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Compilation of e-commerce data for balance of payments statistics[1]

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[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Compilation of E-commerce Data for Balance of Payments Statistics

Experience of the Republic of Armenia

Lilit Yezekyan[1]

Abstract

E-commerce is burgeoning as a means of doing business and shows every sign of continuing to expand at a rapid rate. However, the volume of digital transactions is hard to estimate and include in official statistics, particularly in the balance of payments. Main issues with e-commerce data is that the dividing line between goods and services is often indistinct, calculation and compilation of transportation expenses included in prices of goods under e-commerce vary from calculation of other transportation expenses, as well as classification of the transactions by principle of residence is hard to obtain from the available resources.

This paper attempts to address the above-mentioned issues for calculation of cross-border e-commerce volume in Armenia for compilation of balance of payments. In the framework of current research, different sources of data are used such as administrative data from payment and settlement organization in Armenia and Customs Service of Armenia. Besides, calculations are supplemented with data obtained from Armenian processing center (ArCa) database.

Keywords: e-commerce, trade, balance of payments, administrative sources, big data, Armenian Card

JEL classification: C80, C81, C82, C89, F19, L81

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1. Introduction

The Internet and digitalization are fundamentally changing the way people, businesses, and governments interact, including across borders. The growing importance of what is commonly referred to as "digital trade" or "e-commerce" and the emergence of new (and disruptive) players has resulted in increased interest amongst policy makers and from within the statistics community for improved measurement of this phenomenon.

Particular interest for measuring e-commerce is produced for compilation of balance of payments statistics in terms of goods and services. Growing volume of cross-border e-commerce transactions that are not registered in statistics on exports and imports of goods and services, lead to miscalculation of resident-non-resident transactions and influences on considerable figure for errors and omissions.

According to the E-commerce Stocktaking Survey[2] among 74 OECD and non-OECD[3] countries, many of them started to calculate e-commerce data or improve existing statistics on it[4]. Starting from 2016 B2C e-commerce index is calculated for 144[5] countries, which shows the growing importance for overall evaluation of e-commerce data.

Current research aims to sum up the situation with available data in Armenia and possible improvements for further collection of statistics on e-commerce transactions for better compilation of balance of payments of Armenia. First part presents definition of the e-commerce transaction adopted by OECD and some general statistics on e-commerce. Second part presents possible sources of collecting information on e-commerce transactions in the world. Third part refers to situation in Armenia with potential sources of statistics for calculation of e-commerce. Worth to mention that credit cards transactions data (ArCa database) is accepted as proxy for B2C e-commerce imports on goods for Armenia. Other sources are used to compare the result received from ArCa database. More detailed insight into e-commerce transactions and presentation thereof in balance of payments compilation guide is presented in corresponding annexes.

In conclusion, importance of compilation of overall e-commerce statistics is stressed and suggestion on using data from Customs Service of Armenia, payment and settlement systems' reports, parcel delivery companies, postal office and credit cards' transactions is made. In the framework of this research more attention is paid to imports of goods, and though the availability of data on imports of services, further

[2] OECD, Result of the 2018 WPTGS Stocktaking Questionnaire, February 2018

[3] Non-OECD countries are: Algeria, Angola, Argentina, Azerbaijan, Bangladesh, Belarus, Botswana, Brazil, Bulgaria, Cameroon, Hong Kong, China, P.R.: Mainland, Colombia, Costa Rica, Croatia, Cyprus, Ecuador, Egypt, Ghana, Guatemala, India, Indonesia, Jordan, Kazakhstan, Kuwait, Lebanon, Malaysia, Malta, Mauritius, Morocco, Nigeria, Oman, Pakistan, Panama, Peru, Philippines, Qatar, Romania, Russian Federation, Saudi Arabia, Senegal, Serbia, Republic of, Seychelles, Singapore, South Africa, Thailand, Tunisia, Ukraine, Uruguay, Venezuela, República Bolivariana de, and Vietnam.

[4] Several countries are currently exploring adding additional questions to e-commerce enterprise surveys regarding the breakdown of online purchases and sales into domestic and international transactions.

[5] UNCTAD, B2C e-commerce index, 2017

research needed to provide conclusions on compilation of e-commerce data on services.

2. Overview of global e-commerce

Digitally related transactions, either in goods or services, have existed for many years, thus the current scale of transactions is significant and presents considerable challenges for policy makers and businesses. For the purpose to incorporate available data in current accounting frameworks (SNA 2008, BPM 6) the Organization for Economic Cooperation and Development (OECD)[6] developed measurement framework for Digital Trade (see Annex 1 for details) and the definition of e-commerce transaction that commonly used by countries worldwide:

> *"An e-commerce transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and the ultimate delivery of the goods or services do not have to be conducted online. An e-commerce transaction can be between enterprises, households, individuals, governments, and other public or private organisations. To be included are orders made over the web, extranet or electronic data interchange. The type is defined by the method of placing the order. To be excluded are orders made by telephone calls, facsimile or manually typed e-mail."*

E-commerce transactions are presented in four main types taking into account the sector involved in transactions: business-to-business (B2B), business-to-consumer (B2C), consumer-to-consumer (C2C) and government-to-business (G2B) (see Annex 1 for further details). Considerable volume of transactions are delivered through B2B e-commerce that involved trade platforms like Alibaba, Amazon, eBay, etc. Interestingly in 2015 global e-commerce volume registered 25 trillion USD. Global leaders of e-commerce market are United States which is by far the largest market, with combined sales of over 7 trillion USD in 2015, Japan and China some distance behind. United States is ahead by some margin in B2B e-commerce, and just behind China in B2C.

Major e-commerce markets: top 10

Table 2.1

		Total		B2B		B2C
	Economy	Billion USD	% of GDP	Billion USD	% of GDP	Billion USD
1	United States	7,055	39%	6,443	91%	612
2	Japan	2,495	60%	2,382	96%	114
3	China	1,991	18%	1,374	69%	617
4	Korea (Rep.)	1,161	84%	1,113	96%	48
5	Germany (2014)	1,037	27%	944	91%	93
6	United Kingdom	845	30%	645	76%	200
7	France (2014)	661	23%	588	89%	73

[6] OECD, Guide to measuring information society, 2011

8	Canada (2014)	470	26%	422	90%	48
9	Spain	242	20%	217	90%	25
10	Australia	216	16%	188	87%	28
	10 above	*16,174*	*34%*	*14,317*	*89%*	*1,857*
	World	*25,293*		*22,389*		*2,904*

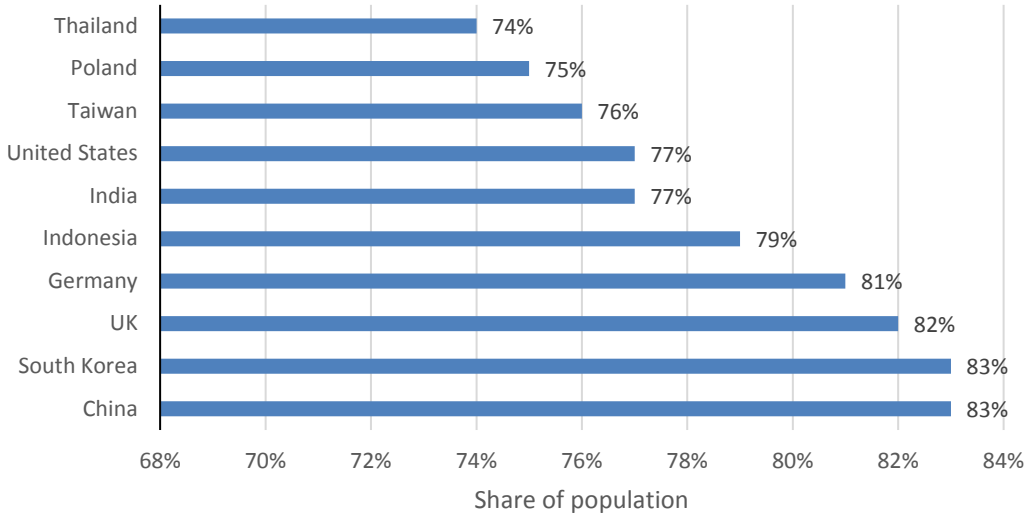
[1] Note: Figures in italics are estimates. Missing data were estimated based on average ratios. Converted to $ using annual average exchange rate.

Sources: UNCTAD, adapted from US Census Bureau; Japan Ministry of Economy, Trade and Industry; China Bureau of Statistics; KOSTAT (Republic of Korea); EUROSTAT (for Germany); UK Office of National Statistics; INSEE (France); Statistics Canada; Australian Bureau of Statistics and INE (Spain).

Countries with better acces to internet are holding the most part of the online shoppers. More than 80% of share of online shoppers in population (16-64 years) is registered in China, South Korea, United Kingdom and Germany.

