HIGH POINT INDUSTRIES OF THE AEGEAN REGION OF TURKEY

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ÖZET

ABSTRACT
As theoretical studies on industrial clusters have progressed, many researchers have focused on identifying clusters in various regions in different national economies. The emphasis has generally been to identify potential clusters, upon which a policy of sustainable development can be formulated. This paper aims to provide a basis to enable the identification of the regional clusters in Turkey. Using manufacturing industry data for years 1995 and 2000, regional high points of the Aegean Region have been identified by calculating shares of regional employment and concentration ratio. Then the identified industries have been focused upon to provide an initial framework to identify Aegean Region’s clusters.

INTRODUCTION
It is generally agreed upon that a transition from an international to a global economic order took place in the early 1970s, with the collapse of the Bretton Woods system. Some of the most important aspects of this new era are; a deep integration of production at a global level, replacement of nation states by TNCs as the most important economic actors of the world and the global division of labour that has come to take place between regions (Amin and Thrift, 1996:2; Asheim and Dunford, 1997; Levy and Dunning, 1993).

Such events have increased the importance of the concept of “industrial agglomeration and specialisation” in formulation of regional policies aimed at the creation of sustainable competitive advantage. Even though the concept has been in use for more than a hundred years (Marshall, 1890), it’s current importance is mostly due to Porter’s popularisation of the concept of clusters, which is a version of growth pole theory (Cooke, 2001a). The growth-pole theory (Perroux,1955) states that economic development takes place by the expansion of networks of interconnected firms at various locations. Constituting the focal points of networks of principal firms, growth poles are thought to form the driving force of economic growth. Economic relations within this framework are regarded to be more dependent on the nature of market relations in economic space rather than physical space (Perroux,1970; Lambooy and Boschma, 2001). However, Porter has emphasised the importance of local concentration and defined clusters as:
...geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate” (Porter, 1998).

Even though a generally accepted definition of clusters does not exist, a point of common understanding between researchers is that the clusters are an opportunity for moving towards a more knowledge-based economy which may increase the chances for attaining a sustainable development path (Cooke, 2001b). The learning process involves absorption, generation and diffusion of new knowledge and clusters provide the social milieu in which especially tacit knowledge, created by learning-by-doing, can be exchanged. Drawing on daily routines, on the tacit experience of using capital goods, producing, interacting with both customers and other manufacturers do the informal exchange channels operate and enable access to highly localised specific learning processes and external and internal tacit knowledge which are very important for increasing returns to scale (Krugman, 1991; Antonelli, 1998; Antonelli, 1999; Amin and Wilkinson, 1999; Gertler, 2001; Gregerson and Johnson, 1997; Keeble and Wilkinson, 1999).

Thus, the cluster theory has become the standard concept in a new field, even if it is widely debated to be considered as standard, and policy-makers all over the world have seized upon the concepts of the cluster model as a tool for promoting national, regional and local competitiveness, innovation and growth. (Martin and Sunley, 2003).

**PURPOSE**

This article’s aim is to identify the manufacturing high point industries across the Aegean Region, and provincial locations of these industries. The identification of manufacturing high point industries, will provide a starting point for an industrial cluster study for the Aegean Region development policy.

**METHODOLOGY**

The methodology used to identify high points can be characterised as follows:

- Boundaries of Aegean Region have been identified in accordance with the definition of the region by the State Planning Organisation (SPO), which is basically geographical in nature. According to this definition, the region consists of 8 provinces, namely Izmir, Manisa, Denizli, Aydin, Mugla, Manisa, Afyon and Kutahya.

- Firm level four-digit ISIC Rev 3 data of Aegean Region manufacturing industries have been obtained from State Institute of Statistics (SIS). The analysis encompasses all manufacturing industries of economic activity and is Aegean Region-wide.

- The analysis is firm-based, using data for years 1995 and 2000 on more than 21309 firms relating to their type of activity, employment, location, value-added, size and regional exports and imports of industries.

