

Hard facts. Clear stories.

Copenhagen
Economics

CE

Principles of e-commerce delivery prices

9 February 2016

Delivery
Order



Tracking

Authors:

Henrik Ballebye Okholm, Ph.D.

Anna Möller Boivie

Julia Wahl

Kristoffer Jensen

Albert Nygård

Bruno Basalisco, Ph.D.

Preface

E-commerce plays an important role in the European Commission's Communication on a Digital Single Market Strategy for Europe. A successful e-commerce market requires well-functioning delivery markets.

The European Commission has announced that it will launch measures in the first half of 2016 to improve price transparency and enhance regulatory oversight of cross-border parcel delivery.

Against this background, PostEurop has asked Copenhagen Economics to describe the structure of the parcels market, the role of the parcel delivery activity in the e-commerce value chain, and the drivers of the prices of this activity, both at domestic and EU cross-border levels.

This report is written by Managing Economist Anna Möller Boive (project manager), Economists Julia Wahl and Kristoffer Jensen and Researcher Albert Nygård. Dr. Henrik Ballebye Okholm has been the responsible Partner for the project.

Copenhagen, 9 February 2016



Henrik Ballebye Okholm
Partner, Ph.D.

Table of contents

Preface	0
Executive summary	4
1 The European e-commerce and delivery landscape	8
1.1 Development of European domestic and cross-border e-commerce markets	9
1.2 Implications for cross-border parcel delivery	18
2 E-retailers' pricing of cross-border e-commerce	21
2.1 E-retailers' pricing models	22
2.2 Factors driving e-retailers' pricing of cross-border delivery services	23
2.3 Case: Mystery shopping experiment	27
3 Delivery operators' pricing of cross-border parcel delivery services	31
3.1 Factors driving cross-border parcel delivery prices	32
3.2 Case studies of cross-border parcel delivery prices	41
References	46

List of tables

Table 1 Drivers of e-commerce development	15
Table 2 User-driven innovations	18
Table 3 Availability of delivery operators, EU-wise	20
Table 4 Factors affecting delivery prices	32
Table 5 Comparison of prices for UK and Cyprus, 1kg parcel	41
Table 6 Examples from public price lists for shipping from Germany	43

List of figures

Figure 1 Average growth rate per year in the share of individuals ordering goods online, EU-28	9
Figure 2 Cross-border e-commerce by individuals, 2014	12
Figure 3 Enterprises selling goods and services over the internet, 2013	13
Figure 4 Enterprises selling online cross-border to EU, 2013	14
Figure 5 Two delivery decisions by e-retailers	23
Figure 6 Design of mystery shopping experiment – trade flows	27
Figure 7 Results from the mystery shopping experiment	28
Figure 8 E-shopper experience at check-out	30
Figure 9 Uniform pricing versus differences in unit costs	40
Figure 10 Cologne-Liège vs. Cologne-Berlin	43
Figure 11 Prices for domestic and cross-border parcels from Germany	44

List of boxes

Box 1 Complexity of the 'cross-border' nature of transactions	11
Box 2 Parcel lockers in Europe	19
Box 3 Case study- direct injection	25
Box 4 Interoperability	34
Box 5 Relation between value of item shipped and delivery costs	36
Box 6 Market-based pricing	38

Executive summary

The European Commission has set high ambitions for a Digital Single Market Strategy for Europe, which includes ambitions for a well-functioning e-commerce market. E-commerce markets will only prosper, if e-retailers have access to good delivery services. It is therefore natural that European policy makers are interested in the development of the market for e-commerce delivery.

The European Commission has announced that it will launch measures in the first half of 2016 to improve price transparency and enhance regulatory oversight of cross-border parcel delivery.¹

Against this background, PostEurop has asked Copenhagen Economics to investigate the current state of European cross-border e-commerce and parcel delivery sectors, with a focus on the factors determining parcel delivery prices faced by e-shoppers when buying online. The purpose is to provide a good knowledge base for policy makers when they decide on initiatives on the parcel delivery markets.

We draw four main conclusions.



The European e-commerce landscape is highly dynamic, and the development of e-commerce is influenced by many factors. This has a positive spill over into the delivery sector.

EU member states differ significantly concerning the development of domestic and cross-border e-commerce, both for e-shoppers and e-retailers of different sizes. At the same time, we observe a highly dynamic market with a lot of innovation.

As an opening remark, we note that the level of cross-border e-commerce is relatively unknown, since it is not clear what the data on cross-border e-commerce contains and it is difficult to separate cross-border from domestic e-commerce and delivery.

The available data for 2014 shows that an average 15% of all individuals and 7% of all enterprises across EU member states engage in cross-border e-commerce.² This covers

¹ European Commission (2015), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Digital Single Market Strategy for Europe, COM(2015) 192 final

² The European Commission has recently relativised the 15% figure: "A recent analysis of survey results confirms clear under-reporting of consumers' cross-border purchases. In approximately four out of ten of the cases where respondent bought cross-border from another EU country, they reported a domestic purchase. ... This means that the actual rates of cross-border online shopping may in fact be closer to the 20% target set by the Digital Agenda for Europe 2015." European Commission (2015) Consumer Conditions Scoreboard 2015, p. 66, http://ec.europa.eu/consumers/consumer_evidence/market_studies/obstacles_dsm/docs/ccs2015scoreboard_en.pdf

strong cross-country variation, from under 5% (e.g., Poland) to over 35% (e.g., Austria) for individuals and from under 5% (e.g., Bulgaria) to up to 12% (e.g., Ireland) for enterprises, where we also observe strong variation depending on company size.

The level and the development of cross-border e-commerce between different European countries is caused by a number of different drivers. These factors include past experience with domestic and cross-border e-commerce, differences in regulation, product and delivery prices, common languages, and borders. The interplay among these factors can help us understand why cross-border e-commerce is stronger between some member states than between others.

We observe that the dynamic market developments for e-commerce spill over into the delivery sphere. With the rapid development of e-commerce, both e-shoppers and e-retailers have become more demanding concerning the delivery services that delivery operators provide. Both national postal operators and their competitors have reacted to this demand by offering more value-added delivery services to consumers and by offering more delivery services geared towards small and medium sized e-retailers. We observe, for instance, a multiplication of services allowing e-shoppers to predict the delivery time of their parcels (e.g., GLS FlexDelivery), a race for the roll-out of parcel lockers all over Europe by national postal operators (e.g., Packstation in Germany) and their competitors (e.g., Parcel motels in Ireland), and an increase in the solutions for small e-retailers (e.g., Hermes' 2015 cost-effective delivery solution for SMEs).

2

E-retailers have ample choice in delivery operators, delivery options and delivery routes.

As e-commerce develops an increasing number of different players try to tap into the market of e-commerce delivery, thereby increasing competitive pressure. Today, the variety of different players in e-commerce delivery extends from national postal operators to pan-European express and postal operators (e.g., DHL, DPD, UPS, GLS, Fedex), to regional and local operators (e.g., DB Schenker, Bring) to those that have emerged from closed delivery networks (e.g., Colis privé, Relais Colis, Hermes) or start doing so (e.g., Amazon, Ebay). We also see the emergence of more disruptive players from the transport sector, such as Uber and Nimber. The wide variety of options allow e-retailers to offer e-shoppers more choice, for instance by using multiple delivery operators or by offering home delivery and delivery to a parcel box.

3

Prices for cross-border parcel delivery paid by e-shoppers generally do not reflect the prices charged by delivery operators, due to the decisions of e-retailers.

E-retailers make two commercial decisions which determine the consumer experience with delivery of e-commerce. Firstly, e-retailers choose what delivery services to offer, depending on their size, products and cost. Secondly, e-retailers choose how to price the delivery service depending on e-shoppers' demands and the e-retailer's general pricing strategy (e.g., free delivery, if the purchase exceeds a threshold). In particular, e-retailers decide whether to make money through high product prices or through high delivery prices. Hence, there is no economic reason to expect that an e-retailer's price for delivery would be the same as the delivery operator's price for the same service.

We have conducted a mystery shopping experiment, which reveals a low correlation between the public list prices charged by delivery operators to e-retailers and the prices for delivery charged by e-retailers to e-shoppers. In some cases, e-retailers offered free delivery, whereas in other cases e-retailers charged five times more than the list price of the postal operator. In many cases, the difference between what e-retailers pay for delivery and what they charge for delivery is even higher, since e-retailers often obtain volume discounts and pay less than the list price. In our experiment, we only very rarely found that the price charged by the e-retailer was equal to the list price of the postal operator. The experiment shows a correlation coefficient of 0.45 between delivery prices charged by e-retailers and delivery operators' list prices. This means that e-retailers' decisions about how to price delivery are commercially driven and not necessarily linked to the prices charged by delivery operators.

4

As in any other sector, pricing is a commercial decision in the delivery sector, driven by a number of cost- and demand factors, such as willingness to pay and volume flows.

When delivery operators determine their prices for domestic and cross-border delivery of parcels, they consider both demand and supply factors. Demand factors include consumers' willingness to pay in different countries and bargaining power of e-retailers, while supply factors include volume flows and interoperability of domestic postal networks. An assessment of the different price drivers at play helps us understand how the public list prices of postal operators for parcel deliveries come about.

What at first sight appears to be strange or implausible cross-border parcel prices can actually be explained by the interplay of demand- and cost-factors. We illustrate the under-

lying trends at two examples. A high ratio of cross-border/domestic parcel prices in Cyprus compared to the ratio in the UK is, for instance, basically a result of cross-border volumes and wage levels. Low cross-border volumes from Cyprus mean high cross-border prices, while low wages in Cyprus lead to low domestic prices in Cyprus. In fact, the ratio between cross-border and domestic prices is a weak indicator for concluding upon problematic cross-border parcel prices. For example, extremely low levels of domestic parcel prices in geographically peripheral countries (e.g., Bulgaria) point to alarmingly high ratios of foreign/domestic rates even though the cross-border prices (i.e. foreign prices) are comparable to the cross-border prices in other countries.

Similarly, when taking economic and operational realities into account, it is no longer strange to observe prices for cross-border parcels travelling only a short-distance, such as Cologne-Liège (132 km), that are a multiples of prices for domestic parcels that travel a longer distance, like Cologne-Berlin (579 km). We show that a correct analysis of this price differential would look at the 'correct distance' (i.e. not the shortest distance between two cities, but the average travel distance for parcels), take into account that many postal operators use uniform prices for multiple destinations in Europe, and identify volume flows as a price driver. Hence, digging into the economic and operational conditions can demystify some of the striking price differences.

The European e-commerce and delivery landscape

1

The European e-commerce landscape is highly dynamic, and the development of e-commerce is influenced by many factors. This has a positive spill over into the delivery sector.

2

E-retailers have ample choice in delivery operators, delivery options and delivery routes.

In this chapter, we analyse the development of domestic and cross-border e-commerce and the factors influencing it. We also capture how the development of e-commerce influences the dynamism of e-commerce delivery.

