

Policy Discussion Forum

This section of the *Quarterly Economic Commentary (QEC)* hopes to foster debate on topics of contemporary relevance and importance for the Irish economy. Articles or comments on the topics put forward and recommendations for topics to be addressed can be set to the Editor of the *QEC*. The opinions expressed in this forum are not necessarily those held by the Editor or the ESRI. Indeed, contrary views are most welcome to enhance the policy discussion this section hopes to engender.

The paper that follows by Anthony Leddin contributes to the theme of “How can Wage Bargaining Within Social Partnership be best Modified”? last discussed in the March 2001 *QEC*.

ECONOMIC ADJUSTMENT IN EUROPEAN MONETARY UNION: THE IRISH EXPERIENCE

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1. Introduction

In discussing the costs and benefits of participating in European Monetary Union (EMU), Irish economists were well aware about the problem of adjusting to country specific or asymmetric shocks. Of particular concern was the prospect of adverse shocks such as a weakening of the sterling exchange rate, a crisis in the agricultural sector or a slowdown in the US economy.¹ These disturbances would have a disproportionate impact on the small, open Irish economy. This raised questions such as: How would a country adjust back to the natural (trend or potential) real growth rate given the constraints imposed by EMU? Would the adjustment process differ from the pre-EMU period? Would recessions or booms tend to be longer or shorter in duration and would they be more or less severe?

As things have transpired, Irish economists were unduly pessimistic. Far from suffering an asymmetric shock and recession, the Irish economy has enjoyed several years of unprecedented growth accompanied by a dramatic fall in unemployment. While the rate of economic growth may now be slowing down due to developments in the global economy and the uncertainties raised by the terrorist attack in September 2001, the Irish experience still provides valuable insights into how a small country adjusts inside EMU.

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¹ For example, Neary (1997, p. 52) notes: "... to my knowledge every university economist who has commented on the matter has expressed grave reservations about our joining EMU if sterling does not" and Leddin and Walsh (1998, p. 561) comment "In the last analysis it is foolhardy to try to predict shocks – by their nature they are unforeseen and unpredictable. All we can predict with any confidence is that shocks will occur!".

2.
**Money, Interest
Rates and the
Exchange Rate**

It is argued that EMU membership has fundamentally changed the way economies adjust to economic disturbances. In particular, the monetary sector, which in the pre-EMU period was a vital part of the adjustment mechanism, is now a potential source of instability. As a consequence, the burden of economic adjustment has shifted away from the money and foreign exchange markets to fiscal policy and the labour market. The result is that the EMU economies have far less options than in the pre-EMU period and inflation and living standards are now an essential part of the adjustment process. This also raises the issue, which has been the subject of a Policy Discussion Forum in the *Quarterly Economic Commentary* on how to design fiscal and incomes policies so as to optimise demand and supply-management practices inside EMU.

A key aspect of the adjustment process relates to the persistence of inflation differentials between member states. If purchasing power parity (PPP) theory holds in the short term, then a country with a high relative inflation rate will suffer a loss of competitiveness and adjustment back to the natural growth rate will be relatively fast. This paper presents some empirical evidence on the absolute and relative PPP theories between EMU countries. The findings are generally not supportive of PPP theory and this adds a further complication in assessing the adjustment process.

From a monetary perspective, EMU membership has a fundamental effect on how countries adjust to economic shocks. In the wide band pre-EMU period, if a particular economy was over-heating, a national central bank could be expected to introduce a deflationary monetary policy to curtail inflation. This would entail cutting the growth rate of the money supply which, in turn, would lead to an increase in interest rates and possibly an appreciation of the exchange rate. In effect, monetary policy could be largely expected to bring about the necessary adjustment. However, in EMU the national central bank is powerless to implement such a policy and so a vital part of the adjustment mechanism has been lost.

However, the situation within EMU is more involved than this because there are three possible reasons why the monetary sector may now prove to be a source of instability and actually exacerbate the adjustment problem. First, the European Central Bank's (ECB) monetary policy is geared towards the whole of the Euro area. But this in effect means that its policy stance is determined by the inflation rates in Germany, France and Italy whose economies account for over 70 per cent of the Euro area's output. If the inflation rate in a particular EMU country is out of line with the inflation rate in these large countries then the ECB's monetary policy will inevitably be inappropriate to the needs of the outlining country.² Recent examples occurred in May, August and September 2001 when the ECB cut interest rates by a total of 1 per cent at a time when Irish inflation accelerated to nearly 6 per cent (three times the ECB's upper target rate of inflation).

