

## **Continent Cut Off?**

### **The Macroeconomic Impact of British Withdrawal from the EU**

**By**

**Nigel Pain and Garry Young**

**National Institute Of Economic And Social Research**

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#### **Abstract**

This paper makes two main points. First, British trade with the rest of the EU is an important source of UK employment. Around 2.7 million jobs in the UK are directly associated with the production of goods and services currently exported to the EU. Another 0.5 million jobs are connected to the domestic and non-EU sales of large global companies who are located in the UK primarily to export to the EU market. Second, UK living standards would be adversely affected by withdrawal from the EU. Most of the jobs we have identified would not be lost if the UK were to withdraw from the EU. Widespread job losses are unlikely since real wages would adjust to changes in the demand for labour in a market economy such as the UK, and monetary policy could be relaxed to offset any deflationary shock. Our assessment is that the level of UK output would be about 2 per cent lower outside the EU than inside. Household consumption would be lower by 2½ per cent. These estimates are fairly uncertain, but they are broadly equivalent to the gains that most EU economies are estimated to have made from the Single Market Programme.

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National Institute of Economic and Social Research,  
2, Dean Trench Street,  
Smith Square,  
London SW1P 3HE,  
United Kingdom.  
Tel: 0171 222 7665.  
Fax: 0171 222 1435.  
e-mail: [gyoung@niesr.ac.uk](mailto:gyoung@niesr.ac.uk) npain@niesr.ac.uk

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## Executive Summary

The purpose of this study is to contribute to the ongoing debate over the costs and benefits to the British economy of withdrawing from membership of the European Union. Quantifying the impact of withdrawal on the British economy is a very difficult task given the range of factors that need to be considered and the absence of any up to date estimates of the overall effects of almost three decades of membership. This has involved benefits, such as active participation in the Single Market Programme, as well as costs, such as the burden of the Common Agricultural Policy.

Our analysis emphasises two main points:

- British trade with the rest of the EU is now an important source of UK employment, accounting for 2.7 million jobs. A further 0.5 million are supported by the other sources of demand for the output of those firms who export intensively to the EU. This does not necessarily mean that a similar amount of jobs are at risk if the UK was to withdraw.
- However UK living standards would be adversely affected by withdrawal from the EU, with real gross national income eventually declining by 1½ per cent and the volume of output by 2 per cent compared to the level that might otherwise have been sustained.

### **Exports To Europe And UK Employment**

One indication of the extent to which the British economy is integrated with that of the EU is provided by the number of jobs connected directly to the production of goods and services exported to the EU. We estimate this at approximately 2.7 million jobs, close to 10 per cent of the total number of jobs in the economy at present. This estimate includes those employees producing finished goods and services for export as well as those employed in supplier firms producing intermediate goods and services for exporting firms. Over a million of the jobs

linked to EU exports are in the manufacturing sector, and half a million each are in the financial intermediation and wholesale and retail sectors.

This is likely to under-estimate the total number of jobs connected to EU exports. Many firms who export to the EU also sell in other markets either at home or outside Western Europe. If these firms were not able to sell to the EU then some may fail to survive, while others may choose to relocate elsewhere. The additional jobs in these firms linked to their non-EU sales can thus also be thought of as being supported by exports to the EU. We estimate that up to an additional 0.5 million jobs may be indirectly supported in this way.

This estimate is derived using a sample of 67 of the largest exporting firms in the UK. Of these 37 were UK-owned and 30 were foreign-owned. Exports to the EU accounted for 44 per cent of the total exports of UK-owned firms, but 64 per cent of those of foreign firms. For those foreign firms with non-European parent companies the proportion of EU exports was even higher at 76 per cent. It is these firms who would be most likely to move elsewhere if exports from the UK were to be subject to EU trade barriers.

### **Quantifying The Macroeconomic Impact of Withdrawal**

Although a large number of jobs are now connected to EU exports it is unlikely that many of these would be lost permanently if Britain was to leave the EU, even if British exporters faced tariff barriers. There might be an initial decline in output, but higher unemployment would put downward pressure on wages and prices so that those losing their jobs could price themselves back into work. Monetary policy could also be adjusted to help offset any deflationary shock. As the experience of the 1960s indicates, there is no reason why being outside the EU should necessarily involve mass unemployment.

This does not mean that leaving the EU would be without cost. A deterioration in the terms of trade would reduce real gross national income, and hence living standards. Any loss of inward investment would also affect the level of output, since foreign firms are known to be an important source of technical progress in the UK economy and to help boost export performance.

There are a number of different factors which we consider in our analysis:

- EU barriers to trade and the greater administrative burden imposed by any re-introduction of border controls for exporting to the EU are estimated to raise the effective price of UK exports to the EU by around 9 per cent.
- The relocation of foreign-owned companies from this country into other countries that remain within the European Union is estimated to eventually reduce the stock of inward direct investment by one-third in manufacturing and one-tenth in distribution and financial services. This is equivalent to a reduction of £21¼ billion in the end-1997 stock.
- Lower tariff levels outside the EU are estimated to reduce the price of imported basic foodstuffs and processed food products by 20 per cent. The competitive effect of this on the price of domestically produced food products is estimated to reduce the consumer price level by a further 0.5 per cent.
- There is an ex-ante improvement in the fiscal position, with the UK government no longer making net payments of £4 billion per annum to the EU. This windfall ‘gain’ is assumed to finance a reduction in import duties of £1 billion and a £2 billion reduction in employers’ national insurance contributions to help offset short-term employment costs.

Some of these changes are of benefit to the economy, whilst others involve costs. Their combined macroeconomic impact has been calculated using simulations on the National Institute's model of the UK economy.

- The overall effect of leaving the EU is mildly deflationary. After two decades the volume of output is 2 per cent lower than might otherwise have been sustained. Real gross national income is 1½ per cent lower, implying a reduction in economic welfare.
- A pro-active monetary policy cannot prevent the long-term decline in output, but it can help to moderate the speed at which it occurs if interest rates fall and the nominal exchange rate depreciates. The main factor accounting for the output fall is a lower level of labour productivity due to the lower level of inward investment.
- There is no long-run effect on employment levels. Real wages eventually decline sufficiently to offset the effects of the fall in output on the demand for labour. However there are short-term job losses. With a pro-active monetary policy around 50,000 jobs are lost at first. Without a policy response, employment is 175,000 lower after three years.
- Consumers are relatively hard hit, despite a lower price level. Household consumption is around 2½ per cent lower than might otherwise have been the case after two decades. This is because incomes are adversely affected by a rise in effective tax rates imposed by the government in order to meet their existing targets for borrowing.

These estimates of potential losses are inevitably uncertain, and to some extent err on the side of caution, but they are broadly equivalent to the gains that most EU economies are estimated to have made from the Single Market Programme.

## **Section 1. Introduction and Overview**

The purpose of this study is to contribute to the longstanding debate over the benefits to the British economy of membership of the European Union (EU). One objective is to estimate the number of jobs that are now dependent on exports of goods and services to the other countries of the EU. This provides one indication of the extent to which the British economy is integrated with that of the EU. But our ultimate aim is to assess the macroeconomic consequences of UK withdrawal from the EU. This may involve some job losses in the short term if British consumers and firms are denied free access to European markets, but it is more likely to involve a reduction in living standards as trade is diverted to more costly markets and economies of scale in production are potentially lost. Our intention is to quantify the size of the effect of withdrawal from the EU on UK living standards and to specify the source of any adverse effects.

The European debate has taken many forms. Thirty years ago the key argument was over whether the UK should leave the European Free Trade Association and loosen historical ties with the Commonwealth in order to enter a customs union with the founder members of the then European Economic Community. As would be expected, entry into that customs union has helped to generate important changes in trade patterns, with a rising share of UK trade in goods and services now taking place with other members of that union.

More recently the European debate has centred over whether to participate in economic and monetary union and the potential impact of further European enlargement and integration. The Single Market Programme (SMP) has already pushed the process of European integration forward significantly since the middle of the 1980s and, in conjunction with the external trade policies of the EU and global tariff reduction, has generated a significant change in international trade and investment patterns, including more foreign involvement in production. The eradication of non-tariff barriers to trade and the resulting improved contestability of national markets is likely to have been of benefit to all member states. Estimates made in the mid-1990s during the evaluation of the impact of the SMP suggest that it had thus far raised the level of EU output by 1-1½ per cent (European Commission, 1996).

However this is only one aspect of European integration; the Single European Act of 1985 which laid the groundwork for the SMP also brought a substantial extension of majority voting on matters where unanimity had previously been required. National governments have

found it harder to block legislation, and the growing influence of the Community law, the *acquis communautaire*, and European social regulations on national economies have become increasingly apparent over time. In part objections to this are political, but there are also wider economic issues that should be considered, since new standards and regulations involve costs as well as benefits. There have also been important changes to the world trading system over the past two decades. Completion of the Tokyo and Uruguay rounds of trade negotiations has resulted in broad-based tariff reductions and the easing of some important non-tariff barriers. One consequence of this is that the additional costs of trading with Europe faced by many UK exporters if the UK were to leave the EU are likely to be much smaller now than they once might have been. All these factors have helped to reignite the debate over whether membership of the European Union really matters any more, since some of the benefits received over the last three decades might still be available even if the UK was to withdraw.

Of course, a full analysis of the impact of EU withdrawal is a tremendously difficult and subjective task that is beyond the scope of this study. There are few, if any, recent historical precedents for such a development. In principle one way of proceeding might be to simply assume that withdrawal causes all of the gains that have resulted from EU membership to be lost. However this is hampered by the absence of any attempts to quantify fully the gains arising from EU membership during the last 27 years (Winters, 1987). In any case some of these might be irreversible. Thus we are forced to consider matters afresh. Some of the issues we consider, such as the costs of the Common Agricultural Policy and the burden imposed by the net payments made by the UK government to the European Union, have been widely discussed for many years. Others have not yet been considered in the debate over whether to withdraw. In particular we wish to emphasise the importance of European institutions and policies for trade and cross-border investments in member states and the implications of those international linkages for the long-term growth prospects of the British economy.

In recent years there has been growing awareness that economic growth in open economies like the UK might be related to the knowledge, both codified and tacit, brought in through direct investment in the economy by foreign firms. For many years economic growth had been considered purely in terms of factor accumulation plus exogenous improvements in total factor productivity. In such a framework greater international trade and investment would not be expected to have a permanent effect on growth, although trade liberalisation and trade creation might stimulate additional capital accumulation and thus a higher level of output for

some time. It might also lead to the reaping of economies of scale and scope through greater international specialisation.

Recent theoretical and econometric studies suggest that international trade and investment may in fact have permanent effects on output and the growth process by affecting total factor productivity. A number of new growth theories stress the potential for international transfers of technology and knowledge through trade and foreign investments by multinational companies to raise technical change and the economic growth of national economies (Grossman and Helpman, 1991; Romer, 1993). These appear to be supported by recent empirical evidence that openness and international investment raise economic growth and the in the UK and other Western European economies (Proudman and Redding, 1998; Barrell and Pain, 1997, 1998 and 1999b).

Part of this process arises from the location of activity through foreign investments by multinational companies. Such investments can provide a channel through which new ideas, working practices and technologies can arrive in host economies, as well as a means by which indigenous companies are exposed to greater competitive pressures. This view is recognised in the latest government Competitiveness White Paper (DTI, 1998). If foreign firms did not possess such firm-specific assets, it would be difficult to account for their existence in a large economy such as the UK, since domestic firms could take advantage of any profitable opportunities. The location of economic activity could thus be an important endogenous influence on national growth prospects. In conjunction with the well-established evidence that European institutions and policies are an important determinant of location choice, it is clear that the size of national economies has to be viewed as partially determined by the degree of integration with Europe.

