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"Knowledge-based" services in Brazil¹²

Renata A. de Oliveira Carvalho, renata.carvalho@mdic.gov.br
Francisco de Assis Campos da Silva, francisco.silva@mdic.gov.br

Abstract

In this paper we start with a short review of the basic trends in the services economy, in Brazil and in the world. Then we review the concepts of services and knowledge separately only to understanding what knowledge-based services mean. Next we compare the idea of knowledge-based services with that of value-adding services, finding that they converge in some aspects. We then review the problems involving the codification and measurement of services, describing the Brazilian experience with SISCOSERV and the Brazilian Classification of Services - NBS. Considering NBS, we present data on Brazilian exports and imports of value-adding services.

Key words: Knowledge-based services; Value-adding services; Codification and Measurement of Services; Brazil; SISCOSERV/NBS.

1. Introduction

1. The focus of this paper is to explore briefly the interconnections and difficulties between classification and measurement in the services sector, on the backdrop of the digital economy. Although classification and measurement are the faces of the same coin, we examine them separately only to make them work together in the example furnished by the Brazilian experience with a classification dedicated to services and an automated system using the same classification.

2. We make brief reviews of the ideas behind “services” and “knowledge” only to construct a concept of “knowledge-based services” (or knowledge-intensive services). Available literature shows that such services are understood as having strong scientific, technical and technological contents, both in its human and physical dimensions.

3. Then we investigate a neighboring concept, or the dichotomy value-adding and cost services. Because this dichotomy refers to services as industrial inputs it leaves a lot of important dimensions of services out. But a lot of what is contained in the idea of value-adding services is also present in knowledge-based services, thus the more analytical conclusions arrived at for value-adding services could easily to some extent be stretched to knowledge-based services. Considering the Brazilian classification of services, we then present data on Brazilian exports and imports of value-adding services.

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4. We conclude that going from concepts to codifications and then to actual measurement is not an easy task, especially for developing countries. The concepts reviewed are those knowledge-based and value added/cost services, their similarities but different approaches. In short, we conclude that different countries will focus on different lists of knowledge-based services, with different emphasis.

5. Focus will be given to the work of the Secretariat of Commerce and Services (SCS/MDIC) in the creation of the Brazilian Classification of Services (NBS) and the Integrated System of Foreign Trade in Services (SISCOSERV).

6. This is a descriptive work, a product of day to day observation from the standpoint of a bureaucratic government body in charge of making public policy for the services sector in Brazil, both domestically and internationally.

2. Services sector in the world economy and in Brazil

2.1 Services in the world economy

7. The economy of the 21st century has in services its main driving force. The role of the services sector in generating new businesses (e.g., digital economy) and creating skilled jobs, apart from its capacity to support business competitiveness, it is currently a consensual position among analysts and policy makers. On the other hand, the disruptive role of knowledge-based services on the global and national economies is a matter of fact.

8. Industrial output is moving up the value-added scale by incorporating smart services to products (in varied guises: as inputs, as activities within production and bundled with products) (Miroudot, S. and C. Cadestin, 2017), and the present advanced industry revolution is to a large extent a revolution in the use of advanced services. It has been said that the leap in competitiveness in industries lies in the improvement of the quality and productiveness of services.

9. The dichotomy that still separates foreign trade in services from that of goods and merchandise is now outdated. What exists is a synergy between the production of goods and the supply and provision of services, thus generating a process of induction and continuous symbiosis in the economy between companies of the two sectors. On the other hand, the services sector is also an important consumer of tech industrial products (“from automotive and similar systems in the transport services to ICT across all services”) (Boden, M. and Miles, I. (2000).

10. The value-added and sophistication that the use of services incorporates into agricultural and industrial goods allows companies to gain the skills needed to succeed in their local and internationalization strategies. The process of conquering foreign markets by industrial companies and their products helps service companies to internationalize. In turn, the servitization process makes services take the lead in terms of value aggregation, increased competitiveness and innovation.

11. A clear understanding of the services economy and trade and their contributions to sustainable and inclusive development should be an integral part of the policies and actions of developing countries, especially in the face of the new challenges created by the digital economy and the ever-pressing need for the maintenance and creation of jobs. On this token, advancing towards knowledge-based, and in particular to value-added services, is key to improving the competitiveness of production and density of foreign trade.

