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Preface

This book presents the results of Polish-Ukrainian scientific cooperation. It contains the papers prepared for the 10th international conference “Quantitative Methods in Accounting and Finance”. Accounting and finance face nowadays many challenges. They require both an international and local approach, they need to be considered from the theoretical and practical point of view, and they also encourage general and specific analysis.

Support from quantitative methods is needed in order to discover, implement and verify new finance and accounting trends, methods and instruments. The research papers which are part of this book present different aspects of accounting and finance combined with a quantitative, in particular Econometric, approach.

Some of the papers focus on methodology of measurement, estimation and forecasting of financial phenomena, especially those related to investment processes. Others address specific problems of accounting such as accounting solutions for different branches, legal issues of accounting, responsibility and reporting. An alternative approach was also undertaken and the roles of a narrative and culture in accounting were presented.

The variety of papers selected for this issue ensures the complexity of the book. It provides theoretical as well as empirical material which can be used in further research and in business practice, particularly in accounting and finance. We hope that the content of the book provides a starting point for scientific discussion and practical changes.

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ESTIMATION OF SERVICES IN GLOBAL ADDED VALUE CHAINS*

OCENA UDZIAŁU WARTOŚCI USŁUG W GLOBALNYCH ŁAŃCUCHACH WARTOŚCI DODANEJ

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Summary: Services fulfil the important and complex role in global value chains. Their non-material nature makes it difficult to statistically evaluate their value, and trade statistics regarding the services has become an important element in the analysis of global value chains. The article concerns the role of services and their place in global supply chains, and in particular: the type of data services available in international trade statistics, balance of payments, national accounts and imperfections of the statistics used to identify the services in supply chains. In particular, issues of measurement and possible modifications of the terms and definitions of services in the context of global supply chains are discussed, as well as identifying the necessary data needed for the analysis of the future development of international trade and information systems.

Keywords: services, statistics, global, value added, chains.

Streszczenie: Usługi mają istotną i złożoną rolę w globalnych łańcuchach wartości. Ich niematerialny charakter sprawia, że statystycznie trudno ocenić ich wartość, a handel danymi statystycznymi dotyczącymi usług stał się ważnym elementem w analizie globalnych łańcuchów wartości. Artykuł poświęcono roli usług i ich miejscu w globalnych łańcuchach dostaw, a w szczególności: rodzajowi danych dotyczących usług dostępnych w międzynarodowych statystykach handlowych, bilansowi płatniczemu, systemowi rachunków narodowych i niedoskonałości statystyk służących do identyfikacji usług w łańcuchach dostaw. W szczególności omówiono zagadnienia pomiaru i ewentualne modyfikacje pojęć oraz definicji usług w kontekście globalnych łańcuchów dostaw, a także identyfikowania niezbędnych danych potrzebnych do analizy przyszłego rozwoju handlu międzynarodowego i systemów informatycznych.

Słowa kluczowe: usługi, handel, statystyka, globalna wartość dodana, łańcuch wartości.

* The article is prepared within the framework of the Prize Ivan Wyhowski by East European Studies, University of Warsaw.

1. Introduction

The investigations (including the assessment) of the economic role of services at international level, in particular, have grown both in practice and in scientific literature recently. This is also connected with the increase of the presence of the global production and sales chains in international trade where services play a vital and complex role.

Services dominate in the economy of many countries in terms of their share in the GDP. According to the indicators of the World Bank World Development [2012], the share of services in the global gross domestic product (GDP) was 70 percent in 2010. Quite a stable growth of this indicator is being observed. It was 53 percent in 1970, 57 percent in 1990 and 68 percent in 2000 [World Bank 2012]. The growth of this share, with the passage of time, was influenced probably by the improvement of statistic methods and techniques. The increase in the share of services was also caused by the structural changes in the economy which caused the greater segmentation and longer transactions. This made it possible to identify individual transactions in services. Despite the national variations in the GDP shares falling within services, the share of services in industry and agriculture in many countries is larger than in other types of economic activity.