Global markets with the highest online shopping penetration rate

As of 2nd quarter 2017 Graph 2.1



[1] Worldwide; GlobalWebIndex; Q2 2017; 16 to 64 years

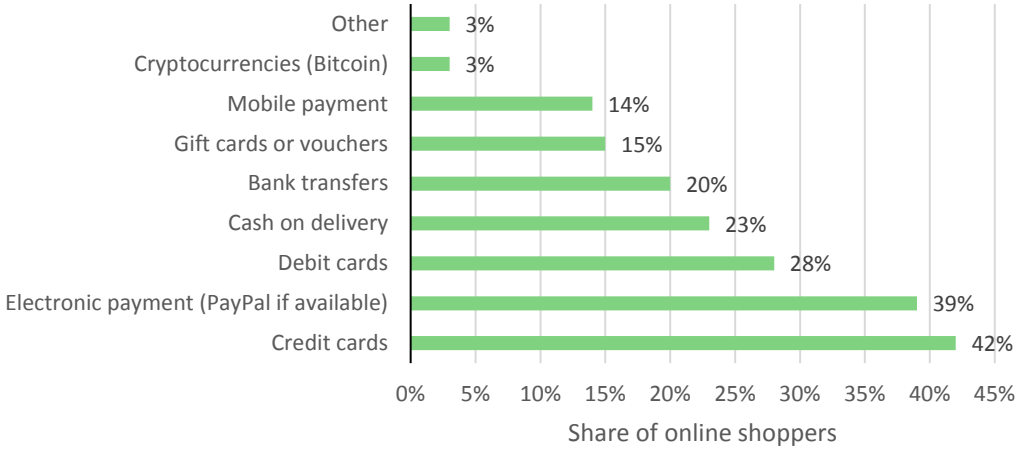
Sources: GlobalWebIndex © Statista 2018

Development of e-commerce was possible through development of online payment systems with secure servers and expanding of the number of cardholders worldwide. According to last year data, payments for online shopping is done mainly by using credit cards and via electronic payment systems. It is worth mentioning that online

shoppers from developed countries[7] are using mostly electronic payment systems, e.g. PayPal[8].

Preferred payment methods of online shoppers worldwide

As of March 2017 Graph 2.2



[1] Worldwide; Ipsos; December 23, 2016 and March 21, 2017; 18,551 respondents; online shoppers who buy goods once per month

Sources: CIGI Ipsos © Statista 2018

3. Sources of statistics on cross-border e-commerce[9]

This part presents available sources of official statistics on e-commerce compiled by government agencies and others, and that have some element of cross-border information. There is information from both sides: enterprise survey data (supply side) and consumer survey data (demand side). Enterprise surveys capture e-sales by resident firms to foreign consumers and enterprises (B2B and B2C). Individual surveys capture e-purchases of residents from foreign businesses or individuals (B2C and C2C). Besides, there are two additional official data sources which can be proxies for cross-border ecommerce: balance of payments statistics and statistics on postal shipments.

Private sector data is another big source of statistics that could be used in a larger scale. Most part of the data is available from large companies involved in e-commerce (Amazon, Alibaba, eBay, etc.) and the remaining part could be compiled from other sources, e.g. parcel delivery companies, collecting data on internet traffic, using payments data and data on digitalized products streamed over internet.

[7] E-commerce Europe, European E-commerce report, 2018

[8] PayPal is presented in 65 countries worldwide and that could be possible explanation for using this payment system in a large scale in developed countries.

[9] UNCTAD, In search of cross-border e-commerce, April 2016

3.1 Official statistics

3.1.1 Enterprise survey data

A significant number of countries undertake enterprise surveys, some of which include questions or modules on ICT use. Usually asked questions related to e-commerce are whether enterprises received or placed orders over the Internet. Such orders may relate to both B2C and B2B e-commerce, and include both domestic and international transactions.

Given that B2B accounts have the greatest impact on international trade, enterprise surveys may offer the greatest potential for improving the availability of more reliable estimates of cross-border e-commerce. Enterprise surveys should offer the opportunity to compare data on cross-border ecommerce with data on enterprise exports. This could be achieved by either including e-commerce-related questions in surveys on trade by enterprises or by including a question related to trade in existing e-commerce surveys.

3.1.2 Consumer survey data

Many countries conduct surveys of households and individuals to obtain data on consumption patterns. Where such surveys include data on online shopping, they typically cover B2C and C2C e-commerce, domestic and cross-border. However, they do not capture information on B2B transactions and thus cannot be used as the only source of information for compilation of e-commerce statistics.

3.1.3 Balance of payments statistics

Overseas e-commerce should technically in the balance of payments statistics be captured as either a good or service import or export. However, digital products purchased over the Internet are intangible and often not declared to customs. Shipments below a certain amount may also not be captured in trade statistics.

"Digital trade is a novel term but, most studies that build on balance of payments statistics refer to trade in ICT related or enabled services rather than cross-border exports of digital products"[10]. ICT services (i.e., not ICT-enabled services) are captured in the balance of payments with the categories covering communications, computer services and information services. Balance of payments classifications can be hard to interpret with the same item a candidate for multiple categories depending on legal rather than practical use and as noted, data useful for cross-border e-commerce analysis are part of broader categories and rarely broken out. (See Annex 2 for balance of payments corresponding articles)

3.1.4 Postal shipments

There is an important link between postal shipments and e-commerce as many online purchases of goods require delivery. Postal and parcel delivery statistics are granular proxy for analysing cross-border e-commerce involving physical goods. This granularity makes postal tracking data unique compared to other official statistics sources.

[10] http://www.progressivepolicy.org/wp-content/uploads/2014/04/2014.04-Mandel_Data-Trade-andGrowth.pdf.

Although there is operational evidence on international postal flows being increasingly driven by e-commerce transactions, not all international parcel shipments are the result of e-commerce. Moreover, there are a number of other challenges presented by the data which make it difficult to compare statistics from the postal system with those from private providers in the postal market. As a result, the number of parcels being shipped abroad because of e-commerce can only be roughly approximated.

3.2 Private sector data

3.2.1 Data from e-commerce companies

Some data on cross-border activities are available from large companies engaged in e-commerce. These data provide a different perspective than the cross-border purchases or sales reported by statistical agencies.

The e-commerce estimates available vary depending on the types of transactions included (B2B, B2C, C2C), the type of revenue reported, the accounting method used and the globalization strategy of the companies. In general, data reported on international transactions refer to sales by overseas subsidiaries rather than exports.

The internationalization strategies of e-commerce firms can be classified into four categories: i) single standalone web sites, ii) dedicated web sites targeted at overseas buyers, iii) customized web sites in different countries and iv) establishing a market place for foreign retailers.

3.2.2 Other private sector data

This section explores other selected indicators and proxies that might be relevant to analyse trends in cross-border e-commerce. This includes statistics on parcel shipments from private service providers, Internet traffic, payments and services trade.

Parcel delivery

As mentioned before, statistics on parcel shipments are a relevant proxy for analysing trends in cross-border e-commerce. Package delivery firms are particularly accurate about cross-border e-commerce given the higher margins with international shipping.

However, not all international parcel shipments are the result of e-commerce. A number of other data aspects complicate comparability. For example, private sector data sometimes include letters with parcels or letter post could also include small packets; courier firms often use their proprietary names for traffic statistics that are occasionally vague about the nature of shipment; and data are often separated by factors such as whether parcels are insured, whether they are express, etc. As a result, it is difficult to answer how many parcels are shipped abroad because of e-commerce. Except for international postal tracking systems, further bilateral data that would be essential for analysing cross-border ecommerce are rarely available for private operators and when they are, they are generally related to volume (number of parcel items or tonnage) rather than value. Despite these limitations, some inferences might be made about the volume and growth of international parcel shipments. The main carriers of international parcels are national postal agencies and express delivery companies.

Internet traffic

Online shopping is instigated over the Internet so the volume of data traffic generated might provide some indication of e-commerce trends especially with regard to services and digital products. However, ecommerce transactions per se use very little bandwidth.

Despite the relatively minor proportion of online shopping transactions in total Internet traffic, trends in bilateral flows might provide insights into cross-border e-commerce trade. While statistics on bilateral Internet traffic might not be a very good proxy for e-commerce transactions (actual orders conducted online), they might provide a good indication on existing bilateral exchanges of information on goods and services, which typically precede and follow actual e-commerce transactions.

Payments data

For B2B e-commerce transactions, electronic funds transfers are the most important form of payment. Credit card usage might give some indication of B2C e-commerce growth in some markets. The credit card industry uses the term "card not present" to refer to transactions that are made when the card is not physically present. This is the situation when purchases are made over the Internet but can also apply in other cases (giving information over the telephone or by fax).

Payment data can be a proxy for cross-border trade when contrasted with enterprise reported figures on online retail sales.

Payments could be useful as a predictor of overall e-commerce in a country and possibly explain cross-border e-commerce flows. Though a number of countries compile payments data, the granularity is currently insufficient or definitions of what the data mean are vague, thus restricting their usage as an indicator of e-commerce trends.

Trade in digitalised products

Digitized products can be downloaded or streamed over the Internet, e.g. audio, video, print, gaming and computer software products. Digitization has affected the way these types of products are traded with different impacts depending on the industry. It is difficult to obtain trade data on these products, particularly since they are often amalgamated under generic trade categories. It is becoming even more difficult to track trade in digital products as they become electronically downloaded or streamed with bits traversing space from seller to consumer, evading customs and other statistical counting mechanisms. This makes it increasingly important to obtain data from suppliers of such products.

Growth in digital sales somewhat mirrors consumer demand. Unfortunately, there is no information whether the purchases are domestic or cross-border.

There are a range of copyright, licensing and other legal issues with entertainment products affecting legal cross-border sales over the Internet. As a result, in many instances such products are only available for digital online purchase in the country of the purchaser. Given such restrictions, there would appear to be limited legal cross-border but significant illegal trade in digital products.

