The Socio-Economic Marine Research Unit (SEMRU)
National University of Ireland, Galway

Working Paper Series

Working Paper 16-WP-SEMRU-01

Understanding the implications of the UK HGV road user charge for Irish maritime freight transport stakeholders

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Abstract

Road user charging in the European Union has evolved from a mechanism of financing the construction and maintenance of motorways to internalising the road user costs in line with the polluter pays principle. The United Kingdom introduced a HGV (Heavy Goods Vehicles) Road User Levy Act 2013, which became effective from 1 April 2014. Given Ireland's geographical location as a peripheral European nation, it has been historically dependent on the use of the British road network (UK land bridge) for exporting and importing goods to and from Europe. Irish exports are set to be the main growth driver for the Irish economy in real GDP and critical for economic revival. The UK's introduction of the new HGV road charge has raised serious concerns across the freight transport sector and policy-makers in the Republic of Ireland. Such concerns relate to who will be most exposed to the charge and the future aggregate economic impact on stakeholders of the export freight transport sector - notably, hauliers, freight forwarders and exporters. This research explores the potential implications of the newly introduced UK HGV road user charge for export freight transport stakeholders operating in the Republic of Ireland. Semi-structured, in-depth interviews were carried out with key stakeholders with the aim of understanding the extent to which these are affected by the road charge and the perceived feasibility of alternatives currently available for exporters and transport providers.

This work was funded through the Beaufort Marine Research Award, which is carried out under the *Sea Change* Strategy and the Strategy for Science Technology and Innovation (2006-2013), with the support of the Marine Institute, funded under the Marine Research Sub-Programme of the National Development Plan 2007–2013.

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1. Introduction

The Republic of Ireland (hereafter RoI) has historically relied on the UK land bridge with a large proportion of its trade with Europe routed through Britain. This has provided a very competitive and efficient service with high degree of reliability and security. However recent UK transport policy developments have created a considerable level of uncertainty among Irish freight transport providers and users on the potential implications of the recently introduced Heavy Goods Vehicles (HGVs) road user charge in the UK. This charge is a time-based charge of up to £1,000 a year or £10 a day and will apply to all vehicles weighing 12 tonnes or more, using the UK road network.

The potential impact of this charge on Irish freight transport stakeholders has raised a debate among freight transport industry organisations, exporters, policy makers and academia on the extent to which RoI's future economic growth may be challenged. The RoI operates at a cost disadvantage in relation to all freight transport modes compared to firms located in the UK or continental Europe (Forfás, 2012). In terms of road freight costs, a typical journey to the continent is about 50% cheaper for a UK exporter and 80% cheaper for a continental exporter than for an Irish exporter (Forfás, 2012). One nation's geography leading to a high dependency on its neighbour for market access, renders the potential impact of the UK road user charge an idiosyncratic and interesting case for study.

This paper takes a qualitative approach to explore the potential implications of the UK HGV road user charge for Irish stakeholders operating and using Irish freight services from the RoI. Using qualitative in-depth interviewing techniques, semi -structured interviews were carried out with key stakeholders in the Irish Freight Transport sector representing road hauliers, freight forwarders, exporters, industrial organisations and state-owned agencies. The advantage of this type of analysis is that it provides a deep understanding of the nature and diverse perspectives of key stakeholders in the Irish transport sector and its users – the exporters.

As a first step, the paper addresses the research question of the identification of the decision maker in Irish international freight transport. Specifically, the paper focussed on the identification of the agent that ultimately makes the decision of route and mode of transport for goods exiting the RoI. While the decision maker in passenger transport is generally straightforward, as the user of the service and the decision maker tend to be the same person, previous studies have shown that it is more difficult to identify the decision maker in freight transport (de Jong, 2000). The large number of actors involved in international freight transport systems and the growing levels of outsourcing in the sector have been identified as the main reasons for this difficulty (Feo et al, 2011). Once this first research question is investigated, the paper moves on into addressing the main research question regarding the implications of the UK HGV road user charges on the Irish international freight transport sector.

The paper is structured as follows. First, Section 2 presents a synopsis of extant studies of current knowledge in the specific area of road user charging in freight transport. This is followed by an overview of the EU road charging systems and corresponding EU

legislative developments. The fourth section details the research context and rationale for inquiry, followed by the research methodology for the study and details of stakeholder participants. Findings are then discussed in the light of the extant literature. Finally, conclusions and policy implications are drawn.

2. Literature review

Road user charging has been a key element of European transport policy for over two decades. The focus has been on establishing efficient transport pricing mechanisms and the internalisation of transport costs, mainly in relation to road freight transport or HGV road charges (Nash, 2007).

The full cost of transportation is composed of first, the private cost, such the price of petrol; second, the infrastructure cost or the cost of maintenance and operation of infrastructures; and third, the external of cost, for example, the time, pollution or noise associated with transport (Quinet, 1997). Economic theory has traditionally referred to the sum of the second and third costs as the social cost, representing the proportion of the full cost not covered by the user (Quinet, 1997). The varied range of social costs and the complexity of the interactions between road transport and other modes makes the formulation of appropriate policies for road pricing a difficult task for policy makers (Crawford and Smith, 1995).

There is a vast amount of literature on the effects of road pricing, covering a wide range of areas such as congestion (Rotaris et al., 2010; Liu et al., 2014), network performance (May and Milne, 2000; Watling et al., 2015), carbon emissions (Beevers and Carslaw, 2005; Welsh and Misra, 2013), social equity (Eliasson and Mattsson, 2006; Levinson, 2010; Miyoshi and Rietveld, 2015) or accessibility (Tillema, 2007; Tillema et al., 2008; Condeço-Melhorado et al., 2011).

