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The European Digital Single Market

Its Role in Economic Activity in the EU

Nestor Duch-Brown and Bertin Martens

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Abstract

The European Commission launched the Digital Single Market policy initiative in May 2015. It aims to make the EU's Single Market fit for the digital age, tearing down regulatory walls and moving from 28 national markets to a single one. This document compiles various bits of empirical evidence that illustrate the current degree of take up in online services trade and the remaining obstacles to the creation of a single digital services market in the EU. It documents the uptake and evolution of e-commerce in goods and services in the EU over the last decade and explores the drivers and barriers to (cross-border) e-commerce for consumers and for firms operating in the EU.

Executive Summary

The European Digital Single Market (DSM) has become a priority for the European Commission. However, there is little evidence about how this market functions that could help us understand it or inform policy makers. Since its emergence in the mid-90s, electronic commerce (e-commerce) as a commercialisation channel has been growing. Its rapid penetration has been generating increasing concerns for policy makers. However, the absence of appropriate data on the volume and relevance of electronic markets is obstructing policy decision making. Despite research efforts by both academics and public institutions, we only have partial pictures of the whole Internet economy. This report aims to shed some light on the evolution and the current situation of e-commerce in the European Union (EU). We look at the general role it plays in economic activity and focus particularly on trade across different Member States (MS).

The data available at the EU level on the Digital Single Market shows a growing industry both for goods and for services. The European digital market is one of the largest in the world, even though it may still be considered immature for some goods and/or services. Big countries have a higher share of e-commerce but small countries benefit more from cross-border e-commerce, a feature of the DSM that is still in its infancy. Moreover, the DSM is quite concentrated in specific product categories, such as clothing, footwear, media products and consumer electronics, which together represent 45% of sales.

E-commerce greatly enhances consumer choice in terms of sellers and products to choose from. It is commonly recognized that being able to shop conveniently at any time from home, office or via mobile devices is a key feature of e-commerce. Consumers greatly benefit from e-commerce, but they mostly buy domestically. In 2002, only 9% of Europeans on average purchased online, but in 2014 the figure went up to 41%. However, the difference between the countries with the highest and the lowest rates of online purchasing also increased. Among the factors that drive the growth in online trade, the uptake of internet use is an obvious necessary condition for it. In addition, market penetration of e-commerce is linked to per capita incomes: e-commerce is less used (as a share of total retail trade) in poorer countries, where the timing of adoption of the Internet and hence also the deployment of e-commerce solutions has occurred later than in more advanced countries. One additional factor that explains e-commerce adoption by consumers is related to prices. Several arguments suggest that prices and price dispersion are lower online than offline. However, research indicates that other factors such as convenience and variety are more relevant than lower prices. Moreover, it is not exactly true that prices online are necessarily lower than they are offline. Projections for e-commerce penetration suggest that, taking into account the adoption trajectories observed in the different Member States, the saturation point will be around 75%. This means that the share of EU population aged 16-74 that will eventually buy online will be around 75%. Taking into account that the value for 2014 is 41% this represents a huge potential for e-commerce in the coming years. As suggested by economic principles, prices, variety and transaction costs are the main drivers of the shift from offline to online purchasing. Variety seems to motivate consumers to buy goods online from other countries more than prices.

From the supply side, e-commerce significantly decreases barriers to entry for online retailers due to low start-up costs as compared with the costs for traditional retailers. For the most part, online businesses have no, or very low, logistics and stock costs, allowing new business models to flourish. The share of firms involved in e-commerce has remained relatively constant in the period 2004-2014 at about 14%. There is no comprehensive information on the population of firms doing e-commerce. However, indicators for the top 20 online retailers in the EU in 2013 show that these are typically large firms, which spread their activities across several countries and usually carry out their main activity offline. As a matter of fact, the average weighted percentage of turnover that comes from online activities is just 14%. The number of pure e-commerce players in this list is limited to three companies. The aggregated turnover value of the top 100 online retailers in the EU accounted for 52% of total online retail in 2013.

Looking at the average turnover by firm in the top 100, we observe a steady increase, passing from 674 Million € in 2010 to 924 Million € in 2013. Concentration has been increasing in the recent years. These evolutions may eventually raise competition concerns if the companies dominating the market start to use exclusionary tactics or anti-competitive practices. However, some concentration is to be expected in markets where switching costs and network effects play a significant role, even though there are also some effects that tend to facilitate entry by new competitors. Only a limited number of barriers really matter for online trade: these include settling cross-border disputes, restrictions on suppliers selling cross-border, delivery costs, taxation rules, and knowledge of "the rules" abroad. In line with the offline trade literature, the data confirm that they matter mostly for small firms who find it harder to overcome the trade costs associated with these barriers.

There are no comprehensive EU data for B2B, B2G and C2C markets. Moreover, a large part of online activity is based on "free" or "freemium" business models, driven by advertising or other sources of financing. The fact that the consumers do not pay for these services does not mean that they have no economic value. The online services most in demand by consumers are social networking sites, followed by online games, e-mail services and search engines.

The European online market is one of the largest in the world, both for goods and for services. However, in many respects, it is the sum of 28 different online markets, barely interconnected. This failure to interconnect is influenced by many factors, from both demand and supply sides.

I. Introduction

With the aim to stimulate growth and competitiveness by encouraging further integration, the European Commission proposed in 1985 an ambitious agenda to eliminate existing barriers to internal trade as well as to promote capital and labour mobility within the EU to be completed by 1992. More than twenty years later –a period characterised by heterogeneous economic performance across Member States (MS), successive enlargements and radical technological developments- there is some consensus on the success of the Single Market Programme. However, there are also concerns about the usefulness of traditional policies in a substantially different economic context. The Single Market Act[1] enacted in 2011 tackles many of these issues, identifying information society services –and particularly e-commerce- as fundamental drivers for prosperity and competitiveness of the European economy.

Since its emergence in the mid 90s, electronic commerce (e-commerce) has been escalating as a commercialisation channel. Even if during the past years its penetration speed has diminished due to the economic crisis, it is expected to continue to expand significantly in the years to come. The rapid penetration of e-commerce has been generating growing concerns in the policy dimension. However, the absence of appropriate data on the volume and relevance of electronic markets is obstructing policy decision making. Despite research efforts from both academics and public institutions, as of today, we only have partial pictures of the whole Internet economy. This report aims to shed some light on the evolution and the current situation of e-commerce in the European Union (EU). In particular, we revise its role in economic activity more generally and particularly, in trade across different Member States (MS).

In parallel with the deployment of ICT and particularly the massive adoption of the Internet during the last 20 years, e-commerce has expanded considerably. This penetration of e-commerce has important economic impacts, due to the effects electronic markets can have in the economy. For instance, digital markets help to mitigate some factors that have been traditionally considered as market frictions. Electronic marketplaces reduce information asymmetries (when one party in a transaction has more relevant information than the other party); search costs (the effort to find suitable products or customers); transaction costs (the cost of participating in a market); and menu costs (costs of changing prices). On the other hand, digital markets enable practices that are difficult to implement in offline markets such as price discrimination (selling the same goods, or nearly the same goods, to different targeted groups at different prices); dynamic pricing strategies (the price of a product varies depending on the demand characteristics of the customer or the supply situation of the seller); and disintermediation (the removal of organizations or business process layers responsible for intermediary steps in the value chain).

These changes affect different industries in non-equal ways, depending on the relevance of the different elements for their performance. Hence, e-commerce penetration will necessarily differ by sector and, due to productive and trade specialisations, also among countries. This report is structured as follows. The next section deals with the size of the digital market in Europe. The third section focuses on the demand side, this is, the number of individuals using the internet to purchase goods and services. The fourth section concentrates on the supply side. It describes the proportion of firms selling online. The fifth section goes beyond traditional B2C e-commerce and offers some evidence about online services in general. The sixth section deals with digital media, one of the most relevant sectors within the digital economy. The seventh section offers some preliminary insights with respect to the macroeconomic impacts of e-commerce in the EU. The last section concludes.

[1] Along with other pieces of legislation, such as the Digital Agenda for Europe among others.

II. The Size of the Digital Single Market

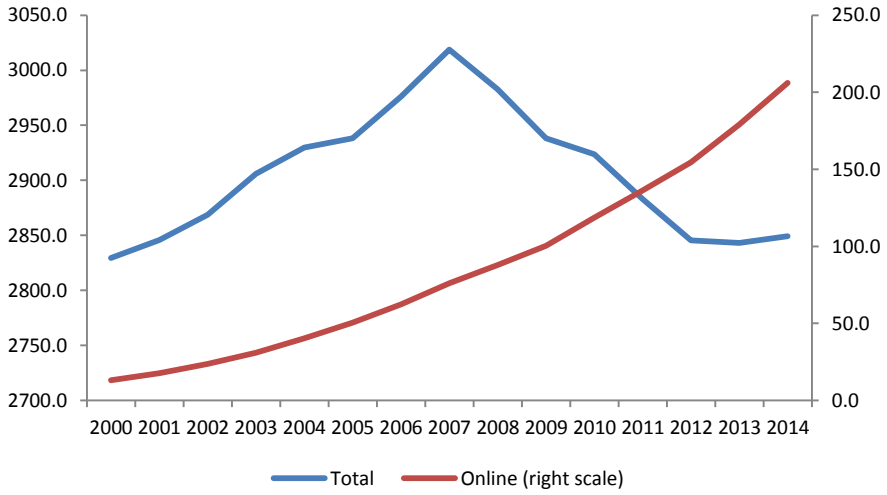
This section presents some descriptive statics on online markets in the EU, including figures on the size of online retail markets, the distribution by sector and economic activity, a comparison with the EU's main trading partners and the extent of cross-border e-commerce.

II.1 Size of the online retail market in the EU

One of the main obstacles to understand the role of e-commerce in the European economy is lack of appropriate data. We have no clear idea how big the overall online market in the EU is. We have been able to collect some figures for specific parts of the online market however, in particular the B2C market. The time profile shows continuous strong growth in online sales, despite the 2008 economic crisis and the drop in overall retail sales in subsequent years. With an average annual growth rate of 22% in the period 2000-2014, online retail of goods exceeded 200 Bln € in 2014, reaching a share of 7% of total retail in the EU28 (Graph 1).

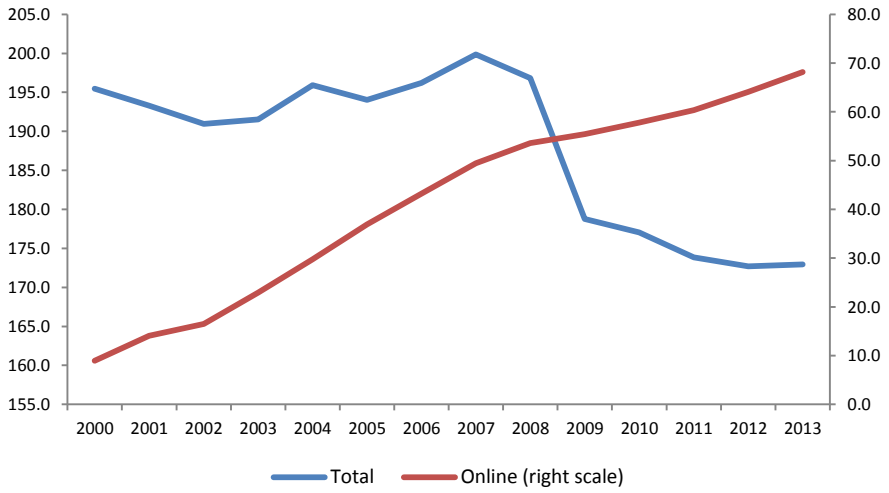
The share of online sales is much larger in services than in goods. For instance in the Travel and Tourism sector, one of the activities more exposed to the Internet revolution, online sales represent some 40% of total retail sales. In 2013 it reached a volume of sales close to 70 Bln € in the EU. As with the case of goods, online sales in this sector increased steadily during the whole period 2000-2013 despite the sharp fall in total retail services sales registered after 2007 (Graph 2).

Graph 1: Evolution of total and online retail sales in goods, 2000-2014 (Bln €)



Source: Euromonitor International from official statistics, trade associations, trade press, company research, trade interviews, trade sources.

Graph 2: Evolution of total and online retail sales in travel and tourism services, 2000-2014 (Bln €)



Source: Euromonitor International from official statistics, trade associations, trade press, company research, trade interviews, trade sources.