A second more fundamental problem relates to real interest rates (nominal interest rates adjusted for inflation). Following the introduction of the single currency in January 1999, there is only one uniform nominal interest rate in the Euro area. This interest rate is used by the ECB to

² It is assumed for exposition purposes, the three large economies are moving along the same economic trajectory.

achieve its inflation objectives.³ The current rate of 3.75 per cent represents a significant fall for the historically high interest rate countries like Ireland, Portugal, Spain, Finland and Italy. However, in 2000, inflation rates in the Euro area started to diverge. The result is that countries with higher inflation like Spain, Ireland and the Netherlands (whose economies need to deflate), experience expansionary negative real interest rates. (Compare lines 4 and 5 in Table 1, for example.) In contrast, countries like France and Germany with lower inflation experience positive real interest rates when their economies need to expand. This, unfortunately, is the opposite of what is required for adjustment back to the natural growth rate.

Negative real interest rates can, in turn, be expected to increase the demand for credit in the over-heating economies. This would certainly seem to be the case in Ireland where the money supply is rising by 20.6 per cent per annum and private sector credit by 18.2 per cent per annum in mid-2001. Being part of the Euro area, the national central banks cannot impose credit guidelines to restrict the growth of bank credit and, as such, there is little constraint on the banks from expanding their credit base.

The third potential source of instability relates to the Euro exchange rate. Given the single currency, a country with high relative inflation will experience a loss of competitiveness relative to the other EMU countries. This loss of competitiveness should act to offset the effect of the negative real interest rates and help move the economy in the required direction.

However, against non-EMU countries, the Euro exchange rate plays an important part in the adjustment process. If the Euro exchange rate is constant or appreciating then this combined with high inflation will lead to an appreciation of the real exchange rate. The competitive position of the economy will again be eroded and this will deflate the economy. If, however, the Euro should depreciate by more than the inflation differential then the result will be an improvement in competitiveness. This in effect is what has happened in Ireland since the start of the EMU system. Between January 1999 and end of 2000, Ireland's real exchange rate depreciated by 7.1 per cent against sterling and by 14.9 per cent against the dollar. Also the real trade-weighted competitiveness indicator (the new name for the real effective exchange rate index) depreciated by 5 per cent in 1999 and by 0.7 per cent in 2000 (see line 6, Table 1). In this case, the Euro exchange rate is adding a stimulus to the economy and adding to the adjustment problem.

In summary, as long as a particular EMU country is out of sync with what is happening in the large EMU countries, the monetary variables (ECB policy, the money supply, interest rates and credit) have the potential to exacerbate the adjustment problem. This effect can be offset or reinforced by movements in the Euro exchange rate. EMU membership, therefore, results not only in the loss of an important adjustment mechanism through monetary policy, but that the monetary sector itself has the potential to become a source of instability. The implication is that the burden of economic adjustment now shifts to fiscal policy and to the labour market and this fundamentally changes the way in which the economy operates.

³ The ECB's monetary policy is outlined in "The Stability-orientated Monetary Policy Strategy of the Eurosystem", European Central Bank, *Monthly Bulletin*, January 1999.

Table 1: Main Macro Indicators

Year		1998	1999	2000	2001 ^f	2002 ^f
1.	Real GDP (per cent change)	8.6	10.8	11.5	6.4	3.4
2.	Real GNP (per cent change)	7.8	8.3	10.4	4.9	2.6
3.	Unemployment	7.6	5.6	4.3	3.8	4.2
4.	Inflation	2.4	1.6	5.6	4.8	3.1
5.	Interest Rate (Main refinancing operation)	NA	3.0	4.75	4.5	NA
6.	Trade-weighted competitiveness indicator (per cent change)	NA	-5.0	-0.7	NA	NA
7.	General Government Financial Balance (per cent GDP)	2.2	2.1	4.7	4.5	4.5
8.	Average hourly earnings (per cent change)	4.6	5.8	6.2	7.8	7.8
9.	Relative unit wage costs (common currency)	-17.9	-10.9	-10.2	0.0	0.0

Notes: f = forecast, NA = not available.

Source: Rows 1, 2, 3 and 4, *Quarterly Economic Commentary*, October 2001. Dublin: The Economic and Social Research Institute.

Row 5,6,8,9 Central Bank of Ireland, *Quarterly Bulletin*, Spring 2001, Tables B1, B2, E2.

Row 7, OECD *Economic Outlook*, Preliminary Edition, June 2001.

3. The Emergence of an Output Gap in the Irish Economy Sector

The Irish economy emerged from recession in the early 1990s and since then has significantly out-performed the other EMU economies. Table 1, lines 1, 2 and 3, show the real growth rates in GDP and GNP and the unemployment rate in Ireland since 1998 and the ESRI's forecasts for 2001, 2002.⁴ The average actual growth rate in GNP between 1994-2000 was nearly 9 per cent. Normally this level of economic growth could be expected to lead to an increase in the inflation rate. However, this did not happen at least up until mid-2000. Why inflation did not rise in the early years is possibly due to the level of excess capacity in the economy. If a particular country has a:

- (1) high unemployment rate,
- (2) fast population growth,
- (3) low labour force participation rate,
- (4) high rate of productivity,

as was the case in Ireland in 1994, then that country can expand output without putting undue pressure on prices. Since 1994, the Irish labour force has increased by 30 per cent to 1,819,000 people reflecting an increase in immigration and a rise in the participation rate. This has been augmented by very high productivity rates of around 4 per cent per annum (labour productivity in the manufacturing sector increased by 11 per cent

⁴ It is not the purpose of this paper to determine the reasons for the economic boom in Ireland. A substantial literature is emerging on this issue: the literature includes Leddin and Walsh (1997), Leddin and Walsh (1998, Chapter 2), Barry (1999), Walsh (1999 and 2000), Fitz Gerald (1999), Mc Sharry and White (2000), O'Hern (1998), Sweeney (1999), Toomey Valarasan (1998) and Nolan *et. al.* (2000).

in 2000) and a fall in unemployment from 14.5 per cent to 3.6 per cent.⁵ It is largely because of this supply-side expansion that the economy was able to maintain such high non-inflationary growth rates between 1994 and 2000.

However, this situation changed in late 1999, early 2000 as the labour supply declined and the natural (trend or potential) growth rate fell. Fitz Gerald (2001), for example, comments: “*The best estimate of the potential growth rate of GNP in the Irish economy is that, while it was around 8 per cent a year between 1995 and 2000, it should fall to 5 per cent a year over the period 2000 to 2005*”.⁶ Because of this apparent fall in the natural growth rate, an output gap (difference between actual and natural growth rates) emerged and inflation started to pick-up. As the unemployment rate dipped to 3.6 per cent, inflation accelerated from 1.6 per cent to 7 per cent before falling back to 5.6 per cent in the latter half of 2000 (Table 1, lines 3 and 4). This rise in inflation is partly due to external developments such as the depreciation of the Euro exchange rate and the rise in oil prices. However, core or underlying inflation is estimated at 5 per cent and this is largely due to wage inflation in the services sector.⁷ Given the low unemployment rate and high core inflation and allowing for the slowdown in the American economy, it would seem that the rate of economic growth achieved in recent years cannot be maintained and that the economy must slow down to a more sustainable growth path. How then does the economy adjust to the natural real growth rate?

4. Open Economy Monetary Model

There are a number of economic models, which can be used to evaluate how economies adjust within a monetary union.⁸ The “open economy monetary model”, outlined in Figure 1, has the advantage of specifying most of the important markets in the adjustment process.⁹ The right-hand diagram shows how aggregate demand (AD) and aggregate supply (AS) interact to determine equilibrium in the goods and services market. The real growth rate is on the horizontal axis and inflation on the vertical axis. The vertical line indicates the natural real growth rate. If the economy is to

⁵ Potentially, a continued influx of foreign workers into Ireland could alleviate labour shortages and maintain the high growth rates indefinitely. However, differences in language and culture, rigidities in housing markets and ethnic discrimination present significant barriers to the movement of labour in the EMU.

⁶ Fitz Gerald (2001), p. 2. Other Irish papers, which discuss the natural growth rate, are Duffy *et al.* (1999), Fitz Gerald and Kearney (2000) and Kenny (1996). The IMF in a recent report estimates a natural growth rate of 7.5 per cent for the Irish economy (IMF, 2000). For a discussion of the issues involved in calculating the natural growth rate see European Central Bank, 1999, *Monthly Bulletin*, October.

⁷ Core inflation is derived by omitting volatile or exceptional prices from the overall consumer price index. See Central Bank of Ireland, “Domestic Prices, Costs and Competitiveness”, *Quarterly Bulletin*, Spring 2001, p. 29.

⁸ In a recent speech at Trinity College, Dublin, Mundell (2001), not surprisingly, used the Mundell-Fleming model to discuss macroeconomic policy in EMU. This model is, however, rather limited as it contains no supply-side and assumes that purchasing power parity (PPP) holds (inflation differentials between countries are short lived). As such it is not very useful for addressing the issues raised in this paper. Blanchard *et al.* (2001) use a model based on goods market equilibrium (the IS curve) and a Phillips curve relationship to discuss adjustment within EMU. This model does allow for the persistence of inflation differentials but does not explicitly contain a monetary sector or a supply side. As a result, the analysis omits some key aspects of the Irish experience to-date.

