2000) noted another important cost of the lower Canadian dollar value, arguing that machinery imported from the United States became more expensive relative to labor in Canada so that incentives for capital deepening in that country were correspondingly lowered. Grubel (1999) (2000) argued that the falling exchange rate provided Canadian industry with the equivalent of tariff protection, which diminished incentives for declining and mostly traditional industries to become smaller and for the labor and capital no longer needed in these industries to move into new and growing, mostly hi-tech industries.

As a result of the two processes pointed out by Courchene and Harris and Grubel, productivity growth in Canada lagged behind that of the United States. Per capita income of Canada as a percent of that of the United States declined from 91 percent to 83 percent.

There were also important political effects of the lower exchange rate affecting relationships with the United States. The lower rate allowed the Canadian forestry industry to increase its market share in the United States, which in turn provoked American rivals to use available domestic laws to protect their own interests. They claimed that the Canadian industry was subsidized implicitly through the public ownership of most Canadian forests and an antiquated and unfair system of collecting economic resource rents. The import barriers against Canadian forest products by the US tariff authorities produced much suffering by the Canadian industry. Small communities dependent upon forestry in British Columbia were especially hit hard.

In sum, the preceding analysis suggests that the exercise of national monetary sovereignty during the 1990s again was costly for Canada. The lower interest rates, which were needed to increase economic performance in the face of fiscal

[8] The spike in the interest rate gap was associated with considerable public concern about the size and growth of the fiscal deficits of the federal government and the uncertainty surrounding an election near the end of that year.

tightening and as a result of the earlier excessive monetary restraint, brought some of the expected improvements in the economy. However, these benefits were achieved at unnecessarily great economic costs in terms of slower productivity growth, which were due mainly to the low and steadily declining exchange rate. A hard fix for the Canadian dollar would have avoided most of these costs to a considerable degree because the Canadian policies of eliminating inflation during the 1988-91 period would not have been so vigorous and long-lasting and would not have left the burden of debt and unemployment as high as they were.

## The Phantom Inflation of 2002

Figure 3 shows that the US and Canadian interest rates rose together through the year 2000, with a small gap favoring the United States. However, in January 2001 both rates began to fall as the strong US boom of the preceding decade came to an end. For about a year after January 2001, Canada's interest rate exceeded the US rate by a small margin, but after January 2002 the gap widened dramatically. As can be seen from Figure 3, this result was caused by a deliberate increase in the Canadian rate at the same time that the US rate continued to fall. January 2002 thus marks another period when Canada clearly exercised its national monetary sovereignty.

Figure 4 shows that even after the development of a higher interest rate in Canada starting in the middle of 2000, the slide of the Canadian against the US dollar continued for another 6 months, until January 2001. This slide suggests that the effect of the interest rate gap in favor of Canada was less important than the decline in demand for Canadian exports caused by the US recession. However, in January 2002, the magnitude of these two effects was reversed. The Canadian dollar went into a steep climb and within 18 months had appreciated from its low of .63 to about .74, a whopping 16 percent.

Throughout these 18 months the Bank of Canada continued to raise its interest rates while the Federal Reserve lowered the Federal Funds Rate, thus continuing the incentives for a higher Canadian dollar. Why did the Bank of Canada deliberately raise its interest rate so much above the US rate?

The answer to this question is found in Figure 5, which shows the monthly changes in two Canadian consumer price indices between January 1995 and July 2003. The heavy line plots the overall price changes while the thin line reflects the so-called core inflation rate, which is equal to the overall rate minus changes in the prices of highly volatile components like energy and fresh fruits and vegetables. The heavy straight lines show the range of price increases, which are

between one and three percent that acceptable to the Bank of Canada and that do not prompt monetary policy tightening.

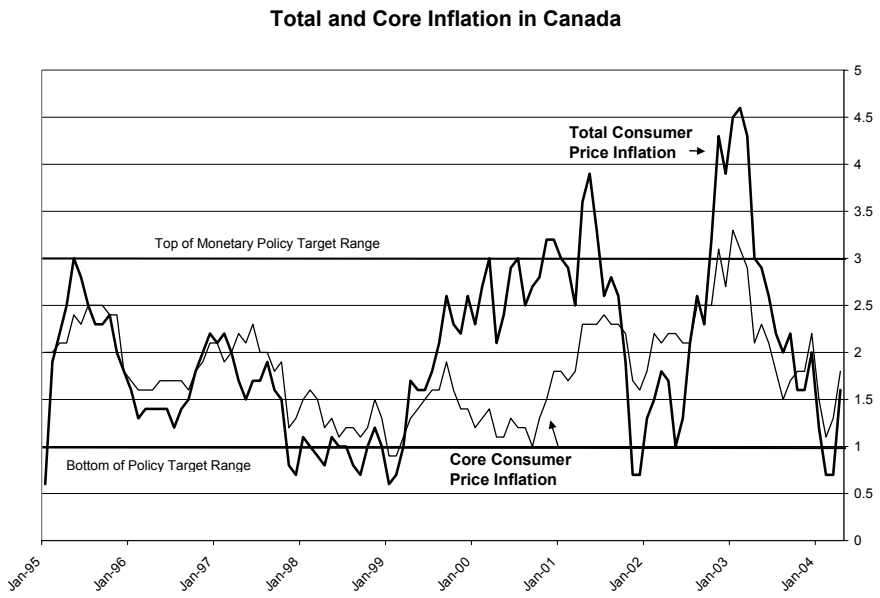


Figure 5

The tightening of Canadian monetary policy beginning early in 2002 was caused by the threat that inflation was beginning to fall outside the target range. As can be seen from Figure 5, the broad CPI index had risen steadily from a negative value in early 1999 to a peak of nearly 4 percent in the middle of 2001. The core inflation rate during this period, however, remained well within the target range and the broad index fell extremely rapidly from its peak to a negative range 6 months later.

Early in 2002 the broad and core inflation rates began a sharp rise to levels that at the end of the year put both rates outside of the target range. The core rate reached a peak of near 4.6 percent, a level not seen for a decade. The Bank of Canada must have had data, which suggested that the threat of inflation existed before it materialized because monetary tightening began in January of 2002, when the rates were still quite low and within the target range.

In the light of the inflation in 2002, it is understandable why the Bank of Canada pursued a properly tight monetary policy. However, with the benefit of

hindsight, there are some good reasons for believing that this tightening was unnecessary and misguided. As Figure 5 shows clearly, both the core and total CPI inflation rates dropped sharply early in 2003 and after they had lasted for just a few months. The main reason is that the observed price increases did not represent the classic case of an inflation, which is defined as a prolonged period of rising prices. Instead, the inflation rates outside the target range reflected temporary price increases in a few commodities that were caused by special circumstances and that were not repeated.

The total CPI increases were driven by higher energy prices that swept the world in anticipation of the War in Iraq. That is why the core inflation rate, which corrects for these energy prices during this period was so much lower than the total inflation rate. Figure 5 shows that during that period the core rate also exceeded the target for about 3 months, but also because of a unique event. Insurance premiums throughout the economy had increased sharply.

