European Economic and Social Committee

A sectoral survey of relocation: a factual background

Final report
1. Summary

The European Economic and Social Committee (EESC) adopted an Opinion on 14 July 2005 on “The scope and effects of company relocation”. The Opinion notes, in paragraph 2.6, that “some sectors will be affected more than others by relocation”. The EESC Bureau, meeting on the 12 July 2005, authorised the Consultative Commission on Industrial Change (CCMI) to draft an Information Report — to be entitled “A sectoral survey of relocation” — to explore this observation and to provide an assessment of relocation by sector.

The purpose of this report is to support the drafting of that Information Report by reviewing the empirical evidence on relocation across a set of 19 sectors in the European Union. The primary goals of this study are to compile and report what published relevant data exist, and, where relevant data on a given sector do exist, to provide a synoptic analysis of relocation. The analysis is to be cast at the level of the European Union (EU) and at the level of individual Member States.

The terms of reference for this report, drawn by the CCMI, are clear in setting out what is beyond scope. We are not to collect primary data; what is required is a review of existing and published data. In addition, we are not to present suggestions on policy options.

Working definition of relocation

There is no unanimous view on what is meant by relocation. As much can be appreciated from a review of the policy and academic papers and from discussion with stakeholders. We do not propose to revisit, or to contribute, to this debate as we have been asked to adopt the definition set out in the EESC’s Opinion of 14 July 2005. In paragraph 1.18, the Opinion defines delocalisation — which, in the English version of the text is used interchangeably with the term “relocation” — as follows:

Delocalisation occurs when a business activity is totally or partially ceased, to be reopened abroad by means of direct investment.

The Opinion proceeds to distinguish between internal and external relocation (delocalisation); the former refers to instances where business is reopened in another Member State within the EU, and external where it is reopened elsewhere.

This report focuses on external relocation. However, attention will be drawn where the data suggest relocation from the old Member States, the EU-15, to the new Member States, the EU-10, or vice-versa.

Our approach

Data on the volume or value of activity that is ceased in a Member State to be reopened by means of direct investment elsewhere are not consistently or comprehensively collected across sectors and across the EU. There are no data, therefore, from which to draw a direct assessment of relocation as defined above.

In the light of this, we have selected a set of indicators which, though imperfect measures of relocation, do have an association with it. We have drawn upon a review of the literature to help us define a set of relevant indicators. That set is listed in Table 1.1 overleaf.

Overarching that selection of indicators is the requirement that it be possible for them to be computed on the basis of published data that are consistent and sufficiently comprehensive.

There is no direct correspondence between any single indicator listed in Table 1.1 and relocation. The extent to which productive activity has been transferred abroad cannot be inferred from examining, for example, trends in domestic production. Whilst domestic production will be affected by relocation, there are clearly many other factors, alien to firms’ decisions to relocate, that will also impact on it. The same is true for trends in trade balances, in employment levels, trends in the domestic production’s share of OECD consumption (reflecting the standing of the sector in the global market) and, indeed, for all of the indicators considered.

Because the indicators selected are only imperfect measures of relocation, it is critical to triangulate the different measures in order to draw an assessment of relocation that is robust.

The need to look across different indicators, and not to rely on any single one, is further substantiated by the fact that the datasets from which the indicators are drawn are themselves not perfect. Other than the methodological shortcomings that they might have, none of the datasets offer a comprehensive coverage of all sectors, in all Member States, over a sufficiently long period of time.

Section 2 describes in detail the indicators considered and the datasets used to compute them.

Sectors covered in report

This report focuses on 19 sectors. These have been selected and defined by the CCMI Steering Group:

(a) Aerospace
(b) Automotive
(c) Cement
(d) Chemicals
(e) Electromechanical engineering
Seventeen of the 19 sectors relate to manufacturing. In 2003, there were just under 25 million people employed in these 17 sectors, accounting for 80 per cent of all manufacturing employment in the EU-25. The two sectors falling outside manufacturing are financial services and Knowledge Intensive Business Services.

Sectors vary in terms of how narrowly they are defined. The aerospace sector, for example, is relatively narrow: it covers the manufacturing of aircraft and spacecraft as well as the maintenance and repair of aircraft engines and the reconditioning of aircraft. Knowledge Intensive Business Services, on the other hand, covers a broader array of activities, including activities relating to real estate, to the renting of machinery and equipment without operator, to the renting of personal and household goods, to computer and related activities, to legal, accounting, auditing, architectural and engineering consultancy, advertising and industrial cleaning. The relevant subsections in section 3 set out the activities covered by each of the sectors.

Table 1.1: Selected indicators of relocation

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic production</td>
<td>Domestic production, in value terms and as a share of GDP</td>
<td>SBS (Eurostat)</td>
</tr>
<tr>
<td>Employment</td>
<td>Employment in absolute terms and as a share of total domestic employment</td>
<td>SBS (Eurostat)</td>
</tr>
<tr>
<td>Share of OECD consumption</td>
<td>Domestic production as a share of consumption across OECD countries</td>
<td>SBS (Eurostat), STAN (OECD)</td>
</tr>
<tr>
<td>Import penetration</td>
<td>Ratio of imports to domestic consumption</td>
<td>SBS, COMEXT (Eurostat)</td>
</tr>
<tr>
<td>Self-sufficiency ratio</td>
<td>Ratio of domestic production to domestic consumption</td>
<td>SBS, COMEXT (Eurostat)</td>
</tr>
<tr>
<td>Narrow input-output measure</td>
<td>Ratio of imported intermediaries from foreign X sector to the value added of the domestic X sector.</td>
<td>Eurostat</td>
</tr>
<tr>
<td>Wide input-output measure</td>
<td>Ratio of imported intermediate by domestic X sector to the value added of the domestic X sector.</td>
<td>Eurostat</td>
</tr>
<tr>
<td>Balance of trade</td>
<td>Balance of trade (net exports), distinguishing between 4 groups of partner countries: all countries, EU-15, EU-10 and developing countries</td>
<td>COMEXT (Eurostat)</td>
</tr>
<tr>
<td>Foreign direct investment</td>
<td>Foreign direct investment, distinguishing between intra- and extra-EU-15, intra- and extra-EU-25 and FDI in EU-10.</td>
<td>Economy and finance – Balance of payment domain (Eurostat)</td>
</tr>
<tr>
<td>Investment in domestic capital</td>
<td>Investment in domestic fixed assets</td>
<td>Annual national accounts data category (Eurostat)</td>
</tr>
<tr>
<td>ERM job loss</td>
<td>Number of job losses due to relocation as reported in ERM database, distinguishing between areas of destination of relocation, to EU-10, to EU-15, to OECD and non EU and to developing countries.</td>
<td>European Restructuring Monitor (EMCC)</td>
</tr>
</tbody>
</table>

