International Competitiveness of the Polish Protective Clothing Manufacturers in Face of European Integration

Abstract
This article attempts to assess the competitiveness of Polish protective clothing manufacturers based on relevant indicators. The analysis is built on statistical data from 1999-2004 according to the appropriate codes of the Eurostat Combined Nomenclature.

Keywords: international competitiveness, comparative advantage, competitive advantage, protective clothing, European single market.

Methods employed to assess the competitiveness of Polish protective clothing

The following indicators were used to assess the competitive position of the Polish export of protective clothing to the EU’s markets:

Branch specialisation indicator [8] given by the following formula:

\[ \text{Branch specialisation indicator} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} \]

where:
- \( X \) - export;
- \( M \) - import;
- \( i \) - a given product;
- \( j \) - a given country.

If \( M = 0 \), then \( u = 1 \), \( X = M \), then \( u = 0 \), \( X = 0 \), then \( u = -1 \), i.e. \( u \) may vary between \(-1 \) and \( 1 \).

This indicator describes the percentage share of Poland’s trade surplus (or deficit) in international trade in product \( i \) (here \( i \) stands for industrial and occupational clothing – IOC). In other words, the indicator describes the directions and intensity of the specialisation processes in the Polish economy with respect to its major trading partners [8].

In addition, we calculated the indicator’s value for all of Section XI of the Combined Nomenclature – textiles and textile articles. The results are presented in Figure 1.

Figure 1 clearly indicates a very high degree of branch specialisation in industrial...
and occupational clothing in Poland (the indicator’s value is close to 1). The indicator is much higher than for all Section XI (textiles and textile materials). However, it has dropped slightly since 2003.

Branch specialisation in the IOC trade with third countries is also very high, but slightly lower than for the EU. As before, the Polish IOC shows an advantage over all textile articles, as well as in comparison with the indicator’s value for an EU15 member state, namely Germany (see Figure 1).

Index of revealed comparative advantage

The competitiveness of the export of Polish protective clothing to the Community was investigated by calculating the revealed comparative advantage index (RCA), as given by the following formula:

\[
RCA = \frac{\sum_{j} X_{ij}}{\sum_{m} X_{im}}
\]

where:
- \( i \) – the type of product in selected, product groups (e.g. protective clothing),
- \( j \) – the product-exporting country (e.g. Poland),
- \( m \) – the product group (textile articles and goods),
- \( X \) – export.

This index identifies the ratio between the share of Polish IOC export in the total IOC export to the EU markets and Poland’s share in the export of textiles and textile articles to the EU markets. It does not have an upper limit, but its lower limit is zero. For particular product groups, values in excess of one mean that a comparative advantage has appeared [9, 10].

The RCA for industrial and occupational clothing, presented in Figure 3, shows that Poland is capable of competing in the single European market as an IOC producer (in all the years in question, the index value exceeded 1). The RCA values for particular years indicate Poland’s comparative advantage as an IOC exporter to the single market. This conclusion is underpinned by the theoretical assumption that the foreign trade structure reflects the competitive positions of particular branches of manufacturing, with the positions hinging on the production factors available in a given country. However, it is quite alarming that the analysed index has been visibly declining since 2002. If nothing is done to stop this trend, then Polish industrial and occupational clothing will ran the risk of gradually losing its comparative advantage in the single market.

The Polish RCA’s downward trend is largely connected with the steadily shrinking share of the Polish IOC export to the EU in the value of third countries’ export to the Union (see Table 1).

An analysis of the data in Table 2 gives very interesting findings. Regarding the total value of occupational clothing exported from Poland, the EU accounts for 78% to 90% of products. A much smaller amount of protective clothing imported to Poland comes from the former EU-15 countries – from 30% to 39%. It is worth noting that the value of exported occupational clothing is between 9 to 16 times as high as its import value.

Unit values

Additionally, the unit value index was calculated, which illustrates the level
of unit values in the Polish export and in one EU15 country, namely Germany. Figure 4 markedly highlights the considerable difference between the unit values of the Polish and German IOC exported to third countries. Polish clothing is exported at significantly lower unit values. At the same time, however, the gap and the related price competitiveness of the Polish IOC are clearly diminishing. This trend has two sources: one is the gradually increasing unit values in Poland, and another the significant price reductions in Germany from 2002.

To make the analysis more precise, the import-prices to export-prices ratio has also been calculated for Poland’s trade with the former EU-15 and with the world (see Table 3).

The analysis of the data in Table 3 allows us to draw the following conclusions:

- Average unit prices of Polish occupational clothing exported to the member states are stable, showing a slight upward trend.

