Who purchases cross-border? Individual and country level determinants of the decision to purchase cross-border in the European Single Market

Leo Sleuwaegen^a, Peter M. Smith^{a,b}

^a MSI, KU Leuven , Belgium, Naamse straat 69, 3000 B Leuven

^b corresponding author peter.smith@kuleuven.be, tel +32 473222868, fax +32 16 3 26732

1. Introduction

Purchasing over the internet allows consumers to deal directly with sellers irrespective of where they are based [61]. This greatly facilitates the internationalisation of consumer markets. It also facilitates the observation of cross-border purchasing compared to purchasing from domestic sellers – a characteristic that is exploited in this paper. In spite of the ease of purchasing cross-border within the Single European Market, there are still many consumers who refrain from making online cross-border purchases. According to the 2016 Eurobarometer survey on consumers' attitudes towards cross-border trade and consumer protection, the average proportion of consumers who shop online in the EU-28 is now 76.0% [34]. However, only 18.9% purchase cross-border from EU-based sellers and 8.4% cross-border from sellers located outside the EU.

The absence of cross-border purchasing does not only relate to the personal characteristics of the consumer, but also appears to have a country specific component. The prevalence of cross-border purchasing differs considerably across countries, even between countries that are part of the European Economic Area (EEA)¹. The percentage of online consumers who purchase cross-border within the EEA varies considerably from a low of 6.3% in Romania to a high of 49.5% in Malta. [34] Within an integrated internal market consumers should be indifferent where they purchase their goods and services. The much lower rate at which consumers are purchasing cross-border than from domestic sellers and the big variation in this rate between individual countries call for an explanation. This paper addresses these phenomena directly and investigates how personal as well as country specific environmental conditions affect the decision of individuals to make cross-border online purchases.

¹ The European Economic Area covers the EU-28 plus Norway, Iceland and Liechtenstein. The European single market for services applies to the EEA and not just to the EU.

In spite of the already substantial literature on e-commerce participation, the literature dealing with online B2C cross-border trade is relatively scarce. Two streams can be identified. The first looks at how e-commerce affects the way businesses reach out to foreign consumers and how they build the relevant capacities to effectively utilise the possibilities opened up by digitalisation [50, 62, 63, 74, 86]. The second looks at the take up and obstacles to cross-border e-commerce from the point of view of the individual purchaser [12, 16, 25, 42, 43, 61, 94]. These papers adopt a variety of approaches for purchases over the internet and specific obstacles to cross-border purchasing including distance related costs. The studies either look at aggregate economic factors or focus on one particular country. Yet, a systematic analysis explaining differences in cross-border purchasing of consumers across countries is still lacking. In this paper we address this gap in the B2C ecommerce literature and contribute by investigating the following research questions:

- What is the importance of the purchaser characteristics that apply generally across countries?
- What is the importance of the institutional, economic and social environment in which he/she lives in making cross-border purchases?
- Which of these elements can be influenced by local and/or national or supranational authorities and which are persistent or hard to influence?

To answer these questions, we first develop a theoretical framework from which we formulate several hypotheses related to the factors which differentiate the consumer's decision to purchase cross-border versus the decision to purchase only domestically. In the next step, these hypotheses are then tested with an empirical model. A statistical qualitative response model (logit) is used to test hypotheses against a very large dataset covering 43,098 observations on

individuals living in 30 EU countries belonging to the European Economic Area (EEA) for the years 2006, 2008, 2010, 2011, 2012 and 2014. In addition to testing the hypotheses and their relevance for understanding the cross-border purchasing behaviour of consumers, the results indicate what variation in cross-border purchasing can be attributed to socio-economic and political factors proper to countries. Based on the theoretical framework and the results of the empirical model, a number of conclusions and recommendations are drawn. In particular, we throw light on the level of convergence in cross-border online purchasing across countries of the EEA that can be expected in the future and what public policy can do to speed up market integration by means of e-commerce.

The remainder of the paper is organized as follows. The next section introduces the theoretical framework and derives specific hypotheses about the choice to purchase cross-border. Section 3 specifies the model and data against which the model is tested. Section 4 present the results of the empirical model. Section 5 discusses these results and concludes.

2. Theoretical Framework and Hypotheses

Before consumers purchase cross-border via the internet they must first decide to purchase online. Hence, many of the determinants affecting the decision to buy cross-border are common to those that affect the decision to buy online. The nature of digital benefits and costs and how they affect the different stages of the decision process are crucial to understanding the consumer's ultimate decision on where and what to purchase. Digital technology has the potential to substantially reduce costs and provide new benefits compared to traditional bricks and mortar outlets [41]. The principal net benefits of purchasing online from the point of view of the consumer relate to convenience (24-hour availability) and speed, increased price competition, increased variety and lower transaction costs [23, 98]. It provides the consumer

more information and choices to compare product and price [11]. Each of these factors affects differently price sensitivity, value of having more varied product offerings and transaction costs, acting either to increase or to dampen the benefits of purchasing online compared to offline. A basic model of purchasing behaviour by consumers takes the decision process through several stages (fig. 1).

Fig. 1 goes in here

For example, the internet reduces search costs by making it easier to find and compare information about potential purchases. Verification costs are linked to the ability to build on the experience of previous buyers and sellers to overcome asymmetric information about quality and trustworthiness. Examples are online rating systems and user reviews of different products [29, 48, 56, 57]. The purpose is to build trust and lower costs associated with online purchasing. These systems are particularly effective in making cross-border purchases where the foreign seller and client are less likely to have direct knowledge of one another.

All the stages of the decision to purchase online are affected by external factors of risks and trust. A basic risk concerns the reliability of the information and of the seller. During the purchase process the exchange of information is subject to the risk of information security [17]. Consumers are worried that the personal information that they provide online could be the subject of unauthorised use or diffusion. Individuals can benefit from protecting the security of their data to avoid the misuse of information they share online. However, they also benefit from the sharing of information with others that results in mutually satisfactory interactions [1]. The implicit trade-offs for consumers have led to an apparent dichotomy between privacy attitudes and privacy behaviours [6]. At the same time as consumers profess a need for privacy, most consumers remain avid users of information technologies that track and share their personal information with unknown third parties [1]. Other risks are related to the inability to examine the product before purchasing or concern the security and reliability of the payment

process. Finally, in the post-purchase stage consumers are concerned with the policies and practices dealing with changing or returning the product that they have bought [49]. In addition to market generated responses to the risks of purchasing online, formal regulations concerning consumer and privacy protection do play an important role in controlling the various risks.

The assessment of different benefits, costs and risks from buying on the internet varies substantially across individuals. Needs, risk attitudes and internet capabilities differ between individuals as well as the appreciation of the value of the extra variety and information offered through the internet. The decision is ultimately based on comparing the utility derived from purchasing online versus the utility from purchasing offline. Besides the potential cost and time advantage, the utility derived from purchasing online is influenced by a set of factors which relate to the complexity and risk of the transaction and are either intrinsic to the purchaser or are set by the external environment of each buyer. Personal characteristics of the buyer, institutional, economic, social and cultural factors are all found to impact the decision to purchase online [49, 52]. Conceptually, four different kind of influences can be distinguished (Fig.2).

Fig. 2 goes in here

Each of the four factors which influence the decision to purchase online are likely to have a specific impact on the choice between domestic and cross-border online purchasing, the focus of this paper.

