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Digital Infrastructure and Services Trade in the CEFTA Region

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ABSTRACT

The aim of this paper is to provide exploratory evidence on the effects of the digital economy on the economic development of cross border services trade in the CEFTA parties. The paper first gauges the extent and usage of internet infrastructure in the region. It then identifies the role of the digital economy in explaining the growth of exports of services in the Western Balkan economies and explores the barriers to providing services exports through e-commerce. We find that the digital economy is making a significant contribution to services exports in the region, but that several substantial barriers hinder the achievement of its full potential. These include poor infrastructure, slow broadband speeds and limited bandwidth, the regulatory environment, geo-blocking and a lack of skills in the use of online technologies. In regard to the latter, the opportunities and financing for internet training and the development of internet skills is insufficient and problematic.

1. Introduction

The context of this paper is the emphasis on digital integration in the European Union's (EU) Strategy for the Western Balkans,¹ which lays out a flagship policy known as the Initiative for a Digital Agenda for the Western Balkans.² This policy aims to support the development of the digital economy in the region by promoting the deployment of broadband connectivity and enhancing digital skills to underpin renewed economic growth led by an expansion of e-commerce.³ It is envisaged that the Western Balkans Investment Framework will devote greater efforts to financing the digital economy in the region, and the EU has already allocated €30 million to digital projects in the region.⁴ The emphasis on the digital economy is also a key feature of the plan to create a Regional Economic Area, championed under the Berlin Initiative and the "MAP-REA" action plan led by the Regional Cooperation Council. The digital dimension of this plan covers broadband deployment and will address the needs of digital skills on the basis of regional cooperation.

The paper maps the extent and usage of the digital economy in the CEFTA region⁵. It also investigates the effects of digitisation on the growth of services trade in the region. Finally, it explores the barriers to providing services exports directly through e-commerce. The paper is organised as follows. In **section 2** we provide a review of the literature on the role of digital infrastructure in economic growth and trade with a focus on trade in services. We draw out the implications of this for the CEFTA Parties. In **section 3** we analyse the development of the digital infrastructure in the CEFTA region. We show how the CEFTA economies lag behind the EU in terms of digital and e-commerce infrastructure. In **section 4** we explore the relationship between the digital infrastructure and the growth of services exports. In the **final section**, we set out our conclusions that the CEFTA parties can gain a large dividend by upgrading both the quantity and quality of their broadband infrastructure and internet readiness, and that this would be an essential element that could help promote trade in services in the region.

¹ European Commission, "A credible enlargement perspective for and enhanced EU engagement with the Western Balkans", COM(2018) 65 final, Strasbourg, 6.2.2018

² European Commission, "Measures in support of a Digital Agenda for the Western Balkans", SWD(2018) 360 final, Brussels, 22.6.2018

³ The concept of digital economy includes e-business infrastructure (hardware, software, networks, human capital), e-business (ways of conducting business, processes), and e-commerce (online transfer of goods).

⁴ Some examples include the integration of the Western Balkans into the EU's Code Week Initiative, and the British Council's programme, within the Berlin Process, to upgrade the teaching of coding skills in all primary schools in the region.

⁵ The CEFTA region covers the Western Balkan economies and Moldova. However, due to data gaps the paper mainly deals with the Western Balkan Parties within CEFTA.

2. Literature review

The digital economy is having a profound effect on the global economy (Mühleisen, 2018). It is now widely accepted that there is a strong link between the level of internet penetration and the productivity and competitiveness of businesses (World Bank, 2016). Bertsekas et al. (2013) show that access to broadband Internet may improve a company's propensity to innovate and hence the diffusion of broadband has the potential to improve the competitiveness of an economy. The diffusion of internet access and ICT services also enables small economies to upgrade their production activities by making intensive use of human capital without the need for large investments in physical capital (Handjiski & Šestović, 2011).

Moreover, the digital economy is an increasingly important element of international trade in goods and services. Digital technology can reduce the transaction costs of trade by reducing transportation and tracking costs (Goldfarb & Tucker, 2019). Lower transportation costs can lead to the death of distance, an effect which may reduce the relevance of many of the "gravity" models that are typically employed in the analysis of international trade among CEFTA parties. Friedman (2005) coined the image of a "flat world" in which distance is no longer important to trade as businesses anywhere can enter global value chains irrespective of national comparative advantage. Advances in digital printing enable manufacturers to print components on site rather than through complex inter-country transportation of product elements. As Gnanon and Iyer (2018) have pointed out, "digital distance" has come to replace geographical distance. Their research demonstrates a strong correlation between digital distance, expressed as the gap between a country's usage of broadband internet and the global average, and the growth of commercial services exports. They suggest that greater internet connectivity can compensate for the effects of geographical distance from world markets for commercial services.

A number of studies have attempted to quantify the impact of broadband penetration rates on overall economic development. A study by Qiang and Rossotto (2009) on data from 1980-2002 found that a 10% increase in the number of broadband subscribers led to an increase of 1.2 percentage points in the growth rate of GDP per capita in high-income countries and to a 1.4 percentage point increase in developing countries. Another study by Koutroumpis (2009) covering OECD countries over the period 2002-2007 found that higher broadband penetration is associated with a greater impact of broadband infrastructure on economic growth. Czernich et al. (2011) found that after the introduction of broadband, a country's GDP per capita is between 3% and 4% higher on average than before its introduction, and that an

increase of 10 percentage points in broadband penetration is associated with an increase in the growth of per capita GDP of between 0.9-1.5 percentage points.

The quality of physical infrastructure, including the speed of internet connection is an additional critical factor. More recently, Kongaut and Bohlin (2014) analysed the relationship between broadband speed and economic growth for a sample of OECD countries over the period 2008-2012. They concluded that broadband speed contributes positively to GDP, with a greater impact in lower income countries. Specifically, they found that a 10% increase in broadband speed leads to a 0.8% increase in GDP per capita. The range of studies and their uniform findings provide strong evidence for the positive impact of broadband internet infrastructure on economic growth.

Internet connectivity also has a positive impact on international trade. Not only does it reduce the transaction costs of cross-border trade, but companies can also access foreign markets without the need to build production capacity at home. Practical applications in relation to trade in goods include tracking and tracing goods in transit, pre-arrival clearance, electronic submission of customs forms and documents, customs automation, and terminal operations and electronic single windows (Sourdin & Pomfret, 2012). In a study of forty emerging economies from 1995-2010, Liu et al. (2013), using a panel data analysis, found strong evidence that internet subscriptions and internet hosts have significant positive effects on exports from emerging economies. Similarly, in a study of 21 transition economies covered by the World Bank/EBRD BEEPS survey in 1999, 2002 and 2005, Clarke (2008) found a strong correlation between exporting and internet access.

