Unpacking the black box: prices of cross-border e-commerce parcels

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Abstract
In the past years, cross-border parcel delivery has shifted into policy makers' focus, as the European Commission is trying to push through its Digital Single Market Strategy for Europe. Within this strategy, cross-border delivery prices occupy a prominent role as an alleged major obstacle to growing cross-border e-commerce in Europe.

In this paper, we investigate the formation of cross-border parcel prices from an economic point of view by disentangling the 'price' concept in the context of the e-commerce delivery value chain. While much of the analytical efforts of policy makers focus on delivery prices set by delivery operators, our analysis clearly distinguishes between the delivery prices set by operators to e-retailers and those prices faced by e-shoppers when buying products online.

We show, via mystery shopping, that there is low correlation between the prices paid to parcel operators by e-retailers and the prices they charge from e-shoppers. We then discuss the commercial and economic reasoning that drives pricing of cross-border parcel delivery.

1 Introduction

The debate about cross-border parcel prices that e-shoppers face when ordering goods online has made it strikingly clear that this topic has, to date, remained grossly under researched. In the absence of robust theoretical economic underpinnings and the use of anecdotal evidence to inform policy decisions, a market failure that could prompt regulation of prices in the market for cross-border parcel delivery has not been demonstrated. To our knowledge, a comprehensive investigation into the economic underpinnings of the pricing of cross-border parcel delivery has to date not been undertaken. In fact most analyses have taken the form of econometric modelling, which has proven a difficult path due to the complexity and the multiple dimensions in pricing decisions.

In the first part of the paper, we illustrate the pivotal role of e-retailers in the pricing of cross-border delivery to consumers. We conduct a mystery shopping experiment on twenty e-commerce flows within the EU, comparing operators' list prices to the delivery prices e-retailers set on various online marketplaces for the delivery of standard e-commerce products. The experiment reveals a low correlation between the prices charged by delivery operators to e-retailers and the prices for delivery charged by e-retailers to e-shoppers.

In the second part of the paper, we investigate the different price drivers for cross-border parcel delivery. We subsequently apply the insights on price drivers on several cases of actual pricing of cross-border deliveries in the EU. We find that a multitude of factors, including both supply-side and demand-side drivers determine delivery prices.

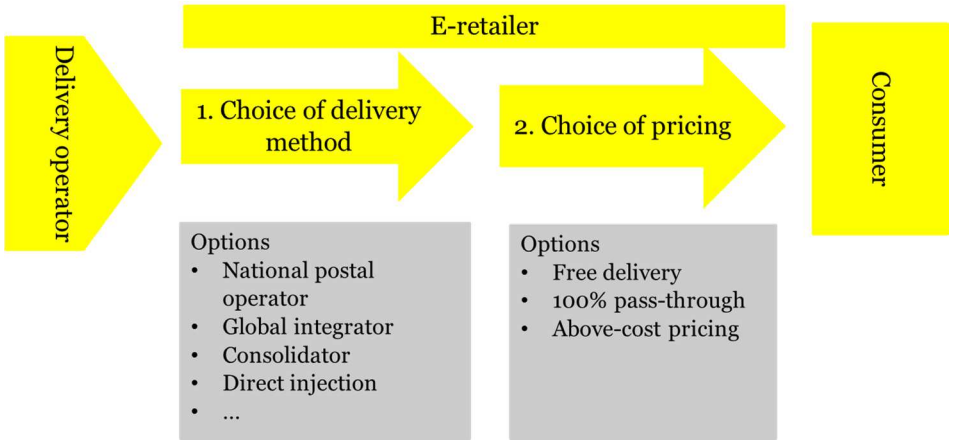
2 E-retailers' role in e-commerce delivery

When shopping online, e-shoppers face a choice between the delivery options and prices that e-retailers offer to them. Placed between delivery operators and e-shoppers in the e-commerce delivery chain, e-retailers play a pivotal role for the development of cross-border delivery offerings and prices. We investigate this role in two steps: firstly, we examine the factors that influence e-retailers' choices of the delivery options and prices to offer; secondly, we test to what extent delivery prices set by e-retailers reflect the prices set by delivery operators.