Our analysis shows that the European e-commerce landscape is very dynamic and still developing at both domestic and cross-border level. At the same time, countries differ significantly concerning the development of domestic and cross-border e-commerce. These dynamic market developments for e-commerce spill over into the delivery sphere where they create an innovative and competitive market for cross-border delivery with many different players competing for the delivery of products bought and sold online.

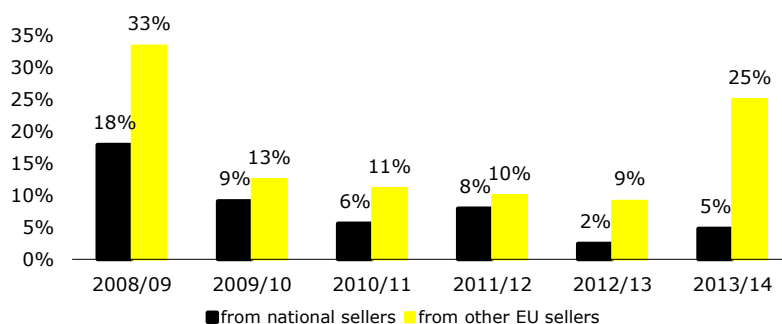
1.1 Development of European domestic and cross-border e-commerce markets

The e-commerce development of a country can be measured by looking at the share of individuals buying online and the share of enterprises selling online. A closer look at these indicators shows the strong dynamism of European e-commerce markets, both for domestic and for cross-border e-commerce.

Dynamics of European cross-border e-commerce development

Since 2008, the share of individuals buying online domestically has increased by around 60%, whereas the share of individuals buying online cross-border (intra-EU) has increased by 150%. Between 2013 and 2014 alone, the share of individuals that had purchased goods or services from sellers cross-border (intra-EU) progressed by 25%, see Figure 1.

Figure 1 Average growth rate per year in the share of individuals ordering goods online, EU-28



Note: Data records individuals that ordered goods and services online in the past 12 months.

Source: Eurostat, E-commerce by individuals and enterprises

Similarly, between 2011 and 2014, the share of enterprises selling online domestically rose by 14%, while the cross-border share rose by 17%.³

³ Eurostat, E-commerce by individuals and enterprises.

However, understanding the European domestic and cross-border e-commerce landscape is a complex exercise for at least two reasons.

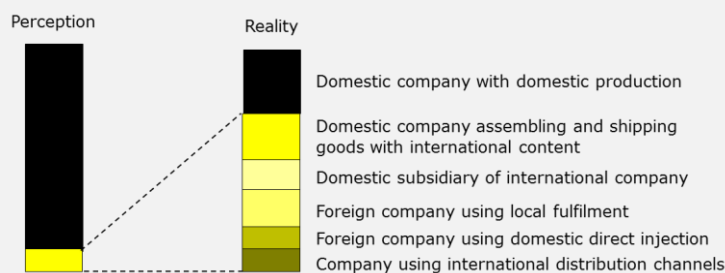
Firstly, it is unclear what the public statistics on cross-border e-commerce contain. Do the statistics include tangible goods only or also services (e.g., travel tickets, concert tickets, etc.)? And how is the distinction between domestic and cross-border e-commerce drawn?

Secondly, it is a general challenge to delineate the concepts of domestic versus cross-border transactions, see Box 1.

Box 1 Complexity of the ‘cross-border’ nature of transactions

According to a 2015 study by the Boston Consulting Group, 70% of revenues of domestically anchored carriers in midsize European countries have some kind of cross-border component⁴ as shown by the figure below.

On wholesale level, a domestic retailer can, for instance, sell imported goods (shipped to a domestic warehouse before delivered to the consumer) or domestically assemble goods with international content. On retail level, there is a difference between consumers buying from a foreign retailer directly or from a domestic retailer with a warehouse abroad (shipping directly from warehouse to consumer).



In fact, a large share of online transactions that are perceived as domestic by consumers involve a cross-border element. For instance, in 2014, 40% of online shoppers making their latest online purchase from another EU country assumed the purchase to be from a domestic seller⁵. Particularly at retail level, e-shoppers’ perception of the cross-border nature of online purchases does not always match the delivery reality. This is illustrated in the figure below.⁶

E-shopper location	Website	Warehouse location	Purchase perceived as cross-border by e-shopper?	Actual cross-border delivery?
Germany	Thalia.de	Germany	✗	✗
Germany	Amazon.de	Poland	✗	✓
Germany	Amazon.fr	Germany	✓	✗
Germany	esprit.fr	France	✓	✓
Germany	Venteprivée	France	✗	✓

The reason for this is that e-shoppers tend to perceive a transaction as domestic, if the website they order on is in their own language, whereas the physical cross-border flow of a parcel depends on both the location of the warehouse as well as the e-retailers’ logistics choices. For instance, during an Amazon strike in Germany, German orders from Amazon.de became ‘cross-border’ as they were delivered from warehouses in Poland. In contrast, a German consumer ordering on Amazon.fr might well receive its order from a German warehouse without there being a physical crossing of borders after the e-shopper makes the e-purchase.

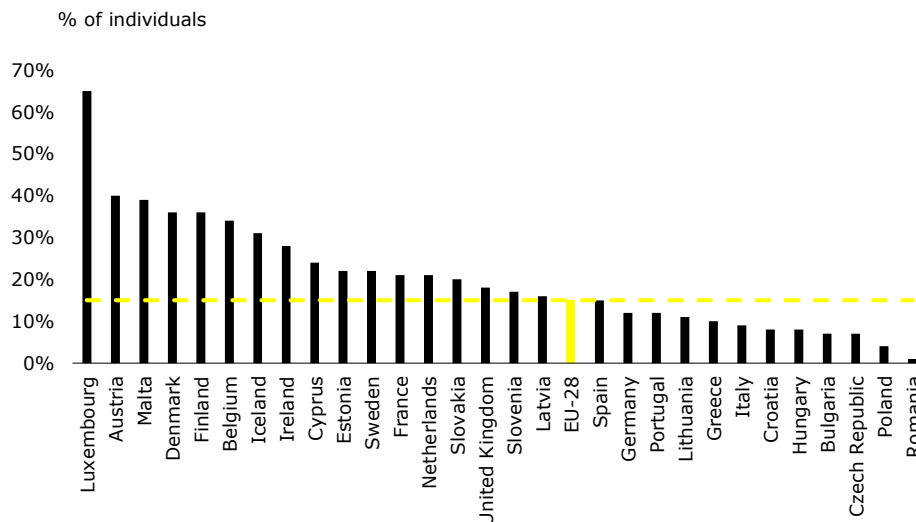
Note: In the first figure, the identity of the retailer (domestic/foreign) depends on the country of registration

Source: Figure 1: Copenhagen Economics based on BCG (2013), p. 3. Figure 2: Copenhagen Economics

Cross-country differences in e-commerce development

While, in 2014, 15% of all individuals in the EU had purchased goods or services from sellers outside their country of residence,⁷ cross-border e-commerce by individuals ranged from very low levels (under 5%) in Poland and Romania to very high levels (over 35%) for Finland, Denmark, Malta, Austria and Luxemburg, see Figure 1. These country-differences are not specific to e-commerce, but also visible for physical commerce.⁸

Figure 2 Cross-border e-commerce by individuals, 2014



Note: Data records individuals that have ordered goods and services over the internet in the past 12 months

Source: Eurostat, E-commerce by individuals and enterprises

⁴ BCG (2013), p. 3.

⁵ European Commission (2015 A).

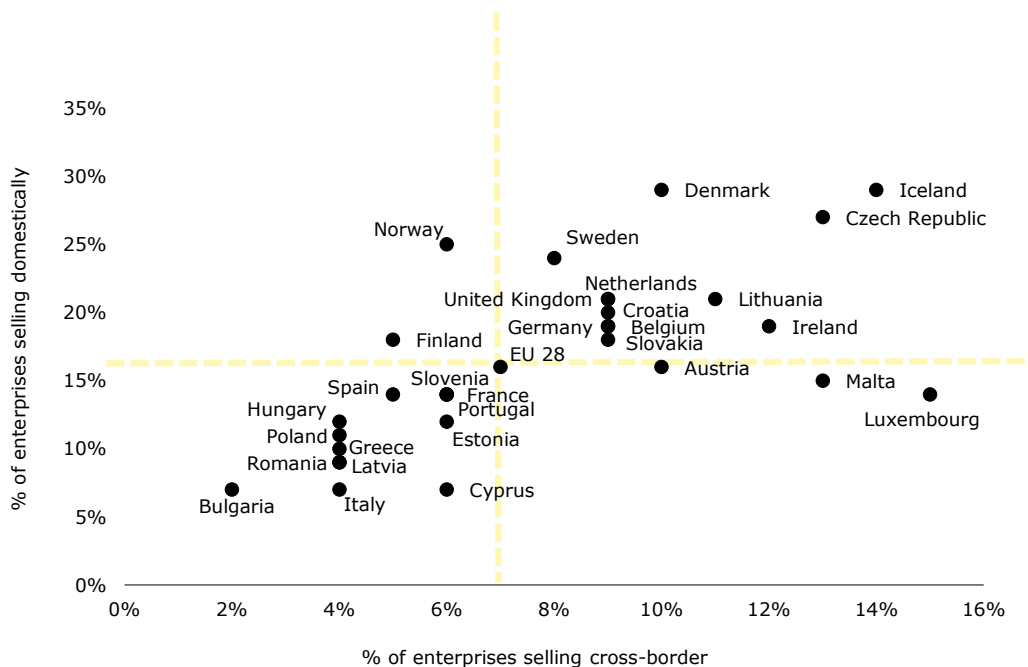
⁶ Different ways of organising cross-border delivery are described in Chapter 2, see also Box 3 on direct injection.

⁷ Taking into account that 40% of online shoppers making their latest online purchase from another EU country assume the purchase to be from a domestic seller, the actual level of cross-border e-commerce is probably significantly higher, European Commission, (2015 A).

⁸ A country's level of imports is a significant variable to explain cross-border e-commerce, Copenhagen Economics (2013), p. 94.

European countries also differ strongly regarding the share of enterprises selling online cross-border, from under 5% for Bulgaria and Hungary, to up to 12% in Ireland, Malta, Czech Republic, Iceland and Luxemburg. The degree of cross-border e-commerce is linked to the development of domestic e-commerce: countries with a high share of enterprises engaging in domestic e-commerce are also more developed with respect to cross-border e-commerce, see Figure 3.

