

2019

IARIW-HSE

Special IARIW-HSE Conference “Experiences and Future Challenges in Measuring Income and Wealth in CIS Countries and Eastern Europe”
Moscow, Russia, September 17-18, 2019

GDP and Beyond: The Case Study of Some Peer-to-Peer Households Transactions in Russia (Issues of Statistical Research)

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Paper Prepared for the IARIW-HSE Conference
Moscow, Russia, September 17-18, 2019
Session 3A: System of National Accounts (SNAs)
Time: 13:45 – 15:45, September 17

“GDP and beyond”: the case study of some peer-to-peer household transactions in Russia (issues of statistical research)

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1. Introduction

Various activities in Russia are interlinked via digital platforms which in turn mediate between households in peer-to-peer transactions in transport and other services thanks to digital economy development. That exacerbates the problems of statistical measurement on rising numbers of new interaction models among economic agents. SNA methodology should provide for higher granularity of some provisions to improve output and value added statistical accounting of the above services and include them in GDP, as well as their impact on well-being.

The SNA is a tool of macroeconomic management and industry regulation. The possibilities of adjusting GDP are expanding due to the need to reflect digitalization processes and the emergence of new types of operations. This is connected with the adoption of the SNA UN 2008 international standard. When studying the digitalization of markets for goods and services, new phenomena and trends in the economy and the social sphere emerge, requiring in-depth analysis both at the sectoral level, at the regional level and at the macroeconomic level, taking into account the growing volumes of household peer-to-peer operations through digital platforms.

The Russian Federal State Statistics Service advances and develops SNA and GDP methodologies (Federal State, 2010¹; About GDP, 2018²). CIS Statistics Service works out further guidelines for the CIS zone (The Measurements, 2003³; The Survey, 2008⁴).

“Beyond GDP” Agenda is the concept which expanding approaches of studying of welfare of the population also considers not only economic factors, but also social, satisfaction with life, state of environment, health of the population and other.

The purpose of the article is to study peer-to-peer transactions of households via digital platforms of online taxi services under sharing economy. The research methodology is based on one hand on the key principles of SNA international standard and on the other – on some concepts of well-being and “Beyond GDP” Agenda.

2. Literature Review

Evaluation methods of shadow economy and informal employment amid economy digitalization are of special interest.

The study of “collaborative consumption” and “sharing economy” are based on the research of M. Felson and J. Spaeth (Felson, Spaeth, 1978), R. Botsman and R. Rogers (Botsman, Roger, 2010) and Zervas (Zervas *et al.*, 2014).

¹ Federal State Statistics Service. Rosstat methodologica l programs. Methodological development in statistical areas. Available at: http://www.gks.ru/bgd/free/meta_2010/Main.htm

² About GDP production in the second quarter 2018. Available at:

http://www.gks.ru/bgd/free/B09_03/lssWWW.exe/Stg/d01/175.htm

³ The Measurements of Non-Observed Economy. 2003. A guide, 296. Available at: http://www.gks.ru/free_doc/new_site/vvp/metod.htm

⁴ The Survey of Informal Activities Estimates as GDP component in the CIS. (2008). Available at: cisstat.com

J. Hamari (Hamari *et al.*, 2016) and S. Wallsten (2015) define collaborative consumption and “sharing economy” like creation of new competition across a number of industries, most notably hotels, through Airbnb, and taxis, through ride-sharing services like Uber, Lyft, and Sidecar.

The relevant learned treatises are thesis by O.D. Vorobieva and other authors (Vorobieva *et al.*, 2015) dealing with assessment of shadow employment in the Russian economy based on the method of labour balance.

The study of J. Hall and A. Krueger (2015) focuses on the preferences of the Uber platform in the context of labour force, official and informal employment.

Scientific papers written by the Russian scientist and expert J.N. Ivanov (Ivanov, 2017; Ivanov *et al.*, 2017) cover the problem of adopting the current SNA concept and macroeconomic indicators in Russia, their assessment in the era of globalization and digital economy.

A.E. Surinov (2018), S.N. Egorenko (2018) review digital analytical platform and key ways of digital economy measurement, on improving SNA methodology amid digital economy development in Russia.

Research by A.E. Kosarev (2016) deals with SNA methodology adjustment and impact of current economy development aspects on value added and GDP calculations, estimates of the scale of shadow sector as well as birth, growing role and scope of peer-to-peer transactions. Research of digitalization influence on well-being is of special importance herein.

