

ARMIN J. KAMMEL

Could North American Monetary Integration be an Optimum?

Zusammenfassung

Spätestens seit der Einführung des Euro als europäische Einheitswährung entstand eine nachhaltige Diskussion über ein ähnliches nordamerikanisches Pendant. Eine wichtige Erkenntnis dieser Debatte ist, dass die Theory of Optimum Currency Areas (OCA) eine politische Dimension gänzlich vermissen lässt. Dieser Aufsatz versteht sich als Beitrag zu dieser breiten und mehrschichtigen Debatte und stellt einen neuen multi-dimensionalen Ansatz zu OCA vor, der jedoch auf der herkömmlichen OCA basiert. Der Beitrag konzentriert sich vor allem auf die Auswirkungen der politischen Begleiterscheinungen und Konsequenzen, welche mit der Errichtung einer Währungsunion verbunden wären. Das erweitert die Diskussion über eine mögliche nordamerikanische Währungsintegration mit dem Endziel einer nordamerikanischen Währungsunion, weil neben den ökonomischen auch die politischen Aspekte einer solchen Entwicklung in den Blick kommen.

Résumé

L'idée d'un pendant nord-américain de l'Euro fait l'objet d'une discussion de longue haleine et ce, depuis du moins l'introduction d'une monnaie commune européenne. Une conclusion importante de ce débat est que la théorie de l'Optimum Currency Areas (OCA) omet toute dimension politique. Le texte se veut une contribution à ce vaste et complexe débat et propose une nouvelle approche multidimensionnelle de l'OCA, tout en se basant sur la théorie traditionnelle de l'OCA. L'article traite principalement des répercussions sur le plan politique et des conséquences qui seraient liées à l'introduction d'une union monétaire. En tenant compte non seulement des aspects économiques mais aussi des aspects politiques, on élargit la discussion quant à la possibilité d'une intégration monétaire en Amérique du Nord visant une union monétaire nord-américaine.

Introduction

The link between language and currency has often been noted. Language is a medium of communication and currency is a medium of exchange. National, ethnic and liturgical languages are here to stay, but a common world language, understood as a second language everywhere would obviously facilitate international understanding.¹

This meaningful quote by Canada's 1999 Nobel Laureate in Economic Sciences *Robert A. Mundell* is definitely a perfect starting point to reconsider the Theory of Optimum Currency Areas (OCA) as well as a possible future monetary integration in North America. Latest in the advent of the introduction of the Euro as a single currency in the majority of EU member states, the OCA theory experienced a kind of renaissance after its first introduction by *Robert Mundell* (1961) in his famous seminal paper on OCA theory, which had an extraordinary influence on the subsequent developments of this theory as *Kenen* (2002) points out.

OCA theory basically looks at the advantages and disadvantages of different regions (*Sarno / Taylor*, 2002, 171-177) adopting the same currency and thereby in the light of a single currency making transactions across regions simpler by guaranteeing a fixed rate of exchange (see *Bayoumi*, 1997, 77). It seems to be that particularly the heavy debate on exchange rate policies, with *Friedman* (1953, 157-203) arguing that exchange rates should be allowed to float against other currencies, significantly influenced *Mundell's* work.

By discussing the costs of losing monetary flexibility, *Mundell* emphasized that the similarity of the underlying economic disturbances primarily determines the costs of a currency union. In case two regions face similar economic disturbances, their desired monetary response will also be similar, and therefore the costs of being forced to set the same nominal interest rate will be small (*Bayoumi*, 1997, 78). In contrast to this, he argues that if regions face dissimilar disturbances – like in his example the Eastern and Western halves of the United States and Canada – a single monetary policy will then cause larger costs. However, according to *Mundell*, this intractable problem can be resolved by perfect factor mobility across the regions.

Nevertheless, *Mundell's* model is characterized by a so-called mirror-image asymmetry meaning that due to the nature of his proposed two-country union, the expenditure-switching shock would not be true in a union with more than two member countries (see *Kenen* 2002, 82). Furthermore, this mirror-image asymmetry is the best example for the tendency in literature to focus only on a single criterion in order to define whether a region constitutes an optimum currency area or not. In

¹ Robert Mundell (2000), "Currency Areas, Exchange Rate Systems and International Monetary Reform" on www.columbia.edu/~ram15/cema2000.html (last paragraph).

order to challenge the existing, rather specifically focussed literature on OCA theory, this paper comes up with *multi-dimensional approach* of OCA theory in order to define an OCA in a complete manner, as well as to connect the ideas of *Mundell* & the others with the political and social dimensions nowadays. The best argument for such a *multi-dimensional approach* comes from microeconomics, in which the world constitutes an OCA. However, this should not lead to the misleading conclusion that the discussion will be in favour of a world currency. However, in the light of this newly proposed *multi-dimensional approach* it shall be pointed out that a currency union can have outrageous effects for certain regions, if the participants firstly experience a similarity in the underlying economic disturbances which is basically reflecting standard OCA theory and secondly – as new extension to current theory – can incorporate their political views into the empirical and economic suggestions being in favour of monetary integration.

In addition to *Mundell's* article, two other papers representing pillars of early OCA theory should be mentioned as well:

The first by *McKinnon* (1963, 717-725) introduced the degree of openness and the importance of the size of the economy as additional criteria. He argued that, typically, in an open economy, changes in the exchange rate would not alter the ratio of prices between traded and non-traded goods while in a relatively closed economy, the assumption exists that labour does not immediately notice the inflationary effect of devaluation. Two logical reasons for this phenomenon are first, that in a closed economy the traded goods sector contributes just a minimal amount to the consumer price index and therefore the devaluation may have a less-than-obvious effect on the rate of inflation, and second, that the large non-traded goods sector may be able to absorb the change in demand without a corresponding rise in prices. In other words, *McKinnon* tries to show that only relatively closed economies can effectively use the exchange rate instrument. This is a main argument for monetary union in the EU because all member countries are open economies as measured by the share of imports in GDP.

The second by *Kenen* (1969, 41-60) primarily stresses the importance of product diversification in the economy because within a diversified economy the microeconomic shocks can effectively be balanced between the different sectors. According to *Kenen*, an OCA is made up of highly diversified economies, which is interesting because this is already a kind of pre-condition for *Mundell's* approach of the mobility of labour because a highly diversified economy maximizes the amount of employment opportunities for each single worker. *Kenen* (2002, 83-84) also points out that a fiscal system spanning several regions can help to maintain internal balance and thus compensate in part for the macroeconomic disadvantage of having a currency area that spans many labour markets, which however is not optimal in the Mundellian sense.

Three Different Approaches of OCA Theory in Literature

Mundell, McKinnon and *Kenen* are representatives of the so-called *traditional approach* of OCA theory, which is characterized by the attempt of several authors to single out different criteria to delimit the domain of an OCA. Within this approach, there are as *Kammel* (2003, 7-9) points out, already some rare attempts to add the degree of financial integration, the similarity in the rate of inflation as well as the degree of policy integration to the original criteria.