A significant fraction of the turnover registered in online retail for goods comes from new businesses. The data shows that in 2014, around 40% of sales are made through pure internet retailers, companies that operate online only (and do not have physical outlets). The massive adoption of portable devices such as smartphones and tablets is also having an impact in online sales. Although today mobile commerce (m-commerce) represents a small fraction of total e-commerce transactions, revenue has been steadily growing. Due to its features, it is particularly suited for location-based services such as banking and financial services; wireless advertising and retailing; and games and entertainment among others (Table 1).

Table 1: Evolution of the volume of the retail sector in the EU-28 and its components, 2000-2014 (Bln euros)

	2000	2005	2010	2014
Total	2,829.4	2,938.2	2,923.6	2,849.2
Online	13.0	50.5	118.6	206.0
Of which:				
Pure Internet retailers		15.9	44.1	80.2
Mobile			3.4*	27.8

* Data refers to 2011.
Source: Euromonitor.

Fast online growth is often presented as an economic success story. However, e-commerce is just another distribution technology/channel for goods and services. Fast online growth does not necessarily imply that more goods and services are sold. How much economic benefits it generates depends, amongst others, on the extent of substitution between online and offline sales. The continuous growth in online sales, even during the overall downturn in retail sales, suggests at least some degree of substitution. Preliminary results (Duch-Brown et al. 2015) suggest that for some product categories – mostly consumer electronics such as digital cameras, portable media players and mobile computers - the crowding-out effect created is rather low. The results indicate a strong market expansion effect. These findings contrast however with, for instance, the travel and tourism sector where crowding out is much stronger. The

research findings for consumer electronics also indicate that consumers benefit most from online channel, more so that producers and sellers: 83% of the total welfare gains induced by e-commerce go to consumers, mostly because of access to an increased variety of products. Economic benefits may come through several mechanisms: lower prices for some goods (increased purchasing power for consumers), more variety (increased choice and hence demand) and lower transaction and search costs (less deadweight costs due to lower market frictions).

II.2 Geographical composition of the online market in the EU

The largest online market in the EU, both in terms of volume and market penetration, is the UK (Table 2). There is a strong correlation between the share of Internet sales in 2014 and 2000. However, Austria, Finland and Malta registered very high penetration rates in 2000 but not in 2014. The opposite occurs in the UK, Denmark and Ireland, countries that started the period with very low penetration rates.

Table 2: Evolution of e-commerce in goods by MS, 2000-2014 (in Mln € and %)

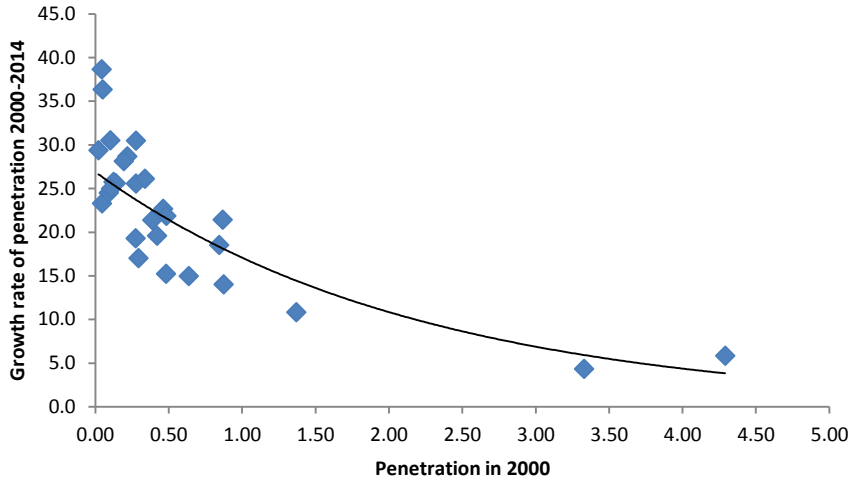
	Million euros			Share of total		
	2000	2014	Change	2000	2014	Change
Bulgaria	4.3	97.4	25.0	0.04	0.83	23.3
Croatia	3.2	94.4	27.3	0.02	0.78	29.4
Czech Republic	63.5	2326.8	29.3	0.22	7.47	28.7
Estonia	20.8	261.6	19.8	0.87	5.50	14.0
Hungary	16.9	1074.4	34.5	0.05	3.78	36.4
Latvia	5.2	178.6	28.7	0.14	3.39	25.6
Lithuania	1.9	321.0	44.3	0.04	4.19	38.7
Poland	156.2	6114.9	29.9	0.19	6.24	28.1
Romania	20.6	601.4	27.3	0.09	1.96	24.5
Slovakia	52.8	781.2	21.2	0.42	5.14	19.6
Slovenia	20.1	194.1	17.6	0.29	2.66	17.0
Austria	957.0	3734.6	10.2	1.37	5.78	10.8
Belgium	316.0	5082.5	21.9	0.39	5.83	21.4
Cyprus	22.4	124.0	13.0	0.48	3.50	15.2
Denmark	126.9	5400.5	30.7	0.28	11.46	30.5
Finland	1463.2	4181.8	7.8	4.29	9.51	5.8
France	1221.8	31995.8	26.3	0.28	6.69	25.6
Germany	2509.6	42026.5	22.3	0.46	8.06	22.7
Greece	69.8	1264.8	23.0	0.12	3.07	25.8
Ireland	282.9	3092.0	18.6	0.84	9.14	18.6
Italy	402.4	7974.3	23.8	0.11	2.40	25.0
Luxembourg	52.7	343.8	14.3	0.64	4.49	15.0
Malta	47.8	76.8	3.4	3.33	6.05	4.4
Netherlands	391.5	9382.6	25.5	0.34	8.71	26.1
Portugal	57.1	2093.1	29.3	0.10	4.27	30.5
Spain	654.8	6861.8	18.3	0.27	3.25	19.3
Sweden	298.2	6118.1	24.1	0.48	7.71	21.9
United Kingdom	3767.0	64201.9	22.5	0.87	13.17	21.4

Source: Euromonitor.

The data shows a clear inverse relationship between the penetration rate at the beginning of the period (2000) and its annual growth rate (Graph 3). This indicates that countries with a low penetration rate in 2000 have been growing more rapidly in the period 2000-2014. Hence, some convergence in terms of e-commerce penetration is

observed. This is confirmed by the fact that the dispersion of penetration rates is also lower in 2014 than in 2000.

Graph 3: Convergence in e-commerce in goods penetration rates, 2000-2014



Source: Own calculations with data from Euromonitor.

Despite convergence e-commerce in 2014 is more geographically concentrated than in 2000. Table 3 shows the distribution of internet sales by country in 2000 and in 2014 to track the observed changes during this period. Internet sales are concentrated basically in the largest European countries. The UK concentrates some 30% of internet sales, followed by Germany (20%) and France (15%). The top 5 countries account for 75% of e-commerce in the EU (up from 70% in 2000). On the other side of the distribution of sales Malta, Bulgaria and Croatia show tiny participation rates. The fifteen countries with the lowest participation account for less than 5% of internet sales in 2014. The countries that register an increase in shares between 2000 and 2014 include France (+6.1 pp), the UK (+2.2), Poland (+1.8) and Denmark (+1.6). On the other hand, countries that have seen their share decrease include Finland (-9.2), Austria (-5.5), and Spain (-1.7).

Large countries show a high share of e-commerce and small countries a low share. Hence, it is legitimate to ask to what extent this distribution reflects the distribution of the population? To answer the question, we plot the ratio of the share of e-commerce over the share of population by country (graph 4). A value above 100 indicates that the share of e-commerce sales is above the share of population and conversely, a value below 100 would indicate that the participation in the e-commerce market is below the proportion of the country's population in the EU-28 total. As the figure shows, only ten countries have values above 100, indicating that they capture a share of e-commerce that is bigger than their population share. In particular the share of Denmark, the UK, and Finland in EU28 e-commerce is more than double their share in EU28 population. For Bulgaria, Croatia and Romania participation in e-commerce is far below their population shares.

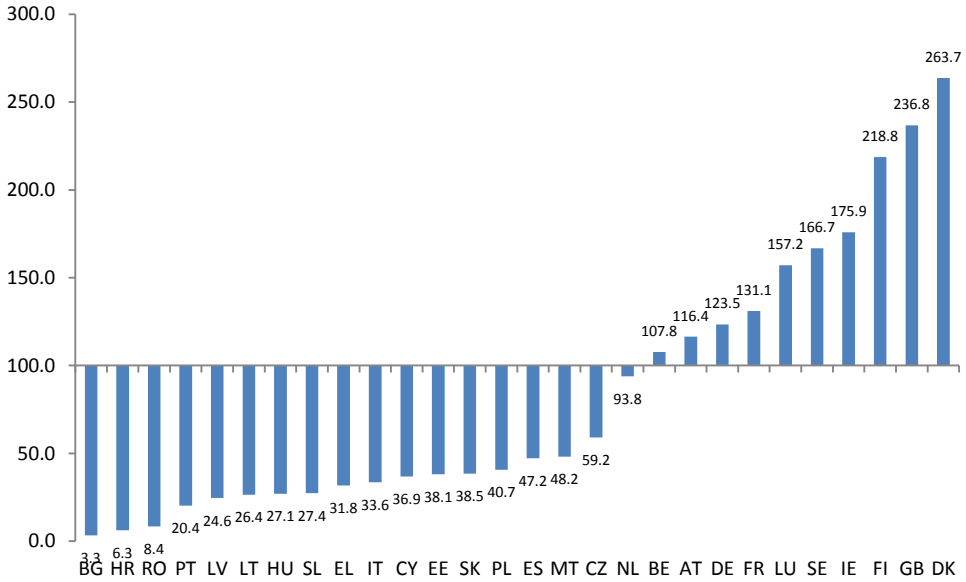
Table 3: Distribution of the online market for goods by MS (in % of total EU-28)

	2000	2014	Change
Bulgaria	0.03	0.05	0.01
Croatia	0.02	0.05	0.02
Czech Republic	0.49	1.13	0.64
Estonia	0.16	0.13	-0.03
Hungary	0.13	0.52	0.39
Latvia	0.04	0.09	0.05
Lithuania	0.01	0.16	0.14
Poland	1.20	2.97	1.77
Romania	0.16	0.29	0.13
Slovakia	0.41	0.38	-0.03
Slovenia	0.15	0.09	-0.06
Austria	7.36	1.81	-5.54
Belgium	2.43	2.47	0.04
Cyprus	0.17	0.06	-0.11
Denmark	0.98	2.62	1.65
Finland	11.25	2.03	-9.22
France	9.39	15.53	6.14
Germany	19.29	20.40	1.11
Greece	0.54	0.61	0.08
Ireland	2.18	1.50	-0.67
Italy	3.09	3.87	0.78
Luxembourg	0.41	0.17	-0.24
Malta	0.37	0.04	-0.33
Netherlands	3.01	4.55	1.54
Portugal	0.44	1.02	0.58
Spain	5.03	3.33	-1.70
Sweden	2.29	2.97	0.68
United Kingdom	28.96	31.17	2.20

Source: Own calculations with data from Euromonitor.

E-commerce affects not only trade in goods, also services. Looking at data for online travel and tourism services, we see that as early as 2000 five EU Member States had penetration rates greater than 10%. In 2013, in four out of five cases (Denmark, Finland, Ireland and the UK) penetration rates are above 60%. Particularly relevant is the case of the Netherlands that, having a penetration rate of a mere 2% in 2000, jumped to 62.2% in 2013 (Table 4).

Graph 4: Ratio of the share of e-commerce over share of population



Source: own calculations with Euromonitor data.

Table 4: Evolution of penetration of online travel and tourism services, 2000-2014 (in % of total by MS)

	2000	2005	2010	2013
Bulgaria	0.0	5.4	10.4	11.8
Croatia	0.0	2.5	12.2	16.9
Czech Republic	3.7	16.2	27.2	42.4
Hungary	0.1	21.8	27.3	36.6
Poland	0.0	2.7	13.0	21.0
Romania	0.0	0.4	5.4	13.5
Slovakia	0.0	4.6	11.4	15.1
Slovenia	0.0	0.5	2.1	2.9
Austria	0.8	8.9	28.4	38.5
Belgium	0.3	4.8	22.2	35.2
Denmark	12.2	41.8	55.1	64.6
Finland	14.5	22.0	49.7	60.1
France	0.4	10.7	26.5	39.6
Germany	0.0	12.6	26.6	34.2
Greece	0.5	18.0	34.0	43.2
Ireland	11.2	48.2	64.7	68.8
Italy	0.1	3.9	18.4	23.5
Netherlands	2.1	25.1	53.7	62.2
Portugal	1.9	8.3	30.6	42.9
Spain	0.7	6.7	15.7	27.2
Sweden	13.3	21.5	35.9	45.6
United Kingdom	15.6	41.1	52.1	60.2

Source: Euromonitor.