Note: SBS refers to Structural Business Statistics, STAN refers to Structural Analysis and COMEXT refers to Commerce Extérieur. For further information, please see Section 2 of this report.

Findings on the existence of relevant data

The Structural Business Statistics (SBS) database, published by Eurostat, is the best available source of data to construct measures of activity. The dataset provides data on the value of production and employment levels for most sectors covered by this study. The SBS database covers all 25 EU countries and covers the period 1995-2003.

The SBS does contain some significant gaps. For example, the coverage of some Member States, notably Greece, Malta, Cyprus and Sweden is relatively incomplete for many sectors. Data for Germany and some EU-10 countries are available only for the period 1999-2003. No data on the financial services sector are available. The data on the shipbuilding sector are relatively sparse. Notwithstanding these gaps, it is still our view that the SBS offers the best data in a consistent manner across the EU and that it is to be preferred, on the grounds of better coverage, to Euromars, a database also published by Eurostat, and also containing data on production.

3 Based on our analysis of Structural Business Statistics, Eurostat.
The COMEXT database, published by Eurostat, provides data on external trade to and from Member States. Data are available for the period 1995-2004 for the EU-15 countries and for the period 1999-2004 for the EU-10.

However, COMEXT does contain a few gaps. The database only covers trade in physical goods and therefore does not cover the activities falling within the Knowledge Intensive Business Services and within the financial services sector. Data on Slovakia and Poland are only reported for the year 2004.

In spite of these difficulties, the COMEXT database is sufficiently complete to be of value to this study.

The input-output tables, published by Eurostat provide a useful source of information to characterise “offshore outsourcing”. The tables allow for the construction of measures that indicate the penetration levels of imported intermediate goods in the domestic manufacturing process. Whilst reporting the penetration of imported intermediaries in a given year provides some insight, it is particularly interesting to observe how the penetration level varies over time. Unfortunately, these tables are not frequently produced; most Member States prepare them only every five years. Where that is the case, we have observations for two years, typically 1995 and 2000. Some Member States have produced these tables for only one year within our period of observation. As a result, useful information can be obtained from these tables for only ten Member States.

A further problem with the use of the input-output tables relates to the level of aggregation of the product categories as, for some sectors, the categorisation of activities is at a more aggregated level than the sectors being studied. For example, input-output tables are available for a set of activities labelled as “other transport equipment”, which groups together railway equipment, aerospace and shipbuilding.

The European Restructuring Monitor (ERM) database, published by the European Monitoring Centre on Change (EMCC), provides information on restructuring activity in the European Union. The database contains detailed information on the types of restructuring, including offshoring/delocalisation, the sectors affected and the number of jobs lost or gained. A further problem with the use of the input-output tables relates to the level of aggregation of the product categories as, for some sectors, the categorisation of activities is at a more aggregated level than the sectors being studied. For example, input-output tables are available for a set of activities labelled as “other transport equipment”, which groups together railway equipment, aerospace and shipbuilding.

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While it is a useful source of information, the ERM dataset suffers from considerable methodological limitations arising from the way in which the data are collected. Data are collected by reviewing selected daily newspapers across the EU and taking note of reports of job losses due to restructuring. As a result, the database reports job losses even when these numbers are based purely on preliminary statements of intent by company officials. In reality, the actual numbers of jobs lost after relocation has occurred might be very different from initial projections. Such ex-post corrections are not easily monitored and therefore not incorporated in the database. We report the relevant figures from this dataset in the tables accompanying the discussion of each sector but do not rely on them for the purpose of drawing a view on relocation.

Furthermore, as with input-output tables, the ERM categorisation of sectors in ERM does not match easily with many of the sectors as defined in this study. For example, the ERM dataset reports jobs losses for a category denoted as “metals”; this covers activities in the steel and iron sector and activities in the sector of nonferrous metals. We resolved this problem by reclassifying the entries in the ERM database in line with the sectors we are considering; we did this on the basis of the additional, more detailed information reported alongside each entry.

FDI and domestic investment data are published by Eurostat. The data are broken down by activity and destination region.

We believe the association between FDI data and relocation is particularly noisy. Any investment by a domestic entity in a foreign firm acquiring a share greater than 10 per cent in the recipient firm is defined as FDI and is captured by the data. Not all overseas investments are made for the purposes of relocation and not all relocation is carried out by way of FDI. Further, the FDI data also captures the flow of disinvestments made by a domestic entity in the relevant foreign sector. Confidence in FDI information is further dented by the fact that there are a relatively large number of gaps in the Eurostat data and that it is generally not possible to infer from the data the FDI flows from entities in a given sector in a given Member State which are directed to a particular country of interest (e.g., China, India or Brazil) or even to a more aggregated set of “developing countries”. Instead, and to ensure few gaps, the countries of destination need to be aggregated to the “Extra EU-25” level.

