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Empirical Paper

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Offshoring of white-collar jobs: theory and evidence¹

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Abstract: Foreign direct investment (FDI) in advanced business services (ABSs), referred to here as the offshoring of white-collar jobs, has become one of the major developments in the operations of multinational corporations (MNCs). However, a specific theoretical approach to this phenomenon has not been adequately defined. In this article, we have two objectives. The first objective is to outline the key elements of the theoretical framework and introduce a simple formal model for business services within MNCs. The second objective is to verify the assumptions of the model in the empirical part. We use the sample of the largest European companies having foreign affiliates. Special attention is paid to Visegrád economies (i.e. Czech Republic, Hungary, Poland, and Slovakia) as host economies. We applied here a multinomial logistic model, which indicates the probability of having an ABS subsidiary taking into consideration the characteristics of MNCs.

Keywords: advanced business services, Europe, foreign direct investment, multinational corporation

JEL Classification: F21, F23

1 Introduction

Business services create a distinctive group within the broad sector of services. Moreover, business services are far from being homogenous. A very important category of business services is advanced business services (ABSs), which are defined here as relying heavily on knowledge and professional expertise. From the business perspective, forms of ABS are as follows: business process outsourcing (BPO), shared service centers (SSCs), information technology outsourcing (ITO), and research and development (R&D) centers. These services are also labeled as modern business services. The important characteristics of ABS are also their high levels of standardization and tradability. Therefore, many tasks can be provided from distant locations, thus increasing the propensity of firms toward offshoring of white-collar work [Metters, 2008].

The topic of offshoring is relevant both for advanced and emerging economies [Feenstra and Hanson, 1992; Ebenstein et al., 2014]. The transfer of white-collar tasks may alter the business structure in both groups of countries and influence their economic performance. As a consequence, this type of offshoring has attracted a lot of attention of economists and policymakers; however, developments within multinational corporations (MNCs) have not been directly associated with the phenomenon. Indeed, offshoring of white-collar services has been introduced and expanded chiefly by MNCs as a part of the global configuration

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of their operations. The inclusion of MNCs in the analysis is crucial, since they frequently dominate many industries and economies.

The role of services in an economy and its tertiarization have been frequently pronounced in macroeconomics. Moreover, services have become a key element of business strategies through digitization and servitization of manufacturing [Martín-Peña et al., 2019]. However, the role of knowledge-intensive services within firms, especially MNCs, has not been sufficiently defined. The mainstream models of MNC-type operations assume the following two types: headquarters activities and manufacturing activities [Grossman et al., 2006]. We argue that to make the picture complete, an additional category of activities should be included—advanced business services. They are related both to the headquarters and the production, and for this reason they can be perceived as providing a link between these two operations.

Most theories and models of MNCs have predominantly focused on manufacturing operations. Thus, the role of business services was on the margin of the discussion and was subordinated to the production function. In our opinion, the distinction of services is necessary due to the changing nature and geographic structure of global value chains (GVCs). In many cases, MNCs have their headquarters in a developed country, manufacture in a developing country, and locate services either in a developed or in a developing country. The ABSs are also very dynamic. Automation and artificial intelligence are rapidly changing services. Therefore, ABSs require a new treatment from the theory of a firm, since they became a central part of every advanced organization.

In this article, we have two objectives. The first objective is to outline the key elements of the theoretical framework and introduce a simple formal model for business services within MNCs. The second objective is to verify the assumptions of the model in the empirical part. We use a sample of the largest European companies having foreign affiliates. This is one among few attempts to analyze affiliates with respect to their core and support roles. Special attention is paid to Visegrád economies (i.e., Czech Republic, Hungary, Poland, and Slovakia) since they have recently become attractive locations for offshoring of business services with hundreds of thousands of jobs having been created. To the knowledge of the author, this is one of the first attempts to analyze the operations of MNCs with respect to their ABS activities. We applied here a multinomial logistic regression approach, which indicates the probability of having an ABS subsidiary considering the characteristics of MNCs. In other words, we define the factors influencing decision-making in relation to offshoring of white-collar jobs. The novelty is also focusing on services' subsidiaries in two types of economies: advanced and emerging.

The remainder of the article is organized as follows. Section 2 delivers a review of previous contributions in the field of determinants of ABS; Section 3 contains a simple model of an MNC; Section 4 contains data description; Section 5 delivers the outline of an econometric strategy; Section 6 contains results of the analysis; and Section 7 delivers concluding remarks.

2 Previous theoretical and empirical contributions

White-collar services have been rather neglected in the theory of international trade or MNCs. Even though an indirect approach to ABSs could be derived from some theories, they do not explicitly model those complex activities. Among the few attempts to model service activities of MNCs, the approach of Markusen and Strand [2009] has been particularly relevant. They prepared a theoretical model in which an earlier explanation of international production by MNCs has been enhanced with service activities. They are based on the knowledge-capital model by Carr et al. [1998]. The first insights into the international configuration of MNCs were provided by Markusen [1997]. His original model assumed that knowledge-intensive services of MNCs may be separated from production, and that knowledge capital is skilled-labor intensive relative to production and can be supplied to additional production facilities at low cost. This prepared the ground for analyzing services in isolation from production activities. The model of Markusen and Strand [2009] considered different types of barriers to trade and establishing a commercial presence in services. Two main groups of barriers to trade in services were identified in their approach: “natural”

economic costs and “policy-imposed” costs. They influenced the viability of operations in services on the international scale.