2.1 What drives pricing by e-retailers

E-retailers make two main decisions related to delivery. Firstly, they decide what delivery service(s) to offer and secondly, they decide how to price the delivery service(s) towards the consumers. Both of these decisions have important implications for delivery services available to e-shoppers as well as the prices charged for these services.

Figure 1 Delivery-related decisions by e-retailers



Source: Copenhagen Economics

Concerning the method of delivery, e-retailers choose between a multiple of options, depending on a number of considerations, such as the size of their business, their experience with e-commerce and the type of products they sell. E-retailers are also likely to consider the trade-off that exists between meeting their customers' needs in terms of delivery options and the cost of a too complex offer.

An e-retailer can hence choose to:

- Use a single delivery operator in order to accumulate volume discounts and simplify logistics
- 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

Subsequently, e-retailers have to decide how to price the delivery services offered to their customers (the e-shoppers). When setting their delivery prices, e-retailers take both cost-factors and demand-factors into account.

Cost-factors influencing the e-retailer's price for delivery include, for instance, the prices that e-retailers pay for delivery to delivery operators, the cost of packaging and shipping materials and costs related to pick & pack.

However, economic theory tells us however that there is no economic reason to expect e-retailers' prices for delivery to correspond exactly to the price the delivery operator

charges to the e-retailer for that same service. Expecting this would be similar to expecting the e-retailer to price a pair of shoes towards the e-shopper at the wholesale price that the e-retailer itself pays to the shoe manufacturer and thereby make a profit margin of zero.

Instead, demand-factors considerations also play a role in e-retailers' pricing decisions for delivery. In fact, the pricing of delivery is a key commercial considerations for e-retailers. While a number of studies have shown that consumers' online shopping behavior in part depends on delivery prices, e-retailers' delivery prices also directly influence their rankings on comparison websites. Moreover, previous studies have shown that the delivery price can act as a 'deal breaker' in an e-shopper's buying decision.[1] 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.

Thus, when deciding upon the delivery price, e-retailers 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)

Given these considerations, e-retailers choose among a number of different pricing strategies, including:

- "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 thus exhibit the kind of commercial behavior that we would expect from companies in any retail industry. From a theoretical standpoint and a look at the industry of e-retailing itself, we expect delivery prices set by e-retailers to be a commercial decision

[1] 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).

that is not closely linked to the pricing of delivery by postal operators. In the following subchapter we test this hypothesis by means of a mystery shopping experiment.

2.2 Mystery shopping experiment

We undertook 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.

Therefore, we consider twenty e-commerce flows across Europe.[2] 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). The products in the lightweight category are headphones, children's books, comics, and t-shirts, whereas the products in the high weight category are book collections and kitchen appliances. In this way, we capture goods sent by letter post (i.e. below 2 kg) and parcel post (i.e. above 2 kg). In total, this provides us with a sample of 116 observations.

The products included in the experiment are all of relatively low value[3] (around € 4-€100). This makes our results conservative, since 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).

For every shopping action conducted, we observe and register the size of the e-retailer, the price of the good (excluding shipping), the delivery operator and delivery service used, the price charged by e-retailers for the delivery service as well as the delivery operator's public list price for the same delivery service.[4] We choose the public list price as the only price that is publicly available. However, in reality, most e-retailers obtain lower delivery prices through volume discounts granted by operators. Since public list prices are only an approximation to and an overestimation of the actual price e-retailers pay, we assume that a comparison with this public list prices will yield conservative results.

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. The result of this comparison is presented in Figure 2.