The energy prices fell quickly once the Iraq War had been decided. There were no further increases in insurance rates.[9] For these reasons the core and total CPI rates returned quickly to levels comfortably within the target range. The temporary price increases in these two components of the CPI obviously had not resulted in higher prices for other goods and services.

The high interest rates and accompanying exchange rate increases affected the Canadian economy as expected. Industries trading with the United States began to reel under the competitive disadvantage caused by the high exchange rates and continued to operate below capacity during the last half of 2003. The economy was hit especially hard because many business plans had been made in the expectation of a continuation of the trend towards and ever-lower dollar that had

[9] The higher insurance premiums were due to lower returns on the insurance industry's investment portfolio that were experienced by all investors after the end of the boom of the 1990s. Profits from these portfolios realized when capital markets were booming have traditionally been used to subsidize current premium rates. For this reason, historically changes in insurance premiums and stock market returns are negatively correlated. Presumably, this fact should have been known to the Bank of Canada and should have led it to discount the increases in the core inflation due to the cyclical increases in insurance premiums. One reason why this information was not used properly might well have been due to the fact that Statistics Canada had failed to record insurance price increases properly. As Mullins (2003) showed, the insurance component of the CPI showed no increases during periods when other indicators showed a significant and steady rise in premium costs. Then around the end of the year 2002 the insurance component of the CPI showed an extra-ordinarily large increase that was not matched by the other data for that period. This large increase apparently compensated for the missed, more moderate increases in preceding periods.

been established during the preceding decade. At the end of 2004, the full cost of the high Canadian interest rates and dollar could still not be fully assessed. But there is little doubt that in retrospect, they will have been accompanied by a slow-down in the economy and thus significant economic and social costs that could have been avoided if the Bank of Canada had not been able to tighten monetary policy on the basis of false forecasts of price trends.

In sum, Canada's exercise of monetary sovereignty during the period starting in January 2002 is very likely to have brought few benefits. The price increases that caused the Bank of Canada to tighten monetary policy did not signal the existence of a genuine inflation and price stability would have returned promptly without the higher interest rates. The costs of the tight monetary policy and high exchange rate, on the other hand, are likely to be high as they depress economic growth and cause higher unemployment.

I conclude therefore that the third episode during which Canada exercised its national monetary policy, just like the two other episodes discussed above, resulted in costs to the economy and the people of Canada that would have been avoided if there had been a hard fix for the Canadian dollar.

## SUMMARY AND CONCLUSIONS

The preceding analysis showed that during the last two decades Canada's exercise of its national monetary sovereignty has not served Canadians that well. During one period the exercise of its sovereignty caused the Bank of Canada to make monetary policy tighter and maintain the tightness for a longer time than did the United States. The resultant economic, financial and political costs were not matched by the desired benefits. The more lax US policies produced the same reduction in inflation, as did the Canadian policies.

During the second period, the laxer Canadian monetary policy opened an interest rate gap in favor of the United States, which in turn caused an unprecedented fall in the value of the Canadian dollar for a number of years. This policy by the Bank of Canada helped economic recovery, but it came at considerable cost. Some economists argue that the low and falling dollar contributed to the widening in productivity gap between Canada and the United States. It is also important to note that the easy monetary policy in Canada during this period was due to the poor economic conditions that had been caused by the excessive tightening of policies during the preceding period when the Bank exercised in monetary sovereignty.

The third episode, which began early in 2002, saw a tightening of Canadian monetary policy while US policies produced lower interest rates. The resultant high interest rates and the strong appreciation of the Canadian dollar resulted caused an economic slowdown and the costs associated with it. As it turns out, the tight monetary policy had been unnecessary since price increases outside of the acceptable range were clearly not driven by general inflationary pressures throughout the economy but relative price increases that promptly ended for exogenous reasons.

However, the conclusion that Canada's exercise of its national monetary sovereignty did not produce any net benefits, does not necessarily clinch the case for a hard currency fix to the US dollar since US monetary policy also tends to be less than perfect. The consequences of a hard fix therefore might have been even more damaging to Canada than did the exercise of its monetary sovereignty.[10]

To decide this issue requires another, much larger study. However, this much is clear. Canada's economy is very open, with over 40 percent of Gross Domestic Product (GDP) generated through export and import activities. Trade with the United States amounts to over $1 billion a day and accounts for over 70 percent of all of Canada's trade. The performance of national stock markets and interest rates on a wide range of fixed income securities in the two countries are highly correlated. The labor markets of the two countries are integrated increasingly in the light of NAFTA provisions that allow the simple and quick issuance of temporary work visas by both governments.

As a result of this close integration of the economies of the two countries, the hard fix of the Canadian dollar would assure that the very large Canadian economic sector dependent on trade, capital flows and labor markets with the United States could avoid the adverse consequences of fluctuating exchange rates discussed above, regardless of how bad US monetary policy might be. The effects of any fluctuations in the value of the linked Canada-US dollar toward other currencies would be small because the Canadian sector of the economy dealing with the rest of the world is relatively small.

Canada would benefit in the same way most European countries have from the creation of the euro. The domain of this currency includes so many countries

[10] The following ignores the possibility that a unilateral hard fix by Canada could eventually lead to institutional arrangements under which the Bank of Canada would have the status of observer, adviser and ultimately voting member on the US board that sets monetary policies. Under such conditions, which some informed observers consider to be quite realistic, Canada could make a marginal contribution to the setting of good policies generally and policies that take into account conditions in Canada more specifically.

so that for most individual members of the union the bulk of their trade and capital flows are with each other. Fluctuations of the value of the euro against the dollar therefore have only marginal effects on economic prosperity in each country. Where before the European currency union, the frequent, wide and differential fluctuations in the value of the dollar against the German mark, French franc, Dutch guilder and other currencies used to cause many problems for each country, the existence the euro assures that equivalent variations of the euro against the dollar tend to have only negligible effects on the economies of the individual member countries.

Britain is in much the same position as Canada, facing in the euro-zone a large currency block and having an economy that is closely linked to it. This is not the place to analyze the costs and benefits that Britain has derived in recent years from its decision to retain its own currency and to exercise occasionally its national monetary sovereignty. However, the theoretical and empirical reasoning of my study of Canadian conditions suggest that Britain is likely to have gained little by exercising its sovereignty and that its economy would benefit greatly from a hard fix to that of its most important trading partner, the eurozone.

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# COMPARING BRITAIN AND CANADA WITH THEIR NEIGHBORS: WHAT CAN CLUSTERING TELL US?

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"Americans should never underestimate the constant pressure on Canada which the mere presence of the United States has produced. We are a different people from you. We are a different people partly because of you."
Pierre Elliott Trudeau, National Press Club address,
Washington DC, March 25, 1969.