The complex operations of MNCs in various international configurations were explained by Yeaple [2003] and Grossman et al. [2006]. They proposed a more detailed explanation of MNCs’ activities. However, they all focused on enterprises which were found to be active in the production and this was the subject of the international division of labor. They did not take into account services that are essential in every MNC. Grossman and Rossi-Hansberg [2008] advanced the theoretic discussion regarding international division of tasks within the GVC. They also took into consideration trade in business services. Ray [2012] extended their model and considered manufacturing operations as being prior to complementary services. In this approach, services were subordinated to manufacturing. An additional element that has been taken into consideration when analyzing the development of the service sector is the liberalization of the service trade, which influences the welfare of home and host economies.

Export-platform approach to MNCs might be also relevant here [Ekholm et al., 2003]. Indeed, most SSC/BPO units in emerging Europe export their services to the headquarters in advanced economies or other units of MNCs anywhere in the world. Frequently, the reach is greater than the home region. We can notice that many ABS subsidiaries are global providers of specialized services within MNCs. On the basis of these observations, we can conclude that ABSs are mostly exported and only a small fraction is consumed in the country of origin by the other units of an MNC. For example, just after the collapse of the iron curtain, many Western European firms established production subsidiaries in Eastern Europe. The operations are still continuing in spite of the rising production cost. Moreover, many Western companies in the middle of the 2000s started establishing service units in emerging Europe. Thus, the former units provide services for production units in both groups of countries.

Some argued that it is possible to separate information from physical manufacturing operations [Evans and Wurster, 1999]. In this sense, the advanced services can increase the fragmentation of GVCs. This also requires an additional assumption in economic modeling of white-collar workers’ offshoring. The tasks can be executed remotely and the distance plays almost no role. This also leads to the possibility of organizing global service centers, which consolidate operations of many separate units in the world. The idea is to develop and deliver the service anywhere in the world [Youngdahl and Ramaswamy, 2008]. The necessity to include offshoring of services in GVCs is linked to the fact that the narrow approach to offshoring meant imports of materials from the same sector, whereas around 40% of employment in manufacturing is related to services functions, which are also prone to offshoring [Nordås, 2019].

Another important aspect is the standardization of knowledge-intensive services. Even in the 1990s, the execution of services was not considered as a process and diagrams similar to those for an assembly line did not exist [Metters and Verma, 2008]. Standardization of operations related to accounting or stock-control in companies having hundreds or more units led to increased profits. The profits are even greater when the operations are consolidated in one global service center which provides services to every unit in the world. Together with the issue of standardization comes the automation of knowledge-intensive services. It is understood as an application of advanced algorithms to execute tasks previously reserved for human beings. Besides performing some repetitive tasks by programmed machines, even cognitive tasks can be executed, consequent to various forms of artificial intelligence [Kaplan and Heanlein, 2019]. This is considered to be one of the most important changes in offshoring and will profoundly transform international provision of services [Klimek, 2020].

The issue of professional qualification and licensing is crucial to services. The licenses are designed to protect users of services (like legal services), but they are also important barriers to entry of new companies. In the case of ABS the issue of licenses was overcome by the fact that ABS operations are rather a back-office type than front-office ones. Moreover, they work for other units within the same business group or for unrelated companies, and thus ABS is a business-to-business type. Sale of the services is conducted by local units according to the local regulation. For example, many operations in banks may be processed by remote units anywhere in the world, but direct contact with customers is provided by the local staff.

The models of Markusen and Strand [2009] and Yeaple [2003] best explain the operations and impact of MNCs on markets and therefore will be used as the basis for constructing a new model of complex structures in MNCs, including activities in business services. Moreover, the new model will be constructed in the general equilibrium, which will enable us to assess the impact of foreign direct investment (FDI) on a host economy and particular markets. The design of the model of Yeaple [2003] allows for the adjustment to a more detailed explanation of the activities of MNCs, for example, in the context of emerging economies [Klimek, 2016].

3 Model

We develop a simple model of an MNC with offshoring of white-collar tasks. As the basic scenario, the firm can choose between performing the white-collar task at the headquarters or engaging in offshoring. When it decides to offshore, it faces an array of choices, since there are countries of various levels of development and labor costs. There are three countries: West (h), East (f), and South (g). West and East are northern countries with high labor costs and South is an emerging country with a cheap labor force. The decision about engagement in FDI in knowledge-intensive services depends on the differences in costs of white-collar labor between North and South. It is in line with the business decisions made by MNCs regarding the execution of knowledge-intensive tasks. Rarely, an MNC performs these processes inside the headquarters and does not engage in offshoring of white-collar services. Frequently, MNCs operate in various developed markets and besides the core processes they also relocate some white-collar processes to particular countries. However, recently, MNCs decided to move white-collar processes into not only emerging economies such as India, the Philippines, but also Poland or other Central and Eastern European economies [Klimek, 2020].

This model is based on Markusen [1997]. The annotations here are also kept very similar to his model to facilitate analysis and comparability. Although he designed the model to explain the manufacturing operations of an MNC, an important element of the model was “knowledge-intensive producer services.” Again, although Markusen [1997] did not precisely refer to offshoring of advanced business services, this approach was discussed as one of the strands in explaining offshoring of white-collar services and operations of multinational firms [Markusen, 2005].

The starting point is the introduction of the market conditions for the products of MNCs. There are two goods. The output of Y in each country can be expressed as CES function:

$$Y_i = \left(aL_{iy}^\epsilon + (1+a)S_{iy}^\epsilon \right)^{1/\epsilon} \quad i=h, f, g. \quad (1)$$

where L_{iy} and S_{iy} stand for unskilled and skilled labor used in the production of good Y in a country i (Y is a numeraire). The elasticity of substitution ($1/(1-\epsilon)$) is greater than 1. Good X is produced with increasing returns to scale by Cournot-type firms. The consumption of goods takes place only in northern countries. This is consistent with the evidence that many affiliates of MNCs in emerging countries export production to northern markets. It is also the case for the consumption of intermediate services, since there is negligible demand for ABS in an emerging economy. For example, foreign firms operating in ABS in Hungary export almost 100% of their output. These services are delivered to an advanced economy and consumed at the headquarters. There are no direct links to manufacturing operations either in home or in host countries. The lack of direct linkages between manufacturing and office services is confirmed by the evidence from CEE countries. Moreover, the consumption pattern is not crucial in modeling the white-collar activities of MNCs. There is a supply of skilled-labor, which is used predominantly by ABS. In the case of absence of ABS companies, the skilled-labor resources are wasted.