The specific impact relates to the particular character of cross-border transactions. Cross-border e-commerce not only widens supply and variety of goods and services on offer, but also increases transactional risk. Cross-border shopping brings into contact consumers with sellers from different cultural backgrounds, operating in different institutional contexts and with less

possibilities of gathering information. Purchasing cross-border may involve the requirement to deal with a site in a different language. This makes purchasing cross-border more complicated and risky than purchasing domestically. These transactional differences impact the probability to make a cross-border purchase. Moreover, there are additional elements that are specific to the decision to purchase cross-border, which do not necessarily impact domestic purchases. For such elements specific hypotheses are formulated.

2.1 Purchaser characteristics

A number of purchaser characteristics have been found to influence the decision to purchase online. The characteristics relate to differences in the need for privacy and risk perception, to frequency of purchases, the skills required and the benefits from having more variety of goods and services. Older generations appear to be more concerned with privacy and risk than younger ones who grew up with the internet. Younger individuals also tend to shop more online than older ones [10, 45, 55]. After age, gender is commonly found to influence purchasing behaviour with males more likely to purchase online. Several studies find women to be more selective and risk averse in online buying behaviour [39, 83, 87]. Education and occupation are found to influence positively the decision to purchase online. These characteristics relate not only to differences in competence and skills, but also to differences in income level [10, 20, 28, 38]. Since purchasing cross-border widens variety but is inherently more complicated and risky than purchasing domestically, the personal characteristics which affect the probability of engaging in domestic e-purchasing also affect more strongly the decision to purchase cross-border. Hence, the above-mentioned personal factors are expected to differentiate buyers who buy cross-border from those that only buy domestically within the group of buyers that make online purchases.

Cross-border specific : Large city networks

The place where the individual lives has been found to influence participation in e-commerce [64]. E-commerce presents many advantages for those who live furthest from cities in terms of variety on offer and potentially prices paid. However, Sinai and Waldfogel [85] argue that online offers are especially focused on people who live in the city. The higher intensity of online buying for urban citizens supports the last argument. Whether this effect carries over to higher intensities of cross-border purchasing is less obvious. The literature on global city regions has shown that large cities have linkages between each other and internationally rather than with smaller domestic cities and rural areas [4, 71, 81, 91].

Those who live in such large city areas have a more international outlook, are more connected and, hence are more likely to decide to purchase cross-border than those that live in smaller cities or rural areas [92]. Moreover, in the smaller countries like Belgium and the Netherlands the relevant commercial areas of some large cities stretch beyond national borders. Hence,

Hypothesis 1: The probability to make a cross-border purchase is higher for individuals living in large cities.

2.2 Trust

Trust is essential to enhance the consumer's willingness to make online purchases (3, 12, 18, 66, 96]. Extensive information searching and evaluation of alternatives both of the good or service involved and tracking the reputation of the seller are typical risk reducing strategies [93, 100]. They help to create the necessary trust to support the transaction. The support from institutions including consumer protection regulations and their enforcement by efficient courts are essential to create such trust. Trust in domestic institutions concerns the degree to which individuals are satisfied that their rights as consumers will be adequately defended. They are important also for the willingness to purchase cross-border because under EU e-commerce

legislation it is the courts of the consumer and not those of the seller that are competent in case of litigation. Again, given the higher risk and complexity of cross-border transactions, the positive effect of having strong institutions is expected to be more important for deciding to purchase cross-border than for purchasing domestically.

Cross-border specific: Trust in foreign sellers

To buy cross-border involves a higher amount of interparty risk compared to domestic online purchasing, and the degree to which the individual is willing to undertake that risk will depend to an extent on whether he or she believes that the seller is trustworthy [12, 42]. At the time of the purchase decision itself, trust in both the product sold and the provider become important, all the more so when the origin of the seller is from another less familiar country. Clearly, the importance of trust in e-transactions depends on the purchase amount as well as product type (e.g., perishable food, designer clothing, automotive components). Trust in the seller depends on several attributes of the seller. For example, trust will be higher for a large established company than for a relatively new or small company. The use of established e-commerce platforms and social media, especially those that operate on global level, can help to raise trust [14]. Yet, even controlling for all these factors, trust in foreign sellers tends to be very different from the trust shown in domestic sellers. There is substantial variation across individuals in the trust they have in foreign sellers, which may be less than, equal to or greater than the trust they hold in domestic sellers. This variation is mainly explained by differences in information and experience across individuals, but emotional factors also contribute to it [8].

An interesting observation in this regard is that trust in foreign sellers appears to be negatively correlated with the level of interpersonal trust within the country from where the purchase is made. It is possible to generate an average inter-personal trust indicator from responses by individuals to questions on trust. Such responses generate very consistent results across time

and between different surveys [13]. Nordic countries and the Netherlands are found to have very high levels of inter-personal trust [5]. Other countries in north-west Europe are also found to display high levels of inter-personal trust, albeit not as high as those found in Nordic countries. With few exceptions, countries in southern Europe and in the former centrally planned countries display much lower levels of trust. In terms of purchasing behaviour, one can expect trust enhancing institutions and cultural traits to promote on-line purchasing. However, in very low trust countries consumers may have more trust in foreign sellers than in those of their own country (fig. 3).

Fig. 3 goes in here

The figure above suggests that trust in foreign sellers can be high enough to support cross-border transactions also in low trust countries. Hence, taking these interpersonal variations into account,

Hypothesis 2: The probability to purchase cross-border is higher if potential buyers trust foreign sellers equally or more than they trust domestic ones.

2.3 Market conditions

Two conditions are essential for a well-functioning e-market : a supportive legal and regulatory environment and the availability of the necessary infrastructure. Broadband coverage and speeds are a factor limiting the ability to trade online for both companies and consumers particularly in remote and rural areas [52, 84].

A number of regulatory barriers specific to cross-border e-commerce have been identified which act to depress either the ability to sell or the willingness to purchase cross-border [16]. Regulations affecting telecommunications and postal services can impact the ability to sell online negatively. Increasingly consumers are using mobile devices to access the internet and

to undertake the different phases of the purchase decision including ordering online. However mobile spectrum is allocated on a country by country basis and there are effectively 30 different markets for mobile services in the EEA [59]. The result is less competition and more complications when moving around and making cross-border purchases.

Delivery delays and costs for parcels which are much higher when purchasing cross-border than domestically have been identified as an important factor limiting such purchases [15, 25, 58, 70]. A common tactic to reduce the high delivery cost and to improve customer experience and satisfaction with online purchasing, especially cross-border purchasing, consists in setting up local warehouses and service centres in the market [99]. An efficient organization of such warehouses and service centres assumes the availability and readiness of a flexible labour force. However, strict labour market regulations prevent such a flexible organization in several EU countries. [68]

From the demand side of the market, online purchasing is found to be positively related to income [18, 28, 51, 53, 54, 67, 88, 90]. With a rising income in the country, consumers look for more variety or need specific, often niche, products. The growth of luxury products that are sold from Western sellers to focused market segments in Asia illustrate this phenomenon [46]. Foreign sellers are attracted to these markets, often tailor their products and services to local consumers and increase their marketing activity to better serve the customers from these segments. The growing needs for more variety push buyers to look wider than the domestic market. Especially if purchasing power is unequally distributed across consumers this tendency will be stronger.