- Employment data has been used to identify regional “high points” which are defined as industries that account for at least 0.2 per cent of the regional workforce and at least 25 per cent more concentrated than the national average (that is, with an LQ value over 1.25). Location Quatient (LQ) values have been calculated as follows:

\[
LQ = \frac{\{E_{ij} / \Sigma_i E_{ij}\}}{\{\Sigma_T E_{iT} / \Sigma_i \Sigma_T E_{iT}\}}
\]

where E stands for employment and subindex i stands for 4 digit SIC Rev 3 industry, subindex j stands for the studied unit of analysis (Aegean Region or provinces in this case) and subindex T stands for all the provinces of Turkey. Thus;

\[
E_{ij} \text{ stands for employment of a given industry (i) in a given region (j),}
\]

\[
\Sigma_i E_{ij} \text{ stands for total industry employment in a given region (j),}
\]

\[
\Sigma_T E_{iT} \text{ stands for total national employment of a given industry (i) and}
\]

\[
\Sigma_i \Sigma_T E_{iT} \text{ stands for total national employment of all industries.}
\]

**EMPIRICAL RESULTS**

The Aegean Region

Turkey consists of 7 geographical regions. According to State Planning Organisation (SPO) data for the year 2000, Marmara Region has the highest value of GDP with a value of $74 billion and Aegean Region has the third value, $30.5 billion.
Table 1: Provincial Profile of the Aegean Region Manufacturing Industry

<table>
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<tr>
<th>Province</th>
<th>Number of Firms</th>
<th>Number of firms of Employment</th>
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<th>Value Added of Total</th>
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The region stands for about 15% of national GDP. In terms of per capita GDP, Marmara Region again takes the lead with a value of $3060 whereas Aegean Region is the second with $20610. The Aegean Region ranks fourth as recipient of public investment expenditures; a value of $550 million out of a national total of $10,5 billion.

Manufacturing industry of Aegean Region concentrates mostly in the provinces of Izmir, Manisa and Denizli. In the Aegean Region, 82.83% of the firms, 84.18% of employment and 91.83% of created value added in manufacturing are accounted for by these three provinces. Among these three provinces, Izmir accounts for more than half of the region’s firms, employment and created value added in manufacturing.

High Points Industries of the Aegean Region

24 high point industries have been identified in the region, which account for 25% of firms, 36.7% of employment and 55.3% of created value added from the Aegean Region manufacturing industry. In terms of the number of firms, non-refractory clay and ceramic products sector is a leader where as in terms of employment the tobacco sector is the first. And in terms of created value added, the refined petroleum products sector is the most important.

Considered in terms of number of firms, structural non-refractory clay and ceramic products (ISIC 2693) takes the lead. However, between 1995 to 2000 this industry has shrunk by about a ratio of 1/5. The second, is the processing and preserving of fruit and vegetables (ISIC 1513), which has shrunk by about 1,56% in the same time period. The third largest industry in terms of the number of firms is cutting, shaping and finishing of stone (ISIC 2696), which has, unlike the above mentioned industries, has grown by 12,96% within the considered time period.

The largest decrease in the number of firms within the considered time period is 50% in refractory ceramic products (ISIC 2692) and the next largest decrease in firms is the case of casting of non-ferrous metals (ISIC 2732), with a percentage of 25. The largest increases in number of firms are 166.67% in refined petroleum products (ISIC 2320), 100% in fertilizers and nitrogen compounds (ISIC 2412) and 50% in bicycles and invalid carriages (ISIC 3592). But these three industries do not account for a large number of firms, none of them having more than 10 firms in the year 2000. The number of firms in these industries was very low in 1995 as well. And these industries contain mostly SMEs, the firms employing on the average 10 to 49 employees annually.

Regionally significant High Points: Within the group of identified high point industries, the highest shares in regional employment are; processing and preserving of fruit and vegetables (ISIC 1513) with a share of 4.79%, tobacco products (ISIC 1600) with a share of 4.97%, and structural non-refractory clay and ceramic products (ISIC 2693) with a share of 3.52%.

Declining High Points: In terms of largest decreases in employment between 1995-2000, the following industries stand out: malt liquors and malt (ISIC 1553) with a decrease of 47.30%, fertilizers and nitrogen compounds (ISIC 2412) with a decrease of 24.77%, and machinery for textile, apparel and leather production (ISIC 2926).
with a decrease of 19.27%. However, despite the decreases in employment, these industries display significant increases in created value added.