The current periodical OECD publications such as “OECD Digital Economy Outlook 2015”⁵ define digitalization, its manifestations in terms of globalization.

According to D. Byrne (Byrne *et al.*, 2016) labor productivity is an evidence that the slowdown arises from growing mismeasurement of the gains from innovation in IT-related goods and services.

According to N. Ahmad (Ahmad *et al.*, 2016, 2017). in practice, the measurement framework used by national accountants at least partially covers the output of peer-to-peer activities. Estimating the size (and impact on growth) of these activities is of great importance. However even if the output of these services is reasonably captured in current estimates of GDP, at least for taxi-services.

The research of J. Stiglitz (F. Stiglitz *et al.* 2009, 2018) are devoted to development of “Beyond GDP” and well-being concepts under modern conditions. The papers of C. Exton and M. Shinwell (2018), F. Murtin (F. Murtin *et al.* 2015), Y. Algan (Y. Algan *et al.* 2016), S. Flech and C. Smith (2017) comprise statistical practice and analysis of some indicators in different countries.

OECD statistical data bases show variable time series of indicators in households activities, GDP, GVA, SDG required for calculation (OECD databases).

Companies’ web sites with regularly published reports are current companies’ activities database Yandex.Taxi (Yandex, 2018⁶).

3. Research Results

3.1 SNA and peer-to-peer transactions

To systemize arising problems in the current SNA methodology and value added sectoral accounting, it is required to define

⁵ OECD (2015a), OECD Digital Economy Outlook. 2015. OECD Publishing. Paris. Available at: <http://dx.doi.org/10.1787/9789264232440-en>

⁶ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

digitalized and sharing economies as crucial factors for intensive development of information-oriented society.

Most of distinctive features of sharing economy are common to informal economy transactions, i.e. deals between unincorporated enterprises. However, the aspect related to the role of intermediary services is of special importance. The crucial problem is whether the latest available statistics tools can capture intermediation fees charged by new digital agents incorporated at the territory of a certain country. ‘Therefore, in scope for traditional business surveys, the answer must be that their activity is likely to be as well captured in the accounts as other registered entities.’ (Ahmad *et al*, 2016).

The study of characteristics of on-line taxi aggregator’s activities in Russia come to the conclusion that it is important to conduct, first, accurate cash flow records of on-line taxi aggregators; second, estimates of growing number of shadow taxi drivers; third, assessment of their wages; and forth, assessment of their value added produced, at last, fifth, of their commission to online agents.

Slowdown and problems in productivity in developed countries are so obvious that revision of SNA methodology becomes extremely relevant ⁷.

According to OECD (OECD Prod.)⁸ annual weak labor productivity growth continues to mark all G7 countries. In the 21-st century over the recent 10-15 years G7 saw feeble labor productivity rate amounting to 0.5-1% by 2015’ (Byrne *et al.*, 2016; OECD Prod.). The downward trend has embraced Russia as well. Based on Federal State Statistics Service (Rosstat) report covering 2003-2016 an annual labor productivity fell to 99.7% in

⁷ OECD (2015a), OECD Digital Economy Outlook. 2015. OECD Publishing. Paris. Available at: <http://dx.doi.org/10.1787/9789264232440-en>

⁸ OECD Productivity Database. Available at: <http://www.oecd.org/sdd/productivity-stats/> OECD Statistics Database. Available at: <http://www.stats.oecd.org>

2016 from 107.0% in 2003 (in transport and communication sectors – from 107.2 to 99% respectively) ⁹.

Perhaps, mis-measurement in SNA methodology is expected to partly impact estimates showing productivity slowdown.

Digitalization has also impacted on the role of the consumer, with households increasingly engaging in intermediation services that blur the lines between pure consumption and participative production (Ahmad et al, 2016). Technology fast development as effect of digital economy progress results in new ways of intermediary, services and consumption, for example, digital platforms facilitating peer-to-peer transactions on consumer-to-consumer basis (Kosarev, 2016). In the meantime it aggressively expands scales of a number of occasionally self-employed and so on.

Pursuant to the above one aspect of digital economy and its expanding is peer-to-peer transactions (Kosarev, 2016) via corporate intermediaries.