## 1. INTRODUCTION

Living next door to a large country that is currently the hegemonic power in the world was the subject that Trudeau addressed in his 1969 speech, and indeed Trudeau forged Canadian policy in all areas that never directly contradicted US policy, but often struck a slightly different note or possessed a different emphasis. This Canadian approach to policy differentiation has persisted through time, and is present not only in the political/public policy sphere (e.g. bilingualism, a more liberal attitude to marijuana usage and same-sex unions, and more recently not joining the Iraq invasion force), but also extends to the sphere of economic policy. Indeed, the fact that Canada still maintains a flexible exchange rate, has adopted a different monetary policy to that of the US, uses a more activist federal fiscal policy, and has established an elaborate system of inter-regional transfers

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(equalization payments) all attest to this desire not to mimic policies south of the border but rather to forge a uniquely national approach to public policy and economic issues. Yet, in the economic sphere, the establishment of the North American Free Trade Agreement (NAFTA) has clearly increased the level of economic integration on the continent, but interestingly has not so far led to any desire on the part of the general public to move to a deeper level of integration such as a monetary or economic union.

The Trudeau quote above could also equally be applied in large measure to the UK in its relationship to the EU. Like Canada, the UK has obviously realized that it is in its best economic interests to join the European Union and has taken part in the single market, but at the same time the UK general public has been consistently against getting more involved in efforts to further integrate the EU, efforts such as the EU Constitution, Economic and Monetary Union (EMU) and the adoption of the euro, and the Social Charter. The UK has also forged its own monetary policy objectives and framework for an independent Bank of England, which is seen by many academic economists as being superior to that of the European Central Bank (ECB). In other ways too, the UK has sought to differentiate itself in policy matters from its EU partners, not only in terms of approach to policy (either Thatcher's ultra-conservative view of the primacy of markets and the individual, or Blair's "third way"), but also in other economic policy areas, perhaps most notably the deregulation of labor markets.

This paper, rather than discussing the political and social differences between the Canadian and UK contexts, interesting though they are, seeks to evaluate how closely aligned the business cycle in Canada is with the US, and similarly how closely the cycle is aligned in the UK with the eurozone countries. This is not as easy a proposition as it sounds, as business cycles are characterized by many economic variables (viz the difficulty with which the National Bureau for Economic Research (NBER) in the US now strives to define recessions). Unlike with optimal currency area considerations, labor mobility is not an issue in this instance, as there is either no single market yet in North America, and in the EU although one exists, there are significant barriers to achieving any significant degree of mobility, in particular because of language and cultural barriers. The opening quote by Pierre Trudeau sums up the paper in a sense: being next door to a large monetary union clearly has an impact on business cycles for geographical reasons, but institutional arrangements and policy differentiation in both Canada and the UK will likely impose limits on the overall impact.

The plan of the paper is as follows: section 2 first provides a general description of the analysis to be undertaken and a brief literature review of the business cycle literature, and then section 3 outlines the methodology to be used,

which is fairly novel in the economics literature. Section 4 describes the data and provides the results of this analysis, while section 5 concludes.

## 2. METHODOLOGY

### a. General Approach and Some Caveats

The approach here is loosely based on the optimal currency area literature, which was originated in work done by Mundell (1961), and developed further by Kenen (1969). The optimal currency area (OCA) theory essentially says that countries or states/provinces should adopt the same monetary policies if their business cycles are highly correlated, and if not, if there is sufficient mobility of labor and capital to offset lower correlations then this might still suggest that countries or states/provinces should use a common currency. In work by Frankel and Rose (1997), trade was also introduced as a factor that might induce countries or states/provinces to be more correlated in their business cycles, as trade linkages would tend to promote greater business cycle interdependence. Increased trade would also likely occur after a given country or state/province adopts the same currency as another country/state/province, so this could also likely to lead to an endogenous OCA being formed.

In this paper we are not directly evaluating whether a set of countries or states/provinces make up an optimal currency area, but rather how state/provincial and country business cycles are correlated with the United States and the eurozone member states. High correlations suggest close linkages with either the United States or the eurozone, but to evaluate whether any states/provinces/countries actually constitute an optimal currency area, other variables would be required such as trade variables and labor mobility indicators. Of course, high correlations do suggest that one criteria for single currency membership is satisfied, but clearly the OCA evaluation would only be partial.

Any *a priori* expectations regarding the results of the exercise of correlating business cycles would also tend to include single currency considerations, given endogenous OCAs. Thus it might be expected that clusters of states/provinces/countries would fall out along current currency demarkations - that is, that US states would form one group, Canadian provinces another, eurozone members would also form another group and non-eurozone EU countries might form other disparate groups. To summarize, although OCA considerations are “in the wings” in this paper, the research undertaken here should not be taken as confirmatory for future members of an OCA, as a richer

dataset would be necessary to make these types of inferences, and *ex-post* considerations cannot be made using this type of approach, unless the currency union has already been formed.

Just taking Canada and the UK separately, where public debate on adoption of a single currency has occurred in both instances over the past decade, there are obviously other considerations other than economics that would determine whether a monetary union would be desirable. The political nature of any agreement to adopt a single currency for both these countries would also be a key consideration.

## b. Business Cycle Synchronicity and Cluster Analysis

Following the work of Gerlach (1988) and Baxter and Stockman (1989) on business cycle correlations, there is now a considerable body of research devoted to the propagation of business cycles, and the existence of a world business cycle in the pre- and post- Bretton Woods periods. Recent research on business cycles has focussed on the effects of trade in propogating business cycles (see Imbs (1999)) and on new measures of co-movement (see Croux, Forni and Reichlin (1999)) of output data for different regions or countries.

Artis and Zhang (1997a) explored the idea of group-specific business cycles after the inception of the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) in 1979, positing a distinctly European business cycle.[1] In their study, cyclical components of industrial production were obtained using several de-trending methods, and then the cross-correlations of the cyclical components of these series with the US series and the German series were calculated. A European business cycle was confirmed, but the cycle was confined to members of the ERM of the EMS, as might have been expected. The results were shown to be robust to the detrending method employed.

In this study a similar methdology is employed, with two differences. First, in the European context, Artis and Zhang (1997a) justified using the cyclical component of the German series as a basis for evaluating whether a European business cycle existed, predicated on other research which clearly showed Germany to be the largest and most influential economy in the EU, and the Bundesbank to be a "leader" in terms of the setting of monetary policy in the ERM of the EMS. In the context of this study, the US national aggregates and

[1] Further research by Artis, Krolzig and Toro (1999) has analysed the phasing of the European business cycle.

eurozone aggregates are used as the appropriate "target" variables for the purposes of calculating cross-correlations for Canada and West European countries. Second, given the advances in detrending non-stationary series, trend components of real GDP series were removed by using a band-pass filter (Baxter and King, 1985; Stock and Watson 1998).