Figure 3 Enterprises selling goods and services over the internet, 2013

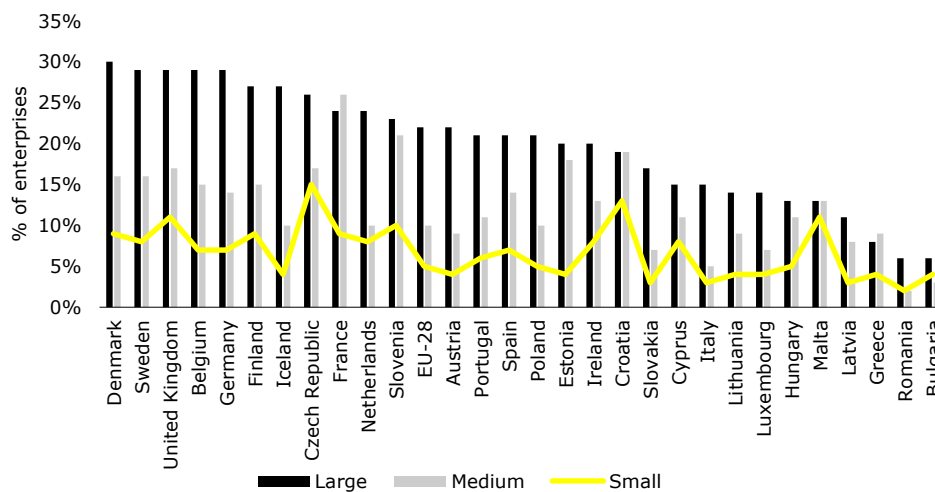


Note: Data records enterprises that have sold goods and services over the internet in the past 12 months, values for Germany are from 2011

Source: Eurostat, E-commerce by individuals and enterprises

The engagement in cross-border e-commerce also differs by firm size, whereby in Europe a higher share of large firms (21%) than of small firms (6%) sell online cross-border.⁹ The cross-border e-commerce activity of differently sized firms differs strongly country-by-country, see Figure 4. For instance, in the UK, Czech-Republic, Croatia, Slovenia and Malta, the share of small firms selling cross-border to other EU countries reaches 10% or more (i.e. above the EU average).

Figure 4 Enterprises selling online cross-border to EU, 2013



Note: Data records enterprises that have sold online in the past year, not including financial sector, values for Germany are from 2011

Source: Eurostat, E-commerce by individuals and enterprises.

In order to understand why the level of e-commerce differs across countries, we have investigated the different factors influencing cross-border e-commerce development.

⁹ Eurostat, E-commerce by individuals and enterprises. Small, medium and large enterprises is defined as having 10-49, 50-249 and 250+ employees respectively (data do not include the financial sector).

Factors influencing cross-border e-commerce development

Based on a literature research, we have identified a number of factors influencing the development of cross-border e-commerce. These can be grouped under six closely inter-linked and sometimes overlapping *drivers*. For each of these drivers we can distinguish between *demand-side factors* (influencing consumers' propensity to buy online) and *supply-side factors* (influencing retailers' propensity to sell online), see Table 1.

Table 1 Drivers of e-commerce development

Drivers	Demand-side factors	Supply-side factors
Experience/ Trust	E-shopping experience Quality of goods and services Consumer awareness of cross-border consumer rights	Possibility of branding Online selling experience
Regulation	VAT differences	Regulatory compliance VAT differences
Geography/ Culture	Home market size Language Home bias	Home market size Language
Technological development	Broadband/internet penetration Digital skills	Broadband/internet penetration Digital skills
Operational	Delivery times	Delivery logistics
Price/ Cost	Domestic vs. cross-border retail prices Purchasing power Foreign exchange rates Delivery price charged by e-retailer	Domestic vs. cross-border retail prices Delivery price charged by delivery operator

Source: Copenhagen Economics

It is important to remember that these drivers are not necessarily specific to the online world in general or to cross-border e-commerce in particular.

1. Experience/ trust drivers

Experience and trust are strong drivers of e-commerce engagement by consumers and enterprises. Various studies show that the more a consumer is experienced in online shopping domestically, the more she is inclined to engage in cross-border e-commerce.¹⁰ Finding better quality and specific products only online is the strongest driver of cross-border spending¹¹. In turn, concerns about the quality of products sold by e-retailers from other EU countries can prevent people from shopping online cross-border.¹²

The experience factor also plays a strong role for enterprises that often start selling on their home markets before 'going abroad'. The lack of specific capacities (e.g., to translate websites or to provide customer services in different languages) and experiences (e.g., of different VAT systems, different consumer rights) required for selling cross-border¹³ can prevent particularly small enterprises from selling online cross-border.

¹⁰ Consumers that are experienced online-shoppers tend to shop more frequently, buy a wider range of products online and shop more frequently cross-borders, (IPC 2013, p. 4), very frequent buyers/users are less likely to buy exclusively from sellers or service providers based in their own country of residence (68% of DSM survey respondents) compared to very infrequent buyers/users (73% of respondents), (European Commission 2015 B, p.58); frequent online shoppers are particularly likely to shop across countries, occasional online shoppers are more likely to avoid cross-border online shopping (Civic Consulting 2011, p. 170).

¹¹ European Commission (2015 B), p. 199

¹² IPC (2013), p. 17

¹³ Cross-border eCommerce Community (2015)

2. Regulation as a driver

The need for knowledge of and capacity to deal with divergent national regulations might encourage or discourage cross-border e-commerce. Differences in applicable VAT might, for instance, discourage e-shoppers who do not know, if they have to pay additional VAT on goods ordered online. By the same token, the lack of knowledge of and the cost of complying with diverging consumer protection rules, providing different payment solutions, or complying with different VAT frameworks can inhibit e-retailers from developing their sales to other European countries.¹⁴

3. Geographic/ cultural drivers

Geographical and cultural factors are determining for the extent of cross-border e-commerce.

Firstly, the size of a country's home market is a factor that will permanently influence both the demand for and the supply of cross-border e-commerce. For consumers, the size of the domestic market determines the number of products available from domestic e-retailers and thereby the extent to which consumers will demand products outside their home-market.¹⁵ Similarly, enterprises have an incentive to locate warehouses and launch web shops in large countries, which by definition make the e-commerce domestic. As visible in Figure 3, small countries tend to have a high percentage of cross-border e-commerce by enterprises.

Secondly, language barriers influence the extent to which cross-border e-commerce develops between certain countries. For consumers, the website language determines where they (can) buy online. Curiously, online trade between consumers and enterprises which share a common language, border and currency is not necessarily perceived as cross-border by consumers (see Box 1).¹⁶ For enterprises, website translation constitutes a barrier for cross-border selling. This can explain the relatively high levels of cross-border e-commerce between member states with strong regional or linguistic ties to neighbouring countries such as Austria and Germany, Belgium and the Netherlands, and countries in Scandinavia.¹⁷

¹⁴ For 41% of retailers the additional costs of compliance with different consumer protection rules and contract law is an important barrier to cross-border sales developments (European Commission, 2013, p. 5); Businesses incur administrative costs and problems when needing to offer different payment solutions tailored to different markets and their regulation (Kommerskollegium, 2012, p. 10); The complications of having to deal with many different national VAT systems represent a real obstacle for companies trying to trade cross-border both on and offline (European Commission 2015 C)

¹⁵ Cross-border EU purchases by individuals are highest in either smaller member states with a limited domestic online offer available, such as Luxembourg (65%), Austria (40%) and Malta (39%). Lower levels of cross-border e-commerce in Germany, France and the UK can to some extent be explained by large domestic supply (satisfying e-shoppers and preventing them from searching for cross-border), see Figure 2 on page 8 in this report.

¹⁶ 42% of respondents to a Commission survey never use any other language than their own to search for and buy products online (European Commission 2011, p. 99); According to a Civic consulting survey in the UK, 11% of consumers do not buy cross-border because they do not speak the language of foreign websites (Civic Consulting, 2011). In France, the language barrier when contacting customer services is a country-specific barrier to cross-border e-commerce, (IPC, 2013).

¹⁷ Overall, UK and Ireland sellers have an advantage in offering their products online cross-border, since they do not necessarily need to translate their websites (European Commission, 2015 B, p. 68 ff.)

4. *Technological drivers*

The level of internet/broadband penetration and the level of digital skills among the population and enterprises will determine the ability and willingness to shop and sell online.¹⁸ This can, for instance, explain lower levels of e-commerce in countries like Romania and Bulgaria, as well as lower levels of e-commerce among elderly people.

5. *Operational drivers*

Operational factors such as delivery times and logistics influence the development of e-commerce. Expectations about and experiences of excessive delivery times can discourage consumers from buying products online. Similarly, e-retailers' engagement in e-commerce depends on their ability to identify reliable logistics and distribution solutions. This however holds for domestic purchases as much as for cross-border purchases.¹⁹

6. *Price/ cost drivers*

Price differences in purchasing power across countries influence consumers' willingness to shop online cross-border.²⁰ In addition, factors that influence the final price, such as exchange rate fluctuations and the costs of dealing in other currencies (e.g., credit card charges and conversion rates), are likely to reduce or increase incentives to buy online cross-border. Moreover, delivery prices charged by e-retailers may influence consumers' willingness to shop online.²¹ Equally for e-retailers, high transport costs may function as a barrier to engaging in e-commerce.

¹⁸ According to the European Commission (2015 D) 46% of companies not selling online perceive lack of the necessary digital skills a barrier. Equally many perceive slow internet connections to be problematic.

¹⁹ According to the European Commission, "a good example is long delivery time, which is the most commonly experienced problem (17%) amongst those who experienced problems [when purchasing online cross-border], equally reported by 18% of EU28 online respondents as a major concern to their domestic online purchases" (European Commission, 2015 B, p. 183)

²⁰ 49% of respondents to a European Commission survey mentioned the opportunity to find cheaper products online as a main driver of their online purchasing behaviour (European Commission, 2015 B, p. 173)

²¹ 27% of respondents to a European Commission survey mentioned high delivery costs as among the greatest concerns related to shopping online cross-border (European Commission, 2015 B, p. 189).

1.2 Implications for cross-border parcel delivery

As the level of e-commerce develops, consumers and enterprises become increasingly demanding concerning parcel delivery solutions offered by delivery operators. This prompts both national postal operators and their competitors to innovate and propose new delivery solutions to consumers and enterprises and to compete more fiercely for the delivery of products sold online.

Impact of market dynamics on industry innovations

Table 2 shows some examples of how delivery operators have responded to users' demand for more predictable or flexible delivery solutions by developing new and innovative services.

Table 2 User-driven innovations

Delivery aspect	E-shopper demands	Market responses	Examples
Time and speed	More predictable parcel delivery	New tracking features for better predicting parcel delivery times	DPD Predict interactive delivery service GLS Flexdelivery
Delivery point	25% of consumer prefer delivery to alternative delivery locations	Roll-out of alternative delivery points to home delivery	Parcel lockers and parcel shops
Value added features and return options	Track and trace and electronic notifications are important	Development of real-time tracking and mobile returns	DHL real-time eTracking

Source: Copenhagen Economics

A range of recent studies²² show that, as e-commerce develops, e-shoppers get more demanding with respect to the *predictability of delivery times*.²³ In response, operators have introduced services that allow e-shoppers to predict the arrival of their parcel by the minute or to re-arrange the delivery of their parcel for another date or to another address. Examples of operators and e-retailers offering these innovations are DPD (Predict interactive delivery service), Asos (15 minute delivery window alert under Asos brand, using DPD), Posta Slovenije (Call 1 and Call 2 Service for Business Parcels), CeskaPosta (Application to change delivery instructions), Deutsche Post DHL (Portal.Paket delivery redirection), Swiss Post (My consignments) and GLS (FlexDelivery).