Trade in services has also been greatly facilitated by the advent of the internet. Before the advent of the internet, trade in services was restricted by the costs of organising physical contact between persons; since it has become available, the internet enables remote provision of services across borders (Freund and Weinhold, 2002). Broadband technologies have allowed for faster and more comprehensive information transmission, enabling more effective collaboration and coordination over long distances and reducing the transactions costs of services trade (Kneller and Timmis, 2016). These effects are likely to be particularly strong for services that are information intensive, such as business services including accountancy, marketing, product design and consultancy, to name but a few. There is substantial empirical evidence bearing out the importance of the relationship between increased broadband access and use and the growth of services exports. Freund and Weinhold (2002) showed that, in the 1990s, a 10 percentage point increase in the growth of web hosts led to about a 0.2 percentage point increase in growth of services exports. Choi

(2010), using panel data for 151 countries from 1990 to 2006, found that a 10% increase in Internet users increased service trade from between 0.23% and 0.42%. Goswami et al. (2012) found that in developing countries the growth of services exports is related to the availability of digital infrastructure, complemented by the degree of tertiary educational enrolment. Kneller & Timmis, (2016) provide some nuance to these general findings by demonstrating evidence of a strong effect of broadband use on exports of business services in the UK, but little evidence of an effect on trade in services more generally. This highlights the importance of digitalization to trade in high value-added business services, which are generally underdeveloped in the CEFTA region, compared to other more traditional tradable services such as tourism, construction and transport (Prica, 2019).

3. Development of digital infrastructure in the CEFTA region

In this section we explore the extent and usage of digital infrastructure in the Western Balkan economies.⁶ It should be noted that all Western Balkan economies have adopted strategies that support the ICT sector directly or indirectly. Serbia and Kosovo* have adopted strategies dedicated to the development of the IT industry promoting exports and outsourcing services. The other four economies have incorporated ICT sector support measures in their broader digital strategies. It is also worth noting that all the Western Balkan economies have adopted e-authentication frameworks and made progress in improving their e-authentication schemes. E-signature legislation has been adopted and e-government services are gradually being aligned with the National Interoperability Frameworks that have been adopted in all economies. In order to analyse the extent and usage of digital infrastructure in the CEFTA region, we make use of the Eurostat database on “Digital Economy and Society”. This provides a wealth of data on the use of e-commerce activities in Europe including in the CEFTA region.

3.1. Digital infrastructure in the Western Balkans

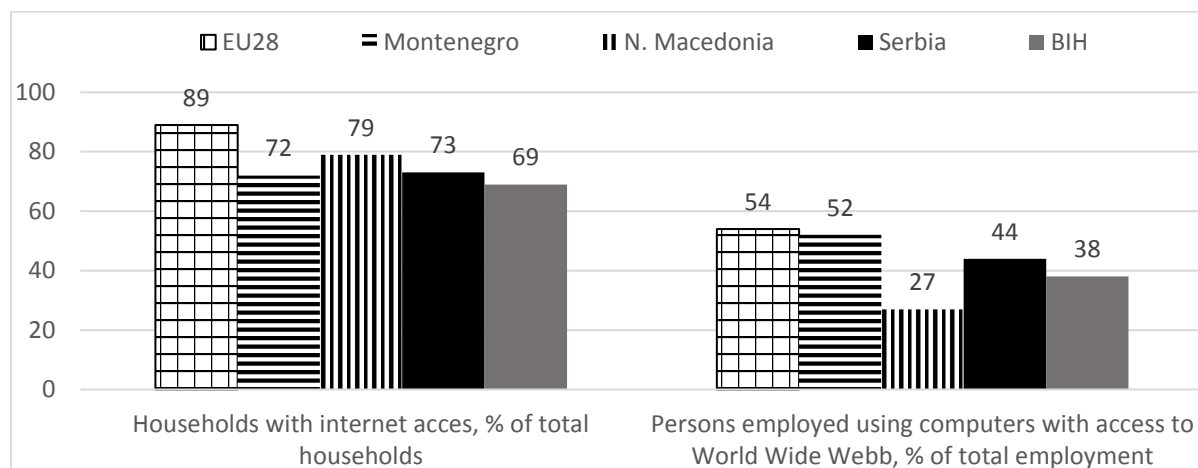
There are many examples of ways in which the development of broadband infrastructure has enabled and facilitated trade in the CEFTA region, from the proliferation of call centres to the development of computer games companies. Nevertheless, the Western Balkan countries lag behind in the development of their digital infrastructure (Mitrović, 2015). Compared to the EU internet penetration rate of 89% of households in 2018 (Eurostat data), the penetration rates in the Western Balkans are far lower ranging from 69% in Bosnia and Herzegovina to

⁶ The term “digital infrastructure” refers not only to the technological component such as broadband, ICT capacity, robots, and so on but also the human component including human capital, skills, ICT graduates, and technological knowledge (Calvino, 2018).

* This designation is without prejudice to positions on status and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

79% in North Macedonia (see Figure 1). Among businesses relatively fewer employees have access to the internet, even in the EU. Montenegro is similar to the EU with 52% of employees having access, while in North Macedonia only 27% do so (Figure 1). These basic indicators show that the rate of internet penetration across CEFTA is high, but they do not show us the quality of this infrastructure (speed, stability). Data on Internet access are also available for companies, but only for Montenegro and Serbia. Both countries exhibit very high levels of Internet penetration, close to the EU levels.

Figure 1: Internet access for households and employees

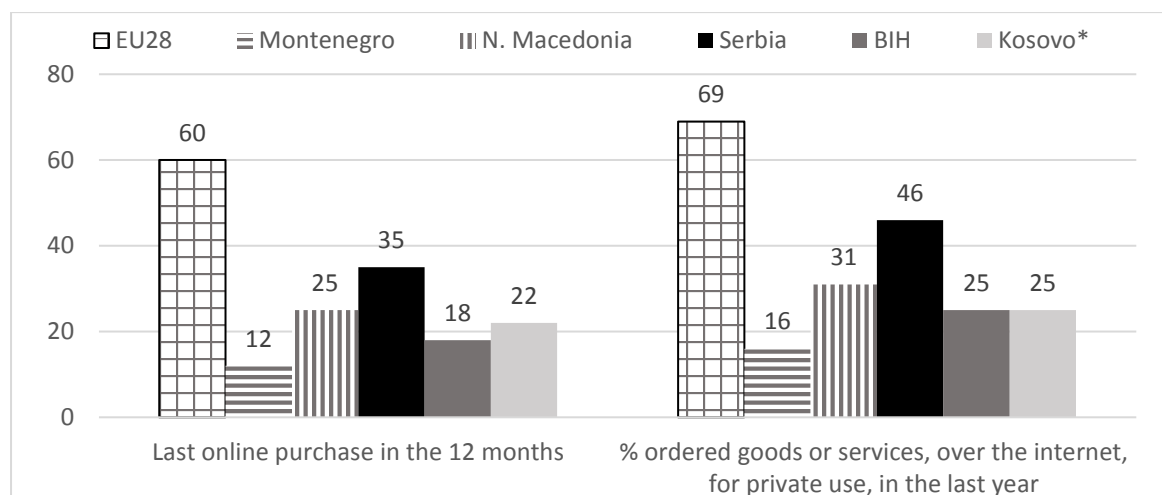


Source: Eurostat online data [isoc_ci_in_h]. Note: data for North Macedonia are for 2016

3.2. Individual access to e-commerce

Although there has been a rapid increase in the use of e-commerce services by individuals in the CEFTA region, the extent of this use lags far behind the average of the EU-28 (see Figure 2). Use of the internet for online purchasing is less than half the level of the EU in all economies except Serbia where it is slightly more than half the EU level. A similar picture can be seen for the proportion of people who ordered goods or services over the internet for private use in the year prior to the survey.