2.2 Services sector in Brazil

12. Services comprise 72% of Brazilian GDP and 69% of total formal jobs. Such a magnitude, however, is not reflected in the country's foreign trade in general. Within the productive fabrics, the relation between industry and services has been termed "intimate", much in line what one would find in the developed world. (Arbache, 2015b). According to the same source, intermediary consumption of services has grown over the years, making value added reach levels only compared to those of advanced economies. Due to this overwhelming (sometimes referred to as "untimely") participation, the quality of services impacts industrial competitiveness, empirical evidence shows that the price of services is high and the quality low, what to a certain measure artificially inflates services share in industrial costs. In this context, low productivity in the services sector remains a challenge, and this state of things influences productivity levels in the whole economy.

13. As of 2017, services represented a mere 13,4% of total exports of goods and services and 29,9% of imports of goods and services. Brazil runs a structural deficit in the services account of the Balance of Payments, a deficit that retreated after 2015 only to rebound slightly in 2017. The five-year period from 2008-2013 was a time of rapid expansion for both exports and imports of services, which showed an annual increase of respectively 6,1% and 12%. Over the last five years (2013-17), however, exports retreated at an annual rate of -1,5% and imports -3,9% (in fact, from a peak of US\$ 85,9 billion, in 2014, imports fell steadily thereafter). In balance of payments terms, in 2017, in relation to the previous year, services exports reached US\$ 33,7 billion (an increase of 3,4% in relation to 2016), and imports totaled US\$ 66,3 billion (an increase of 7,9% or US\$ 4,8 billion in absolute terms). The deficit in the services account thus reached US\$ 32,6 billion (as compared to US\$ 28,9 billion registered in 2016).

3. The problem of classification

3.1 Knowledge-based services

14. An early statement (1973) on the nature of the new knowledge and services-based economy can be found in Bell (1999). Professor Bell published his seminal work on the "post-industrial society" in 1973. While mid-century sociology was substantially composed of analyses of industrial society and its emergence, by the second half of the century economic and social change already pointed to the emergence of a rather different picture (Beckert and Zafirovski, 2011). Bell's idea of "post-industrialism" had a lot to do with the experience of the United States. He therefore initially identified five trends that characterized that new social form (Beckert and Zafirovski, 2011): (i) an increase in services employment as regards total employment; (ii) an increase in the share of professional and technical employment; (iii) a more central role for theoretical knowledge in policy formulation; (iv) technological forecasting and planning by firms and government; and (v) the development and use in decision-making of an "intellectual technology" built around computers and quantitative methods. According to Bell, in this new society the bases for conflict had moved from the ownership or non-ownership of capital, a clear Marxist viewpoint, to the possession or lack of knowledge. The importance of knowledge meant that the central institutions of this new era were universities, research institutions and laboratories.

15. What Bell describes as fact is the displacement of conflicts and power from the work-force and classes towards science and technology. As such, resolution of conflicts would from then on be dealt with by science and technology, the disputes being between those who "have knowledge" (the wise) and those who "do not have it" (the

crowd). The same is true of power: in a context in which knowledge occupies the place formerly occupied by property, science has become the basis of the new power.

16. In Bell's work one will find an initial classification of services that already contained a gradation from less to more complex or advanced services. According to Bell, the era of services, following the primacy of the "primary" (with its pre-industrial and extractive mode of production) and the "secondary" sectors (with its focus on industry and fabrication), could be divided into three broad categories: the tertiary (based on transportation and utilities), the quaternary (with its base on trade, finance, insurance and real state) and the quinary (with its content found in healthcare, education, research, government services, recreation and entertainment). Each one of these denominations meaning a step higher in the complexity of the processes involved, or different layers of more and more complex knowledge. As we see it, this can be taken as an early attempt or tentative effort to classify services based on knowledge.

17. From the anecdotic definition of services as something that "you can buy and sell but that will not hurt you if it falls on your foot" to the dense concept, but certainly the most accurate, contained in the introduction to the System of National Accounts (SNA)³ - the idea of a service is not an easy one to grasp. In a time of digitalization of everything and of ubiquitous information streaming the borders between goods and services have become blurred, not being easy to tell one from the other and the implications thereof. A case in point comes to our mind now that in Brazil software is being taxed at the same time by states (as goods) and by municipalities (as services) all based on the quarrel on the nature of software either as goods and services. For this reason, or others that may be happening on the tech frontier, the concept of a service is hard but still somewhat intuitive. In Brazil, for example, there is the well-known distinction between goods and service, set out in the Brazilian Civil Code, of 2002, according to which a good involves "an obligation to make or do something", while a service involves "an obligation to deliver something".