There is also a high geographic concentration of online sales in services sectors. Travel and tourism online sales are heavily concentrated in the UK. In 2000, the UK's travel and tourism sector represented 75% of online sales for the sample of 22 EU countries included in the Euromonitor data. At that time, many countries did not have a significant online travel and tourism industry. Thirteen years later, the UK is still the biggest market, but account for 30% only of EU online travel and tourism sales. (Table 5)

Table 5: Distribution of the T&T online market by MS (in % of total)

	2000	2005	2010	2013	Change
Bulgaria	0.0	0.1	0.1	0.1	0.1
Croatia	0.0	0.0	0.1	0.1	0.1
Czech Republic	0.4	0.5	0.5	0.7	0.3
Hungary	0.0	0.6	0.3	0.2	0.2
Poland	0.0	0.1	0.5	0.8	0.8
Romania	0.0	0.0	0.1	0.2	0.2
Slovakia	0.0	0.1	0.1	0.1	0.1
Slovenia	0.0	0.0	0.0	0.0	0.0
Austria	0.6	1.5	2.7	2.8	2.2
Belgium	0.2	0.7	2.0	2.4	2.2
Denmark	2.9	3.4	2.9	3.1	0.3
Finland	4.7	1.8	2.5	2.5	-2.2
France	1.2	6.8	10.0	11.4	10.2
Germany	0.0	11.6	15.6	15.8	15.8
Greece	0.2	1.4	1.2	1.1	1.0
Ireland	1.8	2.4	1.6	1.3	-0.5
Italy	0.2	2.4	6.2	6.7	6.5
Netherlands	1.8	4.7	7.0	6.5	4.7
Portugal	0.6	0.5	1.5	1.7	1.1
Spain	1.6	3.9	4.9	6.8	5.2
Sweden	9.3	3.6	4.1	4.6	-4.7
United Kingdom	74.5	54.1	36.2	31.0	-43.5

Source: Euromonitor.

II.3 Relevant sectors in the online market

Exposure to online sales varies across sectors. Dissimilarities in industry configurations, market structures and the relevance of transaction costs -as well as other factors generating market frictions- has allowed the Internet to deeply transform some industries while in others it does not make a significant difference. As a consequence, online sales are concentrated in a limited number of products. In 2014 the most important industries for online businesses are Apparel and Footwear; Consumer electronics and appliances; and Media Products (Table 6). They represent nearly half of all online e-commerce transactions (49%). Moreover, with the exception of other retail, these are the industries that have shown more growth during the period 2000-2014 in the EU.

Some sectors, such as Home care, improvement and furnishing, Food and drink and Traditional toys and games have become relatively less important, indicating slower growth rates in online sales. These changes are the result of the interplay of several forces behind online markets. The appearance of new services in specific industries that add value for consumers as well as the development of business models that better suit one type of product than others lie at the heart of these sectoral transformations.

Table 6: Evolution of online sales of goods, by sector (in %)

	2000	2007	2014	2014 Accumulated
Apparel and Footwear	15.8	17.6	19.5	19.5
Media Products	10.6	13.1	13.0	32.5
Consumer Electronics	13.3	13.6	12.5	45.0
Food and Drink	10.0	11.9	8.9	53.9
Housewares and Home Furnishings	6.2	5.2	4.1	58.0
Consumer Appliances	2.4	3.9	3.3	61.3
Beauty and Personal Care	2.2	2.8	2.0	63.3
Home Improvement and Gardening	5.0	2.5	1.9	65.2
Personal Accessories and Eyewear	2.7	2.4	1.8	67.0
Traditional Toys and Games	2.4	1.7	1.3	68.3
Consumer Healthcare	1.3	1.2	0.9	69.2
Pet Care	0.6	0.5	0.6	69.8
Video Games Hardware	0.5	0.7	0.4	70.2
Home Care	0.2	0.5	0.3	70.6
Other Internet Retailing*	27.0	22.4	29.4	100.0

* Includes tobacco, tissue and hygiene products, drugs, sports equipment, watches, handbags, jewellery, antiques, souvenirs, and bicycles among others.
Source: Euromonitor.

A similar picture emerges for the sectoral breakdown within the travel and tourism sector. Online flight booking dominated the industry in 2000 when it represented more than 70% of the online activity overall in travel and tourism in the EU-22 countries. In the period 2000-2013, it has lost weight and now represents some 40%. Accommodation services and packaged holidays have in turn increased significantly their participation, from 7% to 19% for the first and from 18% to 35% for the second. Other activities have remained more or less stable during the period covered by the data.

Table 7: Evolution of the distribution of online sales of T&T , by sector (in %)

	2000	2007	2013
Accommodation	6.8	16.3	18.6
Car Rental	2.4	1.7	1.8
Cruise	0.4	0.8	1.0
Flight	70.6	41.2	39.3
Package Holidays	17.7	36.1	34.8
Travel Insurance	0.6	0.9	0.9
Other Transport	1.1	1.8	2.3
Other Travel Retail	0.3	1.1	1.3

Source: Euromonitor.

II.4 Market size comparisons with main trade partners

Today, the EU is the largest online market for goods in the world in terms of volume. However, China's growth rate is faster – probably due to catch-up growth - and penetration is higher in the US, probably because it is a more mature market (Table 8).

Table 8: Comparison of the online market for goods (Bln €)

	2000	2007	2014
China	0.0*	1.5	120.7
Japan	6.2	21.7	50.4
Russia	0.3	3.6	12.5
Canada	1.6	2.5	4.8
USA	22.4	86.0	179.5
EU-28	13.0	76.0	206.0

* A result of rounding to the first decimal.
Source: Euromonitor.

A very similar picture is obtained when looking at the figures for online travel and tourism services. In 2013, the EU is the second largest online market just behind the US both in terms of volume and penetration. However, the EU's growth rate, considerably higher than the US growth rate reflects the fact that in most EU countries online retail sales are still catching up (Table 9).

Table 9: Comparison of the online market for T&T services (Bln €)

	2000	2007	2013
China	0.4	1.8	10.3
Japan	1.9	4.9	19.4
Russia	0.0	0.7	2.5
Canada	2.7	4.3	6.0
US	22.8	50.6	56.5
EU	4.6	24.7	39.4

Source: Euromonitor.

II.5 Cross-border trade in the EU

There are no statistics on bilateral cross-border e-commerce in the EU. The only sources of information on cross-border e-commerce are EU consumer survey data (See Gomez et al (2013) for the 2011 survey data and Cardona et al (2015) for the 2015 survey data) that can be used to estimate the pattern of online cross-border trade at an aggregated level.

The geographical online trade patterns that can be derived from these survey data look very similar to those in offline trade. Table 10 presents results for the 2011 consumer survey. In terms of volume, the largest European countries are also the largest online exporters and importers: the UK, Germany and France. One relevant exception is that Italy is the largest online exporter in volume terms. However, when looking the figures in relative terms (online exports over total exports) smaller countries show a stronger trade orientation: Cyprus, Malta and Greece in the case of exports and Malta, Cyprus and

Luxembourg in the case of imports (Table 10). In summary, what we observe for 2011 is that the intensity of cross-border online trade is inversely proportional to country size: smaller countries are trading online relatively more than large countries. This is similar to what can be observed in the offline trade world.

Graph 5 shows a direct relationship between total trade openness and online trade openness, with the smallest countries in the EU more prone to online cross-border trade, as they are also more dependent on total trade.

Table 10: Cross-border online trade in the EU, 2011 (Bln € and %)

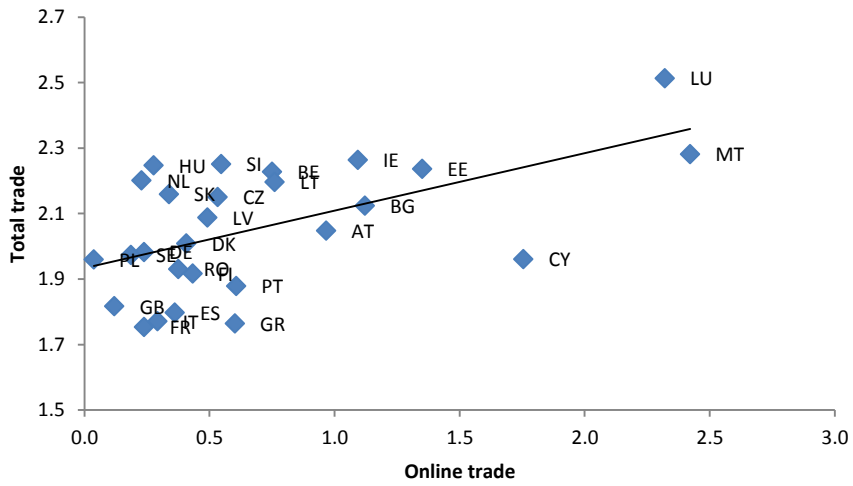
	Exports		Imports	
	Mln €	**%**	**Mln €**	**%**
Austria	1334.7	1.5	3840.2	3.6
Belgium	1129.4	0.5	2278.1	1.0
Bulgaria	55.8	0.4	385.2	2.8
Cyprus	96.3	10.9	283.0	6.6
Czech Republic	166.0	0.2	987.2	1.2
Germany	9325.7	1.5	9748.4	1.7
Denmark	760.8	1.5	1031.2	2.1
Estonia	31.8	0.4	503.8	5.3
Spain	2827.1	1.9	2045.9	1.3
Finland	538.6	1.7	610.2	1.6
France	4063.1	1.6	6862.2	2.0
United Kingdom	5934.0	3.3	6431.6	2.7
Greece	487.3	3.9	784.5	3.2
Hungary	121.2	0.2	363.3	0.7
Ireland	266.8	0.5	981.4	3.0
Italy	12557.3	6.0	1353.6	0.6
Lithuania	81.1	0.7	210.6	1.6
Luxembourg	61.9	0.5	1060.0	6.3
Latvia	133.6	2.1	149.3	1.6
Malta	57.8	4.5	317.0	9.5
Netherlands	1607.5	0.4	1579.8	0.8
Poland	856.0	0.8	838.4	0.8
Portugal	357.8	1.1	420.3	1.0
Romania	101.1	0.3	198.4	0.5
Sweden	978.7	1.3	641.1	0.7
Slovenia	97.1	0.5	157.9	0.9
Slovakia	227.4	0.5	193.4	0.5

Source: Gomez-Herrera et al. (2013).

One of the most powerful propositions of classical trade theory is that the pattern of international trade is determined by comparative advantage. A country showing a comparative advantage in a given good will export it, and countries with comparative disadvantages will import it. This can be applied to e-commerce: which countries in the EU have comparative advantages in terms of online trade? To answer that question we computed the Symmetric Revealed Comparative Advantage Indicator (SRCAI) for online trade from the bilateral online trade flows and we plotted the results (graph 6). As can be

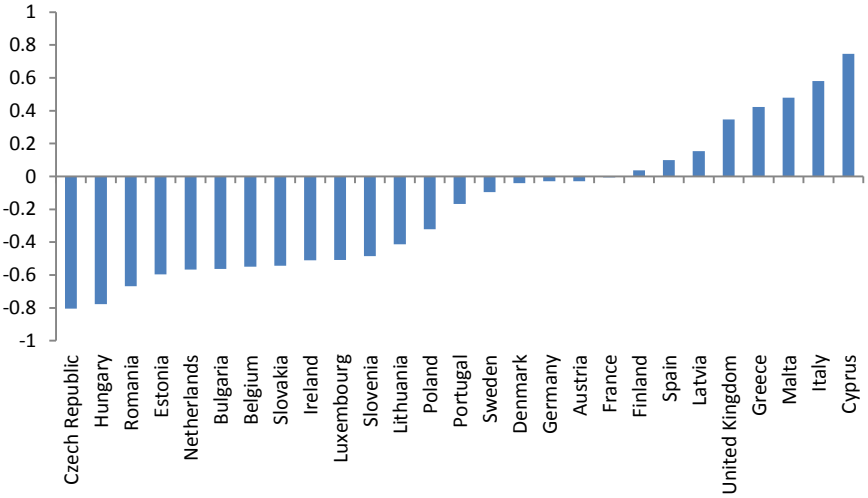
seen in that figure, the countries that show a strong comparative advantage in terms of online trade are Cyprus, Italy, Malta, Greece and the UK. Alternatively, this graph can also provide information about the EU MS online trade specialisation. When the SRCAI equals 1 in a given country, the percentage share of online trade is identical with the EU average. Where SRCAI is above 1 the country is said to be specialised in online trade and vice versa where SRCA is below 1.

