CENTRAL BANK OF ICELAND

WORKING PAPERS No. 10

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August 2000
CENTRAL BANK OF ICELAND
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Also available on the Central Bank of Iceland World Wide Web site (http://www.sedlabanki.is)

ISSN: 1028-9445

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Abstract

The paper considers the pros and cons for Iceland adopting the euro as legal tender. The current Icelandic monetary arrangements are contrasted both with a unilateral adoption of the euro and with a full membership in the EMU. Microeconomic transactions costs savings argue in favour of either form of monetary union. Loss of seignoirage revenues does not seem to be an economic obstacle to either form of euroisation for Iceland. Loss of the lender of last resort is, however, a powerful argument against unilateral monetary union. The optimal currency area arguments (which concern the macroeconomic stabilization aspects of a permanently fixed exchange rate) are unfavourable to a unilateral monetary union, but the case against a full membership in the EMU is more balanced. The extraneous instability and excess volatility inherent in a market-determined exchange rate dominate the shock absorber properties of a flexible exchange rate when financial markets are highly integrated. On balance, the economic arguments favour a membership in the EMU, but not the unilateral adoption of the euro. Because Iceland is not a member of the EU, the political arguments against any form of monetary union are overwhelming. Without a EU membership, the transfer of national sovereignty to the ECB would lack political legitimacy. The lack of institutions for ensuring the political accountability of the ECB in Iceland means that euroisation of Iceland is unlikely to happen, except as part of Icelandic membership in the EU. Euroisation without a membership in the EU is simply unlikely to survive.

Keywords: Icelandic exchange rate regime, optimal currency area, seigniorage, lender of last resort, central bank accountability
JEL: E42, E44, E52, E58, F33, F36, F41, G15, H77

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1. Introduction

Currency regimes are under review everywhere. Not only in transition economies, developing countries and emerging market economies, but also in some of the most industrially advanced countries of the world. On January 1, 1999, eleven of the fifteen EU members successfully launched their common currency, the euro by pooling their national monetary sovereignties in a common, supranational monetary sovereignty, institutionally expressed in a 'unitary' supranational central bank, the European Central Bank (ECB), with the member national central banks (nebs) reduced to a role rather like that of regional reserve banks in the Federal Reserve System.[1]

In view of these epochal changes taking place in Western Europe, it is not surprising that the question as to what constitutes the appropriate exchange rate regime has been raised also in Iceland. I will review the main issues that determine the answer to that question.

I will restrict the discussion to a comparison of just two currency regimes. The first is a flexible or floating exchange rate with emphasis on price stability as the final goal of monetary policy. The monetary policy regime in Iceland has gradually been evolving in this direction (see Gunnarsson [1999]). Although the current Central Bank legislation mentions several goals for monetary policy, the current consensus is that price stability should be the main one. The intermediate target of monetary policy has been exchange rate stability (stability of the effective exchange rate of the krona) within a pre-specified zone, currently ±9%. This choice of intermediate target appears to be a practical recognition of the fact that in a highly open economy like Iceland, there is a close relationship between the external value of the currency and the domestic price level. This, together with the fact that the external value of the krona is more easily monitored on a day-to-day basis than its internal purchasing power, can justify the pursuit of exchange rate stability as an intermediate target, even if no intrinsic importance is attached to the external value of the currency.

[1] Technically, the national central banks are the shareholders of the ECB. The Maastricht and Amsterdam treaties distinguish between the ECB and the European System of Central Banks (ESCB), the collective of the ECB and the national central banks. In publications of the ECB and in public statements of its Executive Board members, there are frequent references to the 'Eurosystem' (an obvious echo of the Federal Reserve System). Each national central bank provides one member of the decision-making Governing Council of the ECB (which consists of the 11 national central bank governors and 6 executive board members) and certain aspects of the implementation of the centrally determined monetary policy are administratively decentralised through the nebs. None of this detracts from the reality that the ECB/ESCB is a 'unitary' central bank. Monetary policy authority is unambiguously centralised in Frankfurt and, the nebs have effectively become the regional branch banks of the ECB.

The second currency regime is a the adoption of the euro as the national currency. Since Iceland is not a member of the European Union, EMU membership is ruled out. Unilateral adoption of the euro as Iceland's national currency and legal tender is, however an option. I will refer to this kind of monetary union as an asymmetric monetary union. Such unilateral 'euroisation' would not provide a share of the seigniorage revenues of the common currency area. There would be no automatic access to the discount window of the ECB. Neither would the ECB have any lender of last resort responsibilities vis-à-vis the financial institutions of Iceland. There would be no seat on the ECB Council or Executive Board and monetary policy by the ECB would be conducted without any reference to Iceland's economic conditions, unless this were in the national interest of Euroland, as perceived by the ECB. This can be contrasted with a full and formal monetary union, what I will call a (formally) symmetric monetary union.[2] With EU and EMU membership, Iceland would get its fair share of the Euroland-wide seigniorage; financial institutions in Iceland would have access to the discount window of the ECB on equal terms; the ECB would act as lender of last resort on the same terms and conditions in all member nations, and the monetary policy of the ECB would be directed at price stability and economic activity in Euroland as a whole, which would give a small weight to Iceland.

There are many other possible arrangements. An adjustable currency peg vis-à-vis the euro (or vis-à-vis a basket of currencies) is one. Another is a currency board, a legislatively fixed exchange rate (presumably vis-à-vis the euro) with 100% reserve backing of domestic currency issue. A third is a legislatively fixed exchange rate without 100% reserve backing of domestic currency issue, that is, with scope for domestic credit expansion.

Even if we restrict ourselves to floating or flexible exchange rate regimes, there is a wide range of possible objectives and at least two choices of monetary instruments to consider. Single nominal targets, such as inflation targets or price level targets are one, currently popular, option. Multiple targets, for instance an inflation target augmented with output gap or unemployment objectives are other popular candidates.[3] The ordering of the targets can either be lexicographic, as in the UK and in Euroland, or more symmetric, with

[2] Formal symmetry means that participating nation states share in the costs and benefits of the monetary union in a way that represents their economic size or weight, and that their representation on the decision making council of the supranational central bank (the ECB) likewise reflects their economic importance in the union. Clearly, in a formally symmetric union between countries of very different economic size, the larger member(s) will be the dominant partners.