Services are also a pronounced and critical component of international trade. Unfortunately, the limitation of data on the share of services in international trade makes its analysis problematic and the international community has started solving it only recently. For many years, the estimates of shares of transactions in transboundary services in the sphere of international trade were just more than 20% of the total trade volume [World Bank 2012]. Another picture was shown in the recent paper from the Organization for Economic Cooperation/World Trade Organization on the trade measurement in terms of added value of goods in various countries over the supply chains, but not in gross terms. In 2008, for example, the share of commercial services in global trade was estimated at 23 percent in gross terms and 45 percent in terms of the added value [Elms, Low (eds.) 2013].

2. Basic concepts and estimate methods

Services represent changes in the status of one natural person or legal entity resulted from actions of another person. The “status change” concept is interpreted quite broadly, including changes in physical state (for example, cardiac surgery), intellectual state (for example, advanced training), legal state (for example, registration of an apartment purchase by a notary), as well as economical state (for example, apartment repair).

Services have significant differences from goods. As opposed to goods, the time of service delivery coincides with the time of their use. Services are not objects to which the title may be first instituted and then transferred. As a rule, services cannot be accumulated or transported.

Transactions with goods and transactions with services are not always identifiable; this often makes statisticians develop and use pragmatic agreements as to what is to be considered a trade transaction and what is to be considered a service purchase/sale. To define the *data coverage*, the statistics of international trade in services uses such terms as “economic interest centre”, “resident” and “method for service delivery”.

Services may be delivered by a vendor to a customer by four methods.

1. Transboundary delivery. This method is used when the service provider stays in one country and the consumer is in another one. A service can be rendered, for example, by phone, fax, Internet or by other electronic means, television or by sending documents, discs, magnetic tapes, etc. Other examples include correspondence courses and telediagnosics.

2. Use abroad. Services are used abroad when the consumer leaves its country and uses services in another country. A typical example of services used abroad is visits to museums and theatres by tourists. Other examples of services used abroad may include medical services for non-residents and learning of foreign languages abroad. Such activity as vessel repair abroad when only the consumer’s property is transported or located abroad is also included here.

3. Commercial presence. This method refers to the situation when a company of any country fixes its commercial presence abroad to ensure the close contact with the consumer in the territory of its country. Examples of rendering services by means of commercial presence are medical services rendered by a hospital in foreign possession, attendance at school in foreign possession, as well as services rendered by a local department or branch of a foreign bank.

4. Presence of natural persons. This method characterizes the situation when a natural person visits the consumer’s country to render services either at his/her own discretion or under the instruction of his/her employer. Therefore, this method includes two different categories of natural persons, namely self-employed and hired employees. For example, services rendered by the auditor, who was delegated by a foreign company, for auditing the financial activity or rendering of entertainment services by an independent professional foreign actor who arrived temporarily to the host country on tour. It was also decided to refer the temporary employment of natural persons in the territory of other countries to this method.

The “international trade in services” concept has a conventional and broad interpretation. Only services which are rendered by residents of one country to residents of another country refer traditionally to international trade in services. The broad interpretation of data coverage also includes services rendered by branches of foreign companies located and operating in other countries to their residents. Whereas foreign branches are economic units and, respectively, residents in host countries, their sales in these countries are not considered in balance of payments accounts because they are intended exclusively for recording transactions between residents and non-residents. It is also recommended to account service sales by such branches separately to get the full picture of international transactions in services.

A foreign trade transaction in services is recorded as of the moment of their rendering. Today the main source of data is bank reports on payment transactions with non-residents in compliance with the requirements of central banks which keep statistics of the country's balance of payments. Data contained in accounting reports of various governmental authorities (for example, reports of health or education authorities concerning services rendered to non-residents) is also used. It is also recommended to use the results of statistical surveys of enterprises, organizations and private households.

