System for converting import and export of commodities statistics’ based on combined Nomenclature (CN) to statistics based on Transport statistics (NST classification) - Polish case

INTRODUCTION

Statistics is prevalent in the field of transportation and it explains the uniqueness of the subject [1, pp.1]. The Standardization of several entities in European System has been a central element in the delivery of the single European market. Studies at the macroeconomic and microeconomic levels in various European countries and around the world have demonstrated the clear benefits of standards and standardization to the wider economy. International standardization is a key supporter of open markets, free trade, and interoperability. European standards are required to meet specific European needs, such as those around the internal European market and public policy or regulatory needs without becoming a barrier to trade [5, pp.3].

The standardization of the units is quite important as it boosts the foreign trade. Foreign trade is one of the major factors contributing to an economic growth. The import provides goods and services, which cannot be produced internally due to the lack or insufficient supply of raw materials. On the other hand, the export increases GDP generated in the country, which positively affects employment levels and personal incomes [3, pp.43].

The most detailed statistics, which can be accessed by the public, are broken down by subheadings of the Combined Nomenclature (CN). This tariff and statistical classification, based on the international classification known as the Harmonized Commodity Description and Coding System includes ca. 10 000 eight-digit codes, thereby making it complex [6, pp.11].

NST is the "Standard Goods Classification for Transport Statistic" as adopted by the United Nations Economic Commission for Europe (UNECE). NST has been adopted at level 1 (Division) in European legislation [4, pp.23]. Classified NST consists of only twenty segments for various commodities. NST not only provides a standard of statistics for Europe but for world. It mainly takes into account the goods involving economic activity [2, pp.53]. This different classification approach makes statistical analysis normalized in an efficient and easier way.

This article demonstrates a system, which will map the CN classification to NST and then convert the statistics accordingly. In addition to the complicacy of CN nomenclature, doubts remain about how certain goods are to be classified in CN nomenclature. The article is divided into two major parts highlighting the theoretical approach and the practical implementation. The implementation phase will include conversion of classification of imported and exported goods in case of Poland.

1 METHODOLOGY FOR CONVERSION

The methodology to highlight the system, which will convert CN classification to NST classification, is shown in schema 1. The conversion of the units is applicable at NUTS 1 and NUTS 2 level and with slight modification; it can be implemented to NUTS 3 level too.
As shown in schema 1, the data is filtered, converted, and normalized to achieve the final result. During conversion, the mapping of the NST – CN nomenclature is created. The output of conversion is shown in the subsequent section.

2 MAPPING OF GOODS FROM CN TO NST CLASSIFICATION

The mapping to goods from CN to NST classification is shown in table 1. The first column shows the goods in NST classification and second column highlights the goods in CN nomenclature. It should be noted that only the important goods which are imported or exported in an adequate quantity are considered here. Goods belonging to Code 18 – 20 are not included as these goods include the goods, which do not belong to any other category.

<table>
<thead>
<tr>
<th>NST Transport Classification</th>
<th>CN Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 1: Products of agriculture, hunting, and forestry; fish and other fishing products</td>
<td>Live animals; animal products, Vegetable products, 1701</td>
</tr>
<tr>
<td>Code 2: Coal and lignite; crude petroleum and natural gas</td>
<td>2701,2711,27090090,</td>
</tr>
<tr>
<td>Code 3: Metal ores and other mining and quarrying products; peat; uranium and thorium</td>
<td>2508,2507,2601, 2608, 2515,2516,2517</td>
</tr>
<tr>
<td>Code 4:</td>
<td>Prepared foodstuffs, Fats and oils, Raw hides and skins, articles</td>
</tr>
<tr>
<td>Code</td>
<td>Category</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Textiles and textile products; leather and leather products</td>
</tr>
<tr>
<td>6</td>
<td>Wood and products of wood and cork (except furniture); articles of straw and plaiting materials; pulp, paper and paper products; printed matter and recorded media</td>
</tr>
<tr>
<td>7</td>
<td>Coke and refined petroleum products</td>
</tr>
<tr>
<td>8</td>
<td>Chemicals, chemical products, and man- made fibers; rubber and plastic products; nuclear fuel</td>
</tr>
<tr>
<td>9</td>
<td>Other nonmetallic mineral products</td>
</tr>
<tr>
<td>10</td>
<td>Basic metals; fabricated metal products, except machinery and equipment</td>
</tr>
<tr>
<td>11</td>
<td>Machinery and equipment n.e.c.; office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and communication equipment and apparatus; medical, precision and optical instruments; watches and clocks</td>
</tr>
<tr>
<td>12</td>
<td>Transport equipment</td>
</tr>
<tr>
<td>13</td>
<td>Furniture; other manufactured goods n.e.c.</td>
</tr>
<tr>
<td>14</td>
<td>Secondary raw materials; municipal wastes and other wastes</td>
</tr>
<tr>
<td>15</td>
<td>Mail, parcels</td>
</tr>
<tr>
<td>16</td>
<td>Equipment and material utilized in the transport of goods</td>
</tr>
<tr>
<td>17</td>
<td>Goods moved in the course of household and office removals; baggage and articles accompanying travelers; motor vehicles being moved for repair; other non-market goods n.e.c.</td>
</tr>
</tbody>
</table>