[3] The USA is unusual in having three targets: maximum employment, price stability and interest rate stability.

non-zero weights attached to all objectives, as in the USA. The horizon over which the target or targets are to be pursued can differ, as can the operational definition of the inflation target.

In a floating exchange rate world, there are two options as regards the choice of the monetary instrument:[4] the monetary base and a short nominal interest rate. Changes in the monetary base can have as their counterpart on the asset side of the central bank balance sheet, either changes in external reserves or changes in domestic credit. In a world with unrestricted international capital mobility, the composition of the asset side of the central bank's balance sheet is irrelevant. Sterilised foreign exchange market intervention then has no effect on anything, nominal or real. In practice, no central bank I know of has ever practised monetary base control. The reason is that the velocity of circulation of the monetary base is far too noisy to make the monetary base a desirable instrument of monetary control. This leaves the cost of borrowing the monetary base, that is, the short risk-free nominal rate, as the universal monetary instrument of choice.

Iceland has unrestricted international mobility of financial capital. In a world with unrestricted financial capital mobility, and an imperfect capacity for commitment to the defence of the external value of the currency, an adjustable peg is an accident waiting to happen.[5] A legislatively fixed exchange rate (with or without the additional currency board feature) is either not fully credible, in which case it is simply another version of an adjustable peg, or it is fully credible, in which case it is an inferior substitute for full monetary union in every respect except as regards some of the symbolic trappings of national sovereignty (discussed in Section 3 below).

I approach the question about the pros and cons of Icelandic euroisation by asking why the currency regime matters. In Section 2 I review the technical economic arguments for and against a monetary union, starting with the microeconomic benefits of a common medium of exchange and the microeconomic costs of the change-over. Next is the question of seigniorage - the real resources appropriated by a national government through the issuance of non-interest-bearing bearer liabilities. The third issue is systemic financial stability and the role of the national central bank as the lender of last resort. The last economic issue is the costs and benefits of national monetary sovereignty and exchange rate flexibility from the point of view of macroeconomic stabilisation policy. This is the venerable subject of optimal currency areas. Section 3 considers the political and constitutional arguments for and against

[4] I am restricting the discussion to market-based methods of monetary control. Credit rationing etc. are not considered.

[5] See Buiter, Corsetti and Pesenti [1998].

monetary union: the substance and symbols of national sovereignty and the issue of accountability of the monetary policy makers to the electorate. Section 4 concludes.

2. Why Does the Currency Regime Matter? Economic Arguments

2.1. The microeconomics of a common currency

The transactions cost saving advantages of a common currency are familiar. A medium of exchange or transactions medium is subject to a network externality (Dowd and Greenaway [1993]). The usefulness to me of a medium of exchange is increasing in the number of other economic agents likely to accept it as a medium of exchange. By eliminating the need for the exchange of one currency for another, real resource costs are saved. From a microeconomic efficiency point of view, if one were to design the world from scratch, a single currency would be adopted.

If the status quo is a situation in which there are multiple national currencies, the permanent flow of transaction cost savings from having a common currency have to be balanced against the one-off, up-front switch over costs of moving to a common currency. Little can be said about the magnitude of the resource savings involved. Estimating them from the spreads in the foreign exchange markets will understate the true cost because it ignores the 'in-house' costs incurred by the non-bank parties in the foreign exchange transactions. It overestimates the true costs to the extent that there are monopoly profits or X-inefficiency in the foreign exchange markets.

In its report *One market, one money* (European Economy [1990]), the Commission of the European Communities estimated the permanent flow of exchange transaction costs savings at about 0.5 percent of GDP for the 15 member Community as a whole. Of course, this exercise involved the abolition of 14 national currencies and their replacement by a single currency. Icelandic euroisation would involve only the abolition of a single currency. The foreign exchange transaction costs savings should also be augmented by the transactions costs saved in transactions between instruments denominated in national currencies that would be redundant if a common currency were adopted. E.g. switching from Icelandic Treasury bills to euro-area Treasury bills would involve the sale of the Icelandic TBs, a purchase of euros and the purchase of the euro area TBs. There would be three transactions, and three sets of transaction costs. Foreign exchange market transaction costs are just one of the three. One half of one percent of GDP (if that is a indeed a reasonable estimate) may not

sound like much, but it is twice the maximal estimate of the amount of seigniorage Iceland currently gets from note issuance (see Table 1 below).

The magnitude of the switching costs for Iceland are even harder to estimate. In the case of EMU, competing estimates differed by one and sometimes two orders of magnitude. The switching costs due to this form of bounded rationality do not just involve the administrative and hardware cost of re-denominating all contracts, changing vending machines etc. but also the psychological costs of having to compute prices with a new numeraire.

A final microeconomic benefit from a common currency is the greater price transparency it creates. Price discrimination and market segmentation are discouraged when buyers can more easily engage in comparison shopping. Again, this argument relies on bounded rationality, and the magnitude of these benefits is anyone's guess.

2.2. Seigniorage

There are several ways of measuring the resources appropriated by the state through the issuance of non-interest-bearing liabilities. If both components of the monetary base (currency and banks' balances with the central bank) are unremunerated a straightforward measure of state revenue from the activities of the central bank is simply the change in the monetary base. In Iceland reserves pay interest (although less than market rates), so the seigniorage measures used here can only be viewed as upper-limit estimates.