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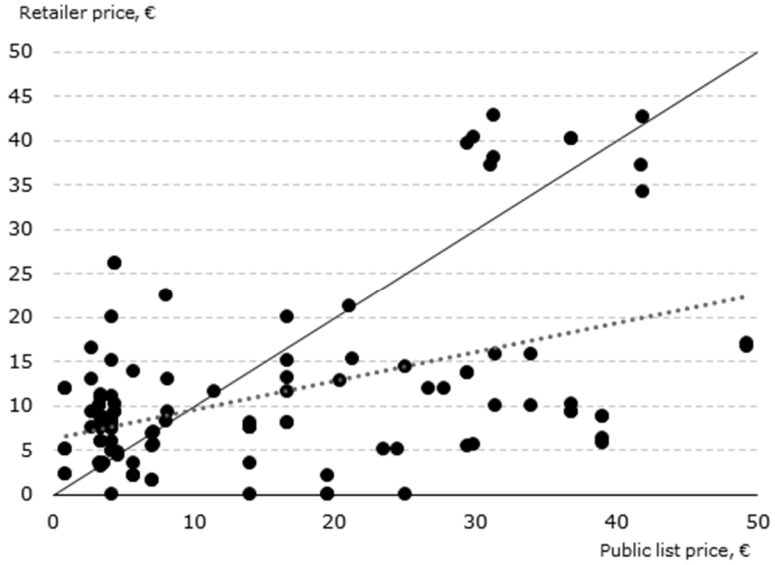
2 The flows we consider are: Czech Republic-Bulgaria, Czech Republic-Poland, Germany-France, Germany-Luxemburg, Denmark-Germany, Denmark-Sweden, Spain-Germany, Spain-Sweden, Finland-Estonia, Finland-Poland, France-Italy, France-United Kingdom, Netherlands-Belgium, Netherlands-Poland, Romania-Hungary, Romania-Lithuania, Sweden-Austria, Sweden- Finland, United Kingdom-Germany, United Kingdom-Spain

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

4 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.

Figure 2 Results from the mystery shopping experiment



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 prices[5] and prices charged by e-retailers to e-shoppers (retailer price), with a correlation coefficient of 0.45.

Figure 2 also exhibits the different pricing strategies that e-retailers use for pricing cross-border delivery. Whereas some e-retailers (close to 5 per cent of our sample) offer free delivery, in close to half of the cases, e-retailers provide delivery at a price that lies above the public list price offered by the delivery operator. In only 3 cases, we observed that the delivery price indicated by the e-retailer exactly matched the public list price of the delivery operator. This finding corresponds to our expectation that e-retailers, when setting their prices decide where to earn a profit. In other words, they decide on whether to earn a profit on the product they sell, on the sale of the delivery service, or on both. We also note, that the 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.

This mystery shopping experiment demonstrates that e-retailers' pricing of delivery services is highly commercial, and that the prices they charge on average do not reflect the prices charged by the delivery operators. The first step in unpacking the black box of cross-border e-commerce parcel delivery prices is to recognise this decoupling between

[5] 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.

delivery operators' prices and the delivery prices that consumers actually face when ordering online. Any attempt to regulate or monitor cross-border parcel prices should take this finding into account.

3 Price-drivers of cross-border parcel delivery

In the second part of this paper, we investigate the different price drivers for cross-border parcel delivery by delivery operators. We then apply these insights on price drivers on several cases of actual pricing of cross-border deliveries in the EU.

3.1 Factors influencing pricing of cross-border parcels

As is the case with prices for any other types of services, the price of a cross-border parcel delivery is determined by both supply side factors (cost factors) and demand-side factors. Specifically in the postal sector, regulation also has an influence on prices. On the one hand, country-by-country differences in these can serve to explain that cross-border delivery prices may differ between country pairs. On the other hand, the existence of some of these factors may limit the possibility of a statistical analysis of price differences between countries. In the following, we describe the cost factors, demand-side and other factors that drive cross-border parcel prices.

Cost factors influencing cross-border parcel prices

A host of factors determine the cost of delivery operators when delivery parcel cross-border and therefore the prices that they will charge for delivery.

The most prominent cost-factors are those that determine the extent to which a delivery operator can exploit economies of scale and thereby lower the unit cost of different activities along the delivery chain. In other words, since delivery operators incur very high fixed costs, delivery of only a few parcels cross-border will be yield a higher unit cost than delivery of a larger volume of parcels. There are numerous factors which indirectly or directly influence the operator's ability to benefit from economies of scale.

