The Digital Side of Bulgaria

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As a Bulgarian economic researcher, it is my job to frequently compare my country's performance in various aspects to the rest of the EU. Since the EU has 28 member states, bar charts are quite adequate when trying to visualize and explain a given issue. I have found out that once a chart has been created, my attention tends to drift towards its right side – the place where one usually finds a meager, well below average bar with the label "Bulgaria" below it. All things considered, this is hardly the case in regard to the development of the digital economy and e-government in Bulgaria.

> "BULGARIA HAS ONE OF THE MOST DEVELOPED BROADBAND INFRASTRUCTURES IN THE EU AND FREQUENTLY MAKES IT IN THE TOP 10 OF VARIOUS GLOBAL CONNECTIVITY SPEED RANKINGS

BULGARIANS AND THE INTERNET

The story of the initial increase of internet penetration in Bulgaria is one of highly unregulated social and economic interaction. Most of the infrastructure and the client base in big cities were actually developed by small semi-legal neighborhood organizations, which one would find it hard to call "businesses" in any legally accepted sense of the word. Monthly payments were made in cash, usually after a visit from "the provider" with no documentation to certify transactions or obligations of any kind. This meant that once a significant (though informal) consumer market was in place, bigger companies could step in and buy it out without the need for significant advertising, human capital and infrastructural expenditures. From 2000-2006, most of these ventures were legalized just so that they could be acquired by cable TV operators, while others managed to keep "the big fish" away and gradually moved into the formal economy.

If ever there was an example of an unregulated free market approach to the development of a new type of social relations in

Figure 1: Bulgaria's internet connectivity performance card

	WORLD AVERAGE	EU	BULGARIA
Connection speed (Q1 2016)	**6.3 Mbps**	7.2 - 21.3 Mbps	15.8 Mbps
Average peak connection speed (Q1 2016)	**34.7 Mbps**	28.4 - 84.4 Mbps	59.0 Mbps
Households with Internet access (2015)	**43%**	82%	59%

Sources: Eurostat, National Statistical Institute, Akamai

Bulgaria – it is the spread of the Internet in the country. Bulgaria has one of the most developed broadband infrastructures in the EU and frequently makes it in the top 10 of various global connectivity speed rankings. However, all is not well when it comes to the significance of the Internet in the everyday life of an average Bulgarian. [See Figure 1]

Bulgaria is still one of the European countries with the lowest Internet access. In 2015, only 59% of Bulgarian households were connected to the Internet, compared to 82% in the EU. This relatively low level is indicative not only of the low standard of living of a (still) significant part of the population, but also of the severe demographic situation in some of the country's poorer and isolated regions. The latter results in the online exclusion of two seemingly unrelated socio-economic groups: 1) old people living in villages and 2) Roma communities, which usually comprise households with a large number of dependents, where parents have limited or no employment opportunities.

While a serious study of the catalysts of online exclusion is yet to be carried out, it is my understanding that demographic (age) and socioeconomic factors (cultural differences, poverty, illiteracy, social and labor market exclusion) by far play the leading role, compared to others such as central and local government policy, business practices, or basic infrastructural development.

This is also in line with what the little data we have suggests: according to the National Statistical Institute (NSI) 51.6% of households without internet access say that they lack the basic IT skills needed for using it, while 38.5% say they could not afford it. In addition, just 31% of people aged 55-64 and about 10% of people aged over

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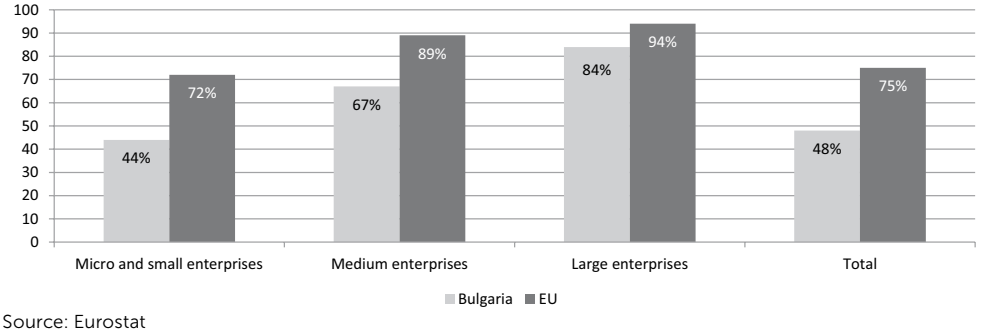
65 have used the Internet at least once weekly in 2015. The two districts with the largest share of self-declared Roma population (Montana and Sliven) are also among those with the smallest share of households that had internet access in 2015 (36.8% and 44.6% respectively, compared to a national average of 59.1%) Simply put – the average retiree and the average Roma person are yet to make their way online in Bulgaria. While this means that there still exists a significant internet user market, it is highly unlikely that it will be developed in the short term.

