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The potential impact of Brexit on Ireland's demand for shipping services to continental Europe

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1. Introduction

The range of impacts that the UK exit from the European Union, known as Brexit, is likely to have on other member states has been the focus of debate and analysis in recent times. Brexit is of particular concern for Ireland, given its geographic location as a Western peripheral nation and its shared border with the UK. Research has shown that Ireland will experience the largest proportional losses from Brexit, alongside the Netherlands and Belgium (Dhingra et al., 2016). In a report prior to the Brexit vote, the Economic and Social Research Institute (ESRI) in Ireland estimated that Brexit could reduce bilateral trade flows between Ireland and the UK by 20% or more (Barrett et al., 2015). This refers to the bilateral trade between both countries and it does not contemplate the additional impact that potential delays and increasing costs resulting from the re-introduction of border controls in the UK may have on Ireland's trade relationship with other EU member states. Given that most of the current traffic between Ireland and continental Europe is through Britain, this is a point worth exploring further. This paper aims at filling this gap by contributing to our understanding of maritime freight transport demand for export trade shipments from Ireland to continental Europe. The OECD estimates that typical delays and costs associated with goods crossing borders can increase trade transaction costs by up to 24% of the value of traded goods (OECD, 2013).

Ireland's trade dependency on the UK goes beyond the bilateral movement of goods (Vega and Evers, 2016). Ireland has historically relied on the UK road network (UK Landbridge), with a large proportion of its trade with Europe routed through Britain. The UK Landbridge offers Irish exporters a very competitive and efficient service in terms of frequency and transit times, with a high degree of reliability and security, whereas at a higher cost than the alternative direct routes to mainland Europe (Vega and Evers, 2016). Trade dependency on the UK Landbridge can be measured by the number of movements of goods from/to Ireland through the UK to/from other European destinations. While this is thought to be significant, robust data does not exist on the proportion of goods that use the UK as a land bridge to Europe and the rest of the world (Department of the Taoiseach, 2013). A recent study from the Economic and Social Research Institute (ESRI) in Ireland has estimated that around 53% of Irish exports to the rest of the world uses the UK landbridge (Lawless and Morgenroth, 2017).

Various possible outcomes of the negotiation process between the UK and the EU have been considered, ranging from an agreement similar to the one between Norway and the EU based on the UK's continuing membership of the Single Market to the more extreme scenario or 'hard Brexit' where the EU-UK trade relationship would be conducted under the World Trade Organisation (WTO) tariff model, with the potential UK exit from the EU Customs Union. Depending on the exit mechanism the UK opts for in the course of the negotiations, the potential impact of Brexit on the Ireland's demand for shipping services to mainland Europe may vary substantially. Moreover, new direct shipping routes to mainland Europe may be introduced as a result of a significantly large increase in transport costs and a deterioration of the level of service along the UK Landbridge. This could in turn result in an unprecedented modal and route shift from a predominantly RoRo traffic route along the UK Landbridge to a mixed-mode continental route, with a larger share of container/LoLo traffic. Trade volumes through direct continental services to France, Belgium and the Netherlands have been steadily increasing since 2013, with over 15% increase in direct continental services to France, Belgium and the Netherlands in 2016 (IMTE, 2017).

The objective of this paper is to understand maritime freight transport route choice for export trade shipments from Ireland to continental Europe. The paper offers an analysis of the likely impact of Brexit on Irish freight transport demand resulting from cost increases and the potential deterioration of key transport attributes along the UK landbridge route. To do so, an efficient stated preference (SP) experiment is undertaken to model the choice between two routes for maritime freight exports shipments from Ireland to France, Belgium, The Netherlands and Germany: one in which goods are shipped to the continent via the UK landbridge and the other in which goods are

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shipped to the continent directly. Discrete choice models are then used to model route choice and to provide subjective values for a number of transport attributes, such as transit time and frequency, which are considered essential for the understanding of freight transport demand across the aforementioned transport routes.

This research presents a tool for informing policy initiatives, commercial opportunities and the necessary infrastructural investment needed to adapt Ireland's maritime freight transport services to the needs of its users, in this case the exporters, ahead of one of the greatest transport policy challenges of our time. This paper provides estimates of the subjective values of key maritime transport attributes and demand elasticities along maritime transport corridors between Ireland and continental Europe. These values are deemed essential to accurately quantify the potential effects of different policy scenarios. Indeed, despite the importance that these maritime transport links have for the Irish economy, empirical evidence has been so far qualitative (Trant et al., 2007; Vega and Evers, 2016).

From a broader perspective, the research also contributes to this body of literature by incorporating non-compensatory behaviours that allow us to understand transport decisions in a more comprehensive and realistic manner, by specifically analysing the role played by reliability in logistics decisions. Thus, in our SP experiment transit time reliability is specified through two attributes - the probability of the shipment suffering a significant delay with respect to the initially agreed transit time and the average magnitude of the delays when they take place. This contributes to deepen our understanding of this variable for which empirical evidence is relatively scarce compared to other attributes such as cost and transit time.