4. Sources of e-commerce data: Armenian case

Customs Service of Armenia provides data on exports (f.o.b.) and imports (c.i.f.)[11] and does not include below-the-threshold[12] goods, thus leading to miscalculation in terms of growing volume of B2C e-commerce in Armenia. Armenia's B2C e-commerce index value (2016) is 47 with improvement of ranking and UPU Postal Reliability Index score[13] in 2016 compared with 2015 (index value 42). Data on cross-border e-commerce and on e-commerce in general is poorly collected in Armenia and does not incorporated in balance of payments statistics as well as in national accounts. However, above-the-threshold goods that are subject to B2C e-commerce are included in international trade statistics and also in balance of payments. Some information regarding digital trade in services is also available in balance of payments, i.e. postal and courier services, tourist services, etc.

Additional sources of data are available that are not currently in use by official statistics, i.e. below-the-threshold data from Customs Service, payments data, parcel delivery companies' and post office data. In the framework of this research information from above mentioned sources is collected and analyzed. Only B2C imports of goods analysis is presented and compilation of services data is left for further research, as classification of services is subject to complications. It is worth mentioning that B2C imports in goods data in Armenia obtained from 4 sources are different due to methodology differences in compilation of data.

Below presented the potential sources for compilation of statistics for balance of payments with available data and shortcomings of each source.

4.1 Merchandise trade data

One of the potential sources of information for compiling balance of payments statistics on cross-border e-commerce in Armenia is administrative data of Customs Service of Armenia. Part of B2C imports in goods that is above-the-threshold is currently included in international trade statistics.

Customs service obtains information on imports in below-the-threshold goods and is able to provide data based on expert opinion. Due to large diaspora of Armenians worldwide and receiving parcels from relatives abroad, it is difficult to clearly distinguish goods that are obtained through e-commerce. Customs service is able to classify goods having the granular data on type of receiver, but still it can have bias due to including only goods received from large e-commerce companies and through parcel delivery companies. Another possible shortcoming of this source is that it is not possible to distinguish imports by residency due to lack of information on receivers residency. Also there are small envelopes that are counted in the system, but no precise information on whether they are cross-border e-commerce or not.

[11] Free on Board (FOB), Cost, Insurance and Freight (CIF)

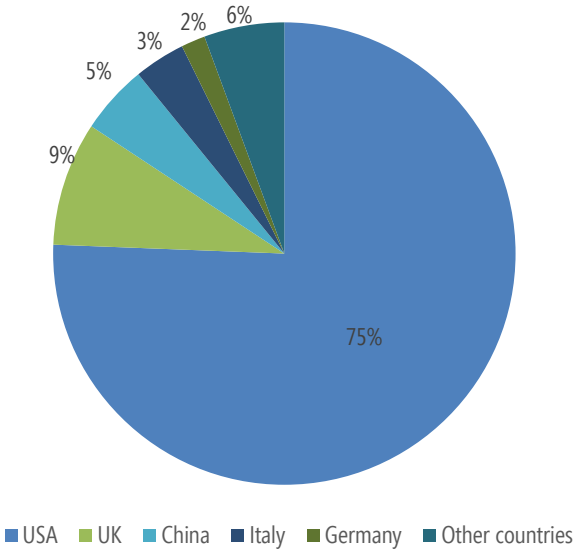
[12] Goods that are not exceed 2 kilos and/or their value is under 200,000 AMD (352 EUR) are not due to customs duty and are excluded from statistics that is provided to National Statistics Committee and Central Bank of Armenia.

[13] UNCTAD B2C E-commerce Index 2017

In the framework of this research Customs service provided data on B2C imports in below-the-threshold goods, excluded parcels received from relatives and small envelopes received through e-commerce. However, data is based on Customs service expert opinion and counted as e-commerce those goods that are received from large e-commerce companies or delivered by Armenian parcel delivery companies. It is worth mentioning that classification by countries shows countries where goods delivered from, not the countries where goods are bought from.

Share in total e-commerce by countries

2017 Graph 4.1



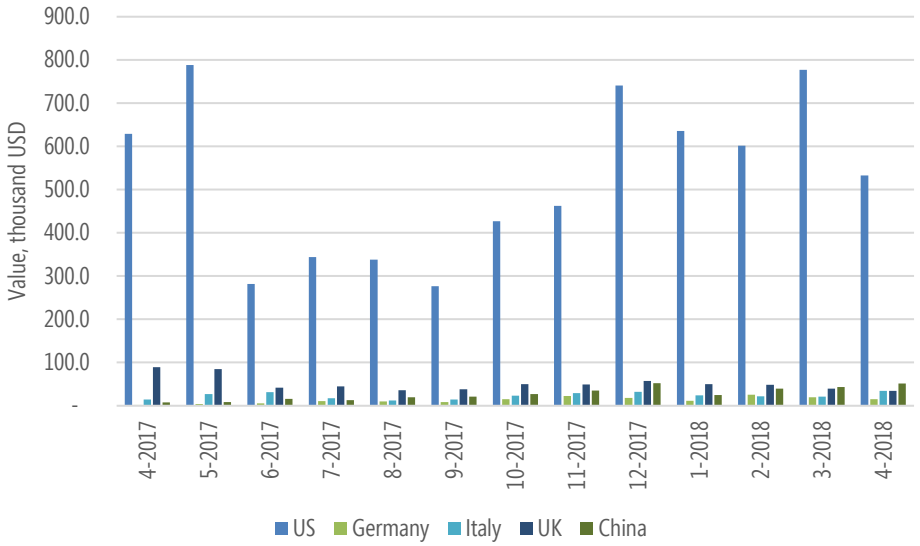
[1] Data from Customs service database

Sources: author's own calculation

According to data received, B2C imports in below-the-threshold goods to Armenia was 5.7 million USD in 2017 and there were mainly imported from the United States.

Monthly share in total e-commerce

2017, monthly Graph 4.2



[1] Data from Customs service database

Sources: author's own calculation

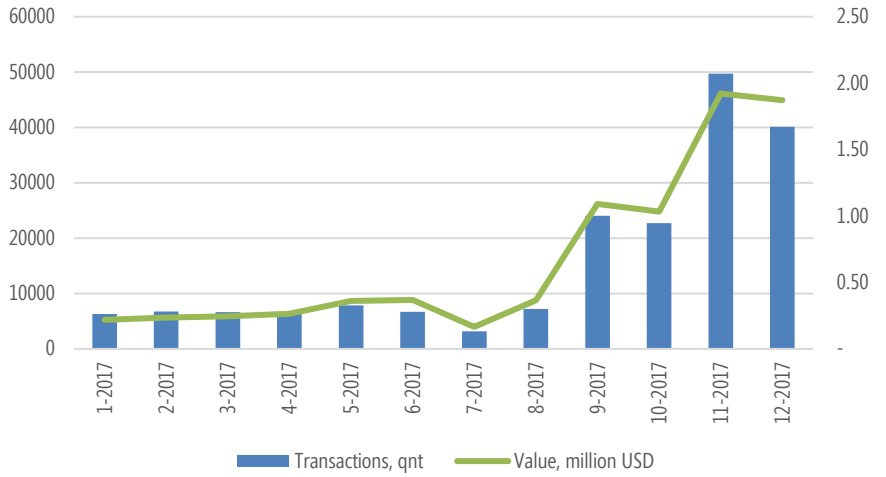
4.2 Reporting form data

Central Bank of Armenia collects report named "Types of payment cards, payment card servicing equipment, as well as transactions with payment cards" (reporting form 31), where indicated information on transactions of payment and settlement systems. There is Armenian payment and settlement system ArCa which covers processing of transactions of 14 Armenian commercial banks. Other 3 commercial banks have their own processing systems and transactions via cards issued by those banks are registered in ArCa system only if they are done by POS terminals of banks using ArCa system. This report collects information on transaction done by 17 Armenian commercial banks regardless the payment and settlement system used.

With data obtained from reporting form 31 it is possible to derive statistics on cross-border acquisition of goods and services via virtual E-POS. Thus, it is not possible to distinguish goods and services and classification by countries is available started from 2017, which enables classification of cross-border transactions.

Dynamics of e-commerce transactions

2017, monthly Graph 4.3



[1] Data from reporting form 31

Sources: author's own calculation

According to data obtained from reporting form 31, overseas e-commerce transactions in goods and services in Armenia totaled 8.1 million USD in 2017.

4.3 Payments and settlement system data

ArCa Database

Description of the database

Armenian Card (ArCa) is a payment and settlement system established in Armenia which covers processing of transactions of 14 commercial banks in Armenia. Another three banks are conducting processing of their transactions through own processing systems. Having the information from ArCa, it is possible to compile B2C imports in goods and services by offsetting country, type of POS terminal, as well as to classify transactions by type and see the merchant name. It is possible to distinguish e-commerce transactions abroad with high accuracy, which makes it worth to use for compilation of balance of payments statistics. However, there are several shortcomings due to lack of information on exports in goods and services, i.e. it is difficult to distinguish non-residents' e-commerce transactions in Armenia, no information on transactions out of ArCa system, hard to classify transactions by trade country and consequently statistics for compilation of balance of payments is incomplete. Moreover, identification of e-commerce transactions using information from ArCa database is done based on expert opinion.

