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DESKTOP STUDY OF THE EFFECTS OF MOBILE NUMBER PORTABILITY ON MOBILE OPERATORS IN GEORGIA AND BELARUS

This article presents findings of the desktop research on the impact of MNP on mobile operators in Georgia and Belarus, which were the first among former Soviet republics to introduce the service. It examines the behaviour of a set of available company-level indicators during timeframes before and after the MNP launch and was part of a larger research project on MNP effects in the two mentioned countries.

Keywords: mobile number portability, Georgia, Belarus, mobile operators, telecommunications, market competition.

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ТЕОРЕТИЧНЕ ДОСЛІДЖЕННЯ ВПЛИВУ ВПРОВАДЖЕННЯ ПОСЛУГ ПЕРЕНОСУ НОМЕРУ НА ОПЕРАТОРІВ МОБІЛЬНОГО ЗВ'ЯЗКУ В ГРУЗІЇ ТА БІЛОРУСІ

Як засіб для стимулювання ринкової конкуренції і забезпечення абонентської мобільності без зміни телефонного номеру, впровадження послуги переносу номеру мобільного зв'язку зазвичай перешкоджається зі сторони домінуючих операторів, проте активно лобіюється новими учасниками ринку. Останні покладаються на неї з метою досягнення необхідної кількості абонентів і об'єму прибутку для забезпечення довгострокової діяльності. Як наслідок, прогнозуються зміни існуючої структури ринку в результаті зменшення долі домінуючого оператора, а також інших впливів на показники функціонування операторів мобільного зв'язку.

В статті представлені результати дослідження впливу послуг переносу номеру на операторів мобільного зв'язку Грузії та Білорусі, першими з пострадянських республік впровадивши послугу. Будучи частиною більш широкого дослідження впливу послуг переносу номера мобільного зв'язку, ця публікація розглядає поведінку певного ряду показників операторів мобільного зв'язку в періоди до і після впровадження послуги. Відзначається, що існування послуги само по собі не зробило суттєвого впливу на окремих учасників ринку і на загальну динаміку сегменту мобільного зв'язку. Як висновок показано, що впровадження послуги переносу номеру мобільного зв'язку сприяло більш активній ринковій конкуренції і абонентській мобільності. Однак, з плином часу зміни в показниках діяльності мобільних операторів проходили паралельно з іншими важливими процесами: впровадження мереж четвертого покоління (4G), значне розширення мереженого сегменту покриття і спектру запропонованих послуг, масова доступність мобільного зв'язку і т.п. Все це спричинило індивідуальні та комплексні впливи на функціонування ринку і поведінку кінцевого користувача.

Ключові слова: перенос номеру мобільного зв'язку, Грузія, Білорусь, оператори мобільного зв'язку, телекомунікації, ринкова конкуренція.

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ТЕОРЕТИЧЕСКОЕ ИССЛЕДОВАНИЕ ВЛИЯНИЯ ВНЕДРЕНИЯ УСЛУГ ПЕРЕНОСА НОМЕРА НА ОПЕРАТОРОВ СОТОВОЙ СВЯЗИ В ГРУЗИИ И БЕЛАРУСИ

В статье представлены результаты исследования влияния услуг переноса номера на мобильных операторов в Грузии и Беларуси, которые первыми среди бывших советских республик внедрили эту услугу. Будучи частью более широкого исследования влияния услуг переноса номера, эта публикация рассматривает поведение ряда показателей операторов мобильной связи в периоды до и после внедрения услуги.

Ключевые слова: перенос номера мобильной связи, Грузия, Беларусь, операторы мобильной связи, телекоммуникации, рыночная конкуренция.

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1. Introduction

Mobile number portability (MNP) allows mobile users to change their service providers without altering phone numbers. It is a policy-making tool aimed at promoting active market competition and ensuring enhanced subscriber mobility. As such, it has become one of the most widely applied regulatory policies in mobile communications markets worldwide, already being implemented in about 70 countries since it was first introduced in 1997.

Number portability has been viewed particularly important by the European Union, which mandated all member states to implement the option in 2003. The European law treats it a human right under the EU Universal Service Directive and defines as “a key facilitator of consumer choice and effective competition in a competitive telecommunications environment” [1]. Contrary to the EU and other parts of the developed world, developing nations, including those from the former Soviet Union, have been lagging behind with their MNP acceptance. According to the GSMA Intelligence research, only 25% of developing markets have so far implemented MNP [2]. Specifically, Georgia and Belarus were the first states in the post-Soviet region to launch MNP in 2011 and 2012 respectively.

After over 20 years of global existence of number portability, it has largely been considered a success story, benefitting all relevant stakeholder groups such as end users, mobile operators and regulatory or policy-making authorities in charge of the telecommunications sector. For instance, MNP may represent a strong driving force for mobile carriers to differentiate their service offerings, expand network coverage areas and undertake other relevant actions for the purpose of preventing customer churn. Many established operators view number portability as a financial and implementation burden, ending up in increased competition, lower prices and hence moderate profit margins. For that reason, the service introduction is normally opposed by incumbent operators but is rather actively advocated for by new market entrants. The latter rely on it as a means of gaining a critical subscriber and revenue base to sustain longer-term operations. Number portability is thus expected to take market concentration away from incumbents and to re-distribute market shares more evenly among all existing players.