The model of an MNC encompasses three main activities: manufacturing, headquarters, and office. We assume captive offshoring in this article; however, outsourcing of services to a specialized firm induces similar costs and has an equal impact on the labor market. We will not model here production operations in detail, since they use different inputs than headquarters or offices.

The production in the North requires skilled (S) and unskilled labor (L). Headquarters and office activities use skilled labor. The production process requires additionally the headquarters and office activities in the form of fixed costs – F. Similarly, in relation to knowledge-capital model (KCM), the size and composition of fixed costs are crucial in decisions concerning the establishment of particular activities in particular economies. There are also fixed costs of coordination the production process – G.

The country of origin of an MNC is an advanced economy h . In the basic scenario (1), the operations of offices are included in the headquarters. There are four types of MNC, namely:

1. MNCs with no service operations abroad,
2. MNCs with service operations in advanced economies,
3. MNCs with service operations in emerging economies, and
4. MNCs with service operations in both advanced and emerging economies.

More formally, there are six types (regimes or configuration strategies) of firms. We also include national firms without any international operations. The ordering of firms with their skilled-labor intensity is given as follows:

1. n_s – national firm with headquarters in S , and the production takes place in the same country, where office activities are incorporated into the headquarters.
2. n_N – national firm with headquarters either in E or W , and the production takes place in the same country, where office activities are incorporated into the headquarters.
3. m_{NN} – multinational firm with headquarters either in E or W , and the production takes place both in E and W , where office activities incorporated into the headquarters.
4. m_{NNS} – multinational firm with headquarters either in E or W , and the production takes place both in E and W , where the office is situated in an emerging country.
5. m_{NNN} – multinational firm with headquarters either in E or W , and the production takes place both in E and W , where the office is situated in another developed country.
6. m_{NNNS} – multinational firm with headquarters either in E or W , and the production takes place both in E and W , where the offices are situated both in developed and in emerging countries.

Factor-intensity of particular types of activities is as follows:

1. Headquarters activities are more skilled-labor intensive than production plant.
2. Headquarters activities are more skilled-labor intensive than office.
3. Office activities are more-skilled-labor intensive than production plant.
4. Any type of activity by a MNC in the host country is more skill-intensive than the Y sector.

There is an iceberg form of transportation costs. A national firm headquartered in i has the following cost function:

$$w_i L_i^n + z_i S_i^n = w_i \left[cX_{ii}^n + (c + \tau)X_{ij}^n + G^n \right] + z_i F^n \quad i, j = h, f, i \neq j \quad (2)$$

As the consumption is met by a local production a multinational firm based in a country i has the following cost function:

$$w_i L_{ii}^m + w_j L_{ij}^m + z_i S_{ii}^m + z_j S_{ij}^m = w_i \left[cX_{ii}^m + G_1^m \right] + w_j \left[cX_{ij}^m + G_2^m \right] + z_i F_1^m + z_j F_2^m \quad (3)$$

A multinational firm based in country i with an ABS unit in another developed economy has the following cost function:

$$w_i L_{ii}^m + w_i L_{ij}^m + z_i S_{ii}^m + 2z_j S_{ij}^m = w_i \left[cX_{ii}^m + G_1^m \right] + w_j \left[cX_{ij}^m + G_2^m \right] + z_i F_1^m + 2z_j F_2^m \quad (4)$$

A multinational firm based in country i with an ABS unit in emerging economy has the following cost function:

$$w_i L_{ii}^m + w_i L_{ij}^m + z_i S_{ii}^m + z_i S_{ij}^m + z_k S_{ik}^m = w_i \left[cX_{ii}^m + G_1^m \right] + w_j \left[cX_{ij}^m + G_2^m \right] + z_i F_1^m + z_j F_2^m + z_k F_3^m \quad i, j, k=h, f, g, i \neq j \neq k \quad (5)$$

A multinational firm based in country i with ABS units both in developed and emerging economies has the following cost function:

$$w_i L_{ii}^m + w_i L_{ij}^m + z_i S_{ii}^m + 2z_i S_{ij}^m + z_k S_{ik}^m = w_i \left[cX_{ii}^m + G_1^m \right] + w_j \left[cX_{ij}^m + G_2^m \right] + z_i F_1^m + 2z_j F_2^m + z_k F_3^m \quad (6)$$

Labor endowments of countries i and j is given as \bar{L}_i and \bar{Z}_i . The market clearing condition for all types of firms is given as:

$$\bar{L}_i = L_{iy} + n_i L_i^n + m_i L_{ii}^m + m_j L_{ji}^m \quad (7)$$

$$\bar{S}_i = S_{iy} + n_i S_i^n + m_i S_{ii}^m + m_j S_{ji}^m \quad (8)$$

The Zero-profit condition for X sector gives the income of country i as:

$$M_i = w_i \bar{L}_i + z_i \bar{S}_i \quad i=h, f, k. \quad (9)$$

The function of a representative consumer in each of the northern countries is the Cobb-Douglas function, which is given as:

$$U_i = X_{ic}^\alpha + Y_{ic}^{1-\alpha} \quad X_{ic} = n_i X_{ii}^n + n_j X_{ji}^n + m_i X_{ii}^m + m_j X_{ji}^m \quad (10)$$