This does not necessarily mean that the number of jobs in the economy is similarly affected. In an economy such as the UK with flexible real wages, trade and investment might ultimately be expected to affect only the types of jobs available rather than the quantity. Higher unemployment would put downward pressure on wages and prices so that those losing their jobs as a consequence of trade barriers could price themselves back into work.

In this paper we attempt to quantify the potential macroeconomic costs that might result from UK withdrawal from the European Union, using our macroeconomic model of the UK economy (NiDEM). We consider the potential impact of withdrawal on trade relations, cross-

border investment decisions and UK fiscal policy and look particularly at the impact on per capita living standards in the UK.

Much depends upon the assumption about the policies pursued by the UK following withdrawal. One option might be for the government to seek to retain membership of the European Economic Area (EEA) formed in 1994, which presently comprises the EU countries plus Norway, Iceland and Liechtenstein. In one sense this would be attractive; the UK would continue to benefit in full from the SMP as the *acquis communautaire* applies throughout the EEA, and would gain the freedom to depart from the common external tariff of the EU if it so wished. However membership of the EEA runs into the problem of 'regulation without representation' (Rollo, 1995) as the UK would have little input into the decision-making process in the EU, but be forced to accept the outcomes of that process. Thus we assume below that the UK would not withdraw into the EEA, and would thus be subject to some EU (and EEA) trade and investment barriers on leaving the European Union.

A further alternative that has been raised in the European debate is that the UK instead seeks to become a member of NAFTA, which is just a free trade area rather than a customs union (Jamieson and Minford, 1999). We have not made such an assumption here, although if it were possible then part of the higher costs facing UK exporters into Europe would be offset by the lower costs facing UK exporters to North America. However moving from a customs union arrangement to a free-trade area would not be completely without cost.

Members of a free-trade area have tariff-free access to each others markets, but do not have to impose a common external tariff as in a customs union. There are some important differences between the two forms of integration. In a free trade area rules of origin typically confine tariff-free treatment to goods largely or wholly produced in that area. Firms with parent companies from outside the free-trade area would not necessarily be permitted to set up export processing facilities in one country and gain tariff-free access throughout the area. Free trade areas are also likely to have greater administrative burdens, since border controls may operate and additional paperwork is required to deal with matters such as rules-of-origin declarations. Prior to the implementation of the Single Market Programme the European Commission estimated the cost of intra-EU border controls as equivalent to 2 per cent of the value of transactions.

The plan of the remainder of this paper is as follows. In Section 2 we discuss ways of

estimating the total number of jobs in the UK which are associated with the production of goods and services exported to the European Union. This provides a sense of the scale of the relationship between Britain and the rest of the EU. It may be an under-estimate of the number of jobs associated with EU membership if some firms exporting from the UK have chosen to locate here because of UK membership of the EU. If they were to re-locate overseas then this would involve the loss of all their employment in the UK rather than just that proportion involved in producing exports to the EU. In an integrated global economy, the amount of trade between countries may significantly understate the extent to which they rely on each other.

In Section 3 we discuss the evidence linking the location choice of foreign firms to the trade policies of the European Union and attempt to quantify the potential effects on inward investment from withdrawing from the EU and foregoing the direct benefits of the Single Market Programme. We go on to discuss and quantify some of the possible macroeconomic effects of withdrawal from the EU in Section 4, before drawing some conclusions in Section 5. The factors considered include the impact of increased barriers to trade with the EU, the impact on the budgetary position of lower net transfers to the EU, the impact of lower import prices, particularly on basic and processed food products and the effects of a slower rate of technical progress.

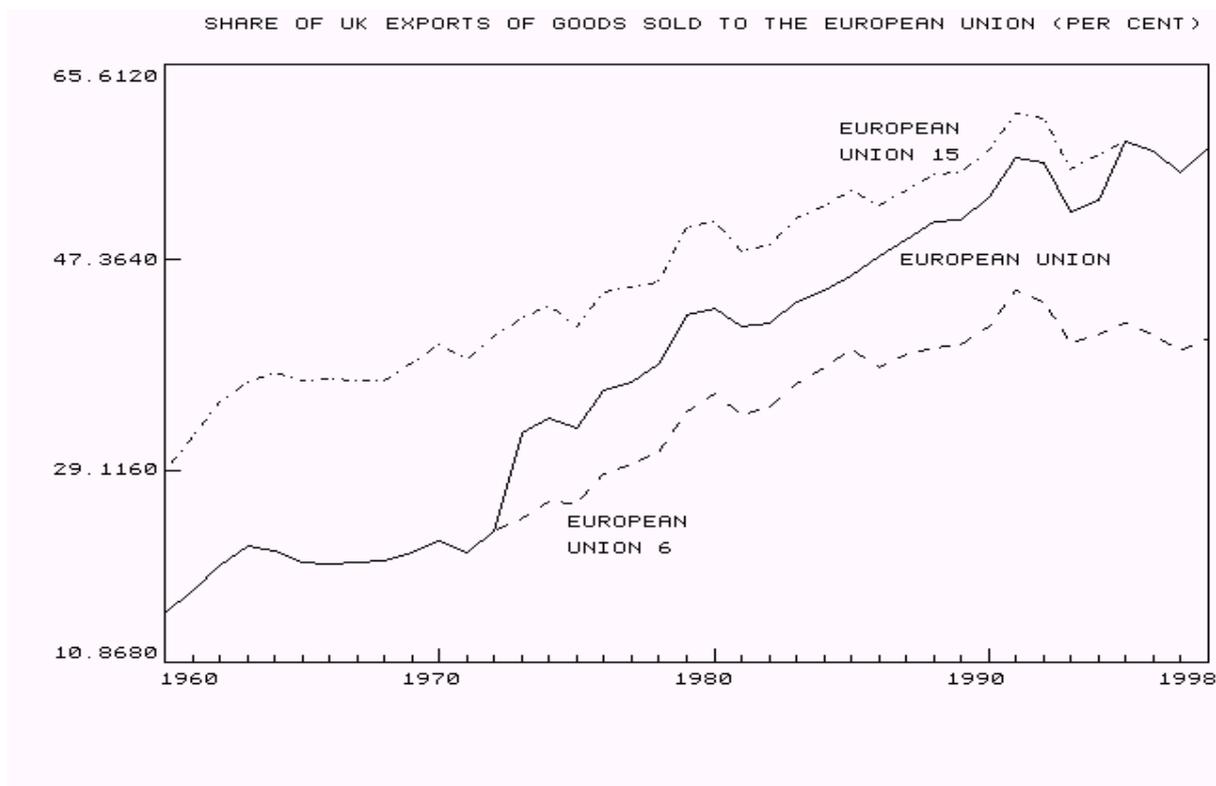
## **Section 2. UK Employment and Exports To The European Union.**

In this section we discuss different ways of providing a snapshot estimate of how many jobs in Britain in 1997 were associated with the level of exports to the rest of the EU. It should be stressed that this is purely an accounting exercise. We do not attempt to address here the counterfactual situation of what would happen if the UK's relationship with the EU were to alter in any way and how this would affect these jobs and employment more generally. This is considered in detail in Section 4 of the paper. Although we find that a large number of jobs are now associated with exports for the EU, there is no *a priori* reason to suppose that many of these, if any, would be lost permanently if Britain was to leave the European Union.

Estimating the link between trade with the EU and jobs in the UK is not a straightforward task. There are few, if any, firms who exist in the UK and export all of their value added output to the EU. The UK offers a large domestic market, and even those foreign firms who primarily use the UK as an export base, still have some sales in the domestic market. Some firms may sell a sufficiently small proportion of their output to the EU that it is not a factor in determining the number of people they employ. Conversely, other firms may be so reliant on trade with the EU that all of their jobs are in some sense connected to EU exports, even those currently linked to production for non-EU exports or for the UK market. A further complication is that exports are normally produced using intermediate inputs. Jobs in producers of intermediate goods and services are thus indirectly linked to EU sales, even if those firms do not export directly to the EU.

The share of UK exports sold to members of the European Union has risen over time, as can be seen in the chart below. In part this just reflects the growth in the membership of the EU over time, since this automatically raises the share of exports to EU members. But there has also been a steady underlying growth in the share of exports to the EU. This is shown by the long-term upward trend in the share of all exports received by the original 6 members of the EU, who now account for around two-fifths of all merchandise exports.

To begin with we ignore the fact that many firms produce goods and services destined for several markets and split the total number of jobs in the UK economy into three distinct groupings; those arising out of domestic demand, EU demand and non-EU demand.



To derive our estimates we make use of the UK national accounts, the trade statistics and input-output tables<sup>1</sup>. The most recent complete figures available are for 1997, so we use this extensively in our analysis.

## 2.1 Aggregate Exports and Employment

In 1997, there were 27.3 million jobs in the United Kingdom.<sup>2</sup> A very crude estimate of the number of these involved in the production of the goods and services exported to the EU can be obtained by noting that exports of goods and services to the EU in 1997 (£115.7 billion) were equivalent to 14.4 per cent of UK gross value added at market prices (£803.9 billion). If 14.4 per cent of workers were also engaged in the production of these goods, then approximately 3.9 million jobs were needed to service trade with the EU.

One problem with this estimate is that it is not comparing like-with-like when it looks at the value of exports in relation to the value of output. The reason for this is that the value of output is a 'value-added' measure: it measures output net of the value of intermediate inputs. By contrast, exports are measured in 'gross' terms, without deducting the value of inputs used

<sup>1</sup> Office for National Statistics (1999), 'United Kingdom National Accounts, 1999 edition'.

<sup>2</sup> Workforce jobs, annual average, source: *Labour Market Trends*, January 2000.

to produce them. Since exports of goods are likely to include some import content, the above calculation overstates the UK's contribution to their value: that is, it ignores the import content of exports.

Clearly, some adjustment needs to be made which corrects for the import content of exports. A relatively simple estimate comes from noting that the total supply of products in the UK (including intermediates) is £1845.5 billion, of which £228.8 billion is imports. Of these imports, many are final products and not intermediates. Calculating the import share of total intermediate output suggests that the UK imported approximately £96.4 billion of intermediate goods in 1997.<sup>3</sup> If the import share of exports is the same as for total output, then around 5.2 per cent of UK exports will comprise goods and services not produced in the UK. This would then indicate that the UK exported around £109.7 billion or 13.6 per cent of UK value added of £803.9 billion to the EU in 1997. If 13.6 per cent of workers were engaged in the production of these goods, then approximately 3.7 million jobs were connected to exports to the EU.

## **2.2 EU Exports By Industry**

A second difficulty with the above estimates of 3.7-3.9 million jobs is that they assume that goods and services for export have a similar labour content to those produced for domestic consumption or investment. This is unlikely to be valid. Non-tradable industries tend to be more labour intensive than tradable ones. It is also to be expected that for a capital abundant country such as the UK, the capital intensity of exports is likely to be greater than that of imports, although this may not apply to trade with the EU. Thus a better estimate of the jobs linked to EU exports can be obtained by allocating exports to jobs according to the industry in which those exports occur. Table 1 lists the number of jobs in each industry together with value-added output and the value of trade.

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<sup>3</sup> This estimate weights the imports of each type of product by the share of intermediate consumption in the total supply of each product at purchasers' prices. Thus for agriculture, intermediate imports are estimated as total imports of agricultural products (£5,696 million) multiplied by intermediate consumption of agricultural products (£18,078 million) as a ratio of the total supply of agricultural products at purchasers' prices (£29,893 million). This amounts to £3,445 million for agriculture.