Figure 1. Digital economy and peer-to-peer transactions

Household peer-to-peer transactions			
Transport and business services	Dwelling services	Distribution services	Financial intermediation services etc.

Source: compiled by the author.

Information of figure 1 presents: Peer-to-peer transactions include peer-to-peer rental dwelling services in Russia on CIAN, Ostrovok and other platforms; transport and business services - taxi providers (often informal) Yandex.Taxi, GETT and others. Of much importance are distribution services including the sale of second-hand and indeed new goods - Carprice, Avito and others.

⁹ About GDP production in the second quarter 2018. Available at: http://www.gks.ru/bgd/free/B09_03/IssWWW.exe/Stg/d01/175.htm

In some respect, a Russian alternative of the American platform is aggregator CONSTART. Over the recent years crowd-funding and peer-to-peer lending as new sources of alternative financing become more extensive.

GDP, at least theoretically, considers all these transactions being included in the value added, if they have been effected. All the countries practicing SNA methodology reckon household production account to estimate households' contribution to the country's value added and GDP. The output of the sector comprises market and non-market outputs.

The data in table 1 show indicators of household production account in SNA of several countries.

Table 1. Production account of households sector

	Unit	2010		2013		2016	
		Output	Value added	Output	Value added	Output	Value added
Germany	Bn Euro	786	507	830	546
France	Bn Euro	424	334	433	342	440	357
USA	Bn \$...	3704	...	3628	...	4013
Russia	Trln rubles	11.3 (2011)	7.9	13.9	9.5	15.4	10.7 (2015)

Source: <http://stats.oecd.org/>, *National Accounts*

Table 1 variables show that households value added of the countries' gross value added (GVA) in the USA totals 22%, in France – 16%, in Germany – 17%, in Russia – 14.3%.

Rise in peer-to-peer services is driven by opportunities given by on-line agents. More often they use PS and smart phones with

mobile appliances for web search, e-mail and social networks coupled with on-line banking, on-line shopping, job hunting, taxi aggregators.¹⁰

The unique feature of sharing economy is the influence of intermediaries while interaction between informal service suppliers (as a rule, self-employed) and households (consumers) participating in a host of transportation, business and other services.

Russian sharing economy has an international character. Households interact in peer-to-peer transportation (taxi) on-line services as follows:



Households, consumers as well as taxi service providers are integrated on on-line aggregator platforms. Service providers, in this case, are both formal and informal drivers using their own vehicles along with rented ones. Formal taxi drivers operate officially therefore their output, value added and income are subject to direct statistical recording and facilitate GDP measurement¹¹; ¹². The output, value added of peer-to-peer taxi services, revenues of informal taxi drivers (self-employed) and their number are a part of informal economy. Informal taxi drivers' value added, aggregator fees and their cash flows are of concern from a variety of angles: first, in respect of SNA

¹⁰ OECD (2015a), OECD Digital Economy Outlook. 2015. OECD Publishing. Paris. Available at: <http://dx.doi.org/10.1787/9789264232440-en>

¹¹ The Measurements of Non-Observed Economy. 2003. A guide, 296. Available at: http://www.gks.ru/free_doc/new_site/vvp/metod.htm

¹² Recommendations on improving measurement of non-observed economy. 2000. 28. Available at: <http://www.cisstat.com/>

methodology improvement; second, investigating informal household activities and third, estimating this part of informal economy and including it in SNA for GDP measurement.

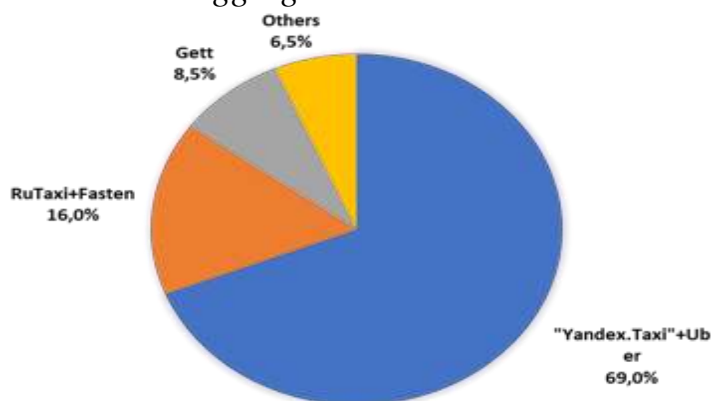
The estimates of the number of informal taxi drivers rendering services on the labour force balance basis (Vorobjeva *et al.*, 2018) are of special interest.