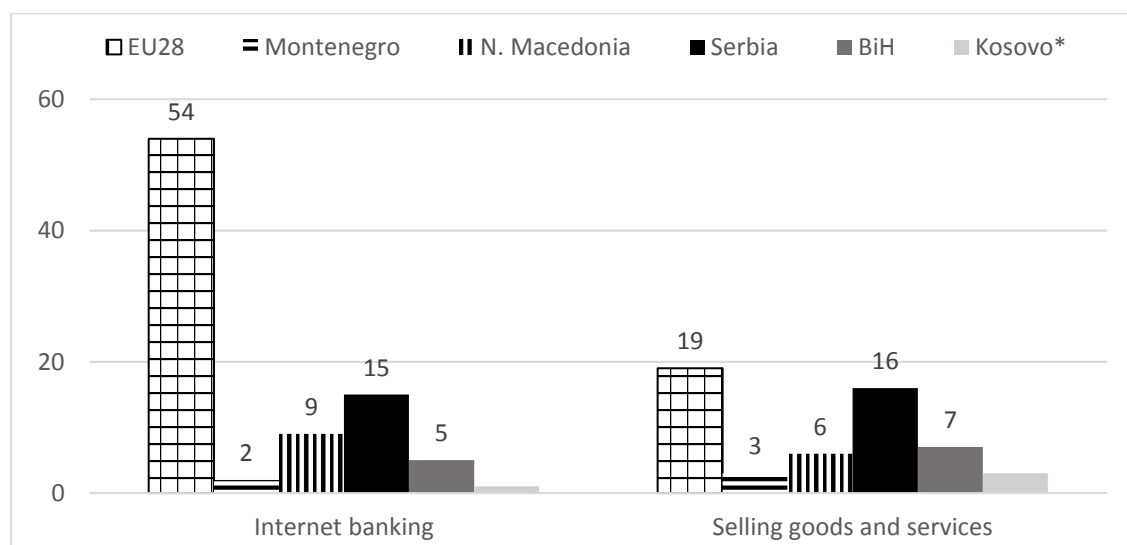
Figure 2: Use of e-commerce by individuals, % individuals, 2018



Source: Calculated based on data from Eurostat. Note: data for North Macedonia are for 2016

Considering specific services, the use of internet banking by individuals is far below that in the EU-28 (see Figure 3). A similar picture emerges for the use of the internet for individuals who sell goods online (such as on e-bay).

Figure 3: Internet banking and sale of goods and services, % individuals, 2018*



Source: Calculated based on data from Eurostat. Note: data for North Macedonia are for 2016

The most common reason for not using the internet is that people still prefer to shop in person or have a loyalty to their shops (see Table 1). This reason is also more of an issue in the CEFTA parties than in the EU28 (with a gap of 25 percentage points). Concerns over the security of payments are also a disincentive for people to use the internet to purchase goods and services. Individuals in Montenegro seem to have a special difficulty in using e-commerce for a whole variety of reasons across the board. Although the problems are less severe in other economies, concerns over the security of payments are a particular factor in North

Macedonia, while concerns about having trust in the ability to receive or return goods are particularly high in Serbia, relative to other reasons for not ordering goods or services over the internet. A lack of skills to use the internet is a particular problem in North Macedonia and Kosovo*.

Table 1: Proportion of individuals who, in the last 12 months, haven't ordered goods or services over the internet, because of the stated reasons (%)

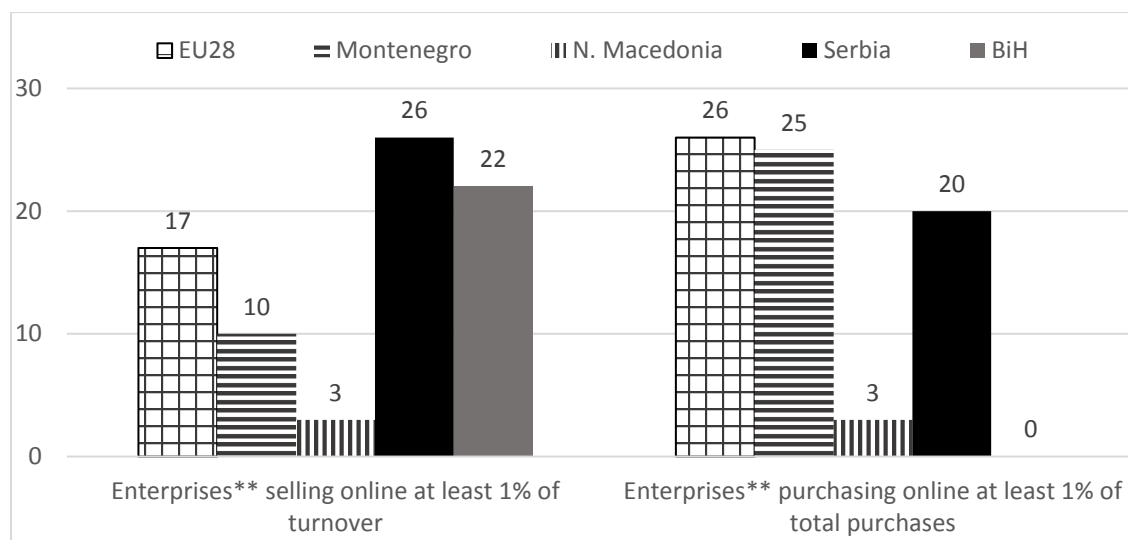
	EU-28	Montenegro	North Macedonia	Serbia	Kosovo*	Average of four CEFTA parties	Gap with EU28
They prefer to shop in person, they like to see product, loyalty to shops or force of habit	20	52	39	34	55	45	25
Payment security concerns	7	21	16	9	9	14	7
They lack the necessary skills	6	21	18	5	13	14	8
Trust concerns about receiving or returning goods, complaint / redress concerns	5	20	10	12	9	13	8
They don't have a payment card	4	19	11	3	7	10	6
Too long delivery times or because of the problematic to receive the ordered goods at home	2	22	9	2	9	11	9

Source: Eurostat online data [isoc_ec_inb]. Note: data for North Macedonia are for 2016

3.3. Business access to e-commerce

The use of internet banking is more developed among businesses, with a higher proportion of businesses in Serbia and Bosnia and Herzegovina than in the EU28 selling goods and services equivalent to at least 1% of turnover (see Figure 4). In contrast, a higher proportion of the businesses in the EU purchase at least 1% of their total purchases of goods and services online than in the Western Balkan economies, although Montenegro and Bosnia and Herzegovina are not far behind.