**Table 1: Jobs and Value Added per Industry****£ million, except where specified**

Industry	Employment <sup>(1)</sup> (000s)	Gross value added at market prices	Value added Per job (£)	EU Exports	Non-EU Exports	EU Imports	Non-EU Imports
Agriculture	577 (80)	8 067	13 981	1177	561	2845	3098
Mining and Quarrying	70 (28)	17 737	253 386	7306	2984	974	7614
Manufacturing	4468 (1777)	212 092	47 469	88819	73877	99090	75406
Electricity, Gas and Water	164 (0)	18,001	109 762	28	43	407	21
Construction	1758 (4)	41,472	23 590	97	197	57	123
Wholesale and Retail	5999 (153)	114,977	19 166	3078	4815	3687	3948
Transport and Communication	1571 (110)	59,589	37 931	4392	7825	4688	6405
Financial Intermediation	4826 (257)	166,667	34 535	9351	19573	4248	7719
Public Administration	1904 (7)	39 020	20 494	157	445	43	26
Education, Health and Social Work	4440 (16)	85 923	19 352	324	565	425	383
Other Services	1513 (34)	40 344	26 665	969	2743	1391	1894
Total	24824 (2466)	803 889	29 457	115698	113628	117855	106637

Notes: (1) Figures in parentheses are estimates of the number of jobs connected to EU exports. See text for details.

(2) Gross value added at market prices is equal to gross value added at basic prices plus taxes less subsidies on products. We have allocated consumption of Financial Intermediary Services Indirectly Measured to Financial Intermediaries.

Most of the exports from the UK to other EU countries are in the form of exports of manufactures. As this is a relatively high value-added sector, estimates derived (as in section 2.1 above) by applying a single ratio to employment in every industry are likely to overstate the number of jobs involved in the export of goods and services to the EU. A relatively straightforward way of correcting for this is to adjust the EU exports of each industry for their imported intermediate component by multiplying by 0.948, and then to divide by value added per job to gain an estimate of the number of jobs that are associated with such exports.

This suggests that 2.5 million jobs were involved in the production of exports to the EU in 1997. The figure for each industry is shown in parentheses in the employment column in

Table 1. This estimate is substantially lower than that given by multiplying total employment by the whole economy export share. This is because the sector which exports most to the EU, the manufacturing sector, has a value added per job of £47,500 per annum, over 60 per cent higher than the national average.

### 2.3 EU Exports And Final and Intermediate Demand By Industry

The above estimate of export-related jobs by industry ignores the fact that many of the jobs to which exports give rise are not in the industry which produces the final good or service that is exported. Thus while most exports to the EU are of manufactured products, manufacturing industry itself needs to buy-in intermediate products from other industries. Jobs associated with EU exports are thus likely to be more widely distributed than indicated in Table 1.

To calculate the ultimate location of jobs generated by exports to the EU, we make use of the UK input-output tables (ONS, 1999). The domestic gross output of each industry is made up of its value added plus the intermediate goods it needs to buy in from elsewhere. The total supply of each product is given by domestic output plus imports. This in turn is equal by identity to the use to which these products give rise. This can be expressed as:

$$VA_i + M_i + \sum_j x_{ij} + PA_i = D_i + X_i + \sum_k x_{ik} \quad (1)$$

where  $VA$  is value added at basic prices,  $M$  is imports,  $x_{ij}$  is intermediate goods and services of type  $j$  purchased by industry  $i$ ,  $PA$  is a price adjustment to go from basic prices to market prices and includes distributors trading margins and indirect taxes,  $D$  is domestic final demand,  $X$  is exports and  $x_{ik}$  is intermediate products from industry  $i$  purchased by industry  $k$ . When summed over all industries, this equation reverts to the familiar national income identity.

This expression can be used to relate the number of jobs in each industry to the various sources of final and intermediate demand for that industry's products. The components of total expenditure on the RHS of (1) each account for a proportion of the gross supply of each product on the LHS. However, these proportions are unlikely to be equal. In particular, imports of final goods will be strongly related to domestic final demand. To reflect this, we can move final imports over to the RHS and deduct them from final domestic demand.

The LHS then measures the total value of domestic output of each product at purchasers' prices and the RHS measures the sources of demand. We then allocate the jobs in each industry to the sources of demand according to their share. Inevitably, this means that a large proportion of jobs are allocated to intermediate demand arising from within the same industry and from other industries. But these in turn can be traced back to the sources of demand within purchasing industries. We allocate intermediate demand according to the shares of final demand in the industry from which the intermediate demand emanates. For example, the manufacturing industry purchased £33.3 billion of products from the financial services sector in 1997. This spending is assumed to derive from domestic and export demand according to their importance in manufacturing.

Using this approach suggests that the total domestic output of manufacturing at purchasers' prices is £606.3 billion, of which £88.8 billion is exported to the EU. On this basis, exports to the EU directly account for a much smaller proportion of jobs in manufacturing than in our previous calculation. Instead the export expenditure indirectly accounts for jobs elsewhere, as shown in Table 2.

These estimates suggest that approximately 2.7 million jobs in the UK can be linked directly to exports of goods and services to the EU. This is around 1 million fewer than simple back-of-the-envelope calculations suggest, primarily because the goods and services which the UK exports to the EU have a relatively small labour content compared to the overall bundle of goods and services produced in the UK. Indeed, the corrected methodology suggests that more jobs are related to exports of goods and services to non-EU markets even though the total value of these is less than that of exports of goods and services to the EU economies. The simple reason for this is that exports to the non-EU are skewed more towards services, as can be seen from Table 1, which tend to have a greater labour content than goods.

**Table 2: Jobs And Their Ultimate Final Demand Source Per Industry**

Industry	Employment (000s)	Employment attributable to:		
		Domestic Final Demand	EU Exports	Non-EU Exports
Agriculture	577	328	143	106
Mining and Quarrying	70	2	46	22
Manufacturing	4468	2325	1157	986
Electricity, Gas and Water	164	143	11	10
Construction	1758	1695	24	38
Wholesale and Retail	5999	4843	480	676
Transport and Communication	1571	1046	213	311
Financial Intermediation	4826	3539	534	753
Public Administration	1904	1866	13	25
Education, Health & Social Work	4440	4353	34	53
Other Services	1513	1335	61	118
<b>Total</b>	<b>27290</b>	<b>21475</b>	<b>2716</b>	<b>3098</b>

There are two important factors which this estimate does not take into account. Both relate to the extent to which the jobs of those not employed in producing goods and services for export to the EU are nevertheless connected to trade with the EU.

The first concerns the behaviour of those firms who are located in the UK but rely for their existence on sales to the EU. If they could not export to the EU, or faced large barriers in attempting to do so, some might re-locate their operation to the EU. Others may simply cease trading. In this case, not only the export sales to the EU, but also export sales outside Europe and sales to UK purchasers would be produced elsewhere. UK demand for the output of such

firms would then be supplied from imports rather than domestic production, assuming that the UK did not unilaterally seek to raise tariff barriers upon leaving the EU.

The second factor concerns the sources of domestic demand. So far domestic demand has been taken as independent of exports. This ignores the fact that the incomes which sustain domestic demand are partly generated by export sales to the EU. For example, tax revenue generated by goods produced for export to the EU helps sustain government purchases of goods and services. If such sales were lost, there would inevitably be considerable short-term disruption, even if markets would eventually adjust to produce new jobs and ensure that the goods and services that the UK is capable of producing were sold elsewhere. These two factors are inevitably more difficult to measure than the number of jobs related directly to exports. But there are various pieces of evidence that might be used.

#### **2.4 Jobs Reliant on Presence of Exporting Firms**

Many firms in the UK are global corporations who produce in the UK but primarily sell in foreign markets. Without access to the EU market, many could choose to locate elsewhere inside the EU to bypass any tariff or non-tariff barriers to trade (Barrell and Pain, 1999a). Most of these are likely to be foreign owned firms. The jobs associated with their output for EU markets are already included in the calculations made above. However those calculations do not take into account the additional jobs linked directly to production for other markets.

Some tentative evidence of the number of jobs reliant on the presence of exporting firms can be derived by looking at the characteristics of the largest exporting firms in the UK. Table 3 summarises the activities in 1997 of the 85 largest UK exporters, who accounted for around 30 per cent of all exports that year and had a total turnover of £179.9 billion. Turnover is a concept broadly equivalent to gross output, in that it reflects final sales rather than value added. The figures calculated above suggest that in the manufacturing sector domestic value added is approximately £212.1 billion, whilst gross domestic output is £606.3 billion. Using the ratio of these two to convert domestic turnover into domestic value added implies that the export/turnover ratio of 38.9 per cent for the 85 firms is roughly equivalent to an exports/value-added ratio of 64½ per cent.<sup>4</sup> This raises the prospect referred to above that some of these companies would not be able to sustain a presence in the UK without unfettered access to foreign markets.

Of these, it is possible to distinguish the destination of the exports of 67 firms. The exports of these firms were worth £57.9 billion in 1997, around 25 per cent of total UK exports. The composition of these exports as between Europe and the rest of the world is very similar to the composition for the whole economy shown in Table 1, with around 54 per cent of exports destined for European markets. One important aspect of the figures is that exports comprise about 40 per cent of the turnover of these companies, suggesting that while the domestic market is the single most important market for them, export markets are also very important.

It is clear that this is particularly so for many of the foreign firms in the UK. Exports are a higher proportion of turnover for foreign companies at 44 per cent, compared with 37 per cent for domestically owned companies. It is also significant that exports to Europe are considerably more important for foreign firms than British ones. For foreign firms, exports to Europe are 64 per cent of overseas sales, whereas they represent 44 per cent for British firms.

More significant still is the importance of the European market to non-European firms in the UK. Other European-owned firms are in many ways similar to their British counterparts, exporting a similar proportion of their overall turnover to Europe and the rest of the world. By contrast, the non-European foreign firms export almost half of their turnover with the bulk, over three-quarters of exports, going to Europe. This indicates the importance of the European market to these companies. In the sample of 67 companies, there are 13 whose exports to Europe account for more than 40 per cent of their turnover (and thus almost certainly over half of their value-added output). Nine of these are foreign-owned firms and all are controlled by parent companies from non-EU locations.

These statistics can be used to help obtain a rough estimate of the additional jobs that might be connected to the domestic sales and non-EU exports of those firms who might locate elsewhere if Britain were not a member of the EU and could not be used as an export base for the whole of Europe. We make separate calculations for non-EU foreign firms and for UK and EU firms. Together they suggest that up to an additional 0.5 million jobs may also be connected to the other sales of leading exporters, although it should be remembered that these calculations are less firmly based than the earlier ones from the input-output tables.

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<sup>4</sup>  $38.9 / (38.9 + 61.1 * [212.1 / 606.3])$ .