3.2 Yandex.Taxi

The growth rate of the Russian on-line taxi aggregator market is highly brisk. CS forecast published in RBC in 2017¹³ claims market capacity will increase more than eightfold by 2022 and exceed 1 trln rubles .

Through the lens of market structure (fig. 2), the taxi aggregator leader is Yandex.Taxi. This is a Russian multinational company incorporated in the Netherlands and owning a homonymous automatic web search system, web sites and services in several countries. Its market foot print is the most perceptible in Russia, Turkey, Republic of Belarus, Latvia and Kazakhstan.

Figure 2. On-line aggregators on the Russian market in 2017 (%)



Source: Credit Swiss forecast, RBC 2017.

https://www.rbc.ru/technology_and_media/27/07/2017/597894089a7947dc52200cel

¹³ Credit Swiss forecast, RBC 2017.

https://www.rbc.ru/technology_and_media/27/07/2017/597894089a7947dc52200cel

Yandex.ru, a web search system, takes the fourth position in the rating of the global search systems by amount of web search queries (over 6.3 bn a month as at the beginning of 2014) (Sokolov-, 2014). According to Alexa.com,¹⁴ ranking yandex.ru secures the 23-rd placing in the global rating and 2nd – in Russia as at 12 June 2018 (About GDP, 2018¹⁵). It accounted for 51 m users by May 2018. After being restructured in 2007, Yandex has become a subsidiary of the Dutch parent company Yandex N.V., with capitalization of the affiliated firm working out at \$ 10.73 bn (Nasdaq)¹⁶.

The share of online taxi on taxi market of Russia in 2017 was about 15%.

Table 2. Revenue of Yandex.Taxi

	2016			2017			2018		
	M rub.	Annual growth rate (%)	Structure (%)	M rub.	Annual growth rate (%)	Structure (%)	M rub.	Growth rate (%)	Structure (%)
Total Yandex.ru Revenue:	75926	27	100	94054	24	100	127657	36	100
-Taxi services	2313	135	3	4891	111	5.2	19213	293	15.1

Source: <https://smart-lab.ru/q/YNDX/f/y/>, <https://yandex.ru/company/prospectus>. Company's report.

¹⁴ Alexa website. Available at: <http://www.alexa.com/siteinfo/yandex.ru>

¹⁵ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

¹⁶ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

In line with official financial accounting of the company (table 2 – indicators of 2016 annually compared to those of 2015) revenues of Yandex surged by 36% in 2018 upward to 2017 and exceeded 127 bn rubles. Rising relative share of on-line taxi services in the revenue of the company hit 5.2 % in 2017 compared to 3% in 2016. The indicator soared to 15.1% for 2018¹⁷.

Yandex.Taxi dominates in online taxi services and accounts for about 70 % of the on-line segment. The total amount of the trips through Yandex.Taxi worked out at 335 m from the service launch in 2011 to September 2018. In Moscow daily taxi trips amounts to 760.000 as of November 2018. One car drives about 10-15 trips a day, so about 70.000-76.000 taxis were online.

The service Yandex.Taxi showed the briskest growth in 2017 (including courier food service Foodfox, acquired by Yandex in December 2017). The service is available in 150 cities in 6 countries (Georgia, Belarus, Kazakhstan, Moldova and Armenia besides Russia) compared to December 2016 when Yandex.Taxi operated just in 49 big cities. At that time Yandex published their number of trips for a month – at the rate of 16.2 m - that 5.6 times as much as in December 2015¹⁸. At present, 280.000 drivers are in-lined to the service.

Two largest market players on the taxi market - Yandex and Uber - in the middle of 2017 signed a merger agreement on on-line taxi requests in the territories of Russia, Azerbaijan, Armenia, Belarus, Georgia and Kazakhstan for the new merged company. The participants in aggregate provide over 35 m trips a month. Both software apps practised by Yandex.Taxi and Uber are available for users. Milestone in global development trends of transport

¹⁷ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

¹⁸ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

services market was a carsharing service rolled out by Yandex in February 2018¹⁹.

In general, informal taxi services account for about 20% of the share of online segment amounting to 13-17% of the total market of car services. In 2015 a share of the transport services in the level of value added in informal sector in Russia totaled 21%, in Georgia, Kazakhstan, Tajikistan – 20, 35, and 40% respectively as per CIS STAT records²⁰.