Gandolfo (2001, 332-340) nicely describes the so-called *cost-benefit approach*, which simply tries to point out the costs and benefits of a participation in a currency area. However, it has generally be kept in mind that it is necessary to weigh the costs and benefits of such a participation through some kind of social preference function, so that the final decision will then depend on the set of weights chosen and furthermore that it can easily vary from country to country or even from period to period within the same country. This explains why no general rule for weighing the following costs and benefits can be given:

The main benefits of participating in a currency area are first that a permanently fixed exchange rate eliminates speculative capital flows between the partner countries, second, that there is – in case the credibility of the fixed exchange rates is established – no need to keep international reserves for transactions and third that monetary integration can stimulate the integration of economic policies and even economic integration and fourth advantages of a political type, in the sense that a currency area carries more weight than individual countries in negotiating as a whole with outside parties. Moreover, another major advantage is the larger capital market created through the currency area.

In contrast to this, the main costs of participating in a currency area are first the loss of autonomy in monetary and exchange policy of the individual members, second, constraints on national monetary policy in the sense that a member country might be harmed due to the fact that the joint management of the single member's monetary policies is carried out in the interest of the majority, third, a possible increase in unemployment if the currency area includes a country with low inflation and an external surplus, which might become dominant and compel the other members with greater inflation and an external deficit to adjust because the deficit countries will have to take restrictive measurements which will probably lead to a decrease in employment and fourth, a possible deterioration of previous regional disequilibria.

In addition to this, it is important to mention two other models by *Melitz* (1995) and *Bayoumi* (1994). *Melitz's* theory is basically based on a direct relationship between the size of this optimal share and the number of countries wishing to join a given monetary union. In this context it is also has to be stressed that the size of the OCA increases with its openness.

One of the most interesting models within OCA literature is *Bayoumi's* attempt to incorporate the three "single-criteria-models" by *Mundell*, *McKinnon* and *Kenen* in his so-called general equilibrium model of an OCA. See *Bayoumi* (1994, 537-554). In this regard the key assumptions are that each of the two respective countries, call them j and k , are fully specialized in the production of a single differentiated good which they trade with each other. *Bayoumi* argues that the benefits of a currency union between the countries j and k depend directly on the proportions of trade between them, on B_{jk} and B_{kk} as well as on the level of transaction costs on this trade. It is important to note that whether or not a currency union is welfare-increasing, depends on the balance of costs and benefits. Therefore, the net benefit of joining a currency union for country k , under the assumption of a negative shock, is greater the larger the cost of transacting currencies, the greater the share of good j in country k 's consumption, the lower the share of good k in country k 's consumption and the smaller these shocks are. Resulting from that, the openness (defined as a high level of cross or so-called diversified consumption) favours a currency union. Interestingly enough, this is exactly *McKinnon's* criterion, but just reached from a different argument. Further, in support of *Kenen's* use of this criterion is a diversified industrial structure, which would tend to reduce the size of aggregate shocks. Moreover, if labour is mobile between regions, a part of country k 's unemployed workers will move to country j where there is excess demand for labour. Thus, while country k 's output is still lower, country j 's output rises by cutting the cost of forming a currency union. By recalling *Mundell*, one will notice a similar approach with the difference that *Mundell* focuses on the alleviation of asymmetric shocks whereas *Kenen* argues that asymmetric shocks are less likely to occur in well-diversified economies.

Contrary to this, the third country outside the union, m , suffers a welfare loss from the currency union between the other two countries because it does not share the lower transaction costs, and also suffers the lower availability of good k . However, it seems to be obvious that the result would be different, if other benefits, such as economies of scale in the currency union, materialize. This goes hand in hand with the view expressed by the *Commission of the European Communities* (1990) as well as more recently *Franke / Rose* (1998, 1009-1025) whereas *Krugman* (1991) and *Eichengreen* (1992) stress that an increased trade leads to more specialization which will then work against the common currency area. It has to be stated that this school, going back to *Kenen* (1969), does not make clear the assumptions and mechanisms under which its conclusions are reached (see *Demopoulos / Yannacopoulos* 2000). Contrary to this, the opposite view is entirely based on empiricism.

To complete the dogmatic distinction of the different approaches, the so-called *New Theory* has to be added, which is primarily dominated by two issues: the effects of shocks and reputational considerations. Even though this *New Theory* brings up interesting aspects (*Tavlas*, 1993, 663-685), recent theoretical and empirical work has produced ambiguous results (*Gandolfo*, 2001, 339-340).

The Origins of Money and Central Banking

Without money, OCA theory would be useless, so therefore in order to suggest a *multi-dimensional approach* of OCA theory, one has to go back to the roots reflecting the on-going debate between those arguing that the use of currency was based essentially on the power of the issuing authority (the so-called *Cartalists*) and those who argue that the value of currency depends primarily (or solely) on the intrinsic value of the backing of that currency (the so-called *Metallists*)². Besides this, another debate exists between those arguing that money evolved as a private sector, market-oriented response to overcome the transactions costs inherent in barter (the so-called *Mengerians*), and the already mentioned *Cartalists*, who argue that state authorities have generally played a central role in the evolution and the use of money (Goodhart, 1998, 408). The on-going debate on how the private sector could evolve towards a monetary economy with the main duty to search for cost minimisation procedures within this system, which a government does not necessarily have to enter at all, is based on Menger's early paper and the constructed models vary in many aspects. However, most (if not all) of these models lack the historical fact that money frequently played an initial means-of-payment role in inter-personal social and governmental roles before it played a major role as a medium-of-exchange in market transactions (Goodhart, 1998, 418). In addition to this, the governing body played a crucial role for the currency in almost any society, which however does not mean that the private sector would not be able to develop various monetary systems without any state influence.