In addition, as with the input-output tables, the applicability of FDI data to study the sectors listed earlier is also handicapped by the fact that the classification used by the FDI dataset is at a higher level of aggregation than that the definition of the sectors in this study. The sector classification of Eurostat’s FDI dataset can only be matched with four of the sectors of interest to us: food, electromechanical engineering, Knowledge Intensive Business Services and financial services. For these sectors we report in this study the relevant FDI data. For the reasons summarily set out above we think there are considerable limitations in the usefulness of that data as indicators of relocation and our discussions of relocation in these sectors do not draw on them. Appendix 1 considers in greater detail the limits of the FDI data.

For some of the sectors, we have used data on activity levels that are published by the relevant industry associations. In most cases, these data complement
information extracted from the datasets discussed so far. However, in the case of the shipbuilding sector, we have opted to use production and employment data from the Community of European Shipyards Association (CESA) rather than from the SBS database. We find that the activities under shipbuilding, as defined for the purposes of this study, are more closely reflected by the CESA data than by the data reported in Eurostat’s SBS. Furthermore, the CESA dataset has fewer gaps in coverage even though it only covers CESA member countries and only 14 of the EU Member States are members of CESA.

Findings on relocation

The analysis of the evidence on relocation for each of the sectors is set out in Section 3. On the basis of those analyses, we have set out a number of broad findings.

In all but two of the sectors studied, the data do not provide clear evidence of relocation at the EU level as a whole. The two sectors for which the data do suggest relocation are textiles and the sector defined as leather, clothing and footwear. These sectors are closely associated in that the output of the textile industry is a significant input in the manufacture of clothing and apparel.

In the electromechanical engineering sector, the data provide mixed signals. European output in this sector has been falling gradually and employment has decreased more substantially, and the sector’s share of the economy has fallen between 1999 and 2003. Countering this trend, Europe’s trade balance in this sector, particularly with developing countries, has improved. Taken together, this evidence could be interpreted to suggest that European labour productivity has improved, leading to falling employment, and that export performance has improved. Conversely, the evidence could also be read as suggesting that some activities are being relocated from Europe to developing countries but that this is obscured in the trade data because of increased exports to that same set of countries.

The data do not uncover particular Member States from which economic activity has generally relocated from. Nor do they identify Member States that have, in general, attracted activity relocated from elsewhere.

Other than the finding of relocation in the textiles and in the leather, clothing and footwear sectors in Europe in general, our analysis has identified only three other instances where the data provide evidence of relocation. In the chemicals sector, data suggest that relocation may have occurred from the UK and from Slovakia. In the railway equipment sector, the data suggest that there is relocation from Germany. In the shipbuilding sector, the data suggest that relocation may have occurred from Germany and Denmark.

The data do not suggest that there has been significant internal relocation towards the Member States in the EU-10. In the two sectors where the data have identified widespread relocation, namely Textiles and leather, clothing and footwear, the activity would appear to have been transferred to developing countries. In fact, and on the basis of trade data alone, the trade balance between the group of EU-10 Member States and the group of EU-15 Member States has tended to move in favour of the EU-15.

We have found no grounds to associate the propensity of a sector to relocate with the relative maturity of the sector.

Structure of the report

The rest of this draft final report is structured as follows:

(a) Section 2 describes the datasets used and sets out the definition of the indicators used;
(b) Section 3 contains the set of sector specific analyses;
(c) Appendix 1 reviews the relevant literature and includes a list of references; and
(d) Appendix 2 draws the correspondence between the sectors studied in the report and the categorisation of data used by the datasets on which we have drawn.

An accompanying Excel file contains the data underlying the analysis set out in this report.
2. Description of the data and indicators

This section provides a detailed description of the sources of data used in the report along with a description of the indicators used to characterise relocation. Much of the information on the databases used is collected from the relevant metadata published by Eurostat.

External trade statistics

External trade data have been extracted from the COMEXT database published by Eurostat. The subject of this database is the movement of goods across frontiers of EU Member States.

Extra-EU trade data are collected using the statistical copy of the customs declaration. Intra-EU trade statistics are collected directly from trade operators. However, any entity registered for Value Added Tax (VAT) in a Member State carrying out intra-EU trade and being above a certain threshold is obliged to report the value of the trade to the national statistical authorities.

The main indicators published in this database are imports and exports, by value and volume, organised by groups of reporting countries, partner countries and product groups. For the purposes of this study, external trade by value (in Euro million) has been used.

The database covers external trade for each reporting country to and from non-EU countries and other EU Member States.

The products covered by this database include all movable and physical goods. This database does not cover trade in services. The database covers more than 10,000 different products classified according to the Combined Nomenclature (CN).

The database covers all 25 EU Member States. For EU-15 countries, the database covers the period 1995-2004. For the new Member States, EU-10, the database covers the period 1999-2004.

The trade balance indicator used in this study is derived from the imports and exports data from COMEXT. The import and export data were aggregated to the level of product groups that most closely matched the sectors defined for the purposes of the study. These data were further aggregated according to groups of partner countries to obtain figures for extra-EU trade, intra-EU trade and trade with developing countries. For the purposes of the study, developing countries were defined as countries that are not members of the EU and that are not members of the Organization for Economic Co-operation and Development (OECD). Trade balance (or net exports) is calculated as exports minus imports. EU-level aggregates for extra-EU trade were calculated by summing the values of extra-EU exports and imports for each Member State.

OECD STAN database for industrial analysis

The OECD Structural Analysis database (STAN) is published by OECD and includes data on output, labour input and international trade for different activities.

The database covers all the OECD member countries and all years from 1995 to 2003. It presents data compiled from the member countries’ national accounts.

The activities in the database are classified according to International Standard Industrial Classification of all Economic Activities (ISIC) Rev. 3.