Cross-border specific: The size of the domestic market

The need to look for more variety cross-border is directly related to the size and development of the domestic market. A decision to purchase is influenced by the range of products on offer,

itself a function of the size of market. In order for consumers to want to purchase online domestically, there must be a wide selection of goods and services on offer preferably at competitive prices [23].

Not only the size of the market differs between countries, but also the share of firms participating in e-commerce matters. The share of firms selling online in the EU-28 has been increasing but remained at the relatively low level of 18% in 2016 up from 13% in 2010 [36]. The share of large companies selling online has also increased faster than that for smaller ones. However, there remains a large variation in the share of firms selling online across countries. Countries with larger markets and many e-sellers can be expected to have a broader range of products on offer so that consumers will be more likely to find those that they are seeking domestically than consumers from countries with smaller markets. Controlling for the share of firms selling online, the size of domestic market is expected to be an important and specific factor influencing the individual to make cross-border purchases.

Hypothesis 3: The probability of purchasing cross-border relates negatively to the size of the domestic market.

2.4 Socio-cultural environment

Several studies established a link between culture and the expectations and perceptions of consumers on e-commerce [65, 75, 97]. Culture differentiates their attitudes to transaction conditions such as purchase, payment, and delivery conditions [9, 78]. Other studies find culturally determined differences in shopping motivations, (e.g. hedonic versus utilitarian motivation) [21, 78, 101]. Differences in culture between countries affect the willingness to purchase online from abroad [7]. Park and Jun [72] find strong effects of cultural differences between US and Korea on online buying in terms of perceived risks and innovativeness. The

empirical model proposed in the next section controls for possible cultural effects that may carry over to the decision to purchase cross-border.

Cross-border specific: Ethnic fractionalization

An element of the socio-cultural context that has not been given attention in the e-commerce literature, but is likely to have a specific impact on cross-border purchasing, is ethnic fractionalization. Some countries are highly fractionalized in terms of social groups. Fractionalization measures the chance that two randomly chosen inhabitants of a country belong to separate groups within society [27]. Alesina et al. [2] measure fractionalization in terms of ethnicity, language and religion. Their work suggests positive effects of fractionalization on the quality of policies, institutions and growth of a country. Of the three dimensions along which societies can be fractionalized, ethnic fractionalization is found to have a specific relationship with international trade. Most of the studies looking into this relationship find a positive effect of ethnic fractionalization on international trade and make the link with immigration and network effects across countries [73]. These networks have the ability to reduce information barriers and search costs in international trade [30, 40, 73, 77, 79, 80, 89]. More generally, the presence of a diaspora in different countries encourages commercial relationships internationally. Countries that are ethnically diverse could be expected to show less of a domestic bias in their purchasing behaviour [26]. The above arguments linking ethnic fractionalization to international trade appear equally relevant for online purchasing across borders.

Hypothesis 4: The probability of purchasing cross-border is higher in countries characterised by ethnic fractionalization.

3. Model specification and data

3.1 Model specification

The conceptual model outlined in the previous section corresponds to a (mental) two stage decision process where the individual is first making the choice between a traditional brick-and-mortar (offline) purchase versus an online purchase and in the second stage decides between purchasing from a domestic seller versus a foreign based seller.

Figure 4 goes in here

The two-stage mental choice model is formalized and empirically estimated hereafter as an hierarchical logit model, following representative consumer theory [see also 95]. The hierarchical logit model partitions the hierarchical decision in two sequential binomial logit models. The first stage model deals with the decision to buy online or offline. This stage has been well explored in other papers [28]. The second stage binomial model modelled hereafter considers the decision to purchase cross-border or not by relating two alternative outcomes to a set of explanatory variables: the individual makes cross-border purchases (=1) versus exclusively purchasing domestically (=0) over a given period. The binomial logit model, which is consistent with a consumer optimizing utility from comparing the two alternatives [60], relates the probability of choosing to purchase cross-border to the characteristics of the individual and his/her socio-economic context following the equation below:

$$\log \frac{p_i}{1 - p_i} = x'_i \beta$$

where $p_i = P\{y_i = 1|x_i\}$ is the probability of observing outcome 1.

The left-hand side (dependent) variable corresponds to the logarithm of the odds $p_i/(1 - p_i)$ of purchasing cross-border. The right hand-side vector of explanatory variables x'_i consists of the

variables belonging to the four determining factors: personal characteristics, interpersonal trust, market conditions, socio-cultural characteristics, and a time indicator μ . Personal characteristics and interpersonal trust represent the variables intrinsically linked to individual i at time t in country k as specified below. The other characteristics are country wide variables typifying individual i living in country k at time t . Market conditions represents the vector of variables relating to the size of the domestic market, per capita income, inequality, the offer of firms online, rule of law as well as ICT related variables and labour and network industry regulation. All of the above variables are time varying by country with the exception of ICT infrastructure, labour and network industry regulation which are measured at a single point in time. Socio-cultural characteristics represent the vector of country specific variables relating to culture and fractionalization and are measured at a single point in time. μ measures year fixed effects.

3.2 Data

In order to test the model, two types of data need to be combined: data on individual consumers and data collected at country level. Table A1 of the appendix provides details of the data used and summary statistics of the variables. The final sample used in testing the model comprises 43,098 observations on individuals in the 30 EEA countries for the years 2006, 2008, 2010, 2011, 2012 and 2014. The countries include all 28 EU Member States plus Norway and Iceland. The population covered are all those aged 15 years and older in the European Economic Area. Average age of respondents was 42 years and just over half of the sample were female.

Personal characteristics of respondents and interpersonal trust are measured with variables from special Eurobarometer surveys on consumer attitudes towards cross-border trade and consumer protection. Respondents identified the domestic or cross-border nature of a purchase based on the web site they ordered from irrespective of the nature of that site (platform, retailer,

manufacturer or service provider). The Eurobarometer surveys use representative random samples of the population aged 15 years and over. The recourse to large samples with identical questions repeated over several years provide very high-quality data with low sample error of each EEA member state [34]. The metric we use for our dependent variable is an indicator variable distinguishing domestic sellers from foreign sellers and is based on the following survey questions: “*In the past 12 months, have you purchased any goods or services via the Internet ...?*” “*Yes from a seller/provider located in our country*”, “*Yes from a seller/provider located in another EU country*” “*Yes from a seller/provider located outside the EU*”, or “*I don’t know the location*”. Cardona et al. [12] examined the validity of the metric with the results of a different survey [33] by which they were able to compare the respondents' answers to the same questions with the actual location of the website used for the purchase. They found that in 84% of cases the respondent was able to identify correctly a domestic site as the source of purchase. This falls to 56.6% in the case of a seller or service provider in another EU country. However, in 22.8% of responses the consumer identified a seller or provider based outside the EU as from the EU. Therefore, the respondents identified an EU purchase correctly as cross border in 79.4% of cases. For sellers or service providers outside the EU the share of correctly identified cross-border purchases was even higher at 90.5%. By combining all cross-border purchases for the dependent variable a high degree of validity could be obtained.

The control survey used by Cardona et al. [12] provided further evidence of validity by breaking down the purchase decision into three product categories: tangible goods, online services (travel, leisure) and digital content. They found that cross border purchases were identified correctly in at least 78% of cases for tangible goods, 89.2% of case for online services and 84.7% in the case of digital content.