To get a sense of magnitude, it is helpful to express this as a fraction of nominal GDP. Letting M_t denote the nominal stock of base money at the end of period t, P_t the price level and Y_t real GDP, I defined seigniorage, s_t, as follows

$$(1) \qquad s_t \equiv \frac{M_t - M_{t-1}}{P_t Y_t}$$

An alternative measure considers the interest bill foregone by having non-interest-bearing rather than interest-bearing liabilities. I denote this w_t. Let i_t be the short risk-free nominal interest rate, then

$$(2) \qquad w_t \equiv i_t \frac{M_{t-1}}{P_t Y_t}$$

A related measure of the monetary revenue of the state is the inflation tax, the reduction in the purchasing value of the outstanding stock of base money. I will refer to this as the anticipated inflation tax, denoted t_t. Let p_t be the rate of inflation,[6] then

$$(3) \qquad t_t \equiv p_t \frac{M_{t-1}}{P_t Y_t}$$

The three measures are related. Let m_t be the base money-GDP ratio[7] and g_t the growth rate of real GDP,[8] then

$$(4) \qquad s_t \equiv t_t + \frac{g_t}{1+g_t} m_{t-1} + \Delta m_t$$

and

$$(5) \qquad \sum_{j=0}^{\infty} \prod_{k=0}^{j} \frac{s_{t+j}}{1+r_{t+k}} \equiv \sum_{j=0}^{\infty} \prod_{k=0}^{j} \frac{w_{t+j}}{1+r_{t+k}} - \frac{m_{t-1}}{1+r_t}$$

Whatever the measure one uses, the revenues from the national printing presses are small beer for Iceland. Table 1 provides some illustrative seigniorage figures for Iceland. Seigniorage (the change in the stock of base money) has averaged 0.18% of GDP in the past 5 years. The interest bill foregone is slightly higher, averaging 0.28% of GDP over the past 5 years and the inflation tax is even lower, at 0.07% of GDP over the past 5 years. This reflects the low ratio of currency to GDP in Iceland, averaging 3.6% of annual GDP in the past 5 years.

TABLE 1. Seigniorage in Iceland

Year	Base Money-GDP ratio (%)	Seigniorage* (ISK billion)	s Seigniorage (% of GDP)	w** Interest bill foregone (% of GDP)	t*** Inflation tax (% of GDP)
1994	3.7	0.25	0.06	0.27	0.06
1995	3.4	-0.73	-0.16	0.27	0.06
1996	3.9	3.64	0.75	0.31	0.09
1997	3.7	0.60	0.11	0.26	0.07
1998	3.5	0.89	0.15	0.27	0.06
Average	3.6	0.93	0.18	0.28	0.07

* Change in stock of base money over the previous year. ** Interest rate is 1 year TB rate. *** Inflation rate is CPI inflation rate.

[6] $P_t/P_{t-1} = (1 + p_t)$.
[7] $m_t = M_t/P_t Y_t$.
[8] $Y_t/Y_{t-1} = (1 + g_t)$.

Neo-classical optimal public finance arguments suggest that, if the fiscal authorities do not have non-distortionary taxes at their disposal, the distortionary inflation tax will be used, together with all other distortionary taxes, in such a way as to minimise the inevitable distortions and efficiency losses, now and in the future, associated with the financing of any given public spending programme. If nations differ in the effectiveness of their tax administration, different national inflation rates may be optimal. Even in the rarefied world of these neo-classical public finance models, this argument is by no means robust. Money is an asset, as well as a medium of exchange, and there is a considerable literature suggesting that, at least in steady state, assets should not be taxed. Money can also be thought of as an intermediate input in the process transforming primary inputs into goods and services available for household consumption. There is another body of literature suggesting that taxing intermediate inputs is undesirable.

Whatever the merits of this literature, the data make it clear that modern industrial states with well-developed financial systems do not make use of the inflation tax to any significant extent.

I conclude that loss of national discretion over seigniorage is not an economic obstacle to monetary union in Iceland, even if this were to take the form of unilateral euroisation. There would be no seigniorage loss at all if Iceland were to join EMU as a member of the EU, which would ensure that Iceland would obtain a reasonable share of Euroland seigniorage revenues.

The loss of national control over the national inflation rate could be more costly from the point of view of the broadly defined inflation tax, which consists not only of the reduction in the purchasing power of the national base money stock (the anticipated inflation tax) but includes the reduction in the market value of all nominally denominated government debt, including its interest-bearing liabilities (the unanticipated inflation tax). One can visualise dire circumstances when the ability to impose a capital levy on the holders of nominal public debt (especially longer-maturity debt) through an unexpected increase in the inflation rate might be a valuable policy instrument. However, given the widespread use of indexed government debt in Iceland this argument has less force.

2.3. Financial stability: the lender of last resort

The state has a unique responsibility for dealing with systemic financial instability. The reason is that the state has deeper pockets than any private domestic agent. The state has the

monopoly of the legitimate use of coercion and force. This is expressed through its power to tax, to declare certain of its liabilities to be legal tender, and to regulate. The central bank is the state agency with the short-term deep pockets, derived from its ability to issue legal tender. If a financial crisis is not a short-lived phenomenon (a liquidity or rollover crisis), but becomes a tong-term solvency crisis for a substantial part of the financial sector, the short-term deep pockets of the central bank must be supplemented with the long-term deep pockets of the ministry of finance. A central bank that attempts to recapitalise a sizeable chunk of a bankrupt private financial sector's balance sheet would undermine its own solvency. Since the central bank does not itself have the power to tax, central bank solvency could be safeguarded only be continued monetary issuance, which would be inflationary. Non-inflationary recapitalisation of a bankrupt financial system requires the resources of the state agency with the long-term deep pockets: the ministry of finance with its power to tax.

To a minor extent, the lender of last resort function can be 'privatised', through deposit insurance, the arranging of contingent credit lines etc. For truly systemic financial crises this is inadequate.

If Iceland were to unilaterally adopt another country's currency (the euro, say) as its national currency, there is no guarantee whatsoever that the central bank of the country whose currency it has adopted will be willing to act as a lender of last resort for its financial institutions. Unilateral euroisation of this kind therefore carries a very high price tag. The discount window is closed forever and there is no lender of last resort.