**Increasing High Points:** Between years 1995-2000, the largest increases in employment were observed in office, accounting and computing machinery industry (ISIC 3000) with an increase of 5836.36%, refractory ceramic products industry (ISIC 2692) with an increase of 1751.72%, and the industry of treatment and coating of metal; general mechanical engineering on a fee or contract basis (ISIC 2892) with an increase of 666.20%. These industries also display considerable increases in created value added.

**Locally concentrated High Points:** The industry with the highest LQ value is plastics in primary forms and of synthetic rubber (ISIC 2413) with a value of 4.79. The percentage change in LQ value of this industry is positive between 1995 and 2000 with a rate of 0.33%. However, within the same time period, the employment level of this industry has decreased by 15.47%. The industry with the second highest LQ value is bicycles and invalid carriages (ISIC 3592), with a value of 3.82. The LQ change in this industry has been very high, a value of 36.45% between the years of 1995 and 2000. The third largest LQ value belongs to non-structural, non-refractory ceramic ware (ISIC 2691); an LQ value of nearly 3.4. The 54.69% change in LQ value in this industry may be considered as very high.

The largest share of created value added within the region belongs to refined petroleum products (ISIC 2320) industry. This industry accounts for nearly a quarter of the regional value added created (26.38%). Considered in terms of exports from the region to other countries, it has been observed that out of these 24 industries, 13 have import values much less than their export values. Only 9 of these

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**Table 2: Firm Number and Firm Size**

**SOURCE:** State Institute of Statistics Manufacturing Industry Database

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<tr>
<th>ISIC Rev 3</th>
<th>Number of firms in 1995</th>
<th>Number of firms in 2000</th>
<th>Percentage Change in Number of firms</th>
<th>Number of Firms According to Employment</th>
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**Aegean Region Totals**

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<th>High Point Totals</th>
<th>Number of Firms in 1995</th>
<th>Number of Firms in 2000</th>
<th>Percentage Change in Number of firms</th>
<th>Number of Firms According to Employment</th>
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<td>473</td>
<td>288</td>
<td>109</td>
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<th>Aegean Region Totals</th>
<th>Number of Firms in 1995</th>
<th>Number of Firms in 2000</th>
<th>Percentage Change in Number of firms</th>
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industries are able to pay for their imports through the Aegean Region.

The proportion of regional imports covered by regional exports, based on the high point industries’s trade through the region, has been calculated by using the following formula:

\[(X_{ij}/M_{ij})*100, \quad (2)\]

where X stands for exports, M stands for imports, subindex i stands for 4 digit SIC Rev 3 industry and subindex j stands for the studied region. According to regional export and import figures, the industries with the best performance in international trade are; made up textile articles; except apparel (ISIC 1721), processing and preserving of fruit and vegetables (ISIC 1513) and malt liquors and malt (ISIC 1553).

### ISIC Based Clusters from High Point Industries

When high point industries are grouped according to ISIC codes, concentrations in three groups are observed. These ISIC based clusters are; food products and beverages (ISIC 15), chemicals and chemical products (ISIC 24), other non-metallic mineral products (ISIC 26).

#### Manufacture of food products and beverages (ISIC 15)

This group is composed of a total of 5 high point industries. These high point industries are processing and preserving of fruit and vegetables (ISIC 1513), vegetable and animal oils and fats (ISIC 1514), dairy products (ISIC 1520), malt liquors and malt (ISIC 1553).

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<table>
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<tr>
<th>ISIC Rev 3</th>
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<th>Value Added 2000</th>
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<th>Share of Regional Value Added</th>
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<td>3592</td>
<td>11825394</td>
<td>8735554</td>
<td>-26,13</td>
<td>0,14</td>
<td>27192578</td>
<td>10285526</td>
<td>37,82</td>
</tr>
</tbody>
</table>

| High Point Total | 4253092061 | 3567726412 | 9601427460 | 3885189163 |
| Aegean Region Total | 7106137871 | 6448600462 | 5111344378 | 4540240154 |
liquors and malt (ISIC 1553), soft drinks, production of mineral waters (ISIC 1554).

This group accounts for 23.14% of employment, 14.54% of value added and 27% of existing firms within the high points of the Aegean Region. The firms also have been classified according to the number of annual average number of employees. According to this classification, 53.90% of the firms within this group employ 10 to 49 workers, 30.47% of them employ 50 to 199 workers and 15.63% of them employ more than 200 workers annually on the average. In other words, about 84.37% of the firms in this group employ less than 200 workers.