The statistic value of exported and imported services shall reflect their actual market prices in the manner they are recorded in the accounting data of the trading partners. If they are unavailable, value estimates should be prepared based on data on the value of similar services rendered in similar conditions. Transactions between branches of the same company located in different countries hold a prominent position in trade in services. In this case, likewise the case of trade in goods, services are rendered at *transfer prices*. Such prices do not always disclose the actual value of services. To this end, statistical authorities of the countries shall develop methods for estimating such services. In cases of considerable contradictions between market and transfer prices, transfer prices should be replaced with estimates performed on the basis of market prices.

As a rule, the systematic quantitative record of exported and imported services is not kept due to a number of methodological and practical difficulties. Trade in services was initially recorded only in the balance of payments. Thus, the first international classification of services was developed by the IMF. Today this classification is used by a majority of countries. This classification includes twelve categories of services, namely: 1) Manufacturing services on physical inputs owned by others; 2) Maintenance and repair services n.i.e.; 3) Transport; 4) Travel; 5) Construction; 6) Insurance and pension services; 7) Financial services; 8) Charges for the use of intellectual property n.i.e.; 9) Telecommunications, computer, and information services; 10) Other business services; 11) Personal, cultural, and recreational services; 12) Government goods and services n.i.e.

When the Manual on Statistics of International Trade in Services was prepared [Manual on Statistics of International Trade in Services 2010], a so-called *Extended Balance of Payments Services* (EBOPS) was developed. The EBOPS is a disaggregated subsystem of the service classification used in the balance of payments. This particular classification is recommended for use by countries in their statistics of international trade in services.

A partner country in the export statistics is the country whose resident is the service consumer. A partner country in the import statistics is the country whose resident is the service provider (manufacturer).

The separation of trade in goods and trade in services is not always clear. Moreover, the hands-on experience in recording shows that the same transactions are accounted both in international trade in goods and services. Therefore, it is unjustified to

sum up the import of goods and the import of services to obtain the total import volume in the country if the national statistics authorities fail to make the required recalculations. Let us recall that the value of imported goods includes the cost of transportation and insurance during the international transit of goods. These types of services (transportation and insurance) are included in the import of services if they are rendered by non-residents of the importing country. Such a summation is justified only within the balance of payments statistics where the required recalculations are to be made. The development of clearer recommendations for separating trade in goods and trade in services at the level of the basic HC (Harmonized System) and EBOPS subtitles is one of the most critical tasks of international trade statistics.

The database for international trade in services (*UN ServiceTrade*) [<http://unstats.un.org/unsd/servicetrade/default.aspx>] was created relatively recently and it contains standardized annual data of countries on the export and import of services broken down into partner countries and service categories. Data requested from the countries shall contain the official total volume of service export/import broken down into partner countries and service categories in accordance with the EBOPS. The UN Statistics Division prefers obtaining data at the highest level of the EBOPS detail. However, if such data is unavailable, data are obtained at the level of detail, which can be provided by the country. Transitional tables are developed and used to enter the countries which do not apply the EBOPS into the countries' statistics database. Data obtained from the countries are processed at the maximum possible level of detail. Data processing includes conversion which, in general, is similar to the conversion of data on trade in goods. The information contained in the database is available for all users via the website.

3. Determination of services over the entire supply chain

Services appear almost in every type of economic activity, in particular, in types which are often specified as service producers, namely trade, transport, communication, finances and business services. This makes services the key determinates of competitiveness, labour productivity, and capital. However, this is only a limited part of the picture because many other services participate in the process of goods manufacture and sales regardless of the fact that the end product is goods or services. The supply chains can be considered as a number of interconnected markets of goods and services. These markets are interrelated in the sense that things occurring at one market influence many other markets. This complementarity (sometimes it is called the joint demand or production demand) is connected with the negative cross-elasticity of demand. It connects markets of goods and services without any distinction in terms of the economic consequences as to the tangibility and intangibility of products. This means that if the price for product A increases in one market, the demand for product B will fall in the other market. This results in a drop in the demand for products A and B. Changes in conditions in the same market will cause a wave effect in other

markets over the entire supply chain, both at the inlet and outlet. The same logic is used in situations with the available modularity or furnishing.