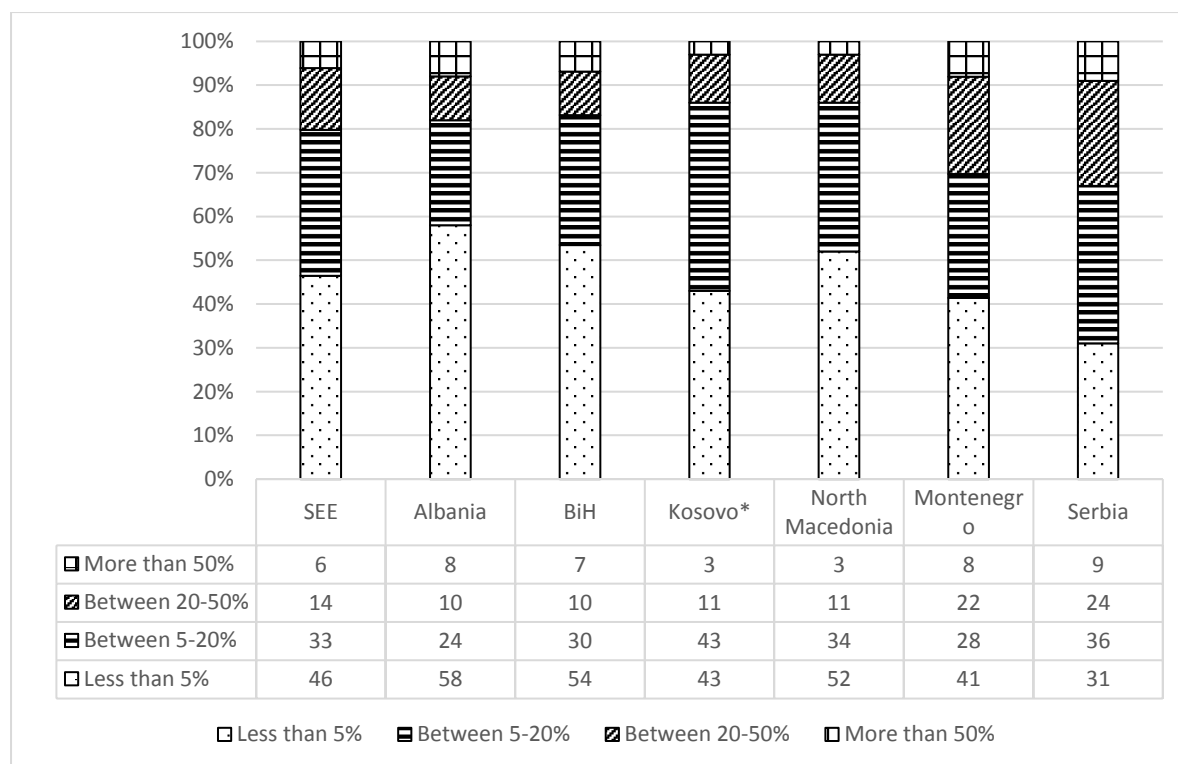
Figure 4. Internet banking and sale of goods and services, % enterprises, 2018



Source: Eurostat online data [isoc_bde15cbc]. Note: data for North Macedonia are for 2016

A survey carried out by the regional Cooperation Council, the Balkan Business Barometer, provides information about the proportion of sales transacted through online media (see Figure 5). The lowest level of online sales are made in Albania, Bosnia and Herzegovina and North Macedonia. In contrast, Montenegro and Serbia stand out as the best performers in the region in this respect with about 30% of businesses conducting more than 20% of sales online.

Figure 5: proportion of sales generated online (%), 2019



Source: Balkan Business Barometer, RCC

The involvement of the business sector with e-commerce varies across sectors, with relatively high usage in the sector of accommodation (tourism), the ICT sector, information and communication and retail trade. The largest gap compared to the EU28 is in accommodation and wholesale trade (see Table 2). Many other sectors lag behind the EU-28 in their use of e-commerce such as the wholesale and retail trade. From a locational perspective, enterprises in North Macedonia are especially lagging in their use of e-commerce compared to the EU, while other economies are not so far behind, and Serbia is ahead of the EU-28 average for all enterprise outside the financial sector.

Table 2: Enterprises receiving orders via computer mediated networks, % enterprises of 10 employees or more, 2018

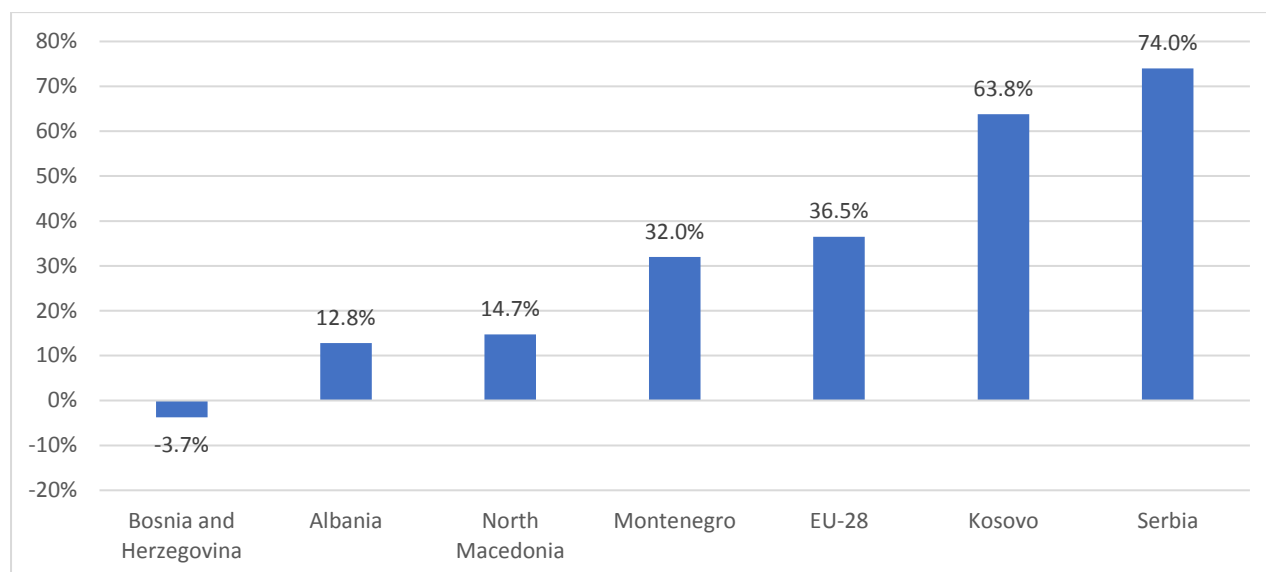
	EU28	Montenegro	North Macedonia	Serbia	BiH	Average of four CEFTA parties	Gap with EU28
Accommodation	68	31	25	77	51	46	-22
Wholesale and retail trade; repair of motor vehicles and motorcycles	31	11	11	22	30	19	-13
Retail trade, except of motor vehicles and motorcycles	28	26	10	31	24	23	-5
Information and communication	26	24	14	38	19	24	-2
ICT sector	24	28	15	36	29	27	3
All enterprises, without financial sector	20	12	7	26	22	17	-3
Transportation and storage	16	15	4	26	23	17	1
Administrative and support service activities	13	0	5	38	11	14	1
Electricity, gas, steam, air conditioning and water supply	11	0	1	8	0	2	-9
Real estate activities	11	0	9	5	0	4	-8
Professional, scientific and technical activities	9	0	4	21	11	9	0
Construction	4	8	3	21	11	11	7