Classification methodology

Data obtained from ArCa database is transformed with following steps. Firstly, raw data is cleaned from transactions in Armenia, taking only ones conducted with foreign countries. Online transactions are separated by «card-not-present» criteria and are taken for further analysis to make sure only e-commerce data is used. Merchant

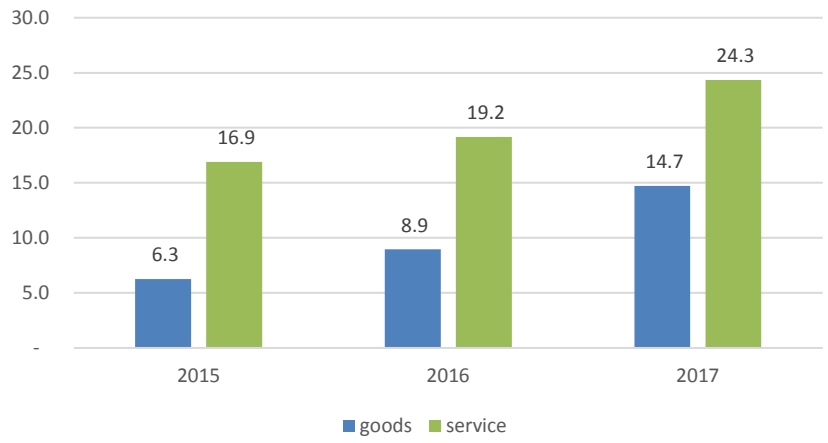
Category Code (MCC) description[14] is used combined with merchant name where it is necessary to classify data into goods and services. It is worth mentioning that classification of PayPal transactions is problematic due to lack of information in merchant name. For those PayPal transactions that were processed through Luxembourg, Ireland and United Kingdom, additional research was done to identify company's residence. Transactions with China were also difficult to identify; those PayPal transactions that contain Chinese surnames were filtered from Luxembourg transactions and were added to China's figures. Classification of transactions by type was done using MCC description.

Quantitative analysis

Analysis of monthly data of 2015-2017 on B2C transactions from Armenia shows that: online purchase of goods and services was 39.1 million USD in 2017 and had 38.8% increase compared to 2016. The most part of transactions – 62% - were purchase of services, and 38% - purchase of goods. Value of transactions for purchasing goods increased by 64.4% and services increase was 26.9% in 2017.

Purchase of goods and services through e-commerce

millions of USD Graph 4.4



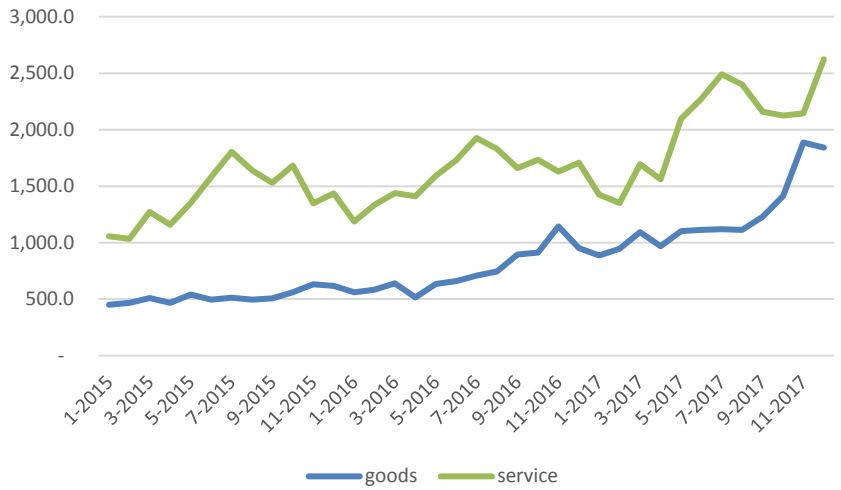
[1] Data from ArCa database

Source: author's own calculation

Monthly purchase of goods and services

thousands of USD Graph 4.5

[14] MCC is a four-digit number listed in ISO 18245 for retail financial services. MCC is used to classify the business by the type of goods or services it provides.



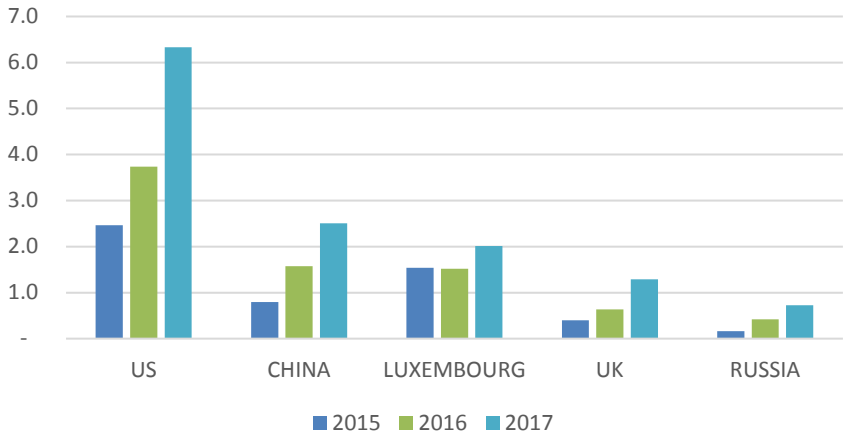
[1] Data from ArCa database

Source: author's own calculation

Purchase of goods from other countries via online transactions was recorded 14.7 million USD in 2017. Main partner is the US – 43.1% of share in total value of trade in goods. Further analysis of online transaction in goods was presented.

Purchase of goods by countries, top 5

millions of USD Graph 4.6



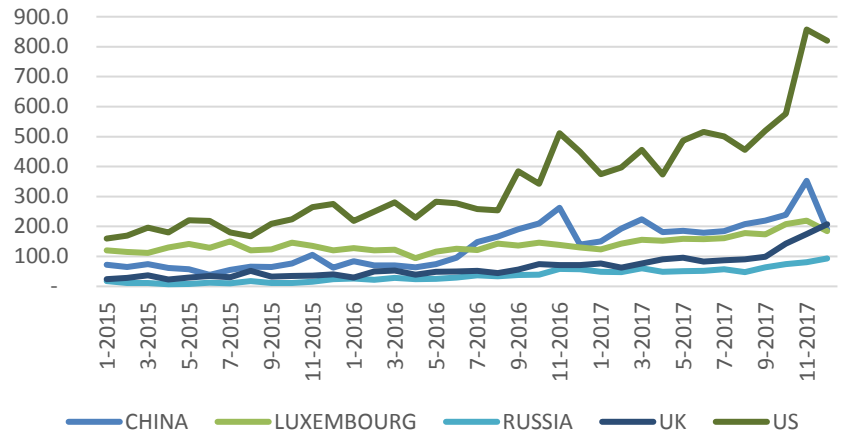
[1] 99.6% of Luxembourg transactions are PayPal transactions that were not classified due to lack of information on merchant name.

Source: author's own calculation

There was a rapid increase in November and December 2017 due to Christmas sales, almost twice as much as the same months in 2016.

Dynamics of monthly trade in goods by top 5 countries

thousands of USD Graph 4.7



1

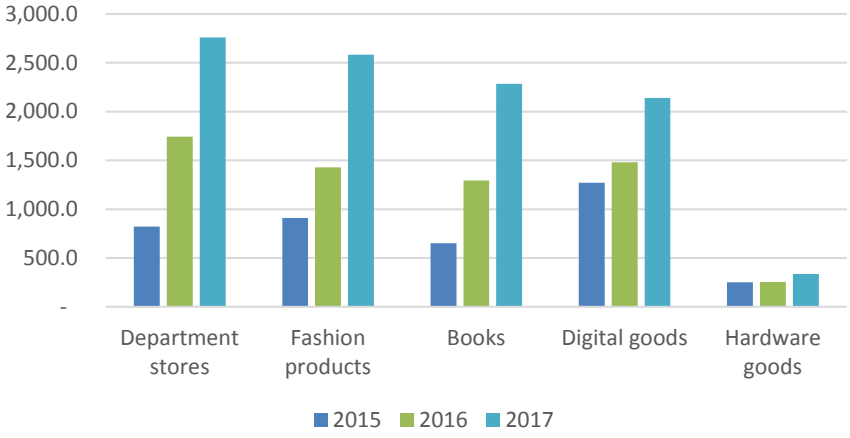
Source: author's own calculation

Main 5 directions of online transactions through ArCa system comprised 69% of all transactions directed to:

- department stores - miscellaneous goods from supermarkets, shopping malls, etc.
- fashion products - clothes, shoes and jewelry,
- books[15],
- digital goods – software, games, music, etc.
- hardware goods – computers, camera, etc.

Purchase by type of products

thousands of USD Graph 4.8



1

[15] Further research needed in figures of books' purchases, as classification was done using MCC description. Main part of the transactions were done through Amazon and there is a possibility that there can be included regular Amazon transactions, not only book purchases.

Source: author's own calculation

There was a considerable increase in purchase of fashion products and books in 2017 by 81% and 77% accordingly.

Further work regarding database information

For the purpose of compilation of balance of payments statistics, further work is needed to derive comprehensive statistics from ArCa database. In the framework of this research data provided by ArCa is aggregated in the level of MCC name and for more accurate analysis granular data is needed in regular basis. Having received this information it will be possible to compile e-commerce statistics on goods and services in a detailed subgroup level.