### 3 IMPORT AND EXPORTS FROM POLAND

This section highlights the statistics related to import and export from Poland. The statistics presented represents the application of above stated methodology and mapping. The countries taken into account in this analysis are Italy, Austria, Slovenia, Germany, Czech Republic, and Finland. The section is divided into two sub-sections emphasizing imports and exports. The data was collected in the form of CN from the national sources [7]. The information regarding transport activity was also considered for the evaluation [8].

In NST classification, codes 1-12, 14, 17 are measured in tons, code 13 is in '000 PLN and Code 16 is in pieces.

#### 3.1 Imports

Chart 1 represents the import of various goods (NST classification) from Italy to Poland in the year 2009-2010.
As clear from the chart, large number of goods are imported from Italy to Poland. The highest quantity for 2010 being goods in Code 11. In addition, it is also clear that the import of goods in Code 11 has increased at large by nearly 3.81 times. The other goods to follow Code 11 are from Code 8, 10 and 13 that are stabilized in regard to the change per year.

Chart 2 represents the import of various goods from Austria to Poland in the year 2009-2010.

Though 13 different types of goods’ groups are imported from Austria only 6 are imported in abundance. The highest in the list is code 8 for the year 2010 followed by goods in Code 6, 10, 13 and 3. The percentage change is also highest in goods involved in Code 8, 83 % approx.

Chart 3 represents the import of various goods to Poland from Slovenia in the year 2009-2010.
Chart 3 Imports from Slovenia to Poland [Own research]

As the country has shared border with Poland, so the quantity of trade is no surprise. It can be seen that the overall trade has increased a lot even if we are analyzing data from 2 years. It can be noted that code 5 and Code 11 goods have gained a huge market in Poland. Code 5 goods have found their place in the imported goods and Code 11 has the highest increase of approx. 17.7 times as compared to 2009.

Chart 4 represents the import of various goods to Poland from Germany in the year 2009-2010.

Chart 4 Imports from Germany to Poland [Own research]

From the overall analysis, it is strongly clear that the Germany has the strongest trade relationship with Poland with almost all types of goods imported in a very good quantity. The highest type of goods imported are from code 8 and there is an increase of approx. 17% as compared to 2009.

Chart 5 represents the import of various goods to Poland from Czech Republic in the year 2009-2010.
Czech Republic is another strong trade partner of Poland as clear from the chart. Code 8 and Code 10 have maximum share in the imports. In addition Code 11 goods have the maximum increase with a factor of 27 as compared to 2009.

Chart 6 represents the import of various goods to Poland from Finland in the year 2009-2010.

Considering Finland Code 7 group of goods share the maximum share of imports in 2009 and code 6 shares maximum imports in 2010. It should be noted also that Code 7 group imports got reduced by 73.5% approx. and Code 6 goods import got increased by 26% approx.

3.2 Exports

Chart 7 represents the export of various goods from Poland to Italy in the year 2009-2010.
As clear from the chart, almost all types of goods are exported to Italy except goods in code 3 and 17. There is a drastic increase in export of goods under code 11 and in contrast goods under code 13 were not exported in 2010. Goods under code 11 share the maximum amount of exports in 2010.