Another delivery feature that has become increasingly important is delivery to an *alternative delivery point* (i.e. not to the home address)²⁴. Alternative delivery points are a way for operators either to respond to e-retailers' demands for low delivery prices, given the cost of last-mile delivery, or to increase consumer convenience (e.g., allowing consumers to pick up their parcels on their way home from work instead of having to stay at home to receive the parcel there). Box 2 provides an overview of the development of parcel lockers in Europe.

²² Accenture (2014), JDA/Centiro (2015), Customer Pulse (2015), Oliver Wyman (2014) and Barclays (2015)

²³ Close to 80% of e-shoppers prefer to be able to predict the time of arrival of their shipments (within a certain timeslot) and therefore accept slower delivery (2-4 days instead of next day), (Copenhagen Economics 2013, p. 65). In a UK consumer survey, 40% of respondents stated that they would be willing to pay extra for the "perfect delivery," in which they designate exactly where and when their parcel will be delivered. (Honeywell (2015).

²⁴ 68% of European prefer delivery at their homes, 6% at authorised pick-up stations, 3% at delivery lockers and 5% at a retail location, such as a grocery store (UPS 2015, p. 33).

Box 2 Parcel lockers in Europe

Parcel lockers have been rolled out all over Europe, by both national postal operators and their competitors. In Germany, Deutsche Post first launched parcel lockers, while in Poland and Ireland, competitors launched parcel lockers first and the national postal operators moved second.

Examples of parcel locker systems			
Country	Operator Type	Operator	Name
DE	NPO	Deutsche Post	Packstation
NO	NPO	Norway Post	MyQuickBox
AT	NPO	Austrian Post	Post.24
BE	NPO	bpost	parcel lockers
FI	NPO	Itella	Smartpost
DK	NPO	Post Danmark	Døgnposten
multiple	Competitor	Inpost	Inpost
FR	NPO	La Poste	Pick-Up station
NL	NPO/ Competitor	PostNL	Inpost
IR	Competitor	nightline	Parcel motels
multiple	E-retailer	Amazon	amazonlocker
DE	Competitors	GLS, DPDgroup, Hermes, UPS	ParcelLock*
LUX	NPO	Post Luxembourg	PackUp
CH	NPO	Swiss Post	My Post 24
CZ	NPO	Ceska posta	Parcel locker

Note: *ParcelLock is a mailbox for parcels competing directly with the equivalent product, Paketkasten, from Deutsche Post DHL and potentially with parcel lockers

Source: Copenhagen Economics

The two most important *value added features* for e-shoppers are track and trace and electronic notifications²⁵. Examples of solutions developed to increase the traceability of parcels include Poczta Polska's e-monitoring, Post Luxembourg's FollowMe, DHL eTrack and DPD Live Tracking.

In addition to the fact that e-shoppers become more demanding as e-commerce develops, the development of more (and more diverse types of) e-retailers in the e-commerce landscape has also spurred the extension of delivery solutions on offer. This has for example resulted in more delivery services geared towards small and medium sized e-retailers, the development of industry-specific solutions (e.g., specific services for e-retailers belonging to the fashion industry), and an expansion along the e-commerce value chain (delivery operators offering website solutions, pick-and-pack, warehousing etc.). Examples of such

²⁵ Copenhagen Economics (2013), p. 74.

solutions are bpost's "Shipping Master tool", and Hermes' 2015 launch of cost-effective international delivery solutions for SMEs.²⁶

Impact of market dynamics on competition

The growth in e-commerce has fuelled competition among a wide variety of operators providing delivery solutions to e-retailers (both domestically and cross-border). Today, national postal operators face competition by pan-European express and postal operators (e.g., DHL Express, DPDgroup, GLS, UPS, FedEx) as well as regional and local operators (Bring, DB Schenker, local couriers, DHL_parcel, Hermes). However, the existence of alternative delivery providers will only benefit users, if e-retailers are aware of the different alternatives available to them. A previous study performed on behalf of the European Commission in 2013 revealed that e-retailers of all sizes are generally well aware of the existence of alternative operators to the national postal operators, see Table 3.

Table 3 Availability of delivery operators, EU-wise

	Number of delivery operators available for domestic delivery	Number of delivery operators available for cross-border delivery
e-retailer awareness	5	5
National regulator's awareness	7	8

Source: Copenhagen Economics (2013), p. 119

Some of these alternative delivery operators have directly emerged from e-retailers' closed delivery networks. German Hermes or French Relais Colis and Colis Privé are examples of such operators. We expect to continue seeing such developments with large e-retailers, such as Amazon and Ebay, starting to organise their own fulfilment²⁷, thereby putting national postal operators under direct pressure to innovate.²⁸ The emergence of other disruptive players, such as Uber or Nimer, also shows that, as e-commerce grows, more cross-border delivery options are likely to develop.

²⁶ Further examples are: Simple Ways to Grow which offers discounted package services including website, delivery, marketing and email data to SMEs tapping into e-commerce (Royal Mail), MyPack which enables SMEs to send parcels to consumers in the Nordic region with the ease of sending a domestic parcel (PostNord); Meinpaket.de which is a secure online shopping portal combining shopping and shipping services (DHL); "Blue Banana" campaign which offers new customers a temporary 20% discount off rate card for all export shipments of up to 250 kg to selected countries (TNT)

²⁷ Oliver Wyman (2014), Financial Times (2014)

²⁸ Furthermore, Amazon has confirmed its plans to acquire 100% of the Colis Privé shares by the first trimester of 2016, see LeFigaro (2015) Avec Colis Privé, Amazon marche sur les platebandes de La Poste, <http://www.lefigaro.fr/secteur/high-tech/2015/10/15/32001-20151015ARTFIG00248-avec-colis-privé-amazon-marche-sur-les-platebandes-de-la-poste.php>

E-retailers' pricing of cross-border e-commerce

3

Prices for cross-border parcel delivery paid by e-shoppers generally do not reflect the prices charged by delivery operators, due to the decisions of e-retailers.

In this chapter, we explain how prices for cross-border e-commerce come about. We assess e-retailers' pricing strategies in general and their strategies for pricing delivery services in particular. We also analyse to what extent delivery operators' prices for delivery (charged to e-retailers) are reflected in the e-retailers' prices for delivery (charged to e-shoppers).

E-retailers play an important role for the development of cross-border delivery offerings, in particular because e-retailers determine the prices faced by consumers. We have conducted a mystery shopping experiment on twenty e-commerce flows within the EU. The experiment reveals low correlation between the public list prices set by delivery operators and the prices for delivery charged by e-retailers to e-shoppers. Based on this we conclude that e-retailers' decisions about how to price delivery are commercially driven and not necessarily linked to the prices charged by delivery operators, which are lower than or equal to the public list prices due to volume and operational discounts.

2.1 E-retailers' pricing models

Retailers selling goods in brick-and-mortar stores take decisions regarding how to price the products sold. Similarly, e-retailers selling goods online take decisions regarding the pricing of their products. In addition to the price of the product itself, however, e-retailers also decide how to price delivery and returns.

E-retailers apply different pricing strategies when deciding the price for their product and for the delivery/return service. The pricing options available include, for example:

- Joint price for product and delivery and/or returns (i.e. 'free' delivery/returns)
- Separate price for product and delivery and/or returns
- Discounts on products and/or delivery contingent on different factors (amount of purchase, subscription to newsletter etc.)

The pricing decisions of e-retailers are similar to the pricing decisions made by companies in other industries. The owner of a restaurant, for example, has to make similar strategic choices regarding her pricing:

- Should prices signal that that the restaurant is high-end or budget?
- Should the restaurant offer food at a low price with the aim to profit more on the drinks sold?
- Should seating be priced at zero?
- Should service be charged separately or not?

Similarly, some airlines choose a pricing strategy with cheap flight tickets and high prices for additional services (food, baggage etc.) while other airlines choose a strategy with more expensive flight tickets and more services included in the basic price.

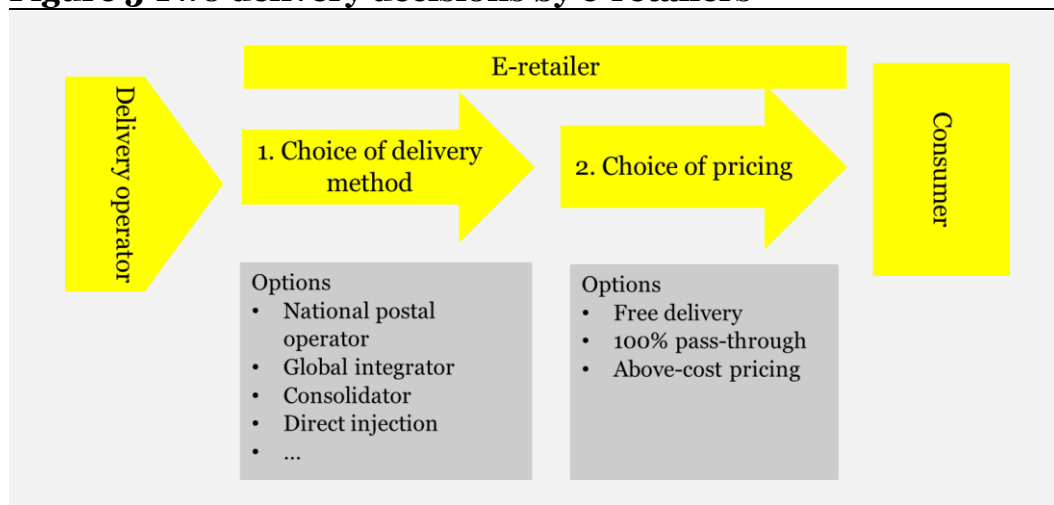
As a general rule, and irrespective of the industry, the price mix chosen by a company is composed to make the *total offer* look attractive and to provide customers with the right

incentives. In the context of restaurants, for example, it will be difficult to charge customers for seating if they are not used to paying for this specific service. Similarly, in the context of e-commerce, e-retailers can for example offer free delivery while requiring the customer to pay for the return in order to promote larger orders and avoid too many returns of unwanted goods. E-retailers can also apply a high delivery price for cross-border deliveries to discourage cross-border orders, if they do not want to sell abroad, for example due to uncertainty or perceived regulatory barriers.

2.2 Factors driving e-retailers' pricing of cross-border delivery services

E-retailers make two main decisions related to delivery. *First*, they decide *what delivery service(s) to offer*. This also includes a decision regarding the delivery operator(s) to use. *Second*, they decide *how to price the delivery service(s)* towards the consumers. Both decisions thus have important implications for e-shoppers in terms of the delivery services available to them, as well as the prices charged for these services, see Figure 5.

Figure 5 Two delivery decisions by e-retailers



Source: Copenhagen Economics

With respect to the first decision, e-retailers can choose from a large variety of delivery options, for example:

- Use a single delivery operator in order to accumulate volume discounts
- Use multiple delivery operators in order to get the best price for each delivery or to provide customers with more choice
- Use a parcel broker or parcel consolidator to obtain better prices for delivery
- Use direct injection, i.e. transport the shipments across the border as freight before they are injected into the domestic delivery network in the destination country
- Self-supply delivery via own distribution network, i.e. deliver products with own vehicles and staff to the recipient's home or collection point

The e-retailer's choice among the options above will depend on a number of factors, such as the size of the e-retailer, the products sold, the stage of development of the e-retailer, and the trade-off between the cost of complexity and the ability to meet individual customer needs. These factors vary across e-retailers and over time.

