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EMERGENCE OF MULTINATIONAL FIRMS FROM MIDDLE INCOME COUNTRIES: THE CASE OF POLAND[1]

The paper analyses factors contributing to foreign activities of Polish enterprises. Most of the previous studies focused on the flows of outward foreign direct investment (OFDI) from advanced economies. Therefore, it was essential to investigate the role of firms from emerging Europe in this process. The research is conducted at the early stage of development of OFDI from Poland as a significant increase in foreign production has been recorded for a few years. The issue is investigated using firm-level data. The results confirm that firms investing abroad are significantly more productive compared to counterparts operating only in the home country.

JEL Classification: F21; F23
Keywords: Foreign Direct Investment, heterogeneous firms, emerging countries

1. INTRODUCTION

Literature on the determinants of foreign direct investment has mostly concerned the most developed countries. This has been justified by the position of this group of countries in the world economy. Moreover, the advanced economies were pioneers in the process of foreign production. For a few years we have been noticing the rising significance of multinational corporations (MNC) originating in large developing countries like China and India. The activities of multinationals from emerging countries have been explained by a separate approach in the theory (Pradhan, 2004). The need for a specific treatment of these MNC occurred due to their distinguished characteristics. They have rarely possessed frontier technology or well established brands and have been usually competing by price or by abundance of resources[2].

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[2] The comprehensive literature review on emerging multinationals can be found in: *Emerging Multinationals in Emerging Markets,* Ramamurti R. and J.V. Jitendra (eds.), Cambridge University Press, Cambridge, 2009.

Nevertheless, the simple division of enterprises into two groups has not been sufficient to explain the emergence of MNC from middle income countries. Until now, the issue has not been widely investigated by researchers. It is tricky to define which of the previously mentioned approaches is more appropriate to explain the establishment of multinationals from medium income countries. The MNC from these countries cannot compete by much lower production costs with developing countries or by advanced technologies with developed ones. The situation becomes more complex because, in many cases, the firms can produce many goods cheaper in the home country than abroad, especially if we take into consideration high fixed cost of establishing a factory in another country.

This ambivalence also causes that the role of medium developed countries as sources of FDI outflows is not widely noticed. Firms from this group of countries do not expand to the large extent, but rather play regional roles.

Transition countries from Central and East Europe were lagging in the internationalization process compared to more developed economies. Firms from the former communist countries have been primarily focused on the home market. Some of them started the expansion by export activities and only a few firms invested abroad in setting up their own plants. Marginal significance of international activities of these firms have been caused by a lack of resources and knowledge. According to the gradual model of expansion the firms first engage in export, then create a sales subsidiary abroad and in the last stage start foreign production (Johanson, Vahlne, 1977). This pattern of internationalization seems to be appropriate for the explanation of expansion of Polish firms. Currently thousands of Polish companies export, but only few of them are already at the stage of international production. The author decided to focus only on the FDI entry mode, rather than any other forms of expansion. This was due to the fact that FDI is the only entry mode associated with possessing assets in foreign country. This mode also brings distinctive results both to home and host economies. An additional reason for selecting the mode of internationalization was that foreign investments was a quite neglected element of foreign expansion of Polish enterprises compared to export which was widely analysed.

The focal issue of the paper is to investigate the characteristics of Polish firms producing abroad. Poland, as a country situated between highly developed European countries in the West and less developed countries in the East, is a unique location for configuration of the production processes of MNC. On the one hand, Polish firms possess non-restricted access to the

European Union market; on the other, proximity to Ukraine or Russian Federation creates opportunities to produce at lower costs.

2. THEORETICAL BACKGROUND

Activities of multinational enterprises have been frequently analysed using two basic models called vertical and horizontal. The original models have been further amended and extended in order to explain more complex strategies of MNC (Yeaple, 2003; Ekholm et. al., 2003). All these approaches explained the operations of MNC using two types of countries: North and South. In general, the first notion referred to highly developed countries in which the headquarters are located; South meant a less developed country where production plants are established.

Those models have not taken into consideration a third type country – termed here as "middle". Countries of this type represent intermediate development level, middling size and technological level. It also means that these countries have not developed the "country advantages". On the one hand, they are not cheap production locations, on the other hand, they have not developed frontier technologies or brand names. Therefore, firms from these countries need to create exceptional organization type to overcome these disadvantages. Multinationals originating in "middle" countries are also more active in one region and rarely run fully global activities. Therefore, it is essential to determine the characteristics of firms which become multinationals headquartered in middle income countries.