The paper is structured as follows: Section 2 presents the characteristics of the transport corridors under study and it provides the details regarding the data collection process, namely experimental design and fieldwork. Section 3 presents the theoretical model employed and the estimation results, followed by the simulation exercises on the impact of Brexit, Discussion and Conclusions in Sections 4 and 5.

2. Data

2.1. Composition of the transport supply in the corridors under study

This section provides a brief overview of the maritime transport corridors under study. The focus of the analysis is on unitised cargo traffic from Ireland to continental Europe, which refers to cargo that is lifted on to container ships or Lift-on/Lift-off (LOLO) and driven on to Roll-on/Roll off (RORO) or ROPAX vessels either accompanied or unaccompanied. According to the latest figures on the performance of the maritime transport sector in Ireland, unitised cargo is driving growth in the industry with both RORO and LOLO volumes increasing by 7% to 1,073,403 freight and to 916,852 TEUs respectively in 2016 (IMTE, 2017).

Ireland's maritime transport supply represented in Fig. 1 has remained relatively stable over the last decades. Irish cargo traffic in the LOLO sector is almost exclusively feeder or shortsea around the large Northern European and English hub ports. Alternatively, RORO/ROPAX traffic moves along four major maritime corridors: Northern, Central, Southern and Continental.

The Northern corridor utilises the relatively short crossing times between Northern Ireland and Scotland. This paper focusses on analysing the Central and Southern corridors relative to the direct continental corridor.

The Central corridor consists of vessels that call to Holyhead, Liverpool and Heysham from Dublin and the Southern corridor consists of ROPAX vessels that call to Fishguard and Pembroke in Wales. Alternatively, the direct continental corridor, which has traditionally consisted of ROPAX vessels from the ports of Rosslare, Dublin and Cork to the ports in Northern France of Cherbourg, Brittany and Roscoff, has experienced significant changes with the arrival of a new operator, Cobelfret, which started running direct RORO services from Dublin to Zeebrugge and more recently to Rotterdam. These vessels are capable of handling both freight trailers and containers. This line has been hugely successful and has increasingly expanded since its introduction in 2009. Direct continental services to France, Belgium and the Netherlands increased by 15% in total, to 179,234 freight units in 2016, the second consecutive year of volume growth above 10% (IMTE, 2017).

Fig. 2 plots the evolution of cargo in and out of Irish ports by type of cargo over the past twenty years. These figures show a steady increase in the quantity of goods handled from 1995 up until 2007, at which point the quantity of cargo handled falls as a result of the economic recession. There has been a slight recovery since with a stronger increase since 2012, in particular for RORO.

Table 1 provides a detail of ferry routes, transit times and frequencies along the UK landbridge and direct continental route in 2016.

Overall maritime traffic in Ireland has performed well since the end of the economic recession in 2012 (see Table 2). According to the Irish Maritime Development Office (IMDO), RORO traffic in 2016 increased by 7%, representing the third consecutive year of growth in traffic volumes. Ports in the Republic of Ireland experienced an increase in traffic of 6% and Northern Ireland's traffic increased by 4%. Dublin Port remains the main Irish port, with the largest market share at 49% (IMDO, 2017). Dublin Port, Port of Cork and Rosslare Europort are the main entry and exit ports for the RORO sector. Recent figures highlight that over 90% of Ireland's overall Ro/Ro traffic volume is with Great Britain. However, as pointed out before, there has been over 15% increase in direct continental services to France, Belgium and the Netherlands in 2016. Fig. 3 shows the development of these direct services to France, Belgium and the Netherlands in the last decade.

2.2. Experimental design and fieldwork

This study is concerned with the analysis of the demand for maritime freight transport services from Ireland to continental Europe. The aim of the research is to obtain empirical evidence on the determinants of route choice between the two alternatives: one in which goods are shipped to the continent via the UK landbridge and the other in which goods are shipped directly to Europe without UK passage.

The population under study are Irish exporters that use or have used in the past the UK landbridge to ship their goods to the following Northern European destinations: France, Belgium, The Netherlands and Germany. The population was further narrowed down by excluding refrigerated shipments, as these have very different timeline requirements and costs, and would not be comparable to the rest of the sample.

One of the main critical issues in freight transport modelling is to identify the decision maker, whether this is the shipper, the freight forwarder or the transport service provider (Feo-Valero et al., 2011a, Feo-Valero et al., 2011b). Previous research has acknowledged that road hauliers and freight forwarders are the agents that ultimately make the decision of transport route and mode in Ireland (Vega and Evers, 2016). However, in recent years, rising fuel costs, taxation and the highly competitive nature of the sector have reduced margins in the freight transport sector, with increasing costs being passed on to the shipper or exporter. As the impact of changes in service attributes start to be felt by Irish manufacturers, their preferences and attitudes become increasingly important to consider. Moreover, by collecting data from exporters directly a larger sample size is possible. In any way, it would be desirable to include both the shipper, the freight forwarder/logistic operator, as well as the transport service provider in future research to understand how the estimates presented in this paper vary from one group to another.

The data used in the estimation process were provided by Irish exporters to Northern Europe. Interviews were carried out with company representatives of the logistics or supply chain department responsible for managing transport shipments. Therefore, the interviewee company was in all cases the person directly responsible for transport and