Firstly, delivery volumes will influence unit costs for several activities of the delivery chain. The higher the volumes in the sending country, the lower a delivery operator's unit cost for the collection. In turn, higher volumes in the destination country means lower unit costs for transport, distribution and sorting related to the last mile. For a specific cross-border flow, a lower volume of parcels would imply higher unit costs for that specific cross-border transport.

Similarly, the population density in the destination country will have a positive effect on the operator's ability to exploit economies of scale. This is because more parcel volumes per square kilometre lower the unit cost of transport and delivery and a higher prevalence of multi-household buildings reduces delivery costs through fewer stops on the delivery route.

Furthermore the interoperability of different domestic postal networks influences unit costs via the number of sorting steps needed for delivery, the distance that the parcel has

to travel and the economies of scale yielded by volumes. In fact, with 80% of parcel volumes being domestic[6], parcel networks tend to be optimised for national parcel flows. This implies that cross-border delivery of parcels might not take place over the shortest route, but the route geared towards optimisation of each national delivery network. Hence, cross-border parcels might travel a longer route with longer delivery times and additional costs related to extra handling and administration. These additional costs will be reflected in the cross-border delivery price.

Finally, a higher share of parcels with various value added services will lower an operator's possibility to benefit from economies of scale for transport and sorting, increasing unit costs for these activities.

Beyond economies of share the characteristics of the parcels delivered determines operators' delivery costs. The degree of preparation of parcels, such as pre-labelling or pre-sorting, will reduce the cost for delivery operators for preparation or collection and sorting. Depending characteristics of the goods delivered, i.e. its format, weight or whether it is classified as hazardous, the delivery operator will face higher or lower costs for activities such as collection, handling, sorting and delivery. However, the value of the good itself will only increase delivery costs insofar as the sender might choose value-added service such as insurance or tracking.

Next to economics of scale and product characteristics a host of other factors might influence the delivery cost of cross-border parcel delivery. Most importantly, labour costs in the destination country might increase the cost for a specific cross-border flow, as last-mile activities are most labour intensive.[7] Similarly, the business models of delivery operators have a direct impact on their costs, for instance via the ration of full-time permanent to self-employed delivery personnel.

Finally, the geography of the delivery route and delivery destination affects the distance that a parcel has to travel and thereby the transport mode chosen for and transport cost of delivery. Long distances may require flight transport, while long distances for road transport will imply higher costs for fuel, vehicles, and labour 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 numerous 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 Eurotunnel) prolongs transport time and thereby increases costs, and limited air cargo capacity can force delivery operators to choose other (more costly) modes of transport.

However, these cost factors related to delivery only partially determine delivery prices, which are also influenced by demand-side factors, two of which we discuss here.

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6 (Copenhagen Economics, 2013).

7 *Labour costs constitute a large share of the total cost for delivery operators (often more than 50%)*

Firstly, cross-border parcel prices are influenced by consumers' willingness to pay for cross-border delivery. As parcel delivery is characterised by a large share of fixed and common costs, delivery operators resort to market-based pricing. While firms without any fixed or common costs can achieve allocative efficiency by setting prices equal to marginal costs, delivery operators can only recover their fixed costs when pricing above marginal costs. The most efficient way of pricing is then to set prices that reflect customers' price sensitivities for each service.

Customers' price sensitivity is in turn influenced by a number of factors, such as their knowledge about the alternative delivery operators and delivery options (e.g. direct injection or self-supply) available to them and customers' preferences. For instance, a lack of trust in new delivery solutions or inertia (i.e. customers being used to pay higher prices for certain services) will decreases customers' price sensitivity for certain services.

Secondly, parcel delivery prices reflect the simplicity of delivery operators' pricing schemes that will be easy to grasp for customers. Particularly for public list prices, simplicity is an important element in pricing strategies. 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 (also called zonal pricing). This is often done for operational and commercial reasons, whereby the buying process for the customer is simplified. On top of mere pricing strategies, national regulation in some cases also required postal operators to apply uniform prices for single-piece domestic and cross-border delivery services, and in other countries, parcel and packet prices are in addition subject to additional regulation, such as price caps.

