

## Offshoring of production – a European perspective

Frequency, target regions and motives

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### Summary

One quarter to half of the manufacturing companies in different Western European countries performed offshoring of production activities in 2002 or 2003. In Eastern Europe production offshoring is rather uncommon. Surprisingly, it is not an over-proportionally frequent phenomenon in countries with the highest labour costs in Western Europe. Attempts to reduce the costs of production factors are still the dominating motive, but factors such as market opening, vicinity to key customers or securing the ability to supply locally are important, too. However, production offshoring is not necessarily an irreversible one-way process. Varying from country to country, every second to sixth offshoring company is countered by a backshoring company.

The ten new EU-member countries, Eastern Europe and Asia are the most attractive target regions for cost driven offshoring activities. Market and customer oriented offshoring activities are predominantly targeted at Northern America and Asia, whereas Western Europe seems to be attractive for compensating for capacity bottlenecks or as source for new technologies. An analysis of the characteristics of offshoring companies shows that it is predominantly larger companies with a high share of very old products in turnover, hence with only slight improvement potentials in the underlying mature production processes, who tend to offshore parts of their production.

## 1. Introduction

**Offshoring of production activities seems to have gained momentum since the EU expansion**

During the last few years globalisation of economy has come into the focus of economic policy discussions. Whereas in the past predominantly large multinationals have established production facilities abroad (Henzler 1992), today more and more small and medium sized enterprises (SMEs) open up new markets abroad thereby utilising the advantages of a more intensive international labour division (Bassen et al. 2001; DIHK 2003) by offshoring parts of their production either to affiliated companies abroad or to other companies in foreign locations. As a result of the ten new member countries joining the European Union this development has gained momentum (Kinkel und Lay 2004).

Economic literature convincingly shows that internationalisation of production can be advantageous in the long term for both the offshoring and the target countries (Barba Navaretti and Venables 2004; Lipsey 2002). Nevertheless, public opinion in many European countries views this development with some scepticism. However, this discussion often lacks empirical evidence. Statements on the extent or motives and determinants of production offshoring are often based on singular and subjective observations rather than empirical evidence.

**The European Manufacturing Survey (EMS) ...**

The *European Manufacturing Survey* (EMS) tries to close this gap. The survey collected data on technical and non-technical process innovations as well as manufacturing and offshoring strategies in 2,249 companies from Austria, Croatia, France, Germany, Great Britain, Italy, Slovenia, Switzerland, and Turkey (see box on the last page). In the following, the EMS constitutes the basis for an analysis of the extent and motives of production offshoring in different European countries, followed by an identification of the decisive factors and the specificities of offshoring companies. We will try to answer the following questions:

**... and its key questions regarding production offshoring**

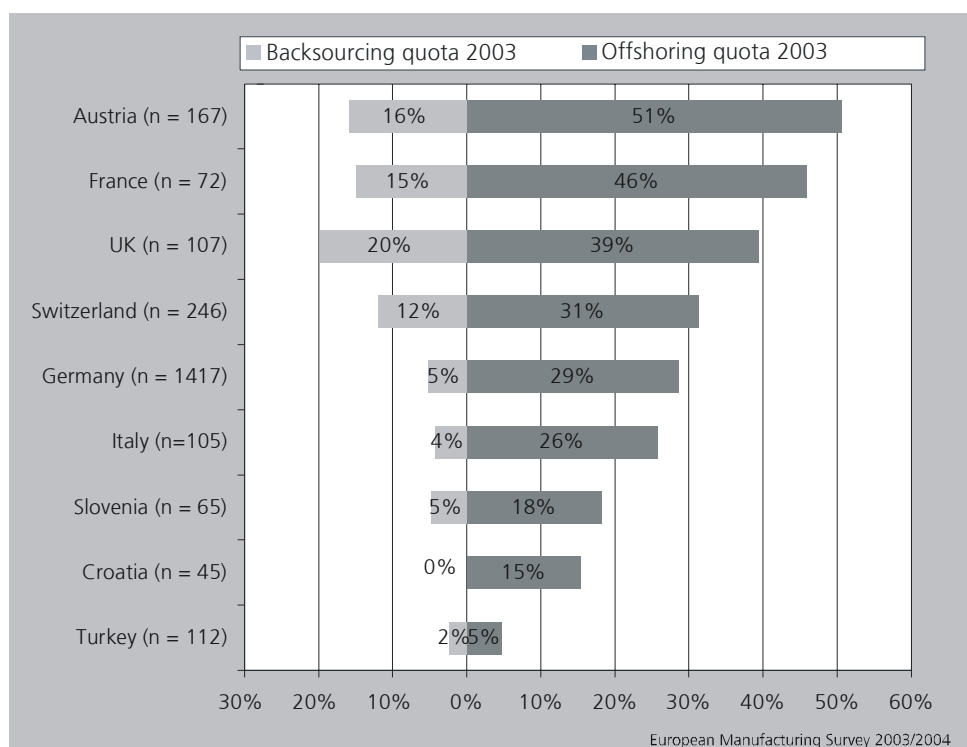
- How many companies do offshore parts of their production? Into which target countries is production offshored?
- Why do companies offshore production facilities? Is there an interrelationship between motives and target countries?
- Are there specific characteristics discernible differentiating offshoring companies from those not having offshored production facilities between 2002 and 2003?