Source: Eurostat online data. Note data in the last column for N Macedonia are for 2016, data for Serbia are an average for 2017-2018, some data for Montenegro is for 2017

4. Internet access and international trade

In this section we identify the role of digital infrastructure in explaining the growth of exports of services in the Western Balkan economies. As is shown in Figure 6, Eurostat data show that the economies in the CEFTA region with the fastest growing services exports are Kosovo* and Serbia (between 2008 and 2018).

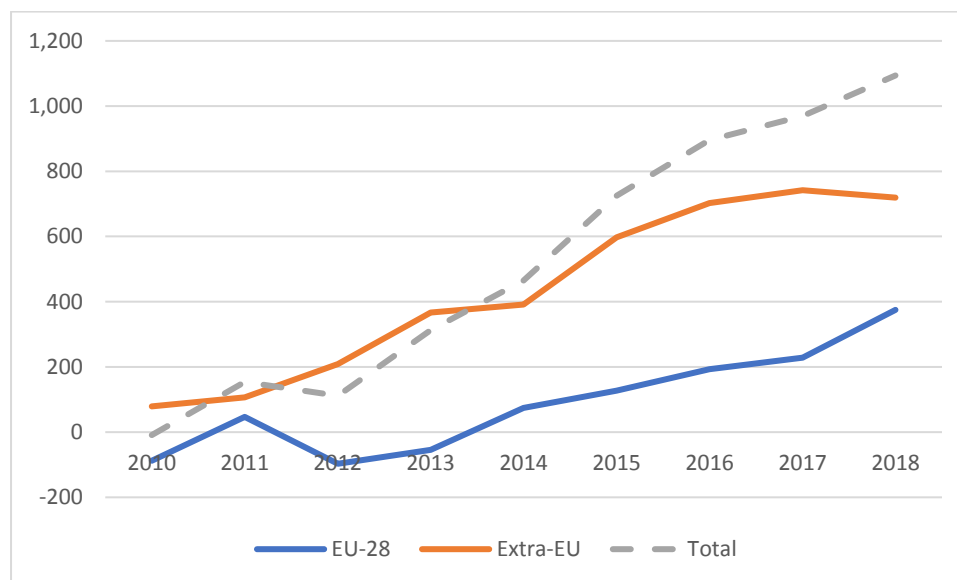
Figure 6: Growth in services exports from 2009-2017 (%)



Source: Eurostat online data, GDP and main components (output, expenditure and income) [nama_10_gdp]

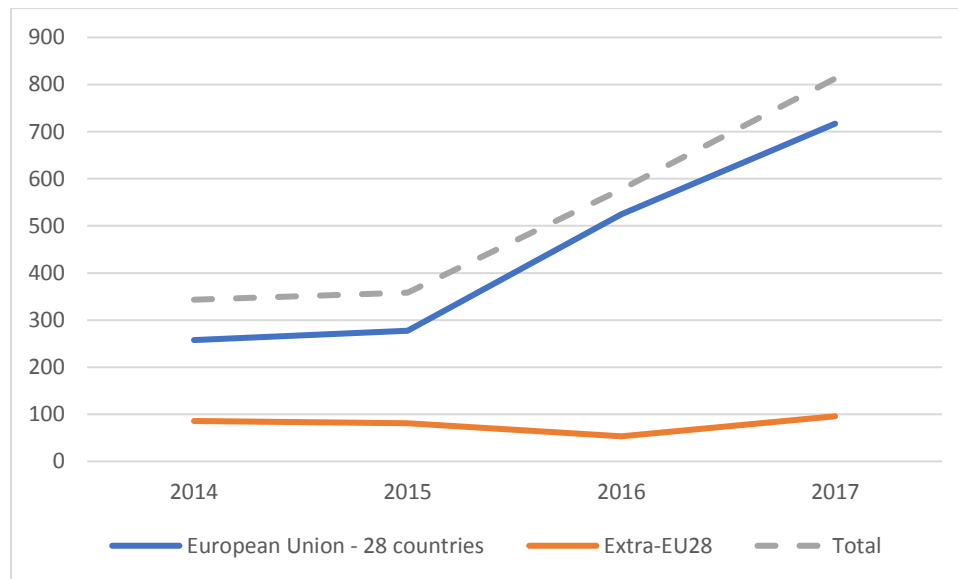
The increase in services exports in Serbia and Kosovo* has been remarkable and has led to an increasing trade surplus in services in both economies. In Serbia, the growth in the overall balance of services trade has been most rapid to extra-EU countries (see Figure 7), while in Kosovo* the growth of services trade balance has mainly been due to increased exports to the EU (see Figure 8).

Figure 7: Services trade balance, Serbia, 2010-2018



Source: Eurostat online data, Total services, detailed geographical breakdown by EU Member States (since 2010) (BPM6) [bop_its6_tot]

Figure 8: Services trade balance, Kosovo*, 2014-2018



Source: Eurostat online data, Total services, detailed geographical breakdown by EU Member States (since 2010) (BPM6) [bop_its6_tot]

Increased broadband penetration, as a facilitator for the use of the internet for commercial reasons may be a factor in driving this substantial growth of services trade in Kosovo* and Serbia, while the relatively poor performance of Bosnia and Herzegovina in the service export field may be linked to the relatively weak roll-out of broadband services reported above. To investigate further this hypothesis, we have developed a panel data regression model to explain the differences in services exports as a share of GDP in the CEFTA economies for which sufficient data is available, namely Albania, Bosnia and Herzegovina, Montenegro and Serbia. The basic model can be written as follows:

$$\frac{S_{it}}{GDP_{it}} = c + \beta_1 B_{it} + \mathbb{Z}_{it} + \varepsilon_{it} \quad (1)$$

Where, for country i at time t:

S_{it} = volume of services exports

GDP_{it} = gross domestic product

B_{it} = the penetration rate of broadband contracts per hundred population

\mathbb{Z}_{it} = a vector of correlates of the share of services exports in GDP

= error term

The data on the share of services exports are taken from Eurostat. The data on the broadband penetration rate is taken from the statistical database of the International Telecommunications Union (ITU) and represents the number of broadband contracts per hundred population each year. Data are only available for Albania, Bosnia and Herzegovina, Montenegro and Serbia over the period 2009-2017. The panel regression analysis yields the results set out in Table 3.