As Goodhart (1998, 409) correctly points out, there seems to be a tendency among economists to have a normative preference for systems determined by private sector cost minimisation rather than the not as transparent political factors. It is correct that the European Monetary Union (EMU) does not show the desired link between political sovereignty and fiscal authority on the one hand and money creation, the mint and the central bank, on the other hand. However, it is important to stress the independence of the European Central Bank (ECB) (see Art 107 EC) and its primary objective being the maintenance of price stability (see Art 105 EC). It has to be kept in mind that the Euro system reflects more or less the existing national sensitivities among the member states and the desire of national banks to keep some power in the formulation and the implementation of monetary policies. However, from a structural point of view, it is worth mentioning that the ECB has some shortcomings: The ECB incorporates to a certain extent two models of central banking which have evolved in the post-war period, the so-called Anglo-French model and the so-called German model. As DeGrauwe (2000, 150-174) correctly distinguishes, these two models basically differ from each other on two counts, the first

2 Goodhart (1998, 407-432) nicely divides the two schools into the "C-team" and the "M-team". He kind of ironically lists the economists of both "teams" such as Aristotle, Locke, Menger, or Kiyotaki and Wright for the "M-team" and Knapp, Mireaux and most post-Keynesians for the "C-team".

one being concerned with the objectives a central bank should pursue and the other being related to the institutional design of the central bank. Regarding the objectives of the central bank, a central bank in the Anglo-French model has to pursue a few objectives such as price stability, stabilization of the business cycle, the maintenance of high employment or financial stability, whereas in the German model, price stability is its primary objective in the sense that any other objective pursued by the central bank always has to be conditional on the requirement that its pursuit does not endanger price stability. Regarding the institutional design of the central bank, the Anglo-French model favours the political dependence of the central bank, meaning that monetary policy decisions have to be approved by the government, whereas the German model is characterized by the political independence as the leading principle. In *DeGrauwe's* words, the Anglo-French model was discarded as a guide for the design of the ECB, and the German model prevailed due to the German Bundesbank's appearance representing the new monetarist paradigm of price stability being the primary objective and political independence as the instrument to achieve that and the dominant position of Germany, during the negotiations for a monetary union.

These elaborations show that the lack of clear accountability is a serious shortcoming of the ECB because its strong degree of independence, a feature of utmost importance, is not equally matched by a strong procedure to control its performance. One might consider the general failure to centralize the supervision of the banking system at the supranational level as another shortcoming of the ECB. However, due to the *Lamfalussy* committees on the supranational level and the increased supervisory cooperation in Europe, such a centralized approach is currently not necessary. Nevertheless, a separate institutional approach analogously to the ESCB might be an option in the future.

Reasons for a Multi-dimensional Approach of OCA Theory

Why are all these fairly detailed elaborations necessary in a paper that primarily tries to outline various perspectives of a possible North American Monetary Integration (NAMI)? Why is OCA theory so crucial for monetary integration? What would a *multi-dimensional approach* of the OCA theory mean?

Pure OCA theory basically compares the advantages and disadvantages of having a single currency in a wider region. As already pointed out above, the main factors affecting an OCA are its size, openness, labour market flexibility, product diversity and the nature of either symmetric or asymmetric shocks. It is a substantial shortcoming of standard OCA theory that the functions and role of a government do not enter these models. Theoretically speaking, there is no need that currency domains have to be co-incident and a co-terminus to sovereign states. This means in other words that it is easily possible that a sovereign state has any number of currencies as from one to n and that furthermore an OCA should be able to include as many separate and sovereign countries as from one to n . However, even in case of basic

agreement with this theory, there is a substantial need to extend these approaches to a *multi-dimensional* level. Even though models, as reproductions of the real world, can never include every detail of reality, they shall be constructed as "real" as possible. Before this background, the development of the *multi-dimensional approach* of OCA theory shown in terms of a possible monetary integration in North America, tries to reflect also the political realities.

The *multi-dimensional approach* consists of two main dimensions with various sub-dimensions, depending on the specific case. The first and traditional dimension in OCA theory is the economic dimension constituting the fundament of the model, which also includes the proposed new political dimension as well as a new semi-dimension, being the monetary institutions dimension.

North American Economic Integration in General

Before going into details of the model, a few words have to be said in general on specific issues of North American economic integration (see *Harris, 2001*), a broader term than NAMI. Especially since the 1980s it can be said that a fairly high level of trade integration between Canada and the U.S.A. has been developed. Economic integration can e.g. take the forms of FDI, trade flows in general, mergers and acquisitions, labour movements across borders, cross-border transportation flows as well as political interactions at the federal, state-province and local level, different networks or cultural exchanges.

By observing these forms of integration in North America, one observes a tendency towards a North-South Integration rather than an East-West Integration, although this trend seems to have shifted recently due to the increase of interregional trade in Canada and the strength of the Canadian dollar. However, according to *Harris (2001, 4)*, five potential drivers for the until recently rather prevailing North-South Integration can be indicated: technology in all its various forms, geopolitical events such as the emergence of the EU or the political reform in Mexico, certain demographic trends like the baby boom and bust, economic policy namely the Canada-U.S. free trade agreement (FTA) as well as NAFTA and geography due to the unique nature of the long Canada-U.S. border and the proximity of most Canadians to the U.S. border.

Despite the questionable success of NAFTA and the bilateral FTA between Canada and the U.S.A., numerous – in particular Canadian – concerns emerged. Especially the 1990s showed a significant gap between Canadian and U.S. living standards, mainly resulting from a weaker Canadian productivity (see *Courchene, 2001, 3-11*) and employment performance. Therefore certain worries that future Canadian economic prosperity is at risk emerged. Additionally, the failure of the OECD Multilateral Agreement on Investment (MAI) and the troubles at the WTO meetings from Seattle 1999 onwards bolstered the anti-globalization movement as well as concerns that the multilateral system might not turn out as expected. Canada's increased export dependency on the U.S.A. as well as substantial declines in global commodity prices

– here it is important to stress that commodity prices are traditionally a source of Canada's comparative advantage due to its enormous resources – at the same time as U.S. growth in knowledge-intensive sectors increased, raised serious concerns in Canada, whether special economic policies would be necessary to implement and whether Canada is already substantially behind in the developments towards a new knowledge-based economy. Furthermore, Canada's decline in the share of total North American FDI during the last 20 years led to the negative development that foreign investors "forget" Canada more and more.

Despite the recent economic turbulences and the comparable weakness of the US economy, Canada has to do something in order to improve its current situation. A few policy options have to be taken into consideration in this regard. As *Harris* (2001, 6) correctly points out, there are basically four of them:

- strengthening and improving NAFTA in certain areas,
- pursuing policy convergence, and in some areas policy harmonization with the U.S.,
- making radical changes in specific domestic policy areas such as tax policy or
- trying to create a common market network (if not within NAFTA, then at least on a bilateral basis)

The last policy option is the most controversial one and has caused lots of literature. In the following, the paper focuses on a possible monetary integration as part of this option and discusses it in the light of OCA theory.

North American Monetary Integration and OCA Theory

Basics

The advent of the Euro during 1998-99, raised a heavy debate in Canada on the merits of the current floating exchange rate system as well as on the merits of a certain form of monetary integration with the U.S.A. As suggested in various papers, it shall be argued that a North American Monetary Union (NAMU) could make sense in particular for Canada but only by adapting a new *multi-dimensional approach* of the existing OCA theory. However, NAMU is considered as the final stage of NAMI and until today there is no support for any kind of currency integration from Canadian authorities, a phenomenon that also seems to be widespread among academics, economists and financial analysts (see e.g. *Courchene*, 2001) who all tend to remain in favour of the current situation of flexible exchange rates.