2.4. Macroeconomic stabilisation: the theory of optimal currency areas revisited

My first maintained hypothesis in what follows is that the current Icelandic monetary arrangement (a price stability target and an effective exchange rate stability intermediate target) is capable of delivering, on average and in a sustained manner, an acceptably stable rate of inflation compatible with most reasonable definitions of price stability. The record of the last 10 years or so supports this assumption, as seen in Table 2, which also suggests that this price stability has not been purchased at the cost of sustained lower growth or higher unemployment.[9]

[9] Targeting very low inflation does increase the risk that the economy will end up in a liquidity trap. For a discussion of this issue see Buiter and Panigirtzoglou [1999].

TABLE 2. Inflation, Growth and Unemployment in Iceland, 1991-1998

	1991	1992	1993	1994	1995	1996	1997	1998
CPI inflation (%)	6.8	3.7	4.1	1.5	1.7	2.3	1.8	1.7
Real GNI growth (%)	3.2	-4.2	-0.9	2.7	1.9	4.8	6.2	6.9
Unemployment (%)	1.5	3.0	4.4	4.8	5.0	4.3	3.9	2.8

Source: Central Bank of Iceland and OECD.

Granted then that both the current regime and monetary union with the euro zone can deliver price stability, the macroeconomic stability issue can be narrowed down to the question as to which regime is more likely to stabilise the real economy, that is, which regime is more likely to avoid or minimise deviations of unemployment from the natural rate or departures of actual from capacity output.

My second maintained hypothesis is that the choice of exchange rate regime will have no significant impact on the path of capacity output or on the natural rate of unemployment. I therefore rule out a long-run non-vertical Phillips curve and hysteresis in the natural rate of unemployment. Temporary real shocks only have temporary real effects. Nominal shocks, whether temporary or permanent, are temporary real shocks in my world view. I recognise that monetary shocks, to the extent that they affect investment decisions of any kind (or through such features as overlapping, staggered nominal contracts), can have real effects that may last longer than the nominal rigidities that are responsible for nominal shocks having any real effects at all. I do however, maintain the assumption that money is neutral in the long run. For practical purposes, we can take the long run to be two years.

How useful a stabilisation instrument is monetary policy, working through domestic short nominal interest rates and a floating nominal exchange rate? What does a nation give up, in terms of the ability to pursue macroeconomic stabilisation policy by surrendering monetary sovereignty and joining a monetary union and how can it compensate for the loss of the monetary instrument? These are the central questions that produced the theory of optimal currency areas.

The theory of optimal currency areas (Mundell [1961], McKinnon [1963], Ingram [1969], Kenen [1969], Masson and Taylor [1992]) is one of the low points of post-World War II monetary economics. Its key failure is a chronic confusion between transitory nominal rigidities and permanent real rigidities. The result is a greatly overblown account of the power of monetary policy to affect real economic performance, for good or for bad.

The optimal currency area literature asks which of a set of national (or regional) economies each of which has its own national (regional) currency, would benefit from having irrevocably fixed exchange rates with one or more of the other currencies. The following characteristics of either the individual national economies or the multi-country system as a whole, have been argued to favour retention of the national currency, and the associated scope for nominal exchange rate flexibility.

(1) A high degree of nominal rigidity in domestic prices and/or costs.
(2) A high degree of openness to trade in real goods and services.
(3) A high incidence of asymmetric (nation-specific) shocks rather than symmetric or common shocks and/or dissimilarities in national economic structures or transmission mechanisms that causes even symmetric shocks to have asymmetric consequences.
(4) A less diversified structure of production and demand.
(5) A low degree of real factor mobility (especially labour mobility) across national boundaries.
(6) Absence of significant international (and supra-national) fiscal tax-transfer mechanisms.

2.4.1. How important are nominal cost and price rigidities in Iceland?

If there are no significant nominal cost and price rigidities, the exchange rate regime is a matter of supreme macroeconomic insignificance, Only the microeconomic transactions and switch over costs matter. A country can be mired in real rigidities, and its real economic performance will be miserable. Unless these real rigidities can be addressed effectively through nominal exchange rate variations, its performance will be equally miserable with a common currency, an independent national currency and a floating exchange rate, or with a system of universal bilateral barter.

The severity and persistence of nominal rigidities therefore becomes a key empirical and policy issue. Unfortunately, the available empirical evidence is extremely opaque and very hard to interpret. Information on the duration of nominal wage and price contracts and on the extent to which they are synchronised or staggered is subject to an obvious application of the Lucas critique. These contracting practices are not facts of nature, but the outcomes of purposeful choices. Changes in the economic environment conditioning these choices will change the practices.

Testing price and wage data for persistence is equally unlikely to be enlightening. The pattern of serial correlation in the data reflects both 'true' structural lags, invariant under

changes in the economic environment, and expectational dynamics that will not be invariant when the rules of the game are changed. There is no deep theory of nominal rigidities worth the name. Menu cost theory assumes that there are real costs associated with changing the prices of goods and services in terms of some numeraire. It does not explain why the numeraire should be money (the means of payment and medium of exchange) or what the consequences would be of a change in the numeraire. Economics has a hard enough time motivating the use of a transactions medium. It has nothing to say about why the numeraire matters. A theory of the numeraire would swiftly land us in the domain of bounded rationality, an area where conventional economists are loath to tread.

This leaves the economics profession in an uncomfortable position. We believe the numeraire matters, although we cannot explain why (using conventional economic tools). We believe that nominal wage and price rigidities are common and that they matter for real economic performance, but we do not know how to measure these rigidities, nor how stable they are likely to be under the kind of policy regime changes that are under discussion.

2.4.2. Is Iceland too small and/or too open to benefit from exchange rate flexibility?

A common theme in most optimal currency area approaches is that an economy that is more open to trade in goods and services will lose less when it gives up its national currency. It should be obvious that this proposition cannot be correct as stated. An economy that is completely closed to trade in goods and services neither gains nor loses from a macroeconomic stabilisation point of view when it adopts a common currency. If there is a relationship between degree of openness and the cost of giving up exchange rate flexibility, the relationship cannot be monotone.