With the possibility to easily change carriers, subscriber churn turns into a significant challenge for market entities. As a consequence, they may engage in tough price competition as a tactical move to retain existing customers and attract new ones, but cannot afford keeping up with it endlessly under the pressure of maintaining reasonable profit margins. Therefore, operators become more focused on creating additional value for subscribers rather than continuing price wars with rivals. As such, they tend to initiate loyalty programs, improve customer service, extend network coverage and roll out new offers.

As with any other service, the demand for MNP is directly correlated with its high usage rates. Policy makers around the world heavily rely on porting statistics as a measure of success of the MNP implementations. The annual data on ported numbers are defined as an indicator by International Telecommunication Union (ITU) and are regularly collected for the latter's World Telecommunication/ ICT Indicators database [3]. It is regarded as a noteworthy benchmark also by the European Commission, which includes number portability statistics in its Digital Progress Report, as a dedicated section of telecom country profiles for each of the EU member states [4].

When it comes to porting statistics for Georgia and Belarus, the former had reached more than 107 thousand number portings in just one year since the service launch. In contrast, the number of ported mobile subscribers in Belarus in the first 4 months after the MNP introduction amounted to some 2,000 people, constituting only 0.019% of the country's total subscriber base of 10.7 million.

The question may arise here: do these figures indicate that the MNP implementation was successful in Georgia but rather unsuccessful in Belarus? Absolutely not, as the number of portings alone is an insufficiently adequate criterion to assess the impact of MNP. It is merely a simple reference for policy makers to quantify the demand for MNP, which should be accounted for throughout the entire period since the service introduction and not at a single point in time, together with some other quantitative as well as qualitative aspects.

A more holistic insight into the effects of MNP would imply the application of a multi-stakeholder impact analysis, taking account of all relevant stakeholder categories such as final consumers, regulatory and/or policy-making bodies, and mobile operators. This was the approach followed in the study of MNP implementations in Georgia and Belarus, carried out during 2014-2017

within the framework of the author's doctoral program. With already several years in place in those countries, the MNP service has accumulated some track record to research for. By then, there seemed to be no other publicly available, comprehensive ex post research in this direction.

The given article shares findings of the desktop study of MNP effects on the performance of mobile operators in both of the above countries. It has looked into a number of available operational and financial indicators, such as market shares, revenues, mobile service prices, etc. In particular, changes over time in those variables were traced for certain periods prior to and after the MNP launch, in an attempt to arrive at meaningful conclusions. The analysis of MNP effects on other stakeholder groups, i.e., mobile users and regulatory/ policy-making authorities, is not included in the present publication.

2. Brief overview of telecommunications markets

2.1. Georgia. As a result of the market liberalisation process started in 1996, the existing monopolies on international calls and internet services were removed by 1998 [5]. Silknet, the traditional incumbent fixed-line operator known as United Telecom, was privatised in 2005. The company operates a nationwide fixed network and provides services in a highly competitive market, competing with over 50 other suppliers offering voice, internet and broadband services. Alternative internet providers offer their services either over their own networks or through renting capacity from more established network operators, such as Silknet and Caucasus Online. Georgia is connected internationally via fibre optic cables through Armenia, Azerbaijan, Turkey and Russia. Caucasus Online's own international fibre optic backbone infrastructure connects Georgia with Bulgaria.

Telecommunications is one of the fastest growing industries of the Georgian economy, with a significant share in the country's GDP and a mobile segment of the market particularly booming. Under conditions of degrading fixed-line networks, specifically in rural and remote areas of the country, mobile telephony with its extensive coverage has gained critical importance, sometimes representing the only means of communication.

The provision of mobile services started in 1995, when MagtiCom became the first licensed mobile operator. The second licence was issued to Geocell in 1996. The third mobile operator Mobitel entered the market only in 2007. The third operator's late market entry was conditioned by the fact that the first two mobile operators were initially awarded most of the available frequency spectrum, leaving a smaller share to Mobitel when it was licensed 10 years later.

Because of the spectrum imbalance and under-utilisation of available spectrum by MagtiCom and Geocell, the mobile market had suffered from the lack of full competition. To help with fostering better competitive environment, the MNP service was introduced in early 2011, resulting in over 100,000 ported numbers by the end of the same year.

The Georgian National Communications Commission (GNCC) is an independent regulatory body responsible for telecommunications, internet and broadcasting markets. Established in 2000, the regulatory authority has been successful in carrying out ex ante regulation, particularly as it relates to market analysis, designation of significant market power in relevant markets, and implementation of competitive market remedies. In addition, the Ministry of Economy and Sustainable Development of Georgia is a policy-making body in charge of legislative development for the telecommunications field.