Hensher and Puckett (2008) used experimental design techniques to investigate the role that distance-based road user charges play in the transport preferences of a sample of freight transporters. Results show that a higher freight rate lowers the marginal disutility of total cost, which implies that any cost increase will be passed on to shippers through higher freight rates (Hensher and Puckett, 2008).

Another strand of literature has dealt with the issue of acceptability of road pricing. While theoretically sound from an economic theoretical perspective, road pricing has been notoriously difficult to implement (Sørensen et al, 2014). According to Lowi (1985), redistributive measures like road pricing are more likely to meet political and public resistance than other transport policy measures. Using the example of the Swiss national HGV road charge introduced in 2001 as one of their case studies, Sørensen et al. (2014) identify barrier managing strategies which seem to have supported the implementation of road pricing schemes. These strategies range from ‘combining stick and carrots’ and ‘showing openness and flexibility in negotiations’ to the use of trials and strategic communication.

The potential disadvantages that the introduction of HGV road user charges may have on peripheral countries, relative to more central regions, conforms to the standard regional economics core-periphery model. This model explains how agglomeration of

manufacturing activity may happen in one region depending on the proportion that manufacturing activity represents in the economy, the existence of economies of scale and the level of transport costs (Bar-El, R., and Parr, J., 2003). Since the seminal work of Krugman (1991), researchers have explored extensively the relationship between trade flows and factor mobility, production processes and firm agglomeration (see Brakman et al. 2009 for an overview of the literature). Relevant to this research is the understanding of how increased trade costs - via freight transport costs – affect the core-periphery dynamics. Recent research has highlighted that peripheral regions, with generally less freight transit traffic, are likely to obtain lower revenues from taxing foreign registered HGVs. At the same time, indigenous firms in these peripheral regions have to travel greater distances to get to the main central markets, which increases transport and logistics costs (Gutierrez et al., 2013).

The potential negative effects that HGV road user charges have on the economy of peripheral regions has been the focus of analysis of a number of EU-funded projects such as TIPMAC (Kohler et al, 2003; 2008) and IASON (Tavasszi et al, 2004). With the use of various economic modelling methods such as a computable general equilibrium and input-output models, results from these projects shed light on the relatively negative impact of these pricing mechanisms on peripheral economies, both in terms of employment and revenue. Gutierrez et al., (2013) highlight the potential disadvantages from the application of the 'Eurovignette' system – Directive 2011/76/EU - across Europe with regard to direct revenue transfers between European countries. While their analysis excluded island countries such as the UK and the RoI, geographical location still was identified a main factor in determining whether the net balance of toll payments was positive or negative, with peripheral countries presenting negative balances.

Previous studies have referred to the challenges existing in the identification of the decision-maker in freight transport (de Jong, 2000). There are two reasons for this: first, the large number of actors in international freight transport systems and second, the increased dependency in externalising this service outside the boundaries of the firm otherwise commonly known as 'outsourcing'. In Feo et al.'s (2011) comprehensive review of studies specific to decision-maker identification in freight transport demand studies, they considered the influence of exporters -the shipper-, and freight forwarder and haulier. They found that extant studies considering the exporter as the decision-maker were far more numerous, at national and international level than those opting to focus their analysis on other agents in the logistical supply chain such as hauliers/freight forwarders.

In the last decade, two studies specific to the UK road freight user charging policy have been conducted. In response to an introduction of a road user charging scheme in the UK back in 2002, McKinon (2006) offered alternative proposals to the UK government proposed HGV road user charging scheme of 2002. The authors comment how the UK HGV road charge scheme was planned to be effective from 2008; however, it was cancelled in 2005. The authors further examine the main features of the proposed 2002 scheme while suggesting an alternative method of taxation for HGVs.

More recently, research studies (see Sui and Liwei, 2012) have focused on the potential consequences of a distance-based HGV charge in the context of the announcement of the levy by the UK Department for Transport in April 2014 (2011-2015 Business Plan, DFT, 2010). However, no study to date has examined the idiosyncratic nature of the impact of the UK HGV road user charge on the Irish transport sector.

The objective is to understand the potential impact of the UK HGV road user charge across Irish freight transport stakeholders in the context of the existing decision-making process for intermodal transport in The RoI. We further explore views on the spectrum of feasible alternatives currently available for exporters and transport providers in light of the recent HGV road user charge. Previous research has used a similar approach to understand the views of the haulage industry regarding transport efficiency measures (Ardvisson et al., 2013). To the authors' knowledge, no research on HGV road user charging and its impact has been conducted to date in a cross-border context – the Irish-UK context.

3. HGV road user charges in the European Union

3.1. Policy context

The European Commission has long been concerned with the relationship between transport prices and the marginal social cost of transport.. EU directives for HGV road user charges have played a central role in European transport policy, while road charging for the private car has been left as a matter for the member states (Nash, 2007). In transport economic theory, the social marginal cost of transport, or the additional short-term cost created by one additional person using the road infrastructure, is considered the appropriate price setting mechanism. As mentioned in Section 2, the social cost of transport refers to the sum of the infrastructure cost and the external cost. While the first is funded according to the 'user pays' principle, the second is internalised according to the 'polluter pays' principle.

Because of its importance in European economics, the original Eurovignette Directive 1999/62/EC was designed to regulate existing road user charging schemes in Europe to ensure that there was no discrimination between road hauliers based in different countries, which would have an impact on the economies of those countries as a whole. Further developments from the original Eurovignette Directive have broadened its scope to 'improve the management of commercial freight traffic, reduce pollution and generate funds for investment in new infrastructure' (Directive 2006/38/EC).