The determinants of foreign production are divided into three levels: firm, industry and country (Navaretti, Venables, 2006). The fundamental macroeconomic determinants are size of the market, exchange rate, distance from main markets or integration processes. These determinants have been frequently analysed, also thanks to the better availability of macroeconomic data.

Less attention has been paid to analysing firm-level data, especially in the case of middle developed countries. It is also postulated that firms, as objects of foreign activities, should be the first step in the analysis of the flows of FDI. This paper investigates four major determinants of foreign production: size, age, productivity and intangible assets.

2.1. Productivity

The main thesis of the paper is that only the most productive firms establish production plants in foreign countries. Firms starting their operations abroad face less favourable conditions comparing to local firms in the host country (Hymer, 1976). Therefore, a firm going abroad must be more efficient than their counterparts in order to overcome the negative effects of foreignness. According to previous analyses, less productive firms serve only a local market and produce only in the home country. More productive firms engage in mixed forms of foreign activities: export and foreign production at a limited range. Only the most productive firms are able to bear high cost of establishing plants abroad and produce the goods close to customers in order to minimize the transportation costs (Grossman, et al., 2006).

The issue of productivity of MNC from a medium income country has been investigated in a case of Taiwan (Aw and Lee, 2008). The authors studied two possible destinations of investment projects: United States and China. The latter was described as a less developed country in the close distance comparing to a highly developed United States. The conclusion was that less productive MNC choose China as a location of their production activities. Firms of intermediate efficiency manufacture in the United States and the most productive firms possess plants in both locations.

Similar findings on the productivity issue have also been revealed with the respect to the export behaviour of firms from several countries[3]. Not only the level of firm’s productivity compared to counterparts in a home market is essential in becoming a MNC. Hence, it is necessary to compare the firm’s productivity with firms already operating in the host market.

Additional measure of productivity employed in this paper is profitability of a firm. The value of this measure indicates the possibilities to expand abroad. This is associated with two facts. Intuitively, a firm which creates more profits has more resources to expand abroad. More productive firms tends to invest in further destinations, which implicated higher sunk cost (Geishecker, Görg, Taglioni, 2009). Secondly, a firm making more profit should be equipped with high quality resources like management and technology.

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[3] Bernard and Jensen (1999) for the case of the United States, Bernard and Wagner (1997) for the case of Germany; Aw et al (1998) for the case of Taiwan and Korea; Clerides et al (1998) for the case of Colombia, Mexico and Morocco.

2.2. Age

We can assume intuitively that an older company can accumulate more knowledge and assets during its business life. Therefore, the length of operation can be perceived as a monopolistic advantage. Anyway, higher age can also discourage incentives for international operations. Managerial staff working for many years only in the domestic environment may not be able to conduct foreign expansion. This may cause negative correlation between age and foreign activities.

Generally, the companies operating in Poland fall into two groups. The first group consists of former state-owned companies which were established after the Second World War. Most of them were privatized in the last decade of the 20th century. The second group is formed by companies established during the 1990s. They were founded by Polish entrepreneurs and have faced rapid growth during the last twenty years. Those companies have also been most active in the field of internationalization. Twenty years is not a long period for establishing multinational corporations and many of the private companies are still in the stage of exporting as the main form of foreign activity. Therefore, the number of companies engaged in foreign production is not very high, but rising in recent years. This paper is based on the data for 2007 which helps to investigate very current trends in this process.

2.3. Size

Establishing a production plant in another country is one of the most important decisions for many firms, especially when a firm is not of a very large size and failure in this field can ruin the entire organization. We can assume that the larger size of enterprise can encourage foreign operations due to smaller risk, possessing more resources and having a larger impact on the market. Size also means a larger number of employees necessary in foreign expansion. Markusen and Maskus (2001) confirm the significance of human capital in the process of creating MNC.

However, the significance of size on undertaking FDI is ambivalent. According to Caves (2007) the propensity to investing abroad is not linear. This is important only to pass a certain level of fixed costs of investing abroad. After achieving the specific size, the larger firm does not have any further advantages over smaller one. Therefore, the size issue is important mostly in the initial stage of foreign operation.