E-retailers of different sizes have the possibility to select among different delivery options. Moreover, several delivery operators offer delivery services developed especially for small enterprises. Two examples of such services are Royal Mail's "Local Collect" and MyPack by PostNord. In addition, intermediaries such as parcel brokers and parcel consolidators offer small e-retailers a range of different solutions. Large e-commerce platforms (e.g., www.bol.com in the Netherlands) sometimes function in a similar way to brokers and consolidators when they offer the e-retailers on their platform delivery services at a lower price than a small e-retailer could obtain itself (e.g., due to small volumes or due to the lack of capacity to perform pre-labelling or pre-sorting of parcels). Small retailers are thus also often in a position where they can negotiate delivery prices with the delivery operator – a situation which every commercially driven e-retailer (irrespective of its size) would and should take advantage of.

Due to their size, e-retailers with large cross-border flows will have the opportunity to utilise delivery options that smaller e-retailers cannot use on their own. One such example is direct injection where the e-retailer itself delivers parcels by truck across the border to directly inject them into the domestic postal network in the destination country, see Box 3. By doing this, the e-retailer is able to avoid the cross-border element of the delivery service it buys. This solution is used by, amongst others, Vente privée.

Box 3 Case study- direct injection

By inserting products directly into the domestic delivery network in the destination country the e-retailer pays the domestic delivery rates rather than more expensive cross-border tariffs. In practice, the e-retailer's process for cross-border direct injection is the following:



E-shopper buys products (consumer electronics, household appliances, sports articles etc.) from websites in local language although the e-retailer does not have physical presence in her home country.



When the e-shopper places orders at her respective web shop, orders are automatically sent to the central warehouse where almost all goods are shipped from.



The ordered products are transported from the warehouse by the e-retailer's own line haul across the border into the e-shopper's country of residence.



Products are injected into the local delivery network of the e-shopper's home country.



Products arrive at e-shopper's home. As this delivery is a domestic one, the e-shopper does not recognize the order as cross-border.

Source: Copenhagen Economics (2013), p. 44

With respect to the second decision, e-retailers have to decide how to price the delivery services offered towards their customers (the e-shoppers). Similar to the pricing of the overall e-commerce offering, there are a number of different options for how to price the delivery service. These include:

- “free” delivery and “free” returns for all orders
- “free” delivery but not “free” returns
- “free” delivery above a certain order threshold
- “free” delivery for domestic shipments, but not for cross-border shipments
- One-to-one pass-on of delivery operator's delivery price to e-shoppers
- Delivery price charged to e-shopper exceeding the delivery operator's delivery price
- Single price for all deliveries (irrespective of weight, size, destination, value)
- Differentiation of delivery prices according to the weight, size, destination, or value of the product bought

E-retailers' pricing of delivery services towards e-shoppers is a commercial decision, taking both cost (including delivery operators' prices, packaging cost etc.) and demand factors (e-shoppers' reactions) into account.

As for the cost factors, there is no reason to expect that the e-retailer's price for delivery would be the same as the delivery operator's price for the same service. Expecting this would be similar to expecting the e-retailer to price a pair of shoes towards the e-shopper at the same price that the e-retailer itself pays to the shoe manufacturer (i.e. selling the pair of shoes with a profit margin of zero).

As for the demand factors, these will thus play an important role in the e-retailer's pricing. In fact, previous studies have shown that the delivery price can often be a 'deal breaker' in an e-shopper's buying decision.²⁹ As some e-retailers make "free" delivery the norm, this forms expectations among e-shoppers regarding the level of the acceptable delivery price. Similarly, e-shoppers are often reluctant to pay high prices for delivery when the online purchase concerns a low value product.

When deciding upon the delivery price, e-retailers thus have to take e-shoppers' expectations and needs into account, for example:

- How much e-shoppers are willing to pay for delivery of high value/low value products
- How the delivery price will affect the ranking of the e-retailer on price comparison websites
- How many delivery options and prices could be offered without deterring the e-shopper from buying due to complex process
- How important "free delivery" is as a selling argument
- How the pricing strategy could encourage e-shoppers to buy more (e.g., by providing "free" delivery above a certain order value threshold)

²⁹ Copenhagen Economics (2012) reveals that 50% of e-shoppers at some point have abandoned their online shopping cart due to high delivery costs. Similarly, recent EU Digital Single Market research among more than 20,000 consumers reveals that 27% of e-shoppers consider high delivery costs as a specific concern when shopping cross-border (European Commission 2015 B, p. 189).

2.3 Case: Mystery shopping experiment

We have conducted a mystery shopping experiment to assess how the price charged by the delivery operator to the e-retailer for delivery influences the price charged for delivery by the e-retailer towards the e-shopper.

In our experiment, we consider twenty e-commerce flows across Europe, see Figure 6.

Figure 6 Design of mystery shopping experiment – trade flows



Source: Copenhagen Economics

For each flow, we consider three different e-retailers (both large and small). We also include both lightweight products (below 2 kg) and high weight items (between 2 kg and 5 kg). In this way, we capture goods sent by letter post (below 2 kg) and parcel post (above 2 kg). In total, this provides us with a sample of 116 observations. Products in the lightweight category are headphones, children's books, comics, and t-shirts. Products in the high weight category are book collections and kitchen appliances.

The products included in the experiment are all of relatively low value³⁰ (around € 4-€100). This makes our results conservative. The reason for this is that we would expect a larger share of e-retailers selling high value goods to charge a price above cost for delivery (taking into account the e-shoppers' willingness to pay more for delivery when they buy more expensive products).

³⁰ More than 90% of the orders have a value between €4 and €100.

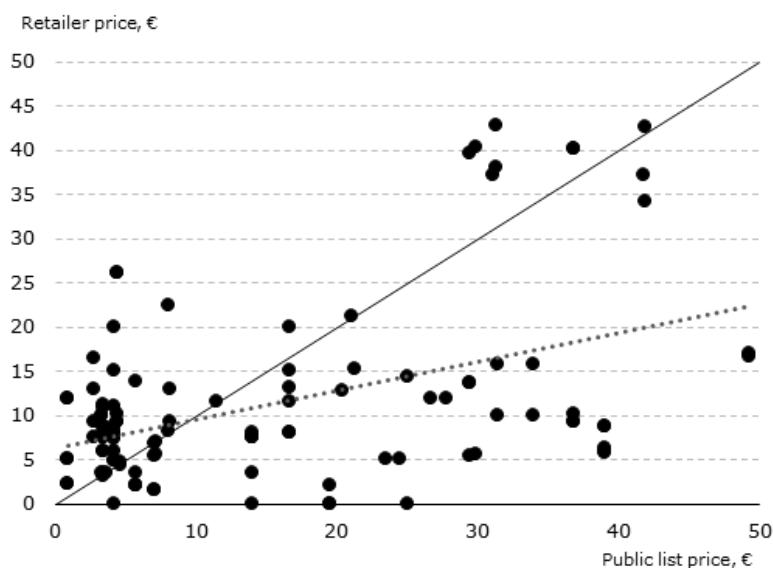
For every shopping action conducted, we observe and register the following information:

- Size of e-retailer (large/small)
- Price of good, excl. shipping
- Delivery operator and delivery service used
- Price charged by e-retailer for the delivery service
- Delivery operator's public list price for the same delivery service³¹

Please note that the real price charged by delivery operators to e-retailers is unknown. We use the public list prices to approximate it, knowing that these public list prices overestimate the real prices paid by e-retailers (see Section 3.1).

For each of the 116 purchase orders in our sample, we register the difference between the delivery operator's list price and the e-retailer's delivery price, see Figure 7.

Figure 7 Results from the mystery shopping experiment



Note: Note: 116 observations distributed across 20 different flows

Source: Copenhagen Economics

The results from our mystery shopping reveal a weak correlation between delivery operators' public list prices³² and prices charged by e-retailers to e-shoppers (retailer price), with a correlation coefficient of 0.45. We also observe that e-retailers (as expected) use different pricing strategies for cross-border transactions. Whereas some e-retailers (five

³¹ Note that the list price for parcel delivery was taken as it is the only price publicly available. In reality, most e-retailers obtain lower delivery prices through volume discounts granted by operators.

³² Moreover, note that the prices of delivery operators are only one element in the overall delivery cost that an e-retailer faces. Cost for pick&pack and shipping material are also part of an e-retailers' delivery costs.

transactions in our sample) offer free delivery, other e-retailers (56 transactions in our sample) provide delivery at a price above the public list price offered by the delivery operator. This is not surprising. In fact, when setting their prices, e-retailers decide where to earn a profit (on the sales of product, on the sales of delivery services, or on both).³³

From this we conclude that e-retailers' pricing of delivery services is highly commercial, and that the prices they charge often do not reflect the prices charged by the delivery operators. Nevertheless, in the cases where the e-retailer charges a price for delivery that is substantially higher than the price charged by the delivery operator, consumers often associate this higher price with the delivery operator rather than the e-retailer. Figure 8 displays a screenshot from one of the e-retailers in our mystery shopping experiment. It shows how a book for €7 is offered together with four different pick-up/delivery options (the most expensive being the option offered by the national postal operator, with a delivery cost even higher than the price of the book itself). This can lead to a (unjustified) negative perception of the delivery operator with the highest displayed delivery price, although the price for delivery offered by the e-retailer does not necessarily correspond to the price charged by the delivery operator in question.

³³ Profits earned by e-retailers may be larger than what we observe in our experiment, because e-retailers often obtain volume discounts, leading to an effective price that is lower than the list prices in our experiment.

Figure 8 E-shopper experience at check-out

Produit	Quantité	Prix total
Le Petit Prince Antoine de Saint-Exupéry Neuf - En stock POCHÉ BROCHÉ PARU LE : 23/02/1999 7,00 € <input type="checkbox"/> Couverture (1,49 € par article) <input type="checkbox"/> Paquet cadeau (1,50 € par article)	- 1 + Retirer l'article Déplacer vers la liste...	7,00 €
Mon code avantage Saisissez votre code de réduction		Appliquer
Mon mode de livraison Vous pourrez modifier ce choix par la suite.		8,00 €
<input checked="" type="radio"/> Book store GRATUIT 5% de cagnottage sur la carte de fidélité Decitre Choisir une librairie		Achat Express > Valider mon panier >
<input checked="" type="radio"/> National postal operator 8,00 € Livraison prévue le 07/10/2015 Choisissez votre pays : Royaume-Uni		
<input type="radio"/> Competitor 1,99 € 0,01 € dès 15€ d'achat Livraison prévue le 08/10/2015		
<input type="radio"/> Competitor 2,00 € 0,01 € dès 15€ d'achat Livraison prévue le 08/10/2015		
< Poursuivre mes achats Consulter mes listes		Total TTC : 15,00 € Total HT : 14,22 € Total TVA : 0,78 €

Delivery price by paid by e-shopper to e-retailer is not equal to the delivery price charged by the delivery operator to the e-retailer

Note: The screenshot has been anonymised.