The latest Directive 2011/76/EU passed by the European Parliaments and council in 2011 stipulate that the cost of constructing, operating and developing infrastructure can be leveraged through tolls and vignettes to road users if desired by a member state. Member states are under no obligation to apply the road charge. This Directive moves forward towards the 'development and implementation' of the 'polluter pays' principle. While distance-based charges are considered a 'fair and efficient economic instrument to achieve a sustainable transport policy', Directive 2011/76/EU contemplates the

usefulness of time-based user charges for applying the ‘user pays’ principle when a distance-based charging systems are not in place.

Distance-based charging schemes are widely adopted across Europe. The charge is calculated on the base of the distance travelled and weighted by other relevant parameters. European countries that apply distance-based road charging schemes to their entire motorway network are Austria, Germany, Czech Republic, Hungary, Slovakia, Poland and Belgium (April 2016) among others.

Time-based road charging systems allow road hauliers to use motorways of participating Member States for a given period (i.e. a day, a week, a month or a year). This system applies to HGVs with a total permissible weight of more than 12 tonnes on motorways and selected A roads across Denmark, Luxemburg, the Netherlands, Sweden and the UK among others.

Vierth et al., (2015) addressed the policy implications from implementing road freight time-based charging schemes compared to the implications from implementing distance-based charges. Using Germany and Sweden as case studies, this research suggests that road freight policy based on distance-based charges has resulted in substantially larger revenues and a cleaner truck fleet and mileage.

In April 2014, the UK government introduced a road user charge for HGVs for the use of its road network. In line with the latest Directive 2011/76/EU, the rationale behind this long-time announced HGV road user levy is that operators of UK-registered HGVs pay road charges or tolls in most European countries for the use of their road network. However, foreign-registered HGVs did not pay to use the UK’s road network. The road user charge introduced is a time-based charge of up to £1,000 a year or £10 a day and will apply to lorries weighing more than 12 tonnes using UK roads. UK-registered HGVs will pay the road user charge for the same period and in the same transaction as they pay for vehicle excise duty (VED i.e. Motor Tax). Foreign-registered vehicles can pay the charge either daily, weekly, monthly or annually. There are associated reductions for UK-registered HGVs in the amount of VED that is payable. This is intended to mean that the vast majority of UK-based hauliers pay no more than at present (HGV Road User Levy Act).

3.2. Irish trade dependency on UK land bridge

There is a significant level of interdependence between the RoI and the British economies. Great Britain is the RoI’s second largest export partner in value terms at €12.3 billion, representing 14.18% of total exports in 2013 (CSO, 2013). Great Britain and Northern Ireland are also the top two destinations for RoI’s exports in volume terms, representing 6.3 million tonnes or almost 50% of the total RoI’s exports by volume. Conversely, the RoI is the fifth largest destination of UK exports, which is larger than what the relative size of the RoI’s population and economy would suggest (Department of the Taoiseach, 2013).

While there is a large amount of trade between the two islands, RoI’s trade dependency on the UK land bridge goes beyond the bilateral movement of goods. This trade dependency on the UK land bridge can be measured by the number of movements of

goods from/to RoI 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 from/to the RoI that use the UK as a land bridge to Europe and the rest of the world (Department of the Taoiseach, 2013). Regardless of the level of traffic from the RoI to Europe through the UK land bridge, these routes offer Irish exporters higher levels of service in terms of frequency and transit times than the corresponding direct routes to mainland Europe. In 2013, the frequency of service between the RoI and Great Britain was 18 times larger than for direct services to the continent (Evers and Vega, 2013). Trade volumes through direct continental services to France, Belgium and the Netherlands experienced significant increases in 2013, with new Roll-On/Roll-Off (Ro-Ro) routes linking the RoI directly to western France and northern Spain (IMDO, 2014). This provides additional options to RoI transport service providers to the more expensive UK land bridge routes.

Table 1 shows the top five export commodities from the RoI to Europe in value and volume terms as a percentage of the total export value/volume in 2013. There is a concentration in export value terms into two commodities, namely 'Medical and Pharmaceutical products' and 'Organic Chemicals', with 30.61% and 20.19% respectively out of the total export value from the RoI. In terms of volume, 'Metalliferous ores and metal scrap' constitutes the largest sector with 29.49% of the total share by export commodity.

Table 1: Top 5 export commodities from Ireland to Europe in value and volume terms as percentage of the total, 2013.

Commodity	Value	Commodity	Volume
Medical & pharmaceutical products	30.61%	Metalliferous ores & metal scrap	26.49%
Organic chemicals	20.19%	Non-metallic mineral manufactures nes	11.00%
Essential oils, perfume materials; toilet & cleansing preps	6.09%	Petroleum, petroleum products & related materials	10.21%
Meat & meat preparations	5.02%	Meat & meat preparations	6.60%
Office machines & automatic data processing machines	4.79%	Dairy products & birds' eggs	5.92%

Source: Intrastat, Central Statistics Office (CSO)

Table 2 shows the top five export commodities from the RoI to Europe by export mode – road, sea and air –in value terms and the percentage that these represent out of the total export value for the RoI for each mode in 2013. The mode of transport indicates the active means of transport by which, on export, the goods are presumed to leave the statistical territory of the Member State and, on import, the goods are presumed to have entered the statistical territory of the Member State (Revenue Commissioners, 2014). Mode 'Road' here indicates Ro-Ro as Table 2 indicates RoI export trade to Europe.