**Table 3: The UK's Largest Exporting Companies****Leading UK Exporters, 1997 (No. of firms = 85)**

Total Exports (£m)	69,956
Turnover (£m)	179,931
Exports / Turnover	38.9%
UK Employees	892,320

**Exports By Destination**

	All Firms	UK Firms	Foreign Firms
Number of Firms	67	37	30
Total Exports (£m)	57,882	29,671	28,211
Europe Exports: (£m)	31,077	13,023	18,054
(% of total)	(53.7%)	(43.9%)	(64.0%)
Non-Europe Exports: (£m)	26,805	16,650	10,155
(% of total)	(46.3%)	(56.1%)	(36.0%)
Turnover (£m)	143,169	79,595	63,574
Total Exports / Turnover	40.4%	37.3%	44.4%
Europe Exports / Turnover	21.7%	16.4%	28.4%
Non-Europe Exports / Turnover	18.7%	20.9%	16.0%
UK Employees	704,738	505,251	199,487

**Exports of Foreign Firms**

	All Foreign Firms	European Firms	Non-European Firms
Number of Firms	30	9	21
Total Exports (£m)	28,211	9,935	18,276
Europe Exports: (£m)	18,054	4,137	13,917
(% of total)	(64.0%)	(41.6%)	(76.1%)
Non-Europe Exports: (£m)	10,155	5,798	4,357
(% of total)	(36.0%)	(58.4%)	(23.9%)
Turnover (£m)	63,574	25,156	38,418
Total Exports / Turnover	44.4%	39.5%	47.6%
Europe Exports / Turnover	28.4%	16.4%	36.2%
Non-Europe Exports / Turnover	16.0%	23.1%	11.4%
UK Employees	199,487	102,127	97,360

### 2.4.1 Foreign Firms

The 1996 Census of Production shows that 801,000 people were employed by foreign-owned firms in the UK manufacturing sector that year. Of these, 65 per cent were in firms owned by non-EU parent companies. The figures in Table 3 suggest that the European exports of non-European firms in the UK are equivalent to 36.2 per cent of their total turnover. For a sub-sample of 11 of the 21 non-EU firms information is also available on their net exports. This indicates that imports are equivalent to 39.4 per cent of gross exports. Assuming that all imports are intermediate goods used in the production of exports, and that total gross output is approximately three times the size of net output, implies that exports to the EU are 65.8 per cent of total value added. This would suggest that up to a maximum of 178,000 jobs are linked to production in the UK by non-EU foreign manufacturing firms for sales either in the UK or non-EU markets.<sup>5</sup>

This calculation makes many implicit assumptions. In particular it assumes that the activities of smaller foreign-owned manufacturing operations in the UK have a similar structure to that of the large firms represented in Table 3. However it is possible to obtain a verification of the orders of magnitude involved by using an entirely separate source of information - the detailed statistics on the operations of the foreign affiliates of US parent companies produced by the US Bureau of Economic Analysis.

These show that US manufacturing affiliates employed 421,900 people in the UK in 1997. The affiliates had value-added output of \$32.0 billion and exported \$8.1 billion back to the United States. If the share of intermediate imports in these exports was the same as for the whole economy (0.052 per cent), then around 101,000 jobs are directly linked to production for export to the US.<sup>6</sup> If the share of intermediate imports in these exports was the same as that assumed for the large non-European owned exporters in Table 3 (0.394 per cent), then the linked jobs fall to approximately 65,000. These jobs are indirectly associated with EU exports to the extent that the US affiliates were originally established in the UK in order to serve the EU market (Blair, 1987; Barrell and Pain, 1998). The range of jobs estimated here is consistent with the estimate of 178,000 for the whole population of foreign-owned firms

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<sup>5</sup>  $801,000 * 0.65 * (1 - 0.658) = 178,000$ .

<sup>6</sup>  $421,900 * [(0.948 * 8.1) / 32.0] = 101,200$ .

above, given the proportion of foreign-owned manufacturing firms in this country owned by US parent companies.

#### **2.4.2 UK Firms**

There may also be some British and European owned companies whose presence in the UK might also be contingent on their ability to export a large proportion of their output to other EU countries. In order to gain an estimate of the order of magnitude of this effect, we can note that the figures in Table 3 suggest that the European exports of these firms are equivalent to 20.9 per cent of their total turnover and that they employ 607,000 employees. For a sub-sample of 16 of the 46 companies information is also available on their net exports. This indicates that imports are equivalent to 26.9 per cent of gross exports. Assuming that all imports are intermediate goods used in the production of exports, and that total gross output is approximately 3 times the size of net output, implies that exports to the EU are approximately 46 per cent of total value added. This would suggest that approximately 330,000 jobs are also linked to production in the UK by leading UK and EU exporters for sales either in the UK or non-EU markets.

#### **2.5 Jobs Reliant on the Income Generated by Sales to the EU**

All the above calculations take account of the number of people involved in the production of goods and services sold to the EU. The income they receive and the profits that their employers earn help to sustain employment in other activities as well. In order to evaluate the possible upper limit of this, we need to trace the flow of income through the economy from exports to employment to expenditure and back to employment, taking account on the way of the response of domestic capital spending to lower sales and of government consumption to lower tax revenue.

In order to calculate the number of jobs sustained we have used our macroeconomic model of the UK economy to assess the effect on the economy of halving the level of exports of goods and services in the absence of any adjustment of wages and prices. This takes account of the various income flows through the economy and produces an estimate of how much employment would adjust to a halving of exports if there were no change in prices. It does not represent our view of what might happen if exports were to fall in this way, since labour and product markets would act to offset such a change, as would the monetary and fiscal

authorities, but it does provide a means of showing the dependence of other jobs on the incomes generated by EU exports.

The resulting estimates suggest that in the unlikely event of exports declining by 50 per cent without any changes to prices, wages or macroeconomic policies, up to 8 million employees might be affected as the effects of lower demand fed through the economy. This provides a very tentative indication of the upper limit of the amount of overall demand and employment that may be indirectly affected by demand for UK goods and services from the EU. The secondary effects on employment from the drop in exports are bigger than the direct effects, partly because the secondary effects impact much more heavily on the labour-intensive service sectors. Even if wages and prices did respond, there may be sufficient nominal rigidities in the economy to ensure that a drop in exports would cause a non-trivial reduction in final demand for some time. This is something which we shall go on to consider in more detail in the subsequent assessment of the macroeconomic impact of withdrawal from the European Union.

## **2.6 Summary**

This accounting exercise emphasises that British trade with the rest of the EU is now an important source of final demand in the economy. We estimate that 2.7 million jobs, approximately 10 per cent of the total jobs in the economy, are associated with the production of the goods and services which Britain currently sells to the EU. This is a million fewer than might be estimated on the basis of the share of EU exports in the total value added output of the British economy, primarily because most of the exports to the EU are produced in those sectors with above average levels of labour productivity.

This estimate probably understates the extent to which current UK employment is connected to EU trade, both directly and indirectly. Some firms currently located in the UK primarily in order to gain tariff-free access to the single EU market would move abroad or close down if trade with the EU were to stop. In the process jobs which exist to produce the additional goods and services they supply to the UK and non-EU markets would be foregone. Estimates of the number of such jobs are particularly uncertain given the number of assumptions that have to be made. Our best estimate is that up to 0.5 million jobs are involved, with around 0.2 million of these in foreign firms with non-European parent companies.

Although a large number of jobs are now connected to EU exports and the income which they generate, it is not the case that many of these would be lost permanently if Britain was to leave the EU. Nonetheless, trade with the EU does have indirect effects on the economy as a whole. The incomes of those involved in producing goods and services for the EU market are spent on domestic goods and services and therefore support other UK industries.

Tracing these multiplier effects through the economy would suggest that in the very unlikely event of exports declining by 50 per cent without any corresponding changes to prices, wages or macroeconomic policies, up to 8 million employees would potentially be affected as the effects of lower demand fed through the economy. In practice even if there were to be initial job losses, higher unemployment would put downward pressure on wages and prices so that those losing their jobs could price themselves back into work. Monetary policy could also be adjusted to help offset any deflationary shock. As the experience of the 1960s indicates, there is no reason why being outside the EU should necessarily involve mass unemployment.

### **Section 3. The Impact of the EU on Inward Investment**

It has long been recognised that national and supra-national trade policies can have an important effect on both the level and location of overseas investments. The initial eradication of tariff barriers within the then European Community and the adoption of a common external tariff prompted considerable empirical study into the question of whether investment was diverted into the region. Studies using data for the United States, the primary source of inward investment in postwar Europe, suggested that in the 1960s there was some investment diversion within Europe from the leading non-EC recipients, notably the UK, to EC members (United Nations, 1993). In contrast, the relative performance of the UK in attracting inward investment improved significantly following entry into the EC in 1973 (Blair, 1987), helped by the fact that foreign firms who wished to use the UK as a base for exporting to EC markets were no longer subject to the common external tariff. The accession of the UK into the EC is also thought to have helped to attract investment from Japanese companies and other EC countries (United Nations, 1993).

A similar picture has been observed in other countries that have joined the European Union in recent years. The level of inward investment into Spain (Bajo-Rubio and Sosvilla-Rivero, 1994; Barrell and Pain, 1999a) and Portugal rose significantly after their accession into the

EU in 1986. Investment in Austria, Sweden and Finland also strengthened significantly in the 1990s, following their decision to participate in the European Economic Area, and then accede into the European Union itself.<sup>7</sup> In a study of the location of US manufacturing investments in nine Western European countries since the mid-1960s, Barrell and Pain (1998) find that entry into the EU had a significant positive impact on the stock of investment in the UK, Ireland, Spain and Sweden.<sup>8</sup>

Account also needs to be taken of other trade policy instruments that impede market access. The general decline in tariff levels on industrial goods over the past 30 years has been offset by increasing reliance on non-tariff barriers, such as technical barriers to trade and anti-dumping duties. These now form an important part of the external trade policy of the European Union. Barrell and Pain (1999a) illustrate the extent to which the use of contingent protection by the EU and the US has changed the behaviour of Japanese firms, with a switch from exporting to production in the host region. As increasing use was made of anti-dumping procedures in the 1980s, FDI flows from Japan into Europe rose independently of other factors. The key objective was to locate within the EU to gain access to the regional wide market. Other European economies outside the EU gained significantly less investment. Particular locations within the EU were chosen on the basis of their cost competitiveness with other EU locations, with the UK gaining the largest share of such investments. In this instance national characteristics, such as the structure of the UK labour market, did affect the level of inward investment, but only because the supra-national tools for creating a 'closed' region forced Japanese firms to invest within Europe. Cost differentials between individual EU economies and Japan were not found to be an important factor in the investment decision.

Recognition of the importance of non-tariff barriers led to the introduction of the Single Market Programme in the EU in the late 1980s and the subsequent elimination of many internal barriers to cross-border trade and investment. This affected service sectors as well as manufacturing ones. Legislation based on the single licence principle has, for instance, facilitated market entry in banking and other financial services. The principle of mutual recognition of national standards has improved market access in areas where common

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<sup>7</sup> Inward FDI into Spain and Portugal averaged 1.03% of GDP per annum during 1981-85, and 2.04% of GDP per annum during 1986-90. Inward FDI into Austria, Finland and Sweden averaged 0.6% of GDP per annum during 1986-90, but 1.64% of GDP per annum during 1991-97 (Hubert and Pain, 1999).

<sup>8</sup> The other five members of the panel were all amongst the original founder states of the European Economic Community in 1957.

community wide standards have not been agreed. Goods approved in one member state can now circulate freely in all, with the exception of those which fail to meet particular health and safety or environmental standards which member states can still impose unilaterally. Econometric evidence suggests that, after allowing for other determinants of investment decisions, the SMP has had a significant positive impact on the level of both extra-EU investment in Europe (Dunning, 1997) and intra-EU investment by UK and German companies (Pain, 1997; Pain and Lansbury, 1997).

Membership of the dominant regional trading bloc thus appears to matter. The continued existence of external barriers to entry into the EU market has induced firms from outside the 'closed' European region to set up production facilities inside the barriers in order gain barrier and tariff-free access to the regional wide market. It is clear from econometric studies that the ongoing process of European integration has played a significant part in stimulating inward investment into the UK. Withdrawing from the EU, and possibly from the EEA as well, may put some of these gains at risk.

Of course it is not the case that inward investments would disappear overnight if the UK were to leave the EU. Many other factors affect location decisions, including relative labour costs, the availability of natural resources and other location-bound factors such as proximity to large markets or clusters of innovating firms that generate agglomeration economies (Barrell and Pain, 1997, 1998, 1999a and b). For example, the high level of non-manufacturing direct investment in the UK partly reflects the agglomeration economies available from the City of London and the availability of oil reserves in the North Sea. The existence of sunk costs and the formation of new industrial agglomerations subsequent to entry may also mean that decisions to withdraw existing investments are not the exact opposite of decisions over whether to make an initial investment.

The most likely scenario, and one we assume in this paper, is that the growth of new investments is much slower than it might otherwise be. In effect this can be characterised as foreign investors failing to modernise and extend the scale of many of their existing investments. The size of the effects we examine is calibrated from the findings of published econometric studies for the determinants of investment decisions of US, Japanese and German companies.