Nevertheless, from a European point of view, one supports fixed exchange rates and thereby the arguments of *Courchene / Harris* (1999). However, as an extension of their arguments the newly constructed model reflecting the *multi-dimensional approach* of OCA theory shall now be examined in more detail.

The Economic Dimension

Like standard OCA theory, the model is based on strong and dominating economic arguments that make sure the region³ fulfils the necessary economic pre-conditions before moving to the upper political dimension. When elaborating on the economic dimension, three interrelated arguments have to be discussed:

- Canada suffers more from its existing floating exchange rate system than it gains from it and therefore experiences a significant welfare loss.
- Economic analysis suggests persuasively that greater exchange rate stability between Canada and the U.S.A. will have positive impacts in particular for Canada.
- The long-term objective for this exchange rate fixity could be a NAMU.

The already traditional argument to defend the floating Canadian dollar is that Canadian monetary independence and a floating dollar create policy sovereignty and economic flexibility, particularly in the sense of being able to implement "home-made"-inflation and nominal interest policy as well as that a flexible exchange rate constitutes a potential buffer role of accommodating asymmetric shocks that hit the Canadian economy, which is actually the classic Keynesian argument defending flexible exchange rates. Despite the argument being valid, following *Courchene / Harris (1999)*, it can under certain circumstances be the case that the presumed advantages associated with this exchange rate buffering may also turn out to be illusory.

In the following it should be shown that the traditional approach to exchange rates and dealing with asymmetric shocks is not appropriate for the changing geopolitical realities and Canada-U.S. economic integration. The best example to illustrate this is Ontario's inter-provincial exports on the one hand and its international exports on the other. In the early 1980s, both domains of Ontario's exports were in the range of around CDN-\$ 40 billion, while already during the 1990s Ontario's international exports increased to a three times higher level than its exports to other provinces. In 2001, the market value of Ontario's international exports being a percentage of Ontario's GDP exceeds 50% and since just over 90% of Ontario's international exports are to the U.S., the value of Ontario's north-south exports is running at roughly 45% of its GDP. These facts underline the first rather obvious aspect of the model, being the necessity of a geographical proximity in order to be able to have a high trade volume in terms of exports and imports. As we will see later on, this geographical proximity will constitute the necessary link between the economic and political dimension of the model.

3 At this stage, when arguing in the economic dimension, a region does not necessarily have to be identical with the borders of a sovereign state but as we will see later in the political dimension, it would not make much sense to split a sovereign state in order that two or more provinces of one or more states can constitute an OCA. Besides that, it would probably not be possible to find the necessary political consensus for that.

Ontario is not the only example experiencing by trend a shift rather from east-west to north-south trade because already in 1996 all but two of Canada's ten provinces exported more to the rest of the world (being the international exports) than they did to the rest of Canada (being the inter-provincial exports). Nevertheless, as indicated above, the recent economic developments and the increasing strength of the Canadian Dollar might lead to a reversal in this regard. Anyhow, contrary to the situation in the 1980s, in 1996 at the aggregate (meaning all-province) level, for each CDN-\$ of inter-provincial exports, international exports were running at CDN-\$ 1.83 with a strong tendency to even increase that, since over 80% of Canada's international exports are destined to the U.S.A.

What are the implications that can be drawn from these numbers? First of all, that comparing to the on average 63% of the exports of the EU-15 countries that are destined to the other member states of the union, around 80% of Canada's exports are to the U.S.A. Therefore, as *Courchene* (2001, 12) correctly points out, the argument for monetary integration or even for a common currency based on economic integration is at least as compelling as for the monetary integration and monetary union in Europe. Second and stressing the geographical argument again, Canada seems to become more and more a series of north-south (and here implying cross-border) economies instead of being a single east-west economy – a tendency that should make Canadians worry and rethink their position concerning economic integration. Third, these newly emerging east-west series of cross-border economies are causing different effects regarding their business cycles.

These recent geo-economic developments lead to a new perspective – not extensively reflected in literature – on the issue of external shocks that supposedly have an asymmetrical impact on Canada and the U.S.A.:

Suppose that B.C. gears to match its policies with those of the American Northwest and the Pacific Rim. Similar to this, Alberta, Saskatchewan and Manitoba align their policies to compete with Montana, North Dakota and Minnesota, like Ontario and Quebec adapt their policies to match those of the U.S. Great Lakes States. The same happens in Canada's Atlantic Provinces in order to become competitive with the New England States and the Atlantic Rim. This scenario is characterised by the fact that each Canadian province has adapted its policies in order to be competitive with its cross-border counterpart.

When assuming that a commodity price shock such as an increase in commodity prices occurs, it has to be kept in mind that this kind of shock will typically be of an asymmetric nature due to the fact that Canada is a larger commodity producer in terms of share of GDP than the U.S.A. Nevertheless, initially, this shock affects each side of every regional cross-border economy similarly in the sense that there is no regional cross-border asymmetry because e.g. B.C. lumber faces the same price changes as lumber in the American Northwest, or Windsor, Ontario is still similar with Mo'town Detroit in terms of car industry. If an appreciation of the Canadian exchange rate now "buffers" this commodity price shock, then – as *Courchene* (2001)

convincingly states – all of the Canadian provincial or regional economics are offside with respect to their American counterparts. Not only due to the certain danger of an exchange rate overshooting or misalignment, this “buffering” function of the exchange rate is more than inappropriate because it is pretty obvious that each Canadian trading region would rather prefer to maintain exchange rate and transactions with both east-west as well as with north-south trading partners. The conclusion that can be drawn is, that in such a case it is necessary that the Canadian exchange rate has to be fixed relatively to the US-\$, a variant of an argument that was first introduced by *Mundell* (1961), who stressed already the asymmetries being rather east-west than north-south.

Along the lines with *Courchene*, it is convincing that in addition to this “regional” aspect of supply or demand shocks, a “national” aspect has to be stressed as well, especially because commodities represent a much larger percentage of overall output in Canada than in the U.S.A. Therefore, the commodity-based goods and services are a much larger component of Canadian-GDP than U.S.-GDP. Furthermore, the example showed that the important asymmetries are east-west. Nevertheless, the “national” aspect requires a certain kind of “buffering” as well, which however does not necessarily have to be one of the exchange rate variety. After pointing out the inappropriate policy of flexible exchange rates, now the question arises how this “buffering” is accomplished in case of fixed exchange rates.

The answer is fairly complex but can be divided into three main mechanisms:

The first one, being the internal adjustment of prices, is basically characterized by the similarity of the terms-of-trade shocks that affect the Canadian as well as the American side. As the example above indicates, it is not the commodity shock that causes the disequilibrium for the Canadian provincial economies, but the exchange rate response! Therefore, in case of a fixed exchange rate, the Canadian provinces can adapt in the same way their regional U.S. counterparts are able to.