- Average unit prices of imported occupational clothing are changeable, but during the period in question, they were invariably lower than the export prices. If we assume an average export unit price to be 100%, then an import price may make up from 58% to 98% of the former, depending on the period.

- Export of occupational clothing accounts for about 3% of export in section XI. The export of occupational clothing is characterised by an extremely worrying downward trend; since 1999 its share in total export declined by 17%.

An analysis of the data provided in Table 4 allows the following conclusions to be drawn:

- Average export unit prices in Poland’s trade with the world are stable, and similar to prices in Poland’s trade with the EU.

- However, unit import prices are lower than in trade with the EU, and their downward trend is distinct. Since 1999, they have dropped by more than 40%.

- The proportion of occupational clothing exported in section XI of Poland’s trade with the rest of the world has been declining.

### Table 1. Share of Polish IOC export to the EU in the total value of third countries’ export to the EU; Source: author’s calculations based on Eurostat data.

<table>
<thead>
<tr>
<th>Years</th>
<th>EU import from third countries, 1,000 €</th>
<th>Poland’s export to EU, 1,000 €</th>
<th>Proportion of Poland’s export in the value of third countries’ export to EU, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>901,671</td>
<td>79,791</td>
<td>8.8</td>
</tr>
<tr>
<td>2000</td>
<td>1,012,762</td>
<td>86,620</td>
<td>8.0</td>
</tr>
<tr>
<td>2001</td>
<td>1,112,108</td>
<td>84,094</td>
<td>7.6</td>
</tr>
<tr>
<td>2002</td>
<td>1,083,824</td>
<td>70,874</td>
<td>6.5</td>
</tr>
<tr>
<td>2003</td>
<td>1,119,475</td>
<td>65,051</td>
<td>5.8</td>
</tr>
<tr>
<td>2004</td>
<td>595,995</td>
<td>31,455</td>
<td>5.3</td>
</tr>
</tbody>
</table>

### Table 2. Share of Poland’s trade with the Community in the trade in occupational clothing; Source: developed by the author based on Eurostat data.

<table>
<thead>
<tr>
<th>Years</th>
<th>Export</th>
<th>Import</th>
<th>Export value/import value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total world, 1000 €</td>
<td>incl. to EU, %</td>
<td>total world, 1000 €</td>
</tr>
<tr>
<td>1999</td>
<td>88,696</td>
<td>90.0</td>
<td>9719</td>
</tr>
<tr>
<td>2000</td>
<td>94,664</td>
<td>85.2</td>
<td>9425</td>
</tr>
<tr>
<td>2001</td>
<td>102,280</td>
<td>82.2</td>
<td>6557</td>
</tr>
<tr>
<td>2002</td>
<td>89,148</td>
<td>79.5</td>
<td>5283</td>
</tr>
<tr>
<td>2003</td>
<td>82,966</td>
<td>78.4</td>
<td>6812</td>
</tr>
<tr>
<td>2004</td>
<td>38,842</td>
<td>81.0</td>
<td>4303</td>
</tr>
</tbody>
</table>

### Table 3. Structure of Poland’s trade in occupational clothing with EU-15 countries, years 1999-2004; Source: developed by the author based on Eurostat data.

<table>
<thead>
<tr>
<th>Years</th>
<th>Average unit prices, 1000 €</th>
<th>Import prices to export prices ratio (export price = 100%), %</th>
<th>Share in the value of trade in occupational clothing in section XI, %</th>
<th>import</th>
<th>export</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>15.3</td>
<td>98.7</td>
<td>0.17</td>
<td>3.31</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>13.9</td>
<td>86.3</td>
<td>0.14</td>
<td>3.14</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>10.0</td>
<td>61.0</td>
<td>0.10</td>
<td>3.12</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>9.7</td>
<td>58.4</td>
<td>0.08</td>
<td>2.80</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>10.2</td>
<td>61.8</td>
<td>0.09</td>
<td>2.66</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>13.7</td>
<td>81.1</td>
<td>0.12</td>
<td>2.74</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4. Structure of Poland’s foreign trade in occupational clothing, years 1999-2004; Source: developed by the author based on Eurostat data.

<table>
<thead>
<tr>
<th>Years</th>
<th>Average unit prices, 1000 €</th>
<th>Import prices to export prices share (export price = 100%), %</th>
<th>Value of trade in occupational clothing in section XI, %</th>
<th>import</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>11.0</td>
<td>73.1</td>
<td>0.31</td>
<td>3.20</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>11.0</td>
<td>68.3</td>
<td>0.27</td>
<td>3.18</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>8.7</td>
<td>52.7</td>
<td>0.17</td>
<td>3.22</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>7.8</td>
<td>45.9</td>
<td>0.14</td>
<td>2.92</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>6.3</td>
<td>37.3</td>
<td>0.18</td>
<td>2.81</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>6.2</td>
<td>35.8</td>
<td>0.22</td>
<td>2.77</td>
<td></td>
</tr>
</tbody>
</table>

In 2004, the value of occupational clothing imported in section XI CN under trade with the rest of world was 83% larger than the value of occupational clothing imported in section XI CN in trade with the EU.