Source: Copenhagen Economics. Screenshot from www.decitre.fr

Delivery operators' pricing of cross-border parcel delivery services



As in any other sector, pricing is a commercial decision in the delivery sector, driven by a number of cost- and demand factors, such as willingness to pay and volume flows.

In this chapter, we analyse how delivery operators' prices for parcel delivery come about by identifying price drivers and their impact one by one. We apply the insights on price drivers on two cases of actual pricing of cross-border deliveries in the EU.

We observe that delivery prices are determined by a multitude of factors including both supply-side (costs) and demand-side drivers. Thus, trying to explain delivery prices by only one or a few cost driving factors is too simplistic and cannot serve as a basis for concluding on market failure in the market for cross-border parcel delivery.

3.1 Factors driving cross-border parcel delivery prices

Pricing of cross-border delivery is a commercial decision depending on a number of factors, see Table 4. We describe each factor below.

Table 4 Factors affecting delivery prices

Cost factors	Demand factors	Other factors
Economies of scale (volume, population density, urban structure, interoperability, etc.)	Price sensitivity and bargaining power	Regulation
Product characteristics	Simplicity of uniform pricing for different destination countries	
Other cost factors (business models, wage levels, geography etc.)		

Source: Copenhagen Economics

Cost factors related to economies of scale

Economies of scale are important in the delivery sector. Fixed costs are high, which makes handling of a few parcels very expensive compared to handling of a large volume of parcels. Factors that directly affect the possibility to benefit from economies of scale, and thereby the unit cost of delivery are:

- Volumes delivered
- Population density in the destination area
- Value added delivery features of delivery services, and
- Interoperability of postal networks

Volumes affect the unit cost in several parts of the delivery chain. Firstly, volumes in the *sending country* affect the delivery operators' costs for collection (i.e. lower volumes in collection imply lower economies of scale and thereby higher unit costs). Secondly, volumes in a *specific cross-border flow* affect cross-border transport costs (i.e. a lower cross-border flow implies lower economies of scale and thus higher unit costs). Thirdly, volumes in the *destination country* affect transport, distribution and sorting costs. Higher volumes in the destination country mean that high fixed costs in automated sorting and "last mile" delivery are split between more units. This lowers the unit cost of delivery.

A higher *population density* in the destination country increases the parcel volumes per square kilometre. This increases economies of scale and lowers the unit cost of transport and delivery. Areas with a high population density also tend to have a higher prevalence

of multi-household buildings, which reduces delivery costs through fewer stops on the delivery route.

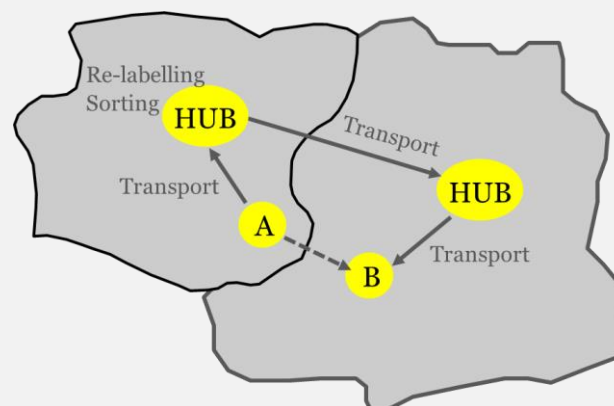
Value-added services (e.g., delivery before 9am) give the delivery operator less flexibility with respect to transport and sorting. As a result, economies of scale will be lower and unit cost will be higher in sorting, transport and delivery.

The *interoperability of postal networks* has an impact on unit costs through the number of sorting steps, the distance that the parcel has to travel and the economies of scale yielded by volumes. Since postal networks are optimised for domestic delivery, cross-border deliveries incur higher costs, see Box 4.

Box 4 Interoperability

Cross-border delivery often requires the integration of two or more national (or regional) delivery networks. These networks are normally optimised for national parcel flows. This is natural, since, on average, 85 per cent of the volume is domestic (Copenhagen Economics, 2013). When two or more national delivery networks integrate, the route of parcels does not only depend on the flow of consignments between the countries, but, more importantly, on the flow of consignments within each country. This implies that delivery between two cities located close to each other but at different sides of a national border may not take place along the shortest or fastest route, but along the route that allows the optimisation of each national delivery network, i.e. the route with the largest volume.

As illustrated in the figure below, a parcel from city A, located close to the national border, may first travel to the national hub, because this is optimal in the national network. Thereafter, the parcel may travel to the foreign hub, because this is optimal in the foreign network. When the parcel is finally transported to its final destination, city B, this has not only required longer time than a direct transport from A to B would have done. It has also produced additional costs related to extra handling and administration. This additional cost will be mirrored in the delivery price.



As a critical mass develops, parcel companies develop more direct delivery lines, cutting out some of the additional handling. But this requires critical mass from one very small geographical zone to another small geographical zone. Ideally, this critical mass should be available in both directions, as imbalanced line hauls make parcel delivery again more expensive.

Source: Copenhagen Economics

Cost factors related to product characteristics

The cost of delivering a parcel will differ depending on (i) the degree of preparation of the parcel by the e-retailer and (ii) the content of the parcel.

The degree of preparation of parcels by the e-retailer affects the split of costs between the e-retailer and the delivery operator. For example, if the e-retailer labels the parcels before inserting them into the delivery operator's network, this lowers the delivery operator's unit cost in relation to the preparation of parcels. Similarly, if the e-retailer inserts

its parcels at the sorting centre and/or sorts its parcels prior to inserting them into the delivery operator's network, this eliminates the delivery operator's cost in relation to collection and/or lowers the delivery operator's cost in sorting. Differences in the degree of preparation of parcels are one of the reasons for why small e-retailers often pay higher delivery prices compared to larger e-retailers.

In addition to the degree of preparation, *the characteristics of the goods delivered* may also influence the delivery operator's cost of delivery in several ways:

- Higher weight means that more time is required to handle the parcel. This implies higher unit cost for the delivery operator in collection, sorting, and delivery.
- Some parcels have bulky formats, which implies that more time is required to sort the parcels (e.g., manual sorting). This increases unit cost in sorting.
- In some cases, e-retailers and/or e-shoppers demand value added features (pick-up at e-retailer, tracking etc.), which leads to higher unit cost for the delivery operator in relation to collection.
- When products are non-letter-boxable, it means, in some cases, that they cannot be delivered on the normal delivery route or that operators need to foresee several delivery attempts. This leads to higher unit cost in delivery (e.g., the delivery operator is not able to deliver the parcel to the recipient's mailbox but must bring it back to the sorting centre or another collection point)
- If the parcel contains permitted or hazardous goods, regulation can create extra costs in customs and handling (e.g., labelling and scanning). This leads to higher unit cost for the delivery operator in relation to collection and customs handling.
- There is a large variety in the value of the products shipped, but this in itself does not have any effect on the delivery operator's costs. The costs can however increase if the delivery includes value-added services, such as insurance, tracking, etc., see **Box 5**.

Box 5 Relation between value of item shipped and delivery costs

The value of the item shipped does not influence the cost of delivery. Higher delivery cost occurs **only if** the higher value of the content spurs the customer to buy a **specific service**, e.g., registered, insured, express or time-definite delivery.

The table below shows the different activities in the delivery value chain and how the delivery of a high value product may differ from the delivery of a low value product.

Costs incurred due to high value of item shipped		
Activity	What happens?	Does higher value mean higher cost?
Collection	Postal operator collects parcels from sender's premises and transports to sorting centre OR sender drops off parcels at delivery office or sorting centre for further transport	Only if value-added delivery service (e.g., registered or insured delivery), which requires additional registration of parcels
Transport	Transport to outward sorting centre	No
Sorting (outward)	Sorting of parcels for destination area	Only if value-added delivery service (e.g., registered or insured delivery), which requires additional registration of parcels
Transport	Transport from outward sorting centre to inward sorting centre	Only if value-added delivery service (e.g., express or time-definite delivery), which requires additional registration of parcels
Sorting (inward)	Sorting of parcels for final delivery	Only if value-added delivery service (e.g., express or time-definite delivery) which requires additional registration of parcels
Transport	Transport to local delivery office	No
Delivery	Delivery of parcels to recipients (businesses or private households)	Only if value-added delivery service (e.g., requiring signature on delivery)

The value of the product shipped can nevertheless have an impact on the e-retailer's decision on what delivery services to offer and how to price these services (see section 2.2). Thus, if the delivery price is affected by the value of the product shipped (apart from value-added services), this is normally due to a commercial decision made by the e-retailer and not to the costs incurred by the delivery operator. From the delivery operator's point of view, a standard delivery service (without any value added features) may well be used to deliver a pair of shoes bought online for €20. The same service may also be used to deliver a pair of shoes bought online for €200. If the same delivery service is used, the cost of delivering the two pairs of shoes will be exactly the same.

Source: Copenhagen Economics

Other cost factors

In addition to factors related to economies of scale and product characteristics, the delivery operator's cost of delivering a parcel may also be affected by a number of other cost factors, for example:

- The business model of the delivery operator
- Labour costs
- Geography
- Exogenous factors like oil prices, currency risks, and traffic congestion

The business model of the delivery operator affects the costs of delivery. One example of this is that agreements with unions can require a high share of full-time employees in permanent positions. A high share of permanent full-time employees leads to higher unit costs throughout the value chain compared to a business model relying on delivery by, for instance, e.g., self-employed delivery workers.

Labour costs constitute a large share of the total cost for delivery operators (often more than 50%)³⁴. As a result, differing wage levels across countries may cause differences in delivery costs. Since the most labour intensive part of delivery lies in the last-mile activities (i.e. the final delivery to the recipient), labour costs in the destination country will be important for the cost of delivering a cross-border parcel.

The geography of the delivery route affects the distance that a parcel has to travel. Long distances may require flight transport. This increases transport costs compared to a situation where road transport can be used due to higher transport and security costs. Similarly, long distances for road transport will imply higher costs for fuel, vehicles, and labour (due to more time spent on driving) in transport and delivery. If many households are situated on islands, this can also have an impact on transport costs.

The cost of delivery can also be influenced by *exogenous factors*. Oil prices, for example, influence transportation costs through gas prices. Similarly, fluctuations in currency exchange rates introduce risks and thus hedging costs. Traffic congestion (e.g., in the Euro-tunnel) prolongs transport time and thereby increases costs, and limited air cargo capacity can force delivery operators to choose other (more costly) modes of transport.

Demand factors

Simplicity is often an important element in price strategies, in particular for public list prices. Many delivery operators only set one or two prices for cross-border delivery in Europe, which means that they set uniform prices across different destination countries. The reason is that such a price scheme is simple to work with for customers. The use of such zonal pricing also means that the prices by definition do not reflect the cost level in each destination country. Consequently, when delivery operators use the same price for all (or a large part) of Europe, any attempt to try and link observed cross-border prices to cost levels in specific destination countries is doomed to fail.