- For the US we use the results of Barrell and Pain (1998) for the stock of manufacturing FDI. The long-run solution to their model, which includes a dummy variable for EU membership, implies that withdrawal from the EU will eventually reduce the real value of the investment stock by almost two-thirds if all other factors stay unchanged.<sup>9</sup>
- For Japan we use the results of Barrell and Pain (1999a) for the manufacturing and non-manufacturing sectors. These models relate to the annual flow of new investments expressed as a proportion of EU GDP. Two separate changes can be quantified from their results – the impact of leaving the EU and the impact of being outside the EEA and thus potentially subject to any non-tariff trade barriers imposed by the EU. The model estimates the impact of non-tariff barriers by using the cumulative (discounted) number of anti-dumping cases initiated by the EU authorities since 1980. Using the 1999 value of EU GDP, withdrawing from the EU is estimated to reduce inward investment by £1.6 billion per annum, and being outside the EU protective wall is estimated to reduce inward investment by £1.5 billion per annum.
- For Germany we use the results of Pain and Lansbury (1997) for the stock of German FDI in five manufacturing and two service industries. This study uses dummy variables to estimate the sensitivity of investments to the SMP, with the value of the dummies varying across industry according to prior expectations of their sensitivity to the SMP measures. The UK was found to be the primary beneficiary of the SMP, with the largest gains being felt in the services sector. Using the implied long-run coefficients and the stock of inward investment from Germany as of the end of 1997 implies that withdrawal from the single market would eventually reduce the stock of manufacturing investment by £950 million, the stock of investment in distribution by £1.7 billion and the stock of investment in financial services by £1.3 billion.

Although it might be expected that similar findings would apply to inward investment from other countries, there is no direct econometric evidence of this and so we have not allowed for any additional effects in this study. Another unknown is whether there are significant linkages

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<sup>9</sup> Their model also includes two agglomeration variables – the size of the national economy relative to the EU and the size of the national research base relative to the EU, plus the relative unit labour costs of different EU locations and the stock of firm-specific assets held by US companies. The agglomeration and relative cost variables might also change if the UK withdrew from the EU, but this is not taken into account here. Letting  $S$  denote the stock of investment, and  $D$  a membership dummy which is 1 if a EU member and 0 otherwise. The long-run solution is  $\ln(S) = 1.0019D + \dots$ . As the dependent variable has a logarithmic form the exponent of the reported coefficient has to be used;  $\exp(-1.0019) = 0.367$ .

between investments in different sectors. For example, the initial stimulus to direct investment in service sectors such as banking and advertising is sometimes provided by the extent of the activities of home country clients in foreign markets (Campayne, 1992). Such linkages raise the possibility that investments in both sectors may move if something changes the desired location of one of them.

In total the effects estimated for the US, Japan and Germany imply that the stock of inward manufacturing investment will eventually be around one-third lower than would otherwise have been the case if the UK withdraws from the EU. The stock of inward investment in distribution and financial services will be around 10 per cent lower. These reductions are equivalent to a reduction of £21¼ billion in the whole economy inward investment stock as of the end of 1997. A lower level of inward investment will have implications for the likely long-term rate of growth in all three industries, and hence for the economy as a whole.

It might also be argued that withdrawal from the EU would actually encourage some new inward investments, since the UK would be free to remove Union legislation that was believed to add to business costs (Jamieson and Minford, 1999). One example might be the measures associated with the so-called 'Social Chapter'. As we noted above, the relative costs of production are one of the factors influencing location choice, so reducing labour costs might raise inward investment.

However it is unlikely that this effect will be large. First, the impact of higher business costs depends on their eventual incidence. Studies of wage formation in Europe point to the long-run absence of 'wedge' effects, so that the eventual incidence of higher employers' taxes is on the employee not the employer. Second, the SMP has coincided with a rapid growth of new investments by British companies into continental Europe. In the manufacturing sector, the level of outward investment by UK companies in EU locations is 2½ times the size of inward investment by EU-located firms, in spite of the supposed advantages offered by the more flexible labour market in the UK.<sup>10</sup> This does not suggest that the Social Chapter and the myriad of different labour market regulations in many European countries are seen by large multinational firms as obstacles that add significantly to location costs, and hence there is no reason to expect that withdrawal from the EU would bring sizable inward investments from

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<sup>10</sup> At the end of 1997 the book value of EU foreign direct investment in the UK manufacturing sector was £15.6 billion, compared to investment of £38.3 billion by UK companies in the EU manufacturing sector (Business Monitor MA4, Overseas Direct Investment 1997).

these firms. Finally, outside the EU the UK would have to compete with other economies, such as those in Central and Eastern Europe, which have lower labour costs and a reasonably skilled workforce and can offer good access to Western European markets.

#### **Section 4: The Macroeconomic Impact of Leaving the European Union.**

As we have already noted above, Britain's relationship with the EU will tend to influence living standards in the UK rather than the number of jobs. Ultimately, in a market economy, the number of jobs is determined by supply-side conditions rather than by the amount of aggregate demand. A fall in demand due to lower exports would be reflected in lower real incomes and hence lower living standards than would otherwise have been the case, but it will not affect the level of output and employment unless it has permanent effects on supply or unless there are economies of scale that are lost. In this section, we attempt to quantify the effect on the UK economy of withdrawal from the EU. We begin by discussing the various factors which we consider in this exercise, and explain the reasoning behind the assumptions we make. A related set of issues are considered by Flam (1995) and Keuschnigg and Kohler (1996), albeit from the perspective of entering the EU rather than from leaving it. It is also important to remember that there are likely to be other possible effects which we are not in a position to address. Perhaps the most important of these is any potential loss of the competitive gains engendered by the Single Market Programme, since these could have been expected to improve corporate performance (Nickell, 1996).

##### **4.1 UK-EU Trade Policy**

Membership of the European Union gives UK exporters tariff-free access to the European Economic Area. The EU itself applies a common external tariff on all imports from outside the EEA. It is likely that UK exporters would be subject to an additional tariff following withdrawal from the EU, at least until a customs union or free trade agreement could be negotiated. Tariff levels have generally come down over time, as can be seen from Table 4, and are likely to be reduced further over time as a result of agreements reached in the

Uruguay Round negotiations. High tariffs are now applied only to agricultural products and textiles and apparel in most OECD economies.<sup>11</sup>

**Table 4. Production-Weighted Average Applied Most Favoured Nation Tariff Rates (%)**

	ISIC	EU		USA		Japan	
		1989	1996	1989	1996	1989	1996
Agriculture, forestry and fishing	1	6.4	10.7	3.8	7.9	5.1	5.0
Mining and quarrying	2	0.5	0.6	0.2	0.2	0.5	0.3
Manufacturing	3	8.4	7.7	4.7	5.4	4.1	3.3
Food, drink and tobacco	31	27.4	32.5	7.6	15.9	15.6	18.9
Textiles and apparel	32	10.0	9.8	11.6	11.3	10.4	10.1
Wood and wood products	33	5.2	3.4	4.1	3.5	5.0	3.6
Paper and paper products	34	7.1	4.7	2.0	1.8	2.0	1.2
Chemicals and plastics	35	6.4	5.3	5.7	4.4	4.6	3.2
Non-metallic mineral products	36	5.5	3.9	4.9	4.5	2.9	1.5
Basic metal industries	37	5.1	3.6	4.1	3.7	4.1	3.0
Fabricated metal products	38	6.0	4.3	3.5	3.2	1.7	0.3
Other manufacturing	39	5.6	4.2	6.0	4.8	3.8	2.5
Total All Products		8.2	7.7	4.4	5.2	4.2	3.4

Source: Hoeller, Girouard and Colecchia (1998), Table 7.

Taking the EU tariff levels for 1996 shown in Table 4 and weighting them by the commodity composition of UK exports to the EU would imply an average tariff level of 6.7 per cent on UK exports to the EU. Exporters may also face some non-tariff barriers in the EU. In 1996 around 19 per cent of EU tariff lines were also affected by some form of non-tariff barrier (Hoeller et al, 1998 Table 9), although it is difficult to quantify the tariff-equivalent value of these. Withdrawal from the EU customs union would also increase the administrative burden associated with exporting to the EU by reintroducing border controls and associated paperwork. Prior to their abolition in the Single Market Programme the costs of border controls in the EU and EFTA were thought to be equivalent to around 2 per cent of transaction values (Hine, 1994; Keuschnigg and Kohler, 1996). If the total additional costs of

<sup>11</sup> Although Table 4 indicates that tariff levels on agricultural products have risen over time, this just reflects the

exporting to the EU are 8.7 per cent, then given that EU exports are presently around 57 per cent of total of goods, this translates into an ex-ante 5 per cent rise in the effective relative price of UK merchandise exports.

Outside the EU, the UK would have the freedom to impose import tariffs on products from the EU if it so wished, although the extent to which it could do so is likely to be limited by global trade agreements and the attitude of the World Trade Organisation. We have not allowed for the imposition of any additional tariffs on imports in this study.

#### **4.2 Agricultural Policy and Agricultural Imports.**

The Common Agricultural Policy (CAP) is one of the key components of the EU and the total level of expenditure by the European Commission. The primary effect of the policy is to hold agricultural prices in the EU at a level which, on average, is above the prices charged on world markets. Full analysis of the effects of this policy is beyond the scope of this study. What is apparent from Table 4 is that many governments in developed economies seek to give some protection to their agricultural sectors, and there is no reason to assume that the UK government would fail to do likewise even if we left the EU. We assume that the government would seek to maintain the same level of direct agricultural subsidies to producers upon withdrawal. These would now be paid directly by the British government rather than out of the EU Budget. However we do assume that tariff levels on imports of agricultural products would be lowered towards the average levels applied in other major economies. Comparing the EU regime with that in the United States would imply that the price of such imports might drop by around 20 per cent. This would reduce the aggregate price of imported non-manufactured goods by 5¼ per cent and reduce revenue from import duties by £1 billion per annum.

The reduction in import prices would feed automatically into domestic retail prices. In addition, it would affect the price of competing domestically produced foodstuffs, such as fruit and vegetables, which could be imported at lower world prices. Since the weight of fruit and vegetables in the consumer price index is less than 2 per cent, a large fall in domestic prices would have a relatively small effect on the overall index. We assume that these have the effect of reducing the consumer price level permanently by 0.5 per cent.

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‘tariffication’ of non-tariff barriers following the completion of the Uruguay Round negotiations.

### **4.3 Budgetary Policy.**

According to the UK national accounts, the UK paid about £4.5 billion more to the EU in 1998 than it received, the highest annual net payment to the EU in the 1990s. On average, the net payment in the 1990s (up to and including 1998) was £2.4 billion. We have assumed that UK withdrawal would lead to the British government taking over responsibility for payments made by the EU to the UK. In 1998 this amounted to £5.7 billion, including £2.9 billion in agricultural subsidies and £0.8 billion in social assistance. Other payments such as the contributions made to the EU foreign aid programme might also be reasonably expected to be taken over. We have also assumed that the government would continue to raise the funds it pays to the EU in the form of import duties and VAT, worth £1.8 billion and £3.8 billion respectively in 1998, but that it would no longer pay these to the EU. We have assumed that this would reduce net payments to the EU by £4 billion per annum.

There are many different uses to which this windfall ‘gain’ might be put. Given that there are likely to be some short-term employment costs to leaving the EU it seems reasonable to assume that additional expenditure might be used to try and alleviate these. We assume that the government would reduce employers’ national insurance contributions by £2 billion per annum and import duties by £1 billion per annum. The remaining £1 billion per annum would eventually be used to increase government spending at home or cut income taxes.