**Manufacture of Chemicals and Chemical Products (ISIC 24)**

Within this cluster are three industries, namely fertilizers and nitrogen compounds (ISIC 2412), plastics in primary forms and of synthetic rubber (ISIC 2413), paints, varnishes and similar coatings, printing ink and mastics (ISIC 2422). The employment share of this cluster within Aegean high points is 12.03%, value added share is 7.16% and existing firms share is 4.65%. 59.09% of these firms employ 10 to 49 workers, 13.64% of these firms employ 50 to 199 workers and 27.27% of these firms employ more than 200 workers annually on average. In other words, the proportion of imports covered by exports in this industry is 6.42%. The next industry is manufacture of bicycles and invalid carriages (ISIC 3592) with a provincial LQ value of 7.58. Regional LQ change for this industry has been 36.45% and the 37.82% of imports have been covered by exports through the region.

**Manisa:** The manufacture of soft drinks and production of mineral waters (ISIC 1554) takes the highest value in this province: 13.63. The regional LQ change for this industry between 1995 and 2000 has been 13.81%. Proportion of imports covered by exports in this region has been 242.05% of imports. The second highest value of LQ is displayed by the manufacture of television and radio receivers, sound and video recording and or reproducing apparatus (ISIC 3230) and has a value of 20.68. LQ change in this industry has been 16.57% for the region. Exports of this industry through the region have been able to cover 203.04% of imports of the same industry.

**Kutahya:** For this province, the highest LQ value has been calculated to be 58.10 and belongs to the industry of non-structural non-refractory ceramicware (ISIC 2691). The LQ change for this industry has been 54.69% for the region and the proportion of imports covered by exports is calculated to be 232.79%. The next industry has the provincial LQ value of 26.37 and is the industry of fertilizers and nitrogen compounds (ISIC 2412). LQ change for this industry has been 0.41% and 1.28% of imports of this industry have been covered by the exports of the same industry through the region.

**Usak:** The industry of made up textile articles except apparel (ISIC 1721) has the highest LQ value, 21.18 and the regional LQ value for this industry has increased by 69.85%. This industry has performed outstandingly, being able to pay 3441.21% of it’s imports by it’s exports through the region. Next is the industry of structural non-refractory clay and ceramic products (ISIC 2693). This industry displays an LQ decrease of 5.33% but...
was able to pay 1366.17% of its imports in the year 2000.

Afyon: Cutting, shaping and finishing of stone (ISIC 2696) has a provincial LQ value of 24.62. The LQ change of this industry, according to the regional data, has been 18.63%. This industry also performs well in terms of being able to pay for imports by exports: a ratio of 409.88%. With the second highest provincial LQ value is the industry of pulp paper and paperboard (ISIC 2101) with a value of 9.61. The LQ increase has been 16.89%. However, the proportion of imports covered by exports has been low for this industry: a mere 4.86% according to regional data.

Denizli: The manufacture of made up textile articles except apparel (ISIC 1721) has the highest provincial LQ value: 5.69. The LQ change of this industry in the Aegean Region has been 69.85%; a relatively high rate of change. The proportion of imports covered by exports is 3441.21%, stating that the industry has performed well considered at the scale of the Aegean Region. The next highest value of provincial LQ comes from cutting, shaping and finishing of stone (ISIC 2696) and is calculated to be 3.13. Regional change in LQ has been 18.63% and the proportion of imports covered by exports of this industry is 409.88% for the region.

Aydin: The industry of structural non-refractory clay and ceramic products (ISIC 2693) has a provincial LQ value of 6.55. The regional LQ change in this industry has been a decrease of 5.33%. The proportion of imports covered by exports of this industry has been 1366.17%. The next highest provincial LQ value is 3.52 and belongs to the industry of machinery for textile, apparel and leather production (ISIC 2926). The regional LQ decrease has been calculated as 14.82% between years 1995 and 2000. The proportion of imports covered by exports of this industry through the region in the year 2000 has been 4.92%.

Mugla: The industry of pulp paper and paperboard (ISIC 2101) has a very high provincial concentration displayed by an LQ value of 47.67. The LQ change in this industry has been a 16.89% increase and the proportion of imports covered by exports has been 4.86%. Next highest provincial LQ value is 40.46 and belongs to the industry of cutting, shaping and finishing of stone (ISIC 2696). The LQ change has been 18.63%. The proportion of imports through the Aegean Region covered by exports of this industry through the Aegean Region in the year 2000 has been 409.88%.