Table 3: Panel data regression, fixed effects, dependent variable share of services exports in GDP, 2009-2017

	Coefficient	t-statistic
Broadband penetration rate	0.38***	4.34
Graduate enrolment ratio	-207.81***	-3.17
Exchange rate	0.085	1.42
Constant	15.50***	4.28
R ² (overall)	0.188	
F	9.68 (0.00)	
Hausman test	$\chi^2 = 0.00$	

A Hausman test rejects the use of the random effects specification, so we adhere to the fixed effects results. These show that there is a significant effect of broadband penetration on services exports. The main finding is that a 10 percentage point increase in the broadband penetration rate in the CEFTA parties for which we have data gives rise to a 3.8 percentage point increase in the share of services exports in GDP. This is a far more powerful effect than has been found in studies of the impact of broadband use on services exports in other parts of the world (see the studies by Freund and Weinhold, 2002 and Choi, 2010 reported in Section 2, although admittedly the definitions of the variables used in the analysis differ).

Surprisingly, the graduate share of the population diminishes the share of services exports in GDP. This issue requires a deeper analysis, perhaps breaking down the graduates into subject areas or taking into account that many graduates in the CEFTA region are either unemployed or in mismatched jobs (Bartlett et al. 2018). Perhaps the proportion of employed graduates would provide a more useful and reliable indicator here.

Exchange rates play an important role in most analyses of export performance. However, in the case of services exports the effects may be more nuanced. For example, in a study of services exports in India, Sahoo et al. (2019) find that while traditional service exports are negatively and significantly affected by real exchange rate movements, modern service

exports are negatively but not significantly affected. In the case of the CEFTA region the exchange rate variable is not significant. This is perhaps not surprising as there is little variation in exchange rates as the Bosnian currency is tied to the Euro and Montenegro has adopted the Euro as its official currency. Only Albania and Serbia have a floating exchange rate, but in recent years these have become loosely pegged to the euro.

5. Barriers to e-commerce in the Western Balkans

The growth of online sales of services through e-commerce is likely to be a large element of future trade growth both globally and within the CEFTA region. However, in order to make the most of investments in digital technologies a range of complementary factors should be in place. These include internet quality and speed, a favourable regulatory and enabling environment, and a well-educated labour force.

5.1. Internet speed

Although there has been an increase in internet penetration and in the development of broadband infrastructure in the CEFTA region, the quality of the networks varies greatly across the region, as do the costs of internet access. The distinction between the quantity and quality of broadband infrastructure is important. According to the findings from a study by Abelianski & Hilbert (2017), while overall internet infrastructure contributes to improvements in international trade, improvements in broadband speed are more important for less-developed countries, while for developed countries (where broadband speeds are already high) it is the expansion in internet penetration rates that is the critical factor. This is because of the importance of being close to the technological frontier in internet technology – it is of little use to expand internet penetration rates if the technology in use is far from the technology frontier.

Table 4: Most important features of internet access (%) and global speed ranking, 2019

	Speed & bandwidth	Reliability & stability of connection	Good coverage	Price level	Global rank of internet speed
Serbia	37	49	11	3	53
Kosovo*	54	18	10	18	65
Montenegro	31	41	11	17	69
Albania	53	18	12	18	78
North Macedonia	34	46	9	9	81
Bosnia and Herzegovina	43	43	7	6	85
Average	42	36	10	12	

Source: Balkan Business Barometer and <https://www.speedtest.net/global-index>

Table 4 shows the ranking of some of the CEFTA parties in terms of internet speed in 2019. The highest ranked is Serbia at 53rd position out of 175 countries; the lowest ranked is Bosnia and Herzegovina. According to the Balkan Business Barometer, compiled annually by the Regional Cooperation Council, businesses in Albania and Kosovo* seem to have the greatest concerns related to internet speed and bandwidth. The reliability and the stability of connections appears to be the greatest concern in North Macedonia and Serbia. These data suggest that the CEFTA parties are only moderately advanced in terms of the quality of internet access and that there is much to be done to improve the situation, and bring it up to speed with more developed countries in Europe and around the world.

5.2. *Regulatory environment*

The quality of institutions and the business environment can also have an impact on the efficacy of internet infrastructure in promoting international trade. The absence of these can pose serious barriers to the development of services trade through the growth of e-commerce. For example, research has shown that in the Western Balkan region the difficulty in the enforcement of intellectual property rights leads to the problem of piracy in relation to intellectual property rights for software products (Handjiski & Šestović, 2011). Cross-border regulatory convergence and cooperation is also an important element in facilitating e-commerce in the region. In this respect it should be noted that since 2019 working arrangements have been established between the Body of European Regulators for Electronic Communications (BEREC) and the regulatory authorities of all the Western Balkan economies.⁷ Concerns have been observed over issues such as the security of payments and the trust in the ability to return defective goods or unreliable services. Long delivery times are also problematic; for example, 35% of the individuals who bought goods over the internet in Montenegro in 2016 declined to buy goods in that way a year later due to the long delivery times encountered.⁸

5.3. *Geo-blocking*

If the internet leads to the “death of distance”, a regulatory response may be triggered through the mechanism of geo-blocking, restricting consumer access to internet purchases in order to protect local producers. Access to certain websites can be blocked, leading to differences in internet access in different countries. Other regulatory responses include

⁷ BEREC (2019) “Decision No MB/2019/08 of the BEREC Office Management Board to establish Working Arrangements between NRAs of Montenegro, Bosnia & Herzegovina, Albania, North Macedonia, Kosovo*, Serbia, Norway, Iceland and Liechtenstein and the Body of European Regulators for Electronic Communications (BEREC)” Brussels: Body of European Regulators for Electronic Communications.