We see a similar pattern in regard to Bulgarian businesses. The latest (2015) Eurostat data show that only 48% of Bulgarian enterprises have their own website, compared to 75% in the EU. The difference with average EU-levels is most significant in regard to micro and small enterprises (44% for Bulgaria and 72% for the EU), but the latter by far form the most significant share in regard to the size of enterprises.

In contrast, the difference in the share of large enterprises (the ones that employ over 250 people) that have their own website is just 10 percentage points – 84% for

Figure 2: Share of enterprises that have their own website (2015)



Source: Eurostat

Bulgarian ones, compared to an average of 94%. What is more, medium and large Bulgarian enterprises have been quicker to catch up with their European counterparts (narrowing the difference by 7 percentage points in the 2010-2015 period), than micro and small enterprises (just 2 percentage points). [See Figure 2]

One of the explanations behind this is that a significant share of the larger enterprises in Bulgaria is actually owned by foreigners. While somewhat discouraging, the numbers show that the development of online trade and services in Bulgaria is yet to achieve its true potential. This means that a significant buffer still exists for lowering prices for domestic consumers. Online transactions have been proven to be cheaper than traditional ones, mainly because of the cost-optimization that online-based businesses can achieve in regard to expenditures on transportation, labor and storage.

> BULGARIA HAS EVEN BEEN DESCRIBED AS THE "SILICON VALLEY" OF IT-RELATED ACTIVITIES

THE DEVELOPMENT OF THE BULGARIAN ICT SECTOR

The rapid expansion of the country's ICT sector has been well documented by foreign media. Bulgaria has even been described as the "Silicon Valley" of IT-related activities and is one of the few EU countries to have ever made it in a number of Top 10 outsourcing destinations rankings such as AT Kearney's Global Services Location Index. The main drivers behind ICT sector foreign investment have been the (still) competitive wages, the relatively low rents for office spaces, the excellent broadband infrastructure, the country's EU membership and the Bulgarian tax system, which boasts a flat 10% tax on individual income and a 10% corporate tax rate.

According to Eurostat, from 2006-2014, the ICT sector's share of the country's annual gross value added tax (GVA) increased from 3.8% to 5.6%, while the EU average actually dropped from 5.0% to 4.9%. The influx of foreign ICT companies in Bulgaria has led to a significant increase in labor demand, thus causing

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wages to rise way quicker than those in other economic activities. In 2015, the average employee in the ICT sector received a 2.5 times higher salary than the country's average.

World Bank data shows that revenues from Bulgarian ICT exports have risen from EUR 113 million in 2011 to EUR 778 million in 2015 – thus tripling in value in the course of just a few years. Most of these (EUR 465 million in 2015) are EU-bound, but on the country level the largest importer of Bulgarian ICT services is the US (EUR 152 million), followed by the United Kingdom (EUR 97 million) and Switzerland (EUR 41 million).

In 2015, the revenues from the export of ICT-related services accounted for nearly 11% of the overall export of all services, compared to 9.5% and 7.7% respectively in ICT powerhouses such as Estonia and the UK. [See FRAME]

WHY IS THE ICT SECTOR IMPORTANT FOR BULGARIA?

The development of Bulgaria's ICT sector is widely viewed (and rightly so) as one of the best hopes of the country to retain young people with significant economic potential. The latter is a serious concern, since young, well-educated and highly productive Bulgarians tend to account for a big part of the migration from the country. While wages in Bulgaria are still the lowest in the EU, people employed in ICT (and especially in IT) have found their living standard rise much faster than the country

One of the highlights of the rapid development of the Bulgarian ICT sector in recent years has been the 2014 "Progress Software" acquisition of the Bulgarian company Telerik for close to USD 260 million.