18. The idea of knowledge is not an easy one, but it can be squared for our present needs. Bell (1999) puts as the distinctive, novel and central traits of the post-industrial era the "codification of theoretical knowledge" and the new relation of science and technology. While all societies existed on the basis of some kind of guiding knowledge and its transmission by means of language, only in the 20th century one will find the codification of theoretical knowledge and the development of self-conscious research programs for the creation of new knowledge. Differently from the personalized inventions of the 19th century, all the major scientific breakthroughs of the 20th century - in telecommunications, IT, semi-conductors and transistors, materials science, optics, biotechnology - derive from the revolutions in 20th physic and biology, or from self-conscious research and development.

19. Again, Bell (1999) makes a crucial distinction between data, information and knowledge. Data would be sequences of events or statistics in and ordered fashion, such as reports of consumer prices or gross national product, or the combinations in the periodic table of chemistry. Information has meaning - news, events and data - found in a given context showing relationships among them and presenting them as organized topics. Knowledge on its turn can be equated with and derives from verified theory,

³ "Services are the result of a production activity that **changes the conditions** of the consuming units, or **facilitate the exchange of products or financial assets**. These types of service may be described as change effecting services and margin services respectively". Central Product Classification - CPC, version 2.1. page 9/10. <<https://unstats.un.org/unsd/classifications/unsdclassifications/cpcv21.pdf>>.

from generalizations that undergo the tests of science. Bell (1999) cites the Babylonians as having gathered astronomical data for a thousand years without ever generalizing them; the Greeks on the other hand invented concepts (knowledge) which allowed them to group data into connected experience (or knowledge) and create theory (a provisional map of something).

20. Having briefly examined the concepts of services and knowledge, what should we make of the expression "knowledge-based services"? A text by OECD (OECD, 1999) presents two conditions for a service to be a knowledge-based service, both technology related: first the service has to be an "intense user of high technology" and second it should "have relatively highly skilled workforce that is required to benefit fully from technological innovations". This same source lists as possible knowledge-based services the services segments of communications, finance, insurance, real estate and business services, community, social and personal services, and includes also health and education services.

21. When discussing the so-called knowledge-intensive business services (KIBS), Boden and Miles (2000) also propose two categories that are like the one presented by OECD above, on one side (i) professional business services (such as accountants and lawyers) and, on the other side, (ii) services with a "scientific and technical knowledge base (various sorts of engineering and information technology services)". In short, "some KIBS are traditional professional services, while others [...] are new technology-based services". The authors emphasize, however, that this last category has been growing steadily in numbers during the last two decades, with the emergence of many new specialties. Further, they cite as characteristics of KIBS, that they (i) rely heavily upon professional knowledge; (ii) either are themselves primary sources of information and knowledge (e.g. reports, training consultancy, etc.); (iii) or use their knowledge to produce intermediary services for their clients' production process (such as environmental services or engineering services connected with large-scale construction projects); and (iv) are of competitive importance and supplied primary to business.

22. We could go on and add more examples, but from the above it is clear that current usage leads us to agree that the expression "knowledge-based" refers to some technical or technological characteristics of practices and products (services), much in line with what Bell described back in 1973.

23. Finally, on an empirical approach, according to Lopez (2017) the main characteristics of knowledge-based services are that they are: (i) labor-intensive (high- and medium-level employment); (ii) absorb, generate and diffuse knowledge (new round of specialization or division of labor): and are increasingly tradable (in various forms). Lopez (2017) presents knowledge-based services in four broad categories: (i) primary sector support services (4 sub-categories of services); (ii) services related to the audiovisual sector (4 sub-categories); (iii) computer services (2 categories) and (iv) selected business, professional, scientific, technical and administrative services (22 categories).

24. In Lopez's classification, there is nothing new when he confirms that knowledge-based services should have some technical and technological content. The novelty in Lopez's work lies in affirming that knowledge-based services are labor-intensive (although of medium and high qualification), an argument of interest to Brazil. Moreover, Lopez's work will tell us (by contrasting its listing with that of Eurostat) that different countries may select different services as knowledge-based services to monitor and focus of public policies (e.g., the magnitude of Brazil's agroindustry, such as that of Argentina, could imply an interest in services supporting the activities of the primary

sector of the economy). Thus, different countries may have listings with different emphases, according to their productive structure and economic perspectives. In this regard, it is interesting to note the listing of Eurostat's knowledge-based services (presented by Lopez) with its emphasis on high-tech services.