The size of firms becoming multinational enterprises is not equal among different countries. According to findings of Blomström and Lipsey (1991) American firms were larger than Swedish counterparts when undertaking foreign production. The meaning of size may also vary between industries.

Size is linked with continuous economies of scale. Larger firms have lower average production costs and can apply more efficient technologies. There are also two dimensions of size. One of them is the likelihood of becoming multinational and then the extent to which the company may operate abroad (Hufbauer, 1975).

2.4. Intangible assets and R&D

One reason for establishing production facilities abroad may be motivation to exploit firm-specific advantages such as unique technology, diversified products, etc (Dunning, 1988). These advantages may not be possible to utilize in any other way, e.g. licensing or exporting (Rugman, 1981).

A firm possessing a unique technology is more likely to manufacture products at own plants than to share the knowledge with partners abroad. This is associated with dissemination risk and desire to control all stages of the production and distribution process. This was described in literature as internalization (Coase, 1937).

A company operating abroad should possess assets helping to overcome the disadvantages of foreign markets. Special notice is paid to managerial skills and research and development activities. Companies having a well-known brand and spending a lot on the licences and software have a higher propensity to operating abroad.

Besides utilizing specific advantages, a firm can also engage in foreign production in order to acquire knowledge and specific assets (Buckley and Ghauri, 1989; Teece, 1992; Dunning, 1993; Chang, 1995). Such behaviour is particularly widespread among firms originated in less developed countries (Lecraw, 1993; Kumar, 1998). The companies from the emerging countries have mostly grown by delivering less technologically intensive products at lower prices. Purchasing R&D is a way to secure future development of these firms. The relationship between R&D expenses and FDI is treated as mutually interdependent (Lin and Yeh, 2003). However, in a case of developing countries the advantages are not created by the frontier technologies, but rather by price competition (Wells, 1983; Lall, 1983).

3. DATA

Two major sources of data were utilized in this analysis. The data on Polish MNC was extracted from Amadeus database provided by Bureau van Dijk Electronic Publishing. Amadeus is a very large record containing financial information about 11 million European companies. For the purpose of the analysis Polish companies possessing foreign affiliates have been extracted. Only manufacturing sectors were taken into consideration which has led to a lower number of companies in the sample.

In the next step a wider dataset was selected – all manufacturing firms employing at least 10 people and operating in Poland. The source was Dun and Bradstreet database provided by ISI Emerging Markets. Over 2000 manufacturing companies operating only in Poland were included in the sample. The data contained: name of firm, industry, number of employees, annual sales, annual profit, total assets, intangible assets and countries of foreign affiliates. The data was prepared according to financial reports for 2007.

Among over 2000 manufacturing firms there were 51 firms which can be described as Polish multinationals. The number of manufacturing firms possessing foreign branches may seem somehow low, but it covers all firms of this type. To the best knowledge of the author, a very complete picture of Polish multinationals was presented. Only a few firms were dropped due to the problem with obtaining reliable data. The group of non-multinational firms is referred here as the control group. The author is aware that the number of Polish multinationals is not impressive. Adding to the consideration the age of Polish firms operating abroad, the paper can be described as a pilot study. The number of Polish firms possessing foreign assets should increase in coming years, but in decades it will rather not reach the level of highly industrialized countries. What is more, the number of Polish multinationals among all manufacturing firms is quite proportional. In most countries there are millions of firms, but only a few undertake foreign expansion. Of over five million American firms, only 4.1 per cent engage in foreign trade (Bernard et. al., 2007). Consequently, the number of American multinationals is far lower.

The countries in which Polish MNC have been operating were divided into two groups: less and more developed countries. Poland was treated as a middle income country and was a separator between the two groups of countries. Any country with higher value of GDP per capita fell into the group “highly developed countries”. Countries with a lower value were described as “less developed countries”. The detailed information is attached in table A2. Such division was necessary to construct the model. According to author’s hypothesis: low-productivity firms will produce only in Poland, intermediate productivity firm will produce in countries of lower development than the home country. The most productive firms will locate production both in less and highly developed countries.