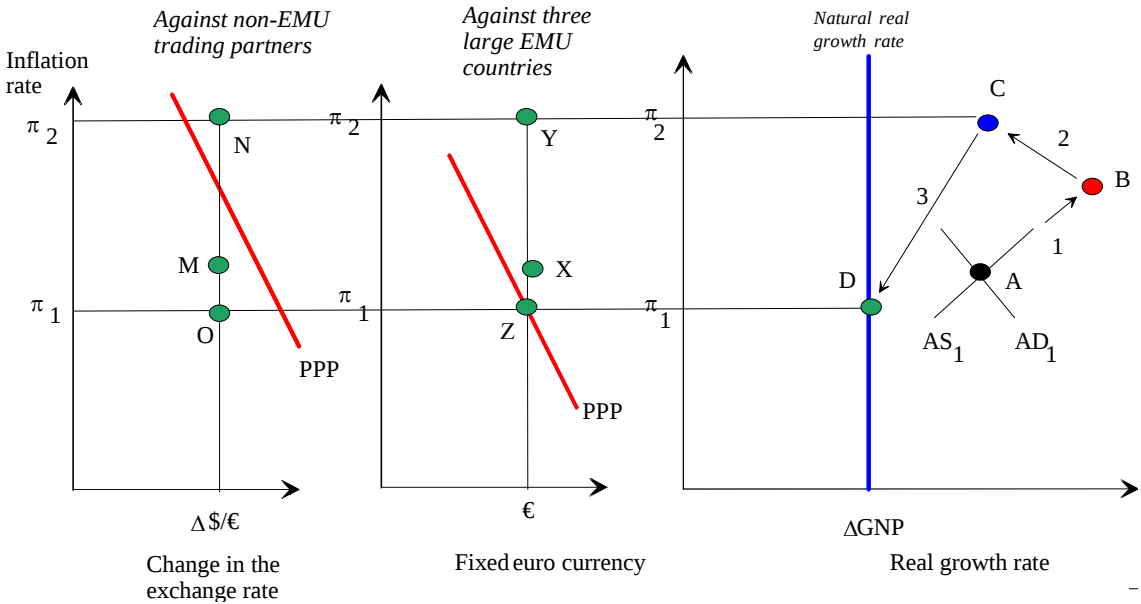
⁹ See Leddin and Walsh (1998), Chapter 20 for a detailed discussion of this model.

the right of this reference line, as shown, the economy is over-heating (operating above the natural rate). To the left, the economy is in recession as it is operating below full capacity.

The centre diagram in Figure 1 shows a relative purchasing power parity (PPP) relationship between Ireland and the three largest EMU countries (Germany, France and Italy). (See Equation (3) in Section 6 below for an exact definition of this hypothesis.) To simplify the analysis, it is assumed that these large countries are moving along the same economic trajectory. The introduction of the Euro ensures that the exchange rate is fixed between Ireland and Germany, France and Italy along the horizontal axis. The Irish inflation rate is shown along on the vertical axis. Relative PPP holds between Ireland and the three large EMU countries along the PPP line. Changes in the foreign inflation rate will shift the PPP line upwards and vice versa. If the economy is above the PPP line (point X in the diagram), the Irish economy experiences a loss of competitiveness relative to the large EMU countries. Below the PPP line the Irish economy experiences a gain in competitiveness. It is this gain or loss in competitiveness which acts to restore the relative PPP hypothesis.

The diagram on the left-hand side of Figure 1 shows a relative PPP relationship between Ireland and its non-EMU trading partners (mainly the United States and the UK). The change in the dollar/euro exchange rate is shown along the horizontal axis and, as before, the Irish inflation rate is given on the vertical axis. (It is assumed here that sterling and the dollar move in tandem.) As shown, the Irish economy is below the PPP line at the point M and this indicates a gain in competitiveness relative to Ireland's non-EMU trading partners. The competitive position would deteriorate if the euro was to appreciate relative to the dollar or Irish inflation was to increase.

Figure 1: Economic Adjustment in the Eurozone



In summary, Figure 1 illustrates a situation where the Irish economy is over-heating in the goods and services market and where there is a loss of competitiveness relative to the three large EMU countries but a gain in competitiveness relative to the non-EMU trading partners. This presentation points to a dualism in determining the competitive position of the Irish economy. A long-run sustainable position for the Irish economy is if the economy returns to the natural growth rate and relative PPP holds against the three large EMU countries and also against the non-EMU trading partners. The situation depicted in Figure 1 is a reasonably accurate description of the Irish economy in early-2001. However, due to a series of adverse economic shocks such as the continued slowdown in the global economy and the foot and mouth disease, it is probably a less accurate description of the Irish economy in late-2001. This shift in the country's economic prosperity is considered in the concluding analysis.

5. The Irish Experience

The Irish economy is depicted in Figure 1 at the points A, X and M. As mentioned, this represents a situation where the real growth rate is above the natural rate and where there is a loss in competitiveness relative to the three large EMU countries but a gain relative to Ireland's non-EMU trading partners. Given the discussion in Section 2, the monetary variables (rapid credit growth, negative real interest rates and weak euro exchange rate) could be expected to shift the AD curve further out to the right thereby increasing the actual growth rate. The slowdown in the global economy, on the other hand, could potentially impact adversely on both the AS and AD curves. If it is assumed for the moment that this adverse effect only partly offsets the expansionary demand-side effects, the Irish economy moves to a point such as B in Figure 1. That is the economy

remains to the right of the natural real growth rate and continues to over-heat.