The second mechanism deals with fiscal stabilization, which is dogmatically part of the philosophy underpinning fixed exchange rates. From a theoretical perspective, an individual region is involved in the fiscal stabilization of the exchange rate, no matter if an economy would be positively affected by a trade shock. In such a case – underpinned by *Courchene / Harris* (1999) who refer to} the example of Ontario in the late 1980s, the region makes use of its fiscal levers in order to temper a boom. As the mentioned example of Ontario indicates, the results of such policy would have been more transparent and efficient if Canada had been under fixed exchange rates. However, this example should not suggest different exchange rates for each province in Canada but underscores the usefulness of having one fixed exchange rate for the whole country.

The third mechanism being the most important one reflects the typical east-west asymmetry within Canada. In this regard, it underscores the importance of national policy mechanisms such as e.g. the national tax-transfer system, unemployment

insurance or federal-provincial equalization payments that are automatically triggered, especially in case of regional-specific shocks.

It can easily be derived from the analysis that these economic arguments support the deepening of North America's economic integration. However, they also indicate that a floating Canadian exchange rate is not necessary and might sometimes even be inappropriate for an efficient adjustment to external (commodity) price shocks. Nevertheless, the deep economic integration makes the case for Canada-U.S. currency integration much stronger than most economists and politicians realize. Moreover, a closer Canada-U.S. exchange rate link would even strengthen such a process.

In addition to this, the advanced stage of the previous elaborations, the so-called monetary integration also has to be mentioned within the discussions of the economic dimension of the model: Especially *Courchene* and *Harris* but also *Grubel* (1999) regularly express their confidence that Canada would successfully be able to maintain a sustainable fixed exchange rate and would also benefit from a monetary union with the U.S.A.

However, when talking about a single currency in North America, two basic considerations and routes have to be taken into account:

Dollarization

The route of dollarization is two-dimensional. The first conception is the so-called "policy dollarization" which is defined to refer to an official decision by policy authorities to proclaim the US-\$ as legal tender. However, it seems to be more than unlikely that Canada would ever follow this route. Nevertheless, the economic advantage would be that Canada would be able to act unilaterally and it would ultimately constitute exchange rate fixity. Nevertheless, its economic disadvantages significantly outweigh these benefits. The main disadvantage would be Canada's loss of its existing seigniorage. Furthermore, adopting dollarization being triggered by an unstable floating Canadian exchange dollar would cause enormous additional costs for the country.

The second conception of dollarization is the so-called "market dollarization", a scenario in which Canada's private sector progressively conducts its affairs in US-\$. There is already a certain tendency into this direction by just considering high-tech firms, banks and other large corporations doing their financial accounting in US-\$, or that the Montreal Stock Exchange established a NASDAQ satellite which trades in Canada in US-\$. This tendency will sooner or later lead to the danger that the Bank of Canada's ability to conduct monetary policy will be extremely limited.

Concluding from these elaborations, dollarization does not seem to be beneficial for Canada due to its wide variety of negative economical side-effects. The recent rise of the Canadian-\$ is simply a strong argument supporting this view.

North American Monetary Union

The preferable alternative to dollarization would be the so-called North American Monetary Union (NAMU)⁴, which is the final stage of NAMI and also constitutes an ultimate exchange rate fixing. NAMU basically means the North American equivalent of the European Monetary Union. Typical characteristics of NAMU would be the following:

- In analogy to the European Central Bank (ECB), a supranational bank would have to be established. Let us name this new overarching central bank North American Central Bank (NACB). This NACB would have a board of directors, in which the 12 existing Federal Reserve Banks would have a seat as well as the Bank of Canada and the 7 newly founded Canadian Reserve Banks. In order to create a balance of power and control in terms of monetary policy of NACB, 7 new "Canadian Reserve Banks" should be established, one in B.C (Vancouver), one in Alberta (Edmonton), one in Saskatchewan (Regina), one in Manitoba (Winnipeg), one in Ontario (Toronto), one in Quebec (Montreal) and the last one in Atlantic Canada (Halifax). These newly created banks would have a similar structure like the Bank of Canada but being on a provincial (state) level. They would be the Canadian counterparts of the Federal Reserve Banks in the United States. Such an organization would give the U.S. the possibility to retain majority control and Canada – contrary to other suggestions⁵ – a kind of balanced power and control. In contrast to the ECB, NACB would have a different structure in order to retain some political control regarding monetary policy. In this context *Grubel* (1999) is completely wrong when suggesting that the NACB would only be responsible for the maintenance of price stability and not for full employment because as we have seen above, this is exactly the situation we have in Europe due to the strong former influence of the Deutsche Bundesbank. In order to avoid this non-existing political control over monetary policy as in Europe, the constitution of the NACB would have to include provisions that certain actions need the approval of supranational bodies. However, to underline the importance of this aspect, the central bank (the NACB) would constitute the second link between the economic and the political dimension. Anyhow, this link is not as strong as the geographical link and includes a certain control function of the political dimension with regard to the economic one.

4 In this context NAMU includes Canada and the U.S.A. and therefore all these suggestions have to be seen in this context. However, it would be possible for Mexico to join NAMU (maybe later) as well.

5 Especially *Courchene* and *Harris* regularly suggest that just the Bank of Canada should have a seat in the FRBNA as well as the 12 existing Federal Reserve Banks. It is likely that such an imbalance would always be to the detriment of Canada as a whole because the 12 Federal Reserve Banks can not be compared with the national/central banks in Europe representing each country. 12 Federal Reserve Banks and just the Bank of Canada would regularly mean 12:1 U.S. votes within the board.