2.2. Belarus. The telecommunications sector in Belarus has been liberalised partially, with further progress still to be achieved to ensure full market competition. Apart from the incumbent fixed operator Beltelecom, there are some alternative service providers with their own networks. Nevertheless, entry to certain market segments is restricted as Beltelecom is in a monopoly position for call transit on most profitable fixed markets. Besides, all interconnections between alternative operators (including mobile ones) have to be made through Beltelecom.

In spite of such circumstances of limited competition, the government of Belarus attaches high priority to the expansion and modernisation of the telecommunications infrastructure. As one of the former ministers of Communications and Informatisation, Mr. Nikolai Pantelei, mentioned in an interview, "we aim for the top 30 countries in the development of information and communication technologies" [6].

The state still possesses significant ownership in telecommunications operators, with 100% control of the incumbent Beltelecom. In turn, the latter owns 51% of Mobile TeleSystems mobile operator (the remaining 49% is owned by the Russian MTS company). The state also owns 20% of the mobile operator BeST, with the remaining 80% stake belonging to Turkcell. The third mobile operator velcom is owned by Mobilkom Austria.

The first mobile license was granted in 1992. MTS has the largest market share by subscribers, followed by velcom and BeST. To allow for increased subscriber mobility, MNP was put in place in early 2012. The number of mobile customers that ported their networks in the first 4 months after the introduction of MNP amounted to some 2,000 people, which constituted only 0.019% of the country's total subscriber base of 10.7 million.

The Ministry of Communications and Informatisation (MCI) of the Republic of Belarus is responsible for policy and regulation in the telecommunications sector. In November 2011, a presidential decree announced that the Operational and Analytical Centre (OAC) would become an independent regulator for the sector, with competences partly transferred from the MCI. The OAC previously intervened in the internet services market, exercising control over e-commerce, hosting services and internet service providers.

As another policy-making body, the Ministry of Economy has responsibilities for the development of competition. In case of market disputes, telecommunications entities can appeal to either the MCI or the Ministry of Economy.

3. Research novelty and applied methodology

There has been no comprehensive, ex post research previously conducted on MNP effects in Georgia and Belarus, at least among publicly available sources. The choice of these countries was conditioned by the fact that they were the first from the former Soviet Union republics to introduce MNP (Latvia, Lithuania and Estonia were actually earlier with their MNP implementations, but they joined the European Union and so number portability became a legal requirement for them).

On the methodology side, formerly carried out MNP research either looked into mobile operator-level panel data or surveys at an end-user level, or rarely utilised a combination of both methods. The larger research project within the framework of the author's doctoral studies appears to be unique in a sense that it gathered and analyzed views and considerations of all key stakeholder groups, namely mobile operators, end users and national regulatory and/or policy-making authorities for the telecommunications field (data analysis on the last two categories is outside the scope of this publication). This multi-stakeholder approach was expected to provide a broader picture of perceptions on MNP effects in the studied countries.

From the academic point of view, research fellows may find it relevant to apply a similar multi-stakeholder data gathering and analysis framework in their studies of MNP effects in other countries. In fact, it might not necessarily be telecoms-related research but could be applicable to any field alike, e.g., utility sectors like energy, water supply, transport, etc. Besides, this study may serve as a theoretical background and reference point for further research on the same topic and countries, thus contributing to the subsequent academic discussion and development of theory.

In terms of practical application, it is believed that the present research findings might be useful for other nations from the post-Soviet space and beyond that are still in the process of taking a decision regarding the necessity of MNP. Adopting best practices and learning from mistakes of those countries that have already pioneered MNP would possibly make the others' implementation path easier.

The performed research was aimed to find out:

1) What the perceptions of key stakeholder groups (i.e., final consumers, mobile operators and telecoms sector regulators/ policy makers) were about the MNP service effectiveness and whether it was successful in meeting its intended objectives.

2) Whether the revealed stakeholder perceptions were supported by certain quantitative indicators on MNP effects such as the reduction in retail mobile prices, change in operator market shares and so forth, which is the focus of the given paper.

Thus, the central research question was formulated as to whether MNP implementations have had any remarkable effect on the telecommunications markets of Georgia and Belarus. It was then narrowed down to specific subsets of questions for each of the targeted stakeholder groups.

In addition to data collection tools (questionnaires) for different stakeholder groups, a separate data request sheet was designed for mobile operators. It was intended to ask for certain statistical information to subsequently analyze if MNP has had any impact on a number of variables, such as the companies' market shares, revenues from mobile services, average per-minute charges for on-net and off-net calls, etc. Like all other data gathering instruments, the data request sheet was first drafted in English and then translated into Russian, as this language is quite commonly used in both of the studied countries, especially in Belarus.

4. Data gathering and analysis process

The data request sheet was presented to mobile operators at structured, face-to-face or remote interviews held during June-July 2015. The interviewed mobile carriers in Georgia and Belarus were as follows:

<i>Georgia</i>	<i>Belarus</i>
1. MagtiCom (first market entrant)	1. BeST (latest market entrant)
2. Geocell (second market entrant)	2. Velcom (earlier market entrant)
3. Mobitel (latest market entrant)	

The remaining third mobile operator from Belarus, MTS, did not respond to several email requests to participate in the survey, in spite of the fact that the MCI asked them to do so and at first the company replied positively to the ministry's mediation.