Table 2: Top 5 commodities by export mode from Ireland to Europe in value terms as percentage of the total export mode value for Ireland, 2013.

Commodity	Road (Truck) %	Commodity	Sea %	Commodity	Air %

Medical & pharmaceutical products	37.92%	Essential oils, perfume materials; toilet & cleansing preps	14.52%	Medical & pharmaceutical products	57.53%
Organic chemicals	32.69%	Meat & meat preparations	10.80%	Miscellaneous manufactured articles nes	8.42%
Office machines & automatic data processing machines	6.00%	Chemical materials & products nes	9.85%	Organic chemicals	8.29%
Miscellaneous manufactured articles nes	4.70%	Medical & pharmaceutical products	8.76%	Office machines & automatic data processing machines	8.28%
Meat & meat preparations	2.02%	Dairy products & birds' eggs	6.57%	Chemical materials & products nes	3.55%

Source: Intrastat, Central Statistics Office (CSO)

As illustrated in Table 2, the top export commodities under Ro-Ro are 'Medical & pharmaceutical products' and 'Organic chemicals', representing nearly 38% and 33% of the total value of exports by Ro-Ro from the RoI in 2013. The value of 'Medical & pharmaceutical products' export trade by Ro-Ro represents 60% of all exports for this commodity. Finally, top export commodities by Sea are 'Essential oils, perfume materials; toilet & cleansing preps' (14.52%) and 'Meat & meat preparations' (10.80%).

Table 3 shows the top five export commodities from the RoI to Europe by export mode – road, sea and air –in volume terms and the percentage that these represent out of the total export volume for the RoI by each mode in 2013. In this case, the top export commodities by volume are Non-metallic mineral manufactures' and beverages in the case of Ro-Ro. In the case of the 'Sea' mode, the top export commodity is 'Metalliferous ores and metal scrap', which is mainly moved by bulk cargo, followed by 'Petroleum and petroleum products'.

Table 3: Top 5 commodities by export mode from Ireland to Europe in volume terms as percentage of the total export mode volume for Ireland, 2013.

Commodity	Road (Ro-Ro) %	Commodity	Sea %	Commodity	Air %
Non-metallic mineral manufactures nes	22.38%	Metalliferous ores & metal scrap	30.17%	Miscellaneous manufactured articles nes	22.24%
Beverages	10.56%	Petroleum, petroleum products & related materials	11.34%	Meat & meat preparations	15.62%
Meat & meat preparations	8.77%	Non-metallic mineral manufactures nes	9.34%	Office machines & automatic data processing machines	12.04%
Crude fertilisers & minerals, excl. coal, petroleum etc.	3.84%	Dairy products & birds' eggs	6.32%	Power generating machinery & equipment	9.74%
Coal, coke & briquettes	3.41%	Meat & meat preparations	6.28%	Professional, scientific & controlling apparatus nes	8.75%

Source: Intrastat, Central Statistics Office (CSO)

Overall, increased freight transport costs along the UK land bridge may have a disproportionate impact on some of the largest export commodity groups. Some key Irish export sectors such as 'Beverages' or 'Meat and meat preparations' may be more affected than others, mainly depending on the proportion that the transport cost represents over the total production cost. Nevertheless, the impact is likely to be noticeable in the case of low/medium value added sectors that are also heavily dependent on the 'Road' mode (truck), such as 'Organic chemicals', for example.

4. Methodology

As part of a larger Irish government-funded study investigating the overall economic impact of the HGV UK road charge on Irish transport stakeholders, case research methodology was selected to address the research questions of the study (Yin, 2009). As the study is exploratory in nature, a qualitative case study approach was considered to be the most appropriate to examine our research questions (cf. Yin 1994) in a policy context. As generalisability is not assumed in qualitative research due to small samples (Yin, 2009; Evers, 2010), qualitative data is rich and holistic, with strong potential for revealing complexity with strong advantage over quantitative data in drawing insights that could not be gained with "hard" data only (Mintzberg, 1979; Smirchich, 1983; Orum et al., 1991). Further, case design method delivers more effectively deeper insights when viewpoints in the extant literature are conflicting or exhibits a degree of controversy, which is a central feature of this case (Eisenhardt, 1989). Qualitative data methods generally aim to understand the experiences and attitudes of key stakeholders in the chosen industry context. These methods aim to answer questions about the 'what', 'how' or 'why' of a phenomenon rather than 'how many' or 'how much', which are answered by quantitative methods.

The main objective of the study is to understand the implications of the UK HGV road user charge on international freight transport stakeholders based in the RoI. The extent to which there are discrepancies in the expected impact of the UK HGV road user charge across key stakeholders is a matter of concern for this study as well as the spectrum of alternatives available for exporters and transport providers once the UK HGV road charge scheme came into place. Previous research has used a similar approach to understand the views of the haulage industry regarding transport efficiency measures (Ardvisson et al., 2013). The advantage of this methodology is that it provides in-depth understanding of the nature and diverse perspectives of key stakeholders in the Irish transport sector. Further, employing qualitative methods in case study research (Yin, 2009), enabled us to gain richer insight into the idiosyncrasies of the context and issues outlined above.

4.1. Data collection and analysis

Following the principles of case data collection established by Eisenhardt (1989) and Yin (1989), multiple sources of evidence in gathering the data was used. Data collection

and analysis occurred in the period February 2013 until March 2014 and involved an iterative process of collecting secondary and primary data sources with cross triangulation to increase validity. Firstly, a review was conducted of policy documents, trade reports, and documentation sources from European Union, the UK and the RoI. Other secondary documentation, and the website content industry/research associations was examined.