3.2 Value adding services and cost services

25. One more conceptual classification of services, and one that can be easily equated with the idea of "knowledge-based services", is that of "value-adding services" as opposed to "cost services". Arbache (2014) uses this opposition heuristically (showing a possible relationship between value-adding services and an increase in productivity). Both "value-adding services" and "cost services" are understood as inputs for the industrial process. Even if analytically productive, the opposition leaves out much of the servicization process in which we also find services as activities within or in support of the industrial process or ultimately as value propositions bundled together and sold with products (Miroudot, S. and C. Cadestin (2017)).

26. As proposed by Arbache (2014), services can be divided in two groups based on their role as inputs, such groups being of different nature and yet complementary. The first group is named "cost services" and refers to functions affecting production costs (namely, logistics and transportation, general infrastructure services, storage, repair and maintenance services, production outsourcing services in general, IT in general, credit and financial services, travel, accommodation, food products, distribution, among others). The second group refers to functions that contribute to adding value, differentiating and customizing products, thus making them singular or unique, raising substantially their market price and this way contributing to increase labor productivity and return on capital. This group is composed of services that require relatively high levels of human capital and other capabilities, including R&D, design, engineering and architecture projects, consulting services, software, specialized technical services, high-end IT services, branding, marketing, trading, among others (in a way, this group can be roughly equated with the so-called "knowledge-based products").¹¹ Nowadays there is enough evidence indicating that soon it will be impossible to create wealth, generate quality jobs and enter the front door of the global value chains without the ability to develop and manage sophisticated services and "pack them" into goods and third-party services. These trends — coupled with digital "commoditization" — strongly suggest that trade in services must be an integral part of sustainable economic growth policies, as well as of those relating to overall foreign trade, investment, industrial, technological, human capital and infrastructure. Later in this paper we will use this classification to show how services exports and imports in Brazil have performed in value-adding services.

27. Again, there is a marked convergence between knowledge-based services and value-adding services. Obviously, a listing of knowledge-based services will always be broader, since value-adding services are ultimately inputs to the industrial sector. For example, if we take CNAE4 categories (the Brazilian spin-off of ISIC) from division 58 to 87, that is, (i) "information and communication" sector (divisions 58 to 63); (ii) "financial, insurance and related services" (Divisions 64, 65 and 66); (iii) "professional, scientific and technical activities" (divisions 69 to 84 and 85 to 87); and (iv) "real estate activities" (division 68), we will find much similarity between the two categorizations.

⁴ The **National Classification of Economic Activities - CNAE** is the official classification adopted by the National Statistical System of Brazil and by federal, state and municipal administrative records managers and other institutions in Brazil. The CNAE was structured with reference to the International Standard Industrial Classification of All Economic Activities - ISIC of the United Nations.

4. The challenge of measurement

28. The problem is rarely one in the formulation of the concepts, but it is almost necessarily on how to go from concepts to operational classifications, and from there to move to the actual data (and make them mean something). Hirschman (1995) when talking about "industrialization and its manifold discontents" make us know that industry too, at its the outset and together with all the negative aspects people brandished against it, was thought of as something difficult to measure. In the language de Rousseau, cited by Hirschman, industrial output was no more than "colifichet", or frivolous and virtually useless objects. Even Adam Smith, also cited by Hirschman, often used an almost exact equivalent, by naming industrial products as "trinkets and baubles". How could one control the production of items "subject to continuous variation dictated by the whim of fashion", asked the eighteenth-century Physiocrats. For them, such objects "failed to satisfy basic human needs through the production of ever identical goods, a function so reliably performed by agricultural activities and their output". Some of this story lives on today, and services in many quarters are still thought of as hard to understand and control, and as such unmanageable for public policy (even in public policy circles). This is compounded by surge in accountability demands and a surge in internal controls and compliance.

29. The previous situation changed "dramatically with the enormous growth in cross-border trade in services, driven by forces of globalization and facilitated by technological innovation" (Hellerstein, 2017). The enlargement of the geographical area of services provision, enabled by the development of information and communication technologies and the increasing digitalization of almost everything, allowing the commercialization of services across borders, only dramatized and complicated the measurement issue. What was once an almost parochial fact (the provision of geographically delimited services, like at a barbershop), has become a phenomenon of global proportions. The idea of service provision has been expanded, not being exhausted in a specific locus, but being thought of as occurring in many stages, among them the production, distribution, marketing, sale and delivery of a service. Thus, services as tasks have always existed, but the explosion of services was electronic at its outset, only to rapidly become digital.