Eventually, none of the respondent mobile operators from both countries agreed to fill in the data request sheet, refusing to do so on the grounds that the requested information was of a confidential nature. The Georgian mobile operators claimed that they periodically submit some of the required data to the GNCC, which are accessible on the latter's website. However, these were rather limited in scope, compared to what was asked for in the data request sheet.

The desktop study was then initiated to locate and process the available statistics related to a defined set of financial and operational indicators. Ideally, to track MNP effects on the company performance before and after the service adoption, historical data since the MNP launch up to the time of research were sought for, together with statistics for the same number of months prior to its introduction (on either a monthly or quarterly basis).

For Georgia, some data pieces were found on the analytical portal of the GNCC's website [7]. For Belarus, there was no such a unified public source and so the analysis was further complicated. The next section summarises outputs of the desktop study performed with scarce resources. It should be noted in advance that the lack of consistent corporate-level data made it difficult to deeply analyse the impact of MNP on the performance of individual companies in particular and of the larger mobile telephony market in general.

5. Analysis of the mobile operator data

5.1. Georgia. The chart below (Fig. 1) shows the dynamics of mobile number portings since January 2013 till October 2016. During this forty-six month period, more than 460,000 mobile phone numbers have been ported (over 10,000 monthly portings on average). As it can be seen from the chart, there were several peaks in the MNP uptake (around March of each year), while the remaining periods were relatively flat with an average of around 5,000 portings per month.

The peaks can be explained by several state-held tenders for the provision of mobile services to the government employees, as it was revealed during face-to-face interviews with mobile operators (summarised in a different publication). This resulted in considerable subscriber movements towards the winning service provider. It would thus be interesting to explore if those peaks had any influence on the mobile operators' performance, e.g., in terms of their market shares, revenues, average revenue per user (ARPU), etc.

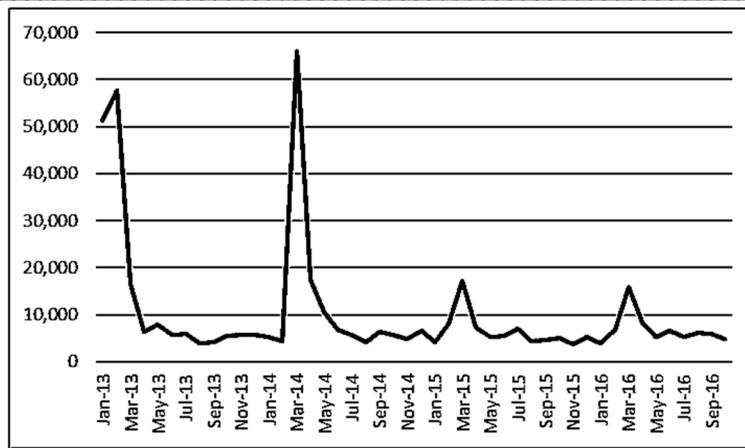


Fig. 1: Mobile number portings in Georgia (January 2013 – October 2016)

The next chart (Fig. 2) depicts market shares by subscribers of the three mobile network operators (MNOs) in Georgia (MagtiCom, Geocell and Mobitel) over the same timeframe of January 2013 – October 2016. It should be noted that the regulator’s analytical portal also contains data on a couple of other market players, which are not MNOs but MVNOs, i.e., mobile communications service providers that do not have their own network infrastructure but rather enter into a commercial agreement with MNOs to obtain bulk access to network services at wholesale prices. Their market shares are negligible and so those are omitted for the purpose of this analysis.

The below graphical lines on Fig. 2 are more or less flat, with the number of subscribers of the first and latest market entrants (MagtiCom and Mobitel respectively) slightly rising and the market share of the second licensee (Geocell) declining over time from their January 2013 levels.

The noteworthy observation here is that in February 2013 Geocell and MagtiCom exchanged places as per subscriber market shares, the latter becoming the first from then onwards. This coincided with the timing of one of the MNP uptake peaks from the previous chart, but it is still not enough to declare that the market structure change was a sole outcome of MNP. Apart from the new user additions, there had also been other customer exchanges among mobile carriers due to MNP but not to the extent to seriously affect their subscriber base.

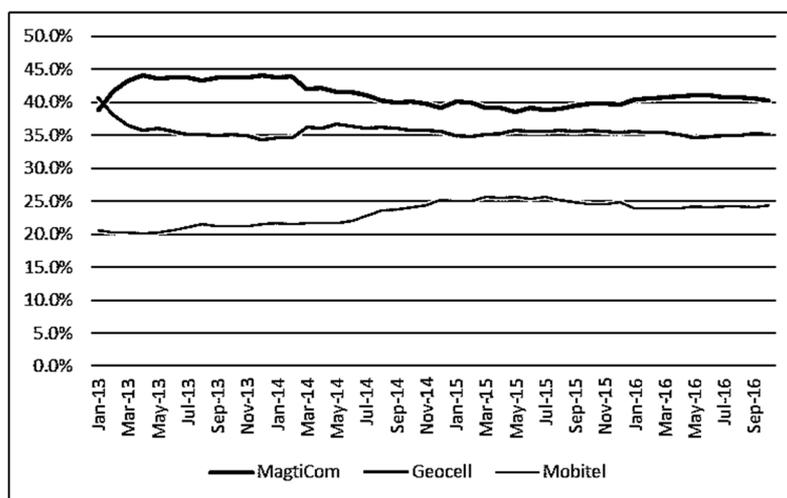


Fig. 2: Mobile operators’ market shares in Georgia (by subscribers, January 2013 – October 2016)