The approach used here is to take cyclical real GDP to correlate each country against US or eurozone cyclical real GDP. Other business cycle variables are then also correlated with US or eurozone equivalents to obtain a set of correlations with equivalent US or eurozone variables. Obviously a high degree of correlation of business cycle variables with the US or the eurozone implies that the country may benefit from a monetary union, but this does not necessarily identify which countries might be classified according to their overall business cycle synchronicity with either the US or the eurozone. For this purpose cluster analysis is used.[2] In economics cluster analysis has been applied to EU data by several authors, notably Jacquemin and Sapir (1995) and Artis and Zhang (1997b and 1998a and b), with interesting results. The cluster analysis done on the EU has largely corroborated the evidence on suitability for membership of EMU gained from the aforementioned empirical methods used in the OCA literature. The methodology has also started to infiltrate the economics profession, with Galbraith and Jiaquing (1999), Honohan (2000), Crowley (2002) and Boreiko (2003) all using the technique - also Maharaj and Inder (1999) is another application using cluster analysis to forecast time series in economics.[3]

Cluster analysis aims to determine the intrinsic structure of data when no information other than the observed values is available - the data is to be partitioned into meaningful subgroups. Clustering methods range from those that are largely heuristic to more formal procedures based on statistical models, and they are hierarchical or based on allocating observations among tentative clusters (such as k-means clustering). Hierarchical methods fall into two categories: "agglomerative" and "divisive" - with agglomerative denoting the merging of clusters at each stage and divisive denoting the splitting of clusters at each stage - in most cases agglomerative and divisive methods give similar clusterings. At each stage some criterion is optimized used to determine which clusters should be combined or split - most methods use single link (nearest neighbor), complete link (farthest neighbor) or sum of squares. In model methods, however, usually a

[2] Cluster analysis was first applied by to classifications of irises indigenous to the Gaspé peninsula in Québec.

maximum likelihood based on specific distributional assumptions is used to merge or divide groups. Useful references for these heuristic clustering methods are Anderberg (1993), Kaufman and Rousseeuw (1990) and Hartigan (1975).

Unfortunately, although these clustering methods are appealing, none of them addresses the issue of how many clusters there should be. Various strategies have been put forward to choose the number of clusters, but up until recently none of these methods has been satisfactory from a computational point of view, or from a methodological point of view (see Bock (1996) for a survey of this issue and related research). The alternative that has been presented by Fraley and Raftery (1998a and b, and 2002) is computationally relatively straightforward, and is also intuitively appealing, so this methodology is adopted here.

## 3. MODEL-BASED CLUSTER ANALYSIS

### a. Probability-Based Clustering Methodology

In probability based clustering, each observation is assumed to be generated by a mixture of underlying probability distributions where each component in the mixture represents a different cluster. Given a set of observations $\boldsymbol{x} = (\boldsymbol{x}_1,....,\boldsymbol{x}_n)$, then the density of an observation $\boldsymbol{x}_i$ from the kth component in a total number of G components, is $f_k(\boldsymbol{x}_i \mid \theta_k)$, where $\theta_k$ are the parameters. In most cases, $f_k(\boldsymbol{x}_i \mid \theta_k)$ is assumed to be multivariate normal (Gaussian), so in this instance the parameters $\theta_k$ consist of a mean vector $\mu_k$ and a covariance matrix $\Sigma_k$. The clusters will then be ellipsoidal, with center at $\mu_k$, and the covariance matrix will determine the other characteristics.

The mixture likelihood approach then maximizes the criterion:

$$\ell_M(\theta_1,\ldots,\theta_G:\tau_1,\ldots,\tau_G|x) = \prod_{i=1}^{n} \sum_{k=1}^{G} \tau_k f_k(x_i|\theta_k) \qquad (1)$$

where $\tau_k$ is the probability that an observation belongs to the kth component.

Banfield and Raftery (1993) developed a model-based framework for clustering by expressing the covariance matrix in terms of its eigenvalue decomposition, which is of the form

[3] In other disciplines, cluster analysis is frequently used - applications range from astrophysics (Mukerjee, Feigelson, Babu et al. (1998)) to microbiology (van Ooyen (2001)).

$$\sum_k = \lambda_k D_k A_k D_k^T \tag{2}$$

where $D_k$ is the orthogonal matrix of eigenvectors, $A_k$ is a diagonal matrix where the elements of the diagonals are proportional to the eigenvalues of $\Sigma_k$, and $\lambda_k$ is a scalar. This leads to a geometric interpretation of the ellipsoidal clusters - $D_k$ determines the orientation, $A_k$ determines the shape of the density contours and $\lambda_k$ specifies the volume. These characteristics can then be allowed to vary between clusters, or constrained to be the same for all clusters. This approach actually subsumes many previous approaches for model-based clustering - more details can be located in Fraley and Raftery (1998a). The range of models used here is quite extensive, but still limited to ten, and using SPLUS software and the library MCLUST this has been extended to a similar set of model alternatives to that used by Celeux and Govaerts (1995).

In the approach taken here, the parameterizations of the covariance matrix are detailed in table 1 below:

**Table 1. Parameterizations of the Covariance Matrix**

| Model | ID | Distribution | Volume | Shape | Orientation |
|---|---|---|---|---|---|
| $\lambda I$ | EII | Spherical | Equal | Equal | NA |
| $\lambda_k I$ | VII | Spherical | Variable | Equal | NA |
| $\lambda A$ | EEI | Diagonal | Equal | Equal | Coordinate axes |
| $\lambda_k A$ | VEI | Diagonal | Variable | Equal | Coordinate axes |
| $\lambda A_k$ | EVI | Diagonal | Equal | Variable | Coordinate axes |
| $\lambda_k D_k A_k$ | VVI | Diagonal | Variable | Variable | Coordinate axes |
| $\lambda DAD^T$ | EEE | Ellipsoidal | Equal | Equal | Equal |
| $\lambda_k D_k A_k D_k^T$ | VVV | Ellipsoidal | Variable | Variable | Variable |
| $\lambda D_k A D_k^T$ | EEV | Ellipsoidal | Equal | Equal | Variable |
| $\lambda_k D_k A D_k^T$ | VEV | Ellipsoidal | Variable | Equal | Variable |

Source: Fraley and Raftery (2002)

Given the different model parameterisations above, agglomerative hierarchical clustering can be used to initialize the model-based clustering process by merging clusters so as to maximize the resulting likelihood as specified in equation (1) above.

## b. Clustering Algorithms

The algorithm used for maximizing the likelihood function here is the EM (Expectation-Maximization) algorithm (see McLachlan and Krishnan (1997)). EM iterates between an "E" step, which computes a matrix $z$ such that $z_{ik}$ is an estimate of the conditional probability that observation i belongs to group $k$ given the current parameter estimates, and an "M" step, which computes maximum likelihood parameter estimates given $z$. In the limit, under certain conditions the parameters usually converge to the maximum likelihood values for the Gaussian mixture model and the sums of the columns of $z$ converge to $n$ times the mixing proportions $\tau_k$, where $n$ is the number of observations[4].