### **4.4 Foreign Direct Investment.**

As discussed above, there is evidence that the UK attracts substantial FDI because of its membership of the EU and that this in turn has helped improve productivity in the UK. In our analysis we have assumed, in line with this evidence, that exit from the EU would lead to a gradual reduction in inward FDI relative to what it would otherwise have been. In particular, over a ten year period, we allow the stock of FDI in manufacturing to fall by 30 per cent and that in distribution and business services to fall by 10 per cent relative to what they would otherwise have been.

The importance of inward investment for technical change in the UK manufacturing sector was first emphasised in Barrell and Pain (1997). Hubert and Pain (1999) find that inward investment has had an important effect on technical efficiency, and hence productivity growth, in the manufacturing, financial services and distribution sectors of the UK economy, but has not affected public services or transport and communications. These findings appear

to be robust to the presence of other potential determinants of growth such as imports, domestic R&D expenditures and human capital. They do not indicate that inward investment is the only source of technical change in the UK economy, but they do indicate that it is an important and significant one. We use their results in the simulation analyses reported below:

- A 1 per cent change in the (constant price) stock of manufacturing inward investment is estimated to eventually change the level of labour-augmenting technical progress in the manufacturing sector by 0.32 per cent.
- A 1 per cent change in the (constant price) stock of distribution and financial services inward investment is estimated to eventually change the level of labour-augmenting technical progress in those sectors by 0.135 per cent.

#### **4.5 The Macroeconomic Impact of Withdrawal**

Clearly, there is a great deal of uncertainty as to what would happen if Britain were actually to withdraw from the EU. Our assumptions are intended to be plausible estimates of what the effect might be, but we have to acknowledge that there is a large degree of doubt as to what would happen. It is also important to take into account the likely reactions of the fiscal and monetary authorities. Deflationary shocks can be offset in part by loosening monetary policy in order to attain any given monetary or inflation target. Equally, the government has to remain solvent. In order to make it easier to understand the effects of the different components of the above withdrawal package, we first describe our estimate of its overall impact and then discuss the effects of the different components individually.

##### **4.5.1 The Overall Macroeconomic Impact**

Our first set of results summarise the overall effect on the UK economy of the various changes discussed above. The main case assumes that interest rates are set to target the inflation rate and the present exchange rate is determined by interest rate differentials and expectations of the future exchange rate. To illustrate the importance of this monetary rule we also report the outcome if it were assumed that interest rates and the exchange rate did not change. The key results are shown in Chart 1. The panels show how various economic aggregates are affected by UK withdrawal by comparing the simulated outcome, showing the development of the economy under withdrawal, with a *status quo* base case of no exit. Each

panel shows the difference between these cases under two different monetary policy assumptions.

UK output is shown to be reduced by around 2 per cent after twenty years as a consequence of EU withdrawal, irrespective of the monetary policy assumption. This latter result arises because the real side of the economy is independent of monetary policy in the long run. Instead the main influence on growth and the level of income is productivity, determined by the skills of the workforce, capital and technology. The main factor explaining the lower level of output is the reduction in technological progress arising from lower inward investment. The various sectors of the economy are affected in different ways by EU withdrawal. Manufacturing is particularly hard hit by the reduction in technical progress as inward investment falls and by the effects of higher tariffs on exports. Manufactured exports fall by over 8 per cent in the long run as a consequence.

The effect of EU withdrawal on employment itself is relatively small in relation to the change in output. After twenty years it is within 0.1 per cent of the level it would have reached in the base case. In the short term, there is downward pressure on employment as the economy contracts. The extent of the fall depends on how monetary policy operates. If monetary policy is relaxed as the economy contracts, then the maximum decline in employment is less than 50,000. If interest rates and the exchange rates do not fall, then employment would fall by around 175,000 after three years as a result of UK exit from the EU. The reason for the relatively small decline in employment in spite of a large shock to output is that wages fall in real terms as the labour market slackens. This makes labour relatively more attractive to companies, compensating for the effect of lower demand. It is also the case that with lower labour-saving technological progress, firms need relatively more labour for each unit of output. This is brought out in a reduction of productivity of about 2 per cent.

As well as lower national output, EU withdrawal would have an additional effect on household income as a consequence of a higher income tax rate and because of changes in the income distribution. While government finances are improved in the short run by withdrawal, in the longer term the effective tax rate needs to be raised to ensure that the government remains solvent for given levels of expenditure. This is because the permanent reduction in output has a permanent effect on the level of revenue unless effective tax rates rise. The higher burden of taxation reduces household disposable income by more than the fall in

national income. As a result household consumption is around 2½ per cent lower than might otherwise have been sustained after twenty years, even with a pro-active monetary policy.

The terms of trade as represented by the ratio of export to import prices also worsen by about 1 per cent as a consequence of EU withdrawal, with the impact of a lower domestic price level on export prices more than offsetting the assumption of lower import prices on basic commodities. An alternative measure of national income, real gross national income, which measures GDP net of transfers and property income payments to the rest of the world, and values it at consumer prices also falls by about 1½-2 per cent in the long run.<sup>12</sup> The combined effects of the drop in GDP and the deterioration in the terms of trade are partially offset by a lower level of transfer and property income payments to overseas.

#### **4.5.2 Withdrawal Without Inward Investment Effects**

There are a number of components to the package described above and they do not all work in the same direction. The reduction in import prices and the ending of net contributions to the EU budget improve the welfare of UK residents, but higher tariffs against UK goods and services and a loss of inward investment worsen UK welfare. In terms of the effect on GDP, the most important of these in the simulation is the effect of withdrawal from the EU (and the EEA) on direct investment and hence technical progress. To illustrate this, we have recalculated the impact of withdrawal assuming there to be no direct impact on direct investment. Chart 2 compares the impact of withdrawal on GDP described above with the case when there is no impact on direct investment. Both cases assume fixed interest and exchange rates.

This illustrates the importance of the estimated positive effect of EU trade policies on the location of direct investment. If withdrawal from the EU did not lead to a reversal of the beneficial impact that membership of the EU has had on inward investment in the UK, then output would eventually settle down at a similar level to that which would have been reached if Britain had remained in the EU. In the short term, output is reduced by about ½ per cent as exports fall, but this is eventually made up as competitiveness improves. However there would still be a reduction in living standards due to the adverse effects of tariffs, as we show below.

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<sup>12</sup> An improvement in the terms of trade which raise domestic prices relative to import prices raises real gross national income relative to GDP. See Sefton and Weale (1996) for a discussion of real national income.

#### **4.5.3 Withdrawal Without Inward Investment And Tariff Effects**

Even within this simulation which ignores the effect of EU withdrawal on direct investment, there are effects which work in opposite directions as regards their effects on the UK economy. This is illustrated in chart 3 which shows the effect of EU withdrawal on the economy when there are no direct investment effects and when no trade barriers are imposed on the UK. In this latter case, the UK benefits from a lower price level and from a better budgetary position. In the short run, this adds to the level of activity in the economy, although it has no long lasting beneficial effect.

#### **4.5.4 The Adverse Impact Of Tariffs**

As a contrast, Chart 4 illustrates the effect on the UK economy of the assumed tariffs imposed on UK goods and services in the EU. Fixed interest and exchange rates are assumed. By hitting export demand, this has an initial adverse effect on demand and jobs in the UK and GDP falls by over 1 per cent within 2 years. In the longer term, price reductions at home lead to some restoration in external competitiveness but exports never make up the ground lost. There is however a strong reduction in manufactured imports as domestic producers become more competitive at home driving out some foreign competition. In the short term, employment falls by almost 200 thousand after three years. But, as before, it eventually recovers to the level it would have achieved inside the EU.

Despite the fact that GDP is ultimately unaffected by EU withdrawal, there is nevertheless a reduction in living standards as a consequence of the worsening of the terms of trade. This comes about because UK prices are driven down relative to world prices in response to the imposition of higher tariffs on UK goods. As a consequence, the prices paid by consumers in Britain are higher than they need be. The fall in living standards is shown in the reduction in real gross national income, which in the long run reaches 1 per cent. Household consumption falls permanently by about 1½ per cent in this case.

## **Section 5: Conclusions and Caveats**

Quantifying the impact of withdrawal from the EU on the British economy is a very difficult task given the range of factors that need to be considered and the absence of any up to date estimates of the overall benefits that might have been received from nearly three decades of membership. Our analysis emphasises two main points. First, British trade with the rest of the EU is now an important source of UK employment. Second, UK living standards would be adversely affected by withdrawal from the EU.

In terms of jobs we estimate that 2.7 million jobs exist directly in order to produce the goods and services which Britain currently sells to the EU. This is about a million fewer than might be estimated on the basis of the share of EU exports in the total value added output of the British economy, primarily because most of the exports are produced in sectors with above average levels of labour productivity. Over a million of the jobs linked to EU exports are in the UK manufacturing industry, largely as a consequence of EU demand for goods, while half a million each are in the financial intermediation and wholesale and retail industries, satisfying the demand for services.

This estimate probably understates the extent to which current UK employment is related to EU trade, both directly and indirectly. Some firms currently located in the UK primarily in order to gain tariff-free access to the single EU market would move abroad or close down if trade with the EU were to stop. In the process jobs which exist to produce the additional goods and services they supply to the UK and non-EU markets would also be lost. Estimates of the number of such jobs are particularly uncertain given the number of assumptions that have to be made. Our best estimate is that up to 0.5 million jobs are involved. Trade with the EU also has indirect effects on the economy as a whole. The incomes of those employed in producing goods and services for the EU market are spent on domestic goods and services and therefore support other jobs at home. Tracing these multiplier effects through the economy would suggest that up to eight million jobs are partially linked in the short-term to the demand generated as a result of the goods and services sold to the EU.

Of course most of these jobs would not be lost even if the UK were to withdraw from the EU. Withdrawal could cause disruption to the economy, but it is most unlikely that export sales to EU markets would cease completely. Any initial deflationary forces will however ultimately lead to a worsening of living standards in the UK. Widespread job losses are less likely since

real wages would adjust to changes in the demand for labour in a market economy such as the UK. As the experience of the 1960s shows, there is no reason to suppose that the UK will experience mass unemployment outside the EU.

To calculate the effect on living standards we have made a range of assumptions about the imposition of additional tariffs on UK trade, changes in foreign investment in the UK, import prices and budgetary policy. Some of these effects would enhance the welfare of UK residents. Outside the EU the UK could take advantage of lower world food prices and could benefit from savings on its contributions to the EU budget. However, these effects would be outweighed by the effect of higher tariffs and administrative costs on exports and by a resulting fall in the number of firms investing in the UK. Evidence suggests that the loss of foreign firms in the UK would reduce the level of productivity compared to what might otherwise have been achieved.

Putting these effects together would suggest that the level of UK output would be about 2 per cent per annum lower outside the EU than inside. Household consumption would be lower by 2½ per cent. These estimates are fairly uncertain and to some extent err on the side of caution, but they are broadly equivalent to the gains that most EU economies are estimated to have made from the Single Market Programme.

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## **Annex      The National Institute Domestic Economic Model (NiDEM)**

In this paper we evaluate the overall macroeconomic effects of EU withdrawal using simulations on the National Institute model of the UK economy (NiDEM). This annex provides a brief overview of the salient properties of the model.

NiDEM is intended to capture the key features of the UK economy. It is theoretically coherent and quantified by means of empirical estimation over recent historical experience. It embodies extensive forward-looking behaviour in the private sector as well as in financial markets and provides a plausible benchmark for estimating the effects on the economy of different policies and other types of shocks. In contrast to many small theoretical models of the economy, its complete specification ensures that important features of the economy are not left out of the analysis.

The effects of shocks to the economy have to be viewed in the context of the policy environment in which they take place. Here we assume that the fiscal authorities adjust effective tax rates in order to ensure fiscal solvency. Monetary policy is set to ensure that inflation remains at its medium-term target level of 2½ per cent. Hence an unanticipated slowdown in activity or prices is met by a fall in nominal short term interest rates.