The market shares by revenues, as presented on the following chart (Fig. 3), are almost consistent with those by subscribers. However, revenues of only the current market leader (MagtiCom) have increased over time, as compared with their January 2013 level. This is not something to be attributed to the effects of MNP; the major upward trend in revenues started in the first half of 2015, when in fact the company’s subscriber base was on decline. That is likely to coincide with the introduction of new innovative services by the company, specifically the launch of 4G services in February 2015.

Also, in line with the earlier observation above, in February 2013 MagtiCom outperformed Geocell by revenues, which might partly be the result of the significant number of ported-in customers.

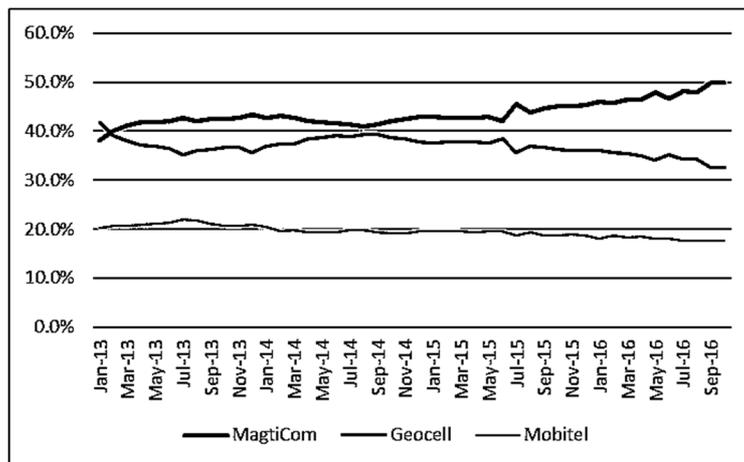


Fig. 3: Mobile operators' market shares in Georgia (by revenues, January 2013 – October 2016)

There have been ups and downs in ARPU levels of the three mobile operators, as it is shown in Fig. 4 below. In general, the present worldwide trend is that the average revenue per mobile customer is gradually decreasing and MNP has only an indirect impact in this regard. The service availability stimulates market competition, which in turn drives the mobile service prices down.

However, similar effect might be observed in the markets with several competing mobile operators and no MNP. Therefore, the ARPU decline shall not be explained solely by the existence of MNP. Interestingly, the three lines seem to have comparable shapes, with coinciding ups and downs at particular points in time. The underlying reasons for this commonality would require deeper research at market and company levels.

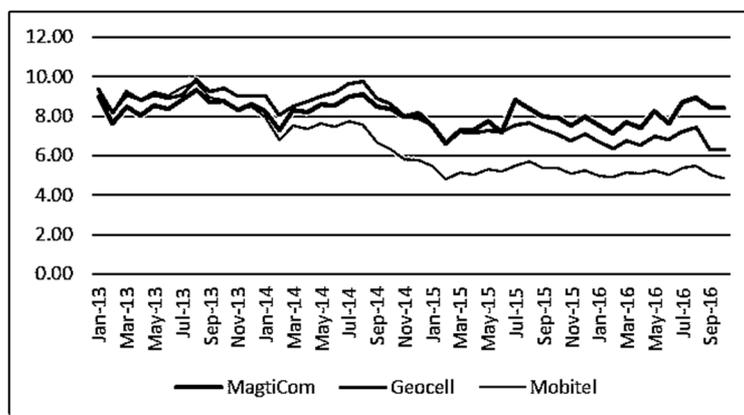


Fig. 4: Mobile operators' ARPU in Georgia (January 2013 – October 2016)

For the measure of an average per-minute price for outgoing voice calls, the mobile operators' monthly revenues from outgoing voice service were divided by the total number of minutes of outgoing voice traffic consumed in a particular month. As graphically depicted below (Fig. 5), in January 2013 the latest market entrant Mobitel seemed to have the highest per-minute price among the three mobile operators, but its tariffs have dropped heavily over time to become the lowest in October 2016.

Similar to the above ARPU case, average voice call charges have seen ups and downs along the available data period. Again, the ultimate downward trend in mobile service prices is observed globally, especially with the widespread use of so-called 'over-the-top' (OTT) applications like Skype, Viber, WhatsApp, etc. This is also the result of more intensive market competition among service providers, where MNP has made its distinct contribution; out of fear of losing customers to a

rival, mobile companies often decide to decrease their tariffs as a means of retaining existing subscribers and attracting new ones.