FISCAL POLICY

Because the money and foreign exchange markets, under certain conditions, introduce a stimulus into the economy the burden of adjustment now shifts to fiscal policy. Post-EMU entry, fiscal policy takes centre stage in the adjustment process.

Leaving aside issues such as the effectiveness of fiscal policy in a small, open economy and the inappropriateness of fiscal policy in dealing with a supply-side shock,¹⁰ Keynesian theory would recommend a deflationary fiscal policy, consisting of cuts in spending and/or a rise in taxation, to curb an over-heating economy. Assuming the economy is at the point B in Figure 1, such a policy would shift the AD curve down to the left and help move the economy back to the natural growth rate and also reduce inflation. Note that while this policy would restore PPP relative to the three large EMU countries, it would increase the competitive gain relative to Ireland's non-EMU trading partners. This gain in competitiveness could act to shift the AD curve back to the right making it difficult to establish a long-run sustainable equilibrium position. Ideally, the deflationary fiscal policy should be accompanied by an appreciation of the euro exchange rate but this is not within the powers of the Irish policy-maker.

While the government's expenditure and taxation commitments are largely determined by the *National Development Plan* (NDP)

and the *Programme for Prosperity and Fairness* (PPF),¹¹ the empirical evidence suggests that the discretionary element of Irish fiscal policy has been procyclical between 1994 and 2000 (Kearney *et al.* (2000) and Lane (1998)). The rise in the budget surplus due to the economic prosperity (see line 7, Table 1) has enabled the government to introduce a series of expansionary budgets consisting of tax cuts and increases in expenditure. This destabilising fiscal policy would be a source of concern if the Irish economy were following a normal growth cycle. However, as pointed out by Kearney *et al.* (2001), if the economy is moving from one stage or development to another, (if it is in a transition phase), then an expansionary fiscal policy which enhances the supply-side of the economy may be a desirable policy option.

The current government clearly believes in the latter interpretation and argues that its policies will shift the AS curve in Figure 1 down to the right and, as such, will work to curtail inflation and maintain the fast growth rate. Furthermore, it is argued that the tax cuts are necessary to secure the continuation of the PPF agreement and prevent industrial unrest.

¹⁰ A shift of the AS curve up to the left reduces economic growth and increases inflation. If an expansionary fiscal policy was introduced to counteract this shock the result would be an improvement in the growth rate but a further increase in inflation. Hence, a demand-side policy is not an appropriate response to supply-side shock.

¹¹ The NDP proposes spending £40.6 billion (£5.3 billion per annum) over the period 2000 to 2006 on a whole range of development projects. The PPF is a three-year agreement, signed in early 2000, which covers approximately 500,000 workers out of total employment of 1,819,000. It was amended in late 2000 following an unanticipated rise in inflation and a special 2 per cent inflation-compensation award was paid in April 2001.

However, this “supply-side enhancing fiscal policy” argument has been described by Blanchard *et al.* (2001) as “implausible” and has provoked a reprimand from the European Commission and from the finance ministers of EU member states. The EU Commission view is that fiscal policy is primarily a demand-side phenomenon, which, in the short term, will exacerbate the over-heating problem.

Whatever the merits on each side of this particular debate, the Irish experience in EMU illustrates that fiscal policy cannot be relied upon to bring about the conventional Keynesian demand-management measures and curtail economic growth and inflation. The result is that the burden of adjustment now shifts to the labour market. In other words, the adjustment process has moved from money and foreign exchange markets to fiscal policy and on to the labour market.

LABOUR MARKET

The movement from the point A to B in Figure 1 results in a decline in real earnings because inflation has increased while nominal wages are unchanged. This fall in real earnings combined with the strong demand for labour and an increasingly tight supply of labour increases the demand for wages. The resulting increase in wages shifts the AS curve to the left and the economy moves to the point C. This shift of the AS curve to the left may be re-enforced by the American economic slow down as multinational companies cancel or postpone investment plans in Ireland.

To a large extent, this is what is happening in Ireland in 2001. Despite the wage agreements, *National Income and Expenditure* data show that the non-agricultural wage bill increased by 14.75 per cent in 2000. Average industrial earnings are estimated to rise by 7.8 per cent in 2001 and in 2002 (line 8, Table 1) and unions representing workers in electricity, road haulage, teachers and nurses among others have lodged claims for wage increases in excess of 30 per cent. Most of the unions are pursuing these claims through the new “benchmarking process” and, as the queues build up and the claims are processed, industrial militancy remains in abeyance.¹²

In the left-hand and centre diagrams, the rise in inflation moves the economy to the points Y and N. Both of these points are above their respective PPP lines and this represents a loss of competitiveness relative to the other EMU countries and the non-EMU trading partners. This loss of competitiveness, *ceteris paribus*, should reduce net exports and shift the AD curve (right hand diagram) down to the left. Eventually the economy should settle at the natural real growth rate, point D in the right-hand diagram. As drawn, relative PPP is re-established with the large EMU countries (point Z), but there is a competitive advantage relative to the non-EMU trading partners. It requires a fall in inflation in the US and UK (PPP line to shift to the left) or/and an appreciation of the euro exchange rate if PPP is to be established against both the EMU countries and the non-EMU trading partners. It is this dualism in the purchasing power parity relationship that makes it difficult to identify the long-run sustainable equilibrium point.