Graph 5: Relationship between total trade and online trade, 2011



Source: own calculations with data from Eurostat and SANCO.

Graph 6: Symmetric Revealed Comparative Advantage Indicator for online trade



Source: own calculations with data from Eurostat and SANCO.

III. The Demand Side

Traditional retail requires buyers to visit several shops in order to compare products and prices, explore product characteristics etc before they eventually make a purchase. Brick-and-mortar shops are subject to opening hours' limitations, and consumers are normally constrained by both the number of shops they can visit in their neighbourhood or city as well as the limited time they can dedicate to shopping. Many products may not be available in shops. Price-sensitive shoppers may not be aware, and therefore cannot take advantage, of ongoing promotional sales elsewhere.

E-commerce can overcome all these constraints and thereby enhances consumer choice. Search engines and price comparison sites allow consumers to easily find and compare many different offers for the same product in a click, at any time and place, thereby reducing search costs. It is common today to find significantly more product information on the internet than by visiting a shop.

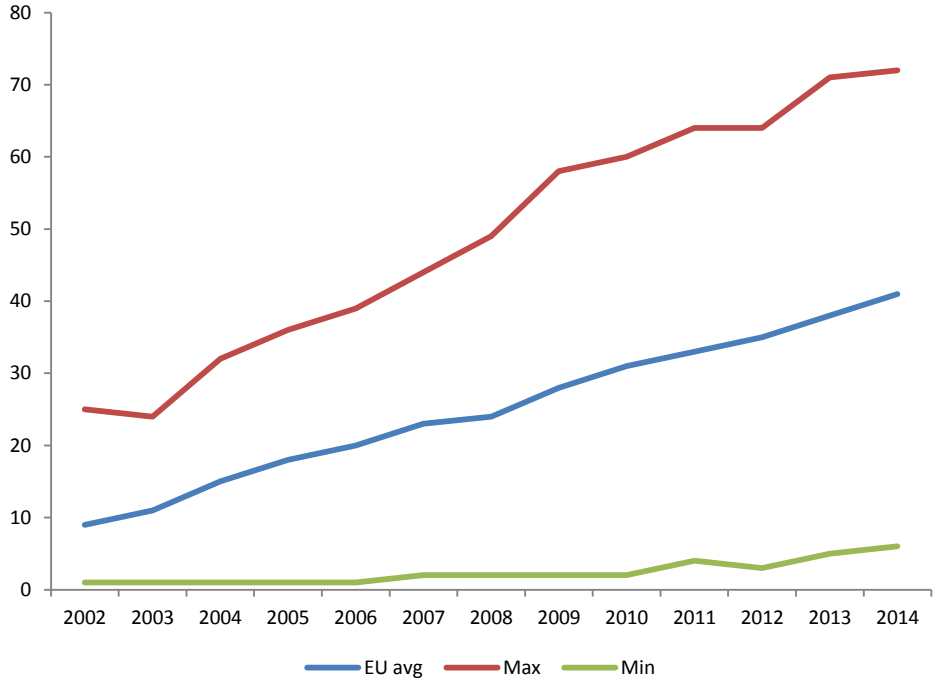
A common criticism used to be that ecommerce lacks social interaction, as the primary relationship is not between the seller and the buyer. While that is still true, online shopping has increasingly become a social phenomenon, as online shoppers are often given the ability to leave or share feedback about past purchases or about a product's characteristics more generally. Such feedback clearly provides additional information that traditional retailers cannot offer unless they have some form of web presence. Increasingly, consumers find product information and suggestions on social networks. This phenomenon, in turn, has huge network effects to attract new potential customers.

III.1 How many consumers are purchasing online?

As with ICT in general, e-commerce has grown rapidly over the past years. Graph 7 shows that in 2002 on average only 9% of Europeans purchased online, but with huge cross-country differences. For instance, the figure shows that in 2002 the difference of the country with the highest proportion of online buyers (41%) and the country with the lowest proportion (1%) is immense. The figure also shows that even if the EU average has expanded considerably in the period 2002-2014 (from 9% to 41%), the difference between the countries with the highest and the lowest proportions has also increased. The corresponding evolution of cross-border e-commerce is similar[2].

[2] The data used here refers to the share of the population aged 16-74 that conducted an online purchase in the last three months. We refer to this group as frequent e-shoppers. Additionally, Eurostat supplies data on population of the same age group that purchased online in the previous 12 months. We term this group as occasional e-shoppers. Please note that this figure –slightly higher than the one used in this section, is the data used in the Digital Agenda Scoreboard (DAS). In 2014, the average share of EU population buying online occasionally reached 50%, i.e., the goal established by the DAS for 2015.

Graph 7: Proportion of population buying online



Note: refers to individuals aged 16-74 that conducted an online purchase in the last 3 months.
Source: Eurostat.

Alternative sources of information are several Eurobarometer surveys that have been conducted to inquire about consumers' attitudes towards e-commerce and cross-border purchases. Table 11 shows the data contained in the Eurobarometer surveys of 2011 and 2012. We show the proportion of individuals that declared to have used e-commerce to buy goods and from where, i.e., from retailers located in the same country or in another EU country. In both years, the majority of individuals buy from retailers located in the same country. There are few exceptions though: in Cyprus, Ireland, Luxemburg and Malta the proportion of individuals buying across the border is higher than the proportion buying from domestic retailers.

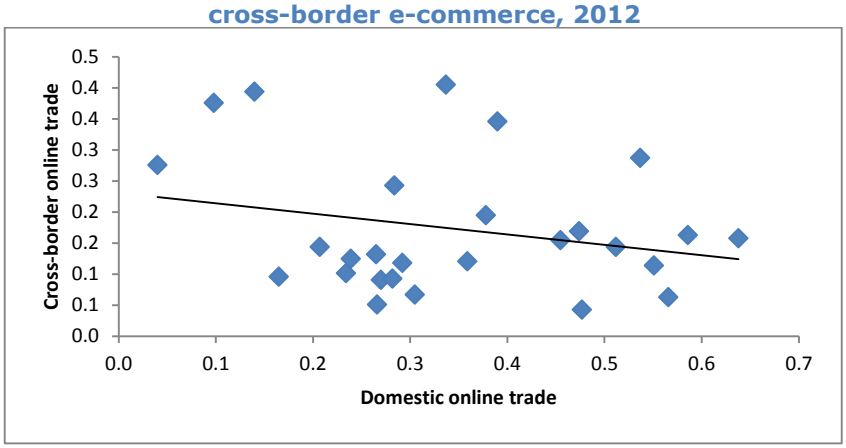
Table 11: % of consumers buying online from domestic or cross-border retailers

	2011		2012	
	Domestic	**Cross-border**	**Domestic**	**Cross-border**
Austria	0.302	0.311	0.390	0.346
Belgium	0.242	0.149	0.284	0.243
Bulgaria	0.151	0.044	0.234	0.102
Cyprus	0.054	0.211	0.040	0.276
Czech Republic	0.499	0.056	0.566	0.063
Denmark	0.513	0.221	0.537	0.287
Estonia	0.207	0.076	0.239	0.125
Finland	0.385	0.165	0.378	0.195
France	0.498	0.086	0.474	0.169
Germany	0.523	0.092	0.551	0.114
Greece	0.157	0.068	0.207	0.144
Hungary	0.228	0.028	0.305	0.067
Ireland	0.275	0.320	0.337	0.405
Italy	0.210	0.067	0.270	0.091
Latvia	0.206	0.077	0.265	0.132
Lithuania	0.192	0.063	0.282	0.093
Luxembourg	0.112	0.398	0.140	0.394
Malta	0.052	0.318	0.098	0.376
Netherlands	0.598	0.148	0.638	0.158
Poland	0.452	0.047	0.477	0.043
Portugal	0.161	0.094	0.165	0.096
Romania	0.185	0.028	0.266	0.051
Slovakia	0.375	0.093	0.455	0.155
Slovenia	0.196	0.061	0.292	0.118
Spain	0.273	0.083	0.359	0.121
Sweden	0.552	0.123	0.512	0.144
United Kingdom	0.618	0.128	0.586	0.163

Source: Eurobarometers 358 (September 2012) and 332 (September 2011).

Graph 8 shows that –with few exceptions- countries where individuals buy online more intensively from domestic retailers tend to buy relatively less intensively from retailers located in other EU countries. This supports the view that in some countries the domestic market is large enough to provide sufficient variety and convenient prices for e-shoppers. In other countries, especially smaller EU Member States, the domestic market is too small to support much supply, variety and competition, so consumers rely more on foreign providers.

Graph 8: Relationship between domestic and cross-border e-commerce, 2012



Source: Eurobarometer 358 (September 2012).

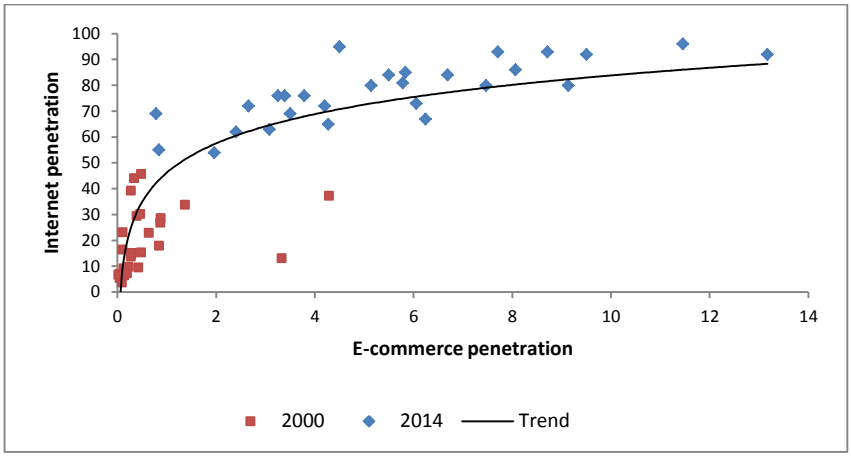
III.2 Factors that explain adoption of e-commerce among consumers

What are the factors that are driving the fast growth in online trade? On the one hand, the uptake of internet use is a necessary condition to enable e-commerce (graph 9). On the other hand we observe that e-commerce market penetration is linked to per capita income: e-commerce is less used (as a share of total retail trade) in poorer countries, where the timing of adoption of the Internet and hence also the deployment of e-commerce solutions has occurred later than in more advanced countries. Still, the strongest factor explaining e-commerce uptake is simply a time trend: people gradually get used to internet technology and therefore use it more, including for e-commerce.

Eurostat consumer surveys [3] provide information about the issues that may deter consumers from online purchases: i) no need; ii) relevant information about goods and services difficult to find on website; iii) lack the necessary skills; iv) it's too expensive; v) too long delivery times; vi) problematic to receive the ordered goods at home; vii) worried about giving personal details over the Internet; viii) worried about giving credit card or personal details over the Internet; ix) speed of the Internet connection is too low. Simple correlations among these variables with the share of individuals doing e-commerce regularly (within the last 3 months) show that the only two variables that have significant correlation are the lack of necessary skills and the concern of giving personal details over the Internet.

[3] See http://ec.europa.eu/eurostat/web/information-society/data/database

Graph 9: Internet and E-commerce penetration in the EU-28, 2000 and 2014 (in %)



Source: own calculations with data from Eurostat and Euromonitor.

There is also evidence that these obstacles play a role in cross-border online trade. A 2012 consumer survey shows that while the majority of the EU population (59.2%) feels confident making domestic purchases via the Internet, a much lower percentage (35.4%) expresses confidence about cross-border purchases (Flash Eurobarometer 358, 2013). The survey does not go into the causes of the differences in confidence, but the general concerns shared by most internet users when buying online are the risk becoming a victim of fraud (55%) and abuse of their personal information (43%), which will feel further out of control when shopping online in a foreign country (Special Eurobarometer 359, 2011). We have as yet no objective indicators to assess if cross-border transactions are indeed more subject to abuse. But perception may be more important than facts. The entire issue of consumer confidence online remains veiled in mist. More research is needed to disentangle the components of that confidence: shop brand names, country brand names, linguistic confidence, acceptance of secure means of payment, among others.