4.4 Parcel delivery companies data

National Postal Offices usually organize delivery of parcels from abroad. In Armenia there are three parcel delivery commercial organizations, one of which established in cooperation with National Post Office of Armenia[16]. These companies provide customers with local postal boxes in 5 countries – United States, Russia, Germany, China and United Kingdom. Customers from Armenia have opportunity to purchase goods in above mentioned countries and receive them in Armenia in 10 days.

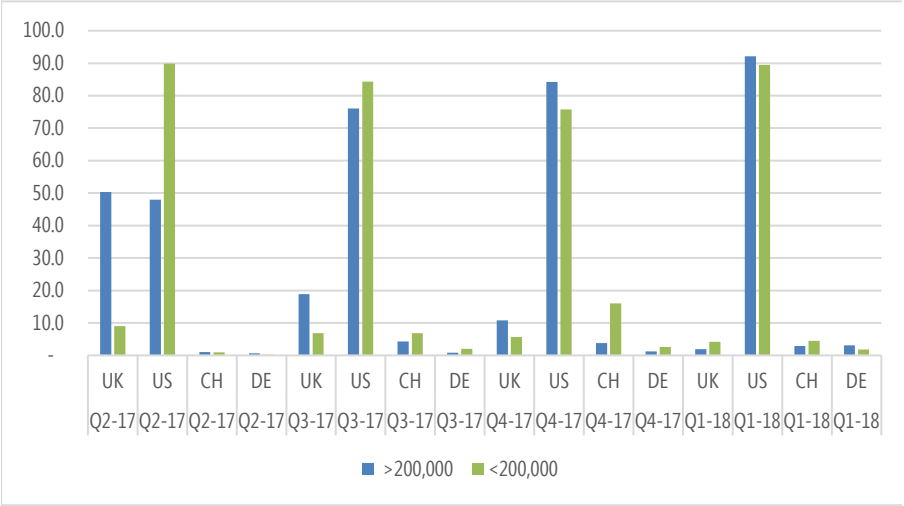
Current research misses data from National Postal Office – Haypost, due to the change of the system and incorporation of new features that will enable to obtain more granular data on imports and exports of goods. At the end of the improvements of the system it will be possible to have more accurate data on parcels received from China.

Globbing and Onex obtain data on all parcels they deliver to and from Armenia with mandatory registration of parcels that are above-the-threshold. They cover only their part of the market and there are problems with registration of the parcels from Russia due to customs procedure regarding membership to the Eurasian Economic Union. It is worth mentioning that parcels delivered to the mailboxes located abroad can include transportation expenses and there are transportation expenses included in payment fee to parcel delivery companies. For calculation of transportation services for balance of payments compilation these three companies should be surveyed to reveal the proportion of those services in payment fee.

Share of countries in e-commerce volume by parcels below/over-the-threshold

% Graph 4.9

[16] Commercial companies are Globbing LLC and ONEX, and the one that is a part of Haypost CJSC is Shop in America.



[1] Data from 2 of the parcel fast delivery commercial organizations.

Source: author's own calculation

According to data obtained from two parcel delivery companies, B2C imports in goods is 8.1 million USD only from United Kingdom, China, United States and Germany.

5. Conclusions

With growing volume of digital trade, importance of compilation of e-commerce statistics is stressed by policy makers. In Armenia e-commerce transactions within the country, as well as cross-border transactions are not registered neither in national accounts, nor in balance of payments, though there are available sources of official statistics and ones from private sector.

Current paper made an attempt to describe the potential sources of compilation of statistics on e-commerce for balance of payments of Armenia and provided description of current measurement framework and possible sources of data.

There were four sources of data used during the analysis: reporting form 31 of payment and settlement systems currently collected by Central bank of Armenia, merchandise trade data on below-the-threshold imports of goods from Customs Service, data from parcel delivery companies and credit card transactions data from biggest player in Armenian payments and settlement market – ArCa.

There are two sources that provided data on e-commerce of both goods and services. However, reporting form 31 does not distinguish goods from services and ArCa database provided data for more detailed classification of goods and services. Total figures for e-commerce in goods and services are 8.1 million and 39 million USD correspondingly. It is worth mentioning that reporting form 31 covers all payments and settlement systems' data and should have greater value of e-commerce transactions then ArCa database. Difference is due to lack of methodology in classification of overseas e-commerce by payment and settlement organizations. When providing reporting form 31 they do not classify transactions by «card-not present» criteria.

Customs Service and parcel delivery companies provided information on B2C imports in goods: in total 5.7 million and 8.1 million USD correspondingly. Though Customs Service should obtain information on total volume of B2C imports in goods, it is obvious that data based on Customs Service expert's opinion lacks some information, as parcel delivery companies do not cover whole Armenian market and nevertheless have greater value of e-commerce volume.

In conclusion, with new sources of data it will be possible to incorporate part of e-commerce data into balance of payments statistics, thus make it more accurate. Further analysis of presented sources is needed to decide whether there is a need to eliminate some of them and to understand how to obtain data on regular basis.

6. Bibliography

1. Measuring Digital Trade: Results of OECD/IMF Stocktaking Survey, Thirtieth Meeting of the IMF Committee on Balance of Payments Statistics, Paris, France, October 24–26, 2017
2. In search of cross-border e-commerce data, UNCTAD Technical Notes on ICT for Development, N˚6, April 2016
3. UNCTAD B2C e-commerce index 2017, UNCTAD Technical Notes on ICT for Development, N˚9, October 2017
4. A review on measuring digital trade & e-commerce as new economic statistics products, Saeed Fayyaz, 16th Conference of IAOS OECD Headquarters, Paris, France, 19-21 September 2018
5. Measuring digital trade: towards a conceptual framework, Working Party on International Trade in Goods and Trade in Services Statistics, 22-24 March 2017, OECD Headquarters, Paris, Statistics Directorate, Committee on Statistics and Statistical Policy
6. Coppel, J. (2000), "E-Commerce: Impacts and Policy Challenges", OECD Economics Department Working Papers, No. 252, OECD Publishing, Paris. http://dx.doi.org/10.1787/801315684632
7. Result of the 2018 WPTGS Stocktaking Questionnaire, Working Party on International Trade in Goods and Trade in Services Statistics, 21-23 March, OECD Boulogne, Statistics Directorate, Committee on Statistics and Statistical Policy
8. Conclusions of the Working Party on Trade in Goods and Services Statistics (22-24 March 2017), Working Party on International Trade in Goods and Trade in Services Statistics, 28 February 2018, Statistics Directorate, Committee on Statistics and Statistical Policy
9. OECD (2011), OECD Guide to Measuring the Information Society 2011, OECD Publishing. http://dx.doi.org/10.1787/10.1787/9789264113541-en
10. Mandel, Michael "Data, Trade and Growth." PPI Policy Memo, April 2014. http://www.progressivepolicy.org/wp-content/uploads/2014/04/2014.04-Mandel_Data-Trade-andGrowth.pdf.

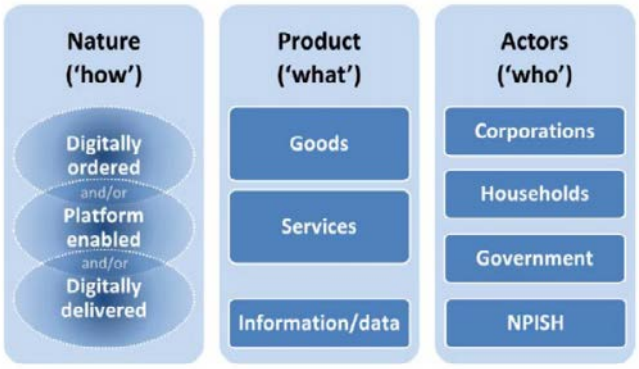
Annex 1. Contours of a measurement framework[17]

International trade transactions can be dissected along a variety of dimensions. The distinction between goods and services is the most traditional, as is, in the area of trade in services, the breakdown by mode of supply. The focus on digital trade brings however a variety of new dimensions to the fore. The growth of e-commerce has increased the focus on better understanding and identifying the ordering and delivery process (both of which can be digital), and has also brought attention to the different (institutional) nature of partners involved in international trade.

In the conceptual framework introduced below, a total of three dimensions of digital trade are identified: the nature of the transaction ('how'), the product ('what') and the partners involved ('who'). Figure 1 depicts these dimensions as well as their underlying components. In particular the first column, on the nature of the transaction, determines which transactions are considered part of 'digital trade'. The second dimension, 'product', introduces information, or data, as a separate product to consider in addition to goods and services. The last dimension looks at the actors involved; which is shown for simplicity below as three categories, but in principle could be defined using the institutional sector classification of the SNA, with additional breakdowns possible for the size and sector of businesses, as a means of providing important information on the role (and take-up) of digitalised tools by SMEs for example.

Box 1.1

Dimensions of digital trade



Source: BOPCOM – 17/7

Each of these dimensions is discussed below in more detail. For several of these, it is possible to build upon methodological and conceptual work that has already been developed, which is made explicit below. In others, additional work is very likely

[17] Measuring Digital Trade: towards a conceptual framework, OECD, March 2017

necessary to further operationalize the framework below and make it useful (and practical) for measurement by statistical offices and/or central banks.