This article adds to other publications based on EMS on production offshoring in Germany (Kinkel and Lay 2004) and Switzerland (Waser and Hanisch 2005).

## 2 Frequency of production offshoring

The results clearly show that the offshoring of production facilities has been an important strategy for modernising production in all the surveyed countries. However, marked differences as regards the degree of offshoring can be found. Austria ranks first as regards production offshoring. In the surveyed period 2002 and 2003 every second Austrian company has offshored production facilities abroad. In the past, Austrian companies have had rather low direct investments quotas abroad and only in the last few years they have engaged themselves, mainly in Central and Eastern Europe to a markedly higher degree (Dell'mour 2005). On the one hand, Austrian companies' high willingness to offshore production clearly stems from the new opportunities the neighbouring countries in Central and Eastern Europe are offering. On the other hand, contrary to Germany or Switzerland for instance, Austrian economy has a markedly lower degree of direct investments abroad and therefore the high number of Austrian offshoring companies may very well be interpreted as a sign of Austria trying to catch up in the "offshoring race".

**Austria ranks first in production offshoring ...**



**Figure 1:** Share of companies having offshored parts of production abroad resp. having backsourced from abroad (2002 and 2003)

With roughly 40 percent of pursued offshoring activities, France and the United Kingdom rank second and third. Contrary to Austria, these countries already have a markedly higher degree of direct investments abroad; hence the high quota of offshoring activities does not stem from a backlog. It rather seems that in times of low or declining direct investment flows abroad (OECD 2005)

**... followed by France and the United Kingdom**

production offshoring presents a promising alternative to foreign plant extension investment to further improve the vicinity to customers and markets in emerging key markets.

**Germany and Switzerland take midfield ranks in production offshoring**

With about 30 percent offshoring companies, Switzerland and Germany take midfield ranks in European comparison. In both countries, this percentage of the period 2002-2003 when compared to the respective percentage for the preceding two-years period 2000-2001 indicates a moderate increase (from 25 percent in Switzerland) or in the case of Germany a more marked increase from 21 percent (Waser and Hanisch 2005, Kinkel and Lay 2004). Hence, for Germany these figures have almost reached the offshoring peak of the late 1990s. Differences between Swiss and Austrian offshoring intensity might be partly attributed to the fact that Swiss direct investments abroad are already markedly higher than the Austrian ones (OECD 2005). A Swiss backlog therefore does not seem to exist. Moreover, the ten new member countries might not have exerted the same attraction on Swiss firms than they have exerted on the geographically nearer Austria. The same applies to German companies which might possibly have anticipated good opportunities for entering the new Eastern „neighbour markets“.

**Eastern European countries are rather target than origin regions of production offshoring**

One fourth of Italian companies has offshored production facilities abroad. This rather mirrors the midfield position Italy takes as regards direct investments (OECD 2005). It comes as no surprise that Slovenian, Croatian, and especially Turkish companies register lower offshoring rates. This clearly reflects the lower export intensities of these countries as drivers of market oriented production abroad as well as their comparatively more favourable position with regard to wage levels as a driver of cost oriented offshoring strategies. Accordingly, these countries still count among the target rather than the origin regions of offshoring activities.

**Every second to sixth offshoring company is countered by a back sourcing company**

The number of companies having back sourced parts of production in the years 2002 and 2003 clearly shows that production offshoring does not necessarily mean a one-way process. The number of backsourcers per country varies just as much as the quota of offshorers; it ranges from 0 percent for Croatia to 20 percent of all the companies in the United Kingdom. However, when examining these figures one has to keep in mind that they refer to all the surveyed companies and not only to those that already have offshored production facilities abroad before. When having a closer look at the relationship between the quota of backsourcers and that of offshoring companies the following pictures emerges: It ranges from one backsourcer compared to six offshoring companies in the case of Italy to one backsourcer compared to two offshoring companies

in the United Kingdom; i.e. a span from about 16 percent to 50 percent. The following pattern shows: Countries ranking top as regards offshoring quotas (30 percent and more) do also take top ranks in backsourcing quotas (12 percent and more, based on all the surveyed companies). Countries with an offshoring quota of less than 30 percent do also have a markedly lower backsourcing ratio of 5 percent and less.