Thus, contribution of informal online taxi services to household value added in Russia is of great interest while conducting peer-to-peer transactions. However, it is imperative to understand how effective available accounting methods are at present for accurate measurement of these small-scale transactions for inconsiderable amounts (basically already included in national accounts for GDP measurements).

For the SNA methodology and GDP measurement, it is extremely relevant to identify the goods designed for transport services, for example, taxis. But in this case, it is essential to distinguish between durable consumer goods and gross fixed investments.

3.3 “Beyond GDP” and peer-to-peer transactions



Peer-to-peer transactions via online taxi aggregators can be studied also on the basis of concepts of well-being. Peer-to-peer

¹⁹ Yandex Official Reports. Available at <https://yandex.ru/company/prospectus>, <https://smart-lab.ru/q/YNDX/f/y/>

²⁰ The Survey of Informal Activities Estimates as GDP component in the CIS. (2008). Available at: cisstat.com

transactions of households have an impact on their well-being. Quality of life is one of key indicators in the Beyond GDP Agenda. Level of Environment quality indicators (SDG -3,11) depend much on the air quality especially in the cities. The growing number of the taxi cars in Moscow and Russia promote increase in concentration in air of exhaust gases of cars, body height of traffic jams.

According to the Copernicus Atmosphere Monitoring Service copernicus air quality index CAQI in Moscow is 4 comparing with 1-2 (5 max) in main capital cities of Europe in August 2019²¹. International standards of Emissions of harmful substances with the exhaust gases are not observed by all producers in Russia. Quality of gasoline is not high and often does not fit the engines of Euro - 4,5 standards.

Taxi drivers, taxi passengers and residents of the cities and megalopolises suffer. Therefore taxi aggregators promote deterioration of the Environment quality and well-being of the Russia population. It affects one more Beyond GDP indicator - Health status, which also worsens.

Life satisfaction is another Beyond GDP Agenda indicator. We have found out several factors which make impact on it. Households taxi passengers and taxi drivers benefit much from free use of Apps as the access to Apps is easy and rather cheap. The call of taxi via App is free. Tariffs for online taxi are low. Taxi passengers feel more comfortable during a trip in comparison with metro, bus, tram and other city transport.

Therefore the peer-to-peer transactions of households via online taxi aggregators promote to increase of Life satisfaction.

4. Conclusions and Further Research Areas

²¹ <https://ru.euronews.com/weather/copernicus-air-quality-index>

Slowdown in productivity is noticeable amid dramatic technological changes. This tends to be in Russia as well. Digitalization is not the only factor to be blamed for the tendency.

SNA methodology is suitable for mainstreaming digital economy, output, household value added and GDP in the current context. However, practical issues of price fluctuations measurement and recording transborder transactions remain unresolved.

The essential problem in improving SNA methodology concerns measurement accuracy of small-scaled peer-to-peer transactions involving inconsiderable sums of money and role of households as producers. In particular, relevance of the current SNA methods in accounting value added generated by households whenever possible especially in transportation services on-line aggregators.

In Russia, the number of peer-to-peer transactions is growing as well as online aggregators market is expanding along with taxi services. First, it results in rise in shadow and informal employment of taxi drivers. Second, upon receipt of online requests, example, from Yandex.Taxi some part of them remains informal that results in underestimated revenues of transportation services. Third, online aggregators charge a commission from taxi drivers on requests. Service fees from taxi drivers for the orders sent to them, online intermediary cash flows are partly concealed from tax and, more important, from statistics accounting for framework to adjust macroeconomic indicators in SNA. Shadow and informal employment keeps growing.

The authors suggest carrying out a special survey to assess how shadow and informal employment contributes to the online taxi services. Development of special questionnaires and carrying out the sampling will promote the solution of this problem. The data selected will allow identifying the scope of shadow and informal

activities and their impact on household value added on the Russian market.

Research of well-being of the population of Russia within the Sustainable development goals Agenda and Beyond GDP Agenda is very relevant. In the framework of the programs which are carried out by Rosstat and Russian Government Analytical Centre collection of information for influence identification of online tax on indicators of well-being of the population is represented very significant.

In future, the methodologies may be applied in EEU and CIS countries.

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