1. The digital nature of transactions

The first component of the framework involves the digital nature of the transaction ('how'), distinguishing between those cross-border transactions that should be considered 'digital' and those that should not. It is important to emphasise however, that this is not a question with a simple binary answer. Many digital transactions have a variety of potentially overlapping characteristics, reflecting the ordering process, the role of intermediaries, and the final delivery of the good or service concerned.

1.1 Digitally ordered

The first dimension that helps identify digital trade involves those cross-border transactions that are digitally ordered, that is, international trade in goods and services that reflect e-commerce, which in turn is generally defined as follows:
"*An ecommerce transaction is the sale or purchase of a good or service, conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders. The goods or services are ordered by those methods, but the payment and ultimate delivery of the goods or services do not have to be conducted online. An ecommerce transaction can be between enterprises, households, individuals, governments, and other public or private organizations. To be included are orders made over the web, extranet or Electronic data interchange. To be excluded are orders made by phone, fax or manually typed email."*[18]

1.2 Platform enabled

One of the most salient features of the digitalization of international trade is the emergence of intermediary platforms such as Amazon, Uber, Alibaba or AirBnB. While not all digital trade transactions by necessity involve such intermediary platforms, they are clearly changing the economic and competitive landscape nationally as well as internationally.

Transactions involving intermediaries, in turn, include a number of distinct categories, each of which raising different questions for trade/investment policy and measurement: foreign goods or services purchased via a foreign on-line intermediary; foreign goods or services purchased via a domestic on-line intermediary; domestic goods or services purchased by a foreign on-line intermediary; and domestic goods or services purchased by a foreign-owned domestic intermediary. Indeed, one of the most salient measurement challenges involves the identification of not only the international trade transactions, but also some measure of domestic transactions that may be facilitated by a foreign (or indeed foreign-owned) intermediary. To illustrate this point, Box 1 describes the example of an Uber transaction. At its most basic, this involves the purchase of a transport service, but how the service is provided determines whether or not there is a trade transaction and importantly how this transaction is to be measured.

Box 1.2

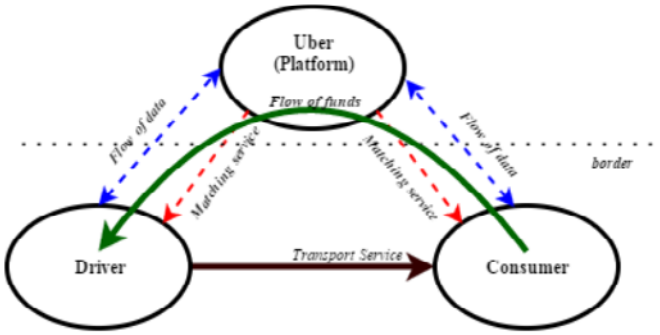
[18] OECD, Guide to Measuring the Information Society, 2011

Example of transactions via intermediary platforms

Unpacking an Uber transaction

In the "physical world", a taxi would have to pass in front of a customer who would pay for the ride in cash or card. The Uber application adds a new tradable digital service which enables the transaction by matching the car driver and the customer and managing payment (see the figure below). The transaction between the driver and the rider (consumer) takes place in a particular country, but the supporting transactions, the provision of the matching services, payments and insurance cover, are potentially provided from another country (assuming that Uber is not operating through a mode 3 local presence).

Transactions involved in the sale of an Uber service



The example illustrates some of the measurement challenges. For example, since Uber owns no cars, should Uber be classified as a transport service or a business service? This has important implications not only for statistics but also for trade policy: If Uber is a transport service, then its operations are subject to the GATS mode 3 commitments; if a business service, then its operation is subject to mode 1 commitments in the business service sector. At the moment, the 2008 System of National Accounts (# 14.126) specifies that the service provided should be recorded as trade in transportation services, with Uber consequentially classified in the transport sector but it is not clear that all countries follow this, nor indeed whether the same rules of classification necessarily govern that used to determine Uber's classification for trade purposes.

Source: STD/CSSP/WPTGS(2017)3

1.3 Digitally delivered

The third dimension is referred to as digitally delivered; in other words, it captures those services and data flows that are delivered digitally as downloadable products. Examples include software, e-books, data and database services. Goods, as physical items, are not very likely to be digitally delivered en masse. However, 3D printing may possibly result in a (future) category of transactions that could possibly classify under digitally delivered goods, if these transactions are deemed to be fundamentally different from trade in services (of 3D blueprints) transactions.

2. The product involved: goods, services and data

Traditional statistics on international trade identify how cross-border transactions involve either goods or services. The notion of digital trade introduces a third category, i.e. the importance of information or data. This distinction differentiates between the types of products being traded, digitally enabled goods, digitally enabled services, digitally delivered services, and digitally delivered information (or data flows), and determines the trade policy environment faced (e.g. GATT or GATS, but potentially also other agreements).

Clearly, perhaps the biggest measurement challenge for digital trade concerns such data flows. In many cases, data flows do not result in a monetary transaction per se, but they may support one (such as generating advertising revenue). For example, a

social networking site such as Facebook offers "free" services to users who, in exchange, provide their data. There is no monetary transaction between Facebook and the user (and in terms of existing international standards, no trade); however, the data collected by Facebook is the basis of the revenue that company receives from advertisers. While the advertising revenue monetary flow is captured in trade statistics, the data flows upon which they depend are not. It is clear that this raises issues concerning consumer surpluses and indeed at the international level who is ultimately financing those surpluses. For example free digital products (such as Facebook) are in general available to all, but the funding model (advertising) does not discriminate between countries. In other words advertisers (and ultimately consumers through paying higher prices) in one country may be indirectly generating consumer surpluses in another.

In a similar manner, and because they are free, the international accounting system does not in general impute transactions related to the use of public goods (such as open-source or free software). Again this raises issues concerning the measurement of consumer surpluses but also potentially policies, such as anti-dumping and competition policies, if the freely available software is designed to gain market share with a view to the introduction of subsequent priced models.

3. Partners

International trade is traditionally considered to take place between enterprises – and to lesser extent between enterprises and governments. Technological change has however provided individual consumers (households) with the possibility to purchase goods and services from foreign suppliers on a scale that was hitherto impossible. Similarly, the possibility to sell online has lowered – or has in any case the potential to lower – the barriers to export, allowing especially smaller firms to market their products abroad. These developments means that new policy attention is given to better understanding the nature of the partners involved in international trade.

While clearly not an exclusive list, the following relationships are among the main categories that are identified in the discussions on for example e-commerce:

- **Business-to-Business (B2B).** Trade transactions that involve two enterprises. This has been the main mode of international trade in the past and initial t studies indicate that the bulk of cross-border ecommerce transactions is accounted for by these types of transactions.
    - **Intra-firm trade** or transactions between related enterprises. An important sub-set of B2B trade transactions involves the transactions between enterprises that are part of the same enterprise group (multinational enterprise). In the area of trade in services, such trade flows are already identified as transactions between related enterprises (BPM6, MSITS2010).
- **Business-to-Consumer (B2C).** Trade transactions that involve businesses selling directly to households, bypassing traditional retailers. This type of cross-border transaction is thought to have grown substantially with the rise of the internet and ecommerce.
- **Consumer-to-Consumer (C2C).** Trade transactions that involve two consumers (households). While traditionally, such cross-border transactions were rare (even if domestic transactions did occur), information and communication technologies have allowed platforms like AirBnB and ebay to develop and mediate such cross-border transactions.

- **Business-to-Government (B2G).** Trade transactions that involve businesses selling to governments.

The overview above strongly resembles the traditional institutional sectors identified in the national accounts: households, non-financial corporations, government and financial corporations, which group the institutional units with broadly similar characteristics and behaviour. It would therefore be advantageous to use the existing definitions of these institutional sectors when trying to break down the partners involved.

Annex 2. Digital trade in balance of payments[19]

Postal and courier services

10.82 Postal and courier services cover the pick-up, transport, and delivery of letters, newspapers, periodicals, brochures, other printed matter, parcels, and packages...Postal services are subject to international agreements, and the service entries between operators of different economies should be recorded on a gross basis.

10.84 Courier services include express and door-to-door delivery...Excluded are the movement of mail carried by air transport enterprises (recorded under transport, air, freight)...

h. Charges for the use of intellectual property n.i.e.

10.137 Charges for the use of intellectual property n.i.e. include: (a) Charges for the use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, franchises). These rights can arise from research and development, as well as from marketing; and (b) Charges for licenses to reproduce or distribute (or both) intellectual property embodied in produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast).

10.138 The production of books, recordings, films, software, disks, and so forth is a two-stage process of which the first stage is the production of the original and the second stage the production and use of copies of the original. The output of the first stage is the original itself over which legal or de facto ownership can be established by copyright, patent, or secrecy. The owner of the asset may use it directly to produce copies that give the purchaser a license to use. Alternatively, the owner may issue a license to other producers to reproduce and distribute the content. The payments made by the licensee to the owner may be described in various ways, such as fees, commissions, or royalties...In contrast to temporary rights to use, outright sales of patents, copyrights, and industrial processes and designs are included under research and development services (discussed in paragraph 10.147). Similarly, temporary rights for computer software and audio-visual originals are treated differently from outright sales ...