A small open economy cannot use variations in its nominal exchange rate to affect its international terms of trade. If all final goods and services as well as all intermediate goods and services and raw materials are traded internationally, and if the country is small (a price-taker in the global markets), changes in the nominal exchange rate also will not affect the relative price of traded and non-traded goods (the 'real exchange rate'). However, labour services are unlikely to be internationally traded on a scale sufficient to have the domestic price of labour determined as the product of the exogenous world price of labour and the nominal exchange rate. With labour non-traded, nominal wage rigidities are sufficient to give the nominal exchange rate a (temporary) handle on the real economy, through its ability to influence relative labour costs and profitability.

Iceland is a very small economy, but not an unusually open one, as measured by imports and exports to GDP ratios. Exports were 34.6% of GDP in 1998 and imports 38.5%. This is slightly higher than the corresponding figures for the UK but significantly lower that such countries as the Netherlands, Belgium and Denmark. Iceland probably has no power to affect its external terms of trade. Its relative price of traded to non-trade goods certainly can be influenced by policy and the presence of immobile labour and nominal wage rigidity means that policy can also influence relative unit labour costs. Potentially therefore, the nominal exchange rate is a stabilisation instrument.

2.4.3. Is Iceland subject to asymmetric shocks that make monetary union with Euroland especially costly?

The 'one-size fits all' monetary policy corset inflicted on all members of a monetary union is most costly to a member state if it is subject to especially severe asymmetric shocks or if its structure is such as to cause even symmetric or common shocks to have seriously asymmetric impacts on output and employment. The proposition that a monetary union is more attractive when the structure of production and demand is well-diversified should be seen as a statement about the conditions under which asymmetric shocks are less likely.

It is true that giving up nominal exchange rate flexibility would deprive Iceland of a mechanism for responding to asymmetric shocks. While nominal exchange rate flexibility does not reduce the long-term pain of changing relative costs or prices, it can, if used properly, reduce the transitional costs of achieving the real adjustment that is required. How serious this loss is depends on how well, in practice, this mechanism has been used.

A frequently heard argument is that Iceland is likely to be subject to asymmetric supply shocks. This is because it has a large primary sector (fishing) that is subject to 'technological' shocks such as random variations in fish stocks, and to global price shocks to the price of fish. This is clearly a relevant consideration. Two point should be noted however. First, the fisheries sector, while clearly important, is not that large a share of total economic activity. The occupational distribution figures for 1996 indicated that 5.1% of the working population was engaged in *Fisheries* and another 6.0% in *Fisheries processing*. The two sectors together produced 14.4% of GDP in 1997, provided 71% of merchandise exports and 49% of total exports. About 40% of Iceland's international trade was with Euroland in 1997. The supply shocks argument presumably applies with reference to Fisheries only, not with

reference to Fisheries processing, which is just a form of manufacturing.[10] Second, it should be noted, that a flexible exchange rate can be a source of domestic price shocks (for given world fish prices) as well as a means of responding to changes in the world price of fish.

There are two further considerations that qualify the practical importance of the asymmetric shocks argument in favour of retaining nominal exchange rate flexibility. Nominal exchange rate changes are the appropriate response only to asymmetric shocks to the markets for goods and services, that is, to IS shocks and aggregate supply shocks. In response to asymmetric monetary shocks (LM shocks), a constant nominal interest rate is appropriate. In a world with perfect international financial capital mobility, a constant nominal interest rate translates into a constant expected rate of exchange rate depreciation. A fixed exchange rate is one way of delivering this optimal response to LM shocks.[11]

Second, it is important not to be excessively impressed with the efficiency of financial markets in general, and with the efficiency of the foreign exchange market in particular. Most of the time, the foreign exchange market is technically efficient, in the sense that large transactions can be made almost instantaneously, at very low transactions costs and with a minimal impact on the exchange rate.[12] Even if the foreign exchange market is technically efficient (in the weak, semi-strong or even the strong sense) and no risk-adjusted pure profits can be made, the price established in this technically efficient market may not convey the right social scarcity valuation. Rational speculative bubbles can cause an asset price like the exchange rate to differ from its fundamental valuation. Departures from technical efficiency also are common. Herding instinct, bandwagon effects and other irrational behaviour, noise traders, panic traders and traders caught in a liquidity squeeze in other financial market make for excessive volatility and sometimes quite persistent misalignments in the foreign exchange markets.

The foreign exchange market and the exchange rate can therefore be a source of extraneous shocks as well as a mechanism for adjusting to fundamental shocks. One cannot have the one without the other. The potential advantages of nominal exchange rate flexibility as an effective adjustment mechanism are bundled with the undoubted disadvantages of excessive noise and unwarranted movements in the exchange rate, inflicting unnecessary real

[10] By the same token, one would calibrate the impact of an oil price shock by the size of the oil extracting and oil exploration sectors, not including the oil refining and processing sectors.

[11] This is a straightforward extension of Poole [1970] to an open economy setting with integrated global financial markets (see Buiter [1997]).

[12] Like other financial markets, the foreign exchange markets denote at times beset by "disorderly market conditions", in which spreads widen to the point that transactions dry up and the market ceases to be efficient, even in the narrow technical sense.

adjustments on the rest of the economy. It is by no means clear that the advantages of nominal exchange rate flexibility when faced with fundamental asymmetric shocks dominate its disadvantages as a source of extraneous asymmetric shocks.

2.4.4. Is limited real resource mobility an obstacle to euroisation?

It is clear that a high degree of real factor mobility can be an effective substitute for nominal exchange rate adjustments in the face of asymmetric shocks. Indeed, factor mobility permits long-term, even permanent real adjustments to asymmetric real shocks, something nominal exchange flexibility cannot deliver.

The real factors whose mobility matters are labour and real capital. Real capital mobility is limited, even when financial capital mobility is perfect. Once real capital (plant, machinery and other equipment, infrastructure etc.) is installed, it becomes hard to shift geographically. There are some examples of 'flying capital', such as Jumbo jets and of mobile real capital (such as fishing vessels), and there have been examples of whole factories being shipped over great distances by rail, but as a first approximation, real capital cannot be relocated. New gross investment can of course be redirected across national boundaries, and financial capital mobility can facilitate this process, by permitting the decoupling of national saving and gross domestic capital formation. This is not a process that is likely to be very significant at cyclical frequencies, however, Moving the real capital stock between Iceland and Euroland through variations in gross investment flows is therefore unlikely to be an effective substitute for the short-term stabilisation potential of nominal exchange rate movements.