CONCLUSION

In this study we used a methodology similar to DTI’s application on UK data to identify clusters. In the Aegean Region, 24 high point industries have been identified by using employment data to calculate location quotient as the main technique to determine the degree of localisation in a given sector. We have two major conclusions concerning the Aegean Region.

First, out of the considered 24 high point industries 6 stand out with positive regional LQ changes and high proportion of regional imports covered by exports. The LQ value increases displayed by these industries means that they have concentrated more locally in the last 5 years. They also have export values more than twice of their import values regionally, thus are able to bring foreign exchange to the region. These industries are manufacture of soft drinks and production of mineral waters (ISIC 1554), tobacco products (ISIC 1600), made up textile articles; except apparel (ISIC 1721), non-structural, non-refractory ceramic ware (ISIC 2691), cutting, shaping and finishing of stone (ISIC 2696) and manufacture of television and radio receivers, sound and video recording and or reproducing apparatus (ISIC 3230).

Second, out of these 24 high point industries, those with relatively higher concentration rates have been classified according to their ISIC codes to form three clusters; namely food products and beverages (ISIC 15), chemicals and chemical products (ISIC 24) and other non-metallic mineral products (ISIC 26). However, these three manufacturing clusters that have been made up only on the basis of employment data can’t be identified as “real” clusters. Interlinks between industries under focus in terms of customer-supplier relations, shared knowledge, infrastructure and labor markets need to be revealed to identify clusters specifically. Thus, this analysis should be taken as an initial identification and it should be kept in mind that it only aims to provide a starting point for a deeper analysis and a strategy of development for the Aegean Region. Such a starting point is crucial for such a point of view has never been used to formulate a cluster-based development policy for the Aegean Region.
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STATE INSTITIUTE OF STATISTICS

STATE PLANNING ORGANISATION
INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION OF ALL ECONOMIC ACTIVITIES (ISIC Rev.3) MANUFACTURING CLASSIFICATION