Computer services

10.143 Computer services consist of hardware- and software-related services and data-processing services... Computer services include:

(c) non-customized (mass-produced) software downloaded or otherwise electronically delivered, whether with a periodic license fee or a single payment;

(d) licenses to use non-customized (mass-produced) software provided on a storage device such as a disk or CDROM with a periodic license fee (non-customized software on storage devices with licenses that convey perpetual use is included in goods; see paragraph 10.17(c) and Table 10.4);

[19] https://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf

Information services

10.146 Information services include news agency services, such as the provision of news, photographs, and feature articles to the media...Also included are direct nonbulk subscriptions to newspapers and periodicals, whether by mail, electronic transmission, or other means; other online content provision services; and library and archive services. ...Downloaded content that is not software (included in computer services) or audio and video (included in audio-visual and related services) is included in information services.

k. Personal, cultural, and recreational services

10.161 Personal, cultural, and recreational services consist of (a) audio-visual and related services and (b) other personal, cultural, and recreational services. Audio-visual and related services

10.162 Audio-visual and related services consist of services and fees related to the production of motion pictures (on film, videotape, disk, or transmitted electronically, etc.), radio and television programs (live or on tape), and musical recordings.

10.163 Included are amounts receivable or payable for rentals of audio-visual and related products, and charges for access to encrypted television channels (such as cable and satellite services).

10.164 Mass-produced recordings and manuscripts that are purchased or sold outright or for perpetual use are included under audio-visual and related services if downloaded (i.e., delivered electronically). However, those on CD-ROM, disk, paper, and so forth, are included in general merchandise. Similar products obtained through a license to use (other than when conveying perpetual use) are included in audio-visual and related services, as is the use of other online content related to audio and visual media. (See paragraph 10.166 for the treatment of originals.) The principles for the timing for related audio-visual and related services, such as for music and film copyrights and for master recordings, are the same as those for other types of intellectual property, as discussed in paragraph 10.139.

10.165 Charges or licenses to reproduce or distribute (or both) radio, television, film, music, and so forth are excluded from audio-visual and related services and included in charges for the use of intellectual property n.i.e.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

IFC - Central Bank of Armenia Workshop on *"External Sector Statistics"*

Dilijan, Armenia, 11-12 June 2018

Compilation of e-commerce data for balance of payments statistics[1]

Lilit Yezekyan,

Central Bank of Armenia

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Central Bank of Armenia
Statistics Department

COMPILATION OF E-COMMERCE DATA FOR BALANCE OF PAYMENTS

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IFC-CBA Workshop on External Sector Statistics

Dilijan, Armenia
11-12 June

WHAT IS ELECTRONIC COMMERCE?

- OECD definition of an e-commerce transaction:

– "...the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders".

– Payment and delivery do not have to be conducted online.

– Orders made by telephone calls, fax or manually typed e-mail excluded

- Business-to-business (B2B)
- Business-to-consumer (B2C)
- Consumer-to-consumer (C2C)
- Government-to-business (G2B): e.g. e-procurement

MAJOR E-COMMERCE MARKETS: TOP 10

		Total		B2B		B2C
	Economy	$ billion	% of GDP	$ billion	% of GDP	$ billion
1	United States	7,055	39%	6,443	91%	612
2	Japan	2,495	60%	2,382	96%	114
3	China	1,991	18%	1,374	69%	617
4	Korea (Rep.)	1,161	84%	1,113	96%	48
5	Germany (2014)	1,037	27%	944	91%	93
6	United Kingdom	845	30%	645	76%	200
7	France (2014)	661	23%	588	89%	73
8	Canada (2014)	470	26%	422	90%	48
9	Spain	242	20%	217	90%	25
10	Australia	216	16%	188	87%	28
	10 above	**16,174**	**34%**	**14,317**	**89%**	**1,857**
	World	***25,293***		***22,389***		***2,904***

Note: Figures in italics are estimates. Missing data were estimated based on average ratios. Converted to $ using annual average exchange rate.
Source: UNCTAD, adapted from US Census Bureau; Japan Ministry of Economy, Trade and Industry; China Bureau of Statistics; KOSTAT (Republic of Korea); EUROSTAT (for Germany); UK Office of National Statistics; INSEE (France); Statistics Canada; Australian Bureau of Statistics and INE (Spain).

AVAILABLE DATA SOURCES FOR COMPILATION OF E-COMMERCE STATISTICS

- Official statistics on e-commerce
  - Enterprise survey data
  - Consumer survey data
- Private sector data on e-commerce
  - Data from e-commerce companies
  - Other private sector data related to measuring e-commerce
- E-commerce estimates
  - Sellers' survey on the amount of overseas sales

SOURCES OF DATA USED FOR THE CURRENT RESEARCH

- Official statistics
  - Customs Service external trade database
  - Reporting form 31 - "Types of payment cards, payment card servicing equipment, as well as transactions with payment cards" provided to the Central Bank of Armenia
- Payments data
  - Armenian Card (ArCa) database
- Data from companies engaged in e-commerce
  - "Haypost" CJSC (postal service) aggregated data
  - "Globbing" LLC aggregated data
  - "Online Express" (ONEX) aggregated data

MERCHANDISE TRADE DATA

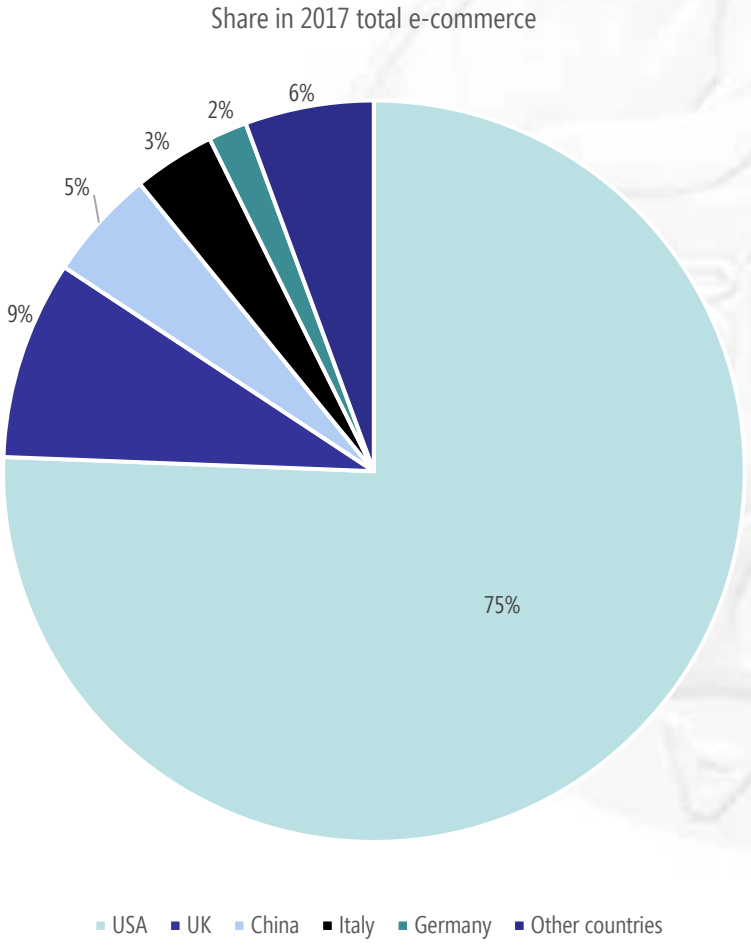
- Data format

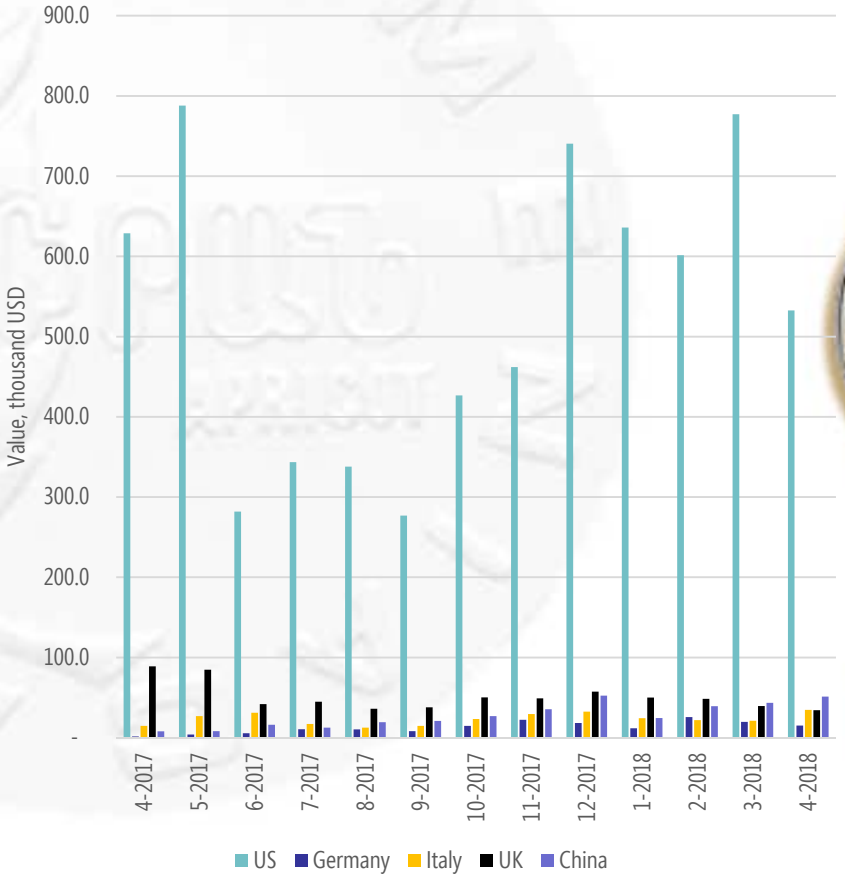
- Collection of data on goods (customs due over 2 kilos and/or 200 000 AMD (approximately 352 EUR) only exceeding part)
- 5.7 million USD in 2017