The analysis has been based on the data presenting the number of firms investing abroad and number of foreign affiliates, not the value of these investments. The data on outflows of FDI do not precisely present the activities of MNC, but rather concern capital flows between countries. Employing data on the number of MNC allowed to minimize the effect of a single large transaction on the total values of countries’ investment flows, and helped avoid misleading conclusions in analysing activities of firms in particular industries.

4. FIRST GLANCE AT DATA

This part of the paper has been devoted to presenting the activities of Polish companies abroad. It is crucial to underline that only manufacturing firms have been taken into consideration. Adding service, retail and financial companies would have led to a larger number of observations[4].

The most active in the field of international production are firms representing food industry and wood products industry (table 1). However, the distribution among industries is quite equal and it is difficult to indicate one particular industry, which could be subject to ranking. Moreover, there are only few firms in each industry having production facilities abroad. Industries like electronic equipment or semiconductors are not present in this field. This means that Polish companies mostly focus on basic industries. Analysing the assortment of parent-firms comparing to affiliates we can say that most of the multinationals are of horizontal type, even though they are also located in less developed countries, which could suggest vertical integration.

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[4] For instance, there were 915 companies in the Czech Republic in which a Polish owner had at least 25% of share capital in 2008 (source: Trade and Investment Promotion Section Embassy of the Republic of Poland in Prague).

Table 1
Distribution of Polish multinationals among industries

Industry group	Number of companies
10 Manufacture of food products	7
11 Manufacture of beverages	1
14 Manufacture of wearing apparel	1
15 Manufacture of leather and related products	1
16 Manufacture of wood and of products of wood and cork	6
17 Manufacture of paper and paper products	1
19 Manufacture of coke and refined petroleum products	2
20 Manufacture of chemicals and chemical products	5
21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	1
22 Manufacture of rubber and plastic products	5
23 Manufacture of other non-metallic mineral products	4
24 Manufacture of basic metals	2
25 Manufacture of fabricated metal products, except machinery and equipment	5
27 Manufacture of electrical equipment	3
28 Manufacture of machinery and equipment	2
29 Manufacture of motor vehicles, trailers and semi-trailers	1
31 Manufacture of furniture	3
32 Other manufacturing	1

Source: own calculations

The values in table 2 provide a confirmation that most Polish MNC produce only in one foreign country. In all cases the companies have their main production facilities in Poland and foreign production sites are supplements to their main activities.

Table 2

Number of plants per multinational corporation

Number of plants	Number of cases	Share [%]
1	19	37.25
2	14	27.45
3	4	7.84
4	4	7.84
5	1	1.96
6	3	5.88
7	1	1.96
8	1	1.96
9	2	3.92
12	1	1.96
13	1	1.96

Source: own calculations

The countries in which Polish companies have plants are mostly the neighbouring ones (table A1). Top three destinations are large countries (Germany, the Russian Federation and Ukraine), which is linked with a significant size of the market. Only a few production sites are established in further destinations like China or India. Polish companies have not reached yet the level of development enabling a global expansion. Ukraine and the Russian Federation are also chosen by the firms due to high trade costs like transportation, border procedures and import taxes. Among top ten investment locations are six EU member countries. This means that removing trade barriers between this group of countries did not support trade, but firms rather chose production in proximity to the customers.

5. EMPIRICAL SPECIFICATIONS

Firms can configure optimal strategy of foreign operations depending on their own characteristics. It is assumed that each firm can choose one of four alternatives:

1. Production only in a home country (H)
2. Production affiliate in a less developed country (S)
3. Production affiliate in a highly developed country (N)
4. Production affiliates both in less and highly developed countries (SN)

Due to the limited number of Polish MNC it has to be assumed that all industries represent the same fixed costs of setting up a foreign affiliate and face symmetric demand. Varying the fixed costs among industries could not have been justified. Following Aw and Yin (2008) it is assumed that fixed investment costs are lower in less developed countries and higher in more developed countries. The highest fixed investment costs occur when plants are located in both groups of countries. It is also assumed that production costs are lowest in less developed countries, intermediate in "middle" ones and highest in the developed countries.