More detailed analysis of the German database has conclusively shown that the quota of backsourcers is more stable when compared to the quota of companies having offshored production facilities in the two years before (Kinkel and Lay 2004). The backsourcers' progression follows the curve of the offshoring companies with a backlog of two years. Hence, every fourth to fifth offshoring activity is countered by a backsourcing activity the following two years. Summing up, it is obvious that backsourcing activities are no exceptional cases but with a view to the share of companies offshoring production facilities present a quantifiable phenomenon.

### **3 Target regions of offshoring activities**

As in the case of offshoring quota also as regards the target regions of production offshoring marked differences between the surveyed countries can be found (Figure 2). Germany and France, and Austria in particular are more strongly focused on the EU-ten, i.e. the member countries having joined the European Union on May 1st 2004, than other countries are. The clear preference of the companies of these three countries, especially the Austrian ones towards these new member countries, above all, is the result of the geographical and also cultural vicinity. Austria and Germany particularly are linked to some of the new member states by a common history, similar industrial experiences, and in some regions even the same language. Given these grown ties, it is all the more astonishing that Italian companies despite their geographical and sometimes cultural vicinity (especially to the Southern East European member states) have not offshored production activities to these countries. One possible explanation might be that Italian companies have not been as proactive as Austrian, German and French ones - bearing in mind that the surveyed period 2002 and 2003 is one to two years prior to the ten new member states joining the EU. Italian companies tend to offshore production facilities to Eastern European regions more far away, the CIS regions included.

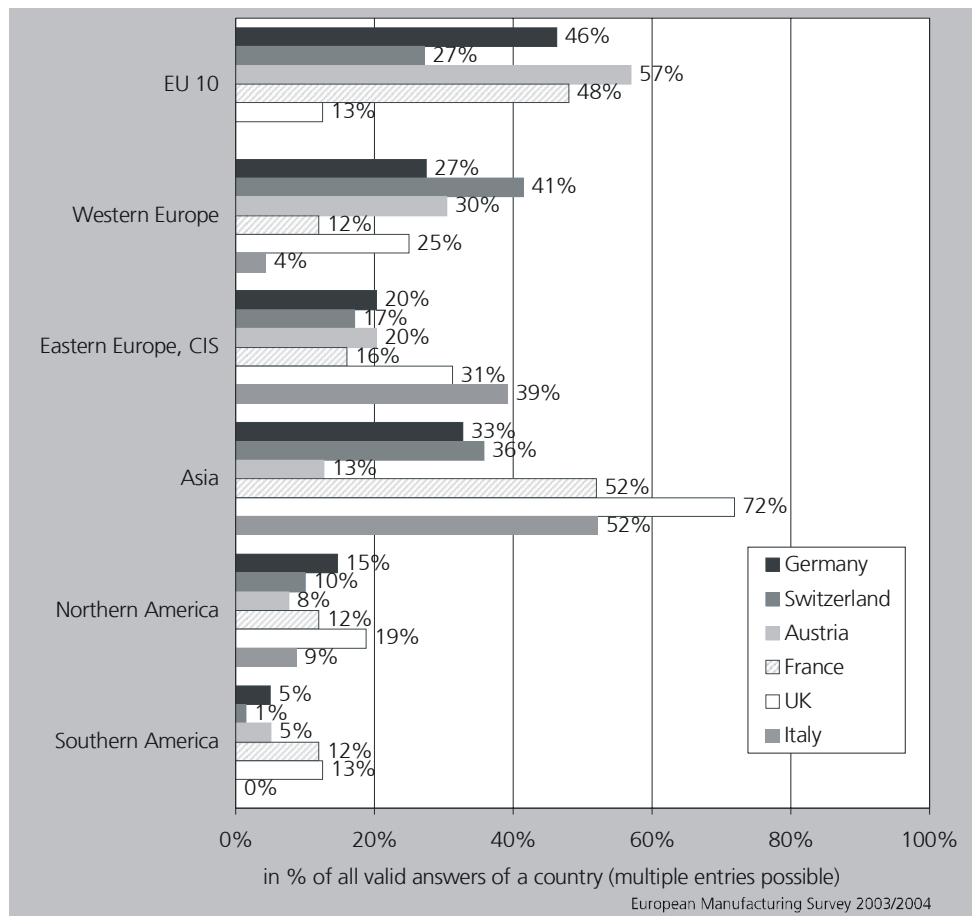
**German data shows: backsourcing follows offshoring with a backlog of two years**