It is not easy to identify in practice all individual components of services which make the total product value and furnishing is not least of all the reasons for this. Patrick Low [Elms, Low (eds.) 2013, p. 65] made an attempt to detail a number of various services by breaking down the product value into components in the value creation chain. Only 9 percent of the initial retail price for a jacket which made USD 425 relates to the jacket production; the remaining part relates to the “hidden” assets. An identification problem occurs: what do the hidden assets contain? They contain the elements both of the preliminary production part of the process and the post-production part. Most probably, the initial sources of the value include the design, intellectual property, branding, etc. The lower-level elements of the post-production part include advertising, marketing, and retail trade. It is a complex task to get the bottom of the value sources which include individual services, as well as consequences of the policy for these segments of the supply chain. According to Patrick Low, the investigation of the Nokia95 telephone supply chain carried out by Ali-Yrkkö et al. [Ali-Yrkkö et al. 2011, pp. 263-278] was one of the most effective efforts to achieve this goal. Thanks to their thorough investigation, the authors managed to break down in detail the product value creation chain. Parts (including processors, memory card, integration circuits, and camera) made 33 percent of the product. Only 2 percent fell within the assembly. The remaining two thirds of the product fell within the share of services for the internal support of Nokia (31 percent), licences (4 percent), distribution (wholesale) (4 percent), retail trade (11 percent) and operating profit (16 percent). Notwithstanding the relatively small detail in the breakdown of hidden articles in this investigation, there is still a lack of analysis of various services used in production independent of their small share.

The investigation carried out by the Swedish company Sandvik Tooling (a part of the Swedish manufacturer, Sandvik Tooling) [Kommerskollegium 2010:2] showed that the company needs to establish and support more than 40 various services in its supply chains. This is almost a half of the services covered within the framework of the General Agreement on Trade in Services (GATS). In addition, Sandvik renders about 15 various services to itself. The investigation does not specify whether these services were rendered individually or were rendered as part of other services. This wide range of services includes services with the high and low added value.

4. Imperfection of statistical identification of services in supply chains

The intangibility of services makes them hard to measure. This problem is aggravated by the heterogeneous (customized) nature of many services and the lack of a properly developed and common service nomenclature. Other problems are caused by the

impossibility to deliver all services separately from each other or from goods. In this case, they cannot be estimated individually. In the context of statistics, it is necessary to know whether these transactions are long-term. Any services in the supply chain manufacturing goods, which are recorded without any term of a transaction, may be fixed both as production goods, and as trade data. In such a case services may be recorded not as services, but as goods, and this results in the statistical accounting misrepresentation. It causes the misrepresentation of data on the structure of the economy.

According to Patrick Low [Elms, Low (eds.) 2013, p.74], the growth of companies, as well as the agglomeration effect, produces the external scale effect. The outsourcing or offshoring of services received earlier inside the country will probably increase. This will make it possible to decrease the degree of statistical disorder between goods and services.

One more classification problem interferes with the accuracy and predictability of the differentiation between goods and services in production. When a product manufacture agreement is concluded, it contains the classification of data on services. This is stipulated in the 6th review of the balance of payments statistics and in the national account system 2008.

As Adlung and Zhang [Adlung, Zhang 2012]note, it is not just a matter of accounting. In a world, where the policy applied for goods and services is not homogeneous, the different attitude of a politician may have influence on investors' decisions in the real sector of economy. This means that the policy may misrepresent unintentionally the structure of the economy.

5. Conclusions

Services play a critical and complex role in global distribution chains. Statistics data on trade in services are relevant for analysing the global value creation chains. The performed analysis of possibilities for estimating services in the supply chains in international trade showed its complexity in conditions of service intangibility, their diversity, the problem of product categorization into goods and services. Apparently, these problems should be solved depending on the type of production in each specific case.

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