The model embodies the same broad approach to the labour market as Layard, Nickell and Jackman (1991) who state that "in the long run, unemployment is determined entirely by long-run supply factors and equals the NAIRU. But in the short run, unemployment is determined by the interaction of aggregate demand and short-run aggregate supply" (p.16). One of the key properties of the model is that in the long run, employment and unemployment are determined by supply side factors. Long run economic growth is determined by the growth of the labour force and by the rate of technical progress, which varies across different sectors. Nevertheless, demand shocks are an important determinant of economic activity in the short run. Despite the assumption of rational, forward looking behaviour in key parts of the model, nominal rigidities are such that the period of adjustment to demand shocks can be protracted.

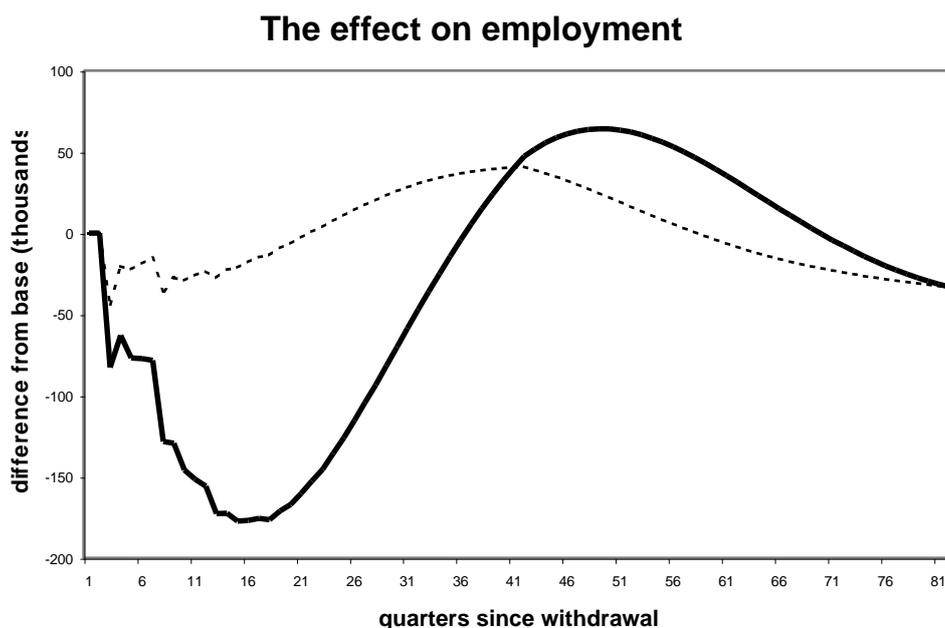
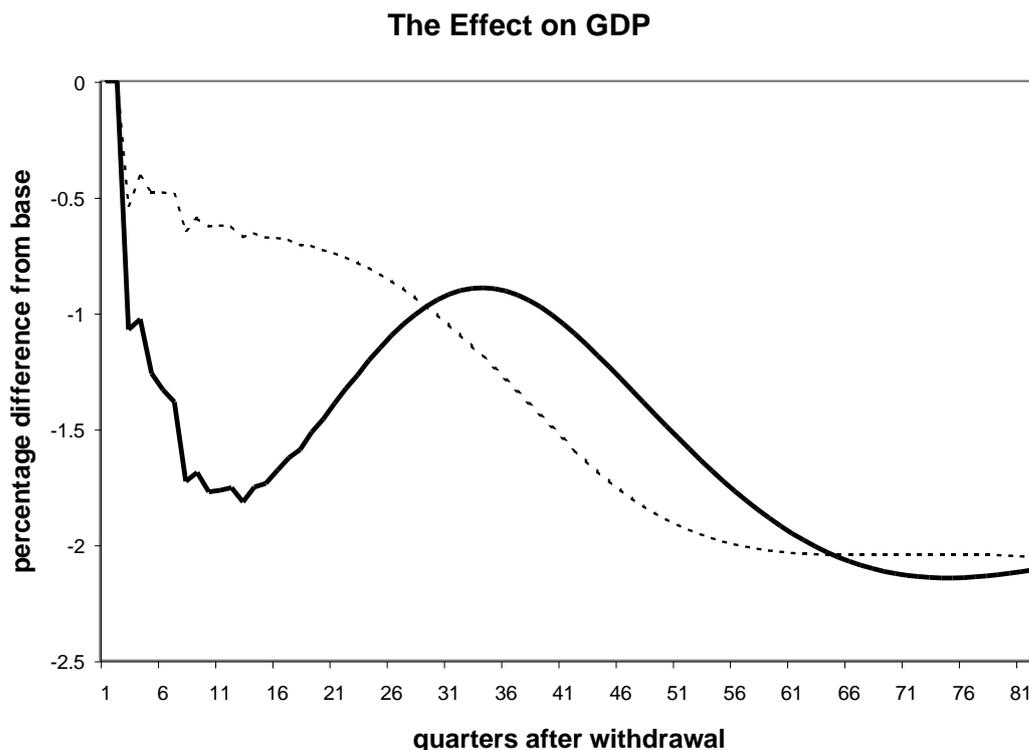
In the long run wages reflect prices, productivity, a measure of labour market slack and a measure of the composition of unemployment. In the short run, wages are constrained from adjusting perfectly to shocks because of the assumption that they are set according to annual

wage contracts. Thus the wages set in any given quarter of the year will reflect expectations of the factors determining wages over the coming year. In addition, there is lagged adjustment of wages to this equilibrium.

The employment and pricing relationships in the model are derived consistently with a CES production function linking sectoral output to employment (measured in hours per worker) and the capital stock in 6 different sectors of the economy. These relationships are specified so as to embody the property that unemployment is not affected in the long run by purely demand factors.

The demand side relationships are fairly standard and have long-run theoretically consistent structures. Private sector consumption is based on the life cycle model, with an important role for expected permanent income. Fixed capital investment responds to the gap between the expected return on capital and its user cost. Imports reflect the composition of demand as well as relative prices. One novel feature of the version of the model used for this paper is that export sales depend upon the net level of inward investment in the manufacturing sector as well as world demand and price competitiveness. The long-run parameters of this relationship are taken from the model presented by Pain and Wakelin (1998).

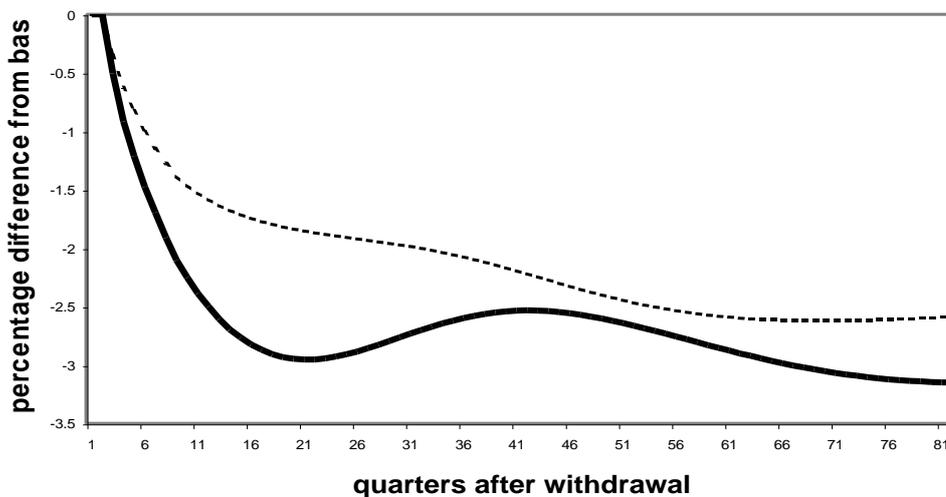
**Chart 1: The Effects of EU Withdrawal**



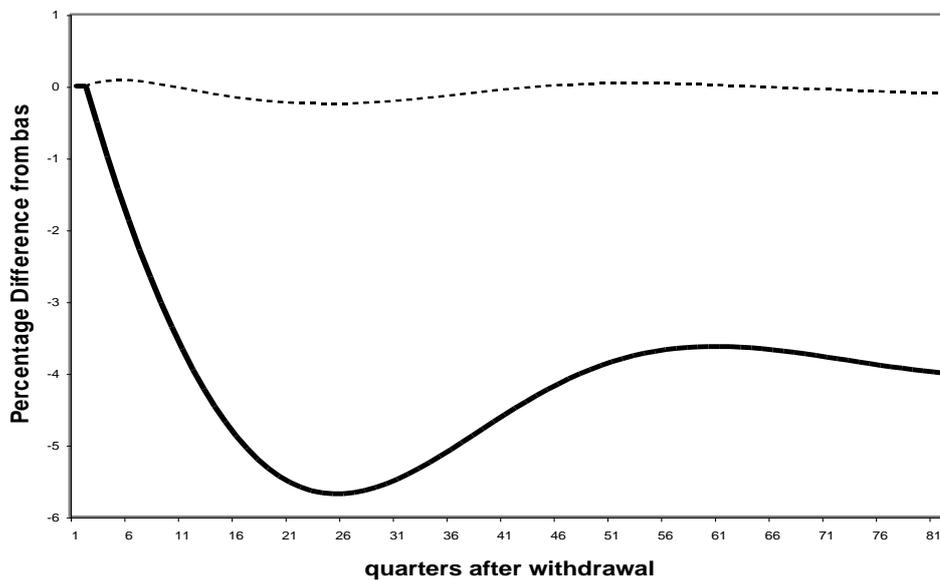
Note: Solid Line shows the effects when interest rates and exchange rate stay unchanged. Dotted line shows effects when interest rates and exchange rate adjust.