³⁴ Copenhagen Economics (2012), p. 128

The demand and *the price sensitivity* for cross-border delivery naturally also play a role for cross-border delivery prices. Across countries and industries, companies set their prices based on both cost (supply) and demand factors. The postal and delivery sector is not different. In fact, companies with a large share of fixed and common costs (like delivery operators) must set their prices above marginal costs to recover the fixed costs. As a result, pricing in the delivery sector will primarily be driven by demand factors and prices will be set to reflect differences in customers' price sensitivities³⁵. We refer to this as market-based pricing, see Box 6.

Box 6 Market-based pricing

In a situation with a firm whose production involves no fixed or joint and common costs, the efficient solution will be prices equal to marginal costs. This creates *allocative efficiency* where an optimal amount of services is produced and consumed.

In reality, however, firms (like delivery operators), incur joint and common costs which must be allocated to services in such a way as to yield the *greatest possible efficiency*. The most efficient way to allocate these costs for pricing purposes is to set prices in a way that reflects the customers' price sensitivities for each service. This can, for example, be done by the use of volume discounts that are larger than the avoided cost of the larger volumes.

This practice is referred to as *market based pricing* and is necessary for efficient recovery of fixed costs. The benefits of this kind of pricing are acknowledged in general economic theory, e.g., Tirole 1988, p. 70.

Source: Copenhagen Economics

Examples of common market-based pricing tools are volume discounts (driven by demand elasticity)³⁶, lower prices for key account clients (not corresponding to cost savings for the delivery operators), and higher prices for customers with a strong preference for certain solutions.

A number of factors affect customers' price sensitivity. If there are suitable alternatives available (e.g., competitors and intermediaries or the ability to use direct injection) customers will substitute towards these if the delivery price is increased. The degree of substitution, however, depends on customers' knowledge about alternatives (although alternatives exist, not all customers are aware of them) and their preferences for certain solutions (e.g., lacking trust in new alternatives). Finally, inertia (customers being used to pay higher prices for certain services) can make customers less price sensitive in relation to certain products. As markets develop, customers will tend to become more price sensitive because more alternatives become available and awareness of the different delivery options increase.

³⁵ Copenhagen Economics (2012), p. 116, p. 147 ff.

³⁶ Copenhagen Economics (2012), p. 113

As a result of demand driven pricing strategies as well as cost factors, public list prices for delivery will only apply to a small share of e-retailers. Many e-retailers will obtain different forms of discounts.

On the one hand, large e-retailers with large volumes are attractive for delivery operators due to the opportunity to reach high economies of scale (and thereby reduce costs). As a result, delivery operators have an incentive to lower prices towards large customers. Furthermore, large e-retailers can use alternative delivery solutions like direct injection³⁷ or threaten to spread volumes across multiple operators. This increases the large e-retailers' buyer power in negotiations with the delivery operator (leading to higher price sensitivity).

On the other hand, small e-retailers can qualify for special rates as well. This is for example the case in countries where the threshold for becoming a business customer is very low, e.g., 50 parcels per year. In addition, small retailers often have the possibility to buy sets of labels with significant discounts (Deutsche Post, for example, offers discounted sets of labels for both parcels and packets) and online franking allows for discounted shipping rates.

Furthermore, small e-retailers without high volumes can use intermediate services to achieve lower prices than the public list prices. One option is to engage with parcel brokers reselling delivery capacity bought in bulk from delivery operators (e.g., Fraktjakt in Sweden). Another option is parcel consolidators (e.g., Spedire in Italy) who aggregate parcel volumes from many small e-retailers to obtain lower prices and who also can help small e-retailers to reach a higher degree of preparation with respect to their parcels (e.g., pre-sorting and pre-labelling). Finally small e-retailers can turn to online market places negotiating delivery prices on behalf of small e-retailers. Examples of such market places are eBay and bol.com.

³⁷ A number of sources acknowledge this, e.g. FTI (2011), p. 158, Oliver Wyman (2013), p. 4-5, EUR-Lex (2012), section 2.

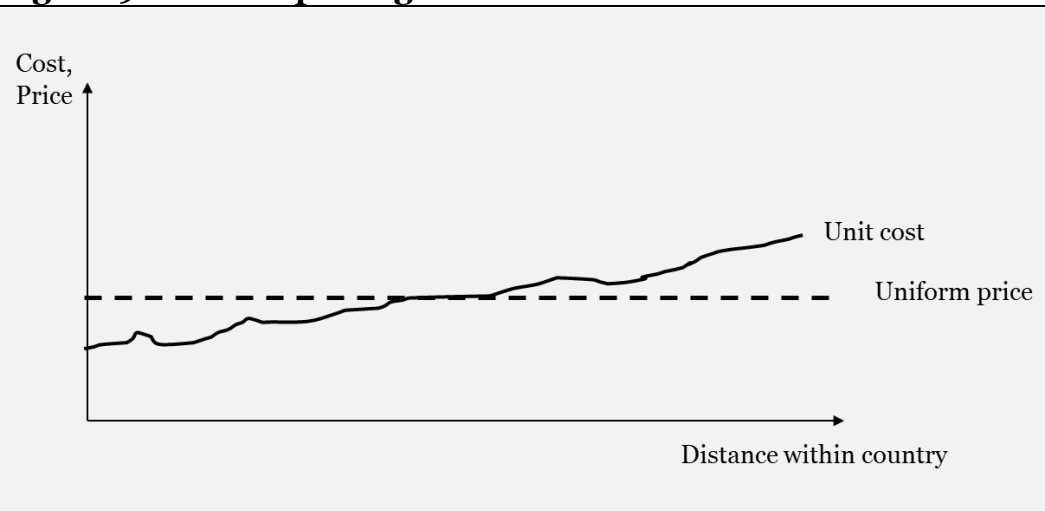
Other factors influencing delivery prices

In addition to cost and demand factors, delivery operators' pricing may be influenced by regulatory frameworks.

National regulation may sometimes require postal operators to apply uniform pricing of single-piece domestic (and cross-border) delivery services. Where this is not the case, operators often apply uniform pricing due to operational and commercial reasons (simplifying the buying process for the customer). In some countries, parcel and packet prices are also subject to additional regulation (e.g., a price cap).

Uniform pricing at an average price ignores any geographical differences in underlying cost factors. As a result, losses on high cost deliveries will be covered by surplus from low cost deliveries, see Figure 9.

Figure 9 Uniform pricing versus differences in unit costs



Source: Copenhagen Economics

Where uniform prices are applied, this means that distance cannot be interpreted as a price driver. This is further elaborated in the section below.

Another regulatory factor influencing the pricing of delivery services is VAT regulation. Differences in VAT treatment of delivery services and differences in VAT rates may therefore create differences in prices depending on the country of origin. This is, for example, one of the reasons for why parcel delivery in Sweden (where 25% VAT have been applied to all postal services) for many years have been considered much more expensive than parcel delivery in many other countries where delivery services within the USO are VAT exempt.

3.2 Case studies of cross-border parcel delivery prices

To study how the price drivers described in the previous section influence prices in reality, and to what extent specific price drivers can explain the public list prices observed, we have selected two illustrative cases which have been brought into question in the public debate in order to demonstrate general economic price trends and their drivers³⁸.

In the first case, we compare cross-border/domestic price ratios to examine why the price of sending a cross-border parcel to the rest of the EU from Cyprus is four to five times the domestic rate, when the cross-border price in the UK for sending a parcel to the rest of the EU only is three times the domestic rate.

In the second case, we look at the impact of borders on parcel delivery prices to examine why the price of sending a parcel from Cologne (in Germany) to Liège (in Belgium) is almost three times the price of sending an identical parcel domestically in Germany from Cologne to Berlin, although the distance from Cologne to Berlin is more than four times the distance from Cologne to Liège.

Case 1: Comparison of cross-border/domestic price ratios

The ratio between cross-border and domestic delivery prices (hereafter referred to as the foreign-domestic ratio, FDR) differs across member states in the EU. In the UK, for example, the FDR for an economy parcel sent to another EU country is around 2.5. In other words, sending an intra-EU cross-border economy parcel from the UK is two and a half times as expensive as sending a parcel with the same features within the UK. In Cyprus, the corresponding FDR is 4.2, see Table 5.

Table 5 Comparison of prices for UK and Cyprus, 1kg parcel

Country, currency	Domestic	Foreign	FDR
UK, £	3.3	8.3	2.5
Cyprus, €	4.2	17.5	4.2

Note: Consumer prices for a priority parcel (A priority for Cyprus, 1st class for UK domestic and fastest option for UK International); for cross-border parcels the price applies to parcels from (i) UK to Germany, (ii) Cyprus to any EU country.

Source: Copenhagen Economics, based on prices from www.royalmail.com and www.mcw.gov.cy

A comparison of foreign/domestic ratios in two countries involves four prices, see the two equations below:

$$FDR_{GBR} = \frac{Price_{GBR,foreign}}{Price_{GBR,domestic}}$$

$$FDR_{CYP} = \frac{Price_{CYP,foreign}}{Price_{CYP,domestic}}$$

³⁸ Note that these examples illustrate the economic effects at play. They do not claim to determine an exhaustive list for all the factors influencing prices in the cases treated or other cases at European level. We underline that a case-by-case analysis is needed to understand the formation of cross-border prices for any country pair.

Each of these four prices are affected differently by the price drivers identified in section 3.1. As revealed there, the construction of delivery prices (both domestic and cross-border) is driven by several factors that influence prices in different directions. The final price will thus depend on the relative importance of the different drivers. For this reason, a simple comparison of cross-border/domestic price ratios will not be a meaningful basis for identifying market failures in cross-border delivery. A high FDR can for example be due to a very low domestic price –irrespective of the cross-border price.

In the case at hand a number of factors influence both domestic and cross-border prices in the UK and Cyprus. Our assessment of the different price drivers in place in Cyprus and in the UK respectively reveals that a high foreign/domestic price ratio in Cyprus could be explained by several factors, for example:

- The geographical condition as an island implies a low domestic price since parcels do not travel great distances, whereas cross-border delivery involves either sea or air transport which increases cost (and price) of cross-border delivery
- Low cross-border volumes in Cyprus, leading to (i) low economies of scale (high costs) in cross-border delivery and (ii) limited business potential for consolidators and other intermediaries offering cross-border services (thereby limiting the bargaining power and price sensitivity of cross-border mailers)
- Lower wage levels in Cyprus compared to many other EU countries (making last-mile delivery in the domestic market less costly than last-mile delivery cross-border).
- Regulated price for domestic parcels and letters, which may imply a relatively low domestic price for delivery
- A cross-border e-commerce market that is still under development with relatively small e-retailers

Similarly, a (in comparison with Cyprus) relatively low foreign/domestic price ratio in the UK could be explained by:

- Large cross-border volumes in the UK, leading to (i) high economies of scale (low cost) and (ii) large business potential for consolidators and other intermediaries offering cross-border services³⁹
- Higher wages in the UK compared many other EU countries (making last-mile delivery in the domestic market more costly than last-mile delivery cross-border)
- A highly developed cross-border e-commerce market with large e-retailers

³⁹ Increases the bargaining power and price sensitivity of cross-border mailers if consolidators' total parcel volume (including both domestic and cross-border deliveries) exceeds that of individual e-retailers.