A similar point can be made about international labour mobility. With Iceland being a member of the European Economic Area (EEA) agreement between the EU, on the one hand, and Iceland, Norway and Liechtenstein, on the other, the legal ability of labour to move between Iceland and the EU are about the same as between any two member states of the EU.

However, since migration is costly (within as well as between nations) it is unlikely that labour mobility could mimic the impact of variations in the nominal exchange rate. Workers are only likely to move if the fixed, up-front cost of moving is compensated for by a long period of higher earnings in the country of destination. Permanent (or at least persistent) real shocks will trigger labour mobility. Nominal exchange rate flexibility only affects the real economy for a short transition period. To mimic the effect of nominal exchange rate flexibility, net cross-border migration flows would have to be reversible and significant at cyclical frequencies. It is hard to see that happening.

I conclude that cross-border mobility of real capital and of labour between Iceland and Euroland is unlikely to be an effective substitute for nominal exchange rate flexibility. However, I doubt that even within existing currency unions (like the USA or Euroland), net interregional migration flows are quantitatively important at cyclical frequencies. This means one of two things. Either, these existing currency unions are not optimal currency areas or an optimal currency area does not require a high degree of labour mobility at cyclical frequencies.

2.4.5. Is a strong supranational federal fiscal authority necessary to compensate for the loss of the exchange rate instrument?

The brief answer is 'no'. Fiscal stabilisation policy works if and to the extent that postponing taxes, and borrowing to finance the resulting revenue shortfall, boosts aggregate demand. This will be the case either if there is myopia among consumers, who fail to realise that the present value of current and future taxes need not be affected by the timing of taxes, or if postponing taxes redistributes resources between households with different propensities to consume. In overlapping generations models without an operative intergenerational gift motive, postponing taxes redistributes resources from the young to the old and from generations yet to be born to generations already alive. This will boost aggregate consumption in the short run. Intracohort heterogeneity (say through the coexistence of life-cycle consumers and current disposable income constrained consumers) can reinforce these effects.

Unless the supranational Federal Fiscal Authority in a currency union has access to the financial markets on terms that are superior to those enjoyed by the national fiscal authorities, there is nothing the Federal authorities can achieve by way of fiscal stabilisation that cannot be achieved equally well by national or even lower-tier fiscal authorities. National government financial deficits and surpluses, probably mirrored to some extent in national current account imbalances, are a perfect substitute for supranational fiscal stabilisation.

There have been a number of recent studies trying to determine the redistributive and insurance properties of Federal tax-transfer systems. A study by Bayoumi and Masson [1993], building on earlier work by Sala-i-Martin and Sachs [1992], analyses regional flows of federal taxes and transfers within the US and Canada. They try to distinguish between long-term fiscal flows (the redistributive element) and short-term responses to regional business cycles, which they identify with the stabilisation element. They find that in the US, long-run flows amount to 22 cents in the dollar while the stabilisation element is 31 cents in

the dollar. For Canada, the corresponding figures are 39 cents and 17 cents respectively. While interesting, these studies tell us nothing of relevance to the issue of whether fiscal policy in a North American Monetary Union could compensate for the loss of the exchange rate instrument. The long-term redistribution properties of the budget are irrelevant, because the nominal exchange rate is not an instrument for long-term redistribution. The stabilisation properties of the fiscal system do matter, but the necessary stabilisation can be provided at the supranational, national or subnational level. The fact that the EU has only a tiny budget and that Iceland, as a non-member, would have no access to it in any case, is therefore not a relevant consideration in determining the pros and cons of euroisation.

It is true that, to the extent that monetary union is part of a wider process of political integration, the political pressures may grow for long-term redistribution among the nations that constitute the monetary union. What the redistribution figures in the studies of Bayoumi and Masson and of Sala-i-Martin an Sachs tell us, is the degree to which the United States and Canada are societies, rather than just economies, and the extent to which notions of national solidarity are translated into redistributive measures through the tax-transfer mechanism.

I conclude that Iceland's exclusion from the Euroland tax-transfer mechanism (such as it is) is not a technical, economic obstacle to euroisation.

3. Political and Constitutional Aspects of Monetary Union

Monetary union is not just a technical economic, financial or monetary issue. It represents a very significant constitutional and political change. Monetary union raises two distinct but related political and constitutional issues: first the legitimacy of the surrender of national sovereignty involved in euroisation, and second the accountability of the monetary policy makers to the electorate or its elected representatives.

3.1. National sovereignty

Monetary union represents a surrender of national sovereignty to a supranational entity, This is true even for the full, formally symmetric monetary union. A central bank is a key agent of the state. The ability to issue legal tender is an expression of the power of the state to coerce, to prescribe and proscribe behaviour. The common use of the term 'seigniorage' to refer to the revenues accruing to the state through its monopoly of legal tender is a reminder of the fact

that the power to issue legal tender is a manifestation of the state's ability to tax. A nation that joins a monetary union surrenders its national sovereignty in the monetary domain and becomes subject to a supranational form of sovereignty. The nation state is weakened by this surrender of monetary sovereignty. I am not expressing myself on whether this would be a good thing or a bad thing for Iceland.[13] I am merely reporting the fact.

The sober reality of this partial surrender of national sovereignty is complicated by the strong symbolic significance often attached to the national currency. The irreducible minimal list of symbols that define a nation as a nation state include a national currency, along with an anthem and a flag. The emotions that are kindled when the abolition of the national currency is under discussion go beyond what can be rationalised in terms of concerns about the loss of national discretion in the use of seigniorage or the loss of the national monetary stabilisation instrument.