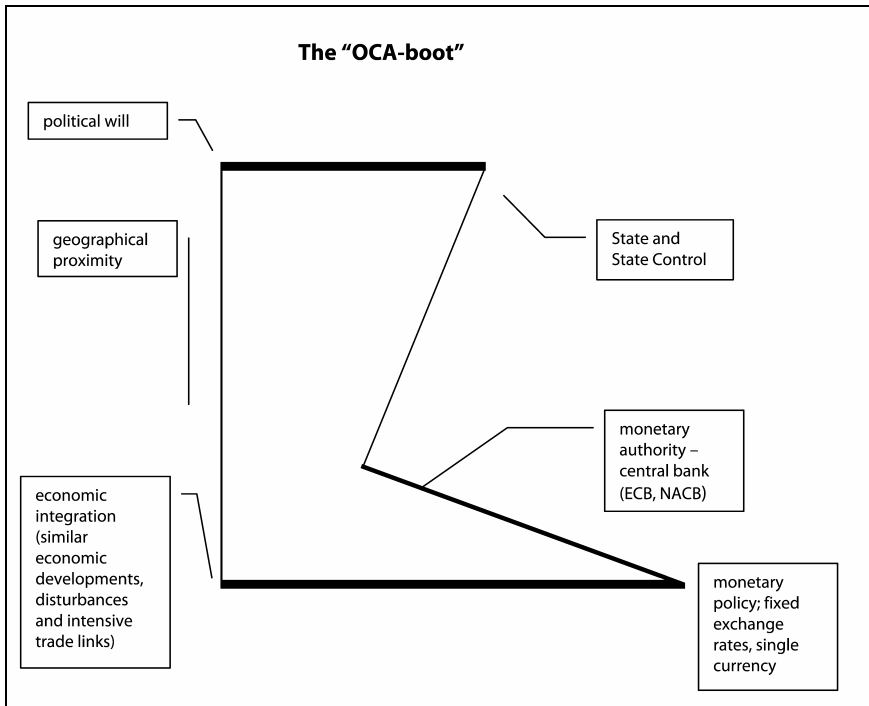
- NAMU would also lead to an ultimate exchange rate fixing in North America, meaning that there would no longer be a Canadian-U.S. exchange rate.
- In order to further stimulate trade between Canada and the U.S.A. due to the elimination of the costs of currency trading and risk, a new currency would have to be issued similar to the Euro. It makes sense to a certain extent, when *Courchene* (2001, 18) argues that the US-\$ would continue to be the U.S. currency, however it seems – especially from a political point of view – to make more sense to introduce a new currency in both countries. As the European experience shows, flexibility in terms of currency symbolism has to be given, meaning that – similar to the Euro – one side of the coins would state that the currency is North American legal tender, while the other side is the so-called “landscape” side for each country⁶. The common currency bills would all show the same symbols and have the same two sides in Canada as well as in the U.S.A.
- In order to know the value of one unit of this new currency, central rates R defined in terms of the so-called North American Currency Unit (NACU), which is a weighted basket of specific amounts or units, U , of the two – in case Mexico would join NAMU, the three – currencies. NACU can be seen analogously to the ECU in Europe. The weight, W , of each currency in this basket is determined collectively by precise criteria⁷ based on the relative economic strength of the member state. According to these criteria the central rates for each currency can be determined by $R = U/W$. Nevertheless, the bilateral exchange rate between any two currencies (in case Mexico would also join NAMU) is the quotient of their central rates. The just above mentioned weights then have to be frozen in, in order to avoid periodic re-weighting which creates uncertainty and would therefore be counterproductive when having fixed exchange rates.
- The name of the new currency could – as *Grubel* (1999) strongly suggested – either be “Amero” or as it is suggested here “Noam” (the “Northamerican”).
- NAMU could only come into existence if its later member countries (Canada, U.S.A. and probably Mexico as well) fulfil certain convergence criteria regarding the inflation rate, the long-term interest rate, the government budget as well as the government debt. There is a similarity to the so-called convergence criteria in Europe. For further details on the European situation, see e.g. *Gandolfo* (2001, 360-363), *DeGrauwe* (2000, 130-136), or *Krugman / Obstfeld* (2000, 618-619).
- Each member state of NAMU, in particular Canada, would be free to maintain its policies and its regulatory approach towards financial institutions and the financial sector in the sense that e.g. the Bank of Canada or one of the seven

6 This “landscape” side of the Canadian coins could e.g. show the maple leaf, the CN Tower, maybe a hockey player, the prairies or the Rockies, in other words typical Canadian symbols.

7 Such criteria are for example each country’s shares in NAMU-GDP, intra-NAMU trade or similar to the European Monetary System (EMS), a North American Monetary System (NAMS) financial support system.

newly created Canadian Reserve Banks could conduct clearings on a national or provincial basis and then clear with the other members of NAMU.

After elaborating on the dominating economic dimension of the model and before adding the political dimension, the model shall in the following be presented graphically in order to better point out the suggested *multi-dimensional approach*. The following graph shows the two main dimensions, the thicker line above being the political dimension and the thicker, longer line below being the economic one. These two main dimensions are connected via the geographical dimension to the left and the central bank, strongly influenced by the economic dimension and controlled by the political one.



The "OCA-boot": The "OCA-boot" consists of two dominating dimensions, the lower and largest one being the economic dimension, constituting the basis for the entire construction and being linked with the second dominating domain, the political dimension through the dimension of geographical proximity which is actually already a pre-condition of an OCA besides being as well a "connecting dimension" within this model. The other "connecting dimension" is the monetary authority (the central bank, or in the particular cases the ECB or the NACB). The inside buckling shows that the monetary authority is strongly influenced by the economic dimension but should – to a certain extent – be controlled by the political dimension.

The Political Dimension

After having focussed primarily on the dominating economic dimension representing standard OCA theory, pointing out the importance of geographical proximity between (potential) members of a monetary union and/or an OCA and stressing the role of the supranational central bank on the European example, the emphasis of the analysis will now be shifted to an issue basically ignored by standard OCA theory: the political dimension of this model.

Probably the biggest shortcoming of standard OCA theory is its failure to reflect any political component. Therefore it shall be argued here that even the greatest economic theory on monetary integration is basically useless, if there is no political will of potential member states to make it reality. The best example for this is actually North America itself because *Mundell* stressed already in 1961 the possibility of an OCA on this continent due its similar economic developments, disturbances and structures. However, it was Europe, the war-plagued continent, which became the first example of a monetary union⁸. This happened not due to the perfect economic preconditions – which actually seem to be much better in North America – but due to the political will with various charismatic political leaders seeing such integration as a possibility to prevent the emergence of further wars and conflicts on the continent. This necessary political will exists not only in the foundation members of the European Community (EC), which became the European Union (EU) during its transformation process introduced by the Maastricht treaty, but can also be found in every country that joined the EU afterwards. Even now, with the EMU⁹ already in existence and the entry criteria being much higher and more difficult to reach, ten additional countries¹⁰ joined the EU on May 1st 2004, of which three¹¹ already joined

8 There have already been some relatively similar examples during history but on a much smaller scale such as the Zollverein of 1834, a customs union between Prussia and Hesse-Darmstadt that laid down the economic foundation for the political unification of Germany, the Moldovian-Wallachian Customs Union of 1847 that led to the foundation of Romania in 1878 or the Swiss Confederation of 1848 that led to the economic and political unification of Switzerland. Aside from that it has to be kept in mind that probably East Asia, commonly defined as the ten economies of China, Hong Kong, Indonesia, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand could – besides a possible monetary integration in North America – probably constitute the next example of a monetary union or even an OCA. For further details on this, it is referred to *Zhang/Sato/McAleer* (2002) or *Trivisvavet* (2001).