30. This state of affairs causes existing classifications to not capture the contours of the services explosion, especially its digital facet. Thus, there is no production of data and information that, articulated, can generate useful knowledge (mainly for the formulation of public policies). Lack of control and clear understanding of the character of services can for instance frustrate taxation, or eventually end up in double non-taxation. Leão (2017) points out that over time as services gained in importance the System of National Accounts (SNA) incorporated many "quick fixes" to accommodate a wave of new productive activities that could not be predicted at its outset. Such conceptual improvisations (although of high complexity) kept the same logical structure of sectorial rigidity and economic research happened to photograph the new world with old cameras. In fact, Leão (2017) sums up, we created a "vintage" vision of our own time.

31. But this scenario is changing. Because of the increasingly important role played by new developments in the "new economy", such as the emergence of intangibles and high technology), specialists are questioning whether these novel phenomena are being treated or measured properly (Corrado, 2005). Even the "measurement of the digital economy in GDP and productivity statistics has become a topic of [...] discussion (IMF,

2018). Traditional themes (in new guises, like “digital trade”) are likewise challenging as far as measuring is concerned (OECD, 2017)⁵.

5. Brazilian experience with the codification and measurement of services

32. In 2005, the government of Brazil created SISCOSERV, or the Integrated System of Foreign Trade in Services and Intangibles. SISCOSERV is an automated system implemented and maintained by Ministry of Industry, Foreign Trade and Services -MDIC (namely by its Secretariat of Commerce and Services - SCS), in a shared governance with the Brazilian Revenue Service (“Receita Federal do Brasil – RFB”), for the collection, analysis and dissemination of Brazilian services foreign trade data. SISCOSERV was established out of the need for data for better and evidence-based public policy and programs for the development of the services sector in Brazil. The system was structured in accordance with the concepts set out in the General Agreement on Trade in Services (GATS), of the World Trade Organization (WTO).

33. At its outset in 2005, SISCOSERV was an idea that mirrored the already existing system for the trade in goods (SISCOMEX, created in 1992). But it had greater challenges before it since it dealt with a rather different, broader and more complex subject matter, much more so than international merchandise trade, much less studied and understood and carried out in four different modes of supply. At the time of its inception SISCOSERV had no national or international model to use as a parameter. Now it can be used as a benchmark, an experience the Secretariat is ready to share.

34. By prioritizing trade flows, SISCOSERV data goes beyond the purely financial aspects of services foreign trade. Details on services provision that are not found in other instruments are captured by the System. Data on the different modes of supply unveil the business the models adopted by Brazilian companies, a determinant aspect in international negotiations. Registration in SISCOSERV covers services provided in the four modes of supply.

35. After more than a decade of hard work (sometimes plagued with personnel and budgetary constraints), Siscoserv now produces tangible results – Brazil has (i) a ready to use three-year statistical base (2014-2016) on the foreign trade (exports and imports) of individual services, (ii) on the four modes of supply; (iii) classified individually as “products” in accordance with NBS, that is based on CPC; and (iv) that can be retrieved in different formats and for different purposes. Further work is now under way to make Siscoserv more pliable and user friendly, thus increasing its usefulness for evidence-based public policy and use by the public and specialists.

36. All inputs in the system are classified according to the Brazilian Classification of Services, Intangibles and Other Transactions that Produce Changes in Equity (NBS). NBS was built based on the Central Product Classification (CPC), version 2.0, developed by the United Nations (UN). As the Brazilian official all-purpose classifier of services, NBS views “services, intangibles and other operations that produce changes in equity” as “products” (the same way as CPC does) and not as a “sectors of economic

⁵ This task is now undertaken by number of organizations working together, namely OECD, UNCTAD, UPU, WTO and IMF. “[...] despite the growing importance of what is commonly referred to as “digital trade”, little empirical and internationally comparable information currently exists, inhibiting a full understanding of the scale and policy challenges of digital trade, which has in turn raised concerns about the capacity of current statistics to measure [these] phenomena. Moreover, the growing importance of enterprises with new business models – such as Uber, Airbnb, Facebook and Spotify – raise a number of additional complications, including in relation to the nature of the activity, for (services) trade policy”. [...] “A number of steps are however being taken towards developing [...] a conceptual framework” (OECD, 2017).

activity” as used in other classifications such as the National Classification of Economic Activities (CNAE) (on the steps of ISIC). Recently the Classification was entirely reviewed to bring it even closer to the CPC and a 2.0 version is to be published soon.