The STAN database is used to compute the OECD Consumption variable, calculated as the sum of production and imports less exports in the OECD countries. We use this variable as a proxy for global consumption.

Structural Business Statistics (SBS)

The Structural Business Statistics (SBS) dataset is published by Eurostat. The dataset provides various indicators relating to the nature and levels of economic activity within the EU.

The database covers activity in all Member States. The database is compiled by Eurostat based on information sent by the national statistics institutes of each Member State.

NSIs collect data through statistical surveys, administrative sources or from the business register. The sampling unit for this exercise is an enterprise, which is defined by Council Regulation (EEC) 696/93 to be

“the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources.”

The data are broken down at the product group level based on the NACE Rev.1 (Statistical Classification of Economic Activities in the European Community) classification system.

The database was implemented in 1995 and the period between 1995 and 1998 was a transitional phase. As a result, some of the data are incomplete for this period. However, the data are more complete for the years 1999 to 2003. Data for 2004 were not available at the time of preparing this report.

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4 Structural Business Statistics, Eurostat Metadata in SDDS format: Summary Methodology.
Production value measures the actual value of goods and services, in Euro, sold by the enterprise during the reference year. This variable is used in this study as the measure of production. Employment is defined as the number of employees; the number of persons who have a contract of employment with the enterprise and who receive wages or salaries from them. This variable does not include contract workers who are not directly employed by the enterprise.

Apparent consumption is calculated by adding up the production and the imports and subtracting exports for each product group. The production value comes from the SBS database, while the imports and exports data come from COMEXT.

Output as a share of GDP expressed as a percentage, is the ratio of total production of a sector to the GDP of the Member State.

Output as a share of OECD consumption expressed as a percentage, is the ratio of production of a sector to the aggregate apparent consumption of the products of that sector in all OECD countries. This indicator is to be interpreted as a proxy for the share of output in relation to global production, which is to say, as a proxy for the share of the global market.

Self-sufficiency ratio is the ratio of production of a particular sector in a Member State to the apparent consumption of the same sector in the same Member State.

Import penetration ratio is the ratio of the imports in a sector to the apparent consumption of the same sector for each Member State.

Share of total employment expressed as a percentage, is the ratio of the number of employees in the sector to the total employment in all sectors in the Member State.

EU-level aggregates are computed for production, employment and apparent consumption by summing the values for each Member State. The EU-level aggregate for output as a share of GDP is calculated as a ratio of the aggregate EU production to the aggregate EU GDP. The EU level aggregate for output as a share of OECD consumption is calculated as a ratio of aggregate EU production and total OECD consumption.

In computing EU aggregates, where data on production or employment for a Member State are not available for the year 2003, the corresponding value for the year 2002 is used instead. Where the data are not available in an intermediate year between 1995 and 2003, linear interpolation was used to fill the gap.

**Symmetric input-output tables**

The symmetric input-output tables are published by Eurostat after being collected from national statistics institutes’ accounting departments. These symmetric input-output tables are constructed by converting the supply and use tables, at constant prices. Of these tables, it is the symmetric input-output tables for imports and the symmetric input-output table for domestic output which are of interest to this study.

Symmetric input-output tables are not released annually, but at five-year intervals. Even then, Eurostat does not provide these tables for many Member States. We have only used data from these tables where they are available for at least two successive periods.

Symmetric input-output tables classify activities into 60 groups, based on the NACE Rev.1 classification system.

Import input-output tables provide the total value of each imported intermediate good broken down by the domestic activity that consumes that intermediate good. Domestic input-output tables provide the aggregate value of all imported intermediate goods broken down by the domestic activity that consumes that intermediate good. The tables also provide the value added by each domestic activity.

The narrow measure of offshore outsourcing is constructed as the ratio of the value of imported intermediate goods belonging to a particular activity classification to the value added by the domestic end-user enterprises belonging to the same activity classification.

The wide measure of offshore outsourcing for a particular activity classification is constructed as the ratio of the value of all imported intermediate goods to the value added by the domestic end-user enterprises within that activity classification.

As the activity classifications are occasionally at a higher level of aggregation than the sectors being studied, the same data are used for some sectors that fall within that activity classification. For example, input-output tables are available for the NACE division 26, which covers other non-metallic mineral products including glass and cement. Therefore the same data are presented in the analysis for both sectors. In some cases, this is not possible. For example, input-output tables are available for the NACE division 24 which covers chemicals and pharmaceuticals. The trends in these two sectors are sufficiently different to make the use of combined data difficult. This is an inherent weakness of this dataset for the purposes of this study.

EU-level aggregates cannot be constructed for these measures as the imported intermediate goods are not further broken down into intra-EU and extra-EU imports.

**European Restructuring Monitor (ERM)**

The European Restructuring Monitor (ERM) is published on an on-going basis by the Dublin-based European Monitoring Centre on Change (EMCC).

The ERM records all industrial restructuring cases that:

(a) affect at least one EU country;
(b) involve an announced or actual reduction of at least 100 jobs; or
(c) involve sites employing at least 250 people and affecting at least 10 per cent of the workforce; or
(d) create at least 100 jobs.
38 The EMCC records this information by conducting a press review of selected daily newspapers in all the 25 Member States.
39 The data are classified according to type of restructuring. There are eight types of restructuring in the database, one of which is “offshoring/delocalisation”.
40 For each of the restructuring cases, the database provides the:
(a) name of the company;
(b) sector;
(c) type of restructuring;
(d) date of announcement;
(e) number of jobs lost or created;
(f) destination of relocation (if reported);
(g) summary of the news item.
41 The compilation of cases begins from January 2002 and is updated on a continuous basis.
42 The jobs lost variable is compiled by adding up the jobs lost in each case corresponding to a particular sector and member state.
43 Again, as is the case with the input-output tables, the sectors, as defined by the ERM, are frequently at a higher level of aggregation than our study requires. In such cases, the relevant summaries are used to reclassify the individual cases into our sectors.