9 Fifteen out of the 25 EU member states joined already the EMU: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, The Netherlands, Portugal, Slovenia and Spain, while Denmark, Sweden and the UK decided to stay out of the monetary union even though they satisfied the convergence criteria. Denmark obtained the right to subject its entry to a national referendum, the UK obtained the right to opt out and Sweden decided not to join the monetary union by using a loophole in the Treaty by refusing to enter the third stage being the irrevocable fixing of the exchange rates between the national currencies.

10 These ten countries were the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

11 These countries are Cyprus, Malta and Slovenia.

the EMU, due to their political will and commitment. As the model clearly shows, the political will is on the one side the main triggering point besides geographical proximity and economic integration and on the other side responsible for state action and state control after the people expressed their will to follow the route of monetary integration until achieving the stage of a complete monetary union. Fifteen countries in Europe have already followed exactly this route but it seems that in North America the political will for monetary integration is not (yet) extant. What are the possible reasons for this lack of political will?

The prevailing view among Canadians seems to be that they will object to the political consequences in terms of loss of sovereignty in areas other than monetary policy despite maybe favouring the economic benefits of a single currency and/or fixed exchange rates. The visual side of these fears seems to be the Canadian dislike of losing currency symbolism. However, the key word associated with these fears is "sovereignty". Fact is, that when joining whatever supranational organization or construction, a sovereign state has to give up quite a substantial part of its sovereign power because otherwise, such a supranational organization would not be able to fulfil its typical characteristics of executing formerly specific functions of a nation-state on a higher level, namely above national state authorities. Therefore, citizens need to perceive the supranational union as "their" place to live, as "their" home. Being part of the union must be a part of the citizens' identity: they must identify themselves with the union without ceasing to identify with their own nation-state. This means that multiple identification homogeneity is a prerequisite for a union's individual charisma, and is thus a prerequisite for the union's ability to secure not only rational allegiance, but also emotional loyalty. Each supranational union must, therefore, evolve specific characteristics which make it interesting and attractive for its own citizens. However, philosophical and political fundamental values and ideals will not be sufficient for this because since they are universal, they are realised elsewhere. What matters are, instead, cultural factors in the widest sense and thus homogeneity of cultures within a supranational commitment such as the EU. Furthermore, as *Courchene* (2001, 24) correctly states, 21st century sovereignty will have much less to do with having one's own currency than had heretofore been appreciated.

In the North American context, and particularly from a Canadian point of view, there is the widespread fear that a move to a common currency will also mean to become more "Americanized" regarding a broad range of policy areas. These fears are understandable – however, the situation can be compared in a certain sense to the Austrian one. Austria, being a small country in the heart of Europe, has always been in the shadow of its "bigger brother" Germany. Its previous currency, the Austrian Schilling, was informally pegged to the Deutschmark and similar to the Canadian situation, Germany has by far been Austria's most important trading partner. Aside from this, the same language is spoken in both countries, as well as culture and history is closely connected with each other. However, Austria has – at least in

modern Austrian history after World War II never become "Germanized" despite the existing close economic interrelations and actually in particular since joining the EU in 1995, Austria became more and more "independent" from Germany. It is not unlikely that the same would happen to Canada when joining NAMU with the U.S.A. and Mexico because there are various policy tools for each member within an economic and further on within a monetary union to state one's opinion and ideology to certain issues such as the various diplomatic tools, not signing common agreements, heavy political debates or veto-policy being the ultimate tool to disagree with common policy.

As the fixed exchange rates during the 1960s showed, Canada was able to go into a different direction regarding social policy than the U.S.A. *Courchene* (2001, 24) even argued that buying into U.S. monetary policy in the 1960s did not mean that Canada bought into U.S. social policy but that instead the opposite was the case.

Another aspect that has to be kept in mind is that unlike dollarization, which would mean the disappearance of the Bank of Canada and the likely integration of Canada's financial infrastructure into the American institutional environment, NAMU would on the one side preserve Canada's financial environment and due to my suggestions of establishing seven new Canadian Reserve Banks even improve the Canadian financial infrastructure. Furthermore, under a single currency, the national banks will still be responsible – among various other things – for monitoring and research functions, meaning that their influence on monetary and economic policy in general should not be underestimated at all.

However, even though Canada might in the future opt for monetary integration, the big question arises if the Americans would ever embrace NAMU. Among Canadians the widespread view is that the U.S.A. would never agree to NAMU which may well be true under the current U.S. administration. Nevertheless, the answer can not be a simple "no", because especially since the Euro rebounded from its mid-80 cent range to e.g. 1.1933 US-\$ in May 2003, the European single currency has become a serious competitor to the US-\$ in global portfolios and business transactions. The Euro will face an additional impact when it will be the effective circulating currency in twenty-five European countries in the future and maybe become the *de facto* currency in several more through currency boards and fixed exchange rates. Anyhow, these recent developments will cause the Americans to be in favour of having a larger formal US-\$ (or single currency area they are participating in) area as well, especially given the (traditional) U.S. proclivity to run enormous current account deficits. In addition to this, the relatively recent currency implosions in Latin America are definitely not in the economic and geopolitical interest of the U.S.A. Someone could now argue that this line of reasoning could just encourage the U.S.A. to enforce dollarization. This may well be true and therefore it seems to be more realistic that the U.S.A. would not make the first step into this direction. However, Canada has to watch the U.S. and Mexican developments closely because a dollarization in Mexico would have dramatic implications for the country, especially since there are

serious concerns about Canada's shrinking North American share of inward FDI. It should always be kept in mind that if Mexico is able to combine its existing wage advantage with a stable currency regime, its attractiveness as a North American business location would be much enhanced to the detriment of Canada. Therefore, it would be in the Canadian interest to pursue monetary integration in North America, in order not to be the "odd man out"!

Conclusions

The discussion above showed that monetary integration in North America is definitely possible if certain criteria are met and especially if Canadians and their political leaders realize the economic advantages of NAMU. Canada will sooner or later have no other choice than pursuing monetary integration in North America because there is already fear that Mexico could become the much more attractive North American business location than Canada. Nevertheless, the proposals by the former Mexican president *Vicente Fox* in terms of an eventual broadening and deepening of NAFTA, including the adoption of a common North American currency, should already be a necessary incentive for Canada to start leading this process and to seek for Mexican co-operation to convince the United States of the advantages and necessity of NAMU. Now the question arises if NAMI could be an optimum at all?