Case 2: The impact of borders on parcel delivery prices

The price of sending a parcel 132 km from Cologne to Liège (or any other EU country) is almost three times the price of sending a parcel 579 km from Cologne to Berlin (or anywhere else in Germany). Thus, in this case sending the cross-border parcel is almost three times the price of the domestic parcel despite of the cross-border parcel delivery involving a much shorter point-to-point distance, see Table 6 and Figure 10.

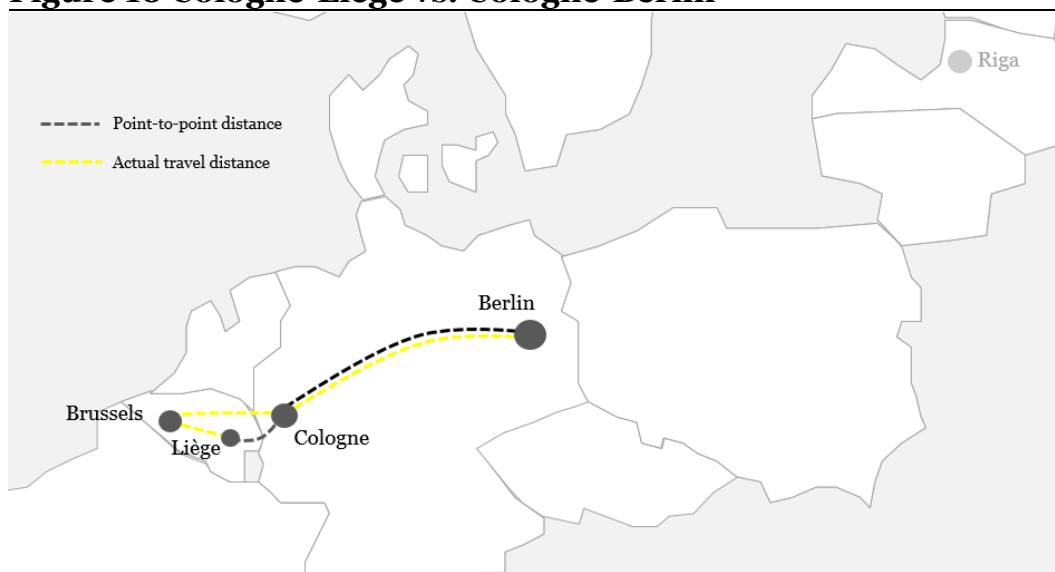
Table 6 Examples from public price lists for shipping from Germany

Route	Type	Product	Point-to-point distance	Actual route distance	Price
Cologne to Liège	Cross-border	Shipping to any EU country	132 km	308 – 345 km*	€13.99
Cologne to Berlin	Domestic	Shipping to all of Germany	579 km	579 km**	€4.99

Note: Online consumer prices for a parcel with a weight of max. 2 kg and dimensions of max. 60 x 30 x 15 cm. *Option 1, Cologne – Bruxelles – Liege, is 308 km and option 2, Cologne – Ternat – Liege, is 345 km. ** we assume that the parcel travels directly from Cologne to Berlin.

Source: www.dhl.de, www.maps.google.com and Deutsche Post.

Figure 10 Cologne-Liège vs. Cologne-Berlin



Source: Copenhagen Economics

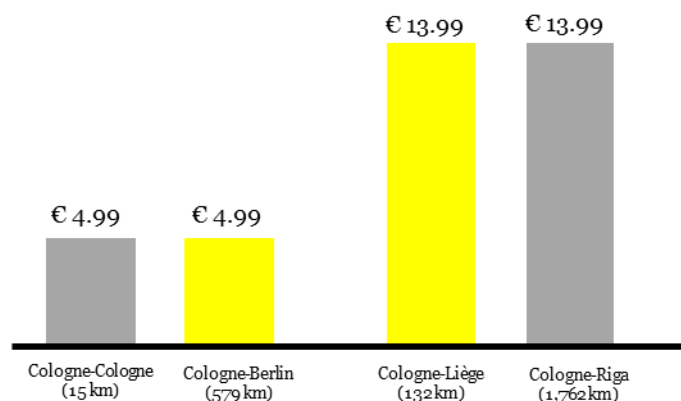
As shown in section 3.2, distance is only one among several drivers of delivery prices. Our assessment of factors affecting the domestic price for delivery on the route Cologne-Berlin and the route Cologne-Liège respectively reveals several reasons (both cost and demand related) for why the delivery price Cologne-Liège would be the more expensive one. For example, low cross-border volume, and interoperability factors indicate lower economies of scale cross-border and thus higher price for delivery Cologne-Liège.

When assessing the impact of distance on parcel delivery prices it is very important to take into account the correct distance. In fact, distance can in this particular example be viewed from three perspectives:

1. Point-to-point distance: The shortest way from Cologne to Liège. This is, however, not the route that the parcel actually travels from Cologne to Liège
2. Actual travel distance: The actual route that the parcel travels from Cologne to Liège. The outbound gateway is the Cologne Parcel Center. The parcel will be either handed over to bpost or be delivered by DHL Parcel BE. In the first case, the parcel will go from Cologne to Brussels and from there directly to Liège. In the latter case, the parcel will go to Ternat and from there directly to Liège.
3. Average distances for domestic and cross-border deliveries: Average distances for deliveries (i) within Germany and (ii) between Germany and other EU-countries.

In a case like this, where the delivery operator applies uniform prices for (i) domestic delivery and (ii) intra-EU cross-border delivery, the relevant distances to take into consideration are the average distances for domestic and cross-border deliveries. The reason for this is that the relevant cost taken into account when setting the uniform price will be the average cost for providing delivery. In other words, the price for delivery from Cologne to Berlin will not depend on the point-to-point distance from Cologne to Berlin, but on the average distance for domestic parcels within Germany. Similarly, the price for delivery from Cologne to Liège will depend on the average distance for cross-border parcels from Germany to the rest of the EU.

Figure 11 Prices for domestic and cross-border parcels from Germany



Source: Copenhagen Economics

Hence, for domestic delivery, the comparatively long distance Cologne-Berlin is cross-subsidised by shorter domestic delivery journeys. The lower average domestic parcel journey means a lower parcel price for domestic delivery. It also means that a parcel travelling

inside the city of Cologne will have the same price as a parcel travelling from Cologne to Berlin.

For cross-border delivery, the short distance between Cologne and Liège is not relevant for pricing, since Deutsche Post sets a uniform price domestically as well as internationally. This means that the price for cross-border delivery covers the distance Cologne-Liège as well as, for instance, Cologne-Riga.

Moreover, distance is only one out of several cost drivers. Interoperability between networks and economies of scale are also important price drivers. Identifying the point-to-point distance as the only driver of prices is thus too simplistic.

References

- Accenture (2014), The Secrets of Seamless Retailing Success
- Barclays (2015), The Last Mile
- BCG (2013), Cross-border e-commerce makes the world flatter
- Cross-border e-Commerce Community (cbec) (2015), International Expansion, <http://www.cross-border-ecommerce.com/international-expansion/>
- Civic Consulting (2011), Consumer market study on the functioning of e-commerce and Internet marketing and selling techniques in the retail of goods
- Copenhagen Economics (2012), Pricing behavior of postal operators
- Copenhagen Economics (2013), E-commerce and delivery: A study of the state of play of EU parcel markets with particular emphasis on e-commerce
- EUR-Lex (2012), Green Paper, An integrated parcel delivery market for the growth of e-commerce in the EU
- European Commission (2015 A), Obstacles to the digital single market, http://ec.europa.eu/consumers/consumer_evidence/market_studies/obstacles_dsm/index_en.htm
- European Commission (2015 B), Identifying the main cross-border obstacles to the Digital Single Market and where they matter most, http://ec.europa.eu/consumers/consumer_evidence/market_studies/obstacles_dsm/docs/21.09_dsm_final_report.pdf

European Commission (2015 C), Inception impact assessment, http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_taxud_002_ia_vat_en.pdf)

European Commission (2015 D), Companies engaged in online activities, Flash Eurobarometer 413, http://ec.europa.eu/public_opinion/flash/fl_413_en.pdf

European Commission (2013), Retailers' attitudes towards cross-border trade and consumer protection, Flash Eurobarometer 359 http://ec.europa.eu/public_opinion/flash/fl_359_en.pdf

European Commission (2011), User language preferences online, Flash Eurobarometer, http://ec.europa.eu/public_opinion/flash/fl_313_en.pdf

Financial Times (2014), Amazon launches same-day delivery service in the UK, October 15, 2014 <http://www.ft.com/cms/s/0/43878128-5433-11e4-84c6-00144feab7de.html>

FTI (2011), Intra-Community cross border parcel delivery

Honeywell (2015), UK consumer survey, <http://www.honeywellnow.com/2015/03/11/fast-and-on-time-uk-consumers-expect-quick-and-convenient-delivery-from-retailers/>

IPC (2013), IPC cross-border e-commerce report

JDA/Centiro (2015) Customer Pulse 2015

Kommerskollegium (2012), E-commerce – New opportunities, New Barriers, A study of e-commerce barriers in countries outside the EU

https://www.wto.org/english/tratop_e/serv_e/wkshop_june13_e/ecom_national_board_e.pdf

LeFigaro (2015), Avec Colis Privé, Amazon marche sur les platebandes de La Poste, <http://www.lefigaro.fr/secteur/high-tech/2015/10/15/32001-20151015ARTFIG00248-avec-colis-prive-amazon-marche-sur-les-platebandes-de-la-poste.php>

Oliver Wyman (2014), Disruptive logistics – The new frontier for e-commerce

Oliver Wyman (2013), Delivery logistics for European e-commerce

UPS (2015), UPS Pulse of the online shopper – A customer Experience study,
<https://www.ups.com/media/en/gb/OnlineCom-ScoreWhitepaper.pdf>

Tirole (1988), The Theory of Industrial Organization

About Copenhagen Economics

Copenhagen Economics is a specialised economics consultancy. Our economists provide advice and analyses in the fields of competition, regulation, international trade and impact assessment.

We are focusing on solving complex problems for clients in the areas of

1. Auctions
2. Competition
3. Digital Economy
4. Dispute Support
5. Energy & Climate
6. Greenland
7. Health Care & Welfare
8. IP Valuation
9. Postal & Delivery
10. Finance & Tax
11. Trade
12. Transport

We provide hard facts and clear stories, enabling our clients and their stakeholders to make superior decisions based on sound analysis.

We advise companies, authorities and policy makers when market meets regulation and conflicts arise. We help our private sector clients handle conflict cases and guide them on how to prosper through regulatory management. We help our public sector clients evaluate and devise new regulation

Copenhagen Economics A/S was founded in 2000. Today, the firm employs more than 50 expert economists – making it one of the largest groups of professional economists on continental Europe.

www.copenhageneconomics.com