37. NBS has 27 chapters (one left unused for future use) and approximately 900 sub-items. The sub-item is the lowest level of classification and the most specific. A NBS classification is composed of 9 digits in the format 1.0000.00.00. All NBS classification numbers start with the distinctive number 1 (meaning that the item is a service). The second and third digits refer to the chapter, the fourth and fifth to the heading, the sixth to the sub-heading, the eighth to the item, and finally the ninth refer to the sub-item.

38. In comparison with balance of payments data, SISCOSERV output is way-out more specific. The example on the tables below, both on Brazilian exports of telecommunications, IT and information services (period 2013-2017 for balance of payments data, and 2014-2017 SISCOSERV data) help us make this point. The first table records the three possible balance of payments items: computer services, telecommunications services and information services, while the next table shows the same data using SISCOSERV/NBS data/classification. For practical reasons we just show the NBS classification in an aggregate form, but if we open them to the sub-item level we have the following picture: (1) balance of payments “IT services” correlates with chapter 15 of NBS which opens up in 21 sub-items, covering consulting IT services, projects and development of IT applications, integrated circuits projects, IT hosting and infrastructure, IT infrastructure management, maintenance of applications and programs and auxiliary IT services; (2) telecommunications services open up in 47 items, covering services such as telephony and other telecommunications services, Internet telecommunications services and broadcasting, programming and program distribution services; and (3) “information services” correlate with 11 NBS sub-items such as offer of online content, news agency services and library and archives services.

Brazilian exports of "telecommunications, computer and information services" - BOP Basis in US\$ 1,000								
EBOPS Code	Service label	Exported Value in 2013	Exported Value in 2014	Exported Value in 2015	Exported Value in 2016	Exported Value in 2017	Average annual % change	2017/2016 % change
9.2	Computer services	393,639	946,931	1,094,380	1,316,410	1,725,571	34.4	31.1
9.1	Telecommunications services	264,476	428,271	404,462	411,024	406,939	9.0	-1.0
9.3	Information services	49,770	71,254	72,639	76,322	53,689	1.5	-29.7
	Total	707,885	1,446,456	1,571,481	1,803,756	2,186,199	25.3	21.2
	Total Exports	38,010,529	39,965,300	33,777,500	33,300,291	34,478,387	-1.9	3.5

Source: ITC Trade Map

Brazilian exports of "telecommunications, IT and information" services - SISCOSERV in US\$ 1,000								
NBS	Descrição do Serviço		Exported Value in 2014	Exported Value in 2015	Exported Value in 2016	Exported Value in 2017	Average annual % change	2017/2016 % change
1.15	IT services		1,580,910	1,443,865	1,645,695	2,102,580	7.4	27.8
1.1701 1.1702 e 1.1706	Telecommunication services		303,673	322,420	368,598	653,178	21.1	77.2
1.1703 1.1704 e 1.1705	Information services		25,222	90,796	32,571	38,637	11.3	18.6
	Total		1,909,804	1,857,081	2,046,864	2,794,395	10.0	36.5
	Total Exports		20,822,626	18,962,863	18,594,327	29,838,917	9.4	60.5

Source: SISCOSERV. Series started in 2014.

39. To make the SISCOSERV more pliable and user-friendly, a dash-board version of the system is now available at the Ministry’s site on the Internet. The Secretariat is

now working to improve the dash-board (by including geographical variables) and expects to publish SISCOSERV data in the categories of the balance of payments, mainly to improve international comparability for public policy and participation in international negotiations.

6. Value-adding services in the Brazilian foreign trade

40. To assess the participation of the categories proposed by Arbache (2014) in the Brazilian services trade, we have correlated the category “value-adding services” with the Brazilian Classification of Services (NBS) and then we verified the data registered in SISCOSERV.

41. As a result, it is possible to present a brief survey of exports and imports of value-added services in Brazil. In accordance with data from SISCOSERV, in 2017, value-added services exports were close to 33% of all service exports by Brazil. This means that US\$ 9.8 billion dollars were exported in services that add value to production, an increase of 11%, if compared with the previous year (which recorded US\$ 8.8 billion).