**Austrian, German and French firms are focussing production offshoring on the ten new EU member states**

**Swiss and British firms are directing their offshoring activities more often to Asia**

Quite contrarily, Swiss companies or firms from the United Kingdom are aiming at a higher diversification of their offshoring activities abroad. Hence, they tend to direct their offshoring activities noticeably more often to Asian countries. Compared to Austrian companies Swiss firms do act rather globally whereas Austrian companies offshore production more often to geographically nearer targets. Overall, Asia is rather attractive for European companies. Especially companies from the United Kingdom but also firms from France and Italy have frequently offshored parts of their production into this target region. The Chinese market will most certainly have played an important role in these offshoring activities.

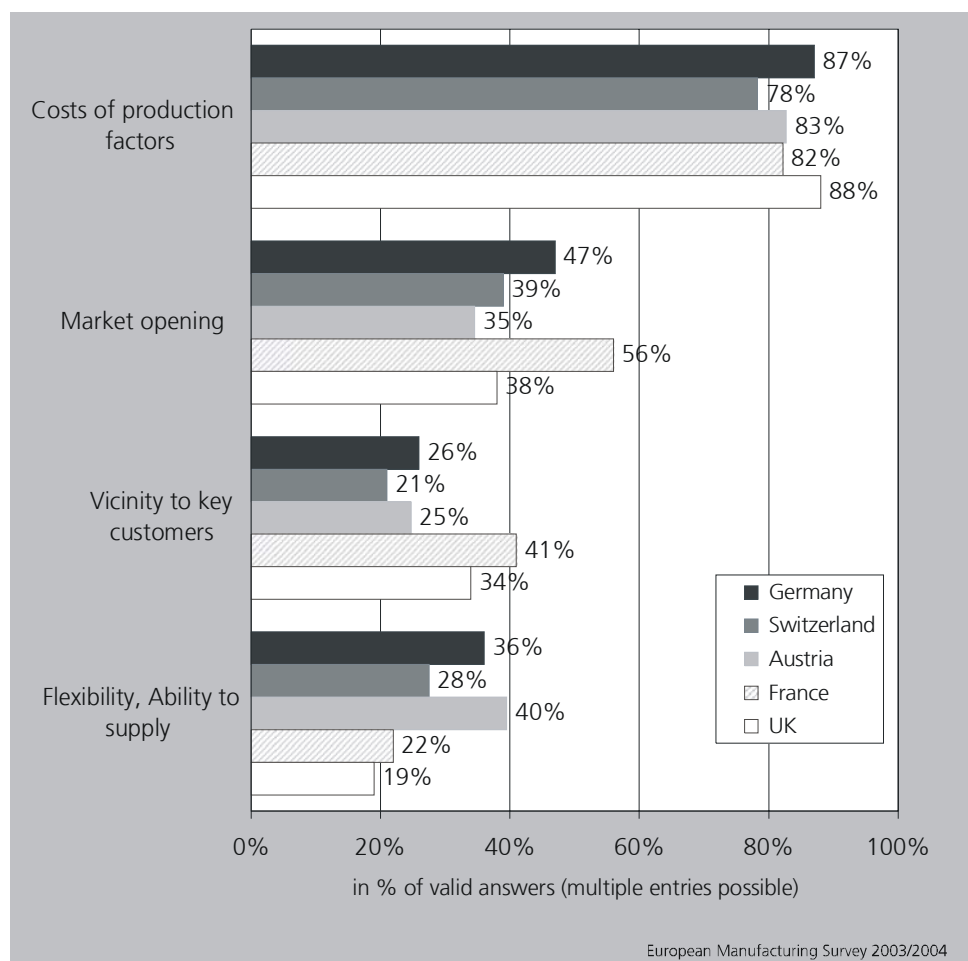
**Figure 2:**  
Target countries of production offshoring (2002 and 2003)



For many companies Western Europe still remains an important target region for offshoring activities. Particularly companies from Switzerland, Austria, Germany or the United Kingdom have offshored production capacities to Western European locations in 2002 or 2003. However, this particularly applies to offshoring to already existing production sites for capacity balancing and not so much for the establishment of foreign production sites in this region. Due to unfavourable currency relations, the United States and Northern America have not been a very attractive target region for offshoring activities.