The mixture model approach allows the use of approximate Bayes factors to compare models (see Kass and Raftery (1995)). The Bayes factor is the posterior odds for one model against the other assuming neither is favored a priori. With the EM algorithm twice the log Bayes factor is used to determine the number of clusters in hierarchical clustering based on the mixture likelihood.- this measure is also known as the Bayesian Information Criterion (BIC) and the larger the value of the BIC, the stronger the evidence for the model.

A standard convention for calibrating BIC differences is that differences of less than 2 correspond to weak evidence, differences between 2 and 6 to positive evidence, differences between 6 and 10 to strong evidence, and differences greater than 10 to very strong evidence.

## c. Clustering Strategy

The general strategy adopted here is similar to that of Fraley and Raftery (1998a). The steps of strategy are as follows:

i). determine a maximum number of clusters to consider, and a set of candidate parameterizations of the model to use.

[4] The EM algorithm is not without its problems though. Fraley and Raftery (1998a) detail several problems notably i) a slow rate of convergence, ii) the number of conditional probabilities associated with each observation equals the number of components in the mixture, so that the EM algorithm may not be suitable for large datasets and iii) when the covariance matrix becomes singular or nearly singular (otherwise known as "ill-conditioned") the EM algorithm breaks down. The latter problem was an issue in this study - and usually relates to clusters which only contain a few observations or if the observations contained are co-linear, and in this study the former was the suspected problem in two instances.

ii). use agglomerative hierarchical clustering for the unconstrained Gaussian model, to obtain classifications for up to M groups.
iii). do EM for each parameterization and each number of clusters, starting with the classification from hierarchical clustering.
iv). compute the BIC for the one cluster model for each parameterization and for the mixture likelihood with optimal parameters from EM for other clusters.
v). plot the BIC - this should (hopefully) indicate a local maximum and a specific model.

This methodology yields significant gains over conventional clustering methodology, as now there is a systematic way to choose both the distributional assumptions underlying the clusters, as well as the number of clusters, in addition to the basis for choosing between alternative models and numbers of clusters.

## 4. DATA AND EMPIRICAL RESULTS

To use cluster analysis for classifying business cycle correlations with the US or with the eurozone, data is needed that corroborates the degree of synchronicity in business cycles and associated variables. In the analysis the following variables were used:

i). real GDP cyclical component correlations (CGDP)
ii). inflation rate correlations (CPI)
iii). unemployment rate correlations (UN)
iv). long-term interest rate correlations (INT)

Obviously the choice of data to characterise business cycles is to a certain extent subjective, but the data used here largely mirrors the data chosen by Artis and Zhang (1998a and b). All of these variables are expected to react to the business cycle, although not necessarily contemporaneously. The data was sourced from both the International Monetary Fund (IMF) International Financial Statistics and the European Commission database and goes from 1960 to 2001 although this varies according to country and data availability. The above economic data is correlated for 18 countries giving a full data set of 72 observations. As correlations for the full data set might not reflect recent trends over the past decade, and the full data set reflects different periods for different

countries, another set of correlations was done for just the period 1992-2001. This implies that four separate clustering exercises were undertaken as follows:

a. Whole data set correlations against the US aggregates (various dates depending on data availability);
b. 1992-2001 correlations against the US aggregates;
c. Whole data set correlations against the eurozone aggregates ( - again, various dates); and
d. 1992-2001 correlations against the eurozone aggregates.

In the case of a) and b), convergence was not achieved because of problems with an ill-conditioned (co-linear) covariance matrix, so data for all the US states was added, and the long-term interest rate correlation dropped. The results for the individual US states are not shown here as they basically duplicate those of Crowley (2001). Tables 2 to 5 and figures 1 to 8 below show the correlation coefficients for the 4 exercises a) through d) detailed above.

**Table 2. Correlations for full dataset against US aggregates**

| | **CGDP** | **CPI** | **UN** | **LINT** |
|---|---|---|---|---|
| **AUS** | 0.190999 | 0.630301 | -0.27888 | 0.615846 |
| **BEL** | 0.351361 | 0.689512 | 0.136785 | 0.79172 |
| **DEN** | 0.498123 | 0.763081 | 0.711277 | 0.814797 |
| **FIN** | 0.465575 | 0.687305 | -0.01433 | 0.473534 |
| **FRA** | 0.353394 | 0.837666 | -0.35634 | 0.820216 |
| **GER** | 0.005428 | 0.617669 | -0.41122 | 0.633641 |
| **GRE** | 0.394503 | 0.625111 | -0.21051 | -0.19565 |
| **IRE** | 0.268597 | 0.809291 | -0.05773 | 0.769081 |
| **ITA** | 0.312949 | 0.807966 | 0.674281 | 0.68655 |
| **NET** | 0.164525 | 0.550671 | -0.59948 | 0.71959 |
| **NOR** | 0.195933 | 0.6739 | 0.544445 | 0.557427 |
| **POR** | 0.300287 | 0.688611 | 0.164532 | 0.533007 |
| **SPA** | 0.287586 | 0.673482 | 0.214031 | 0.690886 |
| **SWE** | 0.234233 | 0.737009 | 0.425812 | 0.644321 |
| **SWI** | 0.345991 | 0.470713 | -0.16038 | 0.212972 |
| **UK** | **0.616387** | **0.832331** | **-0.18704** | **0.658566** |
| **CAN** | **0.686489** | **0.884905** | **0.851211** | **0.879774** |

**Table 3. Correlations for 1992-2001 against US aggregates**

| | CGDP | CPI | UN | LINT |
|---|---|---|---|---|
| **AUS** | 0.643507 | 0.694598 | -0.13831 | -0.66036 |
| **BEL** | 0.596715 | 0.826265 | 0.202084 | -0.55733 |
| **DEN** | 0.565454 | 0.221651 | 0.917577 | -0.57605 |
| **FIN** | 0.906937 | 0.519743 | 0.645396 | -0.74337 |
| **FRA** | 0.596594 | 0.830896 | -0.76105 | -0.50142 |
| **GER** | 0.015256 | 0.530634 | -0.41122 | -0.58088 |
| **GRE** | 0.262914 | 0.343739 | -0.91348 | -0.7952 |
| **IRE** | 0.124073 | 0.463485 | 0.543273 | -0.45398 |
| **ITA** | 0.154938 | 0.558399 | 0.841099 | -0.52019 |
| **NET** | 0.758166 | 0.338379 | -0.66615 | -0.45043 |
| **NOR** | -0.11912 | 0.152654 | 0.653159 | -0.59863 |
| **POR** | 0.543683 | 0.436061 | 0.951438 | -0.74721 |
| **SPA** | 0.541266 | 0.675358 | -0.10536 | -0.53482 |
| **SWE** | 0.666564 | 0.520589 | 0.548136 | -0.37263 |
| **SWI** | 0.708242 | 0.604625 | 0.411394 | -0.63295 |
| **UK** | **0.47918** | **-0.07701** | **0.260341** | **-0.4165** |
| **CAN** | **0.80804** | **0.514245** | **0.938296** | **-0.15182** |