D MANUFACTURING
15 Manufacture of food products and beverages
151 Production, processing and preservation of meat, fish, fruit, vegetables, oils and fats
1511 Production, processing and preserving of meat and meat products
1512 Processing and preserving of fish and fish products
1513 Processing and preserving of fruit and vegetables
1514 Manufacture of vegetable and animal oils and fats
152 Manufacture of dairy products
1520 Manufacture of dairy products
153 Manufacture of grain mill products, starches and starch products, and prepared animal feeds
1531 Manufacture of grain mill products
1532 Manufacture of starches and starch products
1533 Manufacture of prepared animal feeds
154 Manufacture of other food products
1541 Manufacture of bakery products
1542 Manufacture of sugar
1543 Manufacture of cocoa, chocolate and sugar confectionery
1544 Manufacture of macaroni, noodles, couscous and similar farinaceous products
1549 Manufacture of other food products n.e.c.
155 Manufacture of beverages
1551 Distilling, rectifying and blending of spirits; ethyl alcohol production from fermented materials
1552 Manufacture of wines
1553 Manufacture of malt liquors and malt
1554 Manufacture of soft drinks; production of mineral waters
16 Manufacture of tobacco products
160 Manufacture of tobacco products
1600 Manufacture of tobacco products
| 17  | Manufacture of textiles |
| 171 | Spinning, weaving and finishing of textiles |
| 1711 | Preparation and spinning of textile fibres; weaving of textiles |
| 1712 | Finishing of textiles |
| 172 | Manufacture of other textiles |
| 1721 | Manufacture of made-up textile articles, except apparel |
| 1722 | Manufacture of carpets and rugs |
| 1723 | Manufacture of cordage, rope, twine and netting |
| 1729 | Manufacture of other textiles n.e.c. |
| 173 | Manufacture of knitted and crocheted fabrics and articles |
| 1730 | Manufacture of knitted and crocheted fabrics and articles |
| 18  | Manufacture of wearing apparel; dressing and dyeing of fur |
| 181 | Manufacture of wearing apparel, except fur apparel |
| 1810 | Manufacture of wearing apparel, except fur apparel |
| 182 | Dressing and dyeing of fur; Manufacture of articles of fur |
| 1820 | Dressing and dyeing of fur; Manufacture of articles of fur |
| 19  | Tanning and dressing of leather; Manufacture of luggage, handbags, saddlery, harness and footwear |
| 191 | Tanning and dressing of leather; Manufacture of luggage, handbags, saddlery and harness |
| 1911 | Tanning and dressing of leather |
| 1912 | Manufacture of luggage, handbags and the like, saddlery and harness |
| 192 | Manufacture of footwear |
| 1920 | Manufacture of footwear |
| 20  | Manufacture of wood and of products of wood and cork, except furniture; Manufacture of articles of straw and plaiting materials |
| 201 | Sawmilling and planing of wood |
| 2010 | Sawmilling and planing of wood |
| 202 | Manufacture of products of wood, cork, straw and plaiting materials |
| 2021 | Manufacture of veneer sheets; Manufacture of plywood, laminboard, particle board and other panels and boards |
| 2022 | Manufacture of builders carpentry and joinery |
2023 Manufacture of wooden containers
2029 Manufacture of other products of wood; Manufacture of articles of cork, straw and plaiting materials
21 Manufacture of paper and paper products
210 Manufacture of paper and paper products
2101 Manufacture of pulp, paper and paperboard
2102 Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
2109 Manufacture of other articles of paper and paperboard
22 Publishing, printing and reproduction of recorded media
221 Publishing
2211 Publishing of books, brochures, musical books and other publications
2212 Publishing of newspapers, journals and periodicals
2213 Publishing of recorded media
2219 Other publishing
222 Printing and service activities related to printing
2221 Printing
2222 Service activities related to printing
223 Reproduction of recorded media
2230 Reproduction of recorded media
23 Manufacture of coke, refined petroleum products and nuclear fuel
231 Manufacture of coke oven products
2310 Manufacture of coke oven products
232 Manufacture of refined petroleum products
2320 Manufacture of refined petroleum products
233 Processing of nuclear fuel
2330 Processing of nuclear fuel
24 Manufacture of chemicals and chemical products
241 Manufacture of basic chemicals
2411 Manufacture of basic chemicals, except fertilizers and nitrogen compounds
2412 Manufacture of fertilisers and nitrogen compounds
2413 Manufacture of plastics in primary forms and of synthetic rubber
242 Manufacture of other chemical products
2421 Manufacture of pesticides and other agro-chemical products
2422 Manufacture of paints, varnishes and similar coatings, printing ink and mastics
2423 Manufacture of pharmaceuticals, medicinal chemicals and botanical products
2424 Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
2429 Manufacture of other chemical products not elsewhere classified
243 Manufacture of man-made fibres
2430 Manufacture of man-made fibres
25 Manufacture of rubber and plastics products
251 Manufacture of rubber products
2511 Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
2519 Manufacture of other rubber products
252 Manufacture of plastics products
2520 Manufacture of plastics products
26 Manufacture of other non-metallic mineral products
261 Manufacture of glass and glass products
2610 Manufacture of glass and glass products
269 Manufacture of non-metallic mineral products not elsewhere classified
2691 Manufacture of non-structural non-refractory ceramic ware
2692 Manufacture of refractory ceramic products
2693 Manufacture of structural non-refractory clay and ceramic products
2694 Manufacture of cement, lime and plaster
2695 Manufacture of articles of concrete, cement and plaster
2696 Cutting, shaping and finishing of stone
2699 Manufacture of other non-metallic mineral products not elsewhere classified