#### 4 Motives for offshoring activities

The surveyed companies mention lower costs for production factors in the target countries as the main factor triggering off offshoring activities. Contrarily to the findings on the extent of production offshoring and the respective target regions, surveyed companies from different European countries do not show marked differences as regards motives on the whole and cost motives particularly (Figure 3).



**Figure 3:**  
Motives for production offshoring (2002 and 2003)

For the participating Western European countries having surveyed the motives for production offshoring the share of, at least partially, cost driven production offshoring (multiple entries possible) varies only slightly between 80 and almost 90 percent. This surprisingly high importance of the cost argument seems to be all the more surprising as labour intensive sectors such as food, textile, leather or clothing which would most probably have also more marked cost incentives for offshoring production are not covered in the survey. Obviously, also highly automated sectors with a low wage tangent such as automotive industry for instance see clear saving potentials in production offshoring.

**Reduction of costs still is the dominating motive for production offshoring**

**Opening up of  
new markets  
ranks second as  
motive for  
offshoring  
production**

Despite the paramount importance of cost savings as motive for production offshoring we have to keep in mind that deciding for production offshoring is often not triggered off by a singular factor but by a whole bundle of motives. This is clearly indicated by the high number of multiple entries as shown in Figure 3. In most countries, active opening up of new markets takes second rank as motive for offshoring production. Across the surveyed countries the importance of this motive varies slightly more than the cost argument. It is only 35 percent of the Austrian companies pursuing a proactive market oriented offshoring strategy, whereas for more than half of the French offshoring cases (56 percent) the target market plays a decisive role.

Varying with the surveyed country, vicinity to key customers or improvement of flexibility and ability to supply locally can be of paramount importance for up to 40 percent of the companies. Vicinity to the customer as one of the decisive factors ranges from 20 percent of the surveyed Swiss companies to about 40 percent of the French companies. Flexibility and ability to supply influence about 20 percent of the offshoring decisions in the United Kingdom and 40 percent of the Austrian ones. Summing up, we can say that in all the examined Western European countries at least one of the three surveyed market, customer or supply oriented motives plays an important role. Therefore, production offshoring is by no means, as public discussion often tends to insinuate, always a mere cost and efficiency oriented measure. Detailed analysis of offshoring activities of German companies (Kinkel and Lay 2004) has conclusively shown that these heavily discussed cost driven production offshorings have a markedly higher risk of failing and a more negative impact on the employment situation at the home location, whereas market and customer driven offshoring activities tend to fail less often and also do not have a negative impact on the employment situation at the German location.

Moreover, the motives for production offshorings are closely related to the target countries of these activities. To identify and relate bundles of motives to the target countries we will present a multivariate regression model in the following. This model takes motives for offshoring activities as dependent variables and the target countries as independent variables. Table 1 lists the significance levels and the sign of the resulting marginal effects.



|                                | Western Europe | EU10  | Eastern Europe incl. CIS | Northern America | Central America | Asia  |
|--------------------------------|----------------|-------|--------------------------|------------------|-----------------|-------|
| Costs of production factors    |                | + *** | + ***                    |                  |                 | + *** |
| Market opening                 | - *            |       |                          | + ***            | + **            | + *** |
| Technological development      | + **           |       | - *                      |                  |                 |       |
| Vicinity to key customers      |                |       |                          | + ***            | + *             |       |
| Flexibility, Ability to supply |                |       |                          | + ***            | + *             | + **  |
| Capacity bottlenecks           | + ***          |       |                          | + *              |                 |       |

Coefficients significantly diverse from zero, probability value of 10% (\*), 5% (\*\*), or 1% (\*\*\*)

Source: European Manufacturing Survey 2003/2004

**Table 1:**  
Motives for production offshoring, by target countries

The results indicate a clear pattern. Selecting the ten new EU member states, Eastern European or Asian locations as target countries for offshoring activities has a positive, highly significant correlation with costs of production factors. Contrarily to the EU-ten and Eastern European states, in Asia the surveyed companies additionally find strong market incentives to produce locally thereby improving their ability to supply. The fact that the markets in the EU-ten can more easily be supplied with exports from the home bases of the surveyed companies might account for the lack of market incentives in the EU-ten.

**Eastern Europe and Asia are the most attractive target regions for cost driven offshoring activities**

As was to be expected, market and customer oriented motives as well as improving the ability to supply locally rather than cost benefits have dominated the executed production offshorings to Northern and Central America. Offshoring to Southern America, too, is triggered off by motives such as market opening, vicinity to customers and ability to supply.