Code 13 goods were not exported in 2010. In 2009 the same goods code had maximum share in the export of goods to Austria. In general we can say that the total exports have reduced considerably in 2010 as compared to 2009.

Chart 9 represents the export of various goods from Poland to Slovenia in the year 2009-2010.
As clear from the chart the export trade relations with Slovenia are increased as compared to 2009. The maximum increase was in code 11 goods.

Chart 10 represents the export of various goods from Poland to Germany in the year 2009-2010

Germany as the stronger partner for imports shows the same trend in exports also with nearly all goods exported in thousand of tons. Code 13 shares the maximum share among the other exported goods.

Chart 11 represents the export of various goods from Poland to Czech Republic in the year 2009-2010
As expected, Czech Republic has the same trend of goods flow for exports as it was for imports. Only code 13 goods has been stopped exporting in 2010 as compared to 2009.

The overall exports to Finland is balanced over the years 2009-2010. However, there is a drastic decrease of exports in the goods in code 7 but at the same time goods in code viz. 5, 6, 8, 9, 12, and 16 have found their place in the import list of 2010.

**CONCLUSION**

- Mapping of nomenclature nullifies the impact on statistics due to different nomenclature existing at EU level and international level.
- Usage of normalized and standardized system across the EU provides boost to logistics and transportation and benefits the business in an enormous extent.
- NST classification is broadly classified as standardized.
- Certain doubts remain in CN nomenclature related to allocation of certain goods.
- NST is very less complicated than CN nomenclature involving only 20 categories.
- The classification can be applied at data at NUTS 2 and NUTS 3 levels.
NST takes into account the goods involved in economic activities.
The system of conversion developed is universal and can be used for any entity involving CN and NST classifications.
NST at large reduces the barriers in trade, which come up due to usage of different national nomenclatures.
The application to mapped nomenclature showed ease of comparing the statistics among various regions.

Abstract

The statistical data is of utmost importance in any field. It plays an important role in measuring the various aspects of the goods flow from one place to another. In member countries of the European Union, use of statistical approach highlights the flow of goods between the member states. Most of the times, the data acquired by the member states at the national level is of different format, making the analysis of the data quite difficult. The unification of the data has a significant value. Usage of uniform system across the EU and world is of extreme significance in the field of logistics and Transportation. The normalized and standardized system benefits the business in an enormous extent. Most of EU member states have developed combined nomenclature (CN) to classify the commodities, which are imported and exported. As CN classification includes large segments, the comparison or processing of data is quite difficult. In order to avoid this, a system capable of converting the statistics based on CN to statistics based on Transport statistics classification (NST) will make the analysis quite clear and lot easier.

System konwertujący statystyki importu i eksportu z Nomenklatury Scalonej (CN) na statystyki transportu (klasyfikacja NST) - polskie studium przypadku

Streszczenie

Dane statystyczne są niezwykle ważne w każdej dziedzinie. Odrywają one istotną rolę w pomiarze różnych aspektów przepływu towarów z jednego miejsca do drugiego. W krajach członkowskich UE, zastosowanie podejścia statystycznego oparte jest na przepływie dóbr pomiędzy krajami. W większości przypadków, dane zebrane przez państwa członkowskie na poziomie krajowym znajdują się w różnych formatach, co bardzo utrudnia ich późniejszą wspólną analizę. Kluczową wartość posiada więc zuminifikowanie tych danych. Wykorzystanie jednolitego systemu zbierania danych w UE ma ogromne znaczenie w obszarach logistyki i transportu. Na znormalizowanym i ustandaryzowanym systemie skorzysta w ogromnym stopniu biznes. Większość państw członkowskich UE w celu klasyfikacji wywożonych i wwożonych towarów, opracowały Nomenklaturę Scaloną(CN). Jako, że opiera się ona na dużych segmentach danych, porównywanie czy przetwarzanie danych staje się trudne. W celu uniknięcia tej sytuacji, stworzony system do konwertowania statystyki z nomenklatury CN na statystyki transportu(NST) ułatwi analizę danych.

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