These constitutional issues are very clear in the case of EMU. Economic and Monetary Union in Europe is part of an ongoing process of economic and political integration in Europe, and not an isolated, 'technical', monetary arrangement. In this it differs from arrangements like the classical gold standard, which flourished between 1880 and 1914, the heyday of European imperialism and nationalism. EMU is foremost a major step on the road to 'ever closer union' in Europe. It represents the opening of a new chapter in the European federalist agenda, a significant transfer of national sovereignty to a supra-national institution.

Like EMU, Icelandic euroisation would involve a transfer of national sovereignty to the central or federal level. Unless this transfer of power is perceived as legitimate by the citizens of Iceland, this transfer of authority to the ECB will be challenged by those who perceive themselves to be adversely affected by it. In the past, common currency arrangements, including a supranational central banking system with centralised authority, have survived only when, at the time of their creation, a stronger and more legitimate federal government structure was in place than is currently the case in the EMU area. A fortiori, past common currency arrangements have been supported by a level of political integration way beyond the (minimal) level that currently exists between Iceland and the EU.[14] The EU has, at present, only a very weak, proto-confederal set-up, but it does have a Parliament, a Court and a proto-executive, made up of the Commission and the Council of Ministers. Icelandic

[13] In the context of European monetary integration, I have been an enthusiastic supporter of the surrender of national sovereignty involved in EMU. The reason is overwhelmingly political: fear and loathing of the unparalleled destructive capacities of European nationalism.

[14] I do not consider NAFTA, a regional free trade arrangement, to have any serious supranational institutional content.

euroisation would not be supported by any supranational political legitimising structures. For that reason alone, I very much doubt it could survive. Adopting the euro only to abandon it again at some later date would be messy and disruptive.

The track record of past monetary unions is instructive. For instance, monetary union in the USA was not complete until long after political unification. While one can make allowances for the war period (1776-1783) and for the Confederation period (1783-1789), even the USA monetary union created with the signing of the Constitution in 1789, was far from complete. While the constitution gave the Congress the monopoly of coinage and of the regulation of its value, the states continued to be able to charter commercial banks and to regulate their note issuance. Until the creation of the Federal Reserve System in 1914, the USA did not have a central bank, although the First Bank of the U.S. (1791-1811) and the Second Bank of the U.S. (1816-1836) can perhaps be characterised as proto central banks.[15] A monetary union with a centralised authority really did not exist in the USA until the Banking Act of 1935.

Italian monetary unification occurred in 1862, with the introduction of a new unified coinage system, based on the Sardinian lira, after political unification had been completed in 1861.[16] Centralisation of note and coin issuance and of other central bank functions did not occur until 1893.

The history of German monetary and political union in the 19th century is open to two very different interpretations. The political establishment of the German Reich in 1871, following the Franco-Prussian war, preceded the coinage acts of 1871 and 1873, which unified coinage throughout the Reich and introduced the mark and the unit of account. In 1875, the new Reichsbank (a relabelling of the Prussian bank) became the de facto central bank of the Reich. In practice, it monopolised the issuance of notes. In 1875 Germany went on the gold standard (Germany used the Franco-Prussian War indemnity of 1870 to finance the creation of a gold standard - an early example of the use of Regional Funds to facilitate monetary integration perhaps). This sequence of events suggests that political unification in Germany preceded monetary union.

Against that, the customs union (Zollverein) of 1834 was followed by the Munich Coin Treaty of 1837 and the Dresden Coinage Convention of 1838, which created a double currency standard among all members of the Zollverein (which included most members of

[15] The Federal Reserve Act was signed into law on 23 December 1913.

[16] Venetia was incorporated in 1866. The Papal States followed in 1870, when the French were otherwise engaged and could not intervene to protect their independence.

the Deutscher Bund). The 1857, the Vienna Coinage Treaty joined Austria to the Dresden arrangement. On this reading, most of the key steps towards German monetary unification were taken before political unification. It should, however, be noted, that Austria left the Vienna arrangement in 1867 following defeat in its war with Prussia. It did not join the German Reich in 1871.

German political re-unification in 1990 coincided with monetary union between the former West and East Germanies (GEMU). This is not an event with any clear implications for EMU, since GEMU was little more than a take-over of a near-bankrupt East Germany by West Germany.

There have been exceptions to the rule that political unification precedes monetary union. Even if one ignores the ambiguous German 19th century experience, the seven provinces that formed the Dutch Republic established a monetary union with only the weakest (con)federal political institutions and with almost completely decentralised fiscal authority. It lasted for two centuries, until the conquest of the Republic by Napoleon (Dormans [1991]).

Belgium and Luxembourg were in a monetary union from 1922 until they were both absorbed in Euroland in 1999. While this association is more akin to a union between an elephant and a mouse (and belongs in the France-Andorra, France-Monaco, Italy-Vatican City, Italy-San Marino, Switzerland-San Marino category), it is interesting that monetary union did not lead to far-reaching political integration between Belgium and Luxembourg.

Slightly different in nature are the currency unions adopted by contiguous former colonies following independence. The CFA Franc Zone, set up in 1959 by thirteen former French colonies in west and central Africa, survives till this day, although the CFA franc was devalued by 50 percent in 1994. The survival of the arrangement appears to owe much to the continued involvement of (and budgetary transfers from) France. The East Caribbean Currency Area, consisting of 7 former British colonies, has survived since 1966, unlike the East African Currency Area between Kenya, Uganda and Tanzania which lasted only from 1966 until 1977.

Monetary unions that occurred without prior political unification and that did not subsequently lead to political unification, have not survived. Examples include the following.

The Latin Monetary Union among France, Belgium, Switzerland and Italy, which lasted (with some temporary suspensions of convertibility by individual members) from 1865 until, de facto, World War I. The official time of death was 1927.

The Scandinavian monetary union among Sweden, Denmark and Norway, which lasted from 1873 till de facto, World War I, although the arrangements was not officially put out of its misery until 1924.

Attempts by 'successor states' to maintain monetary union following the break-up of a larger political entity, have been short-lived, with the possible exception of the 'monetary union' between the UK and Ireland (a currency board arrangement for Ireland, rather than a "symmetric" monetary union), which lasted from 1922 till 1979.