### Conclusions

Our analysis of these indices enabled us to assess the competitiveness of the Polish IOC manufacturers, and to draw the following conclusions:

- As an IOC-manufacturing country, Poland has achieved a very high level of branch specialisation, which proves the strong position of its manufacturers against their foreign competitors.

- Poland holds a comparative advantage in the IOC export to the EU, and therefore Polish IOC is a competitive product in the European market that buys 80% of the Polish IOC export (ca. 6% of all IOC import to the Community).
A worrying phenomenon in the most recent period has been the downward trends suggested by almost all analysed indices.

References


The 60th Anniversary of the Textile Research Institute (IW) in Łódź, Poland

The two-day celebration began on September 12, 2005 at the New Theatre in Łódź with a ceremonial meeting which was attended by invited guests, as well as former and present employees of the Institute. The official part of the meeting was opened by Jolanta Mamenas, the managing director of the Institute, who presented the Institute’s foundation and history, its main achievements, and the outstanding researchers who have worked there since its foundation. Many congratulatory addresses followed, including from Stefan Krajewski, the Voivode of Łódź (provincial governor of the Łódź region), Marek Bartosik, the Ministry of Scientific Research and Information Technology, Prof. Jan Krysiński, the Rector of the Technical University of Łódź, Prof. Tadeusz Więckowski, the Rector of the Technical University of Wrocław, Prof. Tadeusz Kulik, the Rector of the Technical University of Warsaw, Prof. Janusz Szostal, the Honorary Chairman of the Polish Textile Association, Prof. Eckhard Schollmeyer, Prof. Henrik Wenzel, Prof. Marc van Parys, Dr. Victoria Vlasenko, and Dr Tatyana Chibisova, representatives of the Deutsches Textilforschungszentrum Nord-West e.V. Krefeld (Germany), the Technical University of Denmark; the Technical University of Ghent and UNITEX (Belgium), the Kiev National University of Technology and Design, Kiev (Ukraine), and the Nonwovens Research Institute, Serpukhov (Russia) respectively, and Prof. Izabella Kruczińska, the Dean of the Faculty of Textile Engineering and Marketing, Technical University of Łódź.

Jadwiga Sójka-Ledakowicz Ph. D., Eng., the Institute’s vice director responsible for scientific research, was awarded the Gold Cross of Merit, and Bogna Goetzendorf-Grabowska Ph. D. Eng., & Halina Królikowska M. Sc. Eng. –were awarded the Silver Cross of Merit; and 28 former & present employees were awarded congratulation letters.

The official part of the meeting was followed by the comedy ‘Mayday’ written by Ray Cooney, and by a dinner-party. The second day of the Anniversary celebration took place at the International Scientific Symposium

‘New Vision of Textile Industry and Economic Needs’

at the Dobieszków Conference Hall. The following lectures were presented:

‘Nonotechnology to Functionalisation of Textile Materials’ by Prof. Eckhardt Schollmeyer, DTWN, Krefeld, Germany.

‘Perspectives for Material Engineering at the Beginning of the 21st Century’ by Prof. Krzysztof J. Kurzydłowski, Technical University of Warsaw.

‘Biotechnology in the Textile Industry’ by Dr Jadwiga Sójka-Ledakowicz, Textile Research Institute, Łódź.

‘Our Engineering Is Your Change to Innovations’ by Prof. Mark van Parys, I. Gerez, M.Eng., A. Deraeve, M.Eng., Technical University of Gent, Belgium.

‘Microporous Polyurethane Membranes as a Basic Component of Multilayer High-tech Composite’ by Prof. Stefan Brzozowski, IMMW, Łódź.

‘Current Multifunctional Multiplayer Textiles: Unlimited Possibilities of Their Application’ by Dr Victoria Vlasenko, EKMA, Kiev, Ukraine.

‘Research and Innovation in Textile Industry: the Role of Technological Centres’ by Dr Jan Laperre, Centexbel, Ghent, Belgium.

‘Textile Dyes: Past, Present and Future’ by Prof. Wojciech Czaikowski, Technical University of Łódź.


‘Modern Methods of High Quality Yarn Production’ by Prof. Tadeusz Jackowski, Dr Danuta Cyniak, Dr Jerzy Czekalski, Technical University of Łódź.

An open-air party ended the anniversary celebrations.