**Foreign Direct Investment (FDI) and Domestic fixed capital formation**

44 FDI data are published by Eurostat as part of their Economy and Finance – Balance of Payments domain.
45 FDI is defined by Eurostat as

> “the category of international investment made by an entity resident in one economy (direct investor) to acquire a lasting interest in an enterprise operating in another economy (direct investment enterprise). The lasting interest is deemed to exist if the direct investor acquires at least 10 per cent of the equity capital of the direct investment enterprise.”

46 The data are broken down by reporting country, activity classification of the direct investor, the destination region and year of investment. The data cover all 25 EU Member States.
47 The FDI database is used to construct indicators of the level of FDI made by the reporting country within and outside the EU-15, within and outside the EU-25 and in the EU-10. The FDI is classified according to the activity classification of the investing entity, regardless of the nature of the final destination.
48 Domestic fixed capital formation is published by Eurostat as part of their Annual National Accounts data category.
49 Domestic fixed capital formation is defined by the database as

> “the resident's product acquisitions, less disposals, of fixed assets during a given period plus certain additions to the value of non-produced assets realised by the productive activity of producer or institutional units.”

50 The data are broken down by the reporting country, activity classification and the year of capital formation. The data covers all 25 EU Member States.
51 Gross fixed capital formation within an activity by a Member State is used to characterise the level of investment occurring in the domestic economy.

**European industry and trade associations**

52 We have used data gathered from various trade associations and industry bodies to support the analysis. In most cases, the data are obtained from published sources. In the case of the Shipbuilding industry however, the data were provided by the association itself.
53 Data relating to the shipbuilding industry have been provided by the Community of European Shipyards Associations (CESA). This covers the employment for 1995-2004 and production for 1997-2004 in all CESA member countries. Only 14 of the CESA member countries are Member States of the EU and therefore this analysis only covers these countries.
54 Other supporting data have been obtained from various publications of the following organisations:
(a) European chemical industry council (CEFIC)
(b) The confederation of the food and drink industries of the EU (CIAA)
(c) The European apparel and textiles organisation (EURATEX)
(d) Association of European railway industries (UNIFE)
(e) The European leather association (COTANCE)
(f) The European confederation of woodworking industries (CEI-Bois)
(g) Standing committee of European glass industries (CPIV)
(h) Confederation of European paper industries (CEPI)
(i) Aerospace and defence industries association of Europe (ASD)
(j) European association of aerospace industries (AECMA)
(k) The European cement association (CEMBUREAU)
Appendix 1:

Literature review

We have reviewed the literature on relocation in order to develop our understanding of:

(a) The definition of the various terms associated with relocation and what relocation is understood to mean;
(b) The measures of relocation that have been used in the literature and the data underpinning them;
(c) The business and sector specific factors that are associated with greater propensity for relocation;
(d) The future trend of relocation; and of
(e) The effects of relocation.

We consider each of these points in turn. A list of references is appended at the close of this appendix.

Definition of the terms associated with relocation

The relevant literature offers no single definition of the term “relocation”. In fact many of the papers reviewed do not use the term relocation at all. Instead, they discuss the issues using terms such as outsourcing, offshoring, deindustrialisation and delocalisation. Not all authors use the same interpretation of these terms.

As a starting point, relocation is often associated with the concept of delocalisation, which refers to the cessation of a business activity followed by the reopening of that activity abroad or by sub-contracting the activity abroad (see, for example, Aubert and Sillard, 2005). This is in line with the definition of relocation adopted by the European Economic and Social Committee (EESC) in its 2005 opinion paper. However, the view taken by much of the literature is that such a definition of relocation would be too narrow and as noted by Boulhol and Fontagné (2005) it “hardly corresponds to any statistical category or any sizeable phenomenon”.

Instead, much of the literature defines the phenomenon in terms of the alternatives facing a firm with respect to organisational decisions about how to undertake a particular production process. These organisational decisions concern the use of outsourcing and offshoring, and it is with reference to these two terms that most of the literature discusses relocation.

The use of the terms outsourcing and offshoring has not been standardised in the literature. The most common definitions are those offered by UNCTAD (2004) and Pujals (2005). These papers define outsourcing in terms of whether the production process for intermediate inputs is internalised (kept in-house) or externalised (outsourced); the term offshoring is used to refer to cases where the production process is undertaken in a foreign country.

Table A1.1 below highlights the dimensions captured by these two terms.

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<thead>
<tr>
<th>Location of production</th>
<th>Internalised or externalised production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home country</td>
<td>Internalised</td>
</tr>
<tr>
<td>Foreign country</td>
<td>Externalised</td>
</tr>
<tr>
<td>(offshoring)</td>
<td></td>
</tr>
</tbody>
</table>

Source: adapted from UNCTAD (2004) and Pujals (2005)

2005 defines the concept more precisely on an absolute and relative basis.\(^6\) It defines absolute deindustrialisation as being associated with “a decline in employment, production, profitability and capital stock in industry, as well as a decline in exports of industrial goods and the emergence of persistent trade deficits in this sector.” Relative deindustrialisation is defined as “the decline in the share of industry in the economy, reflecting a process of structural change in the relationship between the industrial performance and the service sector.”

**Measures of relocation**

\(^{12}\) As noted by WTO (2005) a major problem with the above definitions of outsourcing and offshoring is that they do not reconcile easily with officially collected economic data. Data are typically collected at the sectoral level whereas relocation decisions are made at the firm level. It is difficult to make a link between import data and a management decision to substitute domestic production for an imported product. Another potential problem pointed out by Amiti and Wei (2005) is that the data may underestimate the value of offshoring as the cost of the imported products is likely to be lower than the cost of purchasing them domestically. Quantity data may be more preferable but they cannot be aggregated beyond individual products to give a useful picture at a sectoral level and in many cases such data are unavailable.