Independently of its underlying reasons, uniform pricing ignores any geographical differences in underlying cost factors. In other words, the price for a delivery between country destinations in country A and B will not be based on the factors that drive cost for delivery specifically between those two countries, but on the average cost and demand conditions that apply to all deliveries that leave country A for another country. As a result, losses on high cost deliveries will be covered by surplus from low cost deliveries.

A further regulatory factors that influences the price of delivery services is VAT regulation. The difference between countries in VAT treatment of delivery services may drive differences in prices. For instance, (cross-border) parcel delivery in Sweden with 25% VAT applicable to all postal services appear much more expensive that parcel delivery in other EU countries were delivery services within the USO scope are exempt from VAT.

The ways in which both cost, demand and regulatory factors influence pricing has direct implications for analysis economists can perform and they conclusion we can draw concerning the way that cross-border parcel delivery prices come about.

Firstly, via economics of scale, volume flows are an important cost-factor influencing delivery prices. Since parcel volumes are largely determined by e-commerce flows, we can expect e-commerce flows to have a crucial impact on delivery costs and prices.

Secondly, the use of zonal pricing strategies means that 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 analysis trying to link observed cross-border prices to cost levels in specific destination countries will not yield meaningful results.

Thirdly, 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, depending on their size, will obtain different forms of discounts. This means that we can only draw limited conclusions from an analysis of public list prices.

Finally, the influence of customers' price sensitivities on parcel delivery prices will be strengthened as markets develop, since consumers become more price sensitive when the alternative delivery options are available to them and their awareness of these alternatives increases. These dynamics make it difficult to draw meaningful conclusions from the price evidence available today.

3.2 Digging into anecdotal evidence

In order 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 drivers[8]. While we do not aim at a comprehensive study of all factors influencing prices in these cases, our aim is rather to demonstrate the workings of the drivers discussed above and to point to the way economic analysis can be informed by the operational and market realities of cross-border parcel delivery. We start by looking at the role of delivery distance as a factor influencing prices for domestic and cross-border delivery and then turn to discuss the foreign-domestic ratio as a basis for cross-border parcel price analysis.

a. Delivery distance as a factor

The distance between countries appears to be an important cost-driver and therefore also a driver of cross-border parcel delivery prices. However, a look at parcel price examples suggests that the positive linear relationship between point-to-point distance of parcel delivery and the related delivery price does not exist. For instance, the price of sending a parcel over a distance of 132 km from Cologne in Germany across the border to Liège in Belgium is almost three times the price of sending the same parcel 579 km within Germany from Cologne to Berlin (or anywhere else in Germany). In other words, 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 1 and Figure 3.

[8] 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.

Table 1 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.