27 Manufacture of basic metals
271 Manufacture of basic iron and steel
2710 Manufacture of basic iron and steel
272 Manufacture of basic precious and non-ferrous metals
2720 Manufacture of basic precious and non-ferrous metals
273 Casting of metals
2731 Casting of iron and steel
2732 Casting of non-ferrous metals
28 Manufacture of fabricated metal products, except machinery and equipment
281 Manufacture of structural metal products, tanks, reservoirs and steam generators
2811 Manufacture of structural metal products
2812 Manufacture of tanks, reservoirs and containers of metal
2813 Manufacture of steam generators, except central heating hot water boilers
289 Manufacture of other fabricated metal products; metal working service activities
2892 Treatment and coating of metals; general mechanical engineering on a fee or contract basis
2893 Manufacture of cutlery, hand tools and general hardware
2899 Manufacture of other fabricated metal products not elsewhere classified
29 Manufacture of machinery and equipment not elsewhere classified
291 Manufacture of general purpose machinery
2911 Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
2912 Manufacture of pumps, compressors, taps and valves
2913 Manufacture of bearings, gears, gearing and driving elements
2914 Manufacture of ovens, furnaces and furnace burners
2915 Manufacture of lifting and handling equipment
2919 Manufacture of other general purpose machinery
292 Manufacture of special purpose machinery
2921 Manufacture of agricultural and forestry machinery
2922 Manufacture of machine-tools
2923 Manufacture of machinery for metallurgy
2924 Manufacture of machinery for mining, quarrying and construction
2925 Manufacture of machinery for food, beverage and tobacco processing
2926 Manufacture of machinery for textile, apparel and leather production
2927 Manufacture of weapons and ammunition
2929 Manufacture of other special purpose machinery
293 Manufacture of domestic appliances not elsewhere classified
2930 Manufacture of domestic appliances not elsewhere classified
30 Manufacture of office, accounting and computing machinery
300 Manufacture of office, accounting and computing machinery
3000 Manufacture of office, accounting and computing machinery
31 Manufacture of electrical machinery and apparatus not elsewhere classified
311 Manufacture of electric motors, generators and transformers
3110 Manufacture of electric motors, generators and transformers
312 Manufacture of electricity distribution and control apparatus
3120 Manufacture of electricity distribution and control apparatus
313 Manufacture of insulated wire and cable
3130 Manufacture of insulated wire and cable
314 Manufacture of accumulators, primary cells and primary batteries
3140 Manufacture of accumulators, primary cells and primary batteries
315 Manufacture of electric lamps and lighting equipment
3150 Manufacture of electric lamps and lighting equipment
319 Manufacture of other electrical equipment not elsewhere classified
3190 Manufacture of other electrical equipment not elsewhere classified
32 Manufacture of radio, television and communication equipment and apparatus
321 Manufacture of electronic valves and tubes other electronic components
3210 Manufacture of electronic valves and tubes other electronic components
322 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
3220 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
323 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods
3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods
33  Manufacture of medical, precision and optical instruments, watches and clocks
331 Manufacture of medical appliances and instruments and appliances for measuring, checking, testing, navigating and other purposes, except optical instruments
3311 Manufacture of medical and surgical equipment and orthopaedic appliances
3312 Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3313 Manufacture of industrial process control equipment
332 Manufacture of optical instruments and photographic equipment
3320 Manufacture of optical instruments and photographic equipment
333 Manufacture of watches and clocks
3330 Manufacture of watches and clocks
34  Manufacture of motor vehicles, trailers and semi-trailers
341 Manufacture of motor vehicles
3410 Manufacture of motor vehicles
342 Manufacture of bodies (coachwork) for motor vehicles, manufacture of trailers and semi-trailers
3420 Manufacture of bodies (coachwork) for motor vehicles, manufacture of trailers and semi-trailers
343 Manufacture of parts and accessories for motor vehicles and their engines
3430 Manufacture of parts and accessories for motor vehicles and their engines
35  Manufacture of other transport equipment
351 Building and repairing of ships and boats
3511 Building and repairing of ships
3512 Building and repairing of pleasure and sporting boats
352 Manufacture of railway and tramway locomotives and rolling stock
3520 Manufacture of railway and tramway locomotives and rolling stock
353 Manufacture of aircraft and spacecraft
3530 Manufacture of aircraft and spacecraft
359 Manufacture of transport equipment not elsewhere classified
3591 Manufacture of motorcycles
3592 Manufacture of bicycles and invalid carriages
3599 Manufacture of other transport equipment not elsewhere classified
36 Manufacture of furniture, Manufacturing not elsewhere classified
361 Manufacture of furniture
3610 Manufacture of furniture
369 Manufacturing not elsewhere classified
3691 Manufacture of jewellery and related articles
3692 Manufacture of musical instruments
3693 Manufacture of sports goods
3694 Manufacture of games and toys
3699 Other manufacturing not elsewhere classified
37 Recycling
371 Recycling of metal waste and scrap
3710 Recycling of metal waste and scrap
372 Recycling of non-metal waste and scrap
3720 Recycling of non-metal waste and scrap