It is also important to note that the goods and services covered do not include all cross-border transactions or exchanges individuals make over the internet. First, because respondents are

considered in their role as individual consumers, B2B and government purchases are excluded. Goods and services that were obtained via the internet for free are also excluded as are payments for offline orders. In that sense, coverage excludes many other transactions that take place over the internet. In the absence of questions on the type of products purchased over the internet in the Eurobarometer surveys, the Eurostat survey on ICT usage in households and by individuals provides some aggregate data on products purchased abroad over the internet for 2017. Among individuals who ordered goods or services, over the internet, for private use, in the previous year, 33% purchased online from sellers abroad physical goods (e.g. electronics, clothes, toys, food, groceries, books, CDs/DVDs), 10% purchased products downloaded or accessed from websites or apps (e.g. films, music, e-books, e-newspapers, games, paid applications), 14% purchased travel, accommodation or holiday arrangements and 7% purchased other services (e.g. tickets for events received by mail, telecom subscriptions).

Data on person specific characteristics of the individual include : age in years (in logs), an indicator variable reflecting gender (female=1), four indicator variables for level of education (left school before age 16, still in education, 16-20 age at which stopped education, >20 years age at which stopped education) and occupation indicator variables (manual workers, managers & employees, self-employed). To cover all individuals in the sample, the status of being inactive, retired, or student are entered as separate indicator variables in the model. The variable "internet_access" measures whether the consumer has access to the internet or not in the home. A second group of indicator variables relates directly to Hypothesis 1 and indicates the type of location in which the consumer is situated: rural, small town or large town. The respondent self-selected the type of location in which they live rather than having it assigned by the survey organisation.

For measuring trust, data on two variables are taken from the special Eurobarometer surveys. The first, “consumer_rights_courts”, measures institutional trust as the trust consumers have in the court system to protect their consumer rights (four-point Likert scale). The second, “EU_purchase_confidence”, variable is the focal variable of Hypothesis 2 and measures trust in foreign sellers. This variable differentiates whether the individual is more confident (value=3), as confident (value=2) or less confident (value=1) when purchasing from an EU seller based in another country compared to a domestic one.

Data on market conditions in the country cover basic variables related to the quality of the institutions and the network as well as various demand and supply conditions. The variable “%_enterprises selling online”, measures the offer of firms by the percentage of enterprises selling online at least 1% of turnover. The quality of network infrastructure, including the provision of various ICT services, is covered by two variables: internet usage as the percentage of the population using the internet [44] and ICT infrastructure as the quality of ICT infrastructure from Donaubauer et al [24]. Efficient markets need to be supported by strong enforcement of property rights and contract law. To capture this, the variable “rule_of_law” from the World Bank Worldwide Governance Indicators [47] is included as an essential control variable in the model.

Data for “Employment_regulation” and “network_regulation” variables are retrieved from the OECD data base as an index measuring the degree of regulation with values varying between 0 (no regulation) and 6 (highly regulated) [68, 69].

Data covering the variables related to market size and development are from Eurostat. The focal variable “log market size” of hypothesis 3 measures the size of the domestic market by the final consumption of households. The variable is measured annually at current prices and euro exchange rates. The variable “log expenditure per capita” measured at current prices and

purchasing power parities controls for differences in market development. Price levels differences between countries are included as a separate variable “price level” and are measured as an index with EU28=100. The variable “gini” (ranging from 0 to 100) measures income inequality in the country.

The socio-cultural variables include the measures of culture from Schwartz [82]. The measures relate to mastery, autonomy and egalitarianism, and are measured on a -1 to +7 response scale. Mastery measures the desire to discover. Autonomy measures independent behaviour. Egalitarianism measures acceptance of people as individuals rather than hierarchical systems of ascribed roles. These three elements impact risk taking and pro-active behaviour, elements of behaviour which were found to strongly affect on-line purchasing [72]. For testing the final hypothesis, a specific indicator measures the ethnic fractionalization within each country. Controls for fractionalization of society along linguistic and religious lines are entered as separate variables. The fractionalization indexes range between 0 and 1. Higher values indicate more fractionalization. The data are taken from Desmet, Ortuño-Ortín & Wacziarg [22].

The logit regression model is estimated following the maximum likelihood principle. The maximum likelihood estimates are those values of the parameters that make the observed data most likely. As the survey was repeated for several years, but not with the same individuals, the data from the various surveys were pooled. The inclusion of indicator variables for each different year of survey controls for possible inter-temporal variation in the data by taking year-specific effects into account. Moreover, given that the observations are clustered at the country level, a standard estimation of the model may produce biased standard errors of the estimated coefficients, especially those of the country level variables that do not vary across the individuals. Alternative approaches to deal with this problem include logit regression with clustered standard errors or mixed effects logit regression following a multi-level model.

While the second approach may account for random differences across countries, the first requires fewer (distributional) assumptions and is easier to implement. Various studies have shown the effectiveness of the clustered standard error approach in eliminating bias, even for a small number of clusters, as is the case in this study [76].

4. Results

The first column of Table 2 presents the results of a logit regression of the personal characteristics of the individuals on the probability for an individual to purchase cross-border. The dependent variable equals the log of the odds corresponding to the specification of the model presented in the previous section. The importance of the country level environment is examined from a regression that includes country fixed effects in column 2. The inclusion of country fixed effects significantly improves the fit with more than doubling the value of the pseudo R-square and a substantial reduction of the Akaike's information criterion measure.

Country fixed effects do not tell anything about the origin of these effects, only that they are important. In column 3 the country fixed effects are replaced by the explanatory country level variables related to the market conditions and socio-cultural characteristics following the conceptual model introduced in section 2. Compared to the model with country fixed effects in column 2, none of the estimated effects for purchaser characteristics show substantial changes. Moreover, the fact that the changes in pseudo- R^2 and Akaike's information criterion are small suggests that the country level explanatory variables are able to pick up most of the country variation and can be considered a good approximation to the true scale of the country level influence.

Table 2 goes in here

In order to facilitate interpretation, column (4) presents the odds ratio effects for the regression in column (3). The odds ratio is to be interpreted as the multiplicative effect on the odds of purchasing cross-border of a unit change in regressor X_i . The results reveal that the characteristics of the individual purchaser have a sizeable and highly significant impact on the odds of purchasing cross border ($p < 0.001$). Women (base is men) and older people are less likely to purchase cross-border while those more highly educated (base is those leaving school before age 15) and those with higher skilled occupations (base is manual workers) are more likely to purchase cross-border. For inactive and retired individuals, as well as for students no statistically significant effect is found. Self-employed individuals tend to make more cross-border purchases, which is consistent with the finding that self-employed individuals are characterized by a higher willingness to take risk [31].

As to cross-border specific effects, the results provide strong support for Hypothesis 1. Purchasers located in a large town are much more likely to purchase cross-border than those located in smaller towns or rural areas (base is rural area). The results also support Hypothesis 2. The coefficient of the variable measuring trust in foreign sellers (EU_purchase_confidence) is both positive and highly significant. The odds ratio for the variable EU_purchase_confidence implies that moving from level 1 (more trusting in domestic sellers) to level 2 (equally trusting in domestic or EU sellers) or from level 2 to level 3 (more trusting of EU sellers than domestic ones) increases the odds to purchase cross-border by almost three times. The positive effect of rule_of_law reinforces the effects of institutional trust in the court system for cross-border purchasing.