The consumer surveys conducted within the Eurobarometer questionnaires also provide information about the relationship between consumers and e-commerce. For instance, in 2012 the survey asked individuals about the likelihood of receiving misleading, deceptive or fraudulent advertisements or offers by different distribution channels. Results show that almost half of the individuals declared that this likelihood was high for the Internet while for the rest of channels the proportions were quite low. More interestingly, segmenting the sample among those individuals that declared to have conducted purchases online, this proportion rises to more than 60%.

Table 12: Likelihood of receiving misleading, deceptive or fraudulent advertisements/offers by channel, 2012

Channel:	Total	Non E-shoppers	E-shoppers
Internet	48.7	37.4	63.7
Shops	7.1	7.8	6.1
Post	13.9	12.9	15.3
Phone	16.5	16.1	16.9
Doorstep selling	14.2	14.4	13.8
Other	22.3	23.3	21

Source: Eurobarometer 358.

The same wave of the questionnaire inquired about situations that may eventually happen to consumers when buying online and distinguished from domestic and foreign

retailers. Apart from the perceived confidence in purchasing goods or services via the retailers located in the same country as the respondent –where a significant difference in the proportion of individuals can be detected- there are apparently no differences in the perception of the quality of the service from domestic or foreign online retailers. There are no significant differences in the proportion of respondents that (a) suffered delays in the delivery of products bought online or (b) risk not receiving a purchase.

Table 13: Potential problems from buying online cross-border, 2012

	Own country	Another EU country
Delay in the delivery of something purchased from a retailer located in	0.236	0.211
Purchase of something that was not delivered by a retailer located in	0.062	0.067
Confidence purchasing goods or services via the Internet from retailers located in	0.595	0.420

Note: the percentage is calculated with respect to the number of respondents, not the total number of individuals in the survey.
Source: European Commission (2013). Flash Eurobarometer 359

One additional factor that explains e-commerce adoption by consumers is related to prices. Several arguments suggest that prices and price dispersion should be lower online than offline. For instance, since search costs are an important component of price dispersion and these costs are typically lower online than offline, it is to be expected that price dispersion among e-tailers should be lower than among traditional retailers (Bakos, 1997). In addition to search costs, other factors may also influence this difference. For example, entry is easier in online markets because the infrastructure is simplified to a Website and online retailing represents lower menu cost than offline retailing (Brynjolfsson and Smith, 2000). This reasoning suggests that online markets should be more competitive and observe less price dispersion than conventional markets.

However, early empirical evidence on online price dispersion has frequently reported results that contradict these theoretical insights. For instance, Clay et al. (2002), and Lee and Gosain (2002), among others, have documented higher online price dispersion than its offline counterpart. These papers deal with different product categories, methodological approaches and time periods for the analysis, but all coincide in analysing an immature digital market at a time when there were only a few widely known e-tailers and online competition was somewhat limited. On the other hand, there is also early evidence for higher (or at least not lower) offline price dispersion. Examples of this strand of the literature are the contributions by Morton et al. (2001), Brown and Golsbee (2002), and Scholten and Smith (2002). These papers, like the previous ones, are highly heterogeneous in terms of their methodological approach and data used, but in general show that some of the hypothesised advantages of electronic markets in terms of greater information flow and easier consumer search could have been achieved early.[4]

Substantial price dispersion has been observed on electronic markets. In general, early empirical evidence showed that Internet markets did not exhibit smaller price dispersion than traditional markets. More recent empirical evidence, however, tends to point to lower price dispersion online than offline. It appears that greater information flow and easier consumer search facilitated by the Internet has only recently made online markets more competitive and "frictionless" as predicted by theory. However, substantial online

[4] Brynjolfsson and Smith (2000) and Ancarani and Shankar (2004) find mixed evidence for both greater and lower online price dispersion, depending on the measure used.

price dispersion has been documented recently as well. Given that e-commerce still represents only a small fraction of total commerce, it is possible that the Internet market will exhibit higher competitiveness and efficiency as it grows in relevance in the coming years.

Some findings at the EU level for a restricted set of products (Duch-Brown and Martens, 2014) suggest that, after controlling for quality differences, both online-offline and geographical price dispersion exists in in the European Digital Single Market. Products sold online are between 2% and 10% cheaper than offline, depending on the type of product. Moreover, price dispersion between the 21 countries for which there is data available range from 13% to 38% by product type. Particularly striking are the findings of quality-adjusted brand-price differences, since they can be as high as 350% (the non-adjusted figure is fifteen times larger) suggesting that product differentiation plays a strong role in pricing strategies and should be appropriately taken into account. In addition, there is evidence on the price elasticity of demand form both offline and online channels: online demand is more price-elastic than offline, which is consistent with explanations based on search costs and information availability online.

Information about individual prices is not easy to obtain, in particular if an online vs. offline comparison is to be made. However, Table 14 shows some ratios of average prices of products sold online with average prices of products sold offline for consumer electronic goods. As it can be seen from the table, on average, online prices tend to be lower than offline prices. Sometimes, this difference is huge, close to 30% in the highest cases. However, the reverse can also happen with online prices about 30% higher compared to offline prices (as in Hungary in 2013). In most countries, average online prices are lower than average offline prices. Still, there are countries where this is not happening. More strikingly, the number of countries where average offline prices are lower than average online prices increases in time, passing from three countries in 2009 to seven in 2013. The main message of the table is that price dispersion around the EU is high, and it is so for consumer goods sold through traditional channels as well as those sold online.

Table 14: Ratio of average online to offline prices for consumer electronic goods, 2009-2013

	2009	2011	2013
Austria	96.8	98.1	73.0
Belgium	88.7	93.5	n.a.
Czech Republic	90.2	93.7	110.5
Denmark	92.2	87.4	98.2
France	95.1	92.6	114.4
Germany	91.7	94.5	117.1
Greece	73.5	96.9	89.1
Hungary	96.5	101.8	128.5
Italy	103.3	94.6	89.4
Netherlands	97.9	95.3	120.8
Poland	99.5	97.9	95.1
Portugal	104.7	103.9	87.6
Romania	117.0	102.0	111.5
Slovakia	88.4	95.0	95.1
Spain	98.0	90.6	83.4
Sweden	96.6	106.5	n.a.
United Kingdom	93.5	92.9	123.3

Note: figures are not strictly comparable across countries or years since the basket of goods included is not homogeneous.
Source: Data for 2009 from GfK and data for 2011 and 2013 from Euromonitor.

III.3 The diffusion of e-commerce among consumers

As occurs with other technologies, the diffusion of e-commerce is likely to follow the traditional S-shaped path. After the introduction of the innovation, there is an initial stage where few individuals adopt it. This early phase is followed by a period of rapid growth in the number of adopters. Finally, the diffusion process reaches a maturity stage in which the growth of the number of adopters slows down and the total number of adopters gradually stabilises. Regarding e-commerce, many EU Member States are already in the maturity phase, while others are still in the propagation phase. Moreover, each country has a different diffusion speed shaped by regulatory constraints, market characteristics and digital readiness.

We have fitted a logistic diffusion curve to Eurostat's e-commerce purchases data. One interesting feature of these models is that they allow for the estimation of the saturation level, i.e., the total number of potential adopters in the long run, once the maturity phase has been reached. This can be interpreted as a ceiling for the function, i.e. the maximum number of adopters expected. According to the diffusion literature, as time goes by, the number of adopters will increase but at a decreasing rate until the saturation point is reached.

The results suggest that for the case of e-commerce and taking into account the observed trajectories of adoption in different countries, the saturation point is around 75%. This means that the share of the EU population aged 16-74 that will eventually buy online will be around 75%. If we take into account that the value for 2014 is 41%, this

still leaves considerable room for additional growth in e-commerce in the coming years. This increase is expected to come mainly from latecomers in the adoption of e-commerce as a sales channel. However, at the current speed of diffusion, 70% of the EU population will make online purchases by the year 2025, with early adopter countries showing shares close to 80% whereas latecomers will still be struggling to reach 60%.

These figures allow us to evaluate the feasibility of the goals defined by the EU Digital Agenda Scoreboard (DAS)[5] with respect to the proportion of the population buying online. The DAS established that by 2015, 50% of the population should be buying online regularly. DAS data shows that this objective has already been reached in 2014. Table 15 shows that in 2015, at the current rate of diffusion, 53.3% of individuals will be doing online purchases. The table also points to some convergence in the diffusion of e-commerce since the countries with already high adoption rates will struggle to increase it while for latecomers, there is a lot of room for improvement.

Table 15: Forecasts of the diffusion of e-commerce

	2015	2020	2025	2030
EU-28 average	53.3	63.6	70.2	73.9
Bottom 5	24.0	42.5	59.0	68.9
Top 5	74.0	76.4	77.0	77.1

Source: Duch-Brown (forthcoming).

There are still barriers and obstacles that hinder e-commerce, in particular cross-border e-commerce. We applied the diffusion model to cross-border e-commerce and find that the uptake ceiling is expected to be around 60%, meaning that once the advanced maturity phase of the diffusion of e-commerce is reached, 60% of Europeans will be buying goods and services electronically from providers located in other countries.

However, in spite of this value, as the Table 16 shows, at the current diffusion speed in 2030 the share of individuals purchasing electronically across the border will be just under 40%, still below the overall ceiling estimated with our model. Moreover, our forecasts also indicate that the ambitious objective of 20% doing cross-border e-commerce by 2015 is unlikely to be accomplished. The diffusion model predicts that this threshold will be reached by 2018 only.

Table 16: Forecasts of the diffusion of cross-border e-commerce

	2015	2020	2025	2030
EU-28 average	15.2	23.5	31.5	37.7
Bottom 5	8.7	16.8	23.9	30.7
Top 5	44.2	51.1	53.4	54.1

Source: Duch-Brown (forthcoming).

The description of technology diffusion trajectories has been a frequent question in theoretical and empirical studies. The literature so far has concentrated mainly in two alternative explanations. The first one is related to adopters' heterogeneity. Given that potential technology adopters are heterogeneous, even a superior technology will be perceived differently by potential users. At the extreme, it may remain inferior to existing technology for some users or exhibit a considerable lag to become fully deployed. The

[5] For this exercise we use data referring to occasional e-choppers, i.e. those having purchased online in the last 12 months.

alternative explanation assumes that since the adoption of new technology requires substantial information –about the basic features of the technology and/or about the details of its implementation in applications- it is subject to risk. Adopters will collect information to reduce this risk, but it takes time for information to diffuse sufficiently. This means that if the heterogeneity argument is valid, we should observe differences in the saturation points among countries. Conversely, if the information propagation hypothesis works, then differences in diffusion speeds should be more relevant.

We have tested these opposing hypotheses. Cross-country differences seem to be most pronounced with respect to the saturation level of e-commerce adoption as measured by the respective estimated ceilings. Figures in bold indicate that the corresponding value is statistically different from the EU average. As Table 17 shows, there are many more cases with statistically significant differences in the case of the saturation points (60%) than in the case of diffusion speeds (30%). Moreover, the coefficient of variation of the saturation point is 1.5 times the corresponding for diffusion speeds. In some cases (Bulgaria, Estonia, Italy, Latvia and Romania) the estimations exhibited convergence problems, leading to large and unstable estimates of the parameters in some cases or to failure to converge in others. We have removed these countries from the analysis.

Table 17: Coefficients from country-wise estimation of the logistic diffusion curve

	Ceiling	Speed	Obs.	Adj. R2
Austria	48.2	0.312	13	0.9938
Belgium	55.9	0.273	10	0.9926
Cyprus	**29.1**	**0.332**	11	0.9925
Czech Republic	**32.5**	0.299	12	0.9890
Germany	**69.8**	0.230	13	0.9980
Denmark	**75.1**	0.278	13	0.9942
Greece	**26.8**	**0.386**	13	0.9967
Spain	38.0	0.249	13	0.9937
Finland	58.3	0.264	13	0.9963
France	51.8	0.356	9	0.9977
Great Britain	**84.4**	0.240	13	0.9982
Croatia	44.5	0.343	8	0.9951
Hungary	47.3	0.222	11	0.9959
Ireland	**39.1**	0.450	12	0.9880
Lithuania	**30.7**	**0.419**	12	0.9901
Luxemburg	**74.4**	0.225	13	0.9930
Malta	**42.9**	**0.501**	10	0.9936
Netherlands	**57.7**	**0.397**	13	0.9985
Poland	**24.1**	**0.517**	11	0.9955
Portugal	32.0	0.231	13	0.9925
Sweden	**82.4**	0.169	13	0.9958
Slovakia	40.2	**0.357**	11	0.9946
Slovenia	**35.5**	0.292	11	0.9975
EU average	**50.0**	**0.231**	**13**	**0.9989**

Note: bold coefficients differ significantly from EU average (95% confidence level).
Source: Duch-Brown (forthcoming).