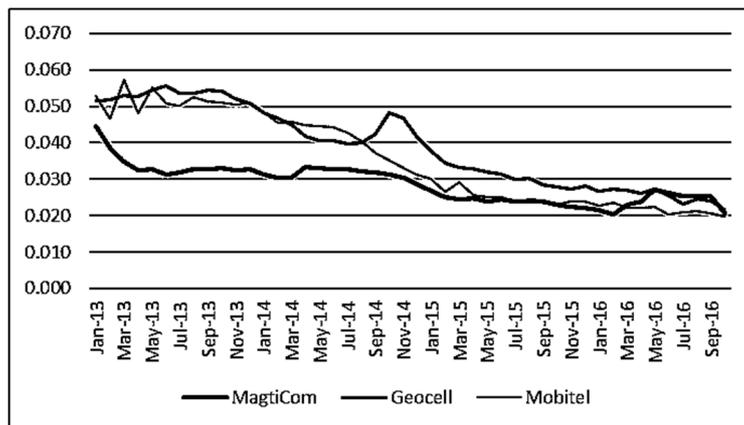


Fig. 5: Mobile operators' voice call charges in Georgia (average per-minute prices for outgoing connections, January 2013 – October 2016)

It should be noted that the data on the GNCC's website do not differentiate between on-net and off-net call prices, so it was not feasible to analyse how these two separate types of mobile voice traffic charges have changed.

Unfortunately, the years of 2011-2012 were missing from the time series in the regulator's database, so that to look into the first two years of MNP in place. Nevertheless, the above analysis of available company-level data for Georgia led to the conclusion that the MNP introduction alone has not resulted in a considerable impact on the mobile carriers' operations and financial indicators, such as revenue, ARPU and price levels.

By itself, the existence of the MNP service has contributed to more active market competition and subscriber mobility. However, detected changes over time have occurred alongside other important developments with a direct effect on the companies' performance, e.g., launch of new service offerings, network expansion, etc.

While the MNP uptake has typically been moderate, the number of portings rose significantly at specific occasions, i.e., immediately after the service implementation and during times of government tenders. Therefore, MNP has had a scattered and limited indirect effect on individual service providers and the broader mobile communications market in Georgia.

5.2. Belarus. The websites of all mobile operators in Belarus were studied in an attempt to find relevant information for the analysis [8, 9, 10]. The available company-level data were fairly limited and inconsistent, extracted mainly from the news releases. The quarterly revenue, ARPU and subscriber figures were located for the two biggest market players, MTS and velcom, covering 17 consecutive quarters within the period of 1Q2010 – 1Q2014 (as a reminder, MNP in Belarus was launched in February 2012, i.e., exactly in the middle of the above time series).

The country witnessed unprecedented hyperinflation throughout that period and so to partially account for its effects, the financial data were presented in both local and foreign currencies. To make it comparable in the analysis, all revenue and ARPU figures were converted into a single currency, using historical data on the official average currency exchange rates provided on the website of the National Bank of the Republic of Belarus [11].

As for the smallest market player BeST (brand life:)), very rare statistics on its financial and operational performance were published on the company's website. Instead, these were aggregated in the reports of its parent group, Turkcell, together with the data on other similar international subsidiaries. While revenue figures were spotted in quarterly financial reports, it seems that the number of subscribers data were not disclosed on a quarterly but annual basis and the ARPU data were not found for BeST at all. Therefore, the main comparison will be between MTS and velcom,

when it comes to analysing the impact of MNP on performance indicators of the Belarusian mobile operators.

The below graph (Fig. 6) displays change over time in the subscriber base of MTS and velcom. It was steadily growing for both companies along the entire period, whereas BeST reported to have 1.5m customers in the end of 2010, increasing to 1.8m in 2011 and then declining to 1.2m at year-end 2013.

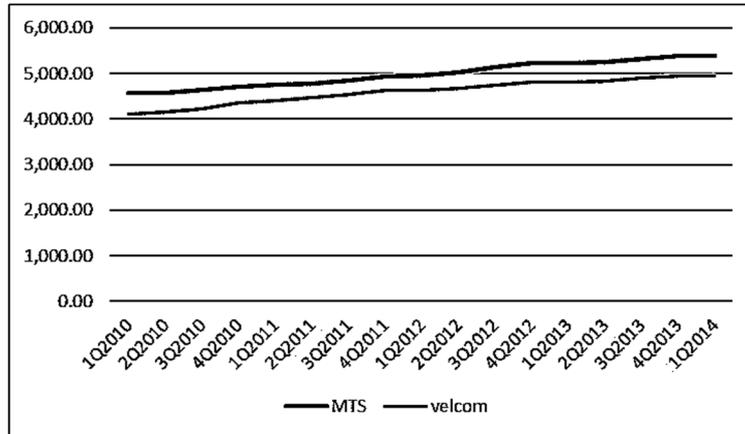


Fig. 6: Number of subscribers of the two biggest mobile operators in Belarus (in '000, 1Q2010 – 1Q2014)

It could be assumed that the smallest mobile operator lost some of its subscribers to bigger competitors due to MNP; the number of churned customers was nearly comparable to what other market players had gained during the same timeframe of the first two years since the service launch. This was not a good news for the latest entrant, as it could have benefitted the most in accordance with the international MNP experience. Moreover, the company was actively lobbying for the service, which was basically introduced in response to its pre-condition for proceeding with investments as per the licence.