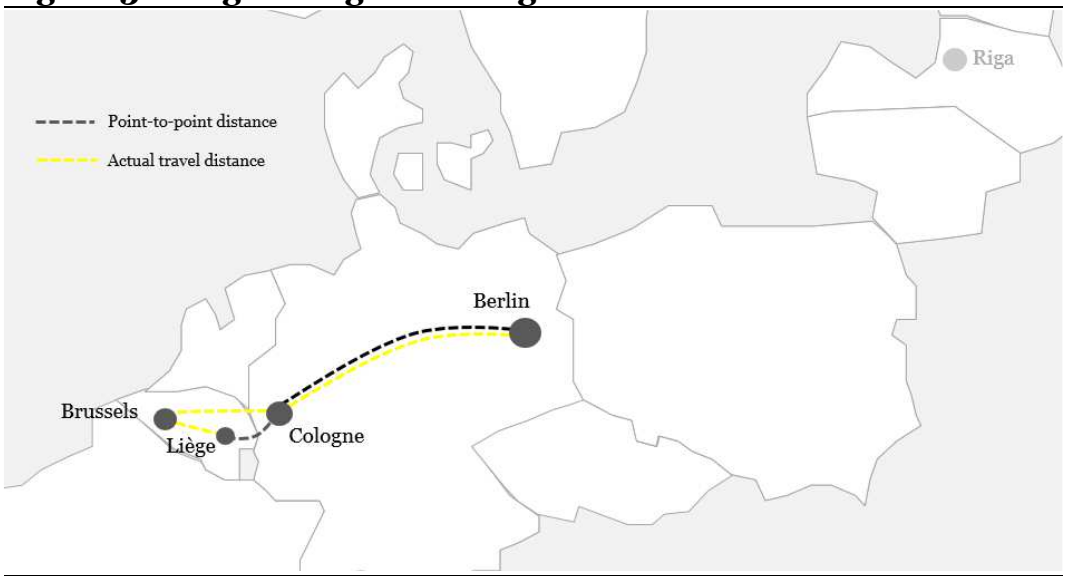
While distance is only one among several drivers of the delivery prices[9], a closer look at the operational and pricing realities at play, raises the question of the correct measure of distance we should take into account for the purpose of analysing the resulting prices. Distance can in this particular example be measures in three different ways.

1. *Point-to-point distance:* This is the shortest way a parcel *could* travel from Cologne to Liège. It is the way a day-tripper travels in her car. It is, however, not the route that the parcel actually travels from Cologne to Liège
2. *Actual travel distance:* This describes the *actual* route that a parcel travels from Cologne to Liège given the way DPDHL has set up their logistics operations to combine both domestic and cross-border delivery. The outbound gateway is the Cologne Parcel Center. The parcel will then either be 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*: This describes the average distances for deliveries of parcels (i) within Germany and (ii) between Germany and other EU-countries.

In this specific case, where the delivery operator (DPDHL) applies uniform prices for both domestic delivery and 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.

[9] 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.

Figure 3 Cologne-Liège vs. Cologne-Berlin

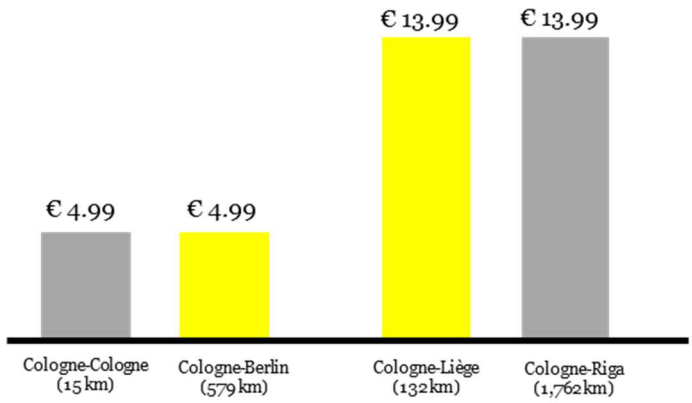


Source: Copenhagen Economics

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.

Figure 4 Prices for domestic and cross-border parcels from Germany



Source: Copenhagen Economics

The way distances comes into play when prices for domestic and cross-border deliveries are set means that neither the point-to-point distance between destinations, nor the actual travel distances for parcels are relevant explanatory factors for an analysis of domestic or cross-border parcel prices.

3.3 Foreign-domestic ratios of delivery prices

Foreign-domestic ratios are often evoked as part of the policy discussion around cross-border parcel prices. They describe ratio between cross-border and domestic delivery prices (hereafter referred to as the foreign-domestic ratio, FDR). The FDR might be a relevant measure from a social economic standpoint as it is directly related to the debate of affordability of cross-border parcel delivery as opposed to domestic delivery. According to this reasoning, the country-by-country variation in FDR in the EU is interpreted as a cause for concern, since it would demonstrate that some delivery operators set unreasonably high cross-border parcel prices. However, this type of reasoning assumes that there should be a direct relationship between domestic and cross-border parcels (the latter being simply a multiple of the former) and that this relationship should be stable / hold across for all country-pairs in Europe.