\(^{11}\) In the absence of direct data on the issue, studies have used proxies to get a sense of the magnitude of the relocation taking place. Several different proxies have been used. Given the lack of consensus on how relocation is defined, this is not surprising.

\(^{13}\) We now turn to present the indicators of relocation that have been used in the literature.

**Input output tables**

\(^{14}\) Outsourcing is typically defined in terms of intermediate inputs and hence input-output tables are frequently used to construct measures. Perhaps the most accurate source for measuring offshore outsourcing would be the use of import input-output tables and domestic input output tables. Import input-output tables give the imports of each industry from other industries abroad and domestic input output tables gives the value added by each domestic industry.

\(^{15}\) Using these data narrow and wide measures of outsourcing can be calculated. For each industry the narrow measure only looks at imports from that same industry abroad and is thus only concerned with the industry’s core activities being outsourced whereas the wide measure looks at imports from all foreign industries. Hijzen et al. (2005) calculate these narrow and wide measures as follows:

(a) Narrow outsourcing of industry I is the ratio of the imported input purchases from industry I by industry I to the value added of industry I.

(b) Wide outsourcing of industry I is the ratio of the sum of all inputs purchases by industry I to the value added of industry I.

\(^{17}\) The main shortcoming of such measures is that the data underpinning them, import and domestic input-output tables, are only produced at wide intervals, typically every five years. To compensate for this deficiency and to enable analysis requiring more observation many authors, including Amiti and Wei (2005), have made approximations of these measures using input-output tables combined with trade data. The standard input-output tables only detail the inputs of each industry and do not split them according to whether they are sourced domestically or from abroad. They use the standard tables by making an assumption that the ratio of imported intermediates to domestic intermediates is that same as the ratio between all imports in the sector to total consumption of the sector.

\(^{19}\) Consumption, perhaps more appropriately described as apparent consumption, is defined as domestic production plus imports less exports of the industry in question. The two different techniques are equivalent when the share of imported intermediate goods is the same as the share of all imported goods.

\(^{18}\) Other authors such as Geishecker (2005) and Falk and Wolfmayr (2005) take these measures further by disaggregating them by partner country, i.e. only looking at imports form selected countries of interest.

**National accounting data**

\(^{20}\) Other measures of relocation do not focus on just trade in intermediates and also look at national accounting data primarily involving imports and exports.

Drumetz (2005) for instance calculates an import penetration ratio and an external deficit ratio which indirectly measures how reliant domestic consumption is on domestic production. These measures are as follows:

(a) Import penetration ratio is calculated as the ratio of imports to the sum of domestic output and net imports

(b) External deficit ratio is calculated as the ratio of net exports to the sum of domestic output and net imports

\(^{22}\) The paper presumes that offshoring takes place in sectors where the import penetration ratio increases sharply, the external deficit ratio drop rapidly and the share of the sectors employment in total employment falls. Other studies that also use the import penetration...
improvements or due to capital-labour substitution.

24 Other studies such as Amiti and Wei also look directly at the trade balance (exports less imports) using imports as a proxy for outsourcing and exports as a measure of “insourcing”.

25 Rowthorn and Ramaswamy (1999) amongst others look at the share of total output made by the industry in question but this is typically as a measure of deindustrialisation and it is examined how it is affected by other factors such as the trade balance.

Employment

26 In the same way Rowthorn and Ramaswamy (1999) use the output share of an industry as a measure of deindustrialisation they also use the share of total employment of the industry as another proxy. Boulhol and Fontagné (2005) also use this measure in the same context.

27 Geishecker (2005), instead of looking at employment numbers, looks at the wage share of different industries and examines how they are affected by international outsourcing.

28 Aubert and Sillard (2005) notes the limitations of relying on employment trends to understand the process of relocation namely that movements in employment levels also reflect factors that bear no relation to relocation. These include changing competitive pressures, both internally and externally, productivity improvements or due to capital-labour substitution.

Data from the European Restructuring Monitor maintained by the European Monitoring Centre on Change can also be used to provide a measure of delocalisation. It has monitored press articles in the EU since 2002 for jobs lost and created due to company restructurings, and, of particular interest for this study, it records the number of jobs lost “when the activity stays within the same company, but is relocated to another location within the same country.” Papers such as Daudin and Levasseur (2005) and Pujals (2005) have used this data source as an indicator of the effect of relocation on employment. Galgoczi (2006) notes, rightly in our view, that the ERM database provides anecdotal evidence which cannot be seen as representative. It does not allow, therefore, for robust inferences on relocation to be drawn from it.

Foreign Direct Investment

29 Foreign Direct Investment (FDI), investment in foreign assets, can be categorised as one of two types. The first type relates to investment in existing foreign companies (i.e. involving just a change of ownership) which is often unlikely to change the behaviour of the recipient company in a manner that leads it to export more to the country providing the FDI. The second type relates to investment that creates a new company or production capacity. This class is closer to the notion of relocation.

In exploring the use of FDI data to inform on relocation, the Council of Europe Parliamentary Assembly (PACE) considers a further categorisation, vertical and horizontal FDI. Vertical FDI refers to the splitting up of the production process by a multinational with a view to locating each stage of production in the country where it is most cost effective. Horizontal FDI refers to the circumstance where the multinational carries out the same activity in a number of different countries in order to serve the local markets and is not part of relocation. FDI data are not available at a disaggregated level to distinguish between horizontal and vertical FDI except through surveys which have been few and far between. PACE (2005) notes that “almost all empirical studies find that vertical FDI plays only a small role as a proportion of total FDI” and acknowledges that it is “difficult to draw simple conclusions on the economic effects of total FDI on the source country.”