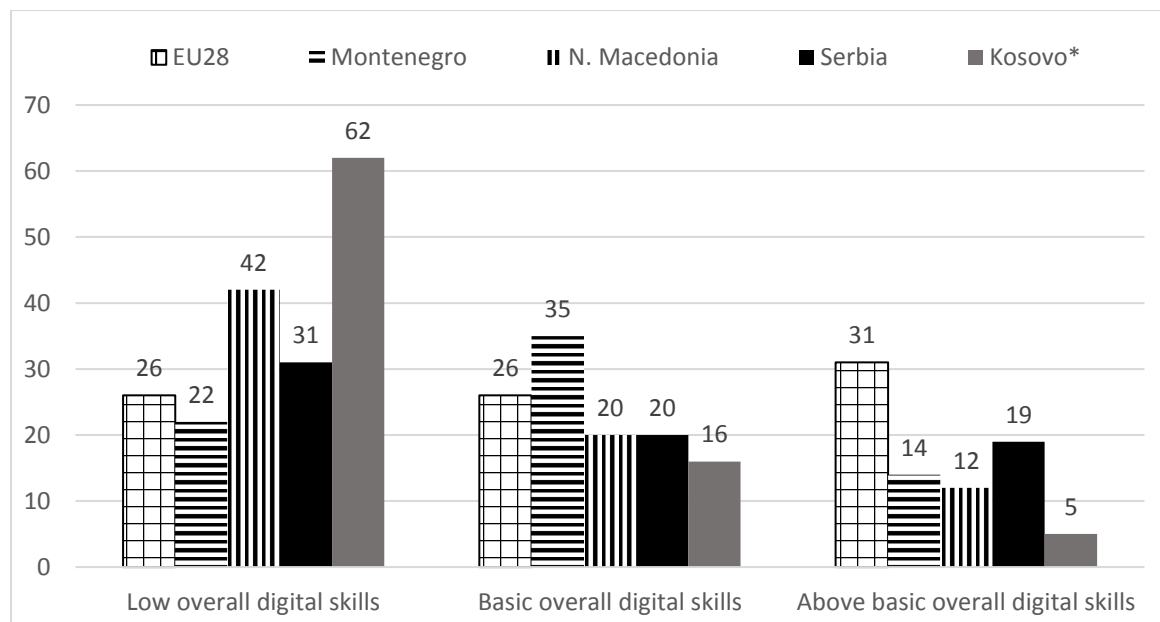
⁸ Eurostat database on “Digital Economy and Society”

policies such as copyright policies that cause differences in the availability and consumption of media across different locations, privacy policy that may generate differences in advertising content and website success, and trademark policy which may bring about differences in internet search outcomes (Goldfarb & Tucker, 2019). A recent European Commission survey found that even in the EU, about 37% of potential cross-border internet purchases were unsuccessful due to geo-blocking of payments (European Commission, 2017). It was estimated that removing geo-blocking could yield enormous benefits in increased cross-border trade, an effect that is likely to be applicable to the CEFTA economies as well.

5.4. Internet skills

The level of internet skills is rather low in the CEFTA region and is generally below that in the EU (see Figure 9). Whereas only one quarter of the EU population has a low level of digital skills, the proportion with only a low level of internet skills is far higher in the CEFTA parties. The most disadvantaged in this respect are North Macedonia where 42% of individuals have only a low level of internet skills and Kosovo* where the proportion is as high as 62%. Among the CEFTA parties, the proportion of individuals with skills above the basic level is highest in Serbia but still relatively low compared to the EU.

Figure 9. Low individual levels of digital skills, % of individuals, 2017

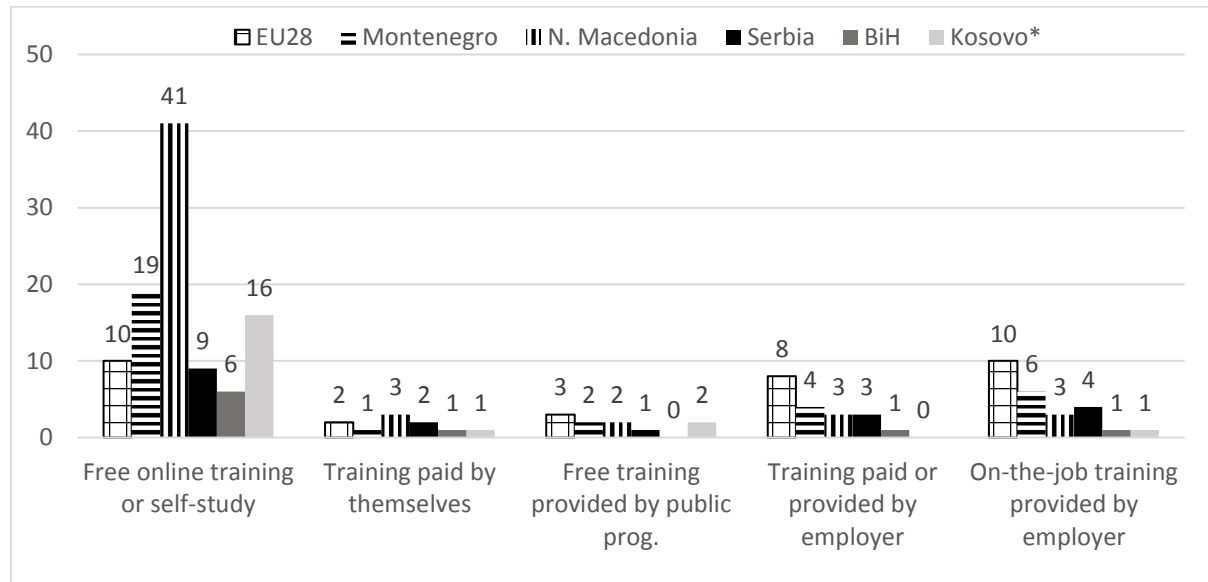


Source: Eurostat online data

Most individuals in the CEFTA parties gain their internet skills from free online learning or study, with the proportion doing so being very high in North Macedonia, and relatively high in Montenegro and Serbia (see Figure 10). This form of informal learning is less present in the EU, where more formal learning opportunities are available. In the EU a relatively high

proportion of individuals gain their internet skills through training paid for by their employer or through on-the-job training provided by the employer. In the CEFTA parties, these routes to learnings are notable by their relative absence.