Second, primary empirical data was collected through explorative semi-structured interviews with key stakeholders that would be potentially impacted by the UK charge or those interviewees representing groups of Irish stakeholders who would be exposed to the charge such as freight forwarder and haulage Industry bodies. To select key interview participants, purposive sampling techniques were used following a review of documents on the public debate of the UK charge by the use of local media, , and a pilot interview with the transport and logistics representative of the Irish Exporters Association who possessed a wealth of knowledge on transport policy and industry developments. Face-to-face interviews were then conducted with twelve key stakeholders operating in the Irish Freight Transport sector including road hauliers, freight forwarders, exporters, industry representative organisations and state-owned agencies. A profile of interview participants and their affiliation are set out in Table 4.

Table 4: Profile of interview participants and their affiliation

Interviewee	Position	Stakeholder organisation	Function or role
1	Trade Facilitation Director	Industry association	Representative body for Irish exporters
2	President	Industry Association	Representative body of the licensed road haulage industry
3	CEO	Industry Association	Representative body of the freight forwarding industry
4	Company Director	International Haulage Company (Large)	Operation of haulage services
5	Manager	International Haulage Company (Small)	Operation of haulage services
6	Owner	International Haulage Company (Medium)	Operation of haulage services
7	Company Director	International Freight Forwarder (Large)	Provider of freight transport and logistics services
8	Sales manager	International Freight Forwarder (Large)	Provider of freight transport and logistics services
9	Company Director	International Freight Forwarder (Medium)	Provider of freight transport and logistics services
10	Managing Director	Exporter (Medium)	Manufacturer of precast concrete
11	Supply Chain Manager	Exporter (Large)	Manufacturer of medical devices

12	Company Director	Exporter (Small)	Supplier of softwood products

- Small corresponds to less than 20 employees
- Medium corresponds to more than 20 and less than 100 employees
- Large corresponds to more than 100 employees

The interviews lasted approximately 60-90 minutes, were recorded and transcribed verbatim. The interviews were framed around a series of questions relating to the following topics underpinning our research inquiry. Probes were used to construct a "conversation-like dialogue" (Arnould and Wallendorf, 1994).

We further recognised that the nature of the qualitative interviews may have been open to potential retrospective biases arising from the nature of the accounts disclosed by the interviewee. To address these concerns, data collection was triangulated around an iterative process of questioning between hauliers companies, freight forwarders, exporters, industry sector representatives as well as policy officials in the Irish Department of Transport, Tourism and Sport. Relevant documentation and archival data were collected to assist with the triangulation of data to increase validity of findings.

In data analysis stage, there have been calls for researchers using qualitative interview data to use more formalized procedures when analysing and interpreting such data (e.g. Sinkovicsetal., 2008). To this end, thematic approach to data analysis was used (Creswell, 2003). Thematic analysis looks across all the data to identify the common issues that recur, and identify the main themes that summarise all the views you have. For each interview, responses were coded and analysed according to emergent themes (Miles and Huberman, 1994). The interview data analysis involved using cross-pattern matching and emergent and recurrent theme analysis (Eisenhardt, 1989). This allowed the patterns of theme to surface, which in turn were explored across the other interviews. Emergent findings were examined in the context of extant literature, thus strengthening the internal validity of the research. Following Olesen's approach (2014), a synopsis of findings from each stakeholder's account was verified by each stakeholder participant where possible through email or offline communication. Further, due to the nature of qualitative data being voluminous and highly descriptive, only selected representative and empirically rich quotations were used to present the data (See Olesen, 2014).

5. Discussion of findings

This section presents a discussion of findings pertaining to each of the research questions of this study. From the analysis of secondary and primary data, key themes emerge addressing the research questions of the study.

5.1. Identification of the decision-maker for Irish export transport mode and route

Qualitative findings from stakeholders were inconclusive in identifying one sole decision-maker. Further, whilst Feo et al.'s (2011) review found the exporter as the

main decision-maker, findings from this study underline three main themes that influence how transport modes and routes are decided. These themes are: the control of the logistics chain, the scale of the business and the exporter's level of knowledge. These findings are discussed below in the context of extant literature.

Control of the logistics chain

Depending on the degree of control, the decision maker can vary according to the type of the decision; with hauliers/freight forwarders normally responsible for deciding the route and exporters usually focusing on the choice of mode (de Jong, 2000). Our findings endorse this view by pointing the degree of control of the logistics chain as one the key determinants of decision-maker identification. As transport is a derived demand there is an overarching agreement that "the decision really starts with the exporter" (Irish exporters' association (IEA Representative). They further qualify this view by adding that "the level of control is determined by the exporter when faced with questions such as 'what element of control do I want? How do I get that level of control in my company?" and ultimately, "Do I give the person who is doing the logistics the tools to do it properly? Do I treat logistics as something important?" (IEA Representative).

Scale of business: SMEs vs. MNCs

Similarly, other studies that have considered the exporter as the decision-maker make the assumption that only companies of a certain size have the necessary information to take responsibility for transport decisions (Feo et al.,2011). The scale of the business matters in the decision process concerned with route and mode choice and ultimately, in the identification of the decision maker. With the exception of large exporters, most SME exporters have little involvement in transport mode decisions and they outsource to freight forwarders and hauliers to decide the best mode/route. As one medium-sized Irish haulier sates "the haulier is the decision-maker", "the exporter is not aware of whether the product goes via land bridge or direct; they are only interested in getting their product from A to B". Outsourcing freight transport services is a common decision amongst smaller and medium sized firms and it is widely used in order to enhance their performance and to cut costs related to their transport and logistics operations. Bettis et al. (1992) presented arguments both for and against outsourcing. While "properly understood and managed as an overall part of strategy, outsourcing can aid competitiveness", it has also disadvantages, including deterioration in overall performance due to excess reliance on outside suppliers (Bettis et al., 1992) and the lower innovation capability of the outsourcer (Gilley and Rasheed, 2000).