Hypothesis 3 also finds support. Log market size is negatively associated with the probability of purchasing cross-border. The odds ratios for logarithmic independent variables report the effect of (irrealistic) large changes in the independent variable. It is more meaningful to inspect the estimated coefficients, which in such cases approximate elasticity effects. For instance, the

estimated coefficient for the logarithm of market size in column 3 suggests that the odds ratio of purchasing cross-border would decrease by 0.56 percent in response to a one percent increase in market size. A higher share of domestic firms that sell online (%_enterprises selling online) is also associated with a lower probability of purchasing cross-border compared to purely domestic purchases. A one percentage point increase in the share of domestic enterprises selling online depresses the odds ratio for cross border purchases by about 3%.

Other market conditions also behave much as expected. The effect of log expenditure per capita has a strong effect on the odds of purchasing cross-border. Higher per capita expenditure allows a greater amount and greater variety of purchases to be made and favour more cross-border purchasing. Following the estimate, the odds ratio would increase by 3.67 percent in response to a one percent change in per capita expenditure. Income inequality (gini) does not seem to affect cross-border purchasing in a significant way.

Both the quality of IT infrastructure (ict_infrastructure) and the percentage of the population using the internet (%_using_internet) should increase the probability of making an online purchase but it is not evident that they should raise the probability of purchasing cross-border over that of purchasing domestically. The non-significant signs in column (3) for IT infrastructure and percent of the population using the internet is therefore less surprising.

The two variables capturing regulation also perform less well than expected. Higher levels of employment_regulation lead to a lower probability of purchasing cross-border but the coefficient is not significant. Higher levels of network_regulation lead to an unexpected positive, but non-significant coefficient. As with the infrastructure variables, regulation may be affecting the online purchase decision rather than that of purchasing cross-border compared to domestically.

The mastery and egalitarianism measures of culture encourage risk taking and self-expression. They are found to stimulate cross-border purchasing. The results also support Hypothesis 4. Ethnic_fractionalization leads to substantially higher probabilities of purchasing cross-border, as expected. Regarding the two controls, religious_fractionalization is not significant. The negative effect for linguistic fractionalization is unexpected. Examining the countries of our sample where linguistic fractionalization is high, most of them are characterized by strong identification of the individual with his/her own linguistic group. This appears to create a lack of openness to make purchases from sellers based in other countries.

Additional robustness tests

Because of missing data, the empirical model could not control for the type of goods or services bought online. The estimated effects could possibly be affected by this omission. First, there is a data concern, which relates to the possibility that consumers perceive the decision to buy cross-border differently for the various products traded online (luxury products, food, services, ...). Second, the effects of gender or of product regulation may likewise depend on the type of product. Data on internet purchases without a breakdown between domestic and cross-border purchases by individuals is available from annual Eurostat surveys on e-commerce [37]. From these data it is possible to estimate the propensity to purchase certain products online by age groups, gender, country and year and link these propensities to the data on individuals provided by the Eurobarometer survey data. Column (2) in Table 2 includes the propensities to buy different products as additional variables in the model. This extension further improves the fit of the model but does not seem to really affect the estimated results.

Table 2 goes in here

As a further check on the robustness of the results, the sample was divided into two periods corresponding to the pre and post financial crisis periods in columns (3) and (4) of Table 2.

The coefficients are quite stable across time periods with some variation within groups of variables. For example, education becomes less important but occupation more important as factors influencing cross-border purchasing. The impact of economic factors appears to have grown stronger post-crisis as would be expected.

5. Discussion and Conclusion

The main contribution of the paper consists in improving our understanding why there is such a large variation in the percentage of consumers who make cross-border purchases across countries, even in an integrated market such as the EU. By modelling personal characteristics in combination with country specific contextual data in a comprehensive model, the paper contributes to the theoretical and empirical literature on cross-border e-commerce which tends to focus on only one of the two dimensions [9, 17, 94,]. The findings also provide guidance to sellers and policy makers in their efforts of stimulating cross-border e-commerce, an area which only received partial attention in the literature [see however, 12, 16, 42, 61].

The theoretical approach conceptualizes and provides arguments how country specific factors matter in addition to the personal characteristics of the consumer and differentiate the decision to purchase cross-border from the decision to buy domestically online. Several testable hypotheses are developed from these arguments. The hypotheses are tested against a large data set which combines the personal characteristics of the purchaser with a wide variety of country level variables that influence the individual's decision to purchase cross-border. The data cover many European countries, including those Member States that joined the EU from 2004 onwards. Since the nature and character of the EU has been profoundly transformed by these enlargements their inclusion represents an important contribution of the paper. The identification of a number of key determinants of the decision to purchase cross-border helps

to focus on those elements that can improve the functioning of the European Single Market through e-commerce. By concentrating exclusively on the cross-border aspect, it also informs policy makers of the most relevant aspects for a better integration of consumer markets. We go beyond existing studies [16, 25, 42, 58, 94] by identifying and stressing the importance of policy actions for three types of intervention: trust and confidence building, removing obstacles to cross-border transaction and infrastructure

Several personal characteristics that affect the decision to purchase online, as identified in prior work [10, 28, 39, 49, 55, 83, 94] are found to have an enhanced impact on the decision to purchase cross border and to differentiate cross-border buyers from those that make only domestic purchases. Characteristics such as age, gender, income levels, trust in institutions fit into this category. Trust in foreign sellers shows up as a key determinant of cross-border purchasing. Such trust not only varies between countries but also between individuals. Besides these personal factors, the results provide strong evidence for the important role which the social, economic and political environment of a country plays in the decision to purchase cross-border versus purchasing only domestically. A number of country level variables that have not been explicitly identified before such as the size of the domestic market, average per capita income together with specific institutional and cultural variables including ethnic fractionalization are found to be prime determinants of the decision to purchase cross-border. The level of urbanization and the rule of law, also identified elsewhere [20, 84], exert a strong influence on the decision. Overall, the results indicate that the comprehensive nature of the model which in addition to personal factors emphasizes the country level determinants is able to account for a high proportion of the country level variation in purchasing cross border.

The findings have important implications for cross-border sellers as well as national and supranational authorities.

For cross-border sellers, the results can help them to better assess the market potential and/or to differentiate marketing efforts to the specific context of the country markets. For instance, depending on the estimated potential, sellers might decide to target countries with important metropolitan regions and sophisticated consumers [20]. Or alternatively, in countries with large rural populations adapt information and delivery systems to reach and serve rural customers. Extending the findings of other studies [44, 19, 63], the results point to the pivotal role of trust in foreign sellers and quality assurance to stimulate of cross-border purchasing. Hence, the use of trustworthy and high-quality information and exchange platform systems should be a prime concern for cross-border sellers [48].

For public policy makers, the strong role for country environmental factors suggests the possibility for policy to act that level. However, several of these factors cannot be addressed by policy makers and can also not be considered as obstacles to online cross-border purchasing requiring action. Cultural differences will remain and consumers in large country markets will always have a wider variety of goods and services to purchase domestically than in the many small markets. Hence, the different countries cannot be expected to convergence to the same level of cross-border purchasing. There are, however, important domains where governments can intervene and stimulate cross-border online transactions as an efficient instrument for market integration, providing consumers with all the benefits that accrue from it.