¹² The benchmarking process is essentially a job evaluation exercise where, for the purpose of awarding pay increases, jobs in the public sector will be linked to similar jobs in the private sector. One of the objectives is to break the links between certain jobs within the public sector (for example, laboratory technicians and nurses).

IMPLICATIONS

The above analysis highlights five points.

First, because the burden of adjustment has shifted away from the money and foreign exchange markets to the labour market, it is possible that the economy is far less flexible relative to the pre-EMU period. It could be hypothesised that changes in interest rates and exchange rates have a fast and significant effect on the economy whereas changing wage rates is slower and far less effective. If this is the case the implication is that the economy will be more sluggish in reacting to economic shocks. This gives rise to the probability that booms and recessions will tend to last longer and this increases the possibility of abrupt about-turns or hard landings.

One factor contributing to wage inflexibility is the PPF agreement mentioned earlier. PPF type agreements, which contain no clauses for adjusting to unanticipated inflation or indeed unsustainable high real growth rates or recession, are difficult to reconcile with membership of a monetary union. In this context, de Buitelir and Thornhill (2001) suggest modifying the current PPF agreement to include a gain sharing arrangement. Similarly, McHale (2001) proposes a deferred compensation mechanism so that the wage agreement can be used for demand-management purposes.

Second, the analysis suggests that inflation and living standards are now an integral part of the adjustment process. In an over-heating economy constrained by EMU membership it would appear that wages and inflation should increase and that there is an associated loss of competitiveness to slow economic growth. The other side of the coin is that if and when recession does arrive, it will be necessary to reduce earnings and improve competitiveness. Wage deflation is also very much part of the adjustment package. The difficulty here is the inflexibility of nominal wages in a downward direction. To counteract this a positive inflation rate may be a desirable option in order to facilitate economic adjustment in EMU. To explain this point, the percentage change in the real wage, ΔRW , is defined as:

$$\Delta RW = \Delta W - \pi \quad (1)$$

where ΔW is the percentage change in the nominal wage and π is the inflation rate. Suppose that there is a particular real wage, which is consistent with the economy being at the natural real growth rate. This real wage may change over time as the economy is subjected to adverse or favourable supply-side shocks. If, however, the economy is over-heating (point B in Figure 1), the real wage should increase to move the economy back to the natural growth rate. Given the flexibility of nominal wages in an upward direction this should not present any difficulty. If, however, the economy is in recession then it is necessary for real wages to fall. This could be achieved if the change in nominal wages was less than the inflation rate. Hence, economic adjustment from a position of recession does not require a fall in the *absolute* nominal wage. All that is required is for the rate of change in nominal wages to fall short of the inflation rate.

Given the limited adjustment options available to countries within EMU, this suggests that a certain amount of inflation may be both necessary and desirable. If the economy is in recession and inflation is very low or near zero, the absolute nominal wage would have to fall to bring about the necessary adjustment. This is, however, infeasible, as workers

are very resistant to cuts in absolute wages. The result would be a prolonged recession involving high costs in the form of lost output and high unemployment. How high the inflation rate should be to accommodate a decline in real earnings is difficult to ascertain, as it will, in general, depend on the particular economic circumstances at the time. However, it is possible that the desired inflation rate could be as high as 3 or 4 per cent which is in excess of the ECB's upper target limit of 2 per cent.¹³

The importance of inflation in the adjustment process is also emphasised by Blanchard *et al.* (2001); "*Domestic inflation ... may well be a desirable part of the adjustment process. ... inflation is the natural instrument to return the economy to equilibrium output. ... it should be not denied or dismissed, nor put off the table from the start, but accepted and explained.*" (p. 11).

Third, another potential problem is that there are no guarantees that the adjustment process will arrive at the optimum real wage or a competitive position consistent with the natural growth rate. A wage, inflation spiral could result in over-shooting giving rise to the possibility of recession or over-heating. This possibility is compounded by the difficulties in estimating the optimum real wage rate. Should, for example, productivity and changes in the euro exchange rate be included in the calculation? That is, should the optimum wage rate be calculated as the "relative unit wage cost in a common currency"? Due to the fall in the euro and a significant rise in productivity, this index decreased by 39 per cent between 1998 and 2000 indicating a significant improvement in labour force competitiveness. However, this indicator of competitiveness is forecast to stabilise in 2001 and 2002. (see line 9, Table 1).