By using the proposed *multi-dimensional approach*, a currency or monetary union, being the final stage of NAMI, can only constitute an OCA if it meets the following criteria:

- geographical proximity of the (potential) members
- similar economic developments, disturbances and structure as well as intensive trade links (economic integration), in particular a high integration of the product markets as well as factor markets
- the political will of the citizens and political leaders to deepen economic integration with the neighbour countries (regions) until achieving the final stage of a complete monetary union
- a common monetary policy, preferably based on fixed exchange rates
- a central bank (e.g. NACB) being responsible not only for price stabilization but also for a wide range of common monetary policy and being controlled by political bodies (necessarily on the supranational level)
- states and state control on a national and supranational level, in order to have control over the integration process as well as to guide the integration into the right direction

After evaluating all these criteria, it has to be concluded that even the EMU does not constitute an OCA *yet* but nevertheless it should be emphasized that Europe is on a good way to become an OCA. North America now has the big advantage to observe the European developments and to be convinced that such a project of monetary integration on a larger scale can turn out successfully. Contrary to Europe,

North America has much better economic pre-conditions in terms of intra-regional trade, labour mobility and so on. Therefore it should be in the interest of Canada, the United States and Mexico as well to use this potential to successfully compete with Europe and the rest of the world in the future. However, there exists an enormous lack of political will in Canada and probably in the USA as well and therefore the process of monetary integration in North America has not yet started. As the new model of the *multi-dimensional approach* of OCA theory clearly points out, monetary integration and further on constituting an OCA always needs a political dimension which has mostly been excluded in standard OCA theory. In this light, the developed model shall be considered as a further evolution of OCA theory, representing the necessary addition of a political dimension to its famous and necessary economic dimension primarily invented by *Mundell, McKinnon* and *Kenen*.

However, if North America and in particular Canada can find a common political will for further economic integration in terms of NAMI and finally NAMU, the excellent – already existing – economic pre-conditions would certainly have the necessary impact that North American monetary integration would be the optimum for this continent and its countries. Besides that we should never forget that *national, ethic and liturgical languages are here to stay, but a common world language, understood as a second language everywhere would obviously facilitate international understanding ...*

References

- Bayoumi, Tamim, 1994, "A Formal Model of Optimum Currency Areas", *IMF Staff Papers*, 41, 537-53.
- Bayoumi, Tamim, 1997, *Financial Integration and Real Activity*, The University of Michigan Press.
- Cohen, Benjamin J., 1997, *International Trade and Finance: New Frontiers for Research*, New York, Cambridge University Press.
- Commission of the European Communities, 1990, "One Market, One Money", in: *European Economy*, No 44, October.
- Courchene, Thomas J., 2001, "A Canadian Perspective on North American Monetary Union", in: Joint NAEFA/ASSA Session, *Currency Consolidation in the Western Hemisphere*, New Orleans, Louisiana, Conference Version.
- Courchene, Thomas J. (ed.), 2002, *Money, Markets, and Mobility – Celebrating the ideas of Robert A. Mundell*, Nobel Laureate in Economic Sciences, John Deutsch Institute for the Study of Economic Policy, IRPP.
- Courchene, Thomas J. / Richard Harris, 1999, "Canada and a North American Monetary Union", www.cabe.ca/cbe/vol7_4/courchene.pdf
- De Grauwe, Paul, 2000, *Economics of Monetary Union*, 4th Edition, Oxford University Press.
- Demopoulos, George D. / Nicholas A. Yannacopoulos, 2000, "Structural Convergence and Divergence in Monetary Unions", in: Cristos C. Paraskevopoulos / Andreas A. Kintis / T. Georgakopoulos (eds.), *Global Financial Markets and Economic Development*, Studies in Economic Transformation and Public Policy, The Athenian Policy Forum Inc., APF Press, Toronto.

- Eichengreen, Barry, 1992, *Should the Maastricht Treaty Be Saved?*, Princeton Studies in International Finance No 74, International Finance Section, Princeton University, December.
- Friedman, Milton, 1953, "The Case for Flexible Exchange Rates", *Essays in Economics*, University of Chicago Press, Chicago, 157-203.
- Frankel / Rose, 1998, "The Endogeneity of the Optimum Currency Area Criteria", *The Economic Journal*, 108, 1009-1025.
- Gandolfo, Giancarlo, 2001, *International Finance and Open – Economy Macroeconomics*, Springer Verlag.
- Goodhart, Charles A.E., 1998, "The two concepts of money: implications for the analysis of optimal currency areas", *European Journal of Political Economy*, Vol. 14, 407-432.
- Grubel, Herbert G., 1999, *The Case for the Amero: The Merit of Creating a North American Monetary Union*, Fraser Institute, Vancouver.
- Hallwood, C. Paul / Ronald MacDonald, 2000, *International Money and Finance*, 3rd Edition, Blackwell Publishers, Malden Oxford.
- Harris, Richard, 2001, "North American Economic Integration: Issues and Research Agenda", in: Industry Canada, ed., *Research Publications Program*, Discussion Paper Number 10.
- Kammel, Armin J., 2003, "Optimum Currency Areas & Monetary Integration", Bachelor Thesis in Economics, University of Graz.
- Kenen, Peter B., 1969, "The Theory of Optimum Currency Areas: An Eclectic View", in: Robert A. Mundell / Alexander K. Swoboda (eds.), *Monetary Problems of the International Economy*, Chicago, University of Chicago Press, 41-60.
- Kenen, Peter B., 2002, "Currency Unions and Policy Domains", in: David M. Andrews / C. Randall Henning / Louis W. Parly (eds.), *Governing the World's Money*, Cornell University Press, Ithaca, London.
- Krugman, Paul, 1991, *Geography and Trade*, MIT Press, Cambridge, Mass.
- Krugman, Paul / Maurice Obstfeld, 2000, *International Economics*, 5th Edition, Addison-Wesley Publishing Company.
- McKinnon, Ronald, 1963, "Optimum Currency Areas", *American Economic Review* 53, 717-725.
- Melitz, Jacques, 1995, "A Suggested Reformulation of the Theory of Optimum Currency Areas", *Open Economies Review* 6, 281-98.
- Mundell, Robert A., 1961, "A Theory of Optimum Currency Areas", *American Economic Review* 51, November, 509-517.
- Pilbeam, Keith, 1998, *International Finance*, 2nd Edition, palgrave.
- Sarno, Lucio / Mark P. Taylor, 2002, *The Economics of Exchange Rates*, Cambridge University Press.
- Sebastià, Saturnino Aguado, 2003, "La Opción de la Dolarización", in: Gonzalo Rodríguez Prada (ed.), *Tipos de Cambio y Crisis Financieras*, Servicio De Publicaciones, Universidad de Alcalá.
- Tavlas, George S., 1993, "The 'New' Theory of Optimum Currency Areas", *World Economy* 16, 663-85.
- Tavlas, George S., 1994, "The Theory of Monetary Integration", *Open Economies Review* 5, 211-30.
- Trivisvavet, Thanawat, 2001, "Do East Asian Countries Constitute An Optimum Currency Area?", www.econ.duke.edu/Journals/DJE/dje2001/trivisvavet.pdf
- Zhang, Zhaoyong / Sato, Kiyotaka / McAleer, Michael, 2002, "Is East Asia An Optimum Currency Area?", www.iemss.org/iemss2002/proceedings/pdf/volume%20due/438_zhang.pdf