In the meantime, MTS and velcom did not refer to MNP as a stimulating factor for the enlargement of their subscriber base but rather explained it by the wise pricing policy and the availability of a plenty of attractive service propositions, as well as by sustainably high quality of services and continued consumer trust.

The next chart (Fig. 7) shows fluctuations in revenues of the three mobile operators. This is somewhat a subjective measure of performance in the existence of incredibly high inflation exceeding 100%, because of which the country was considered a hyperinflationary economy during the period in question.

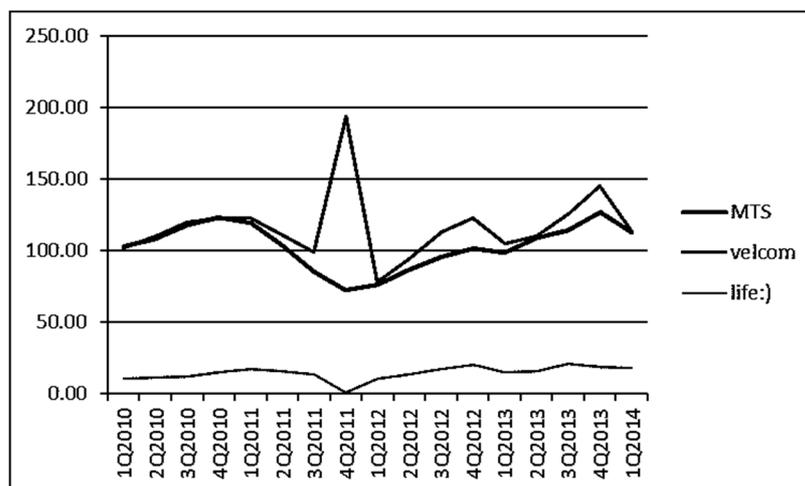


Fig. 7: Mobile operators' revenues in Belarus (in million US\$, 1Q2010 – 1Q2014)

Although mitigated by applying appropriate accounting standards, it still resulted in several sharp ups and downs in the companies' revenues. In particular, for the fourth quarter of 2011 velcom reported a drastic increase in revenues, whereas MTS and BeST ended up at a low level of business activity. It should be noted that while being the second market player by subscribers, velcom was the leader by revenues.

An interesting observation is that during four quarters of the MNP launch year (2012) all mobile carriers were disclosing rising revenues, even BeST that was losing quite a significant number of customers in the same time period. The latter fact, as well as a couple of intermittent peaks and downturns on the below chart seem to be irrational and rather attributed to the effects of hyperinflation. Therefore, an attempt to ascertain the impact of MNP on the service providers' revenues could have a misleading outcome.

The same is with the ARPU on Fig. 8 as it does not tell much due to the embedded inflation component, together with the limited data availability; ARPU figures were found for the two biggest market players only, covering the entire analysis period for MTS and far shorter timeframe of four quarters for velcom. The latter's ARPU during 4Q2012 – 3Q2013 was flat, whereas that of MTS was fluctuating heavily.

During 2011 until the MNP launch in 1Q2012, MTS had experienced sharp decline in the ARPU level, starting to rise from then onwards. This upward trend could be explained by the concurrently growing number of subscribers (partly due to MNP) and increasing revenues in the same time period. Nevertheless, the effect of hyperinflation that is existent in revenue calculations does not make the ARPU a trustworthy source for analysing the impact of MNP on the mobile operators' performance.

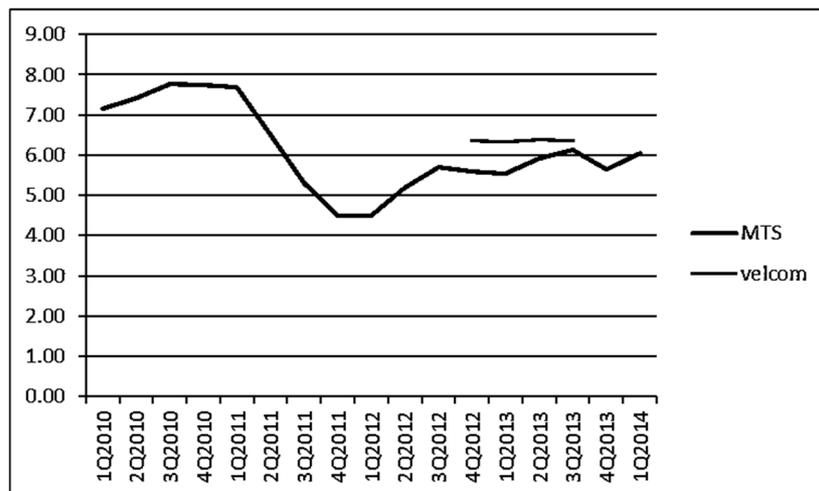


Fig. 8: ARPU of the two biggest mobile operators in Belarus (1Q2010 – 1Q2014 for MTS and 4Q2012 – 3Q2013 for velcom)

The lack of consistent company-level data on mobile operators in Belarus does not allow to arrive at sensible assumptions on whether MNP has left any influence on their performance. The only reliable indicator from this analysis is the number of subscribers, which increased in the two biggest market players and declined in the latest entrant.