III.4 Drivers and barriers for cross-border e-commerce for consumers

A 2015 EU28 consumer survey collected data to analyse the relative importance of drivers and barriers for consumers to switch from offline shopping to buying online and to buying cross-border. Drivers can turn into barriers to the extent that they are insufficiently strong or become an impediment to cross-border transactions. A detailed account of the results can be found in Cardona et al. (2015). In what follows, a summary of the main conclusions is presented. The purpose of the study is to identify the main obstacles to achieving a Digital Single Market (DSM), both in terms of cross-border transactions and bringing more consumers online, and which obstacles matter most from a consumer perspective. The questions in the survey cover the three types of incentives and barriers: prices, variety and transaction costs. Moreover, the survey data allow us to relate the impact of subjectively perceived barriers to online (cross-border) trade on more objectively measured behaviour. This should provide useful information for policy makers to assess where they can contribute most to eliminate these consumer welfare-reducing barriers.

The results from the report show a fairly robust set of factors that motivate consumers to shift their purchases from offline to online shops. This happens for both goods and digital media content. Prices, variety and transaction costs are the main drivers of that shift. These drivers work both at the extensive margin (number of consumers) and at the intensive margin (volume of trade) for goods. Prices and even more so variety seem to be the main motivating factors at the extensive margin (number of consumers) to buy goods online in other countries. At the intensive margin transaction costs come again into the picture. The picture is less clear for digital media content purchases online. Some transaction cost issues play a role for domestic purchases and variety motives seem to work for cross-border purchases. However there is no consistent picture across all questions in the survey and across the intensive and extensive margins.

Economic theory is less clear about the drivers for cross-border trade and this is reflected in the outcomes of the survey. The survey confirms that consumer incentives to go cross-border are more difficult to pinpoint. Price, quality and variety seem to play a role. Policy makers do not need to focus so much on the positive incentives that consumers receive through market forces but more so on consumer concerns that keep them away from buying online and cross-border. There is some evidence that points to lack of knowledge of consumer rights and trust in cross-border transactions.

In the absence of any reliable statistics on cross-border online trade in goods and services, the consumer survey data also enabled to construct a bilateral online trade matrix between the EU28 countries. With the help of the standard gravity model, the findings indicate that around 85% of the observed trade patterns are determined by consumer preference variables such as a preference for the home market, home language and geographical proximity (neighbouring countries). This would suggest that there is relatively little room left for policy to further facilitate this consumer welfare-enhancing shift to online and particularly to cross-border shopping (Table 18).

Table 18: Estimated gravity equation: goods vs. content

	Total	Goods	Content
Distance (in log)	-0.598***	-0.598***	-0.0717**
	(0.0716)	(0.0716)	(0.0341)
Contiguity	0.433***	0.432***	0.172***
	(0.117)	(0.118)	(0.0546)
Common language	0.952***	0.966***	0.495***
	(0.217)	(0.216)	(0.128)
Home bias	3.806***	3.765***	3.366***
	(0.222)	(0.218)	(0.167)
Constant	5.525***	5.487***	0.660***
	(0.511)	(0.512)	(0.239)
Country of origin	Yes	Yes	Yes
Country of destination	Yes	Yes	Yes
Observations	784	784	784
R-squared	0.855	0.854	0.869

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Source: Cardona et al. (2015)

IV. The Supply Side

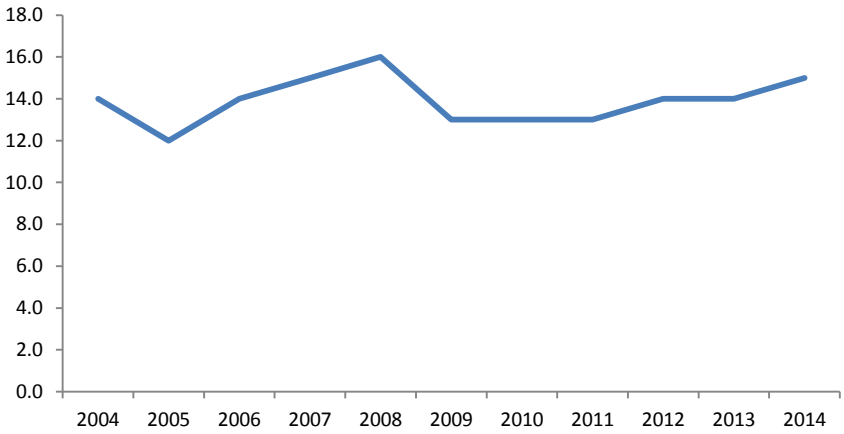
IV.1 How many firms are selling online

Three common business models in the online space today are: Pure Internet Play, i.e., firms that rely exclusively on the Internet for their operations; Brick and Click, companies that split their source of revenue between online and offline activities; and Third Party Platforms, such as electronic market places or online auction sites. These new business models imply relevant changes for the structure of some industries, since they rely on electronic architectures and the exploitation of network effects that promote the creation of sustainable competitive advantages for some firms.

Despite expectations that the Internet would bring about a more frictionless market, most available evidence suggests that cross-border electronic transactions are modest. For instance, a 2006 Eurobarometer survey reported that 35% of firms were selling to consumers in at least one other EU country. After some years of further integration and rapid internet and e-commerce penetration rates, the corresponding figure for the latest Eurobarometer survey of 2012 was 33%. In the same vein, the share of firms that used regularly e-commerce as a sales channel went from 53% in 2006 to 48% in 2012, according to the same source. Even in the presence of sample definition issues, it is surprising that the proportion of firms selling cross-border and using the internet to distribute their products have not increased significantly.

Moreover, the same general trend is confirmed with data from Eurostat's survey on ICT usage by firms. In this case, as graph 10 shows, the share of firms performing e-commerce has remained relatively constant in the period 2004-2014. The series shows some turbulence in the first part of the period, but since 2009 it has remained steady with values below the peak registered in 2008.

Graph 10: Evolution of the proportion of firms selling online, 2004-2014 (in %)



Note: the original series are broken because the adoption of the NACE Rev-2 classification in 2009. Hence, the graph may be useful for describing the general trend but no exact figures.
Source: Eurostat.

The 2012 Eurobarometer firms' survey provides relevant information. As can be seen in Table 19, the proportion of firms doing e-commerce varies greatly among countries, from a low 29% in Romania to a high 72% in the Netherlands. The proportion of firms carrying out cross-border transactions varies widely as well. In this case, the higher values correspond to smaller countries (Belgium, Greece, and Luxemburg) – as could be expected. We examined if there is a difference in the proportion of firms that are doing e-commerce among those that currently carry out cross-border transactions and those that do not. Hence, the third column shows the proportion of firms doing e-commerce conditional on doing cross-border sales. The data shows that the proportion of firms selling online is much higher for those that sell across the border. Similarly, we performed the same calculation but now asking what is the proportion of firms selling across the border conditional on selling online. The results are shown in the fourth column of Table 19. Again, the results indicate a strong complementarity effect. This relationship seems to be highly correlated, as the graph 11 shows.

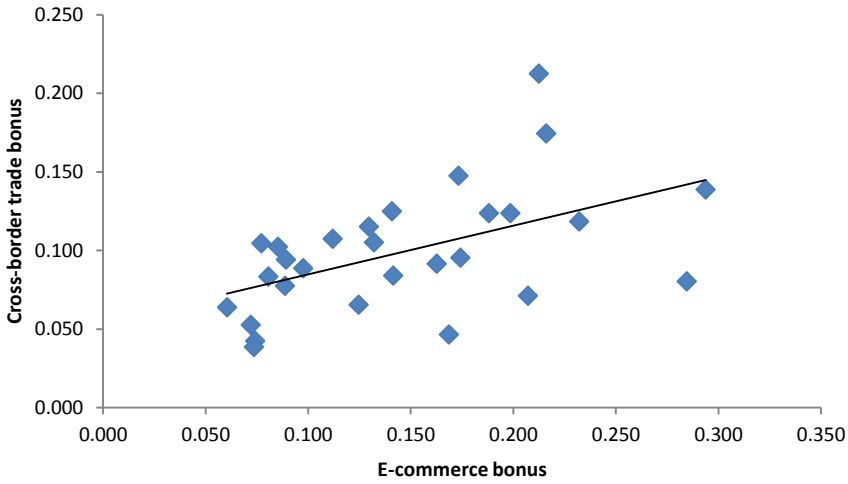
Table 19: Share of firms doing e-commerce and cross-border sales by MS, 2012 (in %)

	e-commerce	cross border trade	e-commerce if cross-border trade	cross-border trade if e-commerce
Austria	0.387	0.409	0.476	0.503
Belgium	0.484	0.501	0.564	0.585
Bulgaria	0.371	0.356	0.483	0.463
Croatia	0.498	0.443	0.627	0.558
Cyprus	0.407	0.253	0.605	0.377
Czech Republic	0.440	0.400	0.538	0.489
Denmark	0.580	0.333	0.654	0.375
Estonia	0.400	0.400	0.613	0.613
Finland	0.505	0.143	0.789	0.223
France	0.536	0.185	0.743	0.256
Germany	0.488	0.358	0.559	0.410
Greece	0.598	0.483	0.813	0.657
Hungary	0.438	0.373	0.611	0.520
Ireland	0.648	0.340	0.772	0.405
Italy	0.485	0.248	0.717	0.366
Latvia	0.430	0.343	0.562	0.448
Lithuania	0.325	0.390	0.410	0.492
Luxembourg	0.467	0.493	0.527	0.557
Malta	0.682	0.384	0.845	0.476
pain	0.633	0.377	0.775	0.461
Poland	0.408	0.193	0.701	0.331
Portugal	0.470	0.418	0.611	0.543
Romania	0.293	0.193	0.481	0.316
Slovakia	0.498	0.435	0.586	0.513
Slovenia	0.335	0.455	0.412	0.560
Sweden	0.493	0.270	0.667	0.365
The Netherlands	0.723	0.380	0.796	0.419
United Kingdom	0.703	0.195	0.872	0.241

Source: own calculations with data from Eurobarometer 359.

There is no comprehensive information on the population of firms doing e-commerce. However, some data is available to analyse subsets of firms involved in these activities. For instance, Table 20 shows some indicators for the top 20 online retailers in the EU in 2013. These are typically large firms, spreading their activities in several countries and most of the time with their main activity offline. As a matter of fact, the average weighted percentage of turnover coming from online activities is just 14%. It is also surprising that the number of pure players in this list is limited to three companies, namely Amazon, Zalando and Vente Privee. Other interesting cases are those companies that manage to be in the top 20 even if their share of turnover coming from online sales is small, like the cases of Tesco, Cdiscount, Metro Group, and Sainsbury's.

Graph 11: Complementarity between e-commerce and Cross-border sales, 2012



Source: Eurobarometer 359.