Telerik was founded in 2002 by a small group of American University in Bulgaria and Technical University of Sofia graduates. It specialized in software development and the creation of application development tools and currently employs over 1,000 people. In 2009, the company launched a completely free training program for software developers, which has so far been attended by almost 10,000 students.

This private sector-led program has been by far the most successful ICT education initiative in the country, with Bulgarian universities so far being unable to provide students with a comparable curriculum.

Stadshypotek
BANK
BROTHERS
KICKS

average, which lowers their economic motives for searching for career opportunities abroad. This is due to several factors:

1. Compared to most other EU countries, Bulgaria's tax system is relatively accommodative of people with higher than average earnings. The country has a 10% flat income tax, combined with a BGN 2,600 gross salary maximum insurance threshold. The latter practically means that all income above BGN 2,600 is not subject to obligatory social and health contributions, which form the largest share of direct taxation for individuals and a significant share of the labor-related expenditures for employers. This means that employees get to keep a larger share of what the employer actually pays for their services. For instance, if a developer received a BGN 2,600 gross salary (around EUR 1,330), he would presently get to keep BGN 2,038 of the total BGN 3,070 that the employer has to pay[1]. This means that his net salary would equal 66.4% of what the employer actually pays for his services. In comparison, if the gross salary was to reach BGN 4,000 (which is quite common for IT specialists with five or more years of experience), the employee would get to keep BGN 3,135 of the BGN 4,470 that the employer would have to pay. The net salary now equals 70.1% of the total expenditures by the employer.

2. Bulgaria is currently the country with the lowest corporate tax in the EU – just 10%. This is, without a doubt, one of the leading drivers of FDI investment in the country and has helped the development of Bulgaria's ICT sector, which has led to an increased demand for labor and thus – to higher wages for employees.

[1] Note that the expenses for the employers are actually higher than the gross salary, because of their obligation to pay around 60% of the total compulsory social insurance payments.

IT SECTOR IS SHOWING SIGNS OF ACHIEVING WHAT VERY FEW ECONOMIC ACTIVITIES IN SERVICES HAVE MANAGED TO DO – PROVIDING HIGH PAYING JOBS NOT ONLY IN SOFIA, BUT ALSO IN OTHER REGIONS OF THE COUNTRY

3. The differences in the purchasing power of average wages across EU countries means that each euro in additional income in Bulgaria actually enables the acquisition of more products and services than in many other EU other countries. This is especially the case for higher paying jobs such as the ones in the ICT and (especially) IT sectors, also because of the already mentioned flat tax system, resulting in lower taxes on high earners.

It is worth noting that the IT sector is showing signs of achieving what very few economic activities in services have managed to do – providing high paying jobs not only in Sofia, but also in other regions of the

country. The under-supply of labor in the capital and the rapid increase in wages has forced companies to expand their activities in the second and third biggest cities (Plovdiv and Varna) and has created incentives to target smaller cities as well. Thus the IT sector may yet help to address one of the leading economic issues in Bulgaria at present – the vast differences in job availability, wages and general economic diversification and development in the different regions of the country.

With all this in mind, it is easy to see why the significance of Bulgaria's IT sector is not only limited to its economic contribution, but also accounts for the improvement (or at least the less rapid deterioration) of social and demographic trends.

ICT WAGES AND EMPLOYEES

In order to better understand the appeal of the ICT sector in Bulgaria, one has to look a bit deeper than the headline wage and employment numbers. The latest available and comparable data from Eurostat and the National Statistical Institute (NSI) shows that:

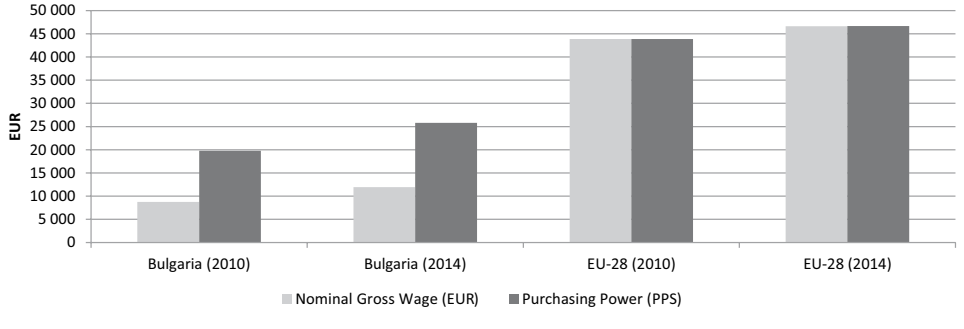
- In 2010, the number of Bulgarians employed in the private ICT sector stood at 57,994 people, accounting for 3.5% of all private employees, compared to 3.4% in the EU. Nominal gross annual average earnings stood at EUR 8,778, compared to EUR 43,897 in the EU, which translates to 20% of the EU average.

- In 2014, the number of Bulgarians employed in the private ICT sector stood at 69,093 people, accounting for 4.1% of all employed, compared to 3.6% in the EU. Nominal gross annual average earnings stood at EUR 11,924, compared to EUR 46,647 in the EU, which translates to 26% of the EU average.

- In 2015, average gross wages in the Bulgarian ICT sector raised by an additional 7% while the number of employees increased by 1,750 people (a 2.5% increase). Although no comparable data is yet available on the EU level, these figures suggest that the catch-up process is well on track.

Despite the fact that the difference still seems significant, it has to be noted that **the purchasing power of ICT sector wages in Bulgaria is highly competitive**, when compared to those in other EU countries. The aforementioned differences in taxation levels and the peculiarities of the Bulgarian tax system (namely, the maximum insurance threshold) mean

Figure 3: Annual average wages in the ICT sector



Source: Eurostat

that Bulgarian ICT employees get to keep a larger share of their gross earnings than ICT employees in other EU countries.

In addition, **the general price level in Bulgaria is lower than the EU-average**. If we account for the purchasing power of the ICT wages in the EU and in Bulgaria, we see that the difference in the amount of goods and services that the average employee can afford drops significantly. While the nominal ICT gross wage in Bulgaria has increased from 20% to 26% of the EU average from 2010-2014, its purchasing power stood at 45% in 2010 and reached 55% in 2014[2]. [See Figure 3]

Despite the increasing economic and social significance of the Bulgarian ICT sector, there is still much to be desired, especially on account of the central government. The country's labor code is in bad need of a major overhaul, research and development (R&D) spending in the economy has remained low by EU standards and the overall protection of property rights (including intellectual property rights) is more of an intriguing concept than a reality. At some point the increase in ICT wages will probably slow down due to international competitiveness pressures, as well as the aforementioned gradual shift of ICT activities away from the capital.

E-GOVERNMENT IN BULGARIA

It is evident that the digital development of Bulgaria's economy and social relations remains fairly uneven. This is also very much the case in regard to the development of the e-government. While more and more administrative services are available on-line, their use has remained limited and their quality leaves much to be desired.

By all accounts most e-government initiatives under the country's "Administrative Capacity" program from 2007-2013 yielded unsatisfactory results, with some notable exceptions such as the projects implemented by the National Revenue Agency (NRA). The latter had a telling effect on both the NRA's capacity to detect tax evasion practices, and its online appeal; in recent years a growing number of citizens and businesses have made use of NRA's online services, including online filing of tax forms. A number of Bulgarian municipalities have also managed to gradually

> BULGARIANS REMAIN PREDOMINANTLY "PASSIVE" INTERNET USERS – PARTICIPATION IN PROFESSIONAL ONLINE NETWORKS, ONLINE BANKING, BLOGGING AND ONLINE CITIZEN ACTIVITIES REMAIN RELATIVELY UNPOPULAR

[2] According to own calculations based on Eurostat.

implement various e-government tools, including online public procurement portals, administrative and tax-related services and various two-way communication methods.

Despite all these improvements, the use of such services has remained limited, as many citizens and businesses have yet to try and take advantage of the available options. Bulgarians remain predominantly "passive" internet users – participation in professional online networks, online banking, blogging and online citizen activities remain relatively unpopular. NSI data shows that in 2015, less than 18% of internet users had any contact with local or state institutions and less than half of them actually engaged in two-way communication.