In the light of the previous findings, EU wide actions should concentrate on three areas: trust and confidence building in e-commerce, removing obstacles to cross-border transactions and the infrastructure required for purchasing cross-border

- Trust and confidence building [3]. Our results stress the importance of trust in foreign sellers for engaging in cross-border transactions. Consumer policy has already successfully

addressed some of the issues relating to trust and security of online purchases². EU policies on consumer protection and data protection have had some success in fostering this positive outcome. Fear of financial fraud has diminished and policies on right of return, small claims procedure and privacy have increased individual confidence in purchasing online albeit with some attendant cost attached. The protection of consumer rights is a key element of an efficient institutional framework to create such trust, but also intercountry co-operation in dispute settling can contribute to this effect. The Consumer Rights Directive of the EU could further address unfair contract terms and guarantees.

The importance of the rule of law, which underlies institutional trust, was found to be an important determinant of the willingness to purchase cross border [84]. Upholding the rule of law therefore is an important task for the EU.

Corruption has been found to affect social trust negatively and countries with low levels of social trust are also ones for which corruption has been identified as particularly problematic. The EU has responsibilities to combat corruption in Member States, for example by withholding structural funds from those countries whose efforts to eliminate corruption are lacking.

- Obstacles. While we could not identify the role of particular obstacles in the empirical part because the Eurobarometer surveys did not include the requisite questions, a number of obstacles have been found in the literature to hinder the development of cross-border e-commerce in Europe [15, 16, 25, 33, 42, 58]. Among them are to be found the high cost of international parcel delivery, geo-blocking, which prevents the consumer from purchasing

² The 2017 edition of the EU Consumer Conditions Scoreboard found that consumer trust in e-commerce has dramatically increased [35]. Since the previous 2015 Scoreboard consumers' levels of trust had increased by 12 percentage points for purchases from retailers located in the same country and by 21 percentage points for purchases from other EU Member States.

outside their national market, and the need for e-commerce platforms and sellers to charge VAT at the rate applicable in the consumer's home country. These obstacles have been gaining attention from EU authorities, but continuing problems indicate a need for further action.

- Infrastructure. Our results also emphasize the importance of a well-developed and competitive infrastructure for telecommunications and ICT. With more and more purchases made via smart phones, mobile telecommunications represent essential infrastructure for e-commerce, whether the purchases are made from domestic sellers or cross-border. However, markets for mobile telecommunications remain fragmented along national lines, in particular because spectrum remains allocated on that basis which precludes the development of genuinely trans-national operators [59]. There is a need therefore to make progress towards a single telecoms market at EU level. Equally important is the need to stimulate investment in education and training centers to develop e-commerce skills. Many Europeans already possess sufficient language skills to use web sites in a language other than their own mother tongue. Foreign language proficiency needs to be developed for those who do not yet possess these skills [14, 19].

Finally, some limitations of this study need to be acknowledged. Some socio-economic variables that would have been preferably measured at the individual level could only be accounted for at country-wide level. This in particular affects the socio-cultural variables. Cross-border transactions could also not be observed at the product level. The nature of products purchased cross-border by the individual could only be accounted for indirectly by linking his/her profile to his/her overall online consumption mix of goods and services. New and improved data forthcoming will enable to model the decision at the level of the product market, and address product specific linguistic, cultural and or regulatory obstacles that have been assumed common in the present research. Future research directions should also address

the specific role of global e-commerce platforms and market places in stimulating cross-border transactions. Such research should study to what extent global service providers are able to overcome certain obstacles to cross-border trade, including the fragmented logistics operators' market in Europe. At the same time, it needs to address the impact of global platforms on the competitive environment for cross-border e-commerce, including an analysis of the kind of sellers and buyers that make use of global platforms.

References

1. Acquisti, A., Taylor, C. & Wagman, L. (2016). The Economics of Privacy. *Journal of Economic Literature*, 44 (2)
2. Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, 8(2), 155-194
3. Alzahrani L., Al-Karaghoul W. & Weerakkody V. (2017). Analysing the critical factors influencing trust in e-government adoption from citizens' perspective: A systematic review and a conceptual framework. *International Business Review*, 26(1), 164–175
4. Badger, E. (2017). What Happens When the Richest U.S. Cities Turn to the World?. New York Times, December 22, 2017
5. Beilmann, M. & Lilleoja, L. (2015). Social trust and value similarity: the relationship between social trust and human values in Europe. *Studies of Transition States and Societies*, VII(2), 19-30
6. Berendt, D., Gunther, O. & Spiekermann, S. (2005). Privacy in e-Commerce: Stated Preferences vs. Actual Behavior. *Communications of the ACM* 48(4), 101-06
7. Blum, B.S. & Goldfarb, A. (2006). Does the internet defy the law of gravity? *Journal of International Economics*, 70(2), 384–405.
8. Borum, R. (2010). The Science of Interpersonal Trust. *Mental Health Law & Policy Faculty Publications* 574.
9. Burgmann, I., Kitchen, P.J. & Williams, R. (2006). Does culture matter on the web?. *Marketing Intelligence & Planning*, Vol. 24 No. 1, pp. 62-76
10. Burkolter, D., & Kluge, A. (2011). Online consumer behavior and its relationship with socio-demographics, shopping orientations, need for emotion and fashion leadership. *Journal of Business and Media Psychology*, 2 (2), 20-28.
11. Butler, P. and Peppard, J., (1998). Consumer purchasing on the Internet: Processes and prospects. *European Management Journal*, 16(5), 600-610
12. Cardona, M., Duch-Brown, N. & Martens, B. (2015). Consumer Perceptions of Cross-border eCommerce in the EU Digital Single Market. JRC Technical Reports, IPTS Digital Economy Working Paper (2015-06)

13. Carlin, R.E., Love, G.J. & Smith, C. (2017). Measures of Interpersonal Trust: Evidence on their Cross-National Validity and Reliability based on Surveys and Experimental Data. OECD Statistics Working Paper No. 86, STD/DOC(2017)10
14. Cheng, X., Su, L. & Zarifis, A. (2019) Designing a talents training model for cross-border e-commerce: a mixed approach of problem-based learning with social media. *Electronic Commerce Research*, 19(4), 801-822
15. Claes, A. & Vergote, W. (2016). Econometric study on parcel list prices. Report prepared for the European Commission, DG GROW, Université Saint-Louis, 16/03/2016
16. Coad, A. & Duch-Brown, N. (2017). Barriers to European Cross-border e-Commerce. JRC Technical Reports, JRC Digital Economy Working Paper 2017-03
17. Comegys, C., Hannula, M., & Váisänen, J. (2009). Effects of Consumer Trust and Risk on Online Purchase Decision-Making: A Comparison of Finnish and United States Students. *International Journal of Management*, 26(2)
18. Corbitt, B. J., Thanasankit, T., & Yi, H. (2003). Trust and e-commerce: a study of consumer perceptions. *Electronic Commerce Research and Applications*, 2, 203-215
19. Cui, Y., Mou, J., Cohen, J. & Liu, Y. (2019) Understanding information system success model and valence framework in sellers' acceptance of cross-border e-commerce: a sequential multi-method approach, *Electronic Commerce Research*, 19(4), 885-914
20. De Blasio, G. (2008). Urban-rural differences in internet usage, e-commerce and e-banking: evidence from Italy. *Growth and Change*, 39 (2), 341-367.
21. Delafrooz, N., Paim, L.H. & Khatibi, A. (2009). Developing an Instrument for Measurement of Attitude Toward Online Shopping. *European Journal of Social Sciences*, 7(3), 166-177
22. Desmet, K., Ortuño-Ortín, I. and Wacziarg, R., (2009). The Political Economy of Ethnolinguistic Cleavages. NBER Working Paper No. 15360, September 2009.
23. Dolfen, P., Einav, L., Klenow, P.J., Klopach, B., Levin, J.D., Levin, L., Best, W. (2019). Assessing the Gains from E-Commerce, NBER Working Paper No 25610, February 2019
24. Donaubauer, M., Meyer, B. & Nunnenkamp, P.(2014). A New Global Index of Infrastructure: Construction, Rankings and Applications. Kiel Working papers, No. 1929, June 2014
25. Duch-Brown, N. & Cardona, M. (2016). Delivery Costs and Cross-border e-Commerce in the EU Digital Single Market., JRC Technical Reports, IPTS Digital Economy Working Paper 2016/03
26. Duanmu, J.L. Guney, Y. (2013). Heterogeneous effect of ethnic networks on international trade of Thailand: The role of family ties and ethnic diversity. *International Business Review* 22(1), 126-139
27. Easterly, W. and Levine, R. (1997). Africa's Growth Tragedy: Policies and Ethnic Divisions. *The Quarterly Journal of Economics*, 112(4), pp. 1203–1250
28. Eastman, J., & Iyer, R. (2006). The elderly and their attitudes toward the internet: the impact on internet use, purchase and comparison shopping. *Journal of Marketing Theory and Practice*, 14 (1), 57-67.
29. Einav, L., Farronato, C. & Levin, J. (2016). Peer-to-Peer Markets, *Annual Review of Economics*, 8, 615-635