Brazilian Exports of Value Adding Services (US\$ Million)

	2014	% Share	2015	% Share	2016	% Share	2017	% Share	2017/2016 % Change	Annual % Change
Software	552	5.6	541	5.8	607	6.8	592	6.0	-2.5	2.3
Consulting services	3,113	31.4	2,920	31.4	2,592	29.2	3,004	30.3	15.9	-1.2
Specialized technical services	2,263	22.8	2,157	23.2	2,150	24.2	2,488	25.1	15.7	3.2
Intellectual property	139	1.4	137	1.5	135	1.5	205	2.1	52.1	13.9
Branding & Marketing	907	9.1	832	9.0	824	9.3	969	9.8	17.6	2.2
Projects	435	4.4	743	8.0	487	5.5	433	4.4	-11.1	-0.1
Advance IT services	72	0.7	96	1.0	174	2.0	218	2.2	25.9	45.0
Legal services	212	2.1	178	1.9	207	2.3	213	2.1	2.6	0.1
R&D	801	8.1	694	7.5	626	7.0	754	7.6	20.4	-2.0
Sophisticated financial services	1,420	14.3	990	10.7	1,084	12.2	1,021	10.3	-5.8	-10.4
Sub-total	9,913	47.6	9,289	49.0	8,886	47.8	9,897	33.2	11.4	-0.1
Total services exports	20,823	100.0	18,963	100.0	18,594	100.0	29,839	100.0	60.5	12.7

Source: Siscoserv

42. In 2017, as compared to 2016, there was an increase in Brazilian exports of “consulting services” (+15.9%), “specialized technical services” (+15.7%), intellectual property (+52%), “branding and marketing services” (+17.6%), “advanced IT services” (+25.9%), “legal services” (+2.6%) and R&D (+20.4%). On the other hand, exports of “software” decreased -2.5%, “services related to projects” -11%, and “sophisticated financial services” -5.8%.

43. Taken as a group, the main highlights for value-added services were (as a share of total exports of value-added services): “consulting services” (30%), “specialized technical services” (25%), “branding and marketing services” (10%); “sophisticated financial services” (10%), “R&D” (8%), “software” (6%) and “services related services” (5%). “Intellectual property”, “advanced It services” and “legal services” reached only 2% each.

44. On the side of imports, the group of value-added services comprised 23% of all service imports by Brazil, or US\$ 10.1 billion, a decrease of 6.7%, if compared to 2016 (US\$ 10.8 billion).

45. In 2017, as compared to 2016, there was an overall contraction of Brazilian imports of value-added services (-6,7%, or US\$ 730 million in absolute terms). This contraction was even more important than the reduction of all Brazilian imports that

represented a decrease of 1,5%. Imports of “consulting services” alone fell -45%. There was also a drop in imports of “specialized technical services” (- 14.3%), “intellectual property” (-17.1%), “services related to projects” (-9.2), “legal services” (-18.6%) and R&D (-1.7%). On the other hand, there was an increase in exports of “services related to software” (+5.1%), “branding and marketing” (+44.1%), “advanced IT services” (+3.2%) and “sophisticated financial services” (+99, 2%).

46. Taken as a group, the break-down of the different categories of value-added services is as follows: “software-related services and intangibles” (30% of total), “branding and marketing” (22%), “specialized technical services” (14%), “consulting services” (13%) and “intellectual property” (13%). “Advanced IT services”, “sophisticated financial services” and “projects related services” had a share of 2%, while “legal services” and “R&D” participated with only 1%.

Brazilian Imports of Value Adding Services (US\$ Million)

	2014	% Share	2015	% Share	2016	% Share	2017	% Share	% Change	Annual % Change
Software	3,389	33.8	2,869	30.5	2,859	26.4	3,005	29.7	5.1	-3.9
Consulting services	1,666	16.6	1,639	17.4	2,430	22.4	1,322	13.1	-45.6	-7.4
Specialized technical services	1,494	14.9	1,773	18.9	1,714	15.8	1,469	14.5	-14.3	-0.6
Intellectual property	1,498	14.9	1,196	12.7	1,546	14.3	1,280	12.7	-17.2	-5.1
Branding & Marketing	957	9.5	874	9.3	1,529	14.1	2,204	21.8	44.1	32.1
Projects	476	4.7	353	3.8	263	2.4	239	2.4	-9.3	-20.5
Advance IT services	90	0.9	103	1.1	155	1.4	160	1.6	3.2	21.3
Legal services	45	0.4	80	0.9	125	1.2	102	1.0	-18.6	31.5
R&D	209	2.1	239	2.5	104	1.0	102	1.0	-1.8	-21.4
Sophisticated financial services	207	2.1	267	2.8	111	1.0	221	2.2	99.2	2.3
Sub-total	10,030	20.7	9,392	20.6	10,836	24.9	10,105	23.6	-6.7	0.2
Total services imports	48,512	100.0	45,581	100.0	43,556	100.0	42,890	100.0	-1.5	-4.0

Source: Siscoserv

7. Lessons learned

47. The analysis of the services account of Brazil's balance of payments⁶ clearly puts in perspective the broad challenges posed for Brazil, not specifically in the sense of eliminating the structural deficit in the services account (which would be desirable anyway), but of endowing trade in services and intangibles with a larger share of services that contribute to up-grade production and increase productivity (“value-added services”). This should not be restricted to exports, but should also encompass the quality of imports.