In the case of large MNCs, the decision is nearly always made by the exporter "It is all done centrally; the Europe logistics team will decide the carriers that we will use including the rates and the routes" (large exporter from the West of Ireland). However, given the multi-plant manufacturing process that characterises MNCs, transport costs play an extremely important role in the internal competition for the allocation of resources among manufacturing plants: "being in the West of Ireland is really a disadvantage; the challenge for us is really around transport costs" In the case of small exporters which require less than a truck load, the freight forwarder will be making the

decision. In line with Feo et al (2011), our findings support this view suggesting the scale of business can determine the key decision-maker of freight transport modes.

Level of Knowledge

Further our findings identify the level of knowledge across actors in the sector in freight mode use, as a key determinant of who decides and controls freight transport decisions. As pointed out by the Transport and logistics Director of the IEA as "the degree of intellectual commitment in the exporting company regarding the delivery of their products and the logistics". Previous studies noted by Feo et al., (2011), endorse this view indicating the important role of knowledge in determining level of participation in freight mode decisions. They note the example of Spanish SME exporters whose lack of knowledge necessitated them to outsource their transport services to external agents. This lack of knowledge pertained to the Spanish SME's insufficient information flows about the current international freight transport landscape to make informed mode and route decisions (Feo et al., 2011). In an Irish context, the export sector is dominated by SMEs who prioritise economies of scale and typically outsource their transport services to freight forwarders and hauliers.

From a policy stance, one of the aims of the EU road pricing policy for HGVs as defined in the EU latest Eurovignette directive relates to reducing pollution (following the 'polluter pays principle') and consequently, the number of trucks on European roads. The findings from this research suggest that the ultimate transport user – the exporter -, or the agent that causes the pollution, is not generally aware of the road charge. This lack of awareness from the final freight transport user has implications for the decision-making process in terms of mode and route choice. This study finds that, regardless of scale of the business and the level of control executed by the exporter over their transport operations, the lack of knowledge or understanding about freight road charges is seen as an efficiency barrier. In other words, the decision-maker is likely to keep using trucks unaware of increasing costs for this mode choice, as one Exporter says: "We use Ro-Ro because that is the way we always did it" (Medium sized exporter A). Another Exporter adds: "Any increase of charges will have an impact on us, even 10 pounds. I am sure they will try and pass it on and we will try to negotiate our way around it" (small sized exporter B).

Our findings conclude that the level of control of the supply chain, the scale of the business, and the exporter's level awareness and knowledge of transport act as key determinants for decision-maker identification of export freight modes and routes.

5.2. Implications of the UK HGV road user charge for Irish stakeholders of export freight transport based in the Republic of Ireland

The findings strongly indicate that RoI-registered road hauliers would be most exposed to the charge. A number of implications thus emerged from this finding of the isolated cost burden on one group of stakeholders, notably the Irish road haulier. These findings are discussed below in the context of extant studies.

Cost Burden

Overarching agreement exists in the findings that the Irish registered HGV hauliers would be the stakeholder paying the new charge. Contrary to findings by Hensher and Puckett (2008) suggesting that any cost increase will be passed on to shippers through higher freight rates, our results show that road hauliers are not expected to be in any position to pass on the UK road charges or other EU road charges to their clients whether they be exporters, shippers or freight forwarders. Representing the views of the industry, the President of the Irish Road Haulage association says: 'the 10 pounds will have a significant impact, it won't on Freight Forwarder as they don't own any trucks…it's very difficult to pass 10 pounds (stg) on the customer…freight forwarders are not running the trucks…so a lot of costs are absorbed by our industry that's why we are lobbying very hard…'

In concurrence, the view to be representative across the freight forwarder stakeholder group, is that: 'Freight forwarders or hauliers dictate routes but hauliers will pay charge' (Freight Forwarder A). Further, findings show that exporters will bear no exposure to the charge as 'exporter margins already squeezed…so they are not tuned in' (Freight Forwarder A). Referring further road charge costs, it was noted that, driven by the requirements of their customers and irrespective of the transport mode decision-maker: "Hauliers will still end up paying for it most likely…' (Freight Forwarder A). This view was also largely echoed by other stakeholder participants across the research findings.

In line with Gutierrez et al. (2013), our findings support the view that indigenous firms in these peripheral regions have higher transport and logistics costs that their core region counterparts. For most of the participants in the study, the likely impact of the UK road user charge is greater in the case of Ireland because of its geographical location and limited number of alternatives to connect with the main European markets. Due to transport distance costs combined with road charging costs, findings confirm that a disproportionate cost impact exists on hauliers. Evidence from the Irish haulier sector further magnifies the cost burden created by the relatively low bargaining power of hauliers to push the road charge on to freight forwarders and exporters. The nature of the Irish haulage sector is that of quasi-perfect competition market brought about by a large fragmented supply base operated by small haulage companies with limited exit routes available to them. The haulage service sector offer commodity services anchoring on price competitiveness, hence many of the larger size Irish haulage companies operate on economies of scale and they can offer more competitive prices than their smaller counterparts. As a result, findings reveal that the additional cost introduced by the UK HGV road charge is expected to have structural implications for the haulage sector and the transport industry supply base.