30. Elo, M. & Minto-Coy, I. eds (2018) *Diaspora Networks in International Business Perspectives for Understanding and Managing Diaspora Business and Resources*, Springer
31. Ekelund, J., Järvelin, M-R. & Lichtermann, D. (2005). Self-employment and risk aversion—evidence from psychological test data. *Labour Economics*, 12(5), 649-659
32. Engel, J. F., Kollat, D. T. and Blackwell, R. D. (1968) *Consumer Behavior*, New York: Holt, Rinehart and Winston 1968
33. European Commission, (2015) 'Identifying the main cross-border obstacles to the Digital Single Market and where they matter most: DSM consumer survey (2015)
34. European Commission (2016) *Consumers' attitudes towards cross-border trade and consumer protection 2016, Final Report*, GfK
35. European Commission (2017) 'Consumer Conditions Scoreboard: Consumers at Home in the Single Market'
36. Eurostat (2018 a) *Annual survey on Information and Communication Technologies usage and e-commerce in enterprises*.
37. Eurostat (2018 b) *Annual survey on Information and Communication Technologies usage in households and by individuals*
38. Farag, S., Weltevreden, J., Rietbergen, T. V., & Dijst, M. (2006). E-shopping in the Netherlands: does geography matter? *Environment and Planning B: Planning and Design* , 33, 59-74.
39. Garbarino, E. & Strahilevitz, M. (2004). Gender differences in the perceived risk of buying online and the effects of receiving a site recommendation. *Journal of Business Research* , 57, 768-775.
40. Genc, M., Gheasi, M., Nijkamp, P. & Poot. (2012). The impact of immigration on international trade: a meta-analysis. *Migration Impact Assessment: New Horizons* 301
41. Goldfarb, A. & Tucker, C. (2017). *Digital Economics*. NBER Working Paper 23684, August 2017
42. Gomez-Herrera, E., Martens, B. & Turlea, G. (2014). The drivers and impediments for cross-border e-commerce. *Information Economics and Policy*, 28, pp. 83-96
43. Huang, S-L & Chang, Y-C. (2017) Factors that impact consumers' intention to shop on foreign online stores, *Proceedings of the 50th Hawaii International Conference on System Sciences*
44. International Telecommunications Union (2018). *Measuring the Information Society Report 2018 - Volume 1*
45. Joines, J., Scherer, C. & Scheufele, D. (2003). Exploring motivations for consumer Web use and their implications for e-commerce. *Journal of consumer marketing* , 20 (2), 90-108.
46. Kapferer, J-N. & Valette-Florence, P. (2018). The impact of brand penetration and awareness on luxury brand desirability: A cross country analysis of the relevance of the rarity principle. *Journal of Business Research*, 83, pp. 38-50
47. Kaufmann, D., Kraay, A. & Mastruzzi, M. (2010). *The Worldwide Governance Indicators : A Summary of Methodology, Data and Analytical Issues*, World Bank Policy Research Working Paper No. 5430

48. Ke, D., Chen. A. & Su, C. (2016). Online trust-building mechanisms for existing brands: the moderating role of the e-business platform certification system. *Electronic Commerce Research*, 16(2), 189-216
49. Keisidou, E., Sarigiannidis, L. & Maditinos, D. (2011). Consumer characteristics and their effect on accepting online shopping, in the context of different product types. *International Journal of Business Science and Applied Management*, 6(2), 31-51
50. Kim, T.Y., Dekker R. & Heij C. (2017). Cross-Border Electronic Commerce: Distance Effects and Express Delivery in European Union Markets. *International Journal of Electronic Commerce*, 21(2), 184-218
51. Korgaonkar, P. K., & Wolin, L. D. (1999). A multivariate analyse of web usage. *Journal of Advertising Research* , 53-68.
52. Kshetri, N. , Bebenroth, R., Williamson, N.C. & Sharma, R.S. (2014). Cross-national heterogeneity in e-retail spending: a longitudinal analysis of economic, technological and political forces. *Electronic Commerce Research*, 14(4), 585–609
53. Kwak, H., Fox, R. J., & Zinkhan, G. M. (2002). What products can be successfully promoted and sold via the internet?. *Journal of Advertising Research* , 23-38
54. Li, H., Kuo, C., & Rusell, M. G. (1999). The impact of perceived channel utilities, shopping orientations and demographics on the consumer's online buying behavior. *Journal of computer-mediated communication* , 5 (2).
55. Lissitsa, S. & Kol, O. (2016). Generation X vs. Generation Y – A decade of online shopping. *Journal of Retailing and Consumer Services*, vol. 31, pp. 301-312
56. Lim, K.H., Sia, C.L., Lee, M.K.O, & Benbasat, I. (2006). Do I Trust You Online, and If so, Will I Buy? An Empirical Study of Two Trust-Building Strategies. *Journal of Management Information Systems*, 23(2), 233-266
57. Liu, M., Brynjolfsson, E. & Dowlatabadi, J. (2018). Do Digital Platforms Reduce Moral Hazard? The Case of Uber and Taxis. NBER Working Paper No. 25015, September 2018
58. Marcus, J.S. & Petropoulos, G. (2016). E-Commerce in Europe: Parcel Delivery Prices in a Digital Single Market. Breugel Policy Contribution, Issue 2016/09, May 2016
59. Mariniello, M. & Salemi, F. (2015). Addressing Fragmentation in EU Mobile Telecoms Markets. Breugel Policy Contribution, Issue 2015/13, July 2015
60. McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. in: Zarembka P, ed. *Frontiers in Econometrics*. New York, NY: Academic Press, 1974. p. 105–42.
61. Martens, B. (2013). What does Economic Research tell us about Cross-border e-Commerce in the EU Digital Single Market? A Summary of Recent Research. JRC Technical Reports, IPTS Digital Economy Working Paper 2013/05
62. Mathews, S., Bianchi, C., Perks, K.J., Healy, M. & Wickramasekera, R. (2016). Internet market capabilities and international market growth. *International Business Review*, vol. 25, pp. 820-830
63. Miao, Y., Du, R., Li, J. & Westland, J.C. (2019). A two-sided matching model in the context of B2B export cross-border e-commerce. *Electronic Commerce Research*, July 2019
64. Mills, B. F., & Whitacre, B. E. (2003). Understanding the non-metropolitan - metropolitan digital divide. *Growth and Change* , 34 (2), 219-243.