# Chart 1 (continued): The Effects of EU Withdrawal

## The Effect on Household Consumption



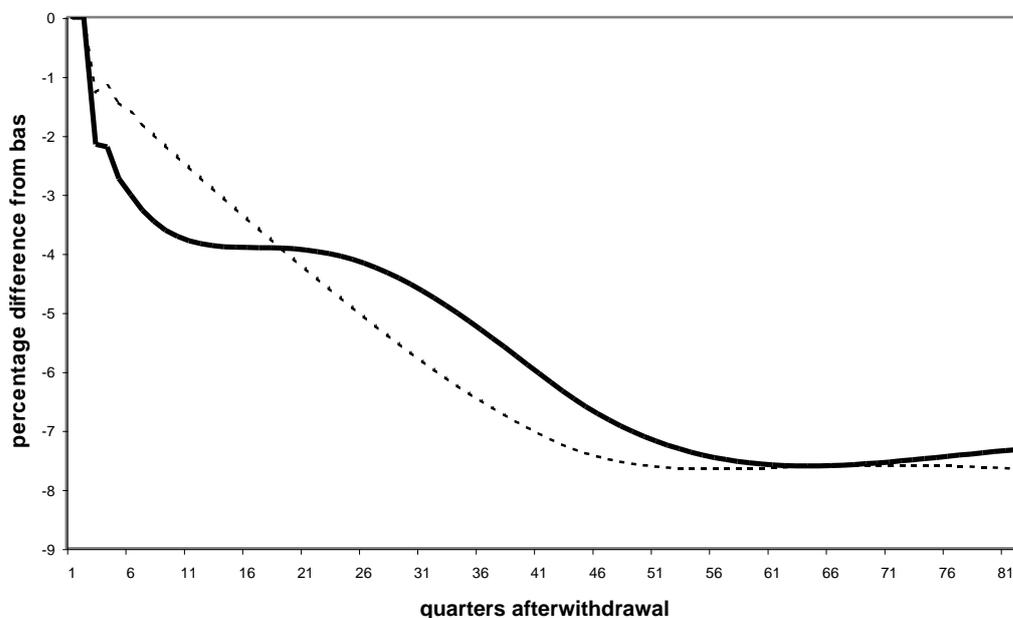
## The Effect on the Price Level



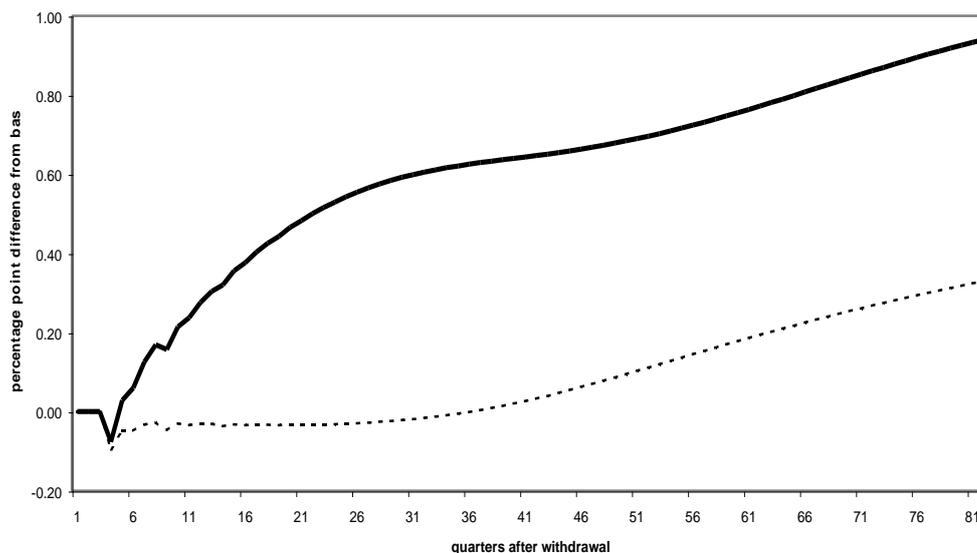
Note: Solid Line shows the effects when interest rates and exchange rate stay unchanged. Dotted line shows effects when interest rates and exchange rate adjust.

# Chart 1 (continued): The Effects of EU Withdrawal

## The Effect on Exports of Manufactures



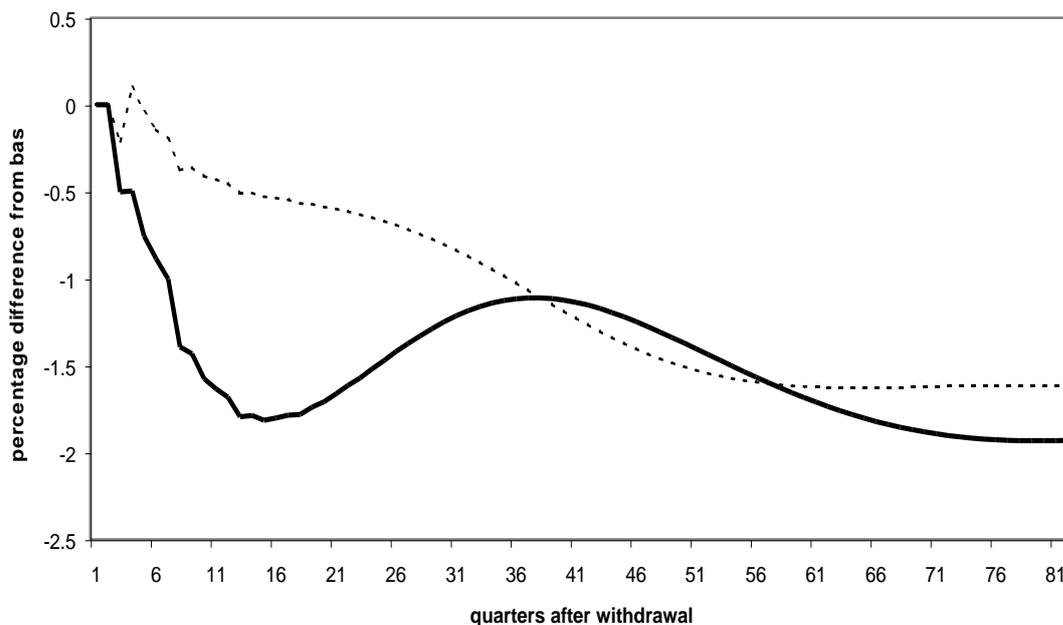
## The Effect on the Income Tax Rate



Note: Solid Line shows the effects when interest rates and exchange rate stay unchanged. Dotted line shows effects when interest rates and exchange rate adjust.

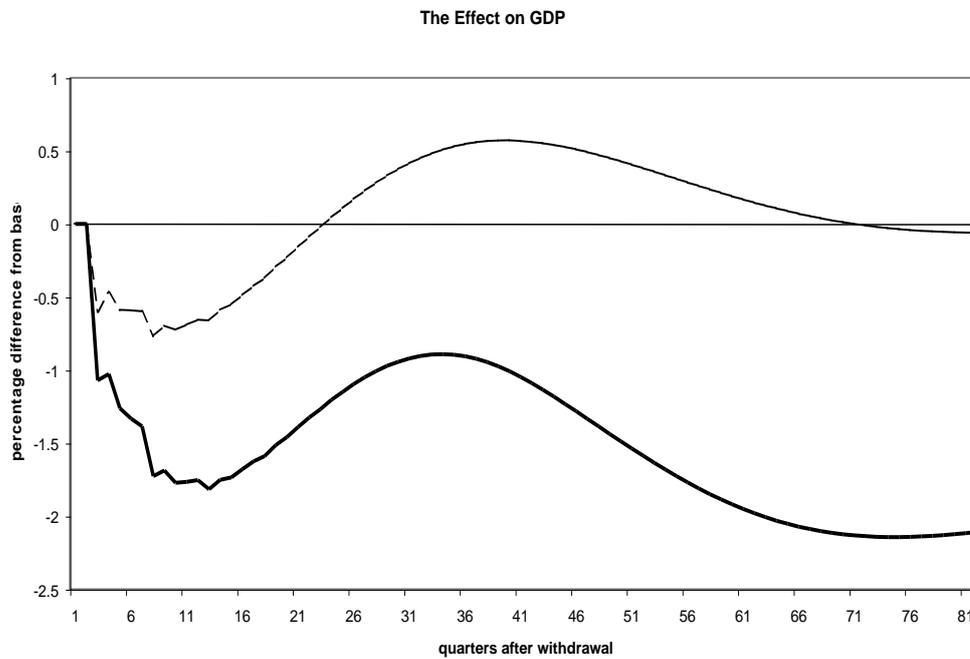
### Chart 1 (continued): The Effects of EU Withdrawal

The effect on real gross national income



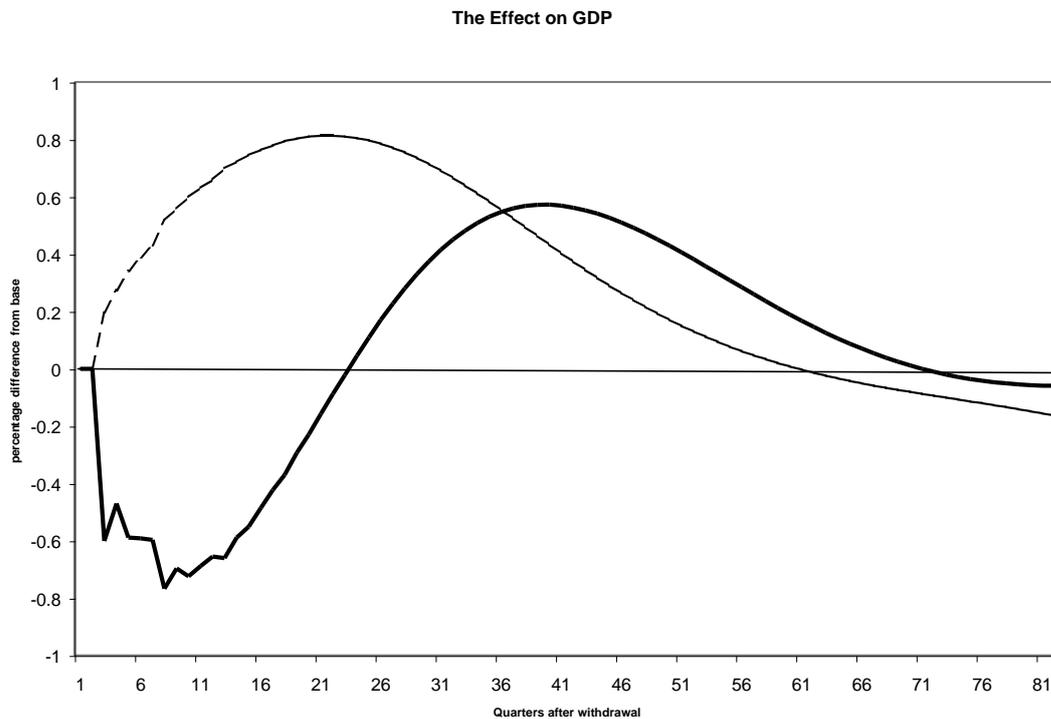
Note: Solid Line shows the effects when interest rates and exchange rate stay unchanged. Dotted line shows effects when interest rates and exchange rate adjust.

**Chart 2: The Effects of EU Withdrawal when there are no FDI effects**



Note: Solid Line shows the effects of EU withdrawal when interest rates and exchange rate stay unchanged. Dotted line shows effects there are no FDI effects.

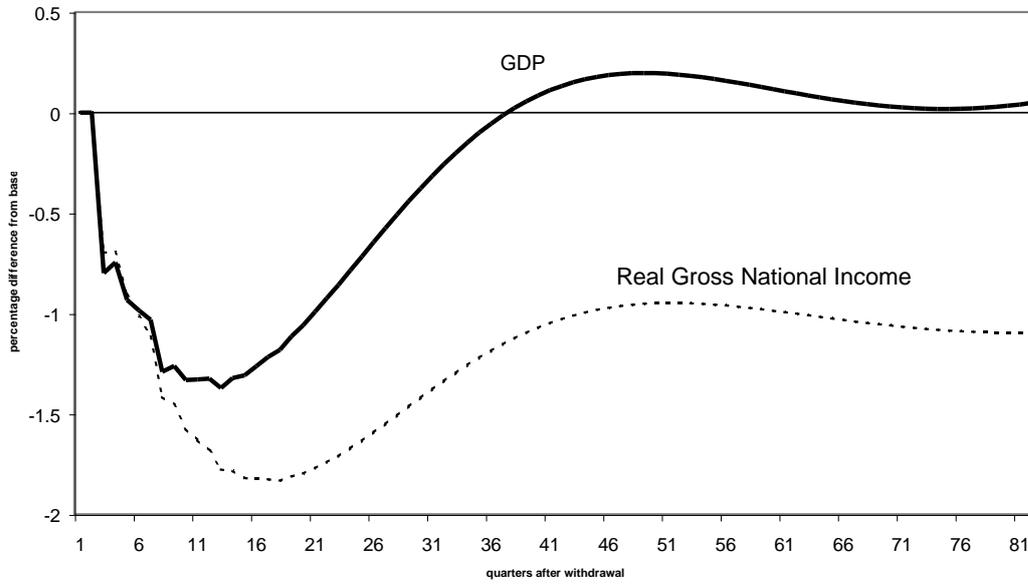
**Chart 3: The Effects of EU Withdrawal when there are no FDI or adverse tariff effects**



Note: Solid Line shows the effects of EU withdrawal when interest rates and exchange rate stay unchanged. Dotted line shows effects there are no FDI or adverse tariff effects.

# Chart 4: The Effects of Adverse Tariff Effects

### The effect on national income



### The Effect on Employment