Although MNP is aimed at fostering competition and strengthening the market position of relatively small service providers by giving them an opportunity to enlarge their subscriber base, this was not the case for Belarus. Instead, the service introduction seems to have just pushed market concentration towards the two, more established mobile operators.

It means that the overall market structure was not changed but the strongest players further enhanced their positions, cumulatively holding close to 90% of the market. Under such circumstances, MNP would be considered to have had a limited effect on the Belarusian mobile communications sector, to some extent benefitting market leaders only.

6. Discussion and conclusions

In accordance with international best practice, the introduction of MNP is aimed at benefitting end users and mobile communications markets, as it is expected to bring about various socioeconomic effects relating to the increased wellbeing of mobile customers as a result of enhanced consumer choice and inter-operator mobility. For commercial players, the MNP availability is an additional means to gain new subscribers and a good stimulus to shake up their strategic and operational models to adapt to a changing competitive landscape. So far, the worldwide MNP track record has seen varying implementation patterns and outcomes, ranging from largely successful to nearly unnoted and depending on a great deal of particular country and market specifics.

Telecommunications is currently one of the most dynamic and rapidly evolving economic sectors across the globe, where market players are in continuous search for technological and service innovations to maintain a competitive advantage over rivals. The Georgian and Belarusian telecommunications markets are not exceptions in this respect. Hence, it should not come as a surprise that the MNP implementation in those countries coincided in time with other important sectoral developments by mobile operators, such as the launch of 4G services, dramatic network coverage and service expansions, and widespread affordability of mobile communications, which all have had their unique as well as joint consequences on functioning of the market and behaviour of an end user.

One of the limitations of the present study is that it was hard to separate the effect of those developments from the impact of MNP, which would possibly require more complex econometric research. Nevertheless, the applied desktop study approach, combined with structured stakeholder interviews, has still allowed to form a meaningful mobile operator perspective of MNP effects on their corporate performance. Bearing in mind the above limitation, it is concluded that the MNP availability alone has not had a considerable impact on individual market players and broader mobile communications segments in Georgia and Belarus. As it is, MNP has made its contribution to attain more active market competition and subscriber mobility. However, changes over time in the performance of mobile operators, as detected by the analysis of scarce and inconsistent company-level data, have occurred concurrently with the aforementioned course of events.

To put it differently, all related market outcomes such as the reduction in mobile service prices and ARPU levels, shifts in the market structure, etc., have been the derivatives of a series of developments happening in parallel after the MNP launch. If looked at in isolation, it would be assumed that MNP has indeed had a scattered and limited indirect effect on the market and its participants.

According to Buehler et al., MNP pursues the following two objectives: (1) it removes barriers to switch service providers and thus directly benefits mobile customers, and (2) it provides equitable conditions for new players to enter the market and generate a sufficient customer base to be able to compete with incumbents [12]. While the analysis of the first objective is not included in the given publication, it has become apparent that the second one has remained largely unmet. It is evidenced from this study of the latest market entrants' operational and financial performance indicators, also supplemented with their direct feedback during interviews (again outside the scope of this text).

The MNP availability in Georgia and Belarus has for the most part benefitted the first two biggest players by further solidifying their market positions. It is in contrast with findings of several earlier studies, including by Cho et al., whereby MNP normally reduces market concentration by taking it away from the incumbent operators [13].

As former MNP research suggests, there have been notable variations in MNP patterns across countries. It is evident from highly heterogeneous porting statistics from one country to another, and so the number of mobile portings cannot be regarded as a sole indicator for the success of MNP. The Belarusian and Georgian examples also fit into the broader picture, with quite a low percentage of MNP users in the former country and the relatively large service uptake in the latter one.

Hence, in order to fully assess the impact of MNP, certain other factors apart from mere porting statistics should be taken into account, which occurred at around the same timing with the MNP launch and left their influence on the mobile telephony market. As such developments, the introduction of the 3.5G service and the entry of a new mobile operator were referred to by Otsuka and Mitomo in their research on the MNP implementation in Japan [14].

It is obvious that none of the similar research studies in this domain is perfect and each has its distinct limitations. Among others, the reaction to MNP of different mobile operators in the same country might not be captured. The current study seems to have addressed this limitation, as the attitudes toward MNP of all mobile operators in both countries were considered by carefully interviewing each of them and analysing their operational and financial performance before and after the MNP launch. Nonetheless, there are still limitations with the approach applied herein, the most crucial of which is the availability of consistent company-level data. It could thus be worthwhile to make another attempt in the future to approach mobile operators in Georgia and Belarus with a request for more comprehensive first-hand data.

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