65. Moon, H., Chadee, D. & Tikoo S.(2008). Culture, product type, and price influences on consumer purchase intention to buy personalized products online. *Journal of Business Research*, Vol. 61, No. 1, pp. 31-39,
66. Mou, J., Shin, D-H. & Cohen, J.F. (2017). Trust and risk in consumer acceptance of e-services. *Electronic Commerce Research*, 17(2), 255-288
67. Norum, P. S. (2008). Student Internet Purchases. *Family and Consumer Sciences Research Journal* , 36 (4), 373-388
68. OECD (2013). Protecting jobs, enhancing flexibility: A new look at employment protection legislation. OECD Employment Outlook 2013
69. OECD (2013) Product Market Regulation Database, www.oecd.org/economy/pmr.
70. Okholm, H., Boivie, A., Wahl, J., Jensen, K., Nygard, A. & Basalisco, B. (2016). Principles of e-commerce delivery prices. Copenhagen Economics
71. Pain K., Van Hamme, G., Vinciguerra, S. & David, Q. (2016). Global networks, cities and economic performance: Observations from an analysis of cities in Europe and the USA. *Urban Studies*, Vol. 53, no. 6, pp. 1137-1161
72. Park,C. & Jun,J-K. (2003). A cross-cultural comparison of Internet buying behavior: Effects of Internet usage, perceived risks, and innovativeness. *International Marketing Review*, 20 (5), 534-553
73. Parsons, C. and Vézina, P-L. (2018). How migrant networks boost trade. *International Trade Forum*, 3, 10-11
74. Pezderka, N. & Sinkovics, R.R. (2011). A conceptualization of e-risk perceptions and implications for small firm active online internationalization. *International Business Review*, 20, pp. 409-422
75. Pookulangara, S. & Koesler, K. (2011). Cultural influence on consumers' usage of social networks and its' impact on online purchase intentions. *Journal of Retailing and Consumer Services*, 18 (4), 348-354
76. Primo, D.M., Jacobmeier, M.L. & Milyo, J. (2007). Estimating the Impact of State Policies and Institutions with Mixed-Level Data. *State Politics and Policy Quarterly*, 7(4), 446-459
77. Rodriguez-Pose, A. & Hardy, D. (2014). Cultural Diversity and Entrepreneurship in England and Wales. CEPR Discussion Paper No. 10241, October 2014
78. Sakarya, S. & Soyer, N. (2013). Cultural differences in online shopping behavior: Turkey and the United Kingdom. *International Journal of Electronic Commerce Studies*. 4, 227-251.
79. Sangita, S. (2013). The Effect of Diasporic Business Networks on International Trade Flows., *Review of International Economics*, 21 (2), 266-280
80. Scellato, G., Franzoni, C. & Stephan, P. (2015). Migrant scientists and international networks. *Research Policy*, 44, 108-120
81. Scott, A. J. (2001). *Global city-regions : trends, theory, policy*. Oxford University Press
82. Schwartz, S.H. (2006). A theory of cultural value orientations: explication and applications. *Comparative Sociology*, 5, 137-182
83. Seock, Y.-K., & Bailey, L. R. (2008). The influence of college students' shopping orientations and gender differences on online information searches and purchase behaviours. *International Journal of Consumer Studies* , 32, 113-121.

84. Shih, C.EE, Dedrick, J. & Kraemer, K.L.(2005). Rule of law and the international diffusion of E-commerce. *Communications of the ACM*, 48(11), 57-62
85. Sinai, T., & Waldfogel, J. (2004). Geography and the Internet: is the Internet a substitute or a complement for cities?. *Journal of Urban Economics* (56), 1-24.
86. Singh, N., Alhor, H.S. & Bartikowski, B.P. (2010). Global E-Commerce: A Portal Bridging the World Markets. *Journal of Electronic Commerce Research*, 11 (1)
87. Slyke, C. V., Comunale, C. L., & Belanger, F. (2002). Gender Differences in Perceptions of Web- based Shopping. *Communications of the ACM* , 45 (7), 82-86.
88. Soopramanien, D. G., & Robertson, A. (2007). Adoption and usage of online shopping: an empirical analysis of the characteristics of buyers, browsers and non-internet shoppers. *Journal of Retailing and Consumer Services* , 14, 73-82
89. Stoyanov, S., Woodward, R. & Stoyanova, V. (2018). The Embedding of Transnational Entrepreneurs in Diaspora Networks: Leveraging the Assets of Foreignness. *Management International Revue*, 58, 281-312
90. Swinyard, W. R., & Smith, S. M. (2003). Why people (don't) shop online: a lifestyle study of the internet consumer. *Psychology and Marketing* , 20 (7), 567-597.
91. Taylor, P.J. (2000). World cities and territorial states under conditions of contemporary Globalization. *Political Geography*, vol. 19, pp. 5-32
92. Taylor, P.J., Derudder, B., Saey, P. and Witlox, F. (2007) "Cities in globalization: practices, policies and theories", London : Routledge, 2007
93. Tan, Y.H. & Thoen W. (2000). Toward a Generic Model of Trust for Electronic Commerce. *International Journal of Electronic Commerce*, 5:2, 61-74
94. Valarezo, A., Pérez-Amaral, T., Garín-Muñoz, T., García I.H. & López, R. (2018). Drivers and barriers to cross-border e-commerce: Evidence from Spanish individual behavior. *Telecommunications Policy*, vol. 42, pp. 464-473
95. Verboven, F. (1996). International Price Discrimination in the European Car Market. *The RAND Journal of Economics*, 27(2), 240-268
96. Wang, Y.. Min, Q. & Han, S. (2016). Understanding the effects of trust and risk on individual behavior toward social media platforms: A meta-analysis of the empirical evidence. *Computers in Human Behavior* 56, pp. 34-44
97. Yoon, C. (2009). The effects of national culture values on consumer acceptance of e-commerce: Online shoppers in China. *Information & Management*, 46(5), 294-301
98. Yu, T. & Wu, G. (2007). Determinants of internet shopping behavior: An application of reasoned behavior theory. *International Journal of Management*, 24(4), 744-762, 823.
99. Yu, Y., Wang, X., Ray Y & Zhong, Huang, G. Q. (2016). E-commerce Logistics in Supply Chain Management: Practice Perspective. *Procedia CIRP*, 52, 179 – 185
100. Zhanga, L-f. & Zhanga, F-j. (2011). Does E-commerce Reputation Mechanism Matter? *Procedia Engineering* , 15, 4885 – 4889
101. Zhou, L., Dai, L. & Zhang, D. (2007). Online shopping acceptance model – a critical survey of consumer factors in online shopping. *Journal of Electronic Commerce Research*, 8(1), 41-62

On behalf of all authors, the corresponding author states that there is no conflict of interest.