With regard to the other surveyed target regions Western European locations alone are significantly more often named as target sources of new technologies. Quite contrarily, the use of new technologies correlates negatively with Eastern Europe as the sole target region. Companies trying to get to know new technologies on site by means of offshoring activities tend to choose Western European locations, Eastern European non EU-countries seem to be out of this question. To a higher-than-average extent production capacities are offshored to Western Europe, particularly to compensate for capacity bottlenecks at home. Western European locations' geographical vicinity and hence controllable logistics expenses as well as these locations being quite similarly designed in terms of products manufactured and production structures will most certainly play a decisive role when deciding for these locations. However, contrarily to

**Western Europe is attractive for compensating for capacity bottlenecks and as source for new technologies**

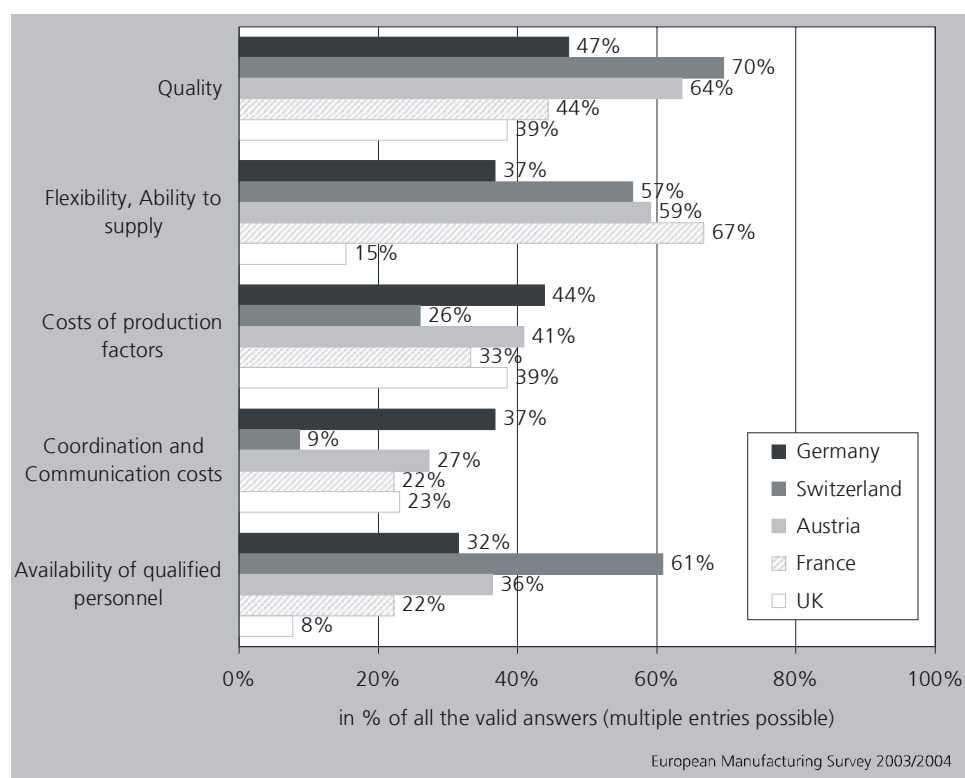
offshoring directed towards America and Asia, market opening does not play a decisive role. Given the geographical and cultural vicinity as well as the existence of sophisticated infrastructures, Western European markets can easily be served by exporting domestic production to these markets.

## 5 Motives for backsourcing

**Quality problems rank top as motive for backsourcing activities**

Compared to the motives for offshoring activities, as regards the motives for backsourcing activities more marked differences between the surveyed countries can be discerned. Quality problems still rank top in all the surveyed countries - France being the exception – (here rank two) as the most important motive triggering off backsourcing of parts of production to the home location. The ratio of quality problems triggering off backsourcing activities ranges from about 40 percent in the United Kingdom to even 70 percent in the case of Switzerland. Problems with flexibility and ability to supply play an important role in backsourcing decisions of Swiss, Austrian and French companies. These countries particularly with their main markets in the neighbouring European countries are quite susceptible to delivery and flexibility problems. Astonishingly enough, also the costs for production factors often play an important role as motive for backsourcing, particularly for German, Austrian and British companies. This reflects problems in estimating realistically before the offshoring decision how costs and prices abroad will develop in the following years.