Exodus of RoI hauliers to UK HGV registration

One the most inevitable implications of the new road charge that emerged across the findings is the exodus of Irish hauliers' registration to the UK. Such an action would mean that Irish hauliers can still operate in the RoI, but avoid paying the road charge as they will no longer be considered as foreign hauliers. One medium-sized haulier states: "If this is not sorted in 12 months, I am going to register in Holland or in the UK".

While in the medium-term Irish road hauliers are likely to react by transferring their haulage company registration to the UK to avoid the road charge, this action will result

in the long-term decline of the RoI's indigenous haulage industry. According to CEO of a medium sized haulage company 'If it is not sorted in two months, I am moving to UK'. This view was strongly endorsed across the interviews with haulier participants and the Chairman of The Irish Road Haulage Association. The flight of registration to the UK is voiced as a serious concern for Irish Tax authorities given the potential loss of revenue. Additionally, it will potentially undermine and weaken the RoI's position to operate its own Irish haulage sector, which there is an enormous dependency on. In line with results from EU projects TIPMAC and IASON, our findings support the view that road pricing mechanisms can have a negative economic impact on tax revenues and employment in peripheral economies.

A further economic impact of the introduction of the HGVs road charge relate to a relative increase of the cost of commercial transport services to/from peripheral rural areas, which may be severely affected if their local transport companies move their operations to the UK. These problems are further exacerbated as a result of limited alternative in the Irish foreign transport sector.

Irish trade dependency on UK Land bridge and Short Sea Shipping

Participants from the haulage industry emphasised that alternative route modes to access mainland Europe were limited, as one haulier states 'The UK land bridge is not that you decide to use it, it is that you have to use it because there is no other option. It is too long a distance otherwise'. "Yes, it would be great to have a direct service, but you have to have the traffic first" (Freight forwarders industry representative).

Findings also highlight that one possible implication of increased costs due to HGVs road charges through the British Land Bridge is a modal shift towards alternative transport modes from The RoI to Europe, in particular Short Sea Shipping (SSS). 'Short-sea shipping is by far the cheapest mode …50% cheaper (than Ro-Ro) , although transit times is 2 days longer …you wonder why companies go by road to Belgium via UK', (large Freight Forwarder). Short-sea shipping (SSS) however is not suited to all types of export cargo that need higher frequency and high volume. SSS tends to have weekly crossings from the RoI to mainland Europe, hence does not offer the same level of frequency and not laden restrictive. For example FF states that 'Ro-Ro is lighter so compliant with diverse National laden restrictions e.g. Germany… but SSS cargo is not always compliant with laden weight restrictions on tonnage in certain countries'. One major barrier to modal shift towards SSS is that behavioural changes are difficult to implement when there is a well-established habit: "we got ourselves into lazy habits. It is easier to call Johnny and his truck and we don't look for alternatives" (representative of the freight forwarding industry).

Although findings revealed that expectations for SSS have been very positive during the economic boom years, the European container market segment has not performed that well in recent years. There has been a continuous downwards trend in laden container exports since 2010. According to a large freight forwarder, this trend is more pronounced on the import side. However, recent statistics from the Irish Maritime Development Office (IMDO) suggest that the rate of decline for inward container traffic is easing off for the last months (IMDO 2014). The shrinking Irish domestic demand has forced importers into implementing just-in-time transport processes designed to

reduce warehousing costs; therefore, increasing their demand for shorter delivery times that can only be obtained by using the British Land Bridge.

RoI Government response

As for any new taxation measure, the likely response from the Irish government was a theme that arises in particular in interviews with Irish hauliers, those stakeholders most affected by the road charge. Strong views were expressed by the President of the Irish Haulage Association and interviewed hauliers calling for the urgency for Irish Government to act in order to mitigate the economic impact of the UK road charge. It was indicated that "the general unsuitability of the Irish motor tax system was one of the main barriers to the introduction of a fair HGV road charge system. Summed up by one small haulier: "There is double taxation for Irish hauliers because while there are paying motor tax here, they are also paying the vignette in Belgium". The basis for the motor tax system in the RoI based on unladen weight is believed to be subjective and unfair. As a medium-sized haulier states, "in other countries they use Gross Vehicle Weight which is fixed and objective. It is clear what the cost will be for those operating in the sector".

Findings highlight that the long-term implications of the UK HGV road charge depend on the response from the Irish government to moderate the impact on Irish transport stakeholders, in particular Irish hauliers. Consequently, following findings of this study were communicated to the Irish DTTAS[1], the RoI Government have recently responded to the potential impact of the UK HGV road user charge. The Finance Minister in his **Budget 2016 (13th Oct. 2015),** acknowledged that "Road tax for large goods vehicles in the RoI is too high by comparison with the regime applying in Northern Ireland and the rest of the UK'. Stating in his Budget 2016 Speech "This is causing distortions in the haulage industry and increasing costs across the economy". With effect from January 1st 2016, the maximum rate of Irish commercial motor tax will be €900 per annum, down from €5,195.