- Shortcomings

- Data available only on import of goods through e-commerce
- E-commerce data classification based on Customs specialists' expert opinion
- Data by countries show the countries from where goods have been imported to Armenia (difficulty to identify countries where goods were bought)
- No data on small envelopes

E-commerce by countries in 2017 (Merchandise trade data)



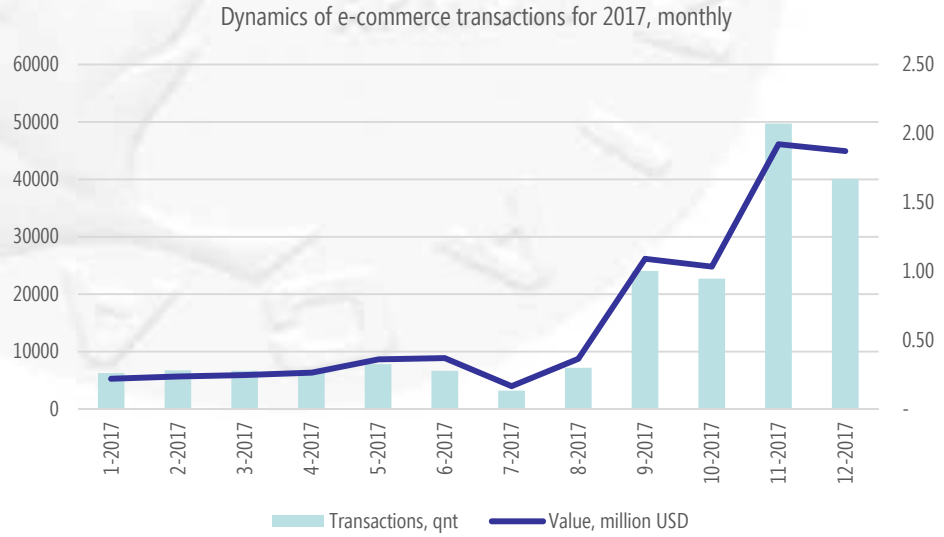


REPORTING FORM 31

- Data format
- Acquiring goods and services abroad via virtual E-POS
- Information received from ArCa
- Possibility to see online acquirement of goods and services abroad
- Shortcomings
- Classification by country starting from 2017
- No possibility to distinguish goods and services

- Overseas e-commerce

total transactions in 2017 –
8.1 million USD



ArCa DATABASE

- Data format

- Detailed identification of transactions (by country, type of POS terminal, etc.)
- Include almost all online transactions in Armenia and from Armenia (except transactions that were done through processing centers of 3 banks)
- 99% accuracy in distinguishing e-commerce transactions abroad

- Shortcomings

- Identification of e-commerce is based on expert opinion
- No possibility to see transactions out of ArCa system
- No possibility to distinguish non-residents' transactions in Armenia
- No possibility to asses all e-commerce market in Armenia

E-commerce by countries in 2015-2017 (ArCa database)

- Overseas e-commerce (goods and services) volume in Armenia in 2017 was 39.1 million USD, increased by 39% compared to 2016
- For 3 years in average 29% of transactions concerned buying goods and 71% - buying services
- E-commerce (goods) volume was 12.9 million USD in 2017, increased by 63% compared to 2016
- Average price of one transaction increased by 16% compared to 2016
- 30.3% of transactions were through Paypal (2017)
- 22% of transactions were from Amazon (2017)

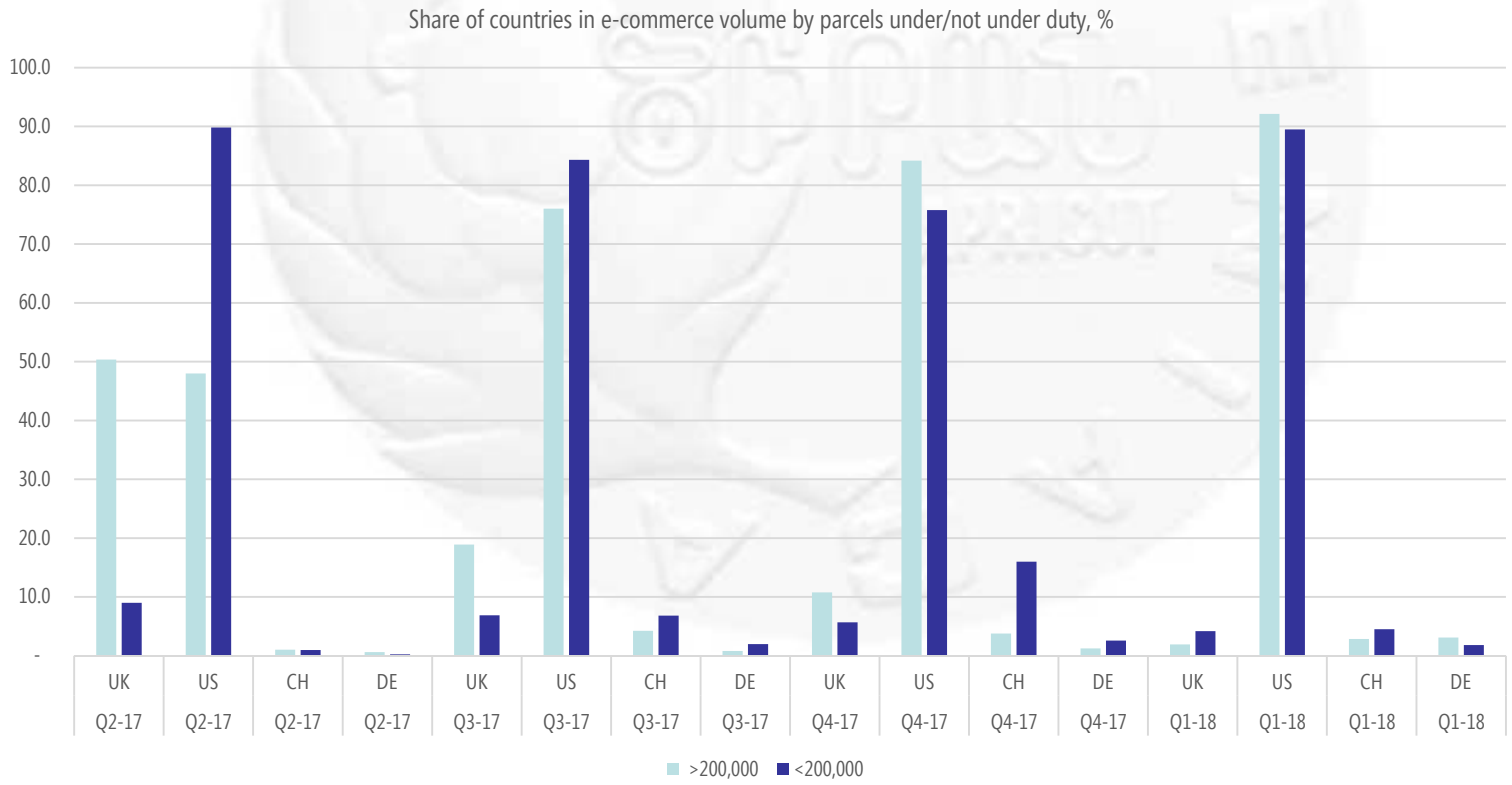
E-COMMERCE COMPANIES

- Data format
- Presents to Customs Service only goods that exceed 2 kilos and/or 200 000 AMD (approximately 352 EUR)
- Information on all parcels except small envelopes
- Market in 5 countries – US, Russia, Germany, China, UK

- Shortcomings
- Does not cover all overseas e-commerce market of Armenia
- No information in database about parcels from Russia due to different procedure in Customs Service (reason: membership in EEU – Customs Union)
- Shipping to the cargo abroad is included in the price of a good
- Data available from end of March 2017

Figures by e-commerce companies (2017Q2-2018Q1)

- Overseas e-commerce total volume in Armenia for 4 quarters was approximately 8.1 million USD



USE OF E-COMMERCE DATA FOR COMPILATION OF BALANCE OF PAYMENTS STATISTICS

- Possibility to adjust import of goods in current account based on ArCa database
- Use services data to adjust services account, e.g. tourist services, advertising services, etc.

Shortcomings

- Problems with classification by residency
- Difficulties with calculation of transportation expenses to compile current account
- No data on e-commerce transactions of non-residents in Armenia

Conclusions and suggestions

<u>Conclusions</u>

- Only one regular reporting form (form 31) to estimate purchase of goods and services overseas
- Several sources available for compilation of e-commerce data but no regular reporting to public bodies

<u>Suggestions</u>

- Conduct enterprise surveys involved in e-commerce to measure supply side or add few questions on proportion of domestic and overseas e-commerce into existing survey questionnaire
- Additional administrative sources, i.e. reporting forms received on regular basis from Customs Service, ArCa and e-commerce market players in Armenia

Thank you
Q&A