We examine the FDR at the example of cross-border parcel deliveries between the UK and Cyprus.

In the UK, 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 lies at 4.2, see Table 2.

Table 2 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 op-tion for UK International); for cross-border parcels the price applies to parcels from (i) UK to Ger-many, (ii) Cyprus to any EU country.

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

A first step into understanding this difference in FDR is to look at how this measure is constructed. In fact, a comparison of foreign/domestic ratios in two countries involves four prices:

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

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

Each of these four prices are affected differently by the price drivers identified in the previous subchapter. Hence, the formation of all of these domestic and cross-border delivery prices 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.

An 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.

At first, Cyprus' geographical condition as a small island implies a low domestic price since parcels do not travel great distances. In turn, cross-border delivery involves either sea or air transport which increases the cost (and price) of cross-border delivery. On top of that, Cyprus' average distance to other EU countries is high, driving delivery cost up. Moreover, cross-border volumes of parcel from Cyprus to other countries are relatively low, leading to lower economies of scale and higher cost in cross-border delivery. Low volumes also crucially limit the potential for consolidators and other intermediaries to offer cross-border deliveries and intensify competition on that market. This in turn limits the bargaining power and price sensitivity of cross-border mailers. Related to this factor is also the relatively weakly developed e-commerce market in Cyprus with smaller e-retailers that are less prone to entertain cross-border businesses.

Another cost-factors lies in the lower wage levels in Cyprus compared to many other EU countries. This implies that domestic last-mile delivery is less costly than last-mile delivery in other EU destination countries where cross-border parcels travel (reflected in higher terminal dues payable for Cyprus post).

Finally, the price for domestic parcels and letters is regulated in Cyprus, which may imply a relatively low domestic price for delivery.

Similarly, a relatively low foreign/domestic price ratio in the UK compared to Cyprus could be explained by a number of drivers. For instance, UK's highly developed cross-border e-commerce market with large e-retailers provides for large cross-border volumes in the UK, creating the possibilities for Royal Mail to exploit economies of scale and thereby lower its costs for cross-border delivery. Moreover, there is a large business potential for consolidators and other intermediaries offering cross-border services[10]. In turn, higher wages in the UK compared many other EU countries make last-mile delivery in the domestic market more costly than last-mile delivery cross-border.

These examples of drivers illustrate that there are many different drivers at play related both to the domestic situation of a country and (average) conditions prevalent in destination countries that make it difficult to draw meaningful conclusions from an FDR. A A high FDR can for example be due to a very low domestic price –irrespective of the cross-border price, as is the case in Bulgaria. The inherent relative nature of an FDR makes it impossible to determine an ideal FDR that should hold across all European countries. It also means that a price regulation fixing the cross-border price as a multiple of the domestic price is misguided.

4 Conclusion

In our two-step investigation into the drivers of cross-border delivery prices, we have seen that there is a low correlation between delivery prices charged by e-retailers and those paid by e-retailers to delivery operators. We also demonstrated that there is a host of drivers of cross-border parcel prices and that the nature of these drivers crucially informs an economic analysis of these prices. Our analysis yields at least three important conclusions. Firstly, the recent evidence from the e-commerce and delivery market cannot serve as a solid basis for concluding on market failure in the market for cross-border parcel delivery. Secondly, any attempt to explain delivery prices by only one or a few cost driving factors is overly simplistic and neglects the commercial character of demand-driven pricing by delivery operators. Thirdly, e-retailers who set final delivery prices for consumers are equally driven by commercial motives. This deprives

[10] 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.

any plan to facilitate e-commerce through regulating operators' cross-border parcel prices of its economic foundation.

This means that there is a wide scope for further research. Research could either take a closer look at the delivery pricing behavior of e-retailers and the way it impacts on consumers' buying behavior, domestically and cross-border. Moreover, research on delivery operators' cross-border parcel prices could gain more insight by moving away from a sole consideration of cost-factors for analyzing delivery prices and by paying increasing attention to the demand-conditions prevalent in EU countries.