The demands for X and Y are as follows:

$$X_{ic} = \alpha M_i / p_i \quad Y_{ic} = (1-\alpha) M_i / p_i \quad (11)$$

The inequalities for marginal revenue–marginal cost are given by:

$$p_i \left(1 - e_{ii}^n \right) \leq w_i c \left(X_{ii}^n \right) \quad (12)$$

$$p_j \left(1 - e_{ij}^n \right) \leq w_i (c + \tau) \left(X_{ij}^n \right) \quad (13)$$

$$p_i \left(1 - e_{ii}^m \right) \leq w_i c \left(X_{ii}^m \right) \quad (14)$$

$$p_j \left(1 - e_{ij}^m \right) \leq w_j c \left(X_{ij}^m \right) \quad (15)$$

The price elasticity is one, which reduced the firm's mark-up to its market share.

$$e_{ij}^l = \frac{X_{ij}^l}{X_{jc}} = \frac{p_j X_{ij}^l}{\alpha M_j} \quad l = n, m, v \quad i, j = h, f \quad (16)$$

Zero-profit conditions for particular types of firms as given according to the following expressions—

National firm in h :

$$p_h e_{hh}^n X_{hh}^n + p_f e_{hf}^n X_{hf}^n \leq w_h G^n + z_h F^n \quad (17)$$

National firm in f :

$$p_f e_{ff}^n X_{ff}^n + p_h e_{fh}^n X_{fh}^n \leq w_f G^n + z_f F^n \quad (18)$$

MNC in h :

$$p_h e_{hh}^m X_{hh}^m + p_f e_{hf}^m X_{hf}^m \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + z_f F_2^m \quad (19)$$

MNC headquartered in h with ABS in f :

$$p_h e_{hh}^m X_{hh}^m + p_f e_{hf}^m X_{hf}^m \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + 2z_f F_2^m \quad (20)$$

MNC headquartered in h with ABS in g :

$$p_h e_{hh}^m X_{hh}^m + p_f e_{hf}^m X_{hf}^m \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + z_f F_2^m + z_g F_3^m \quad (21)$$

MNC headquartered in h with ABS in $f+g$:

$$p_h e_{hh}^m X_{hh}^m + p_f e_{hf}^m X_{hf}^m \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + 2z_f F_2^m + z_g F_3^m \quad (22)$$

We substitute mark-ups into MR=MC inequalities for countries i and j :

$$X \geq \beta M_i \frac{p_i - w_i c}{p_i^2}, \text{ for } X_{ii}^n, X_{ii}^m \quad (23)$$

$$X \geq \beta M_j \frac{p_j - w_j (c + \tau)}{p_j^2}, \text{ for } X_{ij}^n \quad (24)$$

Now we substitute inequalities (23) and (24) into zero-profit conditions:

National firm in h :

$$\beta \left[M_h \left(\frac{p_h - w_h c}{p_h} \right)^2 + M_f \left(\frac{p_f - w_h (c + \tau)}{p_f} \right)^2 \right] \leq w_h G^n + z_h F^n \quad (25)$$

National firm in f :

$$\beta \left[M_h \left(\frac{p_h - w_f (c + \tau)}{p_h} \right)^2 + M_f \left(\frac{p_f - w_f c}{p_f} \right)^2 \right] \leq w_f G^n + z_f F^n \quad (26)$$

MNC in h :

$$\beta \left[M_h \left(\frac{p_h - w_h c}{p_h} \right)^2 + M_f \left(\frac{p_f - w_f c}{p_f} \right)^2 \right] \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + z_f F_2^m \quad (27)$$

MNC headquartered in h with ABS in f :

$$\beta \left[M_h \left(\frac{p_h - w_h c}{p_h} \right)^2 + M_f \left(\frac{p_f - w_f c}{p_f} \right)^2 \right] \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + 2z_f F_2^m \quad (28)$$

MNC headquartered in h with ABS in g :

$$\beta \left[M_h \left(\frac{p_h - w_h c}{p_h} \right)^2 + M_f \left(\frac{p_f - w_f c}{p_f} \right)^2 \right] \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + z_f F_2^m + z_g F_3^m \quad (29)$$

MNC headquartered in h with ABS in $f+g$:

$$\beta \left[M_h \left(\frac{p_h - w_h c}{p_h} \right)^2 + M_f \left(\frac{p_f - w_f c}{p_f} \right)^2 \right] \leq w_h G_1^m + z_h F_1^m + w_f G_2^m + 2z_f F_2^m + z_g F_3^m \quad (30)$$

An MNC decides about its optimal configuration strategy after taking into consideration fixed costs of office activities. The highest fixed costs are in the cases of two offices being located abroad. Only the most productive firms are capable of building such a structure. When we consider the lowest costs of office operations, the focus should be on a low-cost country, since fixed cost, as expressed in a unit of skilled labor in an emerging country, is lower than a unit of skilled labor in a developed country. To sum up our theoretical proceeding, we can rephrase the approach formulated by Hummels et al. [2016] that firms decide about the scope and size of their offshoring operations based on external conditions and internal capabilities.

4 Data and stylized facts

Besides the introduction of the theoretical model, we aim to apply it to the analyses of operations of European MNCs with respect to their engagement in ABS. We expect that firms endeavor to maximize their profits; therefore they configure their services operations in the most optimal way. The selection of an optimal strategy depends on the characteristics of a firm, such as size, productivity, and profitability. We aim to define the factors that are expected to lead to establishing services operations in Western and Eastern Europe.