**Figure 4:**  
Motives for backsourcing activities (2002 and 2003)



In particular, unexpectedly high coordination and communication costs for the location abroad do influence back-sourcing decisions of German, but also of Austrian, French, and British companies. This finding is supported by the results of qualitative case studies which conclusively show that the monitoring costs for the home location supporting the location abroad (overheads) are often not sufficiently calculated beforehand (Kinkel 2004).

**High coordination costs ...**

Availability of qualified personnel still presents a major obstacle for the establishment of production capacities abroad. Swiss companies particularly complain that the lack of qualified personnel also accounts for more than 60 percent of the executed back-sourcing activities. However, also Austrian and German companies regard the lack of qualified personnel as one of the main factors triggering off back-sourcing activities. This clearly shows that even if the qualification level of the personnel is relatively high as this is the case in the new EU member states, this can often be "outshined" by the implicit expectations resulting from long years of experience with qualified personnel at the home location thus culminating in disappointment with the quality of the production abroad.

**... and lack of qualified personnel are also important reasons for back-sourcing decisions**

## **6 Characteristics of offshoring companies**

Summing up, with the help of a multivariate probit analysis for companies having offshored parts of their production between 2002 and 2003, representative characteristics allowing for a differentiation of offshoring companies from those not having offshored production activities in the surveyed period are to be identified and analysed. For this analysis the answers of the surveyed German, Swiss and Austrian companies have been utilised.

The analysis clearly shows that one of the strongest factors determining whether a company is likely to offshore production facilities is its size (in the analysis logarithmised). It comes as no surprise that large companies with larger and thus more easily separable production capacities together with their more profound experience and more extended personnel resources for establishment of production facilities abroad tend to offshore parts of their production more frequently than SMEs do.

A company's share of products which have been in the company's portfolio for more than ten years seems to have a similar impact on the offshoring probability of the respective company. Products which have been in the market for such a long time tend to be subject to a particular cost pressure inducing utilisation of additional cost saving potentials. The ability to launch new products (share

**Offshoring companies show a higher share of very old products in turnover**

of products younger than three years in turnover), however, does not seem to have a significant impact on the offshoring probability.

**Table 2:**  
Probit-Regression  
of characteristics  
of offshoring  
companies

| <b>Variable</b>   | <b>Marginal effects</b> | <b>Coincidence probability</b> | <b>Significance</b> |
|---|-------------------------|--------------------------------|---------------------|
| Number of employees (ln)  | 0.108                   | 0.000                          | ***                 |
| Labour intensity: share of personnel costs  | - 0.003                 | 0.002                          | ***                 |
| Share of products younger than 3 years in turnover  | 0.026                   | 0.291                          |                     |
| Share of products older than 10 years in turnover   | 0.102                   | 0.000                          | ***                 |
| Final assembly to customer order, prefabrication on stock                                   | 0.040                   | 0.187                          |                     |
| Production to stock   | 0.070                   | 0.105                          |                     |
| Single unit production or small batch   | - 0.038                 | 0.215                          |                     |
| Large batch   | - 0.002                 | 0.957                          |                     |
| Simple multipart products   | 0.066                   | 0.058                          | *                   |
| Complex multipart products  | 0.027                   | 0.504                          |                     |
| Complex plants  | 0.013                   | 0.771                          |                     |
| Chemical industry   | - 0.091                 | 0.065                          | *                   |
| Manufacturers of metal products   | - 0.049                 | 0.256                          |                     |
| Mechanical engineering  | 0.053                   | 0.285                          |                     |
| Electrical industry   | 0.079                   | 0.178                          |                     |
| Precision technology: medical devices, measurement and control technology, optical industry | 0.072                   | 0.245                          |                     |
| Other sectors   | 0.085                   | 0.161                          |                     |
| Switzerland   | 0.057                   | 0.129                          |                     |
| Austria   | 0.171                   | 0.000                          | ***                 |

Coefficients significantly diverse from zero, probability value of 10% (\*), 5% (\*\*), or 1% (\*\*\*)

Source: European Manufacturing Survey 2003/2004

Furthermore, the labour intensity of production processes as regards the share of personnel costs in turnover has a significant impact on the probability of companies' offshoring production facilities abroad. However, surprisingly enough, this impact is inversely proportional so that a lower labour intensity implies a higher probability to offshore parts of production. This interrelation might indicate the limits of cost saving potentials through modernisation and automation (i.e. increase of labour productivity) of the respective production processes at home, especially if very mature products and processes are concerned. Companies seem to try to overcome these rationalisation barriers by offshoring production activities.