**Table 4. Correlations for full dataset against eurozone aggregates**

| | CGDP | CPI | UN | LINT |
|---|---|---|---|---|
| **AUS** | 0.773422 | 0.858503 | 0.708666 | 0.96575 |
| **BEL** | 0.880404 | 0.864937 | 0.924953 | 0.984622 |
| **DEN** | 0.48472 | 0.821297 | 0.0968 | 0.930329 |
| **FIN** | 0.481978 | 0.873993 | 0.697195 | 0.830758 |
| **FRA** | 0.846972 | 0.849435 | 0.966416 | 0.972605 |
| **GER** | 0.592053 | 0.731611 | 0.45513 | 0.938531 |
| **GRE** | 0.514703 | 0.437393 | 0.855407 | 0.499567 |
| **IRE** | 0.555643 | 0.857895 | 0.695805 | 0.907024 |
| **ITA** | 0.70155 | 0.790611 | -0.25125 | 0.965462 |
| **NET** | 0.415838 | 0.756687 | 0.669074 | 0.941352 |
| **NOR** | -0.05007 | 0.74949 | 0.271449 | 0.777898 |
| **POR** | 0.76217 | 0.661117 | -0.05973 | 0.81318 |
| **SPA** | 0.780807 | 0.768156 | 0.559549 | 0.958752 |
| **SWE** | 0.512472 | 0.708255 | 0.8468 | 0.928571 |
| **SWI** | 0.673134 | 0.666336 | 0.766181 | 0.662766 |
| **UK** | 0.352185 | 0.842727 | 0.807643 | 0.939978 |
| **US** | **0.403389** | **0.703528** | **-0.01224** | **0.782397** |
| **CAN** | **0.350771** | **0.806574** | **0.400206** | **0.840197** |

**Table 5. Correlations for 1992-2001 against eurozone aggregates**

| | CGDP | CPI | UN | LINT |
|---|---|---|---|---|
| **AUS** | 0.807758 | 0.255841 | 0.78805 | 0.975411 |
| **BEL** | 0.920011 | 0.236809 | 0.961486 | 0.98872 |
| **DEN** | 0.572138 | 0.467672 | 0.380103 | 0.987163 |
| **FIN** | 0.538784 | 0.165293 | 0.758673 | 0.815628 |
| **FRA** | 0.905715 | 0.468533 | 0.932346 | 0.99694 |
| **GER** | 0.777226 | 0.24169 | 0.45513 | 0.983944 |
| **GRE** | 0.7733 | 0.232252 | 0.885424 | 0.8084 |
| **IRE** | 0.683736 | 0.155803 | 0.84629 | 0.981226 |
| **ITA** | 0.790635 | 0.327157 | 0.415617 | 0.984299 |
| **NET** | 0.569308 | -0.00119 | 0.540129 | 0.991523 |
| **NOR** | 0.016548 | -0.04318 | 0.758927 | 0.821323 |
| **POR** | 0.749181 | 0.264731 | -0.00634 | 0.947933 |
| **SPA** | 0.949216 | 0.409655 | 0.917364 | 0.986856 |
| **SWE** | 0.708512 | -0.13888 | 0.91013 | 0.965614 |
| **SWI** | 0.786665 | 0.420897 | 0.924488 | 0.792005 |
| **UK** | 0.058481 | 0.347651 | 0.970296 | 0.928984 |
| **US** | **0.505968** | **0.573908** | **0.186138** | **-0.53063** |
| **CAN** | **0.316187** | **0.221609** | **0.499701** | **0.645983** |

The tables above clearly show a wide variation of correlations between countries - significance tests for these correlation coefficients are not given, as in the context of the exercise being taken here, significance for one coefficient would be meaningless, given that all four correlation coefficients need to be used to see which state/province/country falls into which group. Taking both Canada and the UK together, in table 2 they both show a relatively high degree of correlation in terms of the cyclical component of real GDP and inflation, but in terms of unemployment correlation, the UK has a negative correlation with the US, and a significantly lower correlation for long interest rates than Canada does. It is surprising that the cyclical component of GDP for the UK is so highly correlated compared to other European countries. When we move to look at more recent data in table 3, this effect disappears, with Canadian correlations increasing for GDP and unemployment, but falling quite dramatically for Consumer Price Index (CPI) and long term interest rates. This likely reflects a relatively independent monetary policy on the part of the Bank of Canada. For the UK, all correlations are lower in the 1992-2001 period, but once again the CPI and long

term interest rates become counter-cyclical to the US, demonstrating a monetary policy that is clearly independent of the US.

When looking at the correlations against the eurozone, Canada and the UK have virtually the same value of coefficient for the cyclical GDP component for the full dataset, but interestingly the UK value is lower than the Canadian value when looking at just the 1992-2001 period. Also, interestingly, Canada appears to have a higher correlation coefficient for both the full dataset and also the 1992-2001 subperiod for all the other variable correlates.

As section 3c) detailed, cluster analysis is now used to classify these countries into groups. In all cases the EM algorithm was initialized using hierarchical clustering using the unconstrained model (EII) detailed in table 1 above. From this point BIC values were calculated from an initial parameterization for all other possible models presented in table 1. Some BIC estimates were not available, as the covariance matrix associated with one or more of the mixture components is ill-conditioned, so that the log likelihood and hence the BIC cannot be computed.

For the full dataset the best values are obtained for VVI or VVV with 2 clusters, but the maximum BIC value is found with VVI and 2 clusters. For the 1992-2001 period, VII with 4 clusters appears to give the highest value of the BIC at 67.58. Looking at correlations against the EU, for the full dataset EEI with 3 clusters gives the highest BIC value, only marginally ahead of VII with 3 clusters. As both distributional assumptions give the same number of clusters, this shows that the optimal number of clusters, given the data, is definitely 3. Lastly, the best BIC value is obtained for EEI with 8 clusters for the 1992-2001 period.

Two caveats have to be noted here. First, the BIC plots were a lot more regular when the US states were added for the first two clustering exercises, which possibly indicates that small datasets are not particularly well suited to this methodology. Second, it is noteworthy that in the last clustering exercise, only the BICs for EII, EEI and EEE distributional assumptions could be estimated beyond 3 clusters, and all these BIC plots appeared to be quite volatile. On the other hand BIC values were obtained using these distributional assumptions, so there is no reason to reject the findings without any *a priori* evidence that the methodology is no longer performing properly.

Figures 1 through 4 now display a cluster plot with uncertainties for each of the different exercises.