The source of data on the firms was the Amadeus database, which contains detailed information about millions of companies across Europe. We used here data for European companies and their European subsidiaries. The selected countries create a unique area of free movement of services on a global scale. Therefore, the analysis will focus on the characteristics of firms.

First, the sample of 5,003 firms, having their headquarters in 15 Western European countries belonging to the EU and two EFTA countries (Norway and Switzerland), was extracted. The primary criterion of

selecting the records was the operating turnover of at least EUR 50 million in 2015. Such restriction is necessary since only very large organizations are able to configure their operations internationally, due to high fixed costs. Indeed, the process of services offshoring was started by the largest global firms. The companies should also employ more than 1,000 workers, since such organizations are considered to be able to create a separate unit capable of delivering services. According to an industry association, the average headcount in a foreign-service unit in Poland in 2019 was 321 in the top city [ABSL, 2019]. The largest ABS units in the Czech Republic, Hungary, Poland, and Slovakia – also known as Visegrád Group (V4) – employ even several thousand employees; thus, for the sake of comparability, it is crucial to select a largely homogenous group of parent companies. The time span of the analysis was 2007–2016. Not all companies reported all financial information over the ten-year period.

In the next step, three types of firms were distinguished with respect to ABS (the list of NACE codes considered as ABS is included in Appendix 1). First, an MNC may have an ABS subsidiary in a highly developed country. Second, a firm has ABS operations in selected countries of Central and Eastern Europe. The countries were selected since they have served as leading offshoring destinations in Central and Eastern Europe. Moreover, they provide similar business conditions; therefore, we focus on a largely homogenous group. Also, the types of processes offshored to these destinations are largely similar [Klimek, 2020]. The characteristics of the offshoring services industry in India or the Philippines are completely different when it comes to the size, scope, local conditions, and barriers to trade in services. Including those two major offshoring destinations might completely skew the results and would not allow us to focus on the characteristics of firms; rather, external factors would be dominants. The fact that we focus on these selected economies of the EU allows for using a unique setting for analyzing the unrestricted flow of services. It also sheds more light on ABSs in the context of economic integration and concentration of production [Venables, 1996]. Third, a firm has operations both in emerging and developed countries in Europe. In the next step, the service subsidiaries were merged with their headquarters and financial data, related to the operation of the entire organization, was retrieved.

The first step in the analysis is to investigate the pattern of firms in the sample. German and British firms together with their French peers constitute almost 50% of all analyzed MNCs (Figure 1). This fact is important because investment in production facilities is dependent on the distance between headquarters and subsidiaries. Out of 5,003 firms in the sample, 990 firms have their ABS subsidiaries in another advanced European economy, 81 firms have their service subsidiaries in one of the V4 countries, and 194 firms have subsidiaries both in emerging and developed Europe. This means that firms mostly focus on services in other developed countries. Moreover, we can also conclude that a firm that establishes a service unit in an emerging economy also has such a unit in advanced Europe.

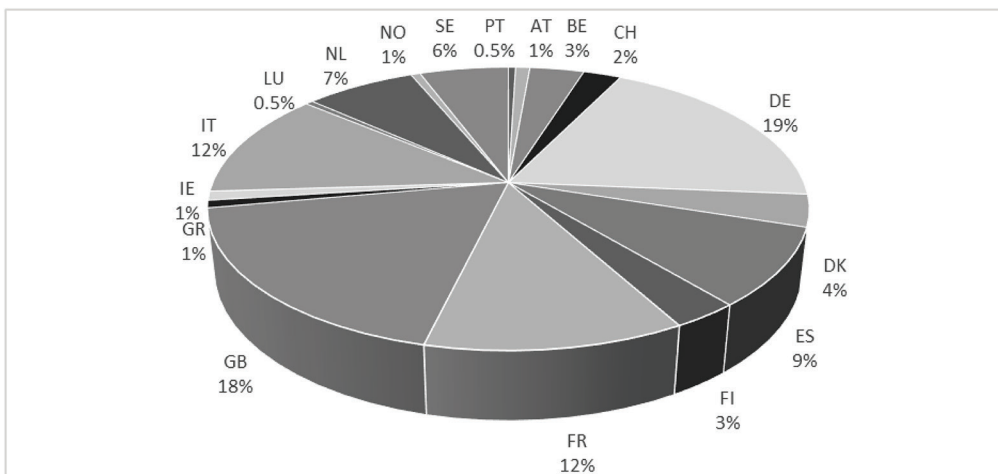


Figure 1. Geographic distribution of MNCs in the sample.

Source: The author.

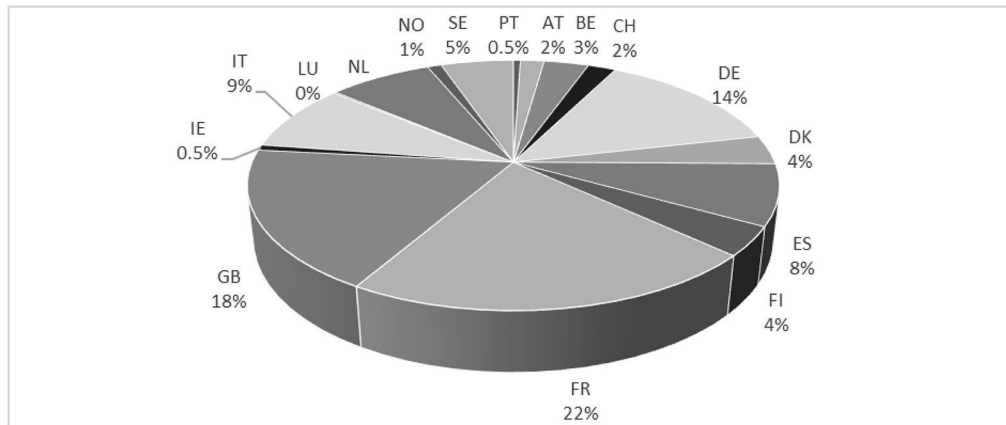


Figure 2. Companies with ABS subsidiaries in advanced Europe.