Table 20: Top 20 Online retail companies in Europe, 2013

Company name	Origin	Main sector	Turnover Europe in M€ Online	Total	% online
Amazon	USA	All sectors except food	19050	19050	100.0%
Otto	Germany	Fashion	6145	12001	51.2%
Apple Inc.	Luxembourg	Consumer electronics	3500	28524	12.3%
Tesco	UK	Food/all sectors	2944	62290	4.7%
Home Retail	UK	Household, telecom	2651	6797	39.0%
Kering[1]	France	Consumer electronics	2400	3802	63.1%
Dixons Retail	UK	Consumer electronics	1862	8498	21.9%
Cdiscount[2]	France	Consumer electronics	1782	19492	9.1%
Zalando	Germany	Fashion	1762	1762	100.0%
Vente-privee	France	Fashion	1600	1600	100.0%
Next PLC	UK	Fashion	1579	4403	35.9%
Shop direct	UK	Fashion, homeware	1552	1989	78.0%
Carrefour	France	Food/All sectors	1550	54658	2.8%
ASDA	UK	Food/All sectors	1400	30200	4.6%
Staples Inc	USA	Office supplies	1315	2988	44.0%
John Lewis Plc	UK	Fashion	1295	3886	33.3%
E.Leclerc	France	Food/All sectors	1276	45600	2.8%
Metro Group[3]	Germany	All sectors	1250	65250	1.9%
3 Suisses Int.	France	Fashion	1228	1536	79.9%
Sainsbury's	UK	Food/ All sectors	1180	31030	3.8%

1 Former Redcats/PPR. 2 Casino group. 3 Includes Mediamarkt/Saturn.
Source: Veraart Research.

In terms of sectors, multiproduct companies tend to dominate the top 20 online retailers, followed by fashion and consumer electronics. In the majority of cases, these are products that can be delivered easily across the border. However, companies selling food are also represented in the list. In this case, a proximity delivery is the norm, so these companies are less likely to be carrying sales across the border. In the list, the most frequent country of origin is the UK, followed by France and Germany, respectively. There are three American companies, although Apple is listed as Luxembourg. These proportions coincide with the country shares of e-commerce sales analysed previously in section II.2.

If we restrict the data to pure players, i.e. firms that only operate online; we see a slightly different picture. Most of these firms have been showing impressive growth rates over the last years (last column of Table 21). Consumer electronics firms dominate other sectors, although some fashion firms are present as well. The most frequent country of origin is Germany. However, we also observe more diversity as firms from many countries are present in the table (Norway, Netherlands, Russia, Spain, Switzerland, and Italy) while in the previous table only four countries were listed.

Table 21: Top 20 Pure online retail players in Europe, 2013

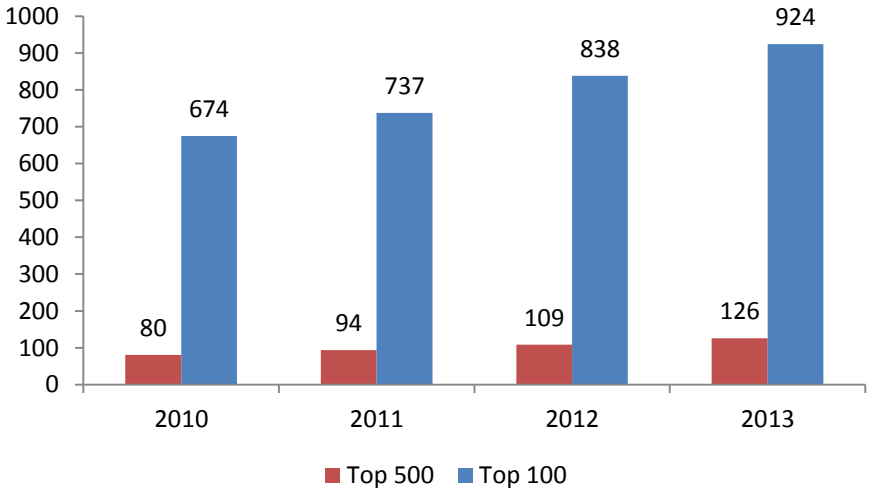
Company name	Country of origin	Main sector	M€	change 2010/2013
Amazon	USA	All sectors except food	19050	26.8
Zalando	Germany	Footwear, leather and fashion	1762	127.3
Vente-privee	France	Fashion	1600	18.5
Ocado Ltd	UK	Food/ All sectors	993	15.6
Misco (Systemax Inc.)	USA	Consumer electronics	824	1.5
GetGoods.de AG	Germany	Consumer electronics	700	62.5
Komplett group	Norway	Consumer electronics	666	11.8
Play.com (Rakuten)	UK	Games, DVD	650	4.1
Shift IT	Germany	Consumer electronics	630	11.4
RFS Holland Holding Bv	Netherlands	All sectors except food	589	11.7
Ozon	Russia	Books, Music, electronics	565	49.2
Privalia.com	Spain	Fashion/footwear/Leather	560	49.4
Cyberport GmbH	Germany	Consumer electronics	548	26.8
ASOS Plc	UK	Fashion	534	21.1
Printus	Germany	computers, office equipment	525	9.5
CDON Group	Sweden	Fashion	513	30.3
Notebookbilliger.de AG	Germany	Consumer electronics	510	14.5
Digitec AG	Switzerland	Consumer electronics	480	20.1
Yoox.com	Italy	Fashion	456	44.2
Zooplus	Germany	Pet care	444	35.9

Source: Veraart Research.

The aggregated turnover value of the top 100 online retailers in the EU accounted for 52% of total online retail in 2013. Looking at the average turnover by firm in the top 100, we observe a steady increase, passing from 674 M€ in 2010 to 924 M€ in 2013 as shown in graph 12. The graph also shows the average turnover per firm for the top 500,

which has also increased significantly in the period under study. In this case, average turnover per firm passed from 80 M€ in 2010 to 126 M€ in 2013. This represents a change of 56% in three years.

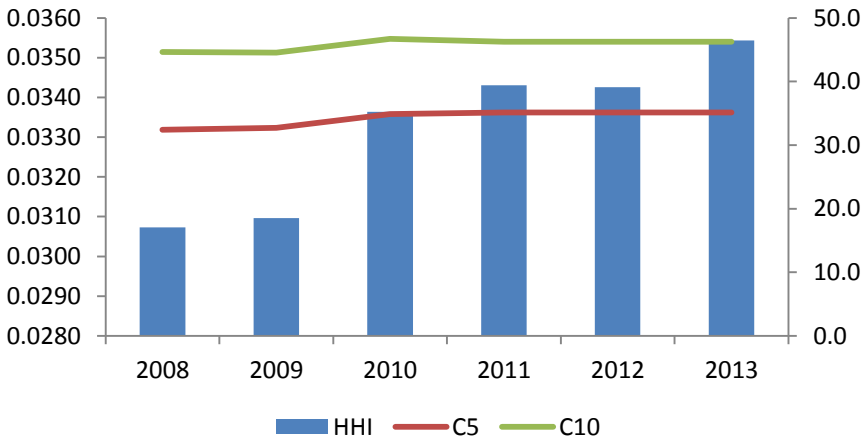
Graph 12: Online retailers' average turnover in the EU, 2010-2013 (M€)



Source: own calculations with data from Veraart Research (Top 100) and Euromonitor (Top 500).

Some concentration is to be expected in markets where switching costs and network effects play a significant role, even if electronic markets tend to facilitate entry by new competitors. We have used the data on the top 500 online companies operating in the EU to analyse market concentration. We have computed the C5, C10 and HHI concentration indexes for the period 2008-2013 and graph 13 shows the results. Both the C5 and C10 measures show a minor increase in 2010 but since then, they have stabilised at 35% and 45% of the market, respectively. On the other hand, the HHI, which includes all the firms and not only the largest 5 or 10, also shows a little bump in 2010, but is steady since then. These results indicate that the online business is not subject to significant changes in concentration over the last years.

Graph 13: Evolution of concentration in online retail in the EU, 2008-2013.



Note: Concentration indices are calculated with data covering the top 500 online retailers. Source: Own calculations with data from Euromonitor.

IV.2 Drivers and barriers for e-commerce uptake by firms

The Eurobarometer surveys have identified some barriers to cross-border trade. Table 22 compares the evolution of firms' perceptions of barriers for the years 2006 and 2012. The most relevant obstacle to cross-border sales is related to the perceived risk of fraud and non-payment in cross-border sales. The perception of additional costs to comply with differences in consumer protection rules, contract law provision and tax regulations across countries come in second and third place, respectively. Market related difficulties are also perceived as relevant. More than one third of the firms declared that the restrictions imposed by manufacturers or suppliers were important for their cross-border sales decision. In sum, many barriers perceived in 2006 seem to be even more restrictive today. Moreover, many of these barriers are also relevant for offline sales.

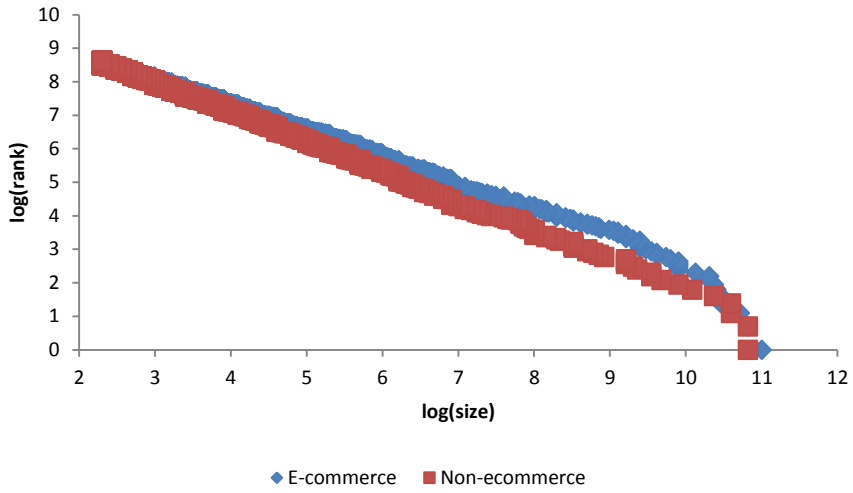
There seem to be no significant differences in firm size when we compare firms selling online with firms selling offline, as the graph 14 shows.

Table 22: Barriers to cross-border trade in the EU, 2006 and 2012

	2012		2006	
Obstacle:	**E-commerce**	**Cross-border & E-commerce**	**E-commerce**	**Cross-border & E-commerce**
Risk of fraud and non-payment in cross-border sales	46.1	57.5	44.8	49.3
Compliance with different consumer protection rules	43.9	50.3	39.0	39.5
Compliance with different national tax regulations	40.1	48.9	41.4	44.7
Cross-border delivery more expensive than domestic	39.4	46.0	35.5	36.5
Resolution of complaints and disputes cross-border	37.6	45.5	40.5	42.2
After sales services cross-border	33.6	37.0	37.9	38.7
Restrictions imposed by manufacturers or suppliers*	34.0	36.6	-	-
Differences in consumption habits*	29.2	33.1	-	-
Language differences	28.1	32.3	30.4	31.3
Share of firms	48%	21%	53%	24%

* Not included in the questionnaire of 2006.
Note: the figures refer to the share of firms responding that the cited obstacle is important to the development of cross-border sales.
Source: own calculations with data from Flash Eurobarometers 186 (2006) and 359 (2012).

Graph 14: Size distribution of firms: e-commerce vs. traditional, 2012



Source: Eurobarometer.

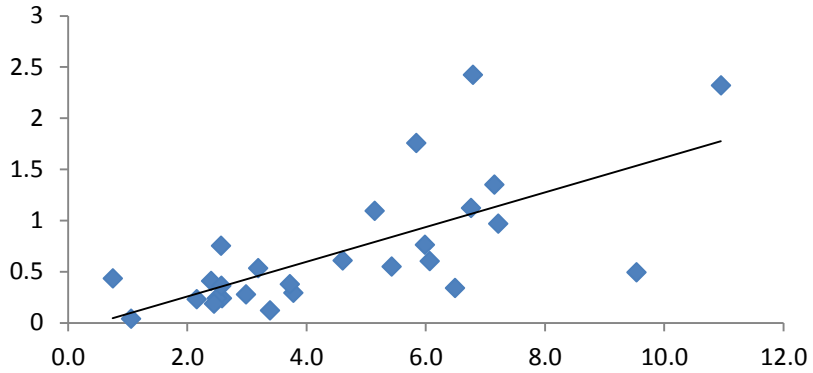
IV.3 Geographical segmentation in the DSM

The importance of online distribution in total firm revenue varies considerably. The Eurobarometer data for 2011 enables us to separate online and offline turnover and, even more interestingly, domestic and cross-border sales. Table 23 shows the results. The average share of turnover from e-commerce in the EU is close to 20%, which can be split in 15% domestic and 4.4% cross-border online sales. These figures confirm once again the inverse relationship between size and trade openness, irrespective of being overall or online trade: firms in smaller countries rely more on cross-border trade. The table also shows the typical cross-country differences in terms of turnover from e-commerce.

We already mentioned that both the percentage of firms that use e-commerce as a sales channel and the percentage selling abroad did not increase in the period 2006-2012 (see section IV.1). If confirmed, this might point to a degree of saturation of the market, at least at the extensive margin (the number of shops wanting to sell online). There is obviously still room for increase at the intensive margin (online sales per shop).