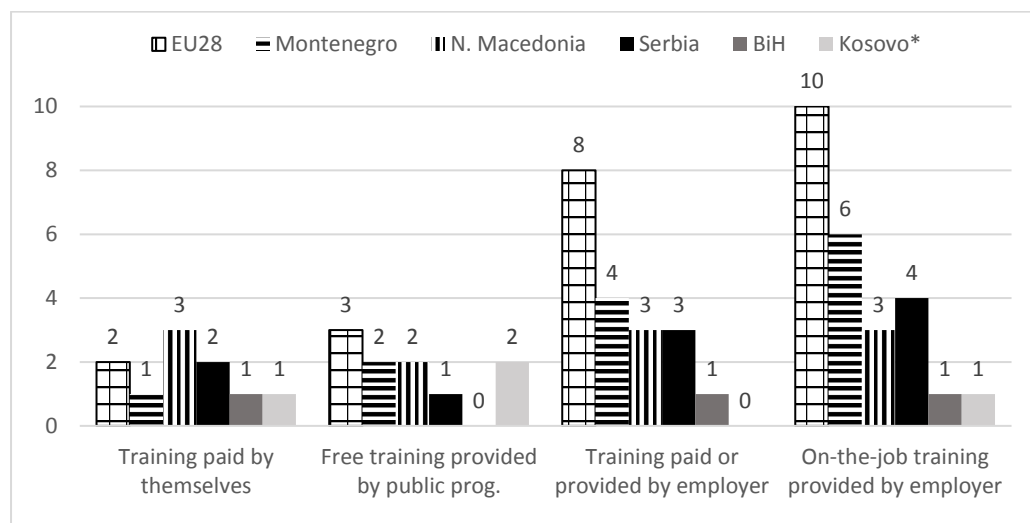
Figure 10. Low levels of training for skills relating to the use of computers, software or applications, % individuals, 2018



Source: Calculated based on data from Eurostat

Compounding these defects is a relative lack of funding for training in internet skills in the CEFTA parties, whereas in the EU a relatively high proportion of training is funded by employers, this form of funding is far less readily available in the CEFTA economies (see Figure 11).

Figure 11. lack of sources of financing for digital skills training



Source: Calculated based on data from Eurostat

6. Conclusions

In this paper we have argued that the digital economy is making a significant contribution to services exports in the region, but that several substantial barriers hinder the achievement of its full potential. Despite the potential benefits in the development of the digital infrastructure for promoting trade in services in the CEFTA region, many barriers inhibit the full realisation of the digital economy in the region. These barriers include poor infrastructure, slow broadband speeds and limited bandwidth, the regulatory environment, geo-blocking and a lack of skills in the use of online technologies. Combined, these barriers inhibit the use of the internet as a tool to support the growth of the digital economy and services exports in the region. In response to such problems, the regulatory environment is in need of fast revision to keep up with the pace of change in digital technologies.⁹ In regard to the development of internet skills, the opportunities and financing for internet training and the development of internet skills is insufficient and problematic. This points to the need to address the problem not only from the 'supply' side (e.g., further improvements of the internet infrastructure) but also from the 'demand' side (e.g., internet skills of individuals).

⁹ See also RCC & CEFTA (2018).

References

Abelianski, A. L. & Hilbert, M. (2017) "Digital technology and international trade: Is it the quantity of subscriptions or the quality of data speed that matters?", *Telecommunications Policy*, 41: 35-48.

Bertschek, I., Cerquera, D. & Klein, G. J. (2013). More bits – more bucks? Measuring the impact of broadband internet on firm performance. *Information Economics and Policy*, 25 (3), pp. 190–203.

Calvino, F. et al. (2018) "A taxonomy of digital intensive sectors", *OECD Science, Technology and Industry Working Papers, 2018/14*, Paris: OECD Publishing

Choi (2010) "The effects of the Internet on service trade", *Economics Letters*, 109: 102-104

Clark, G. R. G. (2008) "Has the internet increased exports for firms in low and middle-income countries?", *Information Economics and Policy*, 20(1): 16-37

Czernich, N., Falck, O., Kretschmer, T. & Woessmann L. (2011). Broadband infrastructure and economic growth. *The Economic Journal*, 121 (552), pp. 505–532.

EC (2015) A Digital Single Market Strategy for Europe: Analysis and Evidence, *Commission Staff Working Document, SWD(2015) 100 final*, Brussels, 6.5.2015

European Commission (2017) *A Connected Digital Single Market for All*, SWD(2017) 155 final, Brussels 10.05.2017

Freund, C. and Weinhold, D. (2002) "The Internet and international trade", *American Economic Review*, 92(2): 236-240.

Gnangnon, S. K. & Iyer, H. (2018) "Does bridging the internet access divide contribute to enhancing countries' integration into the global trade in services markets?", *Telecommunications Policy*, 42: 61-77.

Goldfarb, A. & Tucker, C. (2019) "Digital Economics", *Journal of Economic Literature*, 57(1): 3-43.

Goswami, A. G., Gupta, P., Mattoo, A. and Saez, S. (2012) "Service exports: are the drivers different for developing countries?", in: A. G. Goswami, A. Mattoo and S. Saez (eds.) *Exporting Services: A Developing Country Perspective*, Washington: The World Bank, pp. 25-80.

Handjiski, B. & Šestović, L. (2011) *Barriers to Trade in Services in the CEFTA Region*, Washington: The World Bank.

Kelly, T., Liaplina, A., Tan, S. W. & Winkler, H. (2017) *Reaping Digital Dividends: Leveraging the Internet for Development in Europe and Central Asia*, Washington DC: The World Bank.

Kneller, R, and Timmis, J. (2016) "ICT and exporting, the effects of broadband on the extensive margin of business service exports", *Review of International Economics*, 24(4): 757-796.

Kongaut, C. & Bohlin, E. (2014). Impact of broadband speed on economic outputs: An empirical study of OECD countries. *25th European Regional Conference of the International Telecommunications Society (ITS)*, Brussels, Belgium, 22-25 June 2014.

Koutroumpis, P. (2009). The economic impact of broadband on growth: A simultaneous approach. *Telecommunications Policy*, 33 (9), pp. 471-485.

Liu, L. & Nath H. K. (2013) "Information and communications technology and trade in emerging market economies", *Emerging Markets Finance and Trade*, 49(6): 67-87.

Mitrović, D. (2015) "Broadband adoption, digital divide and the global economic competitiveness of the Western Balkan countries", *Economic Annals*, 207: 95-115

Mühleisen, M. (2018) "The long and short of the digital revolution", *Finance & Development*, June 2018: 5-8.

Prica, I. (2019) "Trade in services in the Western Balkan countries", in: R. Osbild and W. Bartlett (eds.) *Western Balkan Economies in Transition: Recent Economic and Social Developments*, Cham: Springer Nature, pp. 29-46.

Qiang, C. Z. & Rossotto, C. M. (2009). Economic impacts of broadband. In *Information and Communications for Development 2009: Extending Reach and Increasing Impact* (pp. 35–50). Washington, DC: World Bank.

RCC & CEFTA (2018) *MAP Stocktaking and Needs Assessment Report*, Sarajevo: Regional Cooperation Council.

Sahoo, M., Babu, M. S. & Dash, U. (2019) "Asymmetric effects of exchange rate movements on traditional and modern services exports: evidence from a large emergence economy", *Journal of International Trade & Economic Development*, 28(4): 508-531.

Sourdin, P. & Pomfret, R. (2012) *Trade Facilitation: Defining, Measuring, Explaining and Reducing the Cost of International Trade*, Cheltenham: Edward Elgar.

World Bank (2016) *Digital Dividends*, Washington: The World Bank