The investment project abroad is undertaken in a location which maximizes the profit for a firm. The profit function for the individual firm is given by the equation:

$$\pi_{ij} = \alpha_j + \beta_j X_i + \varepsilon_{ij} \tag{1}$$

where

j=1, 2, 3, 4 and

π_1 represents firm i's profit for production only in a home country (H),

π_2 – profit for production in less developed countries (S),

π_3 – profit for production in developed countries (N),

π_4 – profit for production both in developing and developed countries (SN),

α_j is a specific parameter for a production strategy,

X_i is a vector of firm characteristics such as size, age, productivity, profitability and intangible assets,

ε_{ij} is a random disturbance term.

The multinomial logit model (MNL) was used since the goal is to estimate the probability that a firm chooses one of the four strategies. Such model is a popular tool for categorical response data. It allows modelling the probability using multiple predictors (Agresti, 2002). MNL is an appropriate method of analysis because the choice is a function of the characteristics of the individual firm making the choice. The equation is given as follows:

$$\Pi_{ij} = \frac{\exp[\alpha_j + \beta_j X_i]}{\sum_{k=1}^{4} \exp[\alpha_k + \beta_k X_i]} \tag{2}$$

where
j=1, 2, 3, 4 and
Π_{ij} is the probability that firm *i* belongs to type *j*.

Explanatory variables:

Size – logarithm of number of employees. It is expected that larger companies have a higher propensity to undertake foreign production.

Age – logarithm of number of years of operation through 2007. It is expected that older firms accumulate more experience which increases probability of undertaking FDI.

Productivity – logarithm of the ratio of revenue and number of employees. Firms investing abroad are expected to be more efficient than their counterparts in a home country. A firm undertaking production in a more developed country is expected to have higher productivity than a firm producing in a less developed country.

Profitability – profit before taxes on sales. This is a measure of managerial skills and efficiency of an organization.

Intangible assets – ratio of the value of intangible assets and total assets. The measure is expected to be positively correlated with the propensity to becoming MNC.

6. EMPIRICAL RESULTS

Descriptive statistics of independent variables were presented in table 3. Results for the companies producing abroad were in all cases higher compared to firms operating only in Poland. The values come as expected and the highest values were for companies possessing production sites simultaneously in developed and developing countries. A group of 2459 firms operating only in Poland was employed as the control group for firms engaging in FDI. The composition of all firms taken into consideration represents standard distribution of firms in many economies: most of firms stay at home, some export and only a few undertake investment abroad.

Table 3
Mean values by production location of firms

Firm characteristics	Both groups of countries	Only highly developed countries	Only less developed countries	No FDI
Number of firms	18	15	18	2459
Productivity	13.037	12.857	12.854	12.540
Age	6.922	6.902	6.703	2.682
Profitability	0.073	0.066	0.041	0.040
Size	6.922	6.902	6.703	5.408
Intangible assets	0.107	0.045	0.036	0.025

Source: own calculations

The key characteristic – productivity – does not vary significantly between all four groups of firms. This can be partially explained by the presence of numerous affiliates of international companies in Poland. The variable age shows the largest difference between firms undertaking FDI and producing only in the home country.

Table 4 presents the results of estimating equation (2). The coefficients show the influence of each variable on the probability that a firm will choose one of the foreign production strategies relative to the base group of firms producing only in the home country. Constant term supports the assumption about the fixed investment cost. Negative value of this term confirms that undertaking investment in a foreign country causes higher fixed costs compared to the production in home country.

Table 4

Results of multinomial logit regression

Independent variables	**Both groups of countries**	**Only highly developed countries**	**Only less developed countries**
Constant	-24.0301 (5.984071)***	-21.9042 (5.973464)***	-20.8336 (5.549524)***
Productivity	1.7777 (0.644586)***	1.1364 (0.627720)*	1.0379 (0.554542)*
Age	4.9269 (0.898607)***	4.4505 (0.839275)***	4.2619 (0.771351)***
Profitability	4.8176 (5.758933)	2.1198 (6.398531)	-7.4135 (5.860346)
Size	-1.4516 (0.593175)***	-0.9625 (0.577965)*	-0.8505 (0.514535)*
Intangible assets	4.5865 (3.989954)	0.7782 (4.661300)	-0.5666 (4.768404)
Observations	18	15	18
Sample	2510		
Pearson chi-square	1.0318		
Log likelihood	-307.161		

Notes: Standard errors are in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Source: own calculations

Remember that investment projects in foreign countries can only be undertaken by very productive firms. The least expensive form of foreign production is setting up a plant is in less developed countries and the most expensive way is establishing production both in developed and developing countries. The coefficient for productivity is statistically significant for all groups and its values behave as expected. The most productive firms are more likely to invest in both locations. Least productive MNC have located the production affiliate only in developing countries and more productive ones have produced only in highly developed countries.