Source: The author.

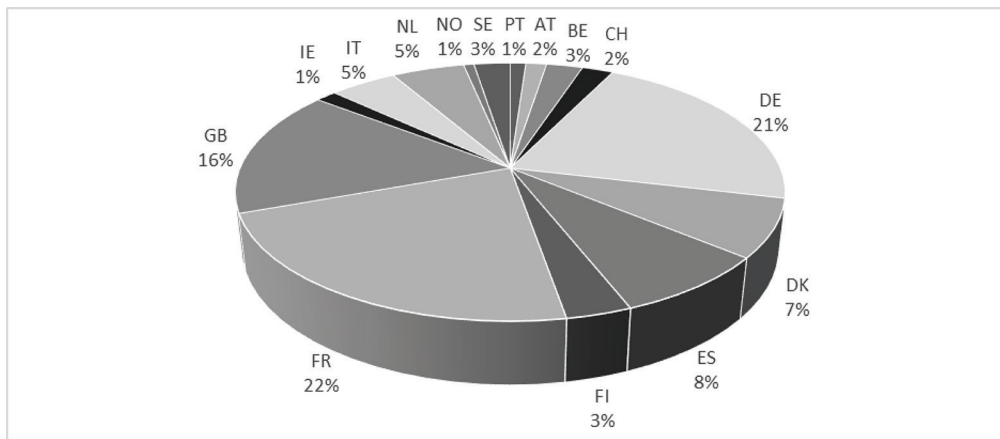


Figure 3. Companies with ABS subsidiaries in V4.

Source: The author.

When we analyze the 990 firms with subsidiaries in advanced Europe, we notice a significant share of French companies (22%) compared to their share in total number of firms (12%) (Figure 2). German firms, which dominate with respect to possession of a subsidiary irrespective of its type, are lagging here behind France and Great Britain.

French firms still dominate when we analyze MNCs with services subsidiaries in selected emerging countries (Figure 3). However, the position of German firms is also very important. Many more German firms have their subsidiaries in V4 countries compared to advanced regions in Europe. This may be associated with the proximity of V4 economies to Germany. However, due to the nature of the ABS, which can be almost cost-free in transportation, it should not play a decisive role in locating service subsidiaries. From the geographic perspective, in the case of ABS, other measures of distance should be considered. Indeed, ABS units in V4 are located almost exclusively in cities having international airports; thus, the costs of transportation concern mostly specialists traveling between units of an MNC.

To fully understand the new wave of FDI in business services in emerging Europe, it is important to analyze the structure of services in the two analyzed groups of countries (Figure 4). In Western Europe, the services of *Engineering activities and related technical consultancy* (7112), *Computer consultancy* (6202), and *Other information technology and computer services* (6209) are dominating. On the other hand, in emerging Europe, we have on the top positions the following: *Accounting, bookkeeping and auditing activities; tax consultancy* (6290), *Computer programming activities* (6201), and *Engineering activities and related technical consultancy* (7112). There is some overlap in the services; however, the magnitude of particular activities is

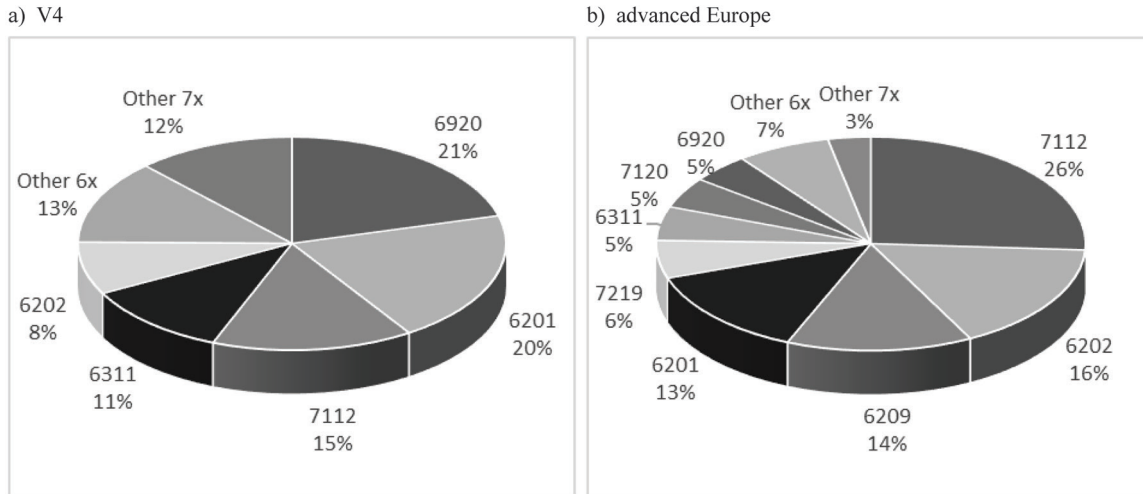


Figure 4. ABS subsidiaries.

Source: The author.

quite different. For example, accounting activities represent only 5% of firms in Western Europe and 21% in Eastern Europe. This can be interpreted as still focusing on simpler activities in V4 countries, in comparison with operations in advanced Europe.

A preliminary analysis of the data revealed important findings regarding country and industry characteristics of parent companies and their service subsidiaries across Europe. There is still a large difference in country pattern when it comes to locating the ABS in advanced and emerging economies. Moreover, services subsidiaries are not very common among MNCs based in Europe. Only around 25% of MNCs possess a service subsidiary in any country and less than 2% of firms possess such subsidiaries solely in V4 countries. There is still a difference in the types of activities in subsidiaries in Western and Eastern Europe. Therefore, we also expect different characteristics of firms, which will be investigated in Section 5.