Characteristic features of the main product, however, only have a minor impact on whether production is offshored or not. Neither for the variables „degree of production to customer order“ nor for „production to stock“ or “batch size“ do we find a significant relation to whether or not parts of production are offshored.

However, producers of simple multipart products (e.g pumps and gears) display a more marked tendency to offshore production facilities. Kinkel and Lay have conclusively shown that offshoring and product complexity are linked by a transversely U-shaped relationship (2004, p. 5): simple products as well as very complex products and plants are less suited for offshoring activities. The first can be efficiently produced at the home location using highly automated and standardised production processes. As regards capital costs, foreign locations do not have any economic advantages. For the production of highly complex products and plants, however, highly qualified staff and several different service inputs are needed. These requirements are estimated to be more easily and better available at home than at the location abroad. Multipart products however, which in terms of product complexity range between these two groups mentioned above, are most strongly affected by offshoring activities.

The sector does not have an impact on the companies' willingness to offshore production facilities. Only the chemical industry displays a significantly lower likeliness to offshore production facilities than the reference sector, the plastics industry does. Particularly in the chemical industry production processes are often quite capital intensive and automated so that efficiency oriented offshoring activities do play a less important role in this sector. Contrary to German companies, Austrian companies show a significantly higher readiness to offshore production facilities. Swiss companies do behave similar to the German ones. This finding has already been discussed in the chapter on the frequency of production offshoring.

**Transversely U-shaped relationship between product complexity and offshoring probability**

**Chemical industry has a lower likeliness to offshore production**

## **7 Conclusions**

This analysis based on data from the European Manufacturing Survey (EMS) has shown that offshoring is a very complex topic which does not allow simple, one-dimensional explanatory approaches. Offshoring activities are neither characterised solely by attempts to reduce the costs of production factors – even if this is still the dominating single motive – nor are they an over-proportionally frequent phenomenon in countries with the highest labour costs (such as Germany or Switzerland for instance). The surveyed companies increasingly base

their offshoring decisions on a whole bundle of different motives including factors such as market opening, vicinity to key customers or securing the ability to supply locally. More detailed analysis (Kinkel and Lay 2004) has shown that these strategies are more sustainable, they are economically more successful and, quite contrarily to mere cost-driven offshoring activities, they do not have an immediate negative impact on the employment situation at the home location.

**Production offshoring is not necessarily an irreversible one-way process**

This analysis has also shown that production offshoring does not necessarily mean an irreversible one-way process. Varying from country to country, every second to sixth offshoring company is countered by a backsourcing company. Therefore, backsourcing activities are by no means mere exceptional cases but a quantifiable phenomenon. Main motives triggering off backsourcing activities are quality problems, shortcomings in flexibility and ability to supply, unexpected cost and price developments abroad, high monitoring and coordination costs as well as insufficient availability of qualified personnel at the foreign location.

It comes as no surprise that motives triggering off production offshoring cannot be analysed without taking into account the target country. Particularly the ten new EU-member countries, Eastern Europe in general as well as Asia seem to be attractive target regions for cost driven offshoring activities. Market and customer oriented offshoring activities are predominantly targeted at Northern America and Asia, whereas Western Europe seems to be a popular location for compensating for domestic capacity bottlenecks or as source for new technologies.

**Limited saving potentials of modernisation and automation in very mature production processes induce offshoring activities**

A multivariate analysis of the characteristics of offshoring companies shows that it is predominantly larger companies with a high share of very old products in turnover, hence with only slight improvement potentials in the underlying mature production processes, who tend to offshore parts of their production. Surprisingly, the labour intensity of production processes correlates negatively with the offshoring probability of the company; i.e. the lower the share of personnel costs in turnover the more likely this company is to offshore production facilities. This finding, too, indicates limited saving potentials of modernisation and automation in very mature production processes. These limitations might induce companies to try to overcome these rationalisation barriers by offshoring activities.

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## **European Manufacturing Survey 2003/2004**

The European Manufacturing Survey (EMS) was conducted in 2003/2004 as a pilot survey in nine European countries. The survey covers Austria, Croatia, France, Germany, Great Britain, Italy, Slovenia, Switzerland and Turkey. In total 2249 firms answered questions concerning manufacturing strategies, the application of innovative organisational and technological concepts in production and questions of personnel deployment and qualification. In addition, data on performance indicators such as productivity, flexibility, quality and returns was collected.

The responding companies present a cross-section of the main manufacturing industries. Producers of rubber and plastics are represented by 11 percent, producers of metal works by 27 percent, mechanical engineering by 31 percent and electrical engineering by 10 percent.

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