A number of studies make use of FDI data in a discussion of relocation. We have not been persuaded, however, for the rationale for making use of such data; typically no rationale is offered other than that such data are available. On the other hand, critical assessment of the use of FDI data has strengthened our conviction that a substantial portion of FDI flowing out of EU is not connected to relocation activity and would therefore act a poor proxy.

In this respect we note the views set out in Drumetz (2005) commenting that “FDI statistics are not designed for measuring offshoring and it is difficult to use them for this purpose.” There will be FDIs carried out without domestic capacity having been closed down. Aubert and Sillard (2005) also note that it is not the case that whatever production may be generated from a particular FDI will be imported back to the country of origin or even, more generally, be “substituting” domestic production. The FDI might have been done for the purpose of expanding a market that is close to the destination country. Furthermore, the relevant investment may have a purely financial one (e.g. purchase of shares in the stock market of the destination country) and have little or nothing to do with decisions relating to production.

The assessment of the difficulties in inferring on relocation from FDI data is equally made by the Belgian Bureau fédéral du Plan (2005).

Factors associated with decision to relocate

Some studies on relocation have sought to shed light on what factors are associated with the decision by businesses to relocate and, more generally, on the
characteristics of the firms/industries that are most likely to experience relocation.

In this area, UNCTAD (2004) is particularly helpful. The study cites the following features of services with a high probability for offshoring:

(a) “no face-to-face servicing requirement;
(b) high information content;
(c) the work process is tele-commutable and Internet-enabled;
(d) high wage differentials with similar occupations in destination country;
(e) low set-up barriers; and
(f) low social networking requirements.”

A second report, the WTO (2005), gives the following factors as the major determinants of the decision of whether to outsource an activity:

(a) technical and institutional separability;
(b) to what extent the task is standardized;
(c) transaction and managerial costs within the firm relative to outside suppliers;
(d) production costs; and
(e) the size of the market.

The decision of whether or not to offshore the activity adds additional relevant factors to the decision as there are additional variable managerial costs related to offshoring which may arise due to differences between the two countries involved in terms of language, laws, government regulations, currency, as well as the geographic distance.

Girma and Görg (2004) uses UK firm-level data from three manufacturing sectors (chemicals, mechanical and instrument engineering, and electronics) to investigate the impact of various factors on a firm’s propensity for outsourcing. This study does not seem to distinguish between offshore outsourcing and outsourcing to domestic producers. It finds that foreign owned firms use more outsourcing than domestic establishments when controlling for other factors (size and labour costs). This finding was robust under various parameterisations of their model.

Kakabadse and Kakabadse (2002) examines trends in outsourcing using a survey of 747 firms from Europe and USA. The study does not seem to distinguish between domestic outsourcing and offshore outsourcing. Table A1.2 below gives the details of the main reasons cited by European firms for outsourcing activities.

Rowthorn and Ramaswamy (1997) studies the causes and implications of deindustrialisation. It concludes that deindustrialisation is not a negative phenomenon but a natural consequence of further growth in developed economies. The main reason cited for deindustrialisation is the faster growth of productivity in the manufacturing sector than in the services sector.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage of respondents selecting response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost discipline/control</td>
<td>59</td>
</tr>
<tr>
<td>Aim to achieve best practice</td>
<td>56</td>
</tr>
<tr>
<td>Improve service quality</td>
<td>41</td>
</tr>
<tr>
<td>Focus on core competencies</td>
<td>39</td>
</tr>
<tr>
<td>Enhance capability to develop new product/service</td>
<td>35</td>
</tr>
<tr>
<td>Access to new technology/skills</td>
<td>34</td>
</tr>
<tr>
<td>Reduce headcount</td>
<td>34</td>
</tr>
<tr>
<td>Reduce capital cost</td>
<td>32</td>
</tr>
<tr>
<td>Grow in-house expertise</td>
<td>30</td>
</tr>
<tr>
<td>Reduce transaction costs</td>
<td>27</td>
</tr>
<tr>
<td>Reduce promotion costs</td>
<td>23</td>
</tr>
<tr>
<td>Investment in technology</td>
<td>18</td>
</tr>
<tr>
<td>Enhance position in value chain</td>
<td>17</td>
</tr>
<tr>
<td>Enhance capability for change</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: Kakabadse and Kakabadse (2002)

The paper also concludes that North-South trade has played very little role in deindustrialisation.

**Forecasts of relocation trends**

We thought it a useful exercise to review what studies have been done on the likely evolution of the process of relocation; whether it is believed to be a process set to accelerate over the next decade and whether and how the direction in the flow of economic activity across the globe is likely to change.

We found but one study exploring this question from a quantitative perspective. Forrester (2004) provides detailed forecasts of European jobs moving offshore by country and by sector for the period up to 2015. The report forecasts that about 495,000 jobs will be moved offshore from the EU-15 by 2010 and around 1,153,000 jobs will be lost by 2015. Of these losses the UK is expected to make up around two thirds of the total for the EU-15. Possible reasons mentioned for this high proportion falling on the UK are that each year India trains 2 million English speakers with technical and quantitative skills and the UK has a relatively more flexible labour market than the rest of the EU-15. In terms of a breakdown by job type the study predicts that of the losses by 2015 around 13 per cent will occur to information technology workers, 34 per cent to clerical workers, 29 per cent in science and engineering, 20 per cent to public and governmental workers and 1 per cent to media workers.

**Effects of relocation**

One question that has been examined with some care by the literature relates to identifying the effects of relocation. The interest in this question is natural in the light of the political sensitivities and, more importantly,
in the light of the conventional wisdom (not necessarily substantiated) that the process of relocation is likely to continue growing. The analysis of the effects of relocation has tended to focus on one of two dimensions: on the effect on employment levels in the source country and in the country of destination, and on the effect on productivity in the source economy. We will set out a brief summary of the relevant papers.