5 Empirical proceedings

The empirical proceedings were based on the categorical data analysis. Due to the nature of the research problem a multinomial logit model was applied here. The baseline scenario was that an MNC does not have a separate ABS unit abroad, and therefore the results exhibit the propensity of the three alternative scenarios, namely that (1) a company has an ABS unit in advanced Europe, (2) a company has an ABS unit in emerging Europe, and (3) a company has an ABS unit in both groups of countries. Such a setting is based on the theoretical scenarios presented in Section 2. This is also similar to the strategy applied by Aw and Lee (2008) for the analysis of Taiwanese MNCs.

Following Long and Freese (2006), a firm's profit function for the choice between strategies of the configuration of international operations with respect to white-collar processes is given by:

$$\pi_{ik} = \alpha_k + \beta_k x_i + \varepsilon_{ik} \quad (31)$$

where $k=1, 2, 3, 4$ and represents particular strategies, α is the constant term, β represents a vector of coefficients on explanatory variables to be estimated, x_i represents characteristics of a firm leading to the choice of one of the strategies, and ε_i stands for error term.

There are four possible strategies. First, no separate business services unit abroad. Second, a service unit in another advanced economy. Third, a service unit in an emerging economy. Fourth, service units both in advanced and emerging economies. π_1 is predicted profit of a firm with no service operations abroad, π_2 for the advanced economy, π_3 for the emerging economy, and π_4 for both advanced and emerging economy.

The profit of a firm depends on its characteristics, which determine the firm's overall efficiency. The probability that a firm chooses one of the strategies depends on observable variables. The probability that a firm belongs to one of the groups is given by:

$$\Pr(y=1|x) = \frac{\exp(\alpha_k + \beta_k x_i)}{1 + \exp(\alpha_k + \beta_k x_i)} \quad (32)$$

where \Pr is the probability that a firm chooses one of the strategies.

The independent variables were selected to describe the capabilities of firms to establish advanced business service units abroad (Table 1). First, the size of a firm is a crucial element in the analysis of probability of having a business services unit abroad. The evidence suggests that more than 75% of largest firms listed in the Fortune 500 ranking operate with a separate ABS unit [Richter and Brühl, 2017]. The size of this work is measured by the number of employees. The focus on the headcount is crucial, since ABS units located abroad are frequently created to reduce costs of employment in high-cost locations. Therefore, larger firms are motivated to consolidate their service operations in one or very few units in lower-cost locations. The second factor influencing the decision to establish a service subsidiary abroad is the profitability of a firm, which can be measured by added value. We avoid using profits (before or after taxation) as they may be skewed by tax optimization strategies. The third variable pertains to the efficiency of enterprises. Employee productivity was measured using revenue per employee. We want to investigate if higher profitability influences the decision to establish a service unit abroad.

6 Empirical results

We conducted estimations of the multinomial logit model using two sizes of samples. First, the full sample leading to 3,794 observations was estimated. Then, as a robustness check, a smaller sample of firms originating in Austria, Germany, and Switzerland (so-called DACH) was estimated. The selection of the DACH countries was based on the geographic proximity to the region of CEE and the importance of the economies as foreign investors in Europe. The position of the DACH economies as investors both in developed and emerging Europe was indicated in Figures 2 and 3; the observations which can be gleaned from these figures include the fact that the selected economies were responsible for 18% and 25% of investment projects, respectively.

The estimation of the full sample brought largely conclusive results (Table 2). The negative values of the constant term indicate here the fixed costs of each strategy. The lowest costs of establishing an ABS unit in advanced Europe are connected to the earlier development of MNCs in the proximity to their headquarters. The highest costs of establishing an ABS unit are results of the recent wave of investment in CEE, where larger and more complex service units were created. We argue that higher fixed costs are necessary to establish a complete ABS unit resembling global business centers, which provide consolidated execution of advanced services. Costs of establishing them are high; however, they bring long-term positive influence on the operations of an entire MNC. However, similar lower fixed costs were observed in the case of investment in both locations. This can be interpreted as only partial transfer of tasks from a developed economy to an emerging one.

Table 1. Description of independent variables

Variable	Description
Added value	Added value (million EUR)
Employment	Number of employees (thousand)
Revenue per employee	Revenue per employee (thousand EUR)

The values were transformed into natural logarithms.

Table 2. Multinomial logit regression of location of ABS subsidiaries

Independent variable	Advanced Europe	Emerging Europe	Both
Added value	0.888*** (0.098)	0.499* (0.264)	0.560*** (0.174)
Employment	-0.626*** (0.103)	-0.015 (0.281)	-0.066 (0.185)
Revenue per employee	-0.434*** (0.085)	0.365* (0.220)	0.210 (0.148)
Constant	-5.263	-12.264	-10.821
Observations	3794		

Notes: Standard error in parentheses; ***significance at 0.01, **significance at 0.05, *significance at 0.1

The values of the constant terms are in line with the estimation of the variable pertaining to the size of an MNC. The odds of having an ABS unit in developed Europe drop with an increase in the number of employees. It means that a firm having an ABS unit in another developed economy is smaller in terms of employment. This can be interpreted to mean that offshoring reduces the number of employees. Unfortunately, we cannot extend this interpretation to emerging economies, since the same sign of the coefficient was also for the other two strategies; however, in those cases, it was statistically insignificant.