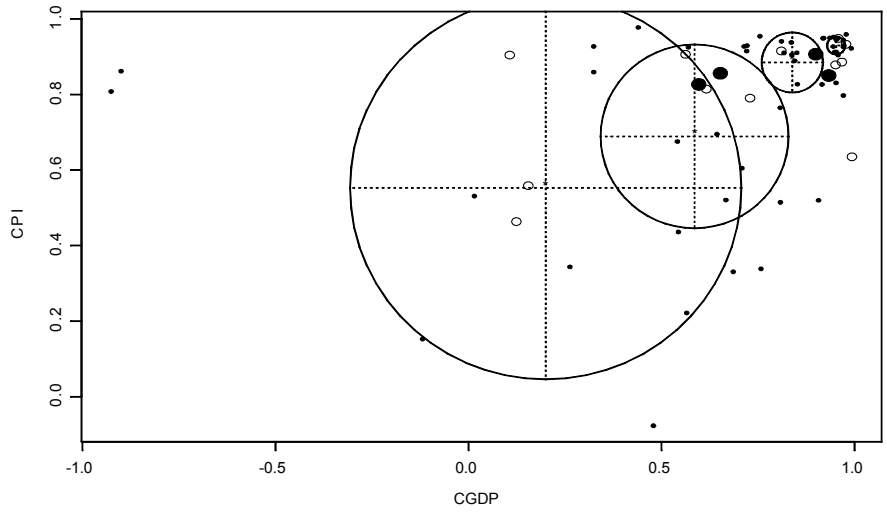


Figure 1. Cluster plot for Correlations vs US with whole dataset

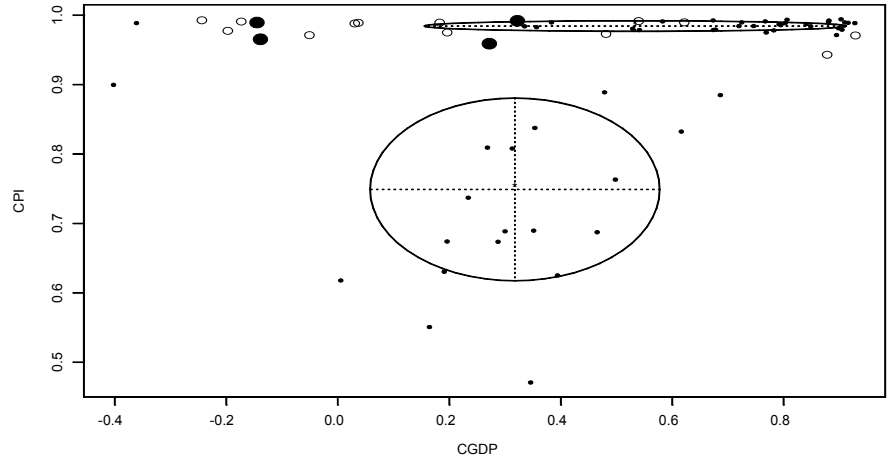


Figure 2. Cluster plot for Correlations vs US with whole dataset

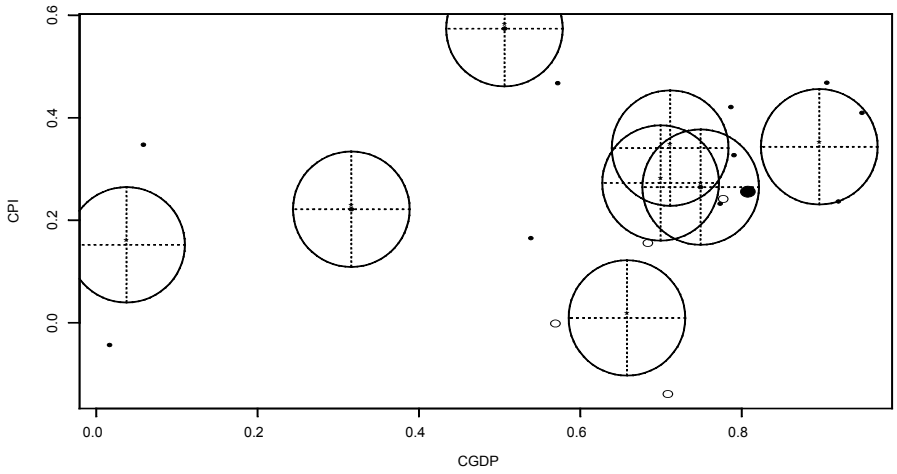


Figure 3. Cluster plot for Correlations vs eurozone with whole dataset

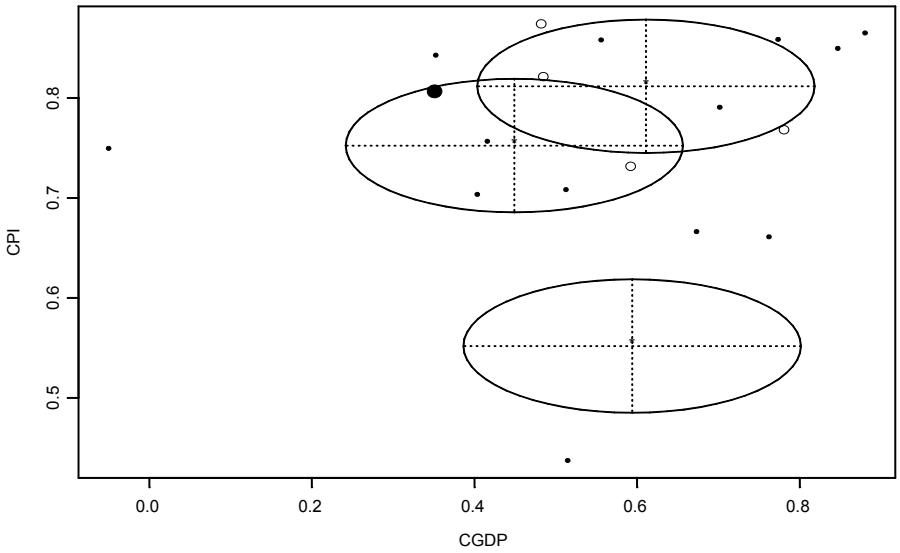


Figure 4. Cluster plot for Correlations vs US with whole dataset

In the diagram, the larger the dot, the more uncertainty there is associated with a particular country cluster classification. These cluster configurations are given below in tables 6 through 9.