Age is also significant in all three groups. This can be explained by the learning process of each company. Well established former state-own companies are especially active in the field foreign expansion. They can also be described as “national champions”.

Cutting-edge technology has not yet been developed by Polish companies. They are still predominantly in the phase of adapting foreign technology to their specific assets. Lack of statistical significance can be also explained by the distribution of the companies among industries. Polish multinationals have operated in less technologically intensive and representing scant R&D expenses industries like food or furniture. There were no MNC derived from advanced industries like electronics or computer technology.

7. CONCLUSIONS

This paper has been devoted to the identification of firm-level determinants which have led Polish firms to establishing foreign production affiliates. Among others the highest influence have been ascribed to productivity, age and size. Value of productivity coefficient is consistent with previous findings. The most productive firms can produce in several locations, also in very competitive markets. On the other hand, the difference in productivity between firms investing either in South or in North cannot be very considerable. This is caused by the fact that investing in developed countries, which are mostly members of the EU, is easier and also bears less risk compared to projects in less developed countries.

The coefficient for age of the companies also behaved according to the theory. The third statistically significant coefficient – size – did not come as expected. As the foreign investment incurs high fixed costs the larger companies should be advantaged in this process. In my findings the size negatively affected the likelihood of undertaking foreign production. One field of explanation is the characteristics of Polish firms undertaking FDI. Among them, a significant group is formed by former state-owned companies, which are of a very large size, but do not start many production projects abroad. Smaller firms are more active in the field of internationalization proportionately to their size. These results are also supported by previous findings that only a certain size is important to undertake foreign production.

The paper was one of a few contributions to FDI projects originating in middle income countries. Moreover, it was also one of the first analyses conducted on firm-level data. The lack of previous profound investigations of the issue may be justified by the modest number of multinationals from middle income countries and their minor role in the world economy.

The author is aware of potential shortcomings of the analysis. Due to the small number of Polish firms producing abroad, could not be analyzed separately particular industries. Different industries represent varied fixed costs and productivity levels. Nonetheless this limitation is not exceptionally significant due to the fact that most Polish MNC operate in less technologically intensive sectors.

Further research should also include the control for ownership of firms. This is linked with the importance of foreign-owned firms operating in Poland. The firms which are affiliates of foreign multinationals produce mostly for the host market rather than expand abroad. Therefore, even if they exhibit the increasing propensity to foreign expansion they will produce only in Poland. Anyway, several affiliates having their foreign production have been identified. We can describe this group of firms as "sub-multinationals".

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APPENDIXES

Table A1

Distribution of affiliates by country

Country	Number
Ukraine	20
Russian Federation	15
Germany	14
Czech Republic	11
Romania	10
China	6
Hungary	5
Belarus	5
United Kingdom	5
Slovakia	4
Lithuania	4
India	4
United States	4
Serbia	3
Croatia	3
Bulgaria	3
Brazil	3
Norway	3
United Arab Emirates	3
Australia	3
Italy	3
South Korea	3
Congo	2
Egypt	2
Macedonia	2
Latvia	2
Peru	2
Mexico	2
France	2
Spain	2
Switzerland	2
Israel	2
Singapore	2

Source: own calculations

Table A2

National GDP per capita (USD, 2007)

Country	Value
India	976
Egypt	1770
Congo	1938
China	2604
Ukraine	3055
Macedonia	3703
Peru	3880
Belarus	4621
Bulgaria	5178
Serbia	5383
Brazil	6852
Romania	7523
Mexico	8386
Russian Federation	9050
Poland	11008
Croatia	11256
Lithuania	11308
Latvia	11930
Slovakia	13702
Hungary	13777
Czech Republic	16881
South Korea	19841
Israel	23383
Spain	32451
Italy	35585
Singapore	36370
France	40090
Germany	40162
United Arab Emirates	43709
United States	45047
United Kingdom	45549
Australia	45590
Switzerland	56579
Norway	82465

Source: UN Statistics