Despite the ongoing push for the introduction of various e-government services, most Bulgarian lawmakers and political parties showed reluctance in regard to the adoption and implementation of online voting (e-voting). Recent successful hacker attacks against a number of government websites (including the Central Election Commission) have proven that some of the concerns regarding the country's preparedness for such a venture are well founded. However, most arguments against the introduction of e-voting in the country's elections and referendums came from parties that traditionally lack support from Bulgarians living abroad. After a successful, but not legally binding referendum was carried out, and under continuous public pressure, the Parliament finally introduced and voted legislation that foresees the gradual implementation of online voting (after an initial testing phase) into power.

THE OPEN DATA MOVEMENT IN BULGARIA

In recent months the coalition government has repeatedly tried to portray Bulgaria as a "trend setter" in regard to public open data initiatives. While such a statement is clearly exaggerated, it is true that as far as the development of e-government and the openness of public administrative bodies are concerned, the current administration has managed to achieve visible results and has put forward proposals and solutions to some long overdue issues.

For instance, Bulgaria ranked 16th in the 2015 Global Open Data Index, up from 51st in 2014, thus surpassing countries such as: Slovakia, Latvia, Austria, Switzerland and even Germany. The country received high rankings for the openness of its "National Statistics", "Procurement Tenders", "Election Results" and "Government Budget" datasets, large parts of which are already available in various electronic formats and are easily accessible.

The positive results that have been achieved during the past two years are to a large extent a result of the efforts of Rumiana Bachvarova, the Deputy Prime Minister for Coalition Policy and Public Administration and acting Minister of Interior, and what has come to be known as "her team". The latter consists of leading e-government and digital economy activists (mostly developers), who have been charged with the ambitious task to practically change the mentality and practices of Bulgarian administrative bodies in regard to the way they collect, store and publish information. They are also the leading force behind the development of the www.opendata.government.bg portal (the official repository and the main go-to place for open data in the country) and also act as advisors in the legislative open data and e-government initiatives.

This expert-led approach to the development of functioning public systems and corresponding legislation may be a common practice in many European countries, but is somewhat of an exception in the

A TIMELINE OF THE ADOPTION OF E-VOTING IN BULGARIA

01/29/2014 – The President of Bulgaria Rosen Plevneliev proposes a referendum about electronic voting (to be held in conjunction with the upcoming European Parliament elections in May the same year).

02/03/2014 – The CEDB party proposes full electronic voting in Bulgaria and electronic voting for Bulgarians abroad.

02/12/2014 – While discussing and voting the changes in the Election Code, the majority in parliament rejects the proposal of CEDB for the introduction of electronic voting.

06/03/2015 – President Plevneliev officially submits a proposal to the National Assembly for local elections and a referendum to be held together on October 25, 2015 with the following questions:

1. Do you support part of the members of parliament (MPs) to be elected through a majoritarian system?

2. Do you support the introduction of compulsory voting in elections and national referendums?

3. Do you support being able to vote remotely by electronic means during elections and referendums?

07/28/2015 – The Parliament narrows down the presidential referendum only to the question about electronic voting, rejecting the other two questions.

10/25/2015 – Local elections are held along with the referendum "for" or "against" electronic voting. The results from the referendum are 69.5% "for", 25.99% "against", 4.51% void. The total turnout for the referendum is 39.6%, and thus the outcome of the referendum is not binding?? for Parliament. However, regulations state that if the activity in the national referendum is over 20%, Parliament must vote on the issue.

11/10/2015 – "Slavi's Show" initiates a petition for a referendum that contains six questions, one of which is again whether electronic voting should be introduced. The initiative lasts three months and in the end manages to collect 673,481 signatures. In May 2016, the questions are approved by Parliament without changes to be held as referendum along with the presidential elections in November the same year.

01/28/2016 – The CEDB, MRF, The Reformist Block, The Patriotic Front and ABR parties declare themselves "for" the electronic voting and support it during the discussions.

02/09/2016 – MPs support the introduction of electronic voting (provided that there are legal guarantees for protecting the secret of the vote, for civilian control of the election process and for the security of information systems).