**Table 6. Cluster configuration for Correlations against the US with full dataset: VVI model**

| Cluster | Country/Countries |
|---|---|
| 1 | Most of the US states |
| 2 | Canada, Europe, far-flung US states |

**Table 7. Cluster configuration for Correlations against the US for 1992-2001: VII model**

| Cluster | Country/Countries |
|---|---|
| 1 | Belgium, Canada, Denmark, Finland, Ireland, Italy, Portugal, Sweden, Switzerland |
| 2 | Rest of the EU |

**Table 8. Cluster configuration for Correlations against the eurozone with full dataset: VVI model**

| Cluster | Country/Countries |
|---|---|
| 1 | Austria, Belgium, Finland, France, Germany, Ireland, Netherlands, Spain, Sweden, UK |
| 2 | Denmark, Italy, Norway, Portugal, US, Canada |
| 3 | Greece, Switzerland |

**Table 9. Cluster configuration for Correlations against the eurozone for 1992-2001: EEI model**

| Cluster | Country/Countries |
|---|---|
| 1 | Finland, Greece, Switzerland |
| 2 | Austria, Belgium, France, Spain |
| 3 | Denmark, Germany, Italy |
| 4 | Ireland, Netherlands, Sweden |
| 5 | Norway, UK |
| 6 | Portugal |
| 7 | US |
| 8 | Canada |

Uncertainties associated with these classifications can easily be obtained. For table 6 there is no uncertainty associated with classifications for the European countries, or with Canada. For table 7, there is quite a large amount of uncertainty associated with the classifications of Belgium (0.33) and Ireland (0.29). For table 8, there is uncertainty associated with Canada's classification (0.33), and in table 9 there is no signficant uncertainty for any of the datapoints.

The results are somewhat unexpected, and clearly suggest several empirical facts, given the data and time periods used in the analysis:

i). From table 6, over the long term, Canada is just as asynchronous in business cycles as the EU is with the US;

ii). From table 7, however, it is clear that over the 1992-2001 period Canada had much more in common with peripheral EU member states and non-EU member states in terms of business cycle correlations, as it did not stand out as a separate cluster. This likely has to do with the different monetary policy pursued by Canada compared to the Fed's policy over this period, and can be seen by the negative correlation of long-term interest rates and the relatively low degree of correlation with US CPI;

iii). From tables 6 and 7, the UK clearly has more in common with Europe in terms of business cycle correlations than with North America - it is notably clustered with the "core" of the EU when correlated against the US;

iv). From table 8, it is clear that the US and Canada fit in the same cluster when considering correlations against the eurozone member states. For the UK, however, it appears to be grouped with a "hard core" of member states that have (with the exception of Sweden) all joined the single currency; and

v). From table 9, perhaps the most interesting clustering exercise, the eurozone member states break down into 5 different clusters, with the "hard core" of EMU forming three clusters (clusters 2 to 4), but the UK is clustered with Norway, a non-EU country, signifying that the UK's business cycle was significantly out of phase with the eurozone during this period. Canada and the US form two separate clusters, which implies that when correlated against the eurozone countries these two countries did not have similar business cycle experiences. A cursory glance at the correlations in this instance shows that Canada had a much lower correlation with the eurozone countries for the cyclical component of GDP and CPI than did the US, but for unemployment and long term interest rates, the correlation was much higher than for the US.

The last set of results are of particular interest, because they largely characterise the path towards the final stage of EMU made by the EU member states, and reflect the fact that the eurozone "average" over this period was perhaps not the target used for those member states attempting to attain economic convergence so as to ensure entry into EMU. The benchmark during this period was undoubtedly Germany, and yet, Germany was undergoing its own transformation into a single entity with the monetary and social union between former East and West Germany. Ironically, then, the cluster analysis shows that a cluster of 4 countries around France tended to have the greatest degree of correlation with a European business cycle over this period. Germany itself had a relatively low correlation with the eurozone average, particularly for CPI and unemployment. The UK was clearly not attempting to join the eurozone as it was experiencing very different real economic movements, and it appears in a separate cluster with Norway, although its unemployment and long-term interest rate correlation with the eurozone is high.

Before concluding, several caveats need to be made for these results. First, during the 1992-2001 period, even the separate US states did not form a single cluster (in fact they formed three clusters, with much more variation than with the full dataset), although none of the states were clustered with European countries - this suggests that even US monetary policy was not necessarily appropriate for all parts of the US (see Crowley (2001) for an analysis of whether the US is an optimal currency area and Rockoff (2000) for a historical perspective on the US as an OCA). Second, similar correlation coefficients do not necessarily represent similar business cycle movements - only an equal degree of business cycle dissimilarity. Third, in this clustering methodology, the three or four variables used for purposes of correlation are equally weighted - it may make more sense to weight the cyclical component of GDP more heavily than unemployment rates, for example, as unemployment rates are dependent on labor mobility, labor force participation rates, and labor market rigidities. Conversely there is no real theoretical basis on which to choose these weights. Fourth, in the eurozone cluster exercises, including both the CPI and long-term interest rates may be including a measure of inflation twice, in the sense that long-term interest rates are often influenced by future expectations of inflation.

## 5. CONCLUSIONS

The paper used model-based cluster analysis to group European countries, Canada and the US according to the business cycle correlations with both the US

and eurozone countries, over different periods using available data, and also over a consistent period from 1992 to 2001. This methodology originated in the literature on optimal currency areas, where it was able to suggest which countries are most suited to adoption of a common currency. Here the methodology was only applied to classify countries in terms of the characteristics of their business cycle correlations, with a particular focus on Canada and the UK.

One of the most important results in this study is that geography does indeed matter - Canada clearly does not have completely synchronous business cycles with the US. The second striking feature of this study when applied to both Canada and the UK is that clearly from the Canadian and continental European experience, a sovereign monetary policy with different operational targets and goals appears to lead to greater asynchronicity than a policy that mirrors the large neighbor's monetary policy. This also equally applies to the UK and it is interesting to note how low the correlation of the cyclical component of real GDP is with its eurozone counterpart over the 1990s. Of course the exchange rate flexibility that allows this monetary policy divergence also likely leads to other economic effects that cannot adequately be considered here. The third result in this study, is that in contrast to the results obtained by Artis and Zhang (1998b) where Germany was used as the "target" to correlate against to be a member of EMU, using a eurozone aggregate (in other words a backwards-looking approach), yields rather different results - no definitive "hard core" is obtained - in fact the EU member states appear to form several clusters, perhaps depending on their initial starting points and their "convergence experience" rather than the ending point of EMU.

In terms of a monetary union with a larger neighbor, the research also has some implications. Clearly, in the long run it would be possible for Canada to achieve monetary union with the US if it so desired, but alignment of policies and likely a stepping-stone approach akin to that used in the EU might be desirable (see Crowley and Rowley (2002) for suggestions for a North American Exchange Rate Mechanism or NAERM). A similar approach would also be necessary for monetary policy, both in the Canadian and UK contexts, where monetary policy is different from that of its larger neighbor - as in both countries there is little political motivation to align these policies as both the Bank of Canada and the Bank of England clearly believe that their monetary policy framework is superior, otherwise they would have adopted that of their larger neighbor. Lastly, the research also seems to corroborate the Blair government's claim that as of 2000 the time was not yet ripe for the UK to join EMU, and that clearly more synchronicity with the eurozone business cycle is required before membership is sought.

Finally, returning to the quote at the beginning of the paper, although this quote was likely made from a political perspective this paper suggests that it can be applied equally to the economic domain too. Even when clustered with the US states, over a longer horizon Canada still falls into the same "heterogenous" cluster as all of Europe, indicating that it does not behave like a typical US state. Perhaps if Pierre Trudeau were still alive today, his would response would be "nor should it!".

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