Fourth, the analysis indicates that if a deflationary (as opposed to an expansionary) fiscal policy had been implemented, a smaller rise in wages and a smaller loss of competitiveness would be required. Starting from point A in Figure 1, for example, if the AD curve moved down to the left due to the deflationary fiscal policy (rather than up to the point B), the output gap would be reduced, there would be less pressure on wage demands and the rise in inflation would be much lower. As a result, the movement of the AS curve up to the left would be smaller. The result would be a better balance combining fiscal contraction and a smaller loss of competitiveness.

Fifth, the adjustment process depends crucially on whether or not purchasing power parity (PPP) theory holds. If relative PPP does not hold the whole adjustment process will be prolonged and recessions and booms will last longer. This issue is discussed in Section 6 below.

Up to mid-2001, the Irish economy represented a clear-cut example of an over-heating economy within EMU. After nearly nine years of rapid economic expansion and a move to full employment it was enviable the economy would slow down to a more sustainable growth path. It is somewhat unfortunate that just as the evidence relating to the effectiveness of the internal adjustment mechanisms was becoming increasingly apparent, that adverse external shocks should emerge to partly bring about the transformation. Already in 2001 the downturn in the US economy has resulted in the loss of 4,500 jobs in IDA backed companies. All the main forecasting institutions are now pointing to a slowdown in Irish economic growth in 2001 and 2002. However, it is important to emphasise that these adverse shocks are exogenous and are not part of the internal adjustment process. The external environment could just as easily

¹³ For a discussion of using inflation to reduce real wages see Akerlof *et al.* (1996).

6. Purchasing Power Parity

have moved in the other direction and accelerated the rate of growth in Ireland. For this reason it is essential to identify the internal adjustment mechanism and make the best use possible of the available fiscal and incomes policies.

An important issue is whether purchasing power parity (PPP) theory can be relied upon to bring about the necessary adjustment of prices. The *absolute* PPP hypotheses can be evaluated by testing if the real exchange rate is stationary over time. Using annual data over the period 1960-99 real exchange rates were calculated for each Euro area country relative to France and, secondly, Germany.¹⁴ In the case of Ireland and Germany the real exchange rate is defined as:

$$(P_{irl} \times e) / P_g = 100 \quad (2)$$

where P_{irl} and P_g are the Irish and German consumer price indexes and e is the nominal exchange rate. The empirical results presented in Table 1 (a), in the Appendix, suggests that the absolute PPP hypothesis does not hold between the EMU countries.¹⁵

To test the *relative* PPP hypothesis, Equation (2) was totally differentiated and the foreign inflation rate and the nominal exchange rate were brought over to the right hand side. In the case of Ireland and Germany, the equation is:

$$\pi_{rl} = \alpha + \beta(\pi_g - \Delta e) \quad (3)$$

Relative PPP theory states that the Irish inflation rate (π_{irl}) is equal to the German inflation rate (π_g) minus the percentage change in the nominal exchange rate (Δe). The empirical results given in Table 1 (b), in the Appendix, show that relative PPP holds in only a small number of instances. For example, Portugal, Luxembourg and Greece relative to France and Luxembourg and Greece relative to Germany. In no other cases can the relative PPP hypothesis be established.

Even if relative PPP could be established, the findings indicate that inflation differences between member states of the Euro area would be eliminated after about two years. This suggests that inflation differentials can persist for some time and that the adjustment back to the natural real growth rate could be slow or prolonged.

This conclusion concurs with an analysis recently published by the ECB.¹⁶ The ECB points to the persistence of inflation gaps in the American economy and explains these differences in terms of a “convergence effect” and the Balassa-Samuelson effect.¹⁷ The European

¹⁴ The data is taken from European Commission, *European Economy*, (1999) Broad Economic Policy Guidelines, No. 68 (1999).

¹⁵ See Leddin and Walsh (1998), Chapter 18 and Quinn *et al.* (1999) for a review of the Irish literature relating to PPP theory.

¹⁶ See the European Central Bank, *Monthly Bulletin*, October (1999) page 41.

¹⁷ The “convergence effect” predicts that due to the completion of the internal market, prices will converge to a common level. As a result, countries with low prices (Spain) tend to experience faster inflation, whereas countries with high prices (Germany) experience low inflation as part of the convergence process. The “Balassa-Samuelson” effect predicts that high productivity in the traded sector results in high wages. These wages are then transmitted to the non-traded sector (public sector, building and construction). “However, because of low productivity in the non-traded sector, the higher wages are pushed on in terms of higher output prices. The result is an increase in the overall consumer price index.”

7. Summary and Conclusions

economy is less integrated than the US economy and as a consequence inflation differentials are likely to persist for longer periods of time.