Examples of spectacular failures to maintain a common currency following a political break-up include the successor states of the Austro-Hungarian Empire following the defeat of the Habsbourg empire in World War I; the ill-fated rouble zone among 11 CIS members between 1991 and mid-1993, following the dissolution of the Soviet Union; and the collapse of the monetary union among the successor states to the Federal Republic of Yugoslavia, which dissolved in 1991.[17] All three political break-ups lead to hyperinflation.

Czechoslovakia broke up as a political union on January 1, 1993; the Czech-Slovak monetary union collapsed on February 8, 1993 (Fidrmuc and Horvath [1998]). Here the political and monetary break-up was not accompanied by hyperinflation.

I have considerable sympathy for the long-standing German position that, in the context of European Economic and Monetary Union, further political integration should have accompanied (or even preceded) monetary union.[18] On the other hand, the whole European integration experiment, from the Coal and Steel Community on, has been a political wolf dressed in economic sheep's clothing. It has been successful so far, and it may well continue to be so.[19] It is essential, however, that the European Parliament, backed by the European Court and the Ombudsman, act as an effective watchdog over the ECB. The legitimacy of the ECB will depend on the extent to which it is effectively accountable to the European Parliament. There would be no counterpart, if Iceland unilaterally adopted the euro, the European Parliament, the European Court and the Ombudsman. The transfer of national sovereignty involved in unilateral Icelandic euroisation would therefore not be perceived as legitimate.

[17] Ukraine left the rouble zone in 1992. Tajikistan did not establish its own currency until 1995.

[18] See e.g. Tietmeyer [1998a,b]. For a general discussion see Eichengreen [1996].

[19] There have been times, however, that the economics got too far ahead of the politics. The Werner Group's recommendation in 1970 of full monetary union by 1980 clearly was a bridge too far at the time.

3.2. Accountability of the monetary authority following euroisation

Monetary policy today is made by operationally independent central banks. The targets or objectives of the central bank should, of course, be politically determined. In an open, democratic society, the delegation of policy making powers to non-elected officials will only be accepted as legitimate by the citizens, if the independent central bank is accountable to the elected representatives. Accountability requires openness and transparency. The objective or objectives of the central bank must be clear and unambiguous. This is essential if the electorate and its elected representatives are to be able to judge the performance of the central bank.

The need for openness and transparency also applies to the procedures of the central bank. Individual voting records of the members of the central bank's decision making Council should be in the public domain. So should the minutes of its meetings. More elaborate and in-depth analyses of the Council's thinking (like the Bank of England's quarterly inflation report and inflation forecast) should be published regularly. An independent body (like the Non-Executive Directors of the Court of the Bank of England) should vet the procedures of the central bank and its Council on a regular basis, and should have the power to make binding recommendations.

This procedural openness and accountability is essential for two reasons. First, it is the only effective instrument of quality control for an operationally independent central bank. Second, openness, transparency and accountability of any agent of the state is a political public good.

At the core of effective accountability is the need for the Council members, collectively and individually, to justify themselves before a duly constituted parliamentary committee. In the US, the Governor of the Fed appears periodically before the Congress. In Euroland, the Subcommittee on Monetary Affairs of the European Parliament is charged with the political supervision of the ECB. In the UK, committees of both the House of Commons and the House of Lords call Monetary Policy Committee members to appear on a regular basis to explain their actions.[20]

Following unilateral euroisation by Iceland, there would be no parliament that could enforce effective accountability of the ECB. Even if Iceland were to get a seat on the ECB

[20] In the UK, there is a further dimension of political accountability. If the inflation rate departs from the politically mandated target by more than 1% in either direction, the Governor of the Bank of England has to write an open letter to the Chancellor of the Exchequer. In that letter he has to explain why the departure from the target happened, what the MPC proposes to do about it, over what time horizon it expects to be back on track and how all this is consistent with the MPC's mandate.

Council (in violation of the Amsterdam and Maastricht Treaties), the Parliament of Iceland would only be able to call its representative to account. The non-Icelandic majority on the ECB Council would be under no obligation to answer to the elected representatives of the citizens of Iceland The European Parliament could hardly be expected to act in loco parentis for the Icelandic Parliament on monetary matters. Such an arrangement would not, in my view, be acceptable to the citizens of Iceland (nor to those of Euroland).

4. Conclusion

I conclude that the economic case for unilateral Icelandic euroisation is unconvincing. The economic case for adopting the euro would be more nearly balanced, if the monetary union in question were a full, formally symmetric monetary union. This would give Iceland a reasonable share of Euroland seigniorage. It would also have the ECB assume full lender of last resort responsibilities for Icelandic financial institutions. The ECB would define its price stability and other economic objectives with reference to the entire Euroland economy. This would, of course, be a token benefit only, given Iceland's tiny weight in the Euroland economy. Finally, it would give Iceland a voice and a vote on the ECB's decision-making council. Unilateral 'euroisation', where a 'peripheral' country simply adopts the currency of another ('centre') nation, without a fair share of the common seigniorage, without access to the discount window and other lender of last resort facilities, and without a voice in the decision making processes of the centre's central bank should be of interest only to a chronically mismanaged economic basket case, whose only hope of achieving monetary stability is to unilaterally surrender monetary sovereignty. Iceland does not belong in that category.

The political arguments against unilateral euroisation are overwhelming. The absence of effective political institutions encompassing both Iceland and Euroland would mean that there could be no effective political accountability of the ECB. The surrender of political sovereignty inherent in euroisation would therefore not be perceived as legitimate by a politically sophisticated citizenry.

Critics of EMU have pointed out that the EMU is a small, flightless bird, that survives precariously in an arid environment. I actually believe that the EMU will fly, and that it will prosper, because it is part of an ongoing process of political unification in Europe. Icelandic

euroisation, however, will not fly, except as part of a wider political movement towards far-reaching political integration, that is, Icelandic membership in the EU and in EMU.

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