Effects of relocation on employment

48 Falk and Wolfmayer (2005) analyses the impact of international outsourcing on employment using manufacturing data for seven EU countries for the period 1995-2000. The study estimates labour demand equations that show that imports from low-wage countries have a statistically significant effect on employment and that imports from industrialised countries have no effect on employment. Their calculations show that observed changes in EU outsourcing between 1995 and 2000 alone accounts for an employment reduction of 0.26 percentage points per year.

49 Stauss-Kahn (2003) constructs a model to show the effect of vertical specialisation (the share of imported inputs in production — the wide measure of outsourcing) on the share of unskilled workers in industry. The model is estimated using French industrial data for 14 manufacturing sectors over two periods 1977-1985 and 1985-1993. In these periods the share of unskilled workers in total employment decreased at 0.49 and 0.44 annual percentage points respectively. The level of vertical specialisation over these periods increased by 0.094 and 0.185 per cent per annum respectively. The paper estimates that the changes in vertical specialisation contributed from 11 to 15 per cent of the decline in the share of unskilled workers in French manufacturing employment for the 1977-1985 period and 25 per cent of decline in the 1985-1993 period.

45 Egger and Egger (2000) studies the employment effects of outsourcing to Eastern Europe and the former Soviet Union on a panel of 20 Austrian industries for the period 1990-1998. The results indicate that a one per cent increase in outsourcing to the Eastern countries (in terms of gross production) generates a shift in relative employment of about 0.1 per cent in favour of the high-skilled labour segment. The authors estimate that the effect of this outsourcing is responsible for about one quarter of the change in relative employment in favour of the high-skilled.

49 The OECD Employment Outlook 2005 report looks at the trade-adjustment costs in OECD labour markets. Its main findings for the effects of international trade on labour markets include the following:

(a) The most important long-run effects of international trade and investment on labour markets have been to raise average wages and induce shifts in the sectoral and occupational composition of employment. The report finds no theories or evidence to suggest that increased international trade affects aggregate employment, but they find it likely that growing trade with low-wage nations has contributed to increasing wage inequality in many OECD countries.

(b) Increases in international competition are associated with increased job displacement but it is noted that trade is only one of many drivers of job turnover and structural change.

(c) Adjustment costs appear to be higher for trade-displaced workers than for other job losers as they are slower to be reemployed and experience larger wage losses once reemployed.

49 Amiti and Wei (2005) considers whether international service outsourcing has reduced jobs in the UK. The authors use UK data from 1995-2001 from 69 manufacturing industries and nine service industries and conclude that outsourcing does not have a negative affect on manufacturing employment at the sectoral level. The same result is found for the services sector. This suggests that those individuals who lose their jobs due to outsourcing tend to find another job within the same industry classification. Another finding of this study is that job growth at the sectoral level is not negatively related to outsourcing.

50 Geishecker (2005) analyses the effect of international outsourcing to Central and Eastern Europe on the relative demand for manual workers in Germany using data from a panel of 20 manufacturing industries over the period 1991-2000. The paper combines trade and input-output data to disentangle international outsourcing and trade in final goods and differentiate between the effects of outsourcing in different international regions. Using a narrow measure of outsourcing and controlling for other factors they find that international outsourcing to Central and Eastern Europe has lowered the manual workers wage bill share by 2.7 percentage points between 1991 and 2000 which makes up 57 per cent of the decline in manual workers wage bill share over the period.

51 Boulhol (2003) develops a model inspired by that of Rowthorn and Ramaswamy (1998) where relocation is found to be closely linked to productivity gains. The study makes use of data for 16 OECD countries between 1970 and 2002. The results of this study reinforce those of Rowthorn and Ramaswamy (1998) namely that deindustrialisation results primarily from a natural process of higher productivity gains in industry. The paper’s estimates suggest that international trade has accounted for no more than 15 per cent of the observed magnitude of deindustrialisation. This, in turn, is driven by the increase in imports of the South (poorer countries) where it is estimated that a one per cent of GDP increase in imports from the South causes a relative impact on relative employment of -2.8 per cent.
Effects of relocation on productivity

51 Girma and Görg (2004), as previously mentioned, looks at the effects of outsourcing (domestic and offshore) on domestic and foreign owned firms using UK establishment level data. The study finds that outsourcing increases both labour productivity and TFP (total factor productivity) and that the increase is found to be more pronounced in foreign owned firms.

52 In a follow-up with similar results study, Görg et al. (2005) investigate the impact of international outsourcing on productivity using plant level data for Irish manufacturing from the Irish Economy Expenditure Survey for the period 1990-1998. Econometric analysis suggests that there are productivity gains to exporting firms which engage in the international outsourcing of intermediaries. The study finds a one percentage point increase in outsourcing intensity increases productivity at the plant level of foreign multinationals by 1.7 percent and of domestic firms by 0.9 per cent. A possible reason for this advantage of multinational firms from international outsourcing suggested by the paper is that multinational firms are part of international production networks and possess better knowledge on where to procure competitively priced inputs.

Summary: findings on the effect of relocation

53 The studies exploring the effects of relocation make use of different data; different sectors, countries and time periods are considered. Against this backdrop, it is perhaps not surprising that no consensus is reached on the effects of relocation on employment in general. While some authors have found relocation to be associated with falls in employment levels, a set of other authors suggest relocation does not impact on the numbers that are employed but does have an effect on the characterisation of those that are employed. In particular, one result echoed by several papers is that relocation shifts the composition of employment towards the higher skilled workers. It also appears to be a finding emerging from the literature, that relocation widens the gap between the wage levels in the source country.

54 Perhaps more surprising is that the literature does seem to come to an agreement on the positive effects of relocation on the productivity in the source country.

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