One of the causes of the lack of growth in the number of online firms may be commercially imposed supply side barriers. An EU mystery shopping survey showed that 97% of domestic online orders lead to a successful shipment but only in 48% of all attempts at cross-border orders does the seller actually deliver to the country of the consumer in 2009. Furthermore these obstacles are most prevalent for goods that are subject to geographical restraints agreed between producers, wholesalers and retailers or subject to compatibility issues. After controlling for size and weight, print books are the most likely to ship across border. Computers, TV screens and electrical goods are six times less likely to be shipped cross-border than books. Interestingly, the difference of successfully shopping with one's credit or debit card between domestic (76.8% acceptance rate) and cross-border (53.4%) is considerable, but not as pronounced as the difference in the willingness to ship abroad by e-commerce shops (Cardona and Martens, 2014). A new mystery shopping survey will become available in 2016.

Graph 15: Turnover from cross-border e-commerce and online trade openness



Source: own elaboration with data from Eurobarometer 331 and Gomez-Herrera et al. (2012).

Table 23: Share of turnover from e-commerce by MS, 2011 (in % over total turnover)

	Share of turnover from e-commerce:		
	Total	**Domestic**	**Cross-border**
Austria	26.1	18.5	7.2
Belgium	15.0	12.7	2.6
Bulgaria	24.4	18.6	6.8
Cyprus	11.8	3.8	5.8
Czech Republic	27.7	25.4	3.2
Germany	19.1	17.1	2.5
Denmark	16.2	12.9	2.4
Estonia	28.7	21.5	7.1
Spain	15.5	12.0	2.6
Finland	11.7	10.8	0.7
France	16.9	14.9	2.6
United Kingdom	22.0	17.0	3.4
Greece	16.9	10.7	6.1
Hungary	13.9	9.0	3.0
Ireland	22.0	16.7	5.1
Italy	18.3	14.5	3.8
Lithuania	17.9	12.5	6.0
Luxembourg	15.0	5.4	11.0
Latvia	26.5	15.4	9.5
Malta	16.9	8.2	6.8
The Netherlands	19.2	16.7	2.2
Poland	19.3	17.6	1.1
Portugal	16.5	11.3	4.6
Romania	22.1	21.0	3.7
Sweden	15.4	12.9	2.4
Slovenia	12.7	6.8	5.4
Slovakia	22.9	17.1	6.5
EU average	19.3	14.9	4.4

Source: own calculations with data from Eurobarometer 331.

IV.4 Drivers and barriers to cross-border e-commerce for firms

Relying on data from a firm survey carried out in January-February 2015 in four different sectors (manufacturing, wholesale and retail, accommodation and food and information and communication), Duch-Brown and Martens (2015) analyse some of the barriers that impede cross-border e-commerce for firms. The authors conclude that a limited number of barriers really matter for online trade, including settling cross-border disputes, suppliers' restrictions to sell cross-border, delivery costs, taxation rules, and knowledge of "the rules" abroad. In line with the offline trade literature, the data confirm that they matter mostly for small firms who find it harder to overcome the trade costs associated with these barriers.

Methodologically, they follow a two-steps strategy. First, they explain the drivers of an online firm' decision to sell across the border –the extensive margin- which implies a medium to long term strategic decision by the firm to be present in export markets. In the case of online cross-border sales, neither size nor age explains the decision to sell online across the border, although one would expect a priori that both larger firms and/or younger firms would be more prone to export. Large firms simply because they have more resources and would require more customers to increase their revenue stream, and younger ones because they should be more prone to new technology. The strategic decision to sell online across the border in aggregate terms –for the full sample of firms- is statistically related to three different barriers. Firms declaring that delivery costs are high; that suppliers restrict or forbid them selling abroad; and that resolving complaints and disputes across the border is too expensive are relevant problems are less likely to engage in online sales across the border. However, the incidence of each one of these barriers is different across the size classes. For instance, delivery costs are more relevant for larger firms. On the other hand, both the suppliers' restrictions and dispute resolution barriers matter only for smaller size classes. Turning to online purchases across the border, three main barriers were found to be relevant for engaging firms to purchase across the border. These are related to the security of payments to other countries, the lack of language skills to deal with foreign suppliers, and the cost of resolving complaints and disputes across the border. As before, these barriers are more relevant for smaller firms than for larger firms, with the exception of dispute resolution, which was also found to be significant for large firms.

Second, they seek to explain the volume of cross border e-commerce or the intensive margin. In this case, the results show five relevant barriers: i) delivery costs; ii) guarantees and returns; iii) foreign taxation; iv) suppliers' restrictions to sell abroad; and v) product and/or services specificity. As before, these barriers have more impact in small size classes than for large firms. As a matter of fact, the only barrier within this list that appears to be correlated with the share of cross-border e-commerce for large firms is expensive guarantees and returns. Other barriers also appear to be statistically significant when analysed by size classes. For instance, security of payments from other countries is relevant in the case of medium sized firms and the lack of language skills to deal with foreign countries is relevant for small firms.

In relation to cross-border purchases, two barriers seem to play a role at the aggregate level: the lack of language skills and the costs associated to dispute resolution. Language skills affect all size classes negatively (except for large firms). The costs of complaints and disputes resolution impact the intensity of cross-border electronic purchases of micro and large firms. Large firms also face as an additional barrier the high costs of delivery and medium-sized firms concerns about their data protection seem to be also negatively affecting their share of online purchases across the border.

V. Beyond e-Commerce

A large part of online activity is based on "free" or "freemium" business models, driven by advertising or other sources of financing. The fact that the consumers do not pay for these services does not mean that they have no economic value. Pantea and Martens (2014) show that free services have considerable economic value for the consumer. According to conservative estimates, leisure time spent on the internet generated a consumer surplus of between 0.6 and 1% of full income in 2011 in the 5 countries studied (UK, Germany, France, Italy, Spain). They will also have value for the producer, if not he would be unlikely to invest in producing them. Strictly speaking however, this "free value" falls outside the market; it is not the subject of monetized transactions.

Which services are the most demanded by consumers? Using the same database, it is possible to check the share of clicks that go to specific categories of websites. The results from Table 24 indicate that there is significant concentration in the use of these online services. The most relevant category is the one including social networking sites, followed by online games, e-mail services and search engines. If we add e-commerce, these top five categories cover almost 60% of visits to webpages (clicks) in the 5 countries studied. Relevant categories such as finance (2.7%), travel (2.0%), education (1.4%) or public online services and information (0.9%) are far from the shares of the top categories.

Table 24: Shares of clicks by website category, 2011

Category	Share
Member Communities	27.7
Games	14.0
Email	7.8
Search	4.8
e-commerce	3.9
Others*	41.8

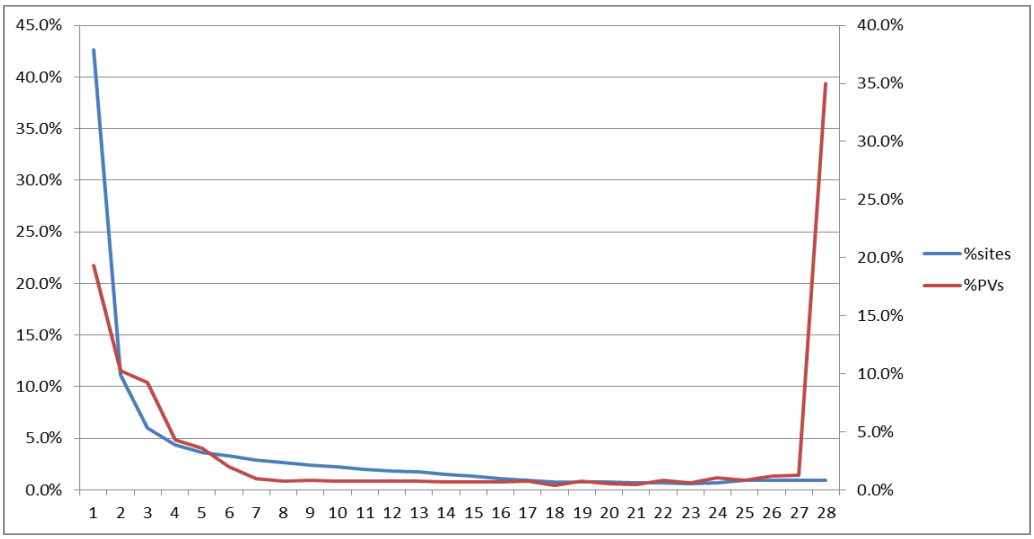
Source: Nielsen clickstream.

Alaveras & Martens (2015) go beyond e-commerce markets and collected data on domestic and cross-border activity on a large and representative sample of all online services websites in the EU, not just websites that carry out monetized transactions. This produces a very comprehensive picture of online activity. Graph 16 shows the percentage of websites (left scale) that are used in one or more EU MS and the percentage of all page views in the EU that is directed to these websites (right scale).

As the table shows, this is a highly squeezed distribution. Almost half of all websites are used in only 1 MS and they account for barely 20% of all traffic. About 60% are used in no more than 3 MS, and most of these are MS that share a language and/or a common border. On the other hand, only about 1% of all websites are used in all MS and they account for one third of all traffic. More than half of these truly DSM websites are global platforms based mostly in the US. Moreover, these US platforms always appear in the top places in the rankings of every MS.

The graph gives us relevant information for the delineation of the policy targets and tools for the DSM policy. This is a picture of the current geographical distribution in EU online market. The distribution is determined by market forces (consumer demand and commercial strategies by online firms) and by regulatory issues that hold the balance because they may affect the cost of cross-border online service delivery. How much does each of these three factors contribute to the observed geographical distribution?

Graph 16: Distribution of webpages and page-views by country



Source: Alaveras and Martens (2015).

We could consider the websites on the left, those operating in one or only a few countries, as a policy target group. The objective could be to bring them to operate in more countries. But many of these websites will only be in demand among local consumers because they deliver essentially local information services and have no commercial interest in trying to deliver across the border. More research is required to find out what type of websites are in this group and to what extent their activity lends itself to cross-border operations.

We could also look at the group on the right as the policy target group. They are by definition fully-DSM compliant websites operating on a global scale. They seem to have no difficulties in overcoming language barriers (local language versions) or any regulatory barriers. There is nothing that needs to be done about these websites – except that some of them operate in geographically segmented markets, either for commercial reasons or because of some regulatory issues (for instance the copyright regime). Because of geo-segmentation and other platform-related issues, this may be a good policy target group.

VI. Conclusions

Since its first appearance in the mid 90s, e-commerce itself has gone through changes owing to the constant developments in internet technology and the ability of individuals to access high-speed broadband from home, work and even mobile devices. Traditional retail has seen many changes over the years, some of them significant, but e-commerce will probably bring about unprecedented structural changes in established marketing and distribution practices that will result in a fundamental reorganization of many markets. Some industries may be more vulnerable to this process than others, but it is unlikely that any sector will be immune.

Online commerce is different in many fundamental ways from traditional bricks-and-mortar retailing. The borderless nature of the internet and its intrinsic characteristics, which include the pervasive role of new technologies and revolutionary business models for marketing and distribution, are reshaping both established relationships in the distribution chain and consumer habits. Due to its unique characteristics, online commerce provides companies with a platform to better promote their products and increase sales, while, at the same time, it also benefits consumers by providing an increased choice of sellers and products and a convenient channel to make purchases.

The European online market is one of the largest in the world, both for goods and for services. However, in many respects, it is the sum of 28 different online markets, barely interconnected. This failure to interconnect is related to many factors, from both demand and supply sides. Among the former, consumer preferences for domestic products, language barriers to purchasing from foreign countries, difficulties with the physical distribution of goods, or geo-blocking of digital content all play relevant roles. Among the latter, online internationalisation is for a few mostly larger and more efficient firms. That is also true in the offline world. In addition, switching costs and network effects can promote more concentration, even though digitisation erodes entry barriers.

E-commerce penetration rates – and also other dimensions of the digital economy- are highly heterogeneous among the Member States, both for consumers and firms. In addition, even though the Digital Agenda Scoreboard goal for the proportion of EU individuals conducting e-commerce transactions for 2015 was already achieved in 2014, the goal for cross-border trade seems too optimistic. Hence, one of the main characteristics of the EU DSM is its fragmentation, and cross-border activities are the exception. Further online integration promoted by policies that effectively remove many of the barriers that are hindering the digital interconnection will have both positive and negative effects. However, the evidence provided in this report indicates that the positive effects are likely to dominate.

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