The coefficient for employee productivity also indicates that more productive firms are less likely to establish ABS units in advanced Europe relative to the base outcome. It can be interpreted that more productive firms prefer to maintain a service provision inside the home economy to avoid the coordination costs. However, the odds of having ABS units in emerging Europe increase with the rising productivity. It means that establishing a larger and more distant unit is reserved rather for more productive MNCs. It again confirms the complexity of creating an ABS unit in CEE economies. However, the coefficient for the most complex strategy of placing ABS units in both groups of economies is not statistically significant.

On the other hand, firms with service units in advanced Europe reported higher added value, which can be interpreted as one of the measures of profitability. The lowest value was for emerging Europe, while companies having their units in both locations were placed in-between. The variable pertaining to added value was the most statistically significant in the entire analysis, which confirms its role in the decision regarding establishing ABS units. The lower value of the coefficients for emerging Europe can be interpreted as the need for a more aggressive strategy of support services provision as the profitability suffers.

The signs of statistically significant coefficients are almost the same for each strategy of the configuration of ABS units. However, there are large differences in the values of coefficients. When it comes to the added value, the coefficient for advanced Europe is more than twice as high as for emerging Europe. It means that firms should be more profitable to have units in advanced Europe. It also means that firms of lower efficiency are choosing an investment in emerging Europe. The value of the same coefficient for firms with ABS units in both locations was again in-between. Similar results were obtained for the number of employees. Firms with units only in advanced Europe reported a larger number of employees. This coefficient has very similar values for strategies of locating ABS in emerging Europe and in both groups of countries.

The results of the robustness check are in line with the baseline scenario (Table 3). The signs of coefficients remained the same; however, there were some changes in the statistical significance. Eventually, only two strategies were supported by statistically significant coefficients. The strategy of establishing an ABS unit in developed Europe was confirmed by very similar values of coefficients. However, the strategy of having ABS units in both types of economies was confirmed to be significant for firms with higher efficiency, as presented by the employee productivity.

The analysis of characteristics of firms revealed significant differences when it comes to the location of ABS units. Smaller but more efficient firms opted for having their service units in advanced economies. On the other hand, the high fixed costs associated with establishing an ABS unit in CEE economies meant that larger firms choose this option.

Table 3. Logit regression of location of ABS subsidiaries (DACH)

Independent variable	Advanced Europe	Emerging Europe	Both
Added value	1.014*** (0.271)	0.914 (0.561)	0.101 (0.411)
Employment	−0.576** (0.103)	−0.305 (0.585)	0.589 (0.437)
Revenue per employee	−0.288 (0.218)	0.203 (0.422)	0.823*** (0.284)
Constant	−8.549	−14.163	−14.417
Observations	952		

Notes: Standard error in parentheses; ***significance at 0.01, **significance at 0.05, *significance at 0.1

One of the limitations of the study is that we do not control for time when ABS units were established; however, they should be operative in recent years. It means that firms can have smaller and less relevant service units in advanced economies for many years; however, they are different from the recent operations in the form of global business centers. Moreover, we were not able to distinguish between specific business roles of particular units. It means we put together units providing services in IT, bookkeeping, or design. Further study should focus on particular forms of ABS, since they have different characteristics.

7 Conclusions

This article has been devoted to the analysis of operations of MNCs with respect to their strategies toward foreign subsidiaries providing advanced business services. First, the theoretical background and a simple formal model were provided. There is still an ambiguity toward the need for a new model of MNCs, with respect to offshoring of white-collar jobs. However, the evidence confirming the role of ABS subsidiaries stipulates the need for a new theoretical approach, which should be based on the existing mainstream theories. The theoretical model assumes that differences in fixed costs are crucial in arriving at a decision regarding establishing ABS units.

The main conclusion from the empirical part is that size of an enterprise negatively influences the propensity toward having ABS subsidiaries abroad. It means that in the sample of European MNCs, those of smaller size were, to a large extent, engaged in offshoring of services. It may be interpreted that firms engaged in offshoring of advanced services have fewer employees in comparison to firms without such a separate unit. Further, the smaller firms reported a higher level of profitability. It can be interpreted that offshoring increases the efficiency of firms' operations.

We divided the companies having ABS units into three categories: advanced Europe, emerging Europe, and both groups of countries. There are large differences between coefficients for particular strategies. In general, the firms with ABS in advanced Europe tend to be smaller but more profitable than those without such units or units solely in emerging Europe.

Moreover, firms possessing an ABS unit abroad, when compared to their counterparts with foreign production units, are still a minority. Only around 25% of MNCs have their ABS units abroad. The reason is that for many firms, ABSs are auxiliary activities and potential gains from locating the subsidiary in the optimal foreign location are not high. However, it is more important to observe that offshoring of services is, for many companies, more challenging than offshoring of production tasks. Indeed, locating the services abroad requires codifying the tacit knowledge of the organization.

There is also an important conclusion from the policy point of view. Even if the absolute number of foreign-owned ABS units in V4 countries is significantly lower than in advanced Europe, we need to take into consideration that these are only four countries of medium level of development, when compared to the remaining 17 countries with a higher level of development in the sample. It may also mean that the large wave of FDI into ABS has been already completed, and that we should not expect rapid growth of the number of companies investing in ABS in V4. This view is contradictory to the opinions of some

consultancies who are expecting multiplication of the current level of employment in ABS in emerging Europe in the coming years.

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Appendix 1.

Services included in empirical analysis according to NACE Rev. 2 (primary codes):

- 620 - Computer programming, consultancy and related activities
- 631 - Data processing, hosting and related activities; web portals
- 639 - Other information service activities
- 691 - Legal activities
- 692 - Accounting, bookkeeping and auditing activities; tax consultancy
- 711 - Architectural and engineering activities and related technical consultancy
- 712 - Technical testing and analysis
- 721 - Research and experimental development on natural sciences and engineering
- 722 - Research and experimental development on social sciences and humanities