The main problem with the econometric results presented in the Appendix is that they are based on annual data over the period 1961-99. As such they apply only to the pre-euro area period. However, the introduction of the euro currency and the strengthening of the single market should lead to greater price transparency and reduced transaction costs and this will work in favour of the PPP hypothesis. Hence, it is quite possible that the PPP hypothesis will hold in the future even if it did not hold in the past. The empirical findings do, however, indicate that the EMU project is not starting from a particularly strong base.

At least up until mid-2001, the Irish economy was a good example of an over-heating economy whose adjustment back to the natural growth rate was constrained by EMU membership and possibly by the wrong use of domestic policy tools. The analysis in this paper raises a number of issues. First, it would seem that the monetary sector is no longer a fast and efficient clog in the adjustment mechanism but is instead a potential source of instability. That is, if the economy is over-heating then, under certain conditions, the monetary sector can actually exacerbate the problem. It follows from this that EMU membership has the fundamental effect of shifting the burden of adjustment away from the money and foreign exchange markets to fiscal policy and on to the labour market.

Second, fiscal policy may be an inadequate policy for bringing about the necessary adjustment. For example, an expansionary demand-side policy is not an appropriate response to an adverse supply-side shock. But even if it were, the Irish experience in EMU indicates that the policy-maker cannot be relied upon to implement the correct policy. The result is that the burden of adjustment in EMU largely falls on the labour market and on price convergence.

The result is that wages and inflation are an integral part of the adjustment process. Reliance on wage adjustment, however, suggests that the EMU economies are far more sluggish than heretofore and this gives rise to the possibility of abrupt about-changes or hard landings.

There is also the problem of wage inflexibility in a downward direction when the economy needs to move out of recession. A fall in real wages could be engineered if the rate of change in nominal wages was kept below the inflation rate. In this regard a positive inflation rate, even in excess of the ECB's target rate, may be a necessary and desirable option in order to facilitate the adjustment process.

This shift in the burden of adjustment to the labour market would be mitigated if relative PPP theory held in the short to medium term. That is, if differences in inflation rates provoked an immediate demand-side adjustment, economies would quickly adjust back to their natural growth rates. However, the empirical evidence presented in this paper does not support either the absolute or relative PPP hypothesis and, as such, it would appear that an "international competitiveness effect" cannot be relied upon to bring about necessary adjustment.

It is now nearly three years since Ireland joined EMU and the cost of surrendering a significant proportion of the country's economic independence is becoming increasingly apparent. To minimise these costs there should be a continuous re-evaluation by Irish policy-makers on what

is the optimal type of fiscal and incomes policies for a small, country participating in a monetary union.

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APPENDIX

The real exchange rate, which is defined in Equation (2) in the main text, were calculated and then subjected to the Dickey-Fuller test for stationary. The results, given in Table A1, indicate that all of the real exchange rates are non-stationary. This suggests that the absolute PPP hypothesis should be rejected in the case of the EMU countries.

Equation (3) in the main text represents the relative PPP hypothesis. This equation was subjected to the Engle-Granger test for cointegration. This test was carried out for all Euro area countries relative to France and, secondly, relative to Germany. The Engle-Granger statistic along with the estimated β coefficient are given in Table A2.

The findings indicate that with a few exceptions the relative PPP hypothesis does not hold. The estimated coefficients vary from a low of 0.006 between Germany and France to a high of 0.7 in the case of Portugal and France. The average β coefficient of approximately 0.33 indicates that, even if cointegration were established, it would take nearly two years for relative PPP to be re-established following some disturbance.

Table A1: Test of Absolute Purchasing Power Parity

Absolute PPP	Relative to France <i>D-F Statistic</i>	Relative to Germany <i>D-F Statistic</i>
Austria	0.8	0.7
Belgium	1.7	1.4
Finland	2.1	1.7
France		0.9
Germany	1.6	
Greece	2.4	1.8
Holland	2.2	1.7
Ireland	1.8	1.5
Italy	1.3	1.4
Luxembourg	2.7	1.4
Portugal	0.5	1.4
Spain	1.6	2.1

Note: * denotes a statistically significant variable.

Critical Value for Dickey-Fuller statistic is 3.5.

Table A2: Test of Relative Purchasing Power Parity

Relative PPP	Relative to France	E-G statistic	Relative to Germany	E-G statistic
	β Coefficient		β Coefficient	
Austria	0.16	2.1	0.39	2.3
Belgium	0.32	2.9	0.35	2.8
Finland	0.17	2.5	0.12	2.1
France			0.4	2.4
Germany	0.006	1.8		
Greece	0.6	4.6*	0.7	3.5*
Holland	0.29	1.7	0.6	2.7
Ireland	0.58	2.9	0.53	3.0
Italy	0.58	2.9	0.47	2.3
Luxembourg	0.15	6.2*	0.7	8.3*
Portugal	0.73	4.4*	0.7	3.1
Spain	0.44	3.2	0.37	2.2

Note: * denotes a statistically significant variable.

Critical Value for Engle-Granger statistic is 3.5.