Locational Peripherality and the Implementation European road user charging policy

Originally designed to justify the construction and maintenance of motorways and roads, European road user charging policy has been considered an instrument for lessening environmental costs in line with the "user pays" and the "polluter pays" principles. For instance, the Eurovignette system has evolved to fulfil two main purposes: financial – to raise funds for infrastructure construction and maintenance - and regulatory – to mitigate the environmental impact of road use and to reduce congestion. On the contrary, evidence from qualitative findings in this study indicate that the haulier is the agent that bears the cost of the UK HGV road user charge. Our study finds that there exists a discrepancy between the decision maker – the exporter as the final user - and the agent most affected by the HGV road user charge. Participants generally perceive that any EU HGV road charging system has a detrimental effect on the RoI, relative to other more central countries (see Kohler et al., 2003 and Tavassi et al., 2004). In particular, participants highlight the RoI's geopolitical relationship with the UK as a mechanism to deal with the recently introduced HGV road charge: "we are

[1] Irish Department of Transport, Tourism and Sport

neighbours, not foreigners" (large haulier). As one freight forwarder states to describe the geographic dependence of the RoI from Great Britain "we are an island of an island". Disadvantages associated with the RoI's peripheral geographic location affect all stakeholder groups in similar way, namely through increased transport costs. The potential disadvantage for Irish exporters and importers compared with their competitors in other European countries is highlighted by participants: "We are the Aran islands – small islands on the West coast of Ireland- of Europe" (President of the Irish haulage association); "Any (road) charge would be much more severe here".

Hence, views from the participants suggest that if this charge was going to be passed on to the exporter, it is likely to have no effect in freight traffic demand management as the exporter would not be aware of it and it would be seen as another increase in transport costs equivalent to those in fuel. From this, we can ascertain from our findings that as much as the ultimate aim of the UK HGV road user charge is to adhere to EU policy i.e. implement the 'polluter pays principle', its aims are undermined by the idiosyncratic nature of UK-RoI trade geography. Our findings thus suggest that the intended implementation of the 'polluter pays principle' may be problematic in the context of EU freight road user charging policy and particularly when transposed into Member State national laws as in the case of the UK road charge levy.

6. Conclusions

This research set out to explore the potential implications of the recently legislated HGVs road user charge in the United Kingdom for Irish export freight transport stakeholders based in the RoI. Specifically, it addressed two research questions using qualitative case research method to gather exploratory insights from key stakeholders potentially impacted by the charge. We further note that the findings of the study are limited to the specific single case context. However, this study presents some key findings that suggest the significant implications of the UK HGV road user charge for the Irish freight transport stakeholders above-mentioned. The findings provide further insights into road charging policy as a mechanism for European transport policy. Below, some conclusions can be drawn from the study followed by implications for future research.

Based on the findings, the specific application of road user charges, in this case the UK HGV time-based user charge can undermine the implementation of EU transport policy in relation to other member states. This is evidenced in the case of the road hauliers in the RoI who pay the charge but are not the sole polluters and aggregate users. There equally exists the logistical necessity for Irish based exporters, freight forwarders and hauliers to transport goods via the UK land bridge. With the onset of the UK road user charge, findings indicate that a distortive economic impact will befall the Irish hauliers operating out of the RoI. As a result, serious economic and repercussions may follow for the Irish haulage sector and ultimately the Irish exchequer. For example, transfer of Irish Haulier company registration to the UK leading to a significant shortfall in motor tax revenues as well as a declining indigenous haulier sector to address the needs of the local economy, specifically in Irish peripheral rural regions. Further, the idiosyncrasies related to Ireland's geography leads to a necessary dependency on using the UK road

network for freight transport for increased frequency and lower transit times. In addition, while the market share of the continental corridor to mainland Europe (direct route) keeps increasing at a steady pace since 2012 (IMDO, 2014), the Irish SSS infrastructural capacity is still limited.

Road user charging is generally introduced in a given economic, social and geographical context and its potential success/failure and its implications depend on this particular context. This paper contributes to the understanding of the impact of HGV road user charging schemes on different stakeholder groups and in the specific geographic context of the RoI. The contribution of this study is to provide comprehensive insights into the nature and diverse perspectives from international Irish transport providers and their customers - the exporters.

Research Implications

In terms of understanding decision-making agents, motivations and choices in international freight transport, transaction cost economics (Coase, 1937 and Williamson, 2002) would be a useful theoretical approach to advance knowledge in this area. Further, the understanding of the increased use of 'outsourcing' transport services by Irish exporters would be enhanced by theoretical assumptions of TCE and further be an interesting context to apply and extend this theory.

The economic application of the 'polluter pays principle' (PPP) has been challenged in this study. The authors believe its principles are indeed economically and socially sound, however, in the context of this study, its application has been questioned. Further research needs to be conducted into the economics of the PPP in the context of freight transport with a view to identifying limitations in certain policy and sector contexts. This would be indeed relevant and useful for EU and national policy makers in addressing the aims of EU environmental policy targets and objectives.

Further, the findings and conclusions of this study are relevant and timely following the recent EU report titled 'Evaluation of the implementation and effects of EU infrastructure charging policy since 1995' (European Commission – DG Mobility and Transport, 2014). This report confirmed that from its evaluation of EU road charging policy no significant evidence of modal shift in transport existed, and statistics of vehicle activity did not provide any evidence of modal shift. It was further pointed out that several studies showed that there was 'potential for cost increases in peripheral regions to be higher compared to those in central regions; however the overall impact on economies is thought to be small.' On the contrary, a key conclusion of this study is that national road charging policy and legislative mechanisms adopted by individual member states can somewhat compromise effective implementation of road charge policies. Awareness and acceptability of road user charges from the Irish exporter's perspective constitute a key barrier to transport policy implementation, as well as aggravating the impact of the charge on one single stakeholder group, the haulier. This study suggests that Member state road charging policies need to be understood in the context of the overall European transport policy and in particular, in relation to other national fiscal measures such as fuel charges and vehicle or motor taxes.

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