48. From a brief analysis of the balance of payments, and despite the positive behavior of the business services account (which encompass both value-added and knowledge-based services) it is possible to anticipate the hard work that lies ahead in relation to areas such as intellectual property services (historically negative for Brazil), besides telecommunications, computing and information.

49. This more general perception is confirmed by the close examination of the micro-data produced by SISCOSERV, with its focus on the specific commercial transactions and its treatment of services as products. By examining SISCOSERV data,

⁶ Reference is made here to the sub-account “other business services, including architecture and engineering of the balance of payments. In 2017, receipts totaled US\$ 17 billion and payments US\$ 7,3 billion, a surplus of US\$ 9,6 billion.

it is clear that there is room for public policies and programs to increase the share of value-added services in the Brazilian overall trade in service (and if we stretch the concept, in knowledge-based services). As we have seen, value-added services comprise a mere 33% of total services exports, and worst still, only 23% of total imports. This import profile can have an impact on the quality of services produced in Brazil and on the competitiveness of exports. It can also mean that a fair part of imports is being channeled to cost services or consumption.

50. The debate on "knowledge-based services" is a timely and appropriate one, as we can see from this joint session of GSF and the Redlas Conference. We may need extra work to make the concept useful for all and guidance on how different jurisdictions can in this context speak the same language. Knowledge-based services have science and technology in their DNA, but they also have a human face (the need to train people and maintain their jobs).

51. MDIC has been working on several fronts to strengthen and improve the profile of the Brazilian foreign trade in services. The joint management of SISCOSERV and NBS is one of such fronts. These instruments consume significant amounts of resources, but already produce positive results: SISCOSERV has been praised in international fora for its uniqueness and novelty (UNCTAD, 2017⁷). The System has now a four-year data-base (2014-2017), produces a variety of by-products for the public, specialists and government and is becoming more pliable and user friendly. NBS on its turn has had broad acceptance in Brazil in its role a general classifier of services. First published in 2012, it is now under review to bring it even closer to its CPC model (the new version – NBS 2.0 – will be published soon).

Perspectives

52. Contact with the Brazilian services producing sector is central to MDIC's work and activities, a task carried out by the MDIC's Secretariat of Commerce and Services (SCS). To do this, SCS maintains two fora with the private sector, the Services Sector Competitiveness Forum and the Retail Sector Competitiveness Forum. They meet on regular basis and channel the themes of interest to the private sector to MDIC and different areas of the federal government.

53. In the ambit of the Executive Secretariat of CAMEX, the Secretariat of Commerce and Services is involved in a far-reaching competitiveness agenda for the Brazilian services sector. The agenda is composed of themes mainly coming from the above-mentioned Fora and encompasses areas such as improvement of the business environment for the services sector, financing and export guaranties, facilitation of commerce and strengthening inter-agency coordination in Brazil.

⁷ UNCTAD (2017): "Box 1 Data collection: Brazil case study In Brazil, the Integrated System of Foreign Trade in Services, Intangibles and Other Operations that Produce Changes in Net Worth is an important tool for services classification, data collection and policy action. The system covers all services transactions between residents and non-residents and data collection covers the four modes of supply. The effectiveness of the system relies on assigning a high priority to and political support for data availability and quality, as well as on national experience in electronic government and electronic platforms. It has helped different authorities identify services exports potential, supported the promotion of trade and provided inputs for trade negotiations. Based on data from the system, specific statistics have been developed to support business strategies for services sectors, and a public-private initiative, Services Export Leverage Forum, has been launched to increase competitiveness by identifying relevant measures. Sources: Communications received from Brazil Ministry of Industry, Foreign Trade and Services; Global Migration Group, 2016, Handbook for Improving the Production and Use of Migration Data for Development; UNCTAD, forthcoming, Trade, Migration and Development".

54. Once again, advancing towards value-added services (or in knowledge-based services) is key to improving the competitiveness of production and density of the productive sector and of foreign trade. In Brazil, there remains the challenge of increasing the productivity of the services sector (as a vector for the development of other sectors of the national economy).

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