04/27/2016 – Parliament adopts electronic voting from 2018 on. Electronic voting should be conducted experimentally three times during 2018 (to be held in one electorate region) and if successful, will be officially introduced in the elections for European MPs in 2019. Until that date, the Central Election Commission should do three simulations of remote electronic voting with fictitious parties, coalitions or candidates. People will be able to change their vote multiple times and the last vote will be the one that actually counts.

case of Bulgaria. In the course of two years Ms. Bachvarova and her team have managed to:

1. develop, popularize and monitor the country's official open data web-portal;

2. push through legislation that makes the use of publicly available open source code a prerequisite for the eligibility of projects under the 2014-2020 "Good Governance" Operational Program of the EU. The 2016 amendments in the Law of Electronic Governance require that all software written for the government is open source and is developed as such in a public repository (thus being freely available to practically everyone);

3. increase the administrative capacity of a number of public bodies, which has resulted in the publication and follow-up support of a number administrative registries and datasets that (although theoretically public) were practically unavailable for the average citizen.

Despite all these positive developments, as has been repeatedly pointed out by Bulgarian researchers, developers and open data enthusiasts, the unavailability or low quality of geographic location and land ownership datasets pose serious challenges for the adequate utilization of many other informational sources.

Some of these shortcomings are the predictable result of the woefully slow development of the country's cadastral maps, as well as the general problems with land ownership and protection of property rights. In addition, many of the recently opened public datasets (with a few notable exceptions) do not really provide developers and researchers with tools that can support the development of sustainable applications or products and are rather "static" in nature. To some extent, these deficiencies will probably be overcome with time, but they are worth noting and are probably one of the main reasons why Bulgarian companies and NGOs have so far been unable to secure funding from open data related initiatives such as Google's "Digital News Initiative" (DNI) and EU's Horizon 2020 "Open Data Incubator for Europe" (ODINE).

Despite the fact that open data initiatives should (in theory) empower NGOs, citizens and businesses to exercise control over the policy making process, the latter is yet to materialize in Bulgaria. I would argue that some of the reasons for this lie not in the datasets themselves, but rather in the lack of expertise, practical and technical preparedness of Bulgaria's non-governmental sector to make good use of big data. Still, there have been some recent good examples of data-driven journalism and open data applications that suggest that this problem will be overcome with time.

CONCLUSIONS

Most aspects of Bulgaria's digital development are well on track with that of the EU as a whole. While there is plenty of praise to go around, the rise of the ICT sector and the push for open public institutions has been almost entirely due to the efforts of citizens and businesses (local, as well as foreign ones).

As far as crediting Bulgarian governments goes, their biggest contribution so far has been the reluctant, yet visible adoption of the imperatives of the digital society. Institutions have been slow to change their ways, but they are increasingly doing so, by offering digital alternatives to traditional administrative services and providing access to previously buried data sets.

And yet, the government may still have their part to play in the development of Digital Bulgaria. While it is highly unlikely that the new law on public education will ignite a digital spark in state-owned universities, the realization that something is wrong with the way the government encourages and subsidizes some specialties is slowly settling in. The recent push in regard to open data initiatives and the adoption of e-voting have proven that given the chance, citizens can actually convince the Parliament to change its stance on a given issue.

However, perhaps the most serious challenge that is yet to be tackled by the administration is the facilitation of a digital business friendly environment that offers adequate property right protection. While there are many aspects to such a task, the following five points should be pointed out as the most important prerequisites for achieving such an end:

1. adopting a clear and long-term commitment to the 10% flat tax on personal income and the 10% corporate tax;

2. coming through with the full scope of the much necessary and long overdue judicial reform that will ensure the rule of law and will help crackdown corruption, thus increasing the investment appeal of the country;

3. adopting legislation that will help liberalize labor relations (especially long distance and part time work) and make them more flexible;

4. resisting any temptations of trying to "actively support", "guide" or "take part" in the development of Bulgaria's ICT sector;

5. not giving in to frequent rent-seeking practices such as the pressure from taxi companies that ultimately led to the suspension of the services of UBER in the country.

Provided these prerequisites are met, the Bulgarian governments will be able to ensure the lasting digital appeal of the country and maybe, just maybe, it will